State and Tribal Comment Summary and Response Document on EPA's Recommended Area Designations for the 2006 24-hour $PM_{2.5}$ Designation Recommendations
EAP-HQ-OAR-2007-0562

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List of Acronyms

Acronym	Definition
AQS	Air Quality System
ASOS	Automated Surface Observing Systems
BACT	Best Available Control Technology
BART	Best Available Retrofit Technology
CAIR	Clean Air Interstate Rule
CALGRID	California Photochemical Grid
CAMx	Comprehensive Air Quality Model with Extensions
CARB	California Air Resources Board
CBSA	Core Based Statistical Area
CEM	Continuous Emissions Monitoring
CENRAP	Central Regional Air Planning Association
CES	Continuous Emissions Score
CMAQ	Community Multi-Scale Air Quality Modeling
CMSA	Combined Metropolitan Statistical Area
CRPAQS	California Regional PM_{10}/$PM_{2.5}$ Air Quality Study
CSA	Combined Statistical Area
EDAS	Eta Data Assimilation System
EGU	Electric Generating Unit
ESP	Electrostatic Precipitator
FEM	Federal Equivalent Method
FGD	Flue Gas Desulfurization
FHWA	Federal Highway Administration
FRM	Federal Reference Method
GIS	Geographic Information Systems
HPMS	Highway Performance Modeling System
HYSPLIT	Hybrid Single Particle Lagrangian Integrated Trajectory
KYOVA	Metropolitan Planning Organization for southwestern West Virginia and southern Ohio
LADCO	Lake Michigan Air Directors Consortium
LAER	Lowest Achievable Emission Rate
LMACD	Louisville Metropolitan Air Control District
MANE-VU	Mid-Atlantic/Northeast Visibility Union
MARAMA	Mid-Atlantic Regional Air Management Association
MVEB	Motor Vehicle Emission Budget
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standard
NEEDS	National Electric Energy Data System

NEI	National Emission Inventory
NEPA	National Environmental Policy Act
NMIM	National Mobile Inventory Model
NOAA	National Oceanic and Atmospheric Administration
OTC	Ozone Transport Commission
PM	Particulate Matter
PMF	Positive Matrix Factorization
PSAT	Particulate Source Apportionment Technology
PSD	Prevention of Significant Deterioration
QA	Quality Assurance
RACT	Reasonably Available Control Technology
SCR	Selective Catalytic Reduction
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Stations
SNCR	Selective Non-Catalytic Reduction
SOFA	Separated Overfire Air
TSD	Technical Support Document
UMAERO/MM5	Urban Airshed Model for Aerosols/Mesoscale Model Version 5
VMT	Vehicle Miles Traveled
WWW	Wood-Washington-Wirt

GENERAL ISSUES

SECTION I: 2006-2008 Data

State Comment: Consideration of 2008 Data
A number of States believe that data for one or more of the areas violating the 2006 24-hour $PM_{2.5}$ National Ambient Air Quality Standard (NAAQS) may show attainment based on 2006-2008 air quality data. These States ask that EPA consider 2006-2008 data for purposes of determining final area designations.

EPA Response:
The U.S. Environmental Protection Agency (EPA or the Agency) understands the States' concerns with using 2005-2007 data in lieu of the most recent data (2006-2008) for making designation decisions. The Agency recognizes that many areas in the country are making improvements in their air quality and believes that it is important to recognize such improvements. In making decisions about whether an area is meeting the 24-hour $PM_{2.5}$ NAAQS, EPA also believes that it is important to use the most recent air quality data. EPA will be unable to use 2008 air quality data for the designation decisions that will be made in December 2008 because that data will not be final and certified by that date. However, all States will still have the opportunity to benefit from improvements air quality by using 2008 air quality data to demonstrate attainment of the 24-hour $PM_{2.5}$ NAAQS.

Prior to the effective date of final 24-hour $PM_{2.5}$ designations, States will have the opportunity to provide more recent data showing that an area is attaining the 24-hour $PM_{2.5}$ NAAQS. To do so, a State must submit its complete, quality assured, certified 2008 air quality data to EPA earlier than the usual June 30 deadline. This early submittal deadline will be February 20, 2009 – approximately 45 days prior to the 90-day effective date of publication of the final 24-hour $PM_{2.5}$ designations. If the Agency agrees that a change of designation status is appropriate based on 2006-2008 air quality data, it would withdraw the nonattainment designation prior to the 90-day effective date of final 24-hour $PM_{2.5}$ designations and take a new final action designating such areas consistent with the new 2008 data.

SECTION II: Contributing Emissions Score (CES)

General Response to Comments Regarding the CES:
Several commenters asserted that too much emphasis had been placed on the Contributing Emissions Score (CES) in deciding the nonattainment area boundaries. EPA has stated that the CES is one tool which utilizes information from the nine factors recommended through guidance to be used in determining potential nonattainment area boundaries. EPA's intent in developing and utilizing the CES was to have it serve as a starting point in determining the possible spatial extent of a potential nonattainment area with additional information through the use of the nine factors as well as other information the Federal, State or Local air agency could provide to determine an area that was contributing to concentrations greater than the level of the standard. The CES was in no way considered to be outcome determinative, but just one more analytical tool that could help inform the final boundary decision.

As stated in the Technical Support Document (TSD), the CES represents a generalized approach that was implemented across the country for consistency purposes. The Agency strongly encouraged State and Local agencies to submit other data and analyses to provide a more detailed and specific characterization of the contributing emissions to the ambient $PM_{2.5}$ concentrations violating the NAAQS. The comments EPA has received including these additional pieces of information have played a major role in the final decision making process.

Other commenters stated that the CES was limited based on the data and the weighting factors used in its calculation. EPA recognizes that it is difficult for any analytical tool to completely characterize the unique and complex conditions observed in many areas across the country using a general approach. The CES TSD clearly states that several factors could not be adequately accounted for such as topography, overall emissions estimates and emissions estimates in counties with isolated densely populated areas or large rural areas. EPA recognized that additional information from the State and Local agencies would be required to better characterize these unique circumstances and encouraged State and Local agencies to submit through the comment process any supplemental information such as population density, commuting patterns, more detailed or localized weather data, and topography data. Additional data and analyses were received to aid U.S. EPA staff in better determining the spatial extent of areas in parts of the country where these limitations were experienced and were considered to help inform the final regulatory decision. Many States, however, did not provide additional analyses which required the Agency to use the information it had on hand at the end of the comment period to inform its decision.

State Comment: Introduction and application of CES methodology
A number of States expressed concerns that information about the CES should have been introduced to the States much sooner, and that it can produce obscure or inaccurate results.

EPA Response:
The concepts used in the CES were introduced early in the process at the $PM_{2.5}$ Implementation and Designations Workshop held in Chicago, IL from June 20-21, 2007. At this workshop, the concept of an emissions score was presented that envisioned taking into account an area's emissions, back trajectories, and the speciation increments. That presentation can be found at http://www.epa.gov/ttn/naaqs/pm/presents/pm2.5_designations_part3.pdf. At this meeting EPA expressed its interest in further developing some sort of score similar to what was developed during the designation process for the 1997 PM2.5 NAAQS, utilizing the concepts presented during the Chicago workshop.

EPA introduced the CES in its entirety through its modification letters to States provided in 2008, and allowed the States to further comment on the technique. This provided States the opportunity to assess the applicability of the CES to areas within their States.

California:
Although the CES is only one element in determining the nonattainment boundary areas, a high CES suggests that a county has a high impact on the adjacent violating county. However, CES numbers are based on data for entire counties. The CES should be adjusted to reflect only those portions of a county to be included with an adjoining nonattainment area, such as Solano, El

Dorado, and Placer Counties within the Sacramento nonattainment area. The higher score of Solano was discounted based on its contribution to the San Francisco Bay Area nonattainment area and the higher population in the western portion of the county. The high scores for Placer and El Dorado were based, partially, on analysis done for the entire counties. As noted in a U.S. EPA Technical Document (Rizzo and Hunt, 2008), the CES methodology uses county-based emissions inventories which may be inaccurate in counties with large rural populations or with mountainous terrain, both of which occur in El Dorado and Placer. Although EPA took some of this into account in recommending only a part of each county for inclusion in the nonattainment area, it did not take into account the fact that the majority of $PM_{2.5}$ emissions are from residential wood burning. These emissions were recently found to be inaccurate (pages 17 and 18 of the California comment letter) and a significant portion may be occurring in the Lake Tahoe Air Basin segment of these counties.

Use of population and population growth as factors in EPA's decision-making was not consistent throughout the country. Warren County, NJ is an example of a county not included with an adjacent violating area. According to EPA,

> "Warren County [New Jersey] ranks low in terms of population and in population density in comparison to counties located near the violating monitor in Northampton County, Pennsylvania. In comparison to the two counties that have been recommend as nonattainment for the Allentown, PA-NJ area, Warren County's population and population density is below 50 percent that of Lehigh and Northampton. (U.S. EPA Response to New Jersey, 2008)".

Warren County's population density is, in fact, 32 percent of Lehigh County and 40 percent of Northampton County. Although the Sacramento County population is larger than the populations for counties around Warren County, NJ, Sacramento's population density is very similar. Both total populations and population densities for all surrounding counties are below those of Sacramento County and far below EPA stated limit of above 50 percent.

In an additional example, Hamblen County, part of the Knoxville-Sevierville-LaFollette, TN Core Based Statistical Area (CBSA), has a population density 44 percent of neighboring (and violating) Knox County. Hamblen County was designated in attainment (U.S. EPA Response to Tennessee, 2008). There are many other examples of counties with higher population densities than those adjoining Sacramento, within a MSA, but not designated nonattainment. EPA has placed a high importance on the CES in designating nonattainment areas. While several counties in California have a relatively low CES and no violating monitor, EPA has still proposed a nonattainment designation in tandem with neighboring violating counties. In several other areas throughout the country, however, counties with similar, or higher, CES are not wed to their adjacent nonattainment counties (Table 2-3 on page 25 of the California comment letter). California requests similar flexibility as provided to other areas of the country.

EPA Response:
EPA recognizes that using county level emissions can have limitations in areas with geographically large counties. However, the Agency also used information from the nine factors as well as additional information from the State to assess whether partial county designations

were appropriate. For example, in the case of Placer County EPA has determined it is appropriate to designate only a portion of that county based on information such as topographical features and locations of emission sources. As noted above, the CES is one analytical tool that EPA has used in conjunction with other information as appropriate. The CES is designed and intended to assess the relative contributions only within a specific geographic area. Just as it is not appropriate to consider a county within metropolitan New York City and a county within metropolitan Los Angeles as equal in all respects, it is also not appropriate to compare CES values between different nonattainment areas.

Delaware:
EPA has relied heavily on the CES in evaluating this factor, using CES as an arbitrary and inadequate means to evaluate transport, and apparently putting much weight on the CES in their analysis. First, the CES utilizes 2005 National Emission Inventory (NEI) emissions data, which completely misrepresents Delaware emissions. Second, tools such as the CES should be considered only when more sophisticated tools like modeling are not available. EPA Clean Air Interstate Rule (CAIR) modeling has already demonstrated that the PM2.5 transport problem is a regional problem, and explicitly demonstrates that Delaware does not significantly contribute to the Philadelphia Combined Statistical Area (CSA) problem. The CES indicates that New Castle County impacts the Philadelphia area more than any other county, and the Pennsylvania CAIR modeling indicates that the entire State of Delaware does not contribute significantly to any part of the Philadelphia CSA (i.e., they reach opposite conclusions)

EPA Response:
The 2005 NEI was used for the CES calculation because it was the most up to date inventory EPA had at the time. EPA believes that the inventory is sufficiently accurate and appropriate for this purpose because it reflects information submitted by States concerning emission sources within their boundaries. In addition, although not directly involved with the CES calculation per se, EPA invited States to submit further information regarding emission reductions since 2005 to be considered as part of the designation process. The CES was intended to be a screening tool to provide an initial evaluations of areas suitable for inclusion within a nonattainment boundary. Additional information such as that recommended by EPA in its guidance document was taken into account to better refine the final decision.

The purpose of the CAIR modeling was to assess the contribution of interstate transport under Section 110 (a)(2)(D) of the Clean Air Act. The purpose of the CES was to provide an initial evaluation of counties possibly contributing to the violating monitor concentrations within the Philadelphia CSA. These two tests were implemented to assess two different problems, the first being long-range interstate transport as opposed to the second, which was the contribution from a county to the nearby area. Under section 107(d), EPA must designate the nearby areas that contribute to violations of the NAAQS. Interstate or long range transport is addressed under other provisions of the CAA.

A CES value is interpreted as the magnitude of contribution a county has on any violating county within an area. This may mean that a high CES value may indicate that a county is affecting itself if it also contains a violating monitor as is the case with New Castle, DE. EPA considered many sources of information when determining whether to include New Castle, DE as part of the

Philadelphia CSA including its inclusion in the current annual $PM_{2.5}$ nonattainment area and its close proximity to the city of Philadelphia.

Iowa:
The CES methodology is incapable of resolving scales finer than the county level, utilizes data during periods without a violation of the 24-hour $PM_{2.5}$ NAAQS, and is based upon unrepresentative speciated data. The boundaries should be determined based upon the analyses utilizing data corresponding to the nonattainment design values, 2005 – 2007. County-scale data as aggregated in the CES analysis is insufficient to resolve the impacts of the sources adjacent to the monitors and results in arbitrary county boundaries.

EPA Response:
The Agency used county level emissions data because that was the finest resolved data available. This level of detail was sufficient for the analytical purposes in part because $PM_{2.5}$ and its precursors generally transport across distances greater than individual counties. However, where county sizes varied this may be a limitation of the CES as acknowledged in the technical support document. In such situations, the Agency considered additional sources of information as recommended in its guidance.

For this purpose, the CES was appropriate for use as a screening tool with additional data refining the area to better reflect specific conditions to both Davenport and Muscatine. For both Davenport and Muscatine, 2005-2007 data were used. This has been clarified in the CES TSD which now lists those areas for which 2005-2007 data were used as opposed to 2004-2006. In generalizing the CES so it could be implemented across the country, default data were used to represent the speciation concentrations in the violating area based on the area's general location within the country.

In the case of Muscatine, EPA recognizes that using default data may not specifically represent the actual speciation profile for the area. The default values represented the average profile for the region containing the violating monitor which EPA felt served as a valid substitution for lacking speciation data. For this case, the Agency relied on data from the State to better clarify the specific circumstances associated with both the Davenport and Muscatine areas to make its final designation decision.

Kentucky:
The Commonwealth was surprised to learn that EPA had employed the use of a "contributing emissions scoring" process to evaluate counties for emissions contributions to an area attainment problem. At no time during States' development of recommendations did EPA offer information concerning this methodology. Further, EPA did not afford the States the opportunity to provide input on the appropriateness of or the science behind this methodology. Information on this methodology only became available in August 2008, after recommendations were done. This approach was revealed in EPA's comments on Kentucky's recommended $PM_{2.5}$ Boundary Designation December and June submittals. Taking this approach, especially at such a late date, is not only contrary to boundary guidance provided to States by EPA, but insults the established designation process which allows States to use their thorough knowledge of the monitoring network and local and regional circumstances to make those designations. A brief description

and a link to the CES TSD, which consists of over 1,000 pages of information, were provided in EPA's comments.

EPA should provide all documentation and a step-by-step process report that shows the calculations of the CES for each county in Kentucky that EPA proposes to be nonattainment. The development of the CES appears to involve a large number of assumptions, data, and calculations, and it is not practicable to expect Kentucky to be able to verify the accuracy of each step without the supporting documentation and processes. Due to the number of errors contained in the August 19, 2008 letter, Kentucky feels that it is imperative to review the process of developing the CES for the areas proposed for nonattainment by EPA.

EPA Response:
The concepts utilized in the CES were presented at the Regional and State designations meeting held in Chicago in June 2007. The CES served to provide an initial evaluation of what potential areas are contributing. It incorporated forms of information recommended in EPA's guidance to preliminarily determine contributing counties which potentially affected the ambient $PM_{2.5}$ concentrations at violating monitors on high days. EPA has given the State the opportunity to comment on the CES through the 120 day letter process which the State has availed itself of here.

The CES technical support document stated that the technique had several limitations which the States would supplement with additional information based on the results from the 9-factor analysis. Thus, the CES score acted as one tool that was not used to determine the final outcome but as an initial piece of information from which additional data from the 9-factor analysis and other analyses submitted to EPA by the States could be used to making a more informed decision.

Michigan:
The State maintains that the CES calculation is a complicated and obscure analysis of air pollution concentrations across Michigan. Ambient values clearly are the best representation of actual environmental conditions in areas of concern. The CES calculation used to determine the daily $PM_{2.5}$ nonattainment areas is much more complex than the version used previously for the annual $PM_{2.5}$ designations. The Michigan Department of Environmental Quality (MDEQ) is concerned about the extensive use of assumptions and weighting factors, all of which culminate in propagation of error in the final result.

EPA Response:
Michigan's theory is that EPA should only use monitoring data to promulgate designations. Obviously, violating monitors indicate where there violations. However, to evaluate nearby areas contributing to those violations, EPA believes that it is necessary to evaluate other forms of information. Therefore, EPA has recommended consideration of different types of information as laid out in the guidance. The CES is intended to be another method to evaluate several of these types of information.

The CES aggregates data from some of the types of information recommended in EPA's guidance. The tool provides an estimate of the contribution a particular county has on a violating

county. It does not attempt to characterize air pollution concentrations across an area. It utilizes air pollutant concentrations at violating sites to determine which days to examine more closely and use a series of weighting factors to determine which counties could possibly contribute to the violation.

The limitations of the CES have been discussed in the TSD. The Agency has given States the opportunity to submit additional information specific to their areas to make a better informed decision. Although the CES influenced the Agency's decision, it served as one tool out of many whose information was utilized to determine potential nonattainment area boundaries.

Utah:
The State indicates for the CES that since there is no documentation of the actual analysis itself, but only conceptual descriptions of the process at the web link provided by the Agency, one assumes this was an analysis done for all of the nonattainment areas in the country. The State continues with concerns with the validity of the CES with respect to the Wasatch Mountains as a topographical issue.

EPA Response:
EPA notes that the CES scores that were provided for every proposed nonattainment area across the nation do not provide definitive answers, but do provide a useful screening analysis for the areas. The EPA does not disagree that the CES screening analyses have limitations especially for areas in the western U.S. The CES information was an additional analytical tool in EPA's technical analysis. The following is extracted from section 3 "Limitations" of the CES reference document:

> "Topography also affects the CES outcome. For example, mountain ranges can act as barriers to transported emissions as well as potentially limiting the size of the region considered when calculating the urban increment. The CES cannot adequately account for the effects of mountainous terrain which would essentially split a county into different parts, each having their own potentially unique effect on the violating county. A more in-depth discussion of these limitations is contained within the "Methodology Details" section of this document. These potential deficiencies can be overcome on an area-by-area basis by using supplemental information, such as population density, commuting patterns, more detailed or localized weather data, and topography data."

In addition to the information provided in the Agency's letter were web links to specific documentation regarding the development of our 9-factor analysis. EPA acknowledges that the information was voluminous. However, this information helped to inform EPA's decisions for the Wasatch Front.

Utah:
The State expressed concerns about using an annual emission inventory data (in tons per year) rather than an episodic inventory for the 9-factor analysis. The State is convinced that the wrong inventory data were used in the CES evaluations, and that EPA drew incorrect summary information from the annual emission inventory data.

EPA Response:
EPA utilized monthly total emission county level estimates that were aggregated to represent daily seasonal estimates for the cold and warm seasons used in the CES. The Agency believes that these estimates provide a good basis for generally assessing which counties possibly contribute to a nonattainment area.

Utah:
EPA ran and provided the results of backwards trajectories from the National Oceanic and Atmospheric Administration's (NOAA) Air Resource Laboratory's Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) model for selected high $PM_{2.5}$ days (inversion conditions). Unfortunately, specific model run details were not included in EPA's response. In order to properly interpret the results of the trajectories, it is critical to know the following:

1. What meteorological data set was used?
2. What meteorological data set resolution was used?
3. What vertical motion scheme was used?
4. What trajectory start height was used?"

EPA Response:
EPA has already provided this information through the CES TSD. The data set used was the Eta Data Assimilation System (EDAS) data set from the NOAA archives. It has a 40 km resolution. The vertical motion scheme was the model default and four trajectory start heights were used as detailed in the TSD.

Utah:
All of the available meteorological data sets on the HYSPLIT website have horizontal resolutions far too coarse to accurately depict a near-surface air parcel's trajectory in a cold pool. The coarse resolution of the meteorological data does not capture the topographically driven micro- and meso-scale features of the wind field. As mentioned in the pollution rose diagram section, topography controls the wind during quiescent ridge dominated synoptic conditions. For this reason, the backwards trajectories produced by EPA must be removed as a technical justification for any argument put forth.

EPA Response:
EPA concurs with much of the above statement, but believes that "topography controls the wind during quiescent ridge dominated synoptic conditions" is an overstatement of the case. EPA's analysis of the surface wind data collected by the Utah Department of Environmental Quality (DEQ) indicates that there are often relatively uniform movements of air across the basin during inversion episodes, which appear to overlay any micro- and meso-scale features of the wind field caused by local topography. This data set is completely independent of the data used by NOAA to create the EDAS meteorology files. It represents an independent assessment of the HYSPLIT results. This regional motion derived from Utah DEQ data appears to be adequately represented by the low speed regional movements seen in the HYSPLIT analyses on inversion days. Currently, the HYSPLIT results do appear to have some value, and so do not need to be removed from consideration as suggested by Utah.

To evaluate the appropriateness of conclusions reached using HYSPLIT back trajectories, EPA obtained surface meteorological data collected by Utah DEQ across their monitoring network from EPA's Air Quality System (AQS). Using 1-hour average wind speed and direction for all of the DEQ met stations (excluding Logan in the Cache Valley); the Agency ordered the data from north to south. The monitors used, in north to south order are:

Brigham City
Harrisville
Washington Terrace
Antelope Island
Syracuse
Badger Island
Bountiful
Salt Air
North Salt Lake*
Beach*
Hawthorne
Magna
West Valley City
Cottonwood
West Jordan
Tooele City*
Herriman*
Highland
Lindon
N. Provo
Spanish Fork

* Indicates monitor did not operate in all years in the period 2004 through 2008

EPA plotted hourly wind speed and direction from these monitors during the periods used in the HYSPLIT trajectory analyses shown in Figure 2. EPA then color coded hourly average wind directions, where blue indicated wind directions originating from the north (northwesterly, northerly or northeasterly winds), and salmon represents times with southerly winds (winds from the southwest, south or southeast). Winds from the east or west remained unshaded.

Rather than showing only winds controlled by local topography during cold pool inversion patterns, the resulting diagrams show basin scale uniformity in wind direction for much of the basin over much of the inversion periods. In addition, for specific monitoring days targeted by the HYSPLIT back trajectories, the diagrams show wind directions over the basin consistent with the trajectories generated by HYSPLIT. Thus the HYSPLIT results and conclusions are in fact consistent with independent local wind measurements.

Figure 1 shows the three days used in the HYSPLIT trajectory ending at midnight on January 13, 2004 (shown in Figure 2). EPA used the 3-day HYSPLIT trajectory ending on January 13, 2004 to illustrate a monitoring day in which winds were blowing from the south, and emissions from Utah County were seen in the HYSPLIT trajectory to move north into Salt Lake County. The third day of the diagram in Figure 1 shows southerly winds across nearly the DEQ's entire meteorology network for the morning hours, and southerly winds in Utah County all day, consistent with the HYSPLIT trajectory for the day.

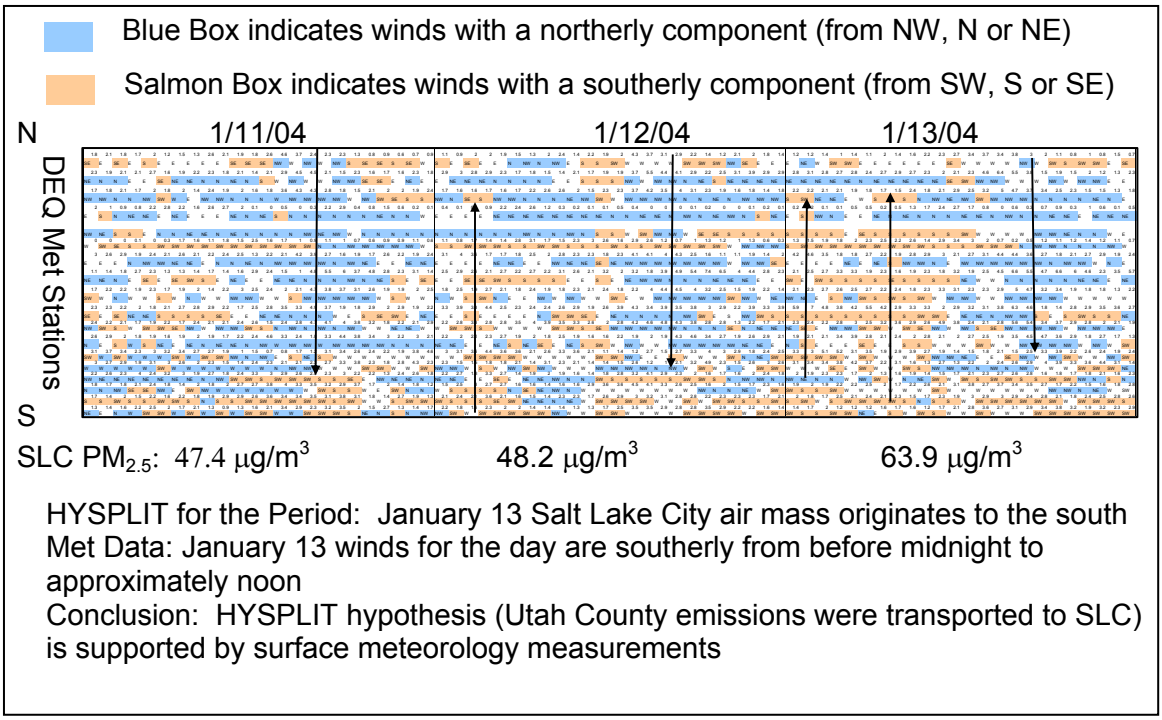


Figure 1. Wind Pattern Diagram for January 11 through 13, 2004.

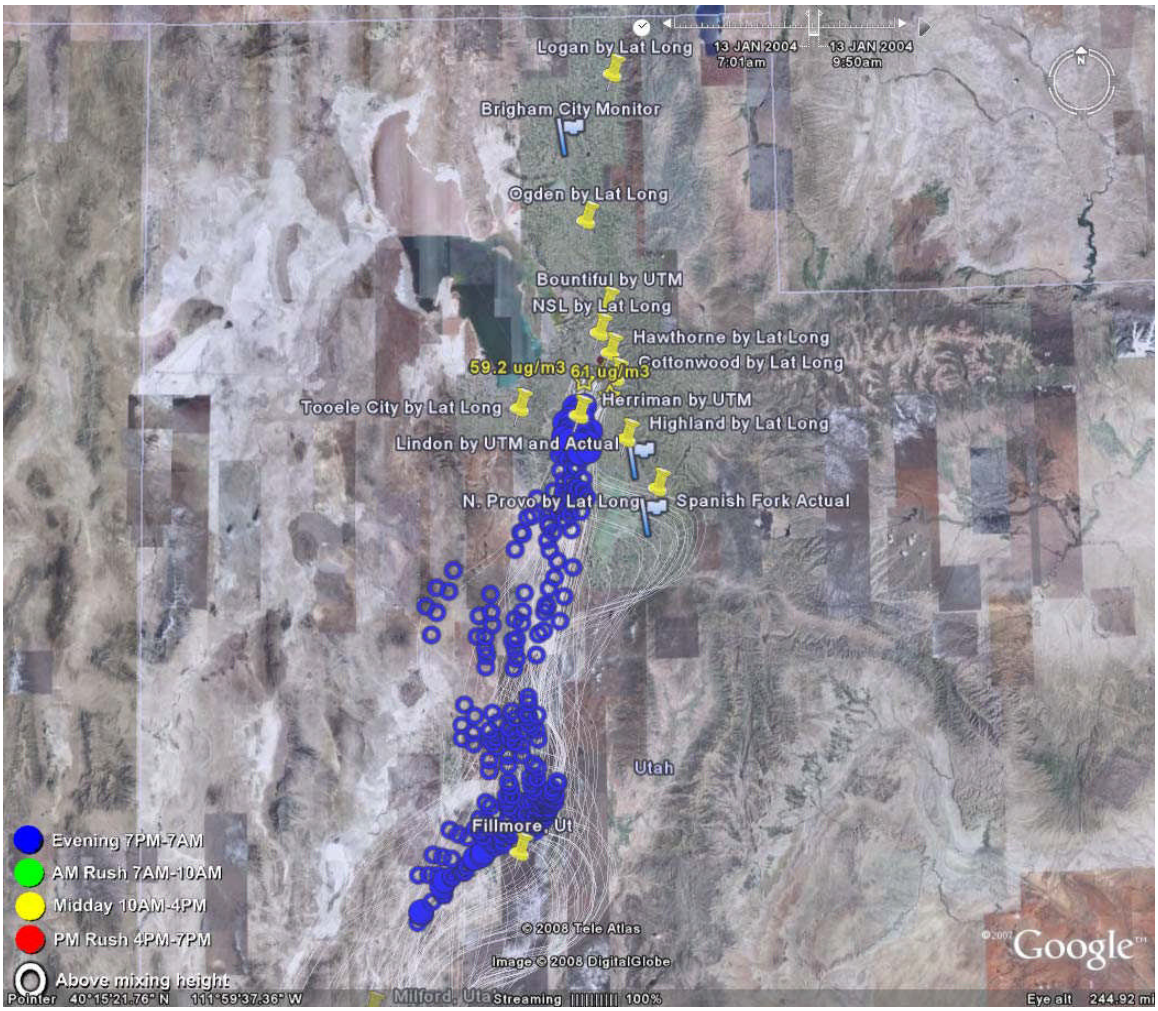


Figure 2. HYSPLIT Back Trajectory for January 13, 2004, all Salt Lake County Monitors.

Figure 3 shows the meteorology data from the Utah Department of Transportation (DOT) monitor located just north of Point of the Mountain along I-15. The monitor shows variable light winds all day, but with frequent winds from the south through the Point of the Mountain gap before noon.

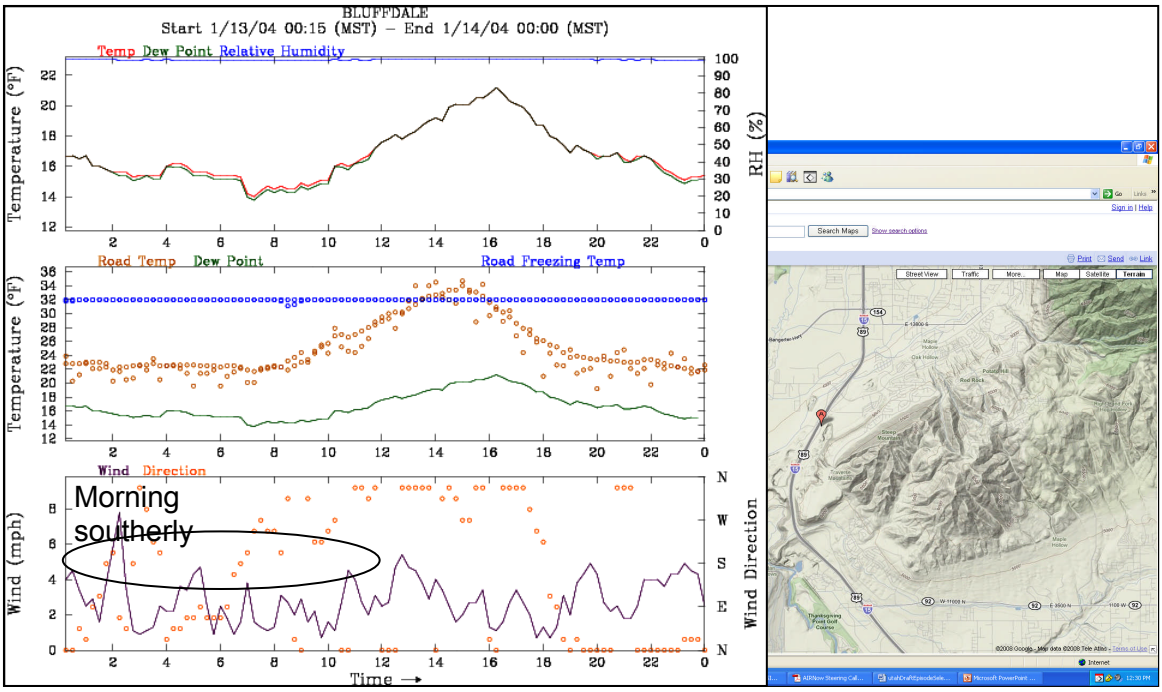
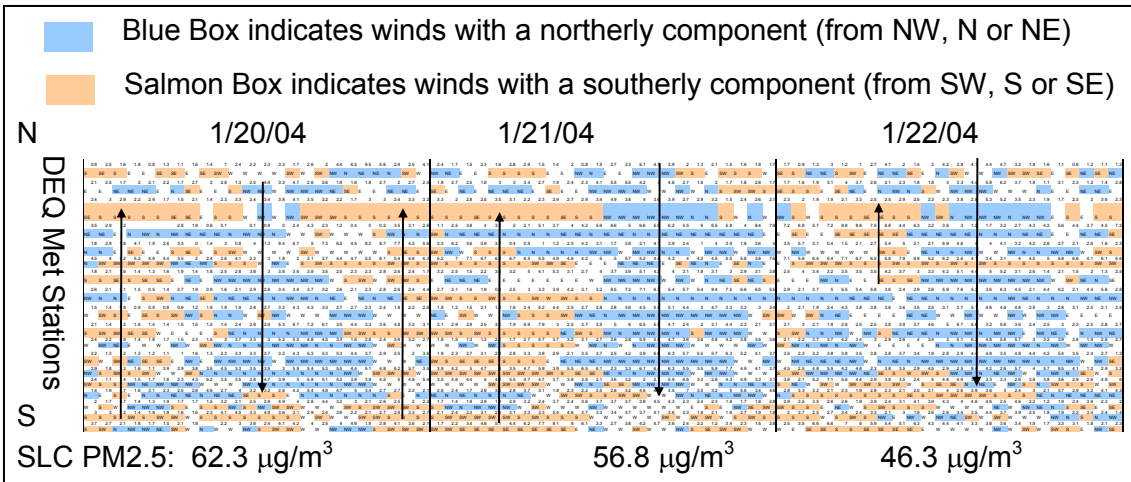


Figure 3. Meteorology Near the Utah County/Salt Lake County Line, January 13, 2004.

The second wind pattern diagram in Figure 4 shows the three days used in the HYSPLIT trajectory ending at midnight on January 22, 2004. Figure 5 shows this three-day HYSPLIT trajectory to illustrate a monitoring day in which winds were generally blowing from the north. The third day of the wind diagram in Figure 4 shows winds from the north across nearly the DEQ's entire meteorology network in the middle of the day, consistent with the HYSPLIT trajectory. The Bluffdale UDOT wind data for the day is shown in Figure 6. The monitor was not reporting prior to 9:15 AM, at which time flow through Point of the Mountain was from the south (downvalley from Utah County to Salt Lake County). Consistent with the Utah DEQ network and HYSPLIT, flow in the afternoon hours is up-valley, flowing south from Salt Lake County into Utah County.



HYSPLIT for the Period: January 22 Salt Lake City air mass originates to the north
Met Data: January wind for the day are mostly northerly from noon the previous day, but with some local southerly flow in the morning of Jan. 22.
Conclusion: HYSPLIT hypothesis (Utah County emissions were transported to SLC) is well supported by surface meteorology measurements

Figure 4. Wind Pattern Diagram for January 20 through 22, 2004.

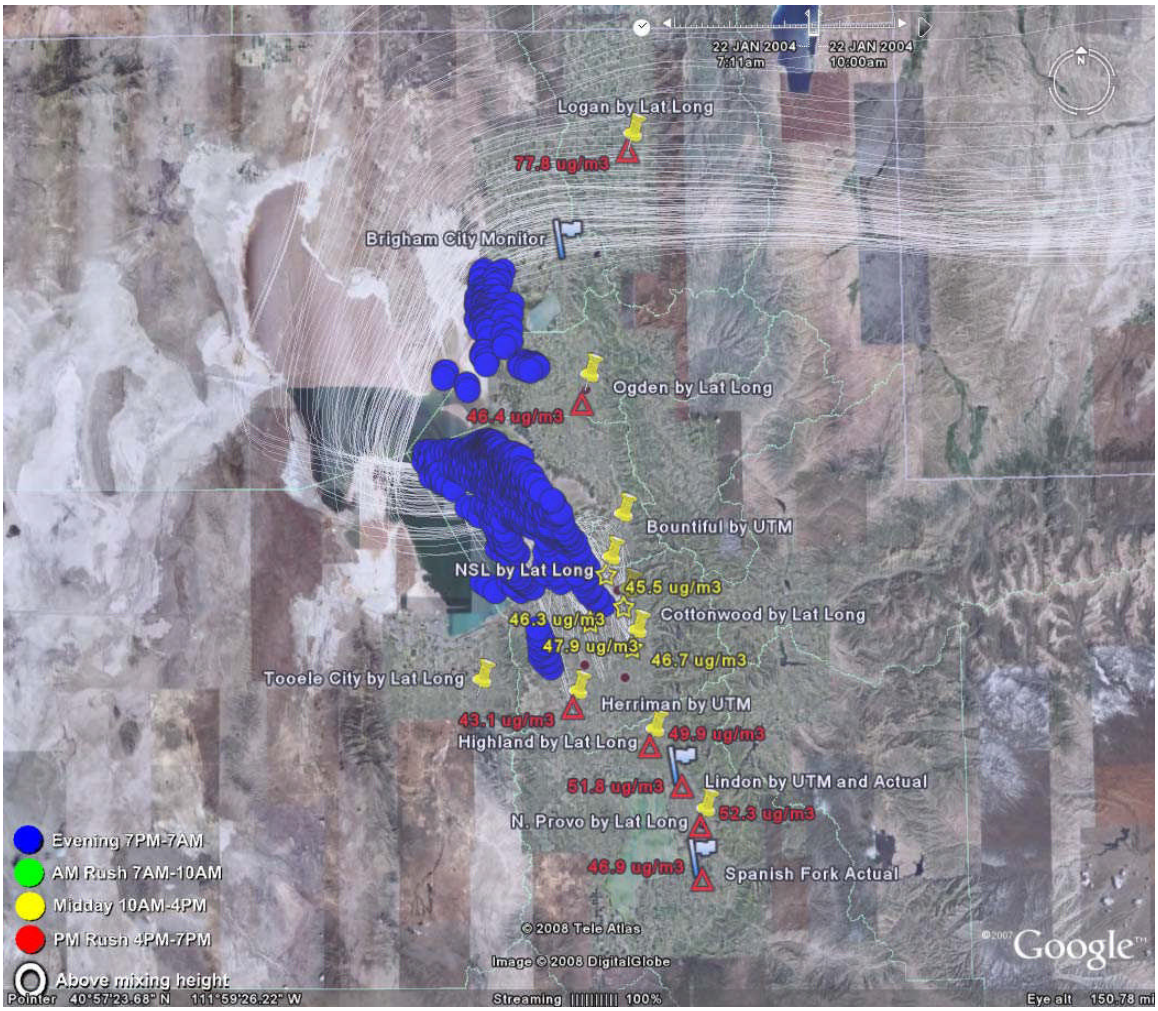


Figure 5. 24-hour Backtrajectory for January 22, 2004, All Salt Lake County Monitors.

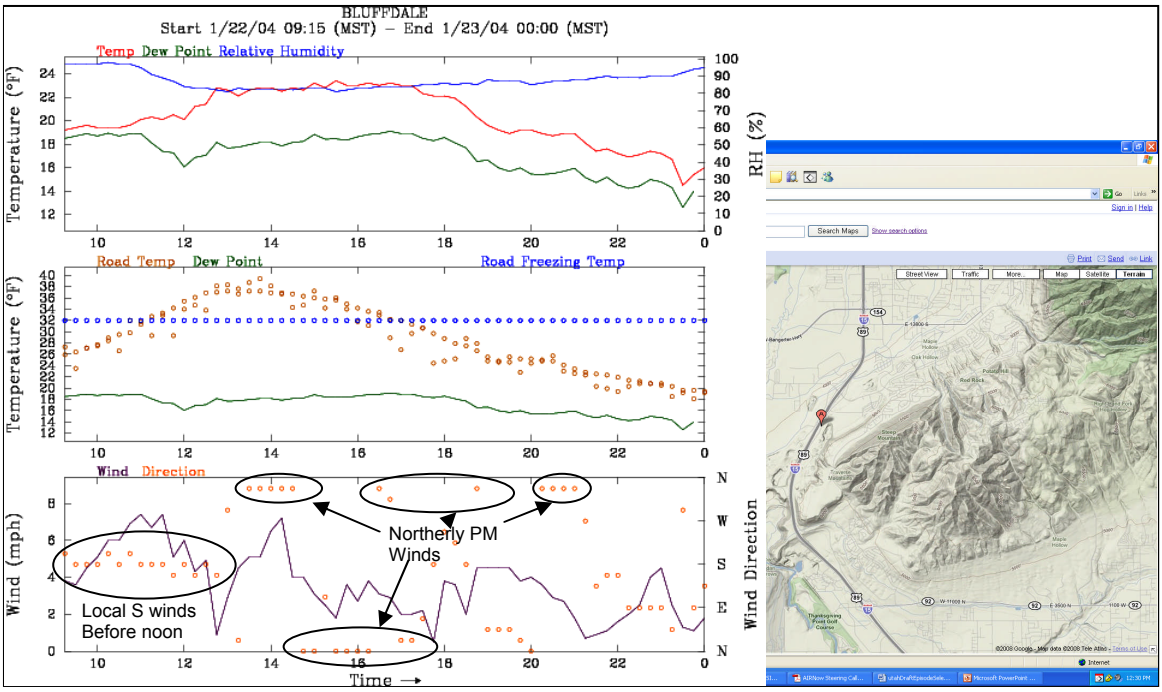
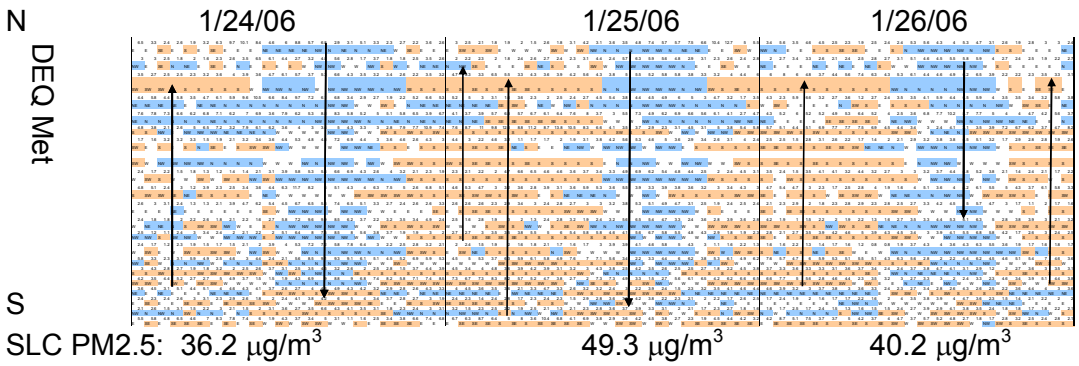


Figure 6. Meteorology Near the Utah County/Salt Lake County Line, January 22, 2004.

The third day of HYSPLIT trajectories EPA utilized were those ending on January 26, 2006 (figure 8). This day was again a southerly wind dominated day. It was selected because it included more southwesterly flow than other trajectories, indicating the potential for flow of Tooele Valley emissions toward Salt Lake City and Ogden, but represents a day with much more complex wind patterns in the HYSPLIT simulation. Again, as shown in figure 7, the measurements of the Utah DEQ meteorology network are consistent with the HYSPLIT trajectory, showing pronounced flow from the south across the basin prior to midnight on January 25 through midday on January 26, 2006. Figure 8 shows the 24-hour backtrajectory from HYSPLIT.



HYSPLIT for the Period: January 26 Salt Lake City air mass generally originates to the south, with very low velocities and variable directions mid-day
Met Data: January wind for the day are mostly southerly from noon the previous day, but with some local southerly flow in the morning of Jan. 22.
Conclusion: HYSPLIT hypothesis (Utah County emissions were transported to SLC) is well supported by surface meteorology measurements

Figure 7. Wind Pattern Diagram for January 24 through 26, 2006.

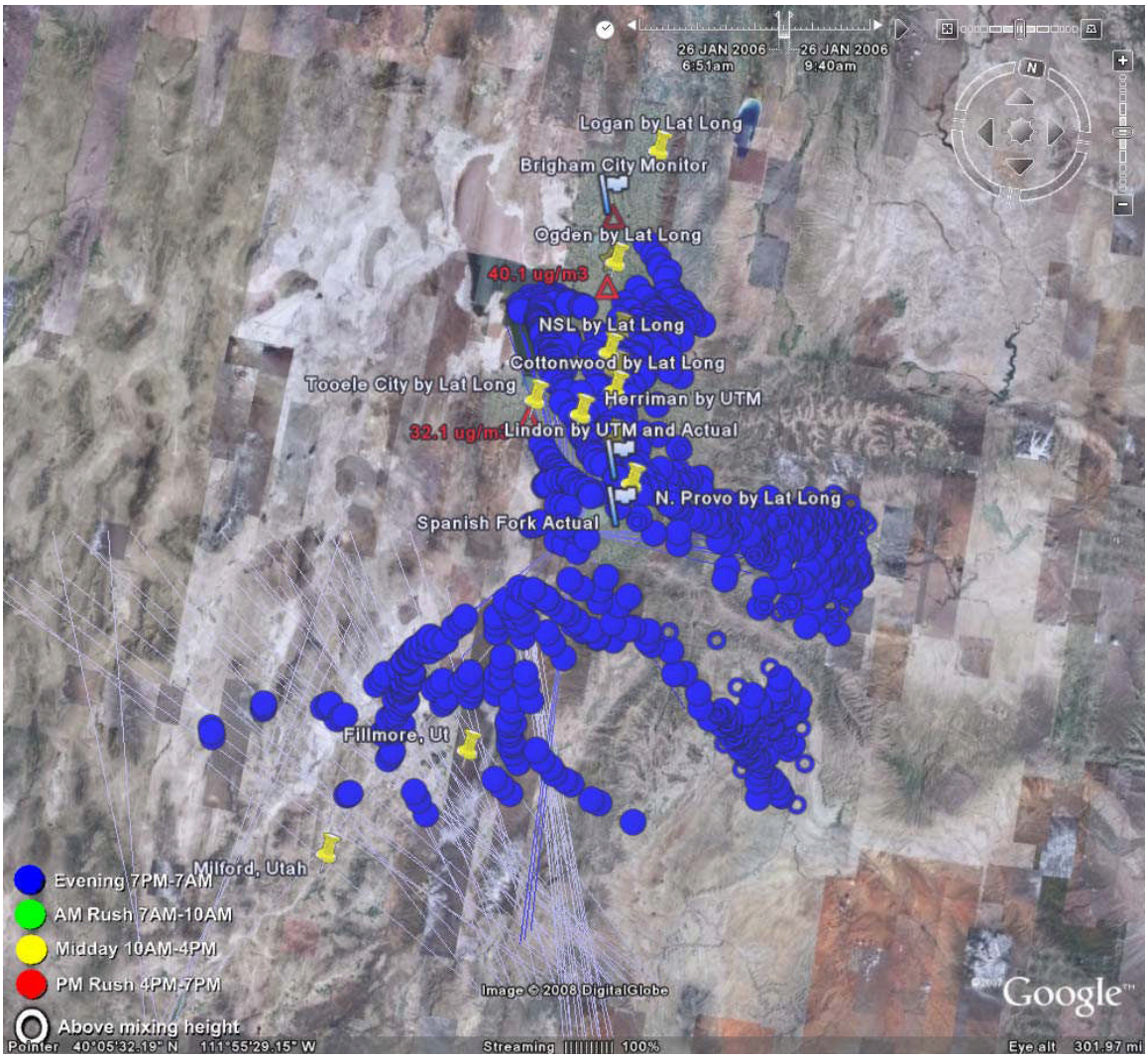


Figure 8. 24-hour Backtrajectory for January 26, 2006.

Wind data from the Bluffdale Utah DOT monitor for January 26, 2006 is almost uniformly from the south. While the Quality Assurance (QA) status indicator for this data in the MesoWest database is "OK", the monitor seems to show a very high level of high winds from due south or south-southeast during January of 2006, so the data appears to reflect a bias in the instrument toward southerly winds. Therefore, that data is not used here.

With respect to the wind pattern diagrams in Figures 1, 4 and 7 and the Utah DOT wind measurements at Point of the Mountain, to a greater or lesser extent, all show some degree of diurnal winds across the Salt Lake and Utah Lake basins; surface winds across the network are more often southerly at night and in the morning, with northerly winds most likely in the afternoon. This would indicate that the two basins are acting as a connected valley system. Generalized basin level winds can be seen well beyond any degree to which local topography is controlling winds at any given monitor location.

Subsequent to 2004-2006 (the period over which HYSPLIT trajectories were calculated for every $PM_{2.5}$ exceedance day), UDOT meteorology data is available from the Alpine station along I-15

just south of Point of the Mountain. The station location is shown in figure 9. The Alpine monitor, on the south entrance to the gap at Point of the Mountain generally shows much more intense winds than does the UDOT Bluffdale monitor north of Point of the Mountain. As an example, figure 10 shows the winds recorded by the Alpine monitor on January 21-30, 2007. This period included the highest $PM_{2.5}$ days in both Utah County and in Salt Lake County during 2007. Winds throughout the period are dominated by southerly (down valley) winds from Utah County to Salt Lake County. During the peak days in the period, some degree of up-valley flow occurs in the middle of several days. The dominance of downvalley flow at this site is typical during the inversion periods since March of 2006, indicating that consistent and significant flow is the usual pattern; some lesser degree of northerly winds is also typical, indicting the likelihood of 2-way transport.

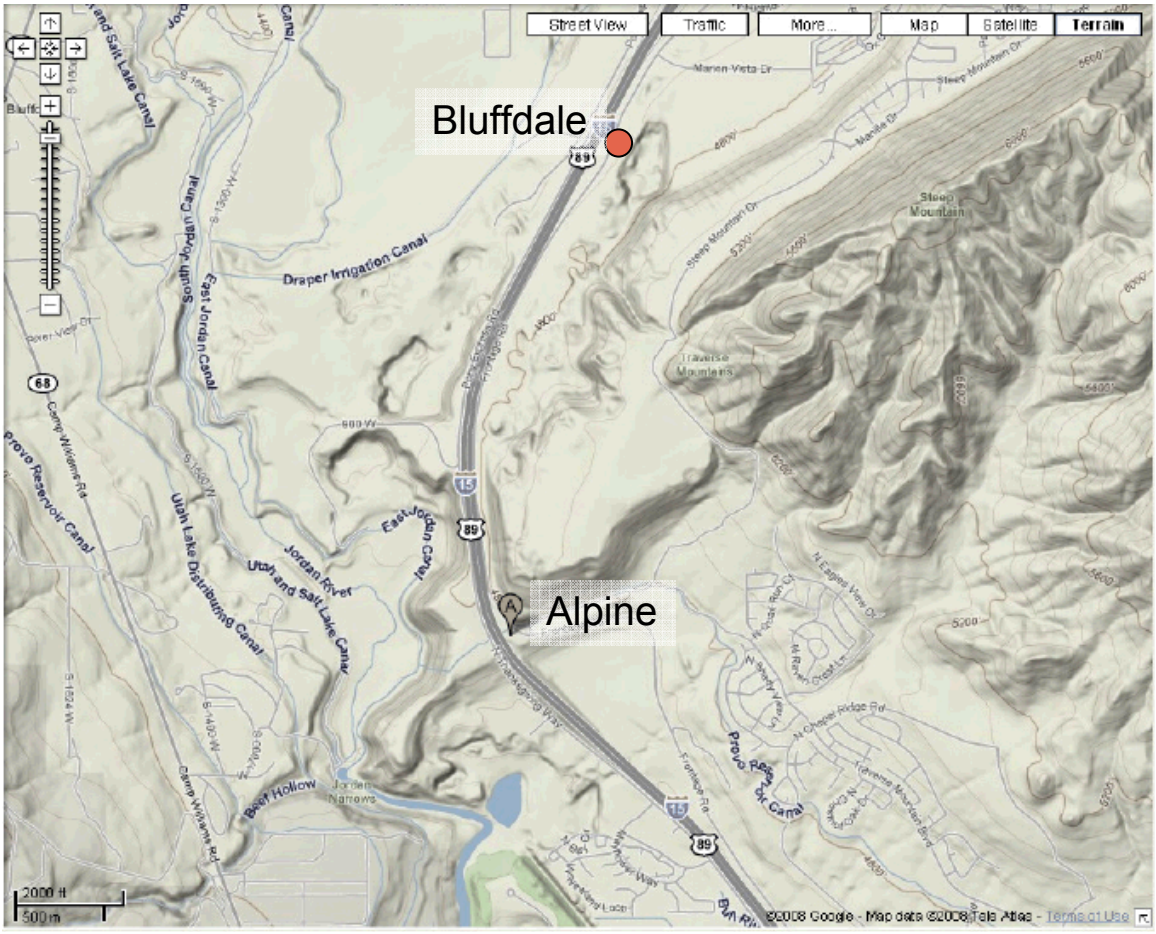


Figure 9. Utah DOT Alpine and Bluffdale Meteorology Station Locations.

January 21 - 30, 2007: Southerly Winds 5 -15 mph, some mid day northerlies.

Salt Lake City Exceeds Jan 23 - 30; Utah County Exceeds January 16-20, with some data gaps. Strong northerly winds Jan. 21 may clear out Salt Lake City, but not Provo

Hawthorne PM2.5:

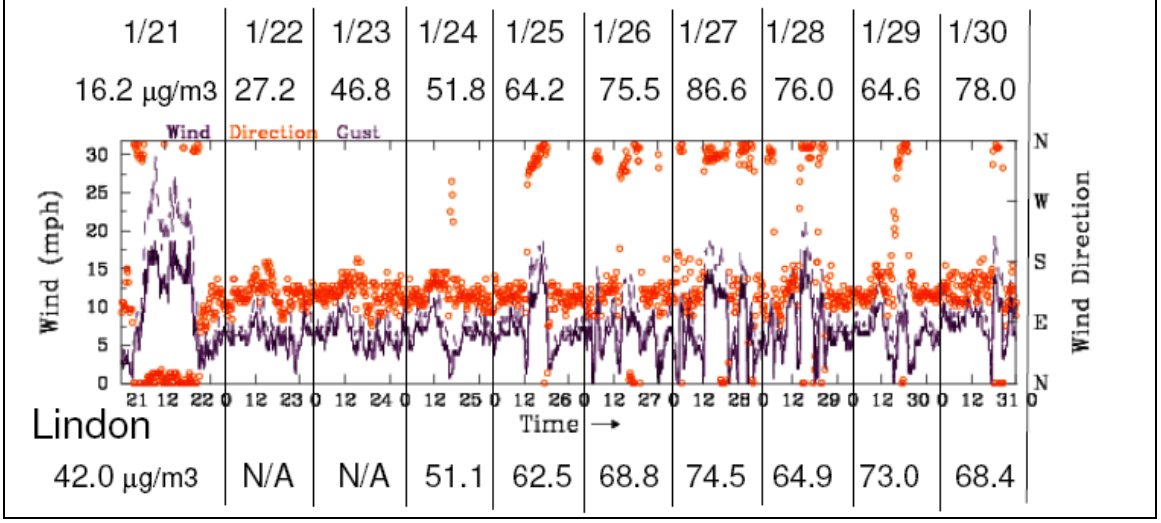


Figure 10. Point of the Mountain Surface Winds, January 21-30, 2007.

SECTION III: Technical Analysis

State Comment: 2005 NEI Inadequate

Delaware:
EPA used the 2005 NEI as a basis for evaluating this factor. The 2005 NEI is not a high quality inventory, as it was not developed in conjunction with State agencies, nor has it been quality assured by States.

EPA Response:
EPA believes the 2005 NEI Version 1 was the highest quality emission inventory available during the 2006 24-hour $PM_{2.5}$ designations process. Most of the point and non-point emissions in the 2005 NEI Version 1 were taken directly from the 2002 NEI Version 3 which was developed in conjunction with State agencies and underwent thorough QA, including QA by State agencies. New emission measurements and estimates were included in the 2005 NEI Version 1 for Electric Generating Units (EGUs), mobile sources, and fires because EPA had more recent data and/or models for these sources (e.g., Continuous Emission Monitoring (CEM) data for EGUs, new versions of the MOBILE model for mobile sources). While it is true that these new emissions data were not developed in conjunction with State agencies, nor quality

assured by States, EPA believes using these data more accurately characterize emissions than the alternative of using an older version of the NEI (e.g., 2002 NEI Versions 3) for these sources.

State Comment: Determination of contributing areas

Indiana:
Indiana firmly believes that due to the localized influence (urban excess) of $PM_{2.5}$, nonattainment boundaries for the 24-hour $PM_{2.5}$ standard should be limited only to counties that possess a three-year average ambient monitor-based design value above the standard. However, if the only violating monitor within the county is a source-oriented site, the boundary should be limited to the township in which the monitor resides. This is consistent with U.S. EPA designations under the PM_{10} standard.

EPA Response:
CAA Section 107(d)(1)(A)(i) provides that nonattainment areas must include "any area that does not meet (or *that contributes to ambient air quality in a nearby area that does not meet*)" the applicable NAAQS, therefore to limit nonattainment boundaries to only those counties with monitored-based design values above the standard ignores the role of contribution from nearby areas mandated by the Act. In most nonattainment areas, speciation data indicate significant contributions from sulfur dioxide and nitrogen oxide sources throughout broader metropolitan and contributing areas..

With regard to source-oriented monitors, those in Indiana are in areas that also have other monitors violating the standard (for example in Illinois). EPA has found that even source-oriented monitors reflect substantial contribution from the metropolitan area and beyond. EPA does not find the comparison to PM10 appropriate because areas with high PM2.5 concentrations are more affected by secondary formation. PM10 and PM2.5 are different particles, that are often formed from emissions from different types of sources that may require different control strategies. PM2.5 can transport greater distances than PM10. PM10 nonattainment area boundaries often date back nearly 20 years.

Indiana:
Recognizing that EPA is obligated to consider a county's contribution to a downwind monitored violation of the standard, sound evidence must exist that demonstrates that a county actually contributes to the downwind violation in order for the upwind county to be designated nonattainment. Such evidence should not only be supported by a culpability demonstration, the culpability of the upwind county, or portion thereof, must be significant. Counties that measure air quality below the standard, and are not proven to be significantly culpable for a downwind violation, should be designated attainment. Counties for which monitoring data does not exist, and are not proven to be significantly culpable for a downwind violation, should be considered unclassifiable and designated attainment.

EPA Response:
EPA appreciates Indiana's acknowledgement that EPA must consider the contribution of areas as part of its decision-making on nonattainment area boundaries. However, Indiana suggests application of a burden of proof that is not required under section 107 of the Act which is

inconsistent with the role of designations as distinct from attainment planning. In many respects, the role of designations is to define the planning area for the State to use in planning for achieving air quality standards. While EPA must make judgments of nonattainment area boundaries based on the best available evidence, the expectation is that the promulgation of designations will trigger more thorough analyses of impacts and potential controls of sources as part of the process of formulating and adopting an attainment plan. Indiana seems to seek a requirement for analyses of impacts of sources typical of an attainment plan analysis in order to determine what area should be subject to such an attainment planning requirement. Such an approach would be inconsistent with the structure of the Act. Furthermore, Indiana in effect seeks for the Agency to be bound to designate potentially contributing areas as attainment even if the best available evidence indicates that the area contributes to the violations, merely because the available evidence is insufficient to meet the burden of proof that Indiana seeks for the Agency to apply. Again, such an approach would be inconsistent with the mandates and structure of the Act. The Agency construes "contribution" to allow a case-by-case approach in determining what level of contribution warrants inclusion in a nonattainment area. Each area has unique facts which must be analyzed. Rather than adopting specific materiality requirements or bright-line tests, the Agency reasonably developed an analytical approach to evaluate whether emissions in a particular area contribute to violations in another nearby area. Nothing in Section 107(d) requires the culpability demonstration suggested by Indiana. The definition of "nonattainment" specifically includes any area that "contributes to" violations of NAAQS in a nearby area, not only those that literally cause such violations. Ambient $PM_{2.5}$ at every monitor reflects the cumulative impacts of many types of emissions from many sources, near and far, that result in primary and secondary formation of particles. Imposing a culpability analysis would frustrate the goal of the statute by narrowing its application. The Agency's analytical approach was designed to evaluate contribution in a qualitative way by considering the facts and circumstances of each area.

Indiana:
Since there are multiple species that comprise $PM_{2.5}$, and the portion of specie contribution varies by season and geographic location, relying solely on precursor emissions data weighted evenly by species is inappropriate and does not constitute a culpability demonstration. Additionally, assuming that mobile source contributions driven by population density substantiate culpability for a collar county is erroneous and contradicted by speciation and source apportionment data available to EPA.

EPA Response:
This comment misrepresents EPA's approach. The Agency applied different weights to the emissions of different pollutants that directly or indirectly contribute to $PM_{2.5}$ concentrations, explicitly in computation of its contributing emission score and also in its examination of underlying information. The contributing emission scores were computed by first estimating the urban increment contributions of each major $PM_{2.5}$ component, estimated separately for each metropolitan area and separately for warm versus cold months. The relative percentages for each component were then used as weighting factors to give the highest score to counties that had high emissions of the most important pollutants. Since this approach appears to match the approach that Indiana recommends, it appears that Indiana endorses the contributing emission score as a tool for judging relative contributions of different counties.

Indiana also appears to misrepresent the approach EPA took regarding mobile source emissions. In general, one of the most important indicators of contribution by a county is the emissions within that county. Commonly, these data strongly indicate contribution of relevant counties, and information regarding the location of mobile sources and their emissions had little influence on EPA's judgment. Nevertheless, since some mobile source control programs are applied based on the home station of the vehicle, one factor in judging the contribution of a county is the number of vehicles that are housed in the county. For example, many vehicles registered in Lake County, Indiana, incur much of their emissions in Cook County, Illinois; these vehicles represent Lake County sources that are contributing to air quality problems in Cook County. Mobile sources are important contributors to $PM_{2.5}$ concentrations, and population data can be an important indicator of the home station of these sources. Mobile source use in an area, as reflected in information like the number of drivers and vehicle miles traveled (VMT) in an area, is relevant to determining whether an area contributes to violations in nearby areas. Similarly, the number of commuters in a county who drive to another county, the percent of total commuters in each county who commute to other counties, and their destinations is important to the analysis. Information about commuting patterns may indicate where emissions from mobile sources might actually be occurring, and therefore the degree to which drivers based in one area are contributing emissions to another area.

Indiana:
In its October 2, 2008 letter, Indiana included an evaluation of fine particulate matter nonattainment area boundaries. Indiana provided this information in Attachment D of its letter in response to the Agency's August 2008 recommended designations.

EPA Response:
Indiana focused on information it believes justifies excluding selected counties or partial counties from the respective nonattainment areas. Nevertheless, the information that Indiana provided in Attachment D is similar to information that EPA has reviewed. Therefore, this information does not justify a change in the boundaries of the pertinent nonattainment areas.

State Comment: Relevance of jurisdictional boundaries and consistent boundaries for $PM_{2.5}$, PM_{10}, and other nonattainment areas

California:
One of U.S. EPA's goals in designating nonattainment areas in California was to achieve a degree of consistency with existing ozone and PM_{10} nonattainment areas. Application of this goal in California led to differences between the State's recommended nonattainment areas and EPA's proposed designations. EPA expanded many of the State's recommended $PM_{2.5}$ nonattainment areas boundaries to match 8-hour ozone nonattainment area boundaries. However, we do note areas throughout the country where EPA proposed $PM_{2.5}$ nonattainment area designations are not consistent with existing 8-hour ozone nonattainment area boundaries. Examples are shown in Table 2 on page 3 of the California comment letter.

Some of the areas in Table 2 were excluded based on the nature of the pollutant. $PM_{2.5}$ is comprised of both primary and secondary components; the primary being more localized. The

California Air Resources Board (CARB) requests that EPA recognize the technical basis for different boundaries for regional ozone and localized $PM_{2.5}$.

EPA Response:
EPA looked at the violating monitors and sources in nearby areas potentially contributing to the violations. As described above, residential woodburning and transportation were identified as the principal sources based on speciation data and, therefore, nonattainment areas were intended to capture population centers, major transportation corridors, and stationary sources in the area. The Agency revised the eastern boundary of the Sacramento, Sutter/Yuba and Butte nonattainment areas. Rather than extending the boundary to the ridgeline of the Sierra Nevada Mountains or the county line, which was consistent with the ozone nonattainment boundaries where they existed, the eastern boundaries were redefined based on the topography of the Sierra Nevada Mountains and the height of the winter time inversion layer. Considering this physical boundary, which also resembles the California Air Basin boundary for the Sacramento Valley, EPA defined the eastern boundaries with township and range lines to capture this topographical boundary, as well as the major population centers and transportation networks.

Delaware:
EPA indicated that New Castle County historically has been part of the Philadelphia nonattainment area for ozone and $PM_{2.5}$, and that Delaware, Pennsylvania, and New Jersey have a long history of working cooperatively with ozone and particulate matter (PM) attainment planning. This statement by EPA is not in the proper context of factor 8. While these States do work cooperatively together, no cooperative air planning effort to date has occurred as a result of being in a common nonattainment area. These States have historically worked together only as part of larger efforts, like the Mid-Atlantic/Northeast Visibility Union (MANE-VU) and the Ozone Transport Commission (OTC). Not a single control measure has been developed as a cooperative effort amongst these States outside of MANE-VU and OTC context.

EPA Response:
Delaware has conceded that it has worked with the other States in the Philadelphia area as part of MANE-VU and the OTC. Therefore, as stated in its August 18, 2008 letter, EPA does not anticipate that including New Castle County as part of the Philadelphia nonattainment area for the 2006 $PM_{2.5}$ NAAQS will be an undue burden on Delaware.

Delaware:
In addition, no CSA scale efforts are necessary relative to planning for the 2006 $PM_{2.5}$ standard. This is because the New Castle County non-attainment problem is separate and distinct from the Philadelphia problem, and the only commonality is transport, which is regional, not local, in nature. Factor 8 supports New Castle County as a separate non-attainment area from the rest of the Philadelphia CSA, and the continuation of larger regional efforts to develop control strategies and address transport.

EPA Response:
EPA has determined that emissions from New Castle County contribute to downwind fine particulate concentrations in the Philadelphia CSA. New Castle County's SO_2 emissions are the highest of all the counties in the Philadelphia-Wilmington area. The predominant wind direction

in the Philadelphia-Wilmington area is from the southwest. The violating monitors in the Philadelphia-Wilmington area, in Delaware, Chester, Camden, and Philadelphia Counties, are downwind of both northern and southern New Castle County. High $PM_{2.5}$ days at the Chester County monitor are from the south-southwest, southeast, and south-southeast. Winds from the southeast and south-southeast would pass through New Castle County. Therefore, CSA-scale planning is necessary.

Indiana:
When designating areas under the annual $PM_{2.5}$ standard, EPA relied on guidance and criteria established for the 1-hour ozone and carbon monoxide NAAQS. Section 107(d)(4)(A)(iv) is the only citation of the CAA that references a Metropolitan or Consolidated Metropolitan Statistical Area (MSA or CMSA) boundary as the presumptive boundary for a nonattainment area. However, not only is this citation limited to ozone and carbon monoxide areas, it is limited to areas classified as Serious, Severe, or Extreme under Subpart 2 of the CAA. EPA relied on Subpart 1 of the CAA when it designated areas under the annual $PM_{2.5}$ standard and no areas were classified. Section 107(d)(4)(B) of the CAA defines a nonattainment area for PM_{10} based on a violation of the standard, suggesting that the boundary should be limited to the jurisdiction where the violation occurs.

EPA Response:
Contrary to the commenter's claim, EPA did not rely on guidance and criteria established for the 1-hour ozone and carbon monoxide NAAQS in promulgating $PM_{2.5}$ designations. Instead, EPA issued separate guidance for designations for $PM_{2.5}$ and conducted $PM_{2.5}$-specific evaluations (including use of a weighted emission score that was not used for ozone) to determine appropriate boundaries for $PM_{2.5}$ nonattainment areas. As explained in EPA's guidance, $PM_{2.5}$ arises from a combination of distant sources and urban scale sources (including sources very nearby and sources elsewhere in metropolitan areas). Ozone also arises from both distant sources and urban scale sources, and EPA's guidance on $PM_{2.5}$ designations notes the similarity of approaches for designating the two pollutants. This similarity in approaches does not mean that EPA is simply applying criteria contained in section 107(d)(4)(A)(iv) (applicable to ozone designations for areas with specified classifications) in promulgating $PM_{2.5}$ designations. To the contrary, EPA acknowledged in its guidance for the 2006 $PM_{2.5}$ designations that when determining boundaries in urban areas for the 1997 annual $PM_{2.5}$ NAAQS, it had applied a presumption that they should be based on Metropolitan Statistical Area (MSA) or Consolidated MSA (CMSA) boundaries. However, we specifically stated that "[f]or the $PM_{2.5}$ 24-hour NAAQS, EPA is establishing no such presumption." The Agency did note that it anticipated that the same boundaries established for the annual $PM_{2.5}$ standard, where that presumption might have been applied, may also be appropriate for implementing the 24-hour $PM_{2.5}$ NAAQS because the same sources of emissions may also be contributing to violations of the 24-hour standard based on emissions and air quality data and meteorology.

EPA continues to believe that C/MSA boundaries may be relevant and appropriate to consider in making PM 2.5 designations because of the distances that $PM_{2.5}$ and its precursors can be transported. Therefore, "nearby areas" for $PM_{2.5}$ are not only those in the immediate vicinity of a violating monitor. Like ozone, a significant fraction of $PM_{2.5}$ particles results from secondary formation of particles in the atmosphere due to emissions of different precursor chemicals from a

variety of nearby and distant sources. EPA's analysis indicated that the local component of particles at a violating monitor were likely to result from a combination of sources throughout the urban area. Thus, it was logical to analyze C/MSAs as potential boundaries to ensure inclusion of relevant sources in evaluating nonattainment area boundaries.

When Congress enlarged the presumptive boundaries for ozone and carbon monoxide nonattainment areas to the C/MSAs, EPA had already designated areas for ozone and carbon monoxide. Section 107(d)(4)(A) explicitly required that those already designated areas be enlarged to full C/MSA boundaries by operation of law. By making this change, Congress presumably recognized that artificially small nonattainment areas could exclude sources that should be subject to SIP requirements. While Section 107(d)(4)(A) does not directly apply to $PM_{2.5}$ designations, it provides a logical basis for EPA to suggest a comparable analysis for $PM_{2.5}$, which, like ozone, is a pollutant that results from a broad range of urban sources. If Congress intended to prohibit States or EPA from using C/MSAs as appropriate geographic starting points for evaluating potential contributions to $PM_{2.5}$ violations, Congress could have done so. Silence in the CAA on the subject does not prohibit using C/MSAs as potential boundaries, but rather leaves to EPA the task of determining how to draw appropriate nonattainment boundaries. Thus EPA considered it appropriate to analyze counties within the C/MSA boundary as well as a ring of counties outside the C/MSA to determine potential contribution and therefore inclusion in the nonattainment area. Additionally, the fact that EPA declined to classify areas for $PM_{2.5}$ when designating areas under the annual $PM_{2.5}$ standard and relied in its implementation rule instead on Subpart 1 (CAA Section 171 – 179B) has no bearing on whether EPA has the discretion to consider any potential group of counties, such as those within the C/MSAs, for analysis purposes. Further, EPA is not promulgating the 2006 PM2.5 designations under Section 107(d)(4)(B) but instead under Section 107(d)(1). Therefore, the provisions contained in Section 107(d)(4)(B) do not limit EPA's authority to designate nearby contributing areas, otherwise mandated by the CAA, nor otherwise limit its analysis of potentially contributing counties.

Indiana:
Both the annual and 24-hour $PM_{2.5}$ standards are a revised version of the PM standards. Therefore, Indiana firmly believes that $PM_{2.5}$ designations should be consistent with designations under the PM_{10} standard. Since U.S. EPA is relying on the nonattainment boundaries for the annual $PM_{2.5}$ standard to serve as the presumptive boundaries for the 24-hour $PM_{2.5}$ standard, and the presumptive boundaries would be more representative of ozone as the pollutant, U.S. EPA must reconsider the criteria and presumptive boundaries prior to proceeding with final designations under the 24-hour $PM_{2.5}$ standard.

EPA Response:
As explained above, EPA did not apply any presumption that annual nonattainment area boundaries would serve as the presumptive boundaries for the 24-hour standard, only that we anticipated that the annual $PM_{2.5}$ boundaries, which were based upon a number of relevant factors, might also be appropriate for the 24-hour $PM_{2.5}$ boundaries. EPA is deciding the boundary of each 24-hour $PM_{2.5}$ nonattainment area on its own merits. EPA's decision to exclude Dubois County from the Evansville 24-hour $PM_{2.5}$ nonattainment area, in contrast to its inclusion in the annual $PM_{2.5}$ nonattainment area, illustrates the fact that EPA is making

independent decisions on the boundaries of nonattainment areas for the 2006 air quality standards based on current information about potential contributions to violating monitors.

Nevertheless, in most cases, areas that contribute to violations of the annual standard also contribute to violations of the 24-hour standard. For both standards, violations in the eastern United States generally reflect significant quantities of sulfate, nitrate, and organic particulate matter. These violations result from a range of sources, including sources at great distances (most notably power plants, yielding regionally distributed sulfate and nitrate concentrations), sources within a few kilometers, and sources emitting either particles or precursors or both within the broader metropolitan area. Consequently, the requirement of the Act, dictating that nonattainment areas shall include nearby contributing areas as well as the area actually observing a violation, is to include much if not all of the metropolitan area in the nonattainment areas for both standards. It was thus appropriate for EPA to analyze counties within and just outside of C/MSA boundaries to determine whether such areas were contributing to monitored violations.

Preexisting PM10 nonattainment boundaries generally have little, if any, relevance to what boundaries would be appropriate for PM2.5. The PM10 NAAQS involves a different standard, with different indicator particles, different concentrations levels, resulting from different sources that may require different control strategies. These boundaries were generally promulgated almost 20 years ago, for a completely different NAAQS.

Indiana
Section 107(d)(4)(B) of the CAA defines a nonattainment area for PM_{10} based on a violation of the standard, suggesting that the boundary should be limited to the jurisdiction where the violation occurs. Both the annual and 24-hour $PM_{2.5}$ standards are a revised version of the PM standards. Therefore, Indiana firmly believes that $PM_{2.5}$ designations should be consistent with designations under the PM_{10} standard.

EPA Response:
Section 107(d)(4)(B) explicitly applies to designations for PM_{10}, not to designations for any other form or constituent of particulate matter. Therefore, this section does not govern designations for $PM_{2.5}$. Given that most designations for PM_{10}, including all the designations for PM_{10} in Indiana, took effect pursuant to section 107(d)(4)(B)(i) (reflective of pre-existing Group I areas), not section 107(d)(4)(B)(ii), and given that no Group I areas exist for $PM_{2.5}$, the Act cannot reasonably be interpreted to provide for promulgating $PM_{2.5}$ designations pursuant to section 107(d)(4)(B).

The comment regarding designations for PM_{10} is not germane and misinterprets this provision of the Act. Section 107(d)(4)(B) applies explicitly to designations for PM_{10}, and the Act does not provide for this section also to apply to other pollutants such as $PM_{2.5}$. In addition, section 107(d)(4)(B)(ii) need not be interpreted to dictate a different legal structure than section 107(d)(1) ("Designations generally"). For PM_{10}, just as for $PM_{2.5}$, the planning areas that became the nonattainment areas included the violating areas but also included contributing areas. For example, the nonattainment area in Northwest Indiana included the entirety of four cities in Lake County, notwithstanding the fact that monitoring data indicated violations in only a portion of that area. Although in Indiana the PM_{10} designations were promulgated under subsection (i)

rather than subsection (ii) of Section 107(d)(4)(B), EPA promulgated PM_{10} designations elsewhere that reflected its view that PM_{10} nonattainment areas are to include contributing areas as well as violating areas. The difference between the size of most PM_{10} nonattainment areas and the size of most $PM_{2.5}$ nonattainment areas thus reflects differences in the typical size of the contributing area and not to any legal differences as to whether contributing areas are to be included. Thus, PM10 which consists of larger particles that more rapidly settle to the ground will generally be caused by sources closer to a violating monitor, while PM 2.5 which consists of smaller particles that can be transported greater distances will more likely see contributions from throughout a metropolitan area. In fact, the distribution of $PM_{2.5}$ bears more similarity to the distribution of ozone than it does to the distribution of PM_{10}, which is the primary reason that the $PM_{2.5}$ nonattainment areas generally resemble the size of ozone nonattainment areas more than they do the PM_{10} nonattainment areas.

Iowa:
The use of arbitrary political boundaries to delineate the extent of the proposed nonattainment boundaries is not consistent with EPA's guidance. In the June 8th, 2007, "Area Designations for the Revised 24-Hour Fine Particulate National Ambient Air Quality Standards" guidance document, EPA stated that the Metropolitan Statistical Area presumptive boundary for areas violating the annual standard would not apply to areas violating only the 24-hour standard. In effect, no presumptive boundaries are to be assumed for any nonattainment area in Scott or Muscatine Counties. The EPA has given no technical consideration to sub-county boundaries. All technical analyses completed by EPA, for example the use of the CES analysis, have relied upon data aggregated to the county level. In effect, this approach has elevated the importance of the jurisdictional/political boundary factor above the other eight factors. This gives rise to the conceptual model of which sources and what conditions lead to $PM_{2.5}$ formation in a given area.

EPA Response:
EPA emphasizes that it did not rely on boundary presumptions in its 120-day letter to Iowa, nor did EPA use it to consider the jurisdictional boundaries factor to override other important factors to be more significant than others. To the contrary, the 120-day letter included EPA's application of all nine factors to the area in stating its intent to establish the county boundaries. The letter also stated that EPA was considering other boundaries, including a partial county boundary, and sought information on whether different boundaries would be appropriate. Finally, and most significantly, EPA's promulgation does establish a partial county boundary for both areas, based on a case-specific application of the nine factors and information provided by the state. However, EPA does not agree that the relatively small area covered by the partial city boundaries recommended by Iowa is supported by the available information.

West Virginia:
EPA's analysis correctly identifies relevant State and county jurisdictions. But that analysis fails to provide any justification whatsoever for adding part of Mason County to the nonattainment area. Rather, the text notes that the ozone nonattainment area includes Cabell and Wayne County (WV) and Boyd County (KY). It is puzzling that EPA ostensibly performed a similar 9-factor analysis for both ozone and $PM_{2.5}$ and reached different conclusions, even though NO_X is a common precursor. It is also troubling that, prior to the 2005 annual $PM_{2.5}$ designations, EPA had generally based nonattainment boundaries on county and Metropolitan Statistical Area

boundaries rather than arbitrarily adding "islands" such as the portion of Mason County. EPA provides no support for how such an isolated tax district bears any relevant jurisdictional relationship to the remainder of the nonattainment area. Moreover, its inclusion within the nonattainment area presents an additional and unnecessary burden on KYOVA because it must be addressed under transportation conformity requirements even though no air quality benefits result.

EPA Response:
Mason County is not part of KYOVA, the metropolitan planning organization for Cabell and Wayne Counties and the City of Huntington in West Virginia, and Lawrence County and the City of Ironton in Ohio. However, EPA believes that including a portion of Mason County in the Huntington-Ashland nonattainment area will not pose an undue burden on KYOVA. In fact, under the 1997 $PM_{2.5}$ NAAQS, KYOVA has successfully completed its transportation planning with the inclusion of the Graham Tax District in Mason County.

EPA included a portion of Mason County in the Huntington-Ashland area because it determined that emissions from two large sources in that tax district currently contribute to violations of the 2006 24-hour $PM_{2.5}$ NAAQS in the Huntington-Ashland area. Mason County, which is adjacent to Cabell County, has two large electric generating units. Meteorological data shows that on one-third of the days in 2004-2006 with monitored 24-hour $PM_{2.5}$ values greater than 35 and 40 $\mu g/m^3$ in Cabell County, winds came from the north-northeast. This data suggests that emissions from the north-northeast, i.e., from Mason County, WV likely contribute to the 2006 24-hour $PM_{2.5}$ NAAQS violations. However, since Mason County did not rank highly for other factors EPA concluded that including only the Graham Tax District in Mason County in the nonattainment area would capture the bulk of emissions in that county that are contributing to the monitored violations.

West Virginia:
EPA identifies the State boundary between Ohio and West Virginia as the major jurisdictional boundary. Further, the Agency encourages the two States to work collaboratively to reduce emissions. The West Virginia Department of Environmental Protection (DEP) agrees that cooperation will facilitate meeting the air quality standard. EPA goes on to note that the former 8-hour ozone nonattainment area included Wood County (WV) and Washington County (OH). However, EPA provides absolutely no support for the inclusion of any portion of Pleasants County based upon jurisdictional considerations. DEP continues to pursue litigation concerning EPA's inclusion of the Grant Tax District (Pleasants, WV) in the $PM_{2.5}$ annual standard designations. We strongly believe that EPA has inappropriately proposed inclusion of this district in the 24-hour $PM_{2.5}$ Parkesburg-Marietta nonattainment area. DEP encourages EPA to reconsider and exclude the entire county of Pleasants from the nonattainment designation.

Pleasants County is not part of the Parkersburg MSA. Therefore, it is not within the jurisdiction of the Wood-Washington-Wirt Interstate Planning Commission (WWW), the transportation planning organization. Moreover, its inclusion within the nonattainment area presents an additional and unnecessary burden on WWW because it must be addressed under transportation conformity requirements even though no air quality benefits result.

EPA Response:
Pleasants County is part of the Parkersburg-Marietta-Vienna MSA, which also includes Wood and Wirt Counties in West Virginia and Washington County in Ohio. However, Pleasants County is not part of the WWW, which is the metropolitan planning organization for Wood County, West Virginia and portions of Washington County, Ohio. EPA believes that including a portion of Pleasants County in the Huntington-Ashland nonattainment area will not pose an undue burden on KYOVA. In fact, under the 1997 $PM_{2.5}$ NAAQS, WWW has successfully completed its transportation planning with the inclusion of the Grant Tax District in Pleasants County.

EPA included the Grant Tax District portion of Pleasants County in the Parkersburg-Marietta nonattainment area because emissions from three large sources in the Pleasants County, just over the border from Wood County, contribute to violations of the 2006 24-hour $PM_{2.5}$ NAAQS in the Parkersburg-Marietta area. These sources are the Pleasants Power Station, the Willow Island Power Station, and the Cabot Corporation Ohio River Plant. Due to these large sources, Pleasants County has the highest emissions in the West Virginia portion of the Parkersburg-Marietta-Vienna MSA. Its SO_2 emissions are nearly 10 times higher than those of Wood County, which contains the violating monitor. Furthermore, Pleasants County's NO_X emissions are more than twice those of Wood County and its total $PM_{2.5}$ emissions are close to two times higher than Wood County's. Therefore, EPA determined that it is appropriate to only include the portion of Pleasants County containing these sources, namely the Grant Tax District, in the Parkersburg-Marietta nonattainment area.

State Comment: Consideration of topography

Kentucky:
The response for the Geography/topography factor was inconsistent throughout the entire response. EPA determined in each area that there were "no geographical or topographical barriers significantly limiting air pollution transport within its air shed." However, despite the common factor, the answer alternated between each factor as to whether or not the absence of topographical and geographical barriers "contributed to violations in the area" or "did not play a significant role in the decision-making process." The lack of a geographical/topographical barrier should either benefit an area or cause a problem.

EPA Response:
The geography/topography analysis evaluated the physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the area in question. The nonattainment areas in Kentucky do not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor did not play a significant role in the decision-making process. By "contributed to violations in the area," EPA, in this case, was conveying that no topographical features interfered with or cut off the transport of relevant pollutants from nearby emissions sources. Kentucky is correct, however, that the absence of topographical features impeding contribution can support the conclusion that such contribution occurs.

State Comment: Consideration of Counties and Time Intervals for 9-Factor Analysis (KY)

EPA used a list of counties including some that were outside of the MSA for certain factor analyses, and would exclude these same counties in different factor analyses. It seems inconsistent to make comparisons with one population of statistical data, and then continue comparisons with a different population of statistical data. This comment also applies where EPA used certain time intervals for one factor analysis and a different time interval in another factor analysis.

EPA Response:
For the CES methodology, EPA ran calculations on counties extending out a large distance from each violating monitor. The CES tables shown in EPA's intended designation letters may not include all counties considered in the 9-factor analysis, but they include those counties having factors which indicate they should be candidates for a nonattainment status. In evaluating each of the nine factors for each potential nonattainment area, our intended designation letters showed the counties for which the Agency intended to designate nonattainment for the 2006 24-hour $PM_{2.5}$ NAAQS, and in many cases, other surrounding counties where a comparison seemed relevant. EPA's exclusion of particular counties from a particular factor data table does not mean those counties were excluded from our analysis, only that we considered those counties less relevant for that factor. With regard to the time intervals considered for each factor, note that the Agency utilized the latest available data sets for our analyses.

State Comment: Documentation of VMTs
Regarding the VMTs that EPA has utilized in their analysis, Kentucky has been unable to document the basis for the development of this data. EPA has provided the spreadsheet containing the VMT numbers used in the analysis, but to date has been unable to provide Kentucky with the supporting documentation in the development of these numbers. Since the numbers used in Kentucky's previous recommendation submittals were developed by area agencies responsible for transportation conformity, we must insist that the numbers in our previous submittals are more reflective of the transportation sector in these areas.

EPA Response:
EPA consistently used county-level population and VMT growth estimates for all areas of the country. For 2005 a full VMT database at the county, roadway type, and vehicle type level of detail was developed from Federal Highway Administration (FHWA) information. For States and local areas that submitted VMT data that were incorporated in the 2002 NEI, the 2002 NEI VMT data were grown to 2005 using growth factors developed from the FHWA data, and these grown VMT data replaced the baseline FHWA-based VMT data. The resulting VMT database prepared for 2005 include data for all 50 States, the District of Columbia, Puerto Rico, and the Virgin Islands for each of the 12 Highway Performance Modeling System (HPMS) functional roadway types and the 28 MOBILE6 vehicle classes, for a total of 336 records per year per county. The data were prepared in the NMIM National County Database BaseYear VMT table format. At this point, States had opportunity to submit 2005 estimates that replaced EPA's estimates for 2005.

SECTION IV: Power Plant Issues

State Comment: Power plant counties

Several States believe that EPA should reconsider its determination that counties and/or townships with significant power plants should be designated as nonattainment based on the cause or contribute rationale. The existence of an electric generating unit in a township should not be the sole factor in determining nonattainment. At a minimum, EPA should consider the size of the power plant and the emission controls it has implemented.

EPA Response:
The fundamental statutory requirement governing the designations process is section 107(d) of the Act, which requires the EPA Administrator (or the Administrator) to designate each area that violates the NAAQS and any nearby area that "contributes" to the violation. In the $PM_{2.5}$ designations process, EPA used 2005 county-level data from the National Emissions Inventory in evaluating potential contributing counties for area-specific technical analyses. These data reflected emissions and control strategies implemented by sources in the State through 2005.

In its August 2008 letters responding to State recommendations, EPA recognized that certain power plants or large sources of emissions in a potential nonattainment area may have installed emission controls or otherwise significantly reduced emissions since 2005 and that this information may not be reflected in the 2005 data. EPA noted that it would consider additional information on emission controls in making final designation decisions. In cases where specific plants have installed emission controls since 2005 or plan to install such controls in the near future, EPA requested additional information on:

1. the plant name, city, county, and township/tax district
2. identification of emission units at the plant, fuel use, and megawatt capacity
3. identification of emission units on which controls will be installed, and units on which controls will not be installed
4. identification of the type of emission control that has been or will be installed on each unit, the date on which the control device became / will become operational, and the emission reduction efficiency of the control device
5. the estimated pollutant emissions for each unit before and after implementation of emission controls
6. whether the requirement to operate the emission control device will be federally enforceable by December 2008, and the instrument by which federal enforceability will be ensured (e.g. through source-specific State Implementation Plan (SIP) revision, operating permit requirement, consent decree)

Some commenters claimed that EPA intends to include partial county areas simply due to the existence of a power plant in the area. EPA did not include these areas simply due to the existence of a power plant, but as a result of a reasoned evaluation of information indicating the likely contribution by the source to $PM_{2.5}$ concentrations at the nearby violating monitor. This information included emissions data, ambient air quality speciation monitoring data, meteorological data, information about current and future planned emission controls, and related geographic information.

A number of States provided comments to EPA with specific additional information on power plants, and they requested that EPA remove such facilities from the list of areas intended for

inclusion as nonattainment. Some commenters noted that certain facilities have plans for emission controls to be installed and operational on a date later than the December 2008 date on which the designations were finalized, and they have requested that EPA consider whether a facility contributes to a violation based on projected lower future emissions levels after future installation of controls. EPA interprets section 107(d) as requiring the designation of areas which currently (i.e. through 2008) emit pollutants contributing to violations of the 24-hour standard. Therefore, in making decisions about contributing areas, EPA did not take into consideration emission controls that would be implemented after the December 2008 date for the Agency's final action on designations. EPA recognizes that implementation of future emission controls will provide important improvements in air quality and they should be included in the State implementation plans for these designated nonattainment areas. These emission reductions should be an important element of the State plan for attaining the $PM_{2.5}$ standards,

In the event that emission controls have been installed and are operational at a facility prior to December 2008, or the facility significantly reduced emissions due to another reason (e.g., the shut down of certain units at the plant), EPA considered two related issues. One issue is whether the emission control requirement on the source is federally-enforceable. Generally, a requirement is considered to be federally-enforceable if 1) it has been adopted by the State and approved by EPA as part of the SIP; 2) it has been approved as part of a federally-enforceable Title V operating permit or new source review/prevention of significant deterioration (PSD) permit; or 3) it is required as part of a consent decree, and the consent decree includes a provision for the emission reduction requirement to be included in the SIP or federally-enforceable permit upon fulfillment of the consent decree. EPA has determined that only federally-enforceable emission controls in place prior to December 2008 should be considered in this process.

A second issue is whether, after the implementation of emission controls prior to December 2008, the facility continues to emit pollutants at levels which still contribute to fine particle concentrations at a nearby violating monitor. For example, certain large facilities may continue to emit several thousand tons or more per year of SO_2 or NO_X even with operation of emission controls. To assess contributions from large sources, EPA considered a number of factors, including emissions data, meteorological information, and ambient air quality data. Each area was considered based on the specific facts for that situation. EPA does not believe, however, that the presence of an emission control device alone should be used as a basis to exclude a source that is otherwise deemed to be contributing to the violations. In the Agency's final action, a number of partial county areas with large power plants were included in nonattainment areas based on the Administrator's judgment that such areas were contributing to nearby violations.

SECTION V: Consideration of Other Regulations

State Comment: Consideration of CAIR-related emissions reductions

Kentucky:
Although at this point in time it is uncertain what reductions can be attributed to CAIR or its replacement, it is certain that some manner of control similar to CAIR will be implemented. This will further reduce these emissions since the Selective Catalytic Reduction (SCR) should be

operated year-round instead of only during the ozone season. Kentucky's NO_X SIP Call regulations remain in effect and, if CAIR continues to be in limbo, it will cover the 2009 allocation timeframe. In addition, non-EGUs in Kentucky will also be required to put on Best Available Retrofit Technology (BART) controls, which will further achieve PM air quality improvements. To designate counties nonattainment because they have a power plant in them would place additional hardships on the county and would be counterproductive since the EGUs in the entire region will be mandated by EPA's CAIR rule to significantly control their PM precursor emissions without being designated nonattainment.

EPA Response:
As required by section 107 of the CAA, EPA determined violations of the 2006 24-hour fine particulate NAAQS based solely on the most recent three complete years of certified monitoring data. EPA set boundaries based on available data and analysis that best represents present-day conditions, and not on projected emissions reductions that may occur after area designations are finalized. Section 107 requires EPA to designate all areas within three years of promulgation of a new NAAQS and to designate as nonattainment any area that violates or contributes to an area that violates a NAAQS. The statute is written in the present tense and thus EPA believes it can only base designations on controls that are in place and federally enforceable by the effective date of final designations.

States may account for other projected emissions reductions in their State SIPs for achieving attainment, where appropriate. States will also be able to take advantage of any air quality benefits that may have already occurred from recently enacted rules by submitting the 2008 monitoring data to EPA by February 20, 2009. EPA will review 2008 monitoring data submitted by this date, and will modify designation areas if appropriate prior to the effective date of the final designations. EPA notes that compliance with CAIR (or any other rule based upon section 110(a)(2)(D) or section 126) does not negate the obligation of a source to comply with nonattainment area requirements. If a source is contributes to local nonattainment, it may well need to be evaluated for additional controls necessary for local attainment needs, as well as reductions to eliminate interstate transport.

State Comment: Anticipated reductions in $PM_{2.5}$ levels due to recent low-sulfur gasoline and diesel rules

Kentucky:
In many areas, EPA based potential nonattainment designations on the supposition that population, commuter traffic, or VMT played an important role in determining potential impacts on $PM_{2.5}$ levels within an MSA. It is not feasible to designate a county as nonattainment if the only reason an area has been included was due to these population-based factors. With national controls being implemented that would address this contribution, including these counties as nonattainment would place additional, burdensome planning requirements on these local areas for no useful purpose. Due to the Tier 2 Vehicle and Low Sulfur Gasoline program, which became effective beginning in 2006, average national gasoline sulfur levels dropped 90 percent. The new Low Sulfur Diesel Rule, which began to be phased-in beginning in 2007, along with new clean engines operating requirements will reduce NO_X emissions by 50 percent, and reduce PM emissions by more than 90 percent. The implementation of these new federal rules will

significantly decrease the fine particulate contribution in and from areas impacted by population and transportation factors.

Michigan:
National rules are reducing emissions from both mobile and non-road mobile sources throughout the region. The Michigan Department of Environmental Quality (MDEQ) believes that decreased emissions in the area will ensure that the Grand Rapids metropolitan area will attain and continue to maintain the daily $PM_{2.5}$ standard.

Ohio:
Beginning in 2004, refineries began phasing in a new sulfur level for gasoline due to the new federal standard for fuel. This standard requires the average sulfur level to be no greater than 30 parts per million (ppm). This represents a 10-fold reduction where average national levels in 2002 were 300 ppm. Also beginning in 2006, a new requirement for ultra low sulfur diesel fuel (15 ppm) began phasing in. As with gasoline, this represents an enormous decrease from the 380 ppm average measured in 2002. These sulfur reductions are a key contributor to large scale vehicular emission reductions in $S0_2$, which in turn, will continue to have a positive impact on reducing $PM_{2.5}$ emission.

EPA Response:
As explained above, consistent with section 107, EPA determined violations of the 2006 24-hour fine particulate NAAQS based solely on the most recent three complete years of certified monitoring data. EPA set boundaries based on available data and analysis that best represents present-day conditions, and not on projected emissions reductions that may occur after designation areas are finalized. As noted, EPA does not believe the statute allows consideration of future controls that have not produced emissions reductions by the effective date of the designations.

States may account for other projected emissions reductions in their SIPs for achieving attainment, where appropriate. States will also be able to take advantage of any air quality benefits that may have already occurred from recently enacted rules by submitting the 2008 monitoring data to EPA by February 20, 2009. EPA will review 2008 monitoring data submitted by this date, and will modify area designations if appropriate prior to the effective date.

State Comment: Anticipated reductions in $PM_{2.5}$ levels due to State or local rules and control strategies

Iowa:
Iowa is making "substantial progress" on the control strategies for the sources which are most responsible locally for the violations (Blackhawk Foundry, Grain Processing, and Muscatine Power and Water), which will be in place on an "expedited timeline" which is likely to achieve attainment for both areas by 2014. In addition, voluntary measures are ongoing in the Quad Cities which will continue to improve air quality.

EPA Response:

EPA recognizes the efforts by the state and the stakeholders to achieve emissions reductions as soon as possible. EPA also encourages both states to continue efforts to assist the community in implementing voluntary measures. However, under section 307(d) of the Clean Air Act, in designating nonattainment areas, EPA must designate, as nonattainment, areas that are violating a NAAQS and areas that are contributing to the violations. This requirement does not authorize EPA to rely on the ongoing efforts to develop future control strategies in determining nonattainment boundaries. EPA's decision must be based on the statutory requirements, and EPA's promulgation of the nonattainment designations for these areas, as described in detail in the TSDs, meets the statutory requirements.

We also note that the state's submission includes a "mitigation plan" provided by Blackhawk Foundry. The plan states that the company's intended control strategy, when fully implemented, "will significantly reduce $PM_{2.5}$ concentrations". However, the document also concludes that, after implementation of the "preferred alternatives" identified in the company's control strategy, the "combination of the predicted concentration" from the foundry, and the background concentration, "could result in a predicted exceedance of the PM2.5 NAAQS". ("PM2.5 Emissions Mitigation Plan", Oct. 10, 2008, at p. 3.) This information provides additional justification for establishing a boundary that ensures emissions from other sources in the area are considered in developing the attainment demonstration control strategies for the Muscatine and Davenport areas.

Wisconsin:
Since 2007, the State has promulgated four significant rules. Collectively, when fully implemented in 2015, these four rules will reduce SO_2 and NO_X emissions in the State by 82 percent and 62 percent respectively below 2005 levels.

EPA Response:
Wisconsin also noted several emission reduction rules that it has recently promulgated. Full implementation of the rules should result in significant emission reductions throughout the State. The emission reductions resulting from current programs and future planned reductions will help improve the air quality in Wisconsin. EPA commends Wisconsin for it's emission reduction efforts. Still, for the fine particulate designations, EPA must use the current information for making its designations. As explained above, section 107 requires designations to be based on current conditions. The uncertainty of future emission reductions and new or expanded sources would not allow EPA to make an accurate determination of the nonattainment area if these assumptions were used. Thus, EPA considers the emission controls in place for designations. Also, with EPA allowing early submission of 2008 monitoring data prior to the effective date of the designations, the air quality improvement from current emissions reduction programs will be factored into the final effective designations. Wisconsin can include the planned future emission reductions as it develops the area attainment plans.

Wisconsin has recently enacted several rules to reduce emissions of a variety of pollutants. Reductions in fine particulate emissions coupled with reductions in the precursor emissions, which form fine particulate in the atmosphere, will lead to improved air quality. The large reductions in two key precursors predicted by the State are impressive. Wisconsin expects a 62 percent reduction in nitrogen oxide and an 82 percent cut in sulfur dioxide emissions from 2005

levels in 2015. These are sizeable emission reductions. Wisconsin can take advantage of the reductions that have already occurred by submitting early 2008 monitoring data for areas that have made enough improvement to meet the air quality standards based on 2006 – 2008 data. The upcoming emissions reductions will benefit areas with ambient concentrations remaining above the fine particulate standards by continuing the improvement toward reaching the air quality standards.

SECTION VI: Exceptional Events

State Comment: Exceptional Events

Indiana:
EPA needs to make a documented, reasoned determination concerning Indiana's exceptional events submittal for all $PM_{2.5}$ data used to determine compliance with the 24-hour $PM_{2.5}$ NAAQS. The repeated conclusion that "Indiana did not fully establish a causal connection to the event and failed to meet the 'but-for' test" does not contain adequate information to understand EPA's conclusion and what specifically would need to be provided to change EPA's determination. The fact that EPA concurred with every exceptional event where the 24-hour concentrations were below 35 $\mu g/m^3$, but rejected every event where the 24-hour concentration was above 35 $\mu g/m^3$ appears arbitrary, especially when the rejected episodes all relate to significant wildfires that were widely reported in the news at the time as causing widespread air quality issues (which we indeed saw in our monitoring data).

EPA Response:
EPA has evaluated Indiana's submittal in accordance with the criteria and procedures that it established in its exceptional event rule. EPA provided documentation of its "reasoned determination" regarding claims for the 2004-2006 period with its letter to Indiana dated August 19, 2008, and EPA is providing documentation regarding claims for 2007 in the TSD. Under the Exceptional Event rule, Indiana has the obligation to demonstrate that each of several criteria are met, most notably that there would have been no exceedance or violation "but for" the exceptional event. Indiana cannot shift this burden of proof to EPA. Nevertheless, in order to evaluate the Indiana Department of Environmental Management's (IDEM) exceptional event claims comprehensively, EPA thoroughly reviewed information submitted by IDEM as well as other additional information not included in IDEM's exceptional event demonstration. In some cases, the supplemental information led to concurrence on IDEM's exceptional event claims, and in other cases, the totality of the evidence did not support EPA concurring. Documentation of EPA's review, including additional sources of information, is included in the TSD.

Indiana has noted a pattern in EPA's concurrences and non-concurrences with claims for 2004-2006 events, but Indiana is incorrect in inferring that this result is arbitrary or somehow predetermined. An examination of patterns of EPA's findings regarding Indiana claims for 2007 exceptional events clearly demonstrates that, for example, EPA neither concurred with every claim for concentrations above 35 $\mu g/m^3$ nor rejected every claim below 35 $\mu g/m^3$. Instead, EPA examined each claim for each day and each monitoring site in accordance with the criteria and procedures established in the exceptional events rule, and EPA has provided documentation of its rationale in each case.

News reports of significant wildfires causing air quality issues can be used as supporting evidence in establishing causal relationship between the measurement and event claimed to have affected air quality. News accounts can also help corroborate quantitative evidence; however, such reports are rarely determinative of the occurrence of an exceptional event. Additionally, for the exceptional event claims from 2004, 2005, and 2006 for which EPA did not concur, IDEM did not provide any news reports or stories in the exceptional event demonstration.

SECTION VII: Other General Issues

State Comment: States' authority to impose additional necessary emissions reduction measures

Alabama:
The Alabama Department of Environmental Management (ADEM) has the legal authority to impose reduction measures in any area of our State, as necessary, to attain the NAAQS, regardless of which areas are formerly designated as nonattainment. Accordingly, in our December 2007 submittal, the only counties that we recommended be designated nonattainment were those with monitoring data exceeding the 24-hour $PM_{2.5}$ NAAQS. High background $PM_{2.5}$ levels present in the entire eastern United States and emissions generated in the local area around the violating monitors are the major causes of the elevated $PM_{2.5}$ concentrations. Accordingly, air pollution controls necessary to mitigate regional background levels must be regional or national in nature. To repeat, the State-specific reduction measures which will be needed for attainment are likely to occur only in the area covered by our proposal for a partial-county area. In the unlikely event that further State-specific reduction measures are needed outside the boundaries of our proposal, ADEM has the necessary authority to impose them.

EPA Response:
Section 107(d) directs that "…any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant" be designated as nonattainment. EPA is legally bound to carry out this directive, and therefore cannot base designation decisions on a State's ability or inability to impose targeted measures either within or outside a nonattainment area that may result in a violating monitor attaining the standard at some point in the future. Nonattainment designations must be based on current air quality regardless of whether polluting emissions are local, regional or transported from much further away. All violating and nearby contributing areas must be designated nonattainment consistent with the statute. States and EPA will then address the sources of pollution in preparing implementation plans and other measures to address regional transport.

State Comment: County-level designations in Western States not appropriate (CA)

California:
One of the primary issues that must be addressed when discussing the boundaries of a nonattainment area in California is the large size of California counties versus other States. The average area of a California county is 2,822 square miles, yet the average county size in the United States is 622 square miles. Alaska and Arizona are the only States with larger average

county size (Table 1 on page 5 of the California comment letter). The average California county is over 4½ times the average U.S. county; many as large, if not larger, than entire States. In many cases, California counties contain one or two urbanized regions and large stretches of sparsely populated areas.

Much of the 9-factor analysis utilized by U.S. EPA to determine $PM_{2.5}$ nonattainment areas is based at the county level. This presents some unusual challenges for California. For instance, applying county-wide VMT statistics to a large California county misrepresents differences that may exist in VMT urban and rural areas in that county, or between two widely separated urban areas in the same county. Throughout this submittal, we offer alternative approaches to analyzing the nine factors when county size presents a particular problem. This problem is most evident in Imperial County where the three main urban areas represent only one percent of the county (in square miles) recommended as a nonattainment area. The remaining 99 percent of the county is sparsely populated.

EPA Response:
In designating nonattainment areas for the 2006 24-hour fine particulate matter NAAQS, EPA considered a partial-county boundary for a violating or contributing county on the basis of: 1) The existence of a power plant as the major source of emissions in a county, with the county ranking low for other factors; 2) Topography, where topography is isolating an airshed within the county; or 3) Factors other than topography that demonstrate a unique situation in which the sources captured by the partial-county boundary account for nearly all of the total fine particle mass on exceedance days; or international emissions are a significant contributor, and the domestic sources captured by the partial-county boundary account for nearly all of the domestic contribution to the total fine particle mass on exceedance days. Under this analysis EPA considered the large size of some counties in the west and did designate partial counties in such areas where the area-specific data demonstrated that the partial county accounted for nearly all of the sources contributing to the violating monitor.

While EPA used county-wide statistics, we also scrutinized population, traffic, and stationary sources of emissions data at a smaller scale, using spatial analysis and geographic information systems (GIS). We used publicly available data sources including the U.S. Census for population, the FHWA's Freight Analysis Framework, and the NEI. In all of the areas where EPA's boundary recommendations were larger than California's recommendations, the majority of the county's population, traffic, and stationary sources were included in the boundary we recommended. Furthermore, in many cases we used township and range boundaries, rather than county boundaries, as a more appropriate means to define nonattainment area boundaries in Imperial, Butte, Yuba, Yolo, Placer and El Dorado Counties.

State Comment: Economic hardship considerations

Michigan:
The 2006-2008 three-year daily average shows only monitors in Wayne County and St. Clair County in violation of the standard. The Michigan Department of Environmental Quality (MDEQ) continues to believe that designating a huge nonattainment area in response to violating monitors in a small area is heavy-handed and unnecessary. It serves to economically penalize

the entire region at a time when the State has been economically distressed for the past eight years and is struggling to revive.

Ohio:
The consequences of having a nonattainment designation status will have a significant economic impact on the townships as well as the entire counties discussed previously, which are already experiencing severe fiscal problems, high rates of unemployment, population migration, and the other social dislocation associated with such economic distress. Given these circumstances and the absence of data which solidly demonstrate that such nonattainment designations are appropriate, I strongly encourage US EPA to reconsider its original findings.

EPA Response:
EPA is required by the CAA to designate all violating and nearby contributing areas nonattainment without regard to potential economic impacts. EPA used the data it had available in conjunction with State recommendations and public input to analyze on a case-by-case basis which areas should be included in each nonattainment area. However, EPA does not believe that a nonattainment designation necessarily and significantly limits economic growth. The requirements for new sources in nonattainment areas are similar to those in attainment areas. In both areas, new sources must be well controlled and must appropriately address the impact of the new source on air quality. While companies will blame environmental restrictions for facility location selections there are many other factors such as market access, skilled labor access, and various cost factors that affect the location decision.

SECTION VIII: Typographical Errors

Alaska:
On page 1 of EPA's technical analysis for Juneau there is a typographical error. The second sentence starts "This technical analysis for Fairbanks…" and should read "This technical analysis for Juneau…"

EPA Response:
EPA has corrected this error in its final Technical Support Document.

Connecticut:
We note one inaccuracy on page 3 of EPA's response to Connecticut's recommended designations. The response refers to the 1997 $PM_{2.5}$ NAAQS nonattainment boundary for the New York City metropolitan area as including Hartford and Fairfield Counties in Connecticut. Rather, the New York City metropolitan area included New Haven and Fairfield Counties in Connecticut. We hope you will correct the record in this respect to avoid any confusion in the future.

EPA Response:
EPA has corrected this error in its final Technical Support Document.

Idaho:

Figure 9 on page 19 of the December 2007 submittal has an incorrect image. Please substitute the corrected page 19 attached to this document.

EPA Response:
EPA has corrected this error in its final Technical Support Document.

Kentucky:
The '2005 VMT' data should be labeled 'millions' (annual) miles not 1000's. This error occurs throughout the letter in the Traffic and Commuting Patterns Table.

EPA Response:
EPA has corrected this error throughout its final Technical Support Document.

AREA-SPECIFIC ISSUES

Allentown, PA

New Jersey:
The "urban increment" in EPA's technical analysis, which only uses the "high" days (top 5 percent of days), does not take into account the direct impact of a major point source such as the Portland Generating Station, which is situated directly next to Knowlton Township. The Portland Generating Station is the single largest source of both SO_2 and carbon emissions in the Knowlton area.

EPA Response:
The "urban increment" identifies the non-regional contribution of $PM_{2.5}$ on high days to violating monitors. For the Allentown, PA area, the violating monitor is located in Northampton, PA. The "urban increment" is incorporated into the CES, which takes into account emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties that contribute to a monitored violation of a $PM_{2.5}$ NAAQS within a nonattainment area. The CES metric was not meant to be an exclusive way for consideration of data for these factors.

The CES method places primary emphasis on characterizing those days when ambient $PM_{2.5}$ concentrations at a monitor are near or exceed the standard. The CES specifically considers the influence of emissions, including data from major point sources, and meteorology on days with high 24-hour fine particle concentrations. The information is particularly relevant for a 24-hour standard, for which individual days affect attainment status, unlike an annual standard, which considers air quality throughout the year. The CES examines all days in an area that are above the 95th percentile or the level of the NAAQS, whichever is lower.

EPA considers the CES to be a reasonably realistic model of the actual processes that affect the contribution linkage between a monitored violation in a violating county and emission sources in a nearby potentially contributing county. The CES was not designed to assess the impact of individual sources on areas not identified as violating through monitored data.

New Jersey:
Any emissions (primary and secondary) from the Portland Generating Station would easily put the Knowlton area over the 35 ug/m^3 standard based on an air quality monitor in Phillipsburg, with a design value of 34 ug/m^3.

EPA Response:
Current regulations for determining violations of the fine particle NAAQS require that violations be determined on the basis of complete, quality-assured ambient air quality data at a monitor in the area.[1] The air monitor in Phillipsburg, Warren County measured 34 ug/m^3. Consequently, this county is not currently violating the $PM_{2.5}$ NAAQS notwithstanding emissions from the

[1] See the regulations on the revised standard at 40 CFR 50.13(c); 71 FR 61224, October 17, 2006. See also monitoring regulations at 40 CFR Part 58, as revised on October 17, 2006 (see 71 FR 61236); and procedures for using these data to determine whether a violation has occurred in 40 CFR Part 50 Appendix N, as revised on October 17, 2006 (see 71 FR 61144).

Portland Generating Station. EPA strongly advises New Jersey to place an air quality monitor in the vicinity of Knowlton Township, to support the State's determination that Warren County (or portions thereof) is violating the 24-hour standard. Without such monitoring data EPA cannot designate the area nonattainment based on a violation, and for reasons explained in the TSD EPA also does not have data to support designating Warren County nonattainment based on contribution.

New Jersey:
New Jersey indicated that they disagreed with EPA's assessment that the Delaware River does not significantly influence the air shed. Since Knowlton Township and the Portland Generating Station are located in the river valley, limited air mixing emissions from the Portland Generating Station would directly impact Knowlton Township.

EPA Response:
EPA agrees with New Jersey that there would be limited air mixing within the Delaware River Valley. However, without monitoring data to contradict the existing data for Warren County EPA can not determine that Warren County is currently violating the $PM_{2.5}$ NAAQS. EPA continues to strongly advise New Jersey to place an air quality monitor in the vicinity of Knowlton Township, to support the State's determination that Warren County (or portions thereof) is violating the 24-hour standard.

New Jersey:
EPA is using the State line between Pennsylvania and New Jersey as the boundary for the nonattainment area. The State line does not prevent SO_2 and $PM_{2.5}$ emissions from the Portland Generating Station from impacting Knowlton citizens.

EPA Response:
Although emissions from Pennsylvania may impact Knowlton Township in Warren County, the current air monitor in Warren County is currently not in violation of the fine particle NAAQS. As stated previously, current regulations for determining violations of the fine particle NAAQS require that violations be determined on the basis of complete, quality-assured ambient air quality data at a monitor in the area.

New Jersey:
The CAA does not specifically require monitoring data when designating or redesignating an area. The regulations cited by EPA, 40 CFR 50.13(c), which references Appendix N, does not specifically provide that monitoring data is the only data that can be used in support of a redesignation or designation. Further, U.S. EPA's June 8, 2007 designation guidance memo should not limit States from considering other scientifically valid approaches to understanding air quality in an area. New Jersey agrees that quality assured air quality monitoring data should be used whenever available. In the case of Knowlton, the use of air quality modeling data to supplement the region's air monitors is appropriate given the geographical complexities of the area.

New Jersey stated that according to Section 171(2) of the CAA, the term 'nonattainment data' means for any pollutant area which is shown by monitored data or which is calculated by air

quality modeling (or other means determined by the Administrator to be reliable) to exceed any NAAQS.

New Jersey provided technically sound and consistent modeling results based on two different models which, when used with regional air monitoring data, indicate violations to the 2006 24-hour $PM_{2.5}$ NAAQS.

EPA Response:
EPA agrees that section 107(d) does not explicitly state that only monitoring data can be used for promulgation of designations, and EPA is considering other information as appropriate to evaluate areas that may be contributing to violations. However, EPA regulations relevant to the NAAQS and monitoring for the NAAQS do describe at length the requirements (which are based on monitoring) for determining whether a violation of the $PM_{2.5}$ NAAQS has occurred. EPA's guidance for these designations likewise explained that for an area to be "violating" the NAAQS, it must have at least one FRM with data establishing such violation. For contributing areas, other information can be relevant.

40 CFR 50.13(c) specifically states: The 24-hour primary and secondary $PM_{2.5}$ standards are met when the 98^{th} percentile 24-hour concentration, as determined in accordance with appendix N of this part, is less than or equal to 35 $\mu g/m^3$.

Appendix N to Part 50-Interpretation of the NAAQS for $PM_{2.5}$ explains the data handling conventions and computations necessary for determining when the annual and 24-hour primary and secondary NAAQS for $PM_{2.5}$ specified in 50.13 are met. While monitoring requirements necessary for determining NAAQS compliance are discussed in detail in Appendix N, requirements for the use of modeling to demonstrate whether the NAAQS has been exceeded are not specified. Thus, EPA believes that monitoring information is necessary in order to substantiate a nonattainment, or attainment, designation made by EPA. Therefore, EPA is designating "violating" areas based upon the presence of an air monitor meeting regulatory requirements to show that a violation, as defined in the regulations for the NAAQS, has occurred.

EPA does not believe that its June 8, 2007 designation guidance memo limits States from considering other scientifically valid approaches to understanding air quality in an area. Current Agency regulations indicate the requirements for designating "violating" areas. EPA's designation guidance memo identifies the current regulations which are applicable for identifying NAAQS violations, specifically using data from Federal Reference Method (FRM) and Federal Equivalent Method (FEM) monitors that are sited and operated in accordance with 40 CFR Part 58, and indicates the procedures given in 40 CFR Part 50 Appendix N for using these data to determine whether a violation has occurred.

EPA agrees that the modeling performed by New Jersey does provide valuable information for understanding air quality in Warren County. Based on the air modeling performed by New Jersey which shows the potential to exceed the $PM_{2.5}$ NAAQS using New Jersey's modeling inputs, EPA strongly recommends that New Jersey place an air quality monitor in the area of impact to demonstrate a possible violation of the $PM_{2.5}$ NAAQS.

New Jersey states that Section 171(2) of the CAA defines the term 'nonattainment data' as

> "any pollutant area which is shown by monitored data or which is calculated by air quality modeling (or other means determined by the Administrator to be reliable) to exceed any NAAQS."

New Jersey is citing a pre-1990 version of the CAA that has since been modified. Section 171(2) of the CAA, which defines nonattainment areas, no longer refers to air quality modeling. The provision now refers to areas "designated 'nonattainment' with respect to that pollutant within the meaning of section 107(d). This change was accompanied by revisions to section 107 itself which eliminated provisions for designations for the SO2 NAAQS that directed EPA to designate areas based on future projected attainment status, i.e., through a process that would have necessitated modeling the future ambient level at FRM monitors. This provides further evidence that it is not appropriate to base determinations of violations for purposes of designation on modeling data alone, especially in the face of valid monitoring data for the same county showing attainment.

Birmingham, AL

Alabama:
Alabama argued that the existence of

> "high background levels present in the entire eastern United States and emissions generated in the local area around violating monitors are the major causes of the elevated $PM_{2.5}$ concentrations."

As a result, Alabama argued that regional control strategies are necessary to address the regional background levels and that "local" emissions sources are being analyzed by the Department for Reasonably Available Control Technology (RACT) level controls, i.e., nonattainment area plan requirements.

EPA Response:
EPA disagrees with the State's argument for several reasons. First, it is not disputed that areas in the Eastern U.S., including Birmingham, are subject to regional transport of pollution. However, that regional transport does not comprise the entire amount of ambient $PM_{2.5}$ measured at the violating monitors in the Birmingham area. The purpose of the designation process is to identify those "nearby" areas that contain emissions sources or activities that are contributing to the violations. It is not appropriate for EPA to exclude nearby areas that are contributing, merely because there is also transport from more distant areas. Moreover, the CAA provides other tools, most notably section 110(a)(2)(D) and section 126, to address interstate transport.

Second, EPA does not agree with Alabama's view of what constitutes "local" emissions sources in the context of designations. As with regional background, these "local" sources identified by Alabama are not the exclusive source of ambient $PM_{2.5}$ levels in the Birmingham area. Under section 107(d), EPA must identify both violating and nearby contributing areas. Because $PM_{2.5}$

and $PM_{2.5}$ precursor emissions can be transported across great distances, the evaluation must take into account sources that contribute in an area based upon the facts and circumstances of that specific area. In its guidance EPA recommended various forms of information that are relevant for evaluating contribution, and the Agency has used a number of relevant analytical tools in evaluating the Birmingham area, as explained in the TSD for this area.

Third, the State's argument with respect to "regional" and "local" emissions is that contribution is limited to the source or sources that "cause" the violation at a violating monitor, i.e., those sources add the last increment of ambient $PM_{2.5}$ above the level of the standard. EPA does not agree that section 107(d) contemplates that "contributes" should be read to mean "causes" in the sense meant by Alabama. EPA believes that section 107(d) requires a designation of nonattainment for those areas that "contribute" to the violation, i.e., that have emissions sources or activities that cumulatively add to the ambient $PM_{2.5}$ at the violating monitor. This reading of the statute is consistent with the purpose of nonattainment area designations, which is to provide the boundaries for those areas within which States should evaluate all sources for controls in the context of the nonattainment area SIP development, to impose controls as appropriate on such sources, and to provide for expeditious attainment of the NAAQS. EPA believes it is not consistent with the statute to truncate that analysis by excluding nearby areas with sources that are also contributing to violations in the area.

Alabama:
In its October letter, Alabama also reiterated its arguments that EPA should only designate a smaller area nonattainment, premised upon the argument that "specific reduction measures which will be needed for attainment are likely to occur only in the area covered by our proposal for a partial county area."

EPA Response:
EPA disagrees with this approach to designations. In essence, Alabama argues that the State and EPA should predetermine which sources should be controlled as a basis for the designation. EPA believes that this is in direct contravention of section 107(d), which obligates EPA to designate as "nonattainment" those violating areas and those nearby areas that are "contributing" to the violations. The full evaluation of sources within a nonattainment area, including the determination of which sources of direct $PM_{2.5}$ and $PM_{2.5}$ precursors should be controlled, to what degree they should be controlled, and when they should be controlled in order to provide for expeditious attainment of the NAAQS, will occur during the development of the nonattainment area SIP for this area. EPA considers it inappropriate to truncate that analysis and the requirements of the CAA for nonattainment area SIPs through the creation of artificially smaller boundaries that exclude areas that contribute to the violations.

Alabama:
The overwhelming majority of NO_X and SO_2 emissions in Walker County are due to a single utility located in the county (Alabama Power Company – Plant Gorgas). Additional controls have been installed at this power plant since 2005. Flue gas desulfurization (FGD) scrubbers have been installed on units 8, 9 and 10. Therefore, over 80 percent of the power generation capacity at Gorgas is being scrubbed.

The overwhelming majority of NO_X and SO_2 emissions in Shelby County are due to a single utility located in the county (Alabama Power Company – Plant Gaston). A scrubber will be installed on Gaston Unit 5 in 2010. Unit 5 is the largest unit at Plant Gaston.

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

The CAA requires that a nonattainment area must include not only the area that is violating the standard, but also nearby areas that contribute to the violation. Thus, for each monitor or group of monitors that indicate violations of a standard, EPA is establishing nonattainment boundaries that cover a sufficiently large area to include both the area that violates the standard and the areas that contribute to the violations. EPA's designations guidance for the 2006 $PM_{2.5}$ standard suggests that the same boundaries established for implementing the annual $PM_{2.5}$ standard may also be appropriate for implementing the 24-hour $PM_{2.5}$ NAAQS in areas where both standards are violated. Walker County (partial) and Shelby County are part of the existing Birmingham nonattainment area. EPA finds that it is appropriate to include the same counties in the nonattainment area for the 24-hour standard since these counties have high emission levels and air quality data indicate that the same $PM_{2.5}$ components that are the biggest contributors to $PM_{2.5}$ mass on an annual average basis in this area (e.g., sulfate from SO_2 emissions) are also key components of $PM_{2.5}$ mass on the highest days.

In addition, Plant Gorgas in Walker County and Plant Gaston in Shelby County have emissions that are not fully controlled. Two units at Plant Gorgas do not have scrubbers. For the first half of 2008, emissions from the plant totaled 14,000 tons SO_2 and 10,000 tons NO_X. At Plant Gaston, while a scrubber will be installed on the largest unit in 2010, four other units will remain without scrubbers. The 2007 emissions from these four units were substantial, more than 75,000 tons SO_2 and 12,000 tons NO_X.

While Alabama anticipates installation and operation of additional controls in the future, EPA must judge whether current emission levels, supported by current regulations that provide assurance of continued operation of existing controls, contribute to existing violations. EPA continues to believe that emissions from Walker County (partial) and Shelby County contribute to violations of the 24-hour $PM_{2.5}$ NAAQS in Jefferson County.

The State of Alabama makes the following points as rationale for excluding Walker County from the Birmingham nonattainment area:

Alabama:
Walker County has a very low population density and VMT compared to Jefferson County.

EPA Response:
Population and population density were one type of information that EPA used nationwide to determine the appropriate boundaries for PM nonattainment area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour $PM_{2.5}$ standard. EPA agrees that Walker County has a relatively smaller

population size and density than Jefferson County. Of the CSA population, about 6 percent (69,980) reside in Walker County, while about 56 percent (656,014) reside in Jefferson County. The population density per square mile is 87 in Walker County and is 584 in Jefferson County. Of the CSA vehicle miles traveled, about 5.5 percent (797) are in Walker County, while about 58.7 percent (8,545) are in Jefferson County.

Low population density and VMT compared to the remainder of the areas under consideration for the nonattainment area are among the reasons that EPA determined that it would be appropriate to include only a portion of Walker County, rather than the entire County. EPA believes a partial nonattainment area designation remains appropriate for Walker County in view of the large amount of $PM_{2.5}$ and $PM_{2.5}$ precursor emissions from Plant Gorgas and in evaluation of other information such as the CES and the pollution rose for this area which indicate that the emissions from this portion of Walker County are contributing to violations of the NAAQS in adjacent Jefferson County.

Alabama:
The wind infrequently blows from the direction of Walker County towards Jefferson County on days with high $PM_{2.5}$ concentrations.

EPA Response:
EPA disagrees with Alabama's conclusion that winds blow infrequently from the direction of Walker County towards Jefferson County on days that are relevant to violations in this area. The pollution rose in EPA's TSD for the Birmingham area reflects both the high number of days on which winds blow from the direction of the County and the high ambient levels on those days throughout the year. Therefore, EPA believes that elevated $PM_{2.5}$ levels at the violating monitors originate from multiple directions in the Birmingham area, including from the direction from Walker County.

In addition, EPA's CES score confirms the high degree of contribution from Walker County to Jefferson County compared to all other counties in the area except Shelby. The CES methodology takes into account the influence of emissions and meteorology on days with high 24-hour fine particle concentrations and also incorporates the seasonal composition of fine particle mass and source receptor distance relationships. Even though the majority of emissions from all of Walker County emanate from one source in a small part of that County, the CES score for the County is 17, which reflects the significance of the level of fine particle transport to the violating ambient monitor. The CES scores for other counties in the area are 100 for Jefferson County, 39 for Shelby County, and 5 or less for all other counties. The scores suggest that particulate matter emissions from Walker County and Shelby County and the average wind trajectories on high PM fine days have a significant impact on PM fine levels at the violating ambient monitor in Jefferson County.

The State of Alabama makes the following points as rationale for excluding Shelby County from the Birmingham nonattainment area:

Alabama:
The monitor in Shelby County measures attainment of the 24-hour $PM_{2.5}$ standard, along with

five of the eight Jefferson County monitors. Data from monitors located between Shelby County and the non-attaining monitors in Jefferson County do not suggest that Shelby County is significantly contributing to nonattainment in Jefferson County; rather, the data shows an obvious local emissions impact around the violating Birmingham monitors.

EPA Response:
The presence of an attaining monitor in Shelby County does not establish whether emissions activity in Shelby County is contributing to violations in adjacent Jefferson County. EPA believes that whether Shelby County itself contributes to the violations in Jefferson County must be evaluated using the types of information that EPA has utilized in the TSD for this area. Likewise, EPA does not agree that the existence of one or more attaining Jefferson County monitors located between Shelby County and the violating monitors in Jefferson County establishes whether or not Shelby County is contributing. The amount of emissions in Shelby County, the proximity of Shelby to the violations in Jefferson and meteorological data indicating transport of those emissions from Shelby towards Jefferson County suggest that the emissions from Shelby County combine with the emissions from Jefferson County sources (and others) and cumulatively result in the violations at the monitors in Jefferson County.

The pollution rose in the TSD for this area confirms that winds blow from the direction of Shelby towards Jefferson on days with high ambient $PM_{2.5}$ in Jefferson County. The CES score for Shelby was 39, which places it second only to Jefferson County in the Birmingham area, and thus ranks its relative contribution to violations in Birmingham higher than all other surrounding counties. This information supports EPA's conclusion that Shelby is contributing, as that term is intended in section 107(d) of the CAA.

Alabama:
Alabama argued that only 73 percent of the MSA population resides in Jefferson County.

EPA Response:
As stated above, population and population density were only one form of information that EPA evaluated nationwide to determine the appropriate boundaries for nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. In conducting our analysis EPA referred primarily to CSA, as defined in OMB BULLETIN NO. 07-01 (Update of Statistical Area Definitions and Guidance on Their Uses), December 18, 2006. According to 2005 population data, of the Birmingham CSA population, about 14.7 percent (171,373) reside in Shelby County, while about 56 percent (656,014) reside in Jefferson County. The population density per square mile is 212 in Shelby County and is 584 in Jefferson County. Although Shelby County does have smaller population than Jefferson, this does not negate the other types of information that establish the contribution of Shelby to violations in Jefferson, such as the particularly high emissions of SO_2 and NO_X, the relatively high level of commuting between these counties, and the lack of topography or other barriers to transport of pollutants from Shelby to Jefferson. EPA believes this data continues to support a nonattainment area designation for Shelby County.

Alabama:
Jefferson County's VMT is approximately five times that of Shelby County's.

EPA Response:
EPA agrees. Of the total CSA vehicle miles traveled, approximately 11.3 percent (1,640) of the VMT in 2005 were in Shelby County, while about 58.7 percent (8,545) of the VMT are in Jefferson County. EPA notes that this amount of VMT reflects a significant amount of NO_X and VOC emissions, and that these emissions do contribute to violations in this area, albeit less than the emissions resulting from mobile sources within Jefferson County itself. However, EPA's assessment of this single form of information does not preclude it from determining that Shelby County contributes to increased ambient $PM_{2.5}$ levels in the Birmingham area, based upon this and other information.

Alabama:
The bulk of the SO_2 and NO_X point source emissions from Shelby County can be attributed to Alabama Power's Plant Gaston. However, several control measures have been installed and will not be reflected in any previous inventory.

EPA Response:
EPA agrees that Alabama Power Company – Plant Gaston is the most significant individual source of NO_X and SO_2 emissions in Shelby County. The emissions from this plant are approximately 130,000 tons per year of SO_2 and 20,000 tons per year of NO_X as well as a large quantity of direct $PM_{2.5}$. These emissions make this source among the largest in the Birmingham area, and these emissions are of the types that are well represented in the speciated data for ambient $PM_{2.5}$ in this area. These emissions occur in a county immediately adjacent to Jefferson County, and only about 28 miles from the violating monitors in Jefferson County. Thus, these emissions occur at a location that is well within the range for transport of $PM_{2.5}$ and $PM_{2.5}$ precursors. Other analytical tools used by EPA, such as the CES score and the pollution rose for this area also confirm that emissions from this plant contribute to violations in the Birmingham area. The emission units at Plant Gaston are not controlled by SO_2 scrubbers, although the largest of the facility's five units is scheduled for a scrubber to be installed by 2010.

Alabama argues that the installation of scrubbers on one unit of this source in 2010 is a reason to exclude Shelby County from the Birmingham nonattainment area. EPA disagrees. Section 107(d) obligates EPA to designate as nonattainment "any area that does not meet" the NAAQS, and any nearby area that "contributes" to those violations. Given the present tense formulation of this provision, EPA does not believe it is appropriate to base designations on projections of future violations or future contributions, but rather upon the facts at the time of the designation.

With respect to the overall level of control at this source, EPA notes that not all of the units at this source are fully controlled and that additional emissions reductions may be necessary and appropriate for this source. The determination of what level of control for this source should be required will be addressed in the nonattainment area plan developed for the Birmingham area, and it would be inappropriate for Alabama and EPA to prejudge that decision in the context of the designations. Based upon the amount and type of emissions, and the location of this source, EPA has concluded that it continues to contribute to violations in the Birmingham area.

The State of Alabama makes the following points as rationale for designating only a portion of Jefferson County as nonattainment, which is a change from its original

recommendation.

Alabama:
Alabama revised its original recommendation that EPA designate all of Jefferson County as nonattainment, on the grounds that the area should include "only the local airshed for the monitors violating the 24-hour $PM_{2.5}$ standard."

EPA Response:
EPA disagrees with Alabama's view that the violating monitors in Birmingham are located in a "local airshed" that is distinct from the remainder of the Birmingham area. EPA has considered nonattainment areas boundaries for smaller areas (including for partial counties), when there is clear factual evidence that the designated area is in a separate airshed from the immediately surrounding areas, e.g., when the area is separated by mountain ranges that clearly impede air flow between the areas. Given the topography and the meteorological evidence in the Birmingham area, EPA sees no factual basis for a credible claim that the violating monitors in this area are in an airshed separate from the remainder of Jefferson County, or from Walker County and Shelby County.

Alabama:
The data from the Jefferson County monitors, along with an air quality study commissioned in 2005 by the Alabama Department of Environmental Management (ADEM) and the Jefferson County Department of Health, indicates the clear existence of a local emissions influence on the violating monitors. This study concluded that there is a well-defined local source influence in addition to a regional component of the annual $PM_{2.5}$ concentrations measured at the Wylam and North Birmingham monitors. Only three of the eight Jefferson County monitors violate the 24-hour standard, all of which will be captured by the partial area that we are proposing for nonattainment designation.

EPA Response:
EPA agrees that "local" emissions sources have an influence on the violations in the Birmingham area. Alabama does not contend, however, nor could it, that all of the ambient $PM_{2.5}$ at the violating monitors in this area are the result of one or more specific sources in the near vicinity of the monitors. EPA believes that the violations in Birmingham are the result of the cumulative impacts of emissions from various sources in Jefferson County and nearby Walker and Shelby Counties, in addition to emissions from sources that are not in nearby areas or are in other States. As a result, under section 107(d) EPA must include these nearby areas within the boundaries of the nonattainment area for Birmingham.

Alabama:
In support of its recommendation that EPA designate only a portion of Jefferson County nonattainment, Alabama also referred to the results of a study it commissioned from Envair "to investigate the source(s) of particulate matter pollution in and around the NBHM and WYL monitors." According to Alabama, "monitoring data clearly indicated a strong local influence on the high particulate matter concentrations."

EPA Response:
EPA does not agree that the Envair study supports a position that only "local" sources are contributing to violations of the NAAQS in this area. Even the portions of the study quoted by the State in its October 2, 2008, letter indicate that contribution is the result of emissions across a broader area than that recommended by Alabama. In addition to a "large regional influence" and a "significant influence of local sources," the Envair study notes that the ambient levels are "supplemented by a general urban component" of emissions. Similarly, in addition to the "local" stationary sources that Alabama would evidently like to encompass within a much smaller designated area, the Envair study notes that there is a "complementary contribution of emissions from local transportation sources, including motor vehicles and railroads." EPA recognizes the study indicates that there is a strong local influence from certain industrial facilities in the Birmingham area. However, while the study does implicate some of the very large local sources as significant contributors, it does not say those are the only sources. Total fine particle mass on the high concentration days in Birmingham indicates that other metropolitan-area sources such as transportation and power plants also contribute. Finally, the Envair study was developed to analyze the area for purposes of the 1997 annual PM2.5 NAAQS, so it does not necessarily translate to what may be appropriate for the 2006 24 hour PM2.5 NAAQS for this area.

California Air Resources Board (CARB) Multi-Area

CARB:
The State of California requested that EPA modify the proposed nonattainment boundaries to be consistent with California's original recommendations for the City of Calexico, Sacramento County, City of Chico, and the combined cities of Yuba City/Marysville. The State and EPA are in agreement regarding the boundaries for the South Coast Air Basin, San Joaquin Valley Air Basin, and San Francisco Bay Area. The State of California provided additional information to document the extent of international transport causing the localized impacts in Imperial County, and the localized impact of wood smoke in the other areas at issue.

EPA Response:
EPA appreciates the additional information submitted by the CARB in their letter dated October 15, 2008. As CARB pointed out in their letter, States and Tribes need to submit recommendations identifying where violations are occurring and including nearby areas that contain emission sources that contribute to the observed violations.

In response to the information submitted by CARB, EPA has modified our previous recommendations for Imperial County, Butte County, Yuba/Sutter Counties, and the Sacramento area (including Yolo, Solano, Placer and El Dorado Counties). EPA originally recommended a larger nonattainment boundary for these areas but has reduced their size in light of further information and analysis provided in CARB's October 15 letter. While EPA has reduced the size of these areas, they still include the violating monitors and the contributing sources in nearby areas and they are still larger than those recommended by the State of California.

Several factors led EPA to recommend a larger $PM_{2.5}$ nonattainment area than recommended by California. A significant consideration in expanding the nonattainment areas recommended by California was that the State relied on future mobile source controls at a statewide level to

address NO_X emissions and, therefore, discounted mobile sources as an important consideration in their analysis. During the designation process, as required by section 107 of the CAA, EPA determined violations of the 2006 24-hour fine particulate NAAQS based solely on the most recent three complete years of certified monitoring data. EPA set boundaries based on available data and analysis that best represents present-day conditions, and not on projected emissions reductions that may occur after area designations areas are finalized. Section 107 requires EPA to designate all areas within three years of promulgation of a new NAAQS, and to designate as nonattainment any area that violates or contributes to a nearby area that violates a NAAQS. The statute is written in the present tense and thus EPA believes it can only base designations on controls that are in place and federally enforceable by the effective date of final designations. Based on speciation data provided by CARB, organic carbon and nitrates were identified as the major components of $PM_{2.5}$ where violations occurred, which were attributed to residential woodburning and mobile sources, respectively. Therefore, EPA's nonattainment areas were intended to capture the extent of these particular sources which could be contributing to observed violations of the $PM_{2.5}$ standard.

While EPA agrees with CARB that there are more localized impacts from residential woodsmoke emissions, as explained above, it does not agree that the contribution of mobile sources can be discounted based on the prospect of future controls. EPA views mobile source emissions as a significant component of regional $PM_{2.5}$ levels in the Sacramento Valley and elsewhere. It appears that the combination of this regional pollution and local woodsmoke emissions in certain areas leads to violations of the $PM_{2.5}$ standard, particularly during stagnant conditions. Considering this, EPA looked at the location of the violating monitors and the sources of both woodsmoke and nitrates to determine the appropriate boundaries, which are larger than what California recommended.

<u>Chicago, IL-IN</u>

The State of Indiana

Indiana:
The monitors in the Chicago area located closest to the Indiana State line … that should be more directly impacted by emissions from Lake and Porter County sources, are monitoring attainment of the 24-hour standard." Indiana feels that if it contributed to the violations in Illinois, the monitors near the State boundary would record higher concentrations. Indiana feels the violating monitors in Illinois are "most likely affected by localized emission sources.

EPA Response:
The fine particulate concentration in an area and thus the monitors measuring the concentration are influenced by emissions from a variety of sources. The concentration is the result of complex atmospheric chemistry that forms fine particulate from precursors and can change the distribution of directly emitted particulate. Fine particulate pollution is the result of emissions from local, urban, and regional-scale emissions. The emissions from a county do not have to cause a violation to be considered as contributing to a violation. Emissions from the area counties can increase the $PM_{2.5}$ concentration across the area which adds to regional background concentration. Emissions from some sources or clusters of sources can further raise the local

$PM_{2.5}$ concentration which results in a monitor or some area monitor recording a violation. A county does have to cause the "last microgram or few micrograms" that cause a monitor to record a violation. It just needs to add to the total concentration to be considered contributing. Lake and Porter Counties, Indiana have the second and fourth most direct $PM_{2.5}$ emissions in the 10-county nonattainment area. Lake County, Indiana has the second highest emissions in the area of the two main precursors, SO_2 and NO_X. The SO_2 and NO_X emissions from Porter County are higher than the emissions from other Chicago area counties. The level of $PM_{2.5}$, SO_2, and NO_X emissions from Lake and Porter Counties, Indiana are high enough to contribute to the violations in the Chicago nonattainment area.

Indiana:
Indiana requested Lake and Porter Counties be designated as a nonattainment area separate from the Illinois portion of the Chicago area. Indiana notes that seven of the 18 $PM_{2.5}$ monitors in the area violated the $PM_{2.5}$ standards for 2005-2007, the most recent complete period. Indiana feels that "it is unnecessary to extend the restrictions of a nonattainment area outside the Chicago area.

EPA Response:
EPA agrees that it is not necessary to extend the nonattainment area beyond the Chicago metropolitan area. In fact, EPA designated six counties within the Chicago combined statistical area as attainment including Jasper, LaPorte, and Newton Counties in Indiana. Indiana's comments does suggest it feels that Lake and Porter Counties, Indiana are not a part of the Chicago area. EPA has information that shows these counties are an integral part of the Chicago area. Commuting data shows that nearly 42,000 workers commute from Lake County, Indiana into Illinois and more 6,500 worker commute to Illinois from Porter County. Over 13,000 workers go into Lake and Porter Counties from Illinois. The Chicago $PM_{2.5}$ (1997 standards) and the ozone nonattainment areas both include Lake and Porter Counties, Indiana. Lake and Porter Counties are also included the Chicago combined statistical area as defined by the Census Bureau. EPA has concluded that Lake and Porter Counties in Indiana are an integral part of the Chicago area and thus should not be treated as a separate nonattainment area. Illinois and Indiana should work together to develop a plan to bring the entire area into attainment.

Indiana:
Indiana provided information on emissions from Lake and Porter Counties. It listed the $PM_{2.5}$ and NO_X emissions from the Indiana portion of the Chicago area and compares them to the emissions from the entire area. Indiana noted that "most of the area in Lake and Porter Counties is urban" and that the two counties emit 66.3 percent of NO_X and 75.3 percent of $PM_{2.5}$ emissions in the Indiana portion of Chicago. Indiana included a chart with the 2002, 2010, 2020, and 2030 emissions of $PM_{2.5}$ and NO_X for the Illinois portion, the Indiana portion, and the Chicago area. The chart shows the Indiana portion responsible for about 15 percent of the Chicago area emissions in 2002. That amount decreases in the future projections.

EPA Response:
EPA agrees that most of the emissions in the Indiana portion of the Chicago area are from Lake and Porter Counties. That is why EPA included Lake and Porter Counties in the Chicago nonattainment area and designated Jasper, LaPorte, and Newton Counties as attainment. It is not clear where the Indiana emissions data provided by the State is from. EPA used emission date

from the 2005 National Emissions Inventory is assessing areas for the designations under the 2006 $PM_{2.5}$ standards. The 2005 emissions from Lake and Porter Counties of $PM_{2.5}$ and NO_X are much higher than the 2002 Indiana portion totals the State provided. Indiana did not list SO_2 emissions on it chart. EPA also concluded that the $PM_{2.5}$, NO_X, and SO_2 emissions from Lake and Porter Counties contribute to the violations being monitored in the Chicago area. The future reductions projected on the table are impressive. As it is a projection, EPA cannot use this information in designation decisions.

Indiana:
Indiana stated that, "Lake and Porter Counties are subject to the most stringent group of emission controls within the State of Indiana. This collection of permanent and enforceable controls is equally as stringent as those applied elsewhere in the Chicago MSA and in some cases, more stringent.

EPA Response:
EPA commends Indiana for applying strict controls to its sources in Lake and Porter Counties. Reducing emissions throughout the Chicago area helps improve the air quality and move the area closer to attaining the air quality standards.

Indiana:
Indiana notes that vehicles registered in Lake and Porter Counties are subject to reformulate gasoline and vehicle inspection and maintenance programs. Indiana tests all 1976 model year and newer vehicles in its program. Indiana states that Illinois does not test pre-1996 model year vehicles in its program. Indiana feels that the Illinois program misses "high-emitters" by exempting pre-1996 vehicles.

EPA Response:
The Illinois inspection and maintenance program and others around the nation discontinued testing pre-1996 model year vehicles because there are few of these vehicles left in operation. Even though the vehicles do emit more, the decreasing number of vehicles remaining on the road means that the emission reductions from testing older vehicles are small. A large amount of mobile source emissions come from sources other that cars and light trucks, such as heavy trucks. The Lake and Porter Counties mobile source emissions from non-road sources had higher $PM_{2.5}$ and SO_2 and similar NO_X emissions as the on-road inventory (2005 NEI data).

Indiana:
NO_X emissions within Northwest Indiana area are projected to decline by almost 42 percent between 2005 and 2020.

> "[The] [e]mission reduction benefits from federal rules are factored into the changes. …Further, due to implementation of the NO_X SIP Call across the eastern Unites States, fine particles and precursors for fine particles emissions entering this area are also decreasing."

EPA Response:

As Indiana stated, the benefits of federal rules cutting emissions of $PM_{2.5}$ and its precursors are beginning to benefit the Chicago area and other areas throughout the nation. National emission reduction program help decrease the regional background concentration of $PM_{2.5}$. However, such future projected emissions reductions do not negate the obligation under section 107(d) for EPA to designate as nonattainment those areas that are violating, or contributing to violations of, the 200 PM2.5 NAAQS based on the most recent three years of data. Congress amended section 107(d) to eliminate provisions that previously directed EPA to base designations for selected NAAQS based on projected future attainment status (e.g., for SO2). Section 107(d) is now phrased in the present tense, and EPA interprets this provision to require designations based upon current facts, not some projected future facts. To the extent that current federal programs will result in near term emission reductions, these will be reflected in the nonattainment area SIPs developed for these areas, and thus will play an important role in helping these areas to attain the NAAQS as expeditiously as practicable. They are not, however, a basis for ignoring current violations or contribution to violations.

Indiana:
Over 80 percent of Lake County's workforce is employed within the county. Over 60 percent of Porter County's workforce is employed within the county, and the majority of those employed outside the county commute to Lake County, and not Chicago. Therefore, the portion of commute traffic with Chicago from Lake and Porter Counties is insignificant. Indiana adds, "gasoline-powered commuter vehicles are insignificant emitters of sulfates, which is the driving precursor for violating sites in Northeast Illinois."

EPA Response:
The commuting data helps show a link between the Illinois and Indiana portions of the Chicago area. Commuting data shows that nearly 42,000 workers commute from Lake County, Indiana into Illinois and more 6,500 worker commute to Illinois from Porter County. Over 13,000 workers go into Lake and Porter Counties from Illinois. There are also nearly 22,000 Porter County workers commuting into Lake County, Indiana. The number of workers commuting between the Illinois and Indiana portions of the area is large even if the percentages are not because of the large populations of the area counties. EPA does not agree that SO2 is the "driving precursor" in an area because the direct $PM_{2.5}$ emissions and all $PM_{2.5}$ precursor emissions in an area cumulatively add to the ambient $PM_{2.5}$ concentration in a violating area. The $PM_{2.5}$ concentration is not the result of one precursor solely. Reductions of direct emissions or in any precursor will benefit the air quality. Details about appropriate control strategies for any area, including the evaluation of which sources of which pollutants to control, consistent with the requirements of section 172, in order to attain the NAAQS expeditiously is among the questions the State and EPA will resolve during the development of the nonattainment area SIP for such area.

Indiana:
Indiana further analyzed the days that the monitoring levels in the Chicago area were substantially higher than the next highest monitor value in the region on that date, as shown below. Indiana then compared those days to wind data to determine the direction of prevailing winds during those days. … The comparison for the highest monitor value days for the Chicago monitors show winds from different directions with winds predominately from the east, south,

west, and southwest. Based on this sample of high fine particle monitor value days, while emissions from all surrounding areas may have small impacts, it is evident that there is no significant impact from Northwest Indiana. … Further analysis of high fine particle days included a back trajectory analysis. A back trajectory measures the winds at different heights in the atmosphere to determine from what locations pollutants may be picked up and transported to an area.

EPA Response:
Indiana examined the meteorology on only three days, October 27, 2004, February 3, 2005, and January 23, 2006. The conclusion that emissions from the Indiana portion of the area do not contribute to violations cannot be reasonably reached using such a small data set. As the $PM_{2.5}$ concentration in an area involves complex atmospheric reactions of the precursor pollutants that blend with direct $PM_{2.5}$ emissions, one cannot say the wind drew emissions from a downwind area to create the concentration being measured at a monitor. Therefore, EPA does not consider Indiana's hypothesis to be proved true from the limited sample it analyzed.

Indiana:
Culpability analysis prepared and submitted by Indiana to EPA on April 3, 2008 demonstrates that not only are Lake and Porter counties not culpable for monitored violations in northeast Illinois, counties designated as attainment in southeast Wisconsin are more culpable to measured levels in northeast Illinois than are Lake and Porter counties. Analysis of trajectory information for four days in which concentrations in Chicago were significantly higher than elsewhere indicated that three of these four days had winds from directions other than from Northwest Indiana.

EPA Response:
On April 3, 2008, Indiana submitted a request that EPA redesignate Lake and Porter Counties to attainment for the annual $PM_{2.5}$ standard; this submittal included culpability analysis for annual average $PM_{2.5}$ for various sites in the Chicago-Northwest Indiana area. Indiana provided a synopsis of this analysis as Appendix D of its comment letter to its 24-hour $PM_{2.5}$ designations submittal of May 30, 2008. EPA disagrees with this comment for the following reasons. First, this is not the proper forum for addressing culpability for annual average $PM_{2.5}$ concentrations. This analysis of culpability for annual average $PM_{2.5}$ concentrations does not clearly address contributions to 24-hour $PM_{2.5}$ concentrations. Second, based on 2005-2007 air quality data, Lake County, Indiana, now has a violating monitor for the 24-hour standard. EPA's analysis concludes that adjacent Porter County, Indiana (24,000 tons SO2; 30,000 tons NOx), is contributing to this violation. Third, the limited information presented in this analysis does not clearly demonstrate that Lake and Porter Counties do not contribute to other violating monitors in the Chicago nonattainment area. In fact, Indiana's analysis is reasonably consistent with EPA's findings, concluding not that Lake and Porter counties contribute on every day with high concentrations in Chicago, but that the winds carry significant emissions from those counties toward violating monitors in Illinois with sufficient frequency to warrant a determination that Lake and Porter counties contribute to violations in Chicago.

EPA Response to Additional Modeling Results Referenced in Indiana Comment Letter:

Indiana Department of Environmental Management (DEM) states that the fine particle contribution from Indiana's portion of the Chicago nonattainment area (Lake and Porter counties) is less than 1.0 $\mu g/m^3$ and that these results verify that Lake and Porter counties do not contribute significantly to measured values in Illinois.

The Comprehensive Air Quality Model with Extensions (CAMx) Particulate Source Apportionment Technology (PSAT) results shown by Indiana are using projected emissions in 2012 that do not reflect current emissions. These emissions include potential controls and reduction in motor vehicle emissions related to fleet turnover. Additionally, a current year modeling platform is necessary so model performance evaluation for the southwest part of Lake Michigan could be presented to show that the model is performing adequately in the region. The results are shown as an annual average, which is not consistent with the 24-hour average standard. The results show approximately a 1 ug/m^3 annual average contribution from Lake and Porter counties to an unidentified monitor in Chicago. A 2012 projected 1 $\mu g/m^3$ contribution for the annual standard of 15 $\mu g/m^3$ is clearly a significant contribution and for a short term standard like the 24-hour $PM_{2.5}$ NAAQS. This contribution could be much higher when monitors in the southwest region of Lake Michigan indicate a violation of the standard. This contribution would also be larger if current year emissions during 2005-2007 were used in the modeling analysis since mobile source emissions are higher and other projected 2012 controls would not be in place. For these reasons, the modeling submitted by Indiana is not appropriate for the purpose of designating the Chicago 24-hour $PM_{2.5}$ nonattainment area, but clearly shows a significant contribution to Chicago.

<u>Chico, CA</u>

CARB:
The only violating monitor in Butte County is located in the City of Chico, which has a 2007 Design Value of 55 $\mu g/m^3$. Chico, the largest urban area in Butte County, has a population three-to-five times other areas in the county. Based on the localized nature of the primary emission contribution to winter $PM_{2.5}$, CARB considers the urban area of Chico an appropriate nonattainment boundary for $PM_{2.5}$.

A diurnal analysis of concentrations at Chico and Gridley, during Chico exceedance days, highlights the localized nature of the $PM_{2.5}$ pollution episodes. The nighttime increases at Chico, the result of residential wood burning, are not reflected at the monitoring site at Gridley. The majority of exceedance days occur during periods of stagnant or low wind, keeping pollutants close to the emission sources.

EPA Response:
CARB has recommended only the City of Chico as the nonattainment area of Butte County. There are a number of reasons why EPA disagreed with this recommendation. In developing the boundaries for Butte County, EPA considered several factors contained in Agency guidance for $PM_{2.5}$ designations, including air quality data, emissions data, population data, commuting patterns, geography, topography, meteorology and other information such as CES scores, chemical speciation data, and wintertime inversion data. EPA also considered information provided by the State of California such as information on residential wood burning.

Exceedances of the $PM_{2.5}$ standard most often occur in Chico during the winter months and speciation data suggest that residential wood burning and mobile source emissions are the most important sources. Area source data show that residential wood burning is the dominant source of $PM_{2.5}$ and, therefore, could be linked to $PM_{2.5}$ exceedances measured in Chico. This data also suggests that other population centers in Butte County could experience high $PM_{2.5}$ levels as a result of residential wood burning. With respect to mobile sources, the Butte County inventory shows significant mobile source emissions which can also contribute to regional $PM_{2.5}$ pollution. Since both sources are associated with the population centers, EPA has determined that the nonattainment area in Butte County should include Chico, Paradise and Oroville, and Gridley.

The area recommended by California, namely the city limits of the City of Chico, does not include all of Chico's urban population nor does it include other population centers in Butte County, including Paradise, Gridley and Oroville. The total population of Butte County is 214,000. According to the 2000 US Census, the population of Chico was 59,444, the population of Paradise was 26,408 and the population of Oroville was 13,004. Moreover, the City of Chico has been experiencing significant growth, growing from 59,954 to 71,728 between 2000 and 2006, and we would expect future growth to continue extending beyond the existing city boundaries.

Finally, topography is considered to be an important factor given that inversion layers during the winter, when $PM_{2.5}$ exceedances typically occur, can contribute to higher pollution levels in the Sacramento Valley. In addition to affecting the City of Chico, these conditions are expected to create similar pollution conditions in areas with large populations and commuting patterns and, thereby, provide further reason to expand the nonattainment boundary beyond the City of Chico.

<u>Cincinnati-Hamilton, OH-KY-IN</u>

The State of Kentucky

Kentucky:
To have Boone County, Campbell County, and Kenton County designated nonattainment would invoke additional, substantial, unnecessary requirements on local government planning agencies with little or no benefit to the area. Substantial local emission reductions from Boone County have already occurred, or will have occurred well before attainment dates for this standard. Drastic emission reductions are scheduled to occur in the mobile sector throughout the next several years that will greatly impact pollutant levels in the area. Couple these changes with those anticipated by the CAIR, or its replacements, provisions which will further reduce SO_X and NO_X emissions within the region, and the air monitoring data demonstrating attainment of the $PM_{2.5}$ standard, and the result should be that these counties be designated attainment for the $PM_{2.5}$ standard.

EPA Response:
EPA's 9-factor analysis has determined that emissions from Boone County, Campbell County, and Kenton County contribute to violations in violations in nearby Hamilton and Butler counties, Ohio, and that it is appropriate to include these counties in the Cincinnati-Hamilton

nonattainment area. EPA believes that consideration of all 9 factors compels designating these counties nonattainment, consistent with the existing nonattainment boundary for the annual $PM_{2.5}$ standard. As stated in Section V, EPA determined the existence of violations of the 2006 24-hour fine particulate NAAQS based solely on the most recent three complete years of certified monitoring data. EPA is setting boundaries based on available current data and analyses that best represent present-day conditions, and not on projected emissions reductions that may occur after designation areas are finalized. This is consistent with the explicit provisions of section 107(d), that define "nonattainment" to be those areas that violate or contribute to violations of the NAAQS.

While EPA acknowledges that local emission reductions have been and continue to be achieved in the area, we are considering only the current emission controls in place for designation purposes. Any local emission reductions in the area that occur before the required attainment date will help further improve air quality and should be included in the attainment plan. However, the uncertainty of future emission reductions, and also any future new or expanded sources, renders assumptions about them unsuitable for use in establishing nonattainment area boundaries.

It is also important to note that Boone, Kenton, and Campbell Counties were designated in 2005 as contributing to violations of the annual $PM_{2.5}$ standard, and the area's design value of 17.3 $\mu g/m^3$ for the 2005-2007 period indicates that considerable emission reductions are still needed for the area to attain. Analysis of chemical composition data for Cincinnati indicates that the same components that make up most of the $PM_{2.5}$ mass in the area on an annual average basis (such as sulfate and direct $PM_{2.5}$ carbon) also are key contributors to the $PM_{2.5}$ mass on days exceeding the 24-hour $PM_{2.5}$ standard. In addition, these data show that nitrate (formed from NO_X emissions) can also be an important component on high days in the cool season. For example, nitrate was 44 percent of $PM_{2.5}$ mass on a cool season high day in the 2005-2007 period. These data indicate that the same source categories that contribute to violations of the annual standard also contribute to exceedances of the 24-hour standard. EPA concludes that counties that were designated as having emissions sources contributing to fine particle concentrations which continue to exceed the 1997 standards also contribute to fine particle concentrations on the highest days. This is another reason that EPA believes that Boone, Kenton, and Campbell Counties should be included in the nonattainment area for the 2006 24-hour standard as well.

The State of Kentucky makes the following points as additional rationale for excluding Boone, Kenton, and Campbell Counties from the Cincinnati nonattainment area.

Kentucky:
Kentucky believes that EPA's use of the contributing emissions scoring approach was skewed. A review of actual percentages of emissions contributions to the area shows that Boone, Kenton, and Campbell Counties do not have the potential to contribute to $PM_{2.5}$ levels within the region.

EPA response:
The CES is an initial screening tool used to determine potential nonattainment area boundaries which can then be modified using additional information provided by the State or other sources.

EPA has recommended other types of information for this purpose through guidance which could be considered in the final decision.

The CES for Boone, Kenton, and Campbell are lower than those for other contributing counties (Clermont, OH; Dearborn, IN) in the area. However, EPA does not find that emissions from these counties (Boone: 5383 tons of SO_2, 10852 tons NO_X, and 1600 tons direct $PM_{2.5}$; Kenton: 1300 tons SO_2, 6316 ton NO_X, 537 tons $PM_{2.5}$; Campbell: 730 tons SO_2, 4231 tons NO_X, 412 tons $PM_{2.5}$) are without the potential to contribute to $PM_{2.5}$ in the region. One key source of emissions located in Boone County is the Cincinnati-Northern Kentucky International Airport.

Kentucky:
Contributions from commuters and vehicle miles traveled in Boone, Kenton, and Campbell Counties have been shown to have no potential to impact $PM_{2.5}$ levels within the region when compared to the levels from other counties and therefore should not be used to determine nonattainment status for this county.

EPA Response:
EPA believes that commuting and vehicle miles traveled data are an important factor in the inclusion of these counties in the nonattainment area. Boone County has 1 million VMT and 43,000 commuters annually; Kenton County has 1.6 million VMT and 74,000 commuters annually; and Campbell County has 1 million VMT and 42,000 commuters annually. EPA has not suggested any threshold of significance for VMT and commuting, but EPA believes these VMT and commuting data indicate that these counties are an integral part of the Cincinnati-Hamilton urban area and that vehicle emissions from these counties are likely contributing to elevated fine particle concentrations on high days.

Kentucky:
The populations of Boone, Kenton, and Campbell Counties are not significant enough to have the potential to impact $PM_{2.5}$ levels in the region. Each county's population represents a small percentage of the population of EPA's proposed nonattainment boundaries.

EPA Response:
The 2005 population of Boone County is 106,000; Kenton County is 153,000; and Campbell County is 87,000. All three have a moderate level of population and population density when compared to other contributing counties in the area and across the country. Together, the population of the northern Kentucky counties is substantial at around 350,000. As noted above, the residents of these counties are responsible for a substantial amount of vehicle miles traveled and commuting in the Cincinnati area, and EPA believes this contributes to $PM_{2.5}$ NAAQS exceedances in the area.

Kentucky:
There are no violating monitors in Boone, Kenton, or Campbell County.

EPA Response:

These counties are being included in the nonattainment area on the basis of their contributions to air quality in nearby counties with violating monitors (Hamilton, OH with design value of 41 $\mu g/m^3$; Butler, OH with design value of 38 $\mu g/m^3$).

Kentucky:
Duke Energy East Bend Station Unit 2, which is located in Boone County, Kentucky, is an electric power generating station consisting of one pulverized coal-fired, dry bottom, wall-fired boiler. The boiler (Unit 02) has an input capacity of 6313 mmBtu/hr. Unit 2 is equipped with an electrostatic precipitator (ESP), FGD unit, low nitrogen oxide burners and a SCR unit. As can be seen in the table on page 11 of Kentucky's comment letter, these controls provide for significant reductions in precursor $PM_{2.5}$ pollutants. Although at this point in time it is uncertain what reductions can be attributed to CAIR or its replacement, it is certain that some manner of control similar to CAIR will be implemented. This will further reduce these emissions since the SCR should be operated year-round instead of only during the ozone season. Kentucky's NO_X SIP Call regulations remain in effect and if CAIR continues to be in limbo will cover the 2009 allocation timeframe.

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

EPA acknowledges that the East Bend Station in Boone County has emission controls in place for both SO_2 and NO_X. Emissions in 2007 were 2452 tons of SO_2 and 5563 tons of NO_X. However, EPA has not included Boone County in the nonattainment area solely on the basis of the presence of the East Bend plant. Based on the amount of emissions from the plant, the geographic location of the plant, and the meteorological data for this area, and the speciated data for this area indicating that such emissions play a role in the formation of the ambient PM2.5 in this area, EPA has concluded that this source still contributes to violations in the area, as that term is intended in section 107(d). Therefore, it is appropriate that the State and EPA will evaluate the source in the nonattainment area SIP development process.

EPA notes that reductions required by CAIR, or any replacement rule under section 110(a)(2)(D) or section 126, to reduce interstate transport would not be in lieu of the requirements under section 172 for nonattainment areas. Thus, additional controls may also be necessary for local attainment needs. Section 110(a)(2)(D) and section 126 address a different issue than section 107(d).

A number of other factors in EPA's decision for inclusion of Boone County are explained in the responses above.

Kentucky:
The air monitoring data demonstrates attainment of the PM2.5 Standard.

EPA Response:
Although there are no ambient monitors in Boone and Campbell Counties and the ambient monitor in Kenton County currently shows attainment, there are several violating monitors in

nearby Hamilton County, which has a design value of 41 $\mu g/m^3$, based on 2005-2007 data. Analysis of all additional data described in the TSD indicates these counties are contributing to the violating monitor. Section 107 requires designation of areas that, although not they themselves violating, are contributing to nearby nonattainment.

The State of Indiana

Indiana:
AEP-Tanners Creek (in Dearborn County) will be installing Selective Non-Catalytics Reduction (SNCRs) on three of its four units, with operation to begin in mid-2009. This will achieve an additional 30 percent reduction in NO_X. Indiana believes that emissions from Dearborn County do not affect the downwind area's ability to attain the 24-hour standard. EPA must substantiate its assumption that this township is contributing to upwind monitored violations with source apportionment analysis and a model-based culpability analysis.

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

EPA disagrees with Indiana regarding its claim that emissions from the Tanner's Creek power plant located in the existing partial county nonattainment area in Dearborn County do not contribute to $PM_{2.5}$ concentrations in Cincinnati. EPA's analysis has evaluated emission levels, speciation data, evidence from the pollution rose and other meteorological data for this area that there is contribution from the direction of this source to the rest of the nonattainment area, and the level of emission controls on the source. The Tanner's Creek plant has four units, none of which have a scrubber or SCR. Emissions in 2005-2007 were substantial: in the range of 33,000 to 46,000 tons of SO_2 and about 9000 tons NO_X. The plant is located close by, about 17 miles from the closest violating monitor. EPA is assessing current contributions to current violations, regardless of whether emissions may decline in the future, consistent with the requirements of section 107(d). Indiana does not address SO_2 emission control at this plant; SO_2 emissions are currently relatively high, and EPA expects SO_2 emissions from this facility to remain relatively high

Cincinnati is an existing $PM_{2.5}$ nonattainment area which has not attained the 1997 standards. Its 2005-2007 annual design value is still well above the standard at 17.3 $\mu g/m^3$, indicating that considerable emission reductions are still needed for the area to attain. Analysis of chemical composition data for Cincinnati indicates that the same components that make up most of the $PM_{2.5}$ mass in the area on an annual average basis (such as sulfate and direct $PM_{2.5}$ carbon) also are key contributors to the $PM_{2.5}$ mass on days exceeding the 24-hour $PM_{2.5}$ standard. In addition, these data show that nitrate (formed from NO_X emissions) can also be an important component on high days in the cool season. For example, nitrate was 44 percent of $PM_{2.5}$ mass on a cool season high day in the 2005-2007 period. These data indicate that the same source categories that contribute to violations of the annual standard also contribute to exceedances of the 24-hour standard. EPA concludes that counties that were designated as having emissions sources contributing to fine particle concentrations which continue to exceed the 1997 standards also contribute to fine particle concentrations on the highest days. This is another reason that

EPA believes that Dearborn county should be included in the nonattainment area for the 2006 24-hour standard as well.

EPA also disagrees with the commenter's supposition that EPA must "substantiate its assumption that this township is contributing to upwind monitored violations with source apportionment analysis and a model-based culpability analysis." Nothing in section 107(d) requires that a modeling analysis be conducted to determine a "contribution" and to make a nonattainment designation. The best available evidence indicates that Dearborn County contributes to violations in the Cincinnati area.

Clarksville, TN-KY

The State of Tennessee

Tennessee:
The State of Tennessee believes that Montgomery County should be classified as "unclassifiable" by the December 18, 2008, deadline, and that monitoring data support the State's declaration that Montgomery County will measure attainment. The State of Tennessee claims that ambient $PM_{2.5}$ data for 2007 may be skewed by the impact of Georgia and Florida wildfires during 2007. Data for 2008 will be certified before the February 2009 deadline to have relatively low readings for 2006-2008 considered.

The State of Tennessee believes Stewart County and Humphreys County should be classified as "attainment." However, if EPA designates Humphreys and Stewart Counties as nonattainment, the State believes EPA should designate only significantly contributing portions of Humphreys and Stewart Counties. The State notes that EPA has previously concluded that a partial area of a county may be designated nonattainment if that partial area includes the emissions point of concern. Tennessee believes this same situation exists for both counties of Humphreys and Stewart, if both are non-attaining. The State of Tennessee proposes as boundaries for the partial areas census block groupings that include the Tennessee Valley Authority (TVA) New Johnsonville Fossil Plant in Humphreys County and TVA Cumberland Fossil Plant in Stewart County.

EPA Response:
EPA finds that ambient monitoring data for Montgomery County is complete for 2005 – 2007 and therefore there is no basis to designate the county "unclassifiable" at this time. Therefore, EPA must designate Montgomery nonattainment based on valid data for 2005 - 2007.

EPA acknowledges Tennessee has proposed as boundaries for the partial areas census block groupings that include the TVA New Johnsonville Fossil Plant in Humphreys County and TVA Cumberland Fossil Plant in Stewart County. EPA agrees with the proposed census block boundaries and is designating only the contributing portions of Humphreys and Stewart Counties.

EPA acknowledges that SO_2 and NO_X emissions have declined at TVA Cumberland Fossil Plant and TVA Johnsonville Fossil Plant. However, EPA has determined that, even at current reduced

emission levels, the surrounding partial-county areas should be designated as nonattainment based on their contribution to the violating monitor in nearby Montgomery County.

Tennessee:
The primary sources of concern are two coal-fired power plants: the TVA New Johnsonville Fossil Plant in Humphreys County and TVA Cumberland Fossil Plant in Stewart County. The proposed boundaries for the partial areas that include these power plants are census block groupings as listed in Table 1 and mapped in Attachment 1 (Humphreys County) and Attachment 2 (Stewart County) of Tennessee's comment letter.

If EPA determines that Humphreys and Stewart Counties must be designated as nonattainment, the EPA should designate only the census block groupings indicated in Table 1 and the attachments. At each of the TVA power plants, SO_2 and NO_X emissions continue to decline, and any further control methodologies would be federally enforceable through operating permit conditions and continued NO_X SIP Call provisions within Tennessee Air Pollution Control Regulations. As stated in TVA's letter to EPA, dated October 1, 2008, TVA Cumberland Fossil Plant in Stewart County has two combustion units with each unit's emissions controlled with low-NO_X burners, SCRs, ESPs, and wet limestone scrubbers. Also, the TVA Johnsonville Fossil Plant in Humphreys County continues to utilize electrostatic precipitators and selective non-catalytic reduction as emission controls on all ten units.

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

The CAA requires that a nonattainment area must include not only the area that is violating the standard, but also nearby areas that contribute to the violation. Thus, for each monitor or group of monitors that indicate violations of a standard, EPA is establishing nonattainment boundaries that cover a sufficiently large area to include both the area that violates the standard and the areas that contribute to the violations. The Clarksville area includes the TVA New Johnsonville Fossil Plant in Humphreys County (2007 emissions: 65,000 tons SO_2 and 19,000 tons NO_X) and TVA Cumberland Fossil Plant in Stewart County (2007 emissions: 17,000 tons SO_2 and 33,000 tons NO_X). The New Johnsonville Plant currently has no scrubbers or SCR installed on its 10 units. The Cumberland Plant, while relatively well-controlled, still has high SO_2 and NO_X emissions and is located in close proximity to the violating monitor. EPA has concluded that these sources do factually contribute to the violations in the nearby area, notwithstanding the current level of control at the Cumberland plant. Under section 107(d), EPA believes that the level of control of emissions from a source is a relevant inquiry in the designations process to assure that EPA and the State are using up to date and accurate emissions information. EPA does not believe that the level of control alone should be used as a basis to exclude from a nonattainment area a source that is otherwise deemed to be contributing to the violations based upon information such as its amount of emissions, geographic location, and meteorological connection to the nearby violating area.

The State of Kentucky

Kentucky:
To have Muhlenberg County designated nonattainment would invoke additional, substantial, unnecessary requirements on local government planning agencies with little or no benefit to the area. Substantial local emission reductions from Muhlenberg County have already occurred, or will have occurred well before attainment dates for this standard. Drastic emission reductions are scheduled to occur in the mobile sector throughout the next several years that will greatly impact pollutant levels in the area. Couple these changes with those anticipated by the CAIR, or its replacements, provisions which will further reduce SO_X and NO_X emissions within the region, and the air monitoring data demonstrating attainment of the $PM_{2.5}$ Standard, and the result should be that these counties be designated attainment for the $PM_{2.5}$ Standard.

EPA Response:
EPA commends Muhlenberg County for local emission reductions that have been and continue to be achieved. However, EPA's 9-factor analysis has determined that emissions from Muhlenberg County contribute to nonattainment in Montgomery County, Tennessee, and that it is appropriate to include this County in the Clarksville nonattainment area. EPA believes that consideration of all nine factors compels designating this County nonattainment, in particular the boundaries surrounding the TVA Paradise Power Plant and the Kentucky Utilities Green River Power Plant. As stated in Section V, EPA determined violations of the 2006 24-hour fine particulate NAAQS based solely on the most recent three complete years of certified monitoring data. EPA is setting boundaries based on available data and analysis that best represents present-day conditions, and not on projected emissions reductions that may occur after designation areas are finalized.

The State of Kentucky makes the following points as additional rationale for excluding Muhlenberg County from the Clarksville nonattainment area.

Kentucky:
Kentucky believes that EPA's use of the contributing emissions scoring approach was skewed. A review of HYSPLITS on days of high monitor readings shows that Muhlenberg County does not have the potential to contribute to $PM_{2.5}$ levels within the region.

EPA Response:
EPA disagrees with Kentucky that the HYSPLIT analysis is more refined than the CES. First, the HYSPLIT trajectories submitted by the State show only days between 2004 and 2006. Since Clarksville, TN violated the 24-hour NAAQS with data collected from 2005 to 2007, data from that three-year period were used to calculate the CES for the area. Furthermore, EPA trajectories were calculated for each "high" day at three hour intervals across the day with each of the eight start times starting at four heights at or below the mixing height. They were calculated at specific hours during which the air would have arrived at the site during the high day.

Second, the trajectories presented by Kentucky all arrive at the site six hours after the end of the high day. This is not as accurate in determining whether air was passing over a contributing area on the actual day of the exceedance. Air could have been coming from other directions and over other land areas during the high day in question which would not be reflected in trajectories arriving at the site after the high day. EPA began trajectories at or below the mixing height in all

instances. Only those points along the trajectory that remained within the mixing layer were used in computing the CES. It is not certain whether the three starting heights the State used for their backward trajectories were started at or below the mixing height. Also, since EPA started trajectories at four starting heights within the mixing layer for eight different starting times, there were a total of 32 trajectories to examine to see if the air parcels followed consistent paths throughout the day. This level of robustness was not captured by the State whose examples show several days where the three trajectories that were run do not consistently follow the same path to Montgomery County, TN. When examining backward trajectories started at staggered starting times across the "high" day and at multiple starting heights, there are days when the trajectories consistently pass over Muhlenberg County on their way to the Montgomery County, TN.

Lastly, the results of the State run trajectories are plotted on maps with only State boundaries given. This provides no sense of spatial resolution as to where Muhlenberg County is located in relation to the trajectory paths.

Kentucky:
TVA Paradise, which is located in Muhlenberg County, is a facility that consists of three cyclone-furnace coal-fired boilers. All three coal-fired boilers are equipped with staged overfire air and selective catalytic reduction modules for nitrogen oxides emission control. Boiler Units 1 and 2 are equipped with venturi-type limestone slurry flue gas desulfurization scrubbers for SO_2 and particulate control. Boiler Unit 3 is equipped with an electrostatic precipitator and a wet limestone FGD scrubber for particulate and SO_2 control. The Unit 3 FGD scrubber that came online in 2006 has significantly reduced the TVA Paradise SO2 emissions by 49,704 tons per year (tpy) given the Unit 3 2005 emissions (53,519 tpy) compared to the Unit 3 2007 emissions (3,815 tpy). TVA Paradise's total SO2 emissions in 2005 were 84,401 tpy while in 2007 its SO_2 emissions had decreased to 33,818 tpy due to the addition of the Unit 3 scrubber. In addition, although not considered as BART since TVA had previously related to the Kentucky Division of Air Quality (KYDAQ) its intent to install controls to mitigate SO_2 emissions at TVA Paradise, TVA plans to install hydrated lime injection controls on TVA Paradise Units 1-3 at to address SO_2 emissions and improve visibility at Class I areas. Given the TVA Paradise existing emission controls that are in place that have significantly reduced the emissions at TVA Paradise and additional controls planned, KYDAQ requests that EPA reconsider its decision and not designate Muhlenburg County as nonattainment for the 24-hour particulate matter standard (see table on page 28 of Kentucky comment letter).

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

In regard to the TVA Paradise plant in Muhlenberg County, an important consideration for EPA is the level of emissions and contribution from the plant even with emission controls in place. As noted in the State's comment above, the TVA Paradise plant now has scrubbers and SCR in place on all three units, yet 2007 emissions were still substantial: 33,000 tons of SO_2, and 43,000 tons of NO_X. In addition to the TVA Paradise plant, the smaller Green River power plant is also located nearby in Muhlenberg County. It has two units without scrubbers or SCR, and 2007

emissions totaling 22,000 tons of SO_2 and 2000 tons of NO_X. Thus, based on the most recent information available, the two main sources of emissions in Muhlenberg County account for 55,000 tons of SO_2 and 45,000 tons of NO_X per year. In addition, meteorological data indicate that, on high $PM_{2.5}$ days, emissions from Muhlenberg County can be transported to the location of the violating monitor.

Under section 107(d), EPA believes that the level of control of emissions from the source is a relevant inquiry in the designations process to assure that EPA and the State are using up to date and accurate emissions information. EPA does not believe that the level of control alone should be used as a basis to exclude from a nonattainment area a source that is otherwise deemed to be contributing to the violations based upon information such as its amount of emissions, geographic location, and meteorological connection to the nearby violating area. Based upon this evidence relevant to designations, in accordance with section 107(d), EPA has concluded that emissions from Muhlenberg County are contributing to violations in the Clarksville area. Thus, these sources will be evaluated by the State and EPA for additional cortrols, as necessary, in the development of the nonattainment area plan for this area. It would be premature to determine whether such sources are adequately controlled for local nonattainment area needs at this time.

Kentucky:
Muhlenberg County, a county that is not in the Clarksville MSA and is geographically separated from Montgomery County by other counties not proposed as nonattainment, should not be identified as contributing to such nonattainment status, and therefore should not be included within the nonattainment boundary for the Clarksville nonattainment area.

EPA Response:
EPA agrees that, like Humphries County, TN, Muhlenberg County is not in the Clarksville metropolitan statistical area and is geographically separated from Montgomery County, TN, the site of the violating monitor by other counties not proposed as nonattainment. However, based on high emissions from the power plants in these counties, coupled with meteorological data indicating wind direction from these counties, EPA believes sources in Humphries County, TN, and Muhlenberg County do contribute to the violating monitor in Montgomery County, TN and thus must be included within the designated nonattainment area.

Kentucky:
EPA's proposal finds that only two of its nine delineated factors weigh in favor of designating Muhlenberg County as contributing to violations of the standard in Clarksville, Tennessee. The results of EPA's assessment of the other seven factors should warrant designation of Muhlenberg County as attainment.

EPA Response:
Section 107(d)(1)(A)(i) of the Act specifies that a nonattainment area shall include "any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant." Based upon emission levels and emissions from electric generating units in Muhlenberg County, EPA believes Muhlenberg County contributes to ambient air quality that does not meet the 24-hour

$PM_{2.5}$ NAAQS in the Clarksville area. EPA considered all of the nine factors as well as other data in each area in determining whether the area as a whole contributed to nearby violating monitors. If a few factors weighed heavily in a conclusion that an area contributed, the area would be included in the nonattainment area even if several other factors weighed less significantly. Further, the nine factors are not all equivalent measures of potential nonattainment, and certain factors could carry more weight in a given nonattainment area. Based upon its analysis of all the data, EPA continues to conclude that these areas should be included in the Clarksville nonattainment area.

Kentucky:
The air monitoring data demonstrates attainment of the $PM_{2.5}$ Standard.

EPA Response:
Although there are no ambient monitors in Muhlenberg County, the air monitoring data demonstrates violating monitors in nearby Montgomery County, TN, which has a design value of 38 $\mu g/m^3$, based on 2005-2007 data. Analysis of all additional data described in the TSD indicates that Muhlenberg is contributing to the violating monitor. Section 107 requires designation of areas that, although not violating, are contributing to nearby nonattainment.

Cleveland-Akron-Lorain, OH

Ohio:
The State of Ohio objected to EPA's inclusion of Ashtabula Township, Ashtabula County within the Cleveland nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS. Among other arguments, Ohio explained that a significant change of circumstances at the power plant in Ashtabula Township had drastically reduced emissions at that plant:

> "The actual emissions from Cleveland Electric Illuminating power plant, located in Ashtabula Township (Ashtabula Co.), are less than a three percent (3 percent) of its allowable emissions. Besides having electrostatic precipitators, the plant has only operated one unit since 2002. In addition, Ashtabula County has insignificant emissions due to low population and insignificant commuting traffic. Ohio EPA believes the above factors demonstrate that Ashtabula is not contributing to the $PM_{2.5}$ problems in this nonattainment area. Moreover, a Cleveland area windrose (enclosed) shows that, for most of the time, the wind is coming from the southwest; consequently it is likely that high pollution levels being detected in Ashtabula County are coming from counties south and west of this County and not from local sources."

By letter dated December 9, 2008, Ohio subsequently established that three of the four boilers at this plant have permanently shut down, that the permit for operating these boilers has expired, and that these boilers are now prohibited from operating. This letter confirmed that the reductions of emissions from this plant are thus permanent.

EPA Response:

See the overview response to comments on power plant issues, located at the beginning of Section IV.

EPA has determined that Ashtabula Township does not contribute to violations of the 2006 24-hour $PM_{2.5}$ NAAQS in the Cleveland area, and thus has concluded that it is not necessary to include it within the designated nonattainment area. EPA notes that it is not the decrease in emissions in the abstract that compels this conclusion. EPA has considered the permanent decrease in emissions at the source in light of other information relevant to the designation. With these shutdowns, the source has decreased its emissions substantially. These reductions have already occurred, and are not future or contingent reductions. Based on data from the first six months of 2008, emissions from this plant were about 1500 tons SO_2 and 500 tons NO_X (equating to estimated annual emissions of 3000 tons SO_2 and 1000 tons NO_X).

These smaller amounts of emissions have rendered the source a relatively small source in the context of the Cleveland area. These reductions should be viewed in terms of the meteorological data and other information relevant to the Cleveland area for the 2006 24-hour $PM_{2.5}$ NAAQS. EPA examined back trajectory information for days with high concentrations at the area's violating monitors, and found that winds blow occasionally but less frequently from Ashtabula County on these critical days than from other area counties. The pollution rose for a critical monitor in Cuyahoga County (representative of conditions under which high concentrations occur in the area) indicates that impacts from the direction of Ashtabula Township to the violating monitors in Cuyahoga and Summit Counties are relatively low, compared to contribution from other areas. The CES score provides an integrated consideration of emission levels and frequency of being upwind; the CES scores for the Cleveland area counties indicated that Ashtabula County has among the smallest contributions to the Cleveland area. As noted elsewhere, EPA believes that the designations for the 2006 24-hour $PM_{2.5}$ NAAQS must be based on the facts and circumstances of each geographic area. Unlike other partial counties within Ohio, EPA believes that the source in Ashtabula Township is not contributing to violations of the 24-hour $PM_{2.5}$ NAAQS in a nearby area.

It should be noted that EPA does not agree with other arguments made by Ohio to support exclusion of Ashtabula Township from the Cleveland area. The fact that actual emissions from the plant are only 3 percent of "allowable emissions" does not eliminate the possibility for contribution, and in fact would raise concerns that the source could drastically increase emissions consistent with its allowable limits. The concept of "allowable emissions" is not germane to the designations process under section 107(d), and the fact that a source might be able to emit some amount of a pollutant without violating other Federal or State statutory, regulatory, or permit limits does not establish whether that source is contributing to violations of a NAAQS in a nearby area. Similarly, the fact that the source has certain controls is relevant, but does not answer whether the source is contributing notwithstanding the level of control. The amount of population in and commuting from Ashtabula County were not under consideration as a basis for inclusion of Ashtabula Township; that proposed inclusion was based upon concerns about the amount of emissions from the electric generating plant. While EPA agrees that the pollution rose for the Cleveland area does support the exclusion of Ashtabula Township, EPA would not agree that winds are always blowing from the southwest in this area, or that all pollution transport in this area of the country always comes from that direction. To be clear, EPA believes that the

pollution rose, the CES score, and the back trajectories for this area all reasonably support the conclusion that the source in Ashtabula Township is not contributing to violations of the 2006 $PM_{2.5}$ 24-hour NAAQS in Cuyahoga and Summit Counties

It should also be noted that EPA's decision not to include Ashtabula Township within the Cleveland nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS does not affect or negate the inclusion of Ashtabula Township within the Cleveland nonattainment area for the 1997 annual $PM_{2.5}$ NAAQS. To the extent that emissions of direct $PM_{2.5}$, SO_2, and NO_X from the source in Ashtabula Township contribute to violations of the annual $PM_{2.5}$ NAAQS in the Cleveland area, Ohio will be required to evaluate those emissions, and control them as appropriate, to provide for attainment of the annual $PM_{2.5}$ NAAQS as expeditiously as practicable in this area.

Columbus, OH

Ohio:
The State of Ohio objected to EPA's proposed inclusion of Franklin Township, Coshocton County, within the nonattainment area for Columbus for the 2006 24-hour $PM_{2.5}$ NAAQS. In its October 8, 2008, letter, Ohio generally objected to this on the grounds that "the existence of an electric generating unit in a township should not be the sole factor in determining nonattainment." More specifically, Ohio argued in that letter that Franklin Township should be excluded because the source located there is adequately controlled, or will be in the future:

> "The emissions from the Conesville power plant located in Franklin Township (Coshocton Co.) have long been controlled with efficient control equipment, and some of the units are expected to have additional controls by the year 2009. Currently there are four operating units and two units that shut down permanently in 2006. Besides electrostatic precipitators, these operating units have installed or are planning to install flue gas desulfurization systems. Moreover, the largest unit (800 MW) will have a SCR system in place and operating for the entire ozone season, starting in June 2009. In addition this unit (800 MW) will have SCR equipment in continuous operation (the whole year) starting in year 2011, increasing the nitrogen oxides emission reductions."

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

EPA disagrees with the reasons provided by Ohio for exclusion of Franklin Township from the Columbus nonattainment area. First, Ohio is incorrect that the "existence" of the source is the sole reason for EPA's inclusion of Franklin Township. EPA's analysis has evaluated not just the existence of the source, but also other considerations including: the significant quantity of emissions of the pollutants (including $PM_{2.5}$ precursors and directly emitted $PM_{2.5}$) that speciated $PM_{2.5}$ data in this nonattainment area show to be of concern; evidence from the pollution rose for this area that there is contribution from the direction of this source to the rest of the nonattainment area; and the CES score that likewise indicates that emissions from Franklin Township contribute to violations in the Columbus area.

For example, emissions information available to EPA indicates that the Conesville plant currently emits approximately 100,000 tons per year of SO_2 (over 106,000 tons in 2005, over 90,000 tons in 2006, and over 114,000 tons per year in 2007). Similarly, the emissions of NO_X from this source are approximately 20,000 tons per year. Emissions of this magnitude place the Conesville plant among the largest sources of $PM_{2.5}$ precursors in the country and make it the largest individual source in the Columbus area. Meteorological data derived in support of the CES scores show that elevated levels of ambient $PM_{2.5}$ in some cases occur on days when winds are blowing generally from the direction of Franklin Township towards the rest of the Columbus nonattainment area. This conclusion is further supported by the CES scores for the Columbus area, which includes a score of 16 for Coshocton County (principally attributable to Franklin Township), a score that is higher than for other counties in the Columbus nonattainment area that Ohio agrees should properly be within the nonattainment area. Based upon this evidence relevant to designations in accordance with section 107(d), EPA concluded that emissions from Franklin Township are "contributing" to violations in Columbus. In the context of the nonattainment SIP for this area, Ohio will have the opportunity and the obligation to perform further analysis and attainment demonstration modeling that can further explore the contribution of the source and the appropriate course of action to reduce that contribution.

EPA also disagrees with Ohio's conclusions relating to the level of control of the Franklin Township source as a basis for excluding it from the nonattainment area. As noted above, EPA has concluded that the source in Franklin Township does contribute to the violations, notwithstanding its current level of control. Under section 107(d), EPA believes that the level of control of emissions from the source is a relevant inquiry in the designations process to assure that EPA and the State are using up to date and accurate emissions information. EPA does not believe that the level of control should be used as a basis to exclude a source that is otherwise deemed to be contributing to the violations, based upon information such as its amount of emissions, geographic location, and meteorological connection to the nearby violating area. Whether sources in an area that is violating or is contributing to violations of the NAAQS are adequately controlled is more appropriately assessed during the development of the nonattainment area SIP for an area. Section 107(d) does not require EPA, in essence, to construct a mock-up nonattainment area plan for an area and to predetermine appropriate levels of pollution control on behalf of the State, as a necessary step in promulgating the designation for the area. In short, the level of control of a source does not in isolation answer whether the source is contributing to the violations.

For example, Ohio argues that this plant is currently well controlled but will have additional controls, either in 2009 or in some unspecified future plans. As noted above, EPA has concluded that this source currently has particularly high levels of $PM_{2.5}$ and $PM_{2.5}$ precursor emissions and that other information such as meteorological data confirms that these emissions are contributing to violations in the Columbus area. This contribution is occurring, notwithstanding that the source in question has some significant pollution controls in place. By inclusion of Franklin Township within the nonattainment area, Ohio and EPA will evaluate this source as part of the development of the nonattainment area plan to assure that it is adequately controlled and controlled in a timely fashion, to provide for expeditious attainment of the 24-hour $PM_{2.5}$ NAAQS in the Columbus area as required by the CAA. This inquiry may conclude that the

source is appropriately controlled, but that assessment must occur during the proper process contemplated by the CAA for development of nonattainment area plans.

With respect to future or planned future emissions reductions at the source, EPA has concluded that for evaluating contribution for designations under section 107(d), it is appropriate to look at the actual level of emissions in the relevant three year period, whether 2005-2007, or 2006-2008 if a State elects to submit additional data for 2008. Given the present tense formulation of section 107(d), EPA does not believe it is appropriate to base designations on projections of the future. Thus, Ohio has indicated that the source in Franklin Township is installing a scrubber and SCR on its largest unit that will be operational in the ozone season in 2009, and operational year round in 2011. Although EPA supports these important steps by the source, they nevertheless will result in emissions reductions that will happen beyond the period that is appropriate for consideration in the designations process. However, these reductions will occur during the time that Ohio is developing the nonattainment area plan for this area, and they may properly be taken into account during that process. Ohio may conclude, and EPA may ultimately agree, that these reductions of SO_2 and NO_X are all that is necessary to reduce NO_X emissions from this specific source within the $PM_{2.5}$ nonattainment area plan for Columbus, but it would be inappropriate to prejudge that outcome now.

Davenport-Moline-Rock Island, IA-IL

The State of Illinois

Illinois:
The Illinois Environmental Protection Agency has worked closely with the Iowa Department of Natural Resources (DNR) to perform the following technical analyses, and both States agree that Rock Island County does not contribute to violations of the 24-hour $PM_{2.5}$ standard in Davenport.

EPA Response:
EPA reviewed the additional information provided by Illinois including modeling analyses. The modeling shows a minor contribution from the Rock Island point sources. Some additional contribution is expected from area and mobile sources from the urbanized areas of Rock Island County, Illinois and Scott County, Iowa. So even with violating monitoring being highly affected by a local source, sources from the entire urban area also contribute to violation. Contributing counties are designated as nonattainment, even if the contribution is minor. EPA is designating partial county areas in Scott County, Iowa and Rock Island County, Illinois to include the sources contributing to the monitored violations in Davenport.

EPA Response to Additional Modeling Results Referenced in Illinois Comment Letter:
The AERMOD modeling performed by Illinois EPA is not documented with any supporting information. No information is given about the methodology used for the application of AERMOD. For instance, the approach to incorporate concentrations associated with calm wind speeds and the selection of "urban/rural" deposition will make a noticeable difference in model estimates.

Illinois EPA asserts that the maximum impact of all Rock Island County sources combined is 1.17 μg/m^3 based on their AERMOD simulations. These AERMOD simulations include eight stationary point sources, which are unlikely to be inclusive of all point sources in the county. Additionally, this analysis does not include any other anthropogenic emissions such as mobile sources and area sources. If all anthropogenic sources were included in addition to the eight stationary sources, the impacts would be even larger than Illinois EPA's estimated 1.17 μg/m^3, which in itself could be considered a significant contribution.

Illinois EPA asserts that when using CAMx zero-out modeling, all anthropogenic emissions sources in Rock Island County contribute a maximum of 2 ug/m3 in Davenport. This could be considered significant.

Illinois EPA asserts that Rock Island County contributes less than 1 percent of each sulfate, nitrate, and primary $PM_{2.5}$ on the highest 2 percent of $PM_{2.5}$ concentration days in 2002 using CAMx source apportionment applied with a Central Regional Air Planning Association (CENRAP) modeling platform. EPA agrees that these results indicate that Rock Island sources have a limited impact on secondarily formed particulate impacting the grid cell containing the violating monitor. However, given the uncertainties in the modeling, as described further in the TSD, EPA finds the results informative but not conclusive about the impacts of Rock Island's emissions on the violating monitor. The modeling results do not support the State's position that emissions sources in Rock Island do not contribute to the violating monitor.

The State of Iowa

Iowa:
The Davenport/Scott County monitor is located 150 meters from Blackhawk Foundry. The monitor records exceedances on days when other area monitors record relatively lower values. In addition, pollution roses indicate that the greatest differences in readings between the Blackhawk Foundry monitor and another local monitor (the Jefferson School monitor) occur when winds blow from the foundry toward the monitor, suggesting influences from foundry emissions.

EPA Response:
The comments relating to proximity of the Davenport (Blackhawk Foundry) monitor to a source and the comparison of exceedance day readings to readings at other monitors raise many of the same issues as described in the Muscatine section of this document. EPA incorporates its response regarding the Muscatine monitor in its response regarding Davenport. EPA also notes that the Davenport monitor is a federal reference method, source-oriented middle scale monitor, eligible for comparison to the 24-hour $PM_{2.5}$ NAAQS, and that Iowa has not raised issues concerning the siting of the monitor or validity of data collected at the monitor.

EPA acknowledges that the pollution roses provided by the state indicate large differences in monitored readings between Blackhawk Foundry and other monitors on exceedance days. However, as described below, we are unable to conclude on this basis that contributions from Blackhawk Foundry alone are the sole basis for the monitored exceedances.

Iowa:
PSAT simulation is consistent with the zero-out results (discussed above), showing very small contributions from sulfate and nitrate emissions sources in Rock Island County, and similar contributions from Scott and Muscatine Counties to particulate sulfate and nitrate concentrations at the violating monitors.

EPA Response:
EPA agrees that the primary contributing pollutant from local sources in the area to the violating monitors is direct $PM_{2.5}$ rather than precursor emissions. EPA's analysis of this information is discussed in more detail in the TSD for Scott and Muscatine counties. However, as explained elsewhere, EPA believes that other nearby sources of $PM_{2.5}$ in each area nonetheless contribute, or have the potential to contribute. (See also, the discussion of contributing emissions in the TSD for Rock Island.)

Iowa:
Iowa has re-reviewed the nine factors, in particular wind roses in the two areas, as well as the growth pattern in Rock Island County (which the commenter states indicates negative growth for the foreseeable future), and believes that the data support the smaller boundary originally recommended by the State.

EPA Response:
EPA has carefully considered all of the information submitted by Iowa and Illinois regarding appropriate boundaries. Wind roses, for example, are instructive, but not dispositive of the appropriate boundary for an area. For example, as discussed above and in the TSD for Scott County, point source modeling shows that other local point sources in the area contribute to monitored exceedances. EPA has reviewed this information, and additional information made available to EPA after the 120-day letter (and included in the docket), and has revised its 9-factor analysis based on this review (see the TSDs for a detailed discussion of the analyses). Although this analysis has caused EPA to determine that a partial county boundary is appropriate, EPA does not agree, for reasons stated herein and in the TSDs, that the very small boundaries suggested by the state are appropriate.

Below are EPA's responses to the State of Iowa's contention that modeling and other emissions impact analyses show that local point sources contribute significantly to violating monitors even on days when regional contributions are moderate to low, and that emissions from other local sources, and sources outside the vicinity of the Blackhawk Foundry monitor, do not significantly contribute to violations.

Iowa:
AERMOD dispersion modeling shows that on "most" exceedance days, Blackhawk Foundry contributions were between 20 percent and 25 percent of the local source contributions, and that the "vast majority" of the remaining $PM_{2.5}$ emissions are attributable to sources outside Scott and Rock Island Counties. This shows that the foundry "causes or contributes" to the exceedances, thus justifying a small boundary around the source's area of impact.

EPA Response:

This comment was submitted in conjunction with Iowa's October 20, 2008 response to EPA's letter informing Iowa of its intent to modify the state's initial boundary designations for eastern Iowa (the 120-day letter). At that time, Iowa had not modeled impacts from other local direct $PM_{2.5}$ point sources on concentrations at the violating monitor. Iowa subsequently modeled (using AERMOD) additional local sources and argued that they have a minimal impact on concentrations at the violating monitor. In fact, the modeling of direct $PM_{2.5}$ emissions shows that other point sources in the area impact the monitor, and the nonattainment boundary which EPA is promulgating will encompass all of these $PM_{2.5}$ sources. In addition, EPA has determined that the uncertainty regarding the AERMOD data and the lack of speciation data at the violating monitor, as described in the TSDs, prevents us from concluding that local sources of direct $PM_{2.5}$ other than the Blackhawk Foundry (i.e., sources outside the state's recommended boundary) do not contribute to the violations. Whether these other sources should ultimately be required to reduce emissions will be determined by the state during the development of the implementation plan for the area.

EPA has also performed a positive matrix factorization (PMF) analysis on speciation data from the Jefferson School monitoring site in Davenport. This analysis is detailed in the TSD for Scott County. The analysis indicates that a unique source other than Blackhawk Foundry contributed to the mass at the nearby Jefferson monitor. Although this is not the violating monitor, it indicates the influence of a source outside the state's recommended nonattainment area on a nearby monitor in the area. This finding supports EPA's decision to promulgate a boundary larger than that recommended by the state.

Iowa:
The State's recommended boundary includes the only sources of direct $PM_{2.5}$ emissions in the two-county area which have any significant contributions to predicted concentrations of the violating monitor on exceedance days.

EPA Response:
As stated in response to II)A), EPA does not believe the AERMOD modeling is adequate to determine that the other point sources of direct $PM_{2.5}$ in the area are not contributing to violations. In fact the modeling and other analyses show that other sources do have some impact. EPA believes that other point sources in the area should be included in the nonattainment boundary.

Iowa:
The results of CAMx model sensitivity analyses and AERMOD runs show that Rock Island County should not be included in the nonattainment area due to insignificant contributions to predicted concentrations at the monitor, based on the following factors: (1) the June 8, 2007 EPA guidance does not provide for CBSA presumptive boundaries for 24-hour PM violations; (2) the mere presence of a broad mix of sources in Rock Island does not indicate their potential contributions; (3) a zero-out run of direct PM emissions in Rock Island County results in an insignificant reduction in base-case contributions at the violating monitor and an even smaller reduction at other area monitors. There are similar negligible reductions when sulfate and nitrate precursors are subject to zero-out runs; and (4) a sensitivity analysis of mobile source commuting

activity between Scott and Rock Island counties shows that traffic patterns and motor vehicle emissions do not influence the violating monitor on exceedance days.

EPA Response:
EPA has determined that the urbanized portion of Rock Island County will be included in the nonattainment area, for reasons detailed in the technical support document prepared by EPA for the State of Illinois and included in the docket for the accompanying rulemaking. EPA's TSD for Scott County also contains some discussion of the issues. With respect to Iowa's specific comments, EPA provides the following responses:

(1) EPA agrees that there are no presumptive boundaries for the 2006 24-hour $PM_{2.5}$ standard designations. The 2007 guidance does provide, however, that one of the 9 factors in the boundary analysis is jurisdictional boundaries, which could include consideration of CBSA, MSA, or county boundaries. However, EPA analyzes all of the factors, and may conclude that smaller or larger boundaries are appropriate, based on a case-by-case review. In the case of Rock Island and Scott counties, EPA has analyzed these factors and has concluded that the urbanized portion of these counties should be included in the nonattainment area. This conclusion is not based on any presumptive boundary for the area, but is the result of application of the 9-factors to the specific information available for the Quad Cities area.

(2) EPA agrees that the "mere presence" of sources in an area does not necessarily demonstrate their contribution to violations of the NAAQS. However, as described in the TSDs and the record for the designations, including this response to comments, EPA has determined that sources of emissions in Rock Island County may contribute to the violations recorded in Davenport. Therefore, EPA is including a portion of the county in the nonattainment area.

(3) The zero-out modeling is instructive but not conclusive with respect to the appropriate boundaries. In addition, in establishing boundaries for contributing sources or areas in the Quad Cities, we do not believe it is appropriate to establish a bright line regarding the amount of reduction in predicted concentration which an area must be below to show that it is not contributing to violations of the NAAQS (for example, that a 4% reduction in a zero-out run is insignificant, but some higher amount is significant). Instead, as explained in more detail in the TSDs, in this response to comments, and in other materials in the record, we are establishing the nonattainment boundary to encompass most of the sources of $PM_{2.5}$-related emissions in the area which could, based on available information, contribute to $PM_{2.5}$ concentrations at the violating monitor. The states will subsequently determine, through refined analyses during development of their implementation plans, the emissions reductions needed, the portions of the nonattainment area in which they must occur, and the sources which must reduce emissions in order to achieve the NAAQS. EPA believes that the boundaries defined in this rulemaking will enable the states to perform these analyses and develop strategies to achieve the standards.

(4) EPA agrees, as described in more detail in the TSDs and other information supporting the decision, that direct $PM_{2.5}$ emissions are a critical component of the $PM_{2.5}$ concentrations at the violating monitor in Davenport. However, zero-out modeling results provided by the state do show that emissions (including mobile) from Rock Island contribute to the violating monitor on exceedance days and support EPA's decision to include a portion of

Rock Island in the nonattainment area. This is discussed in more detail in the TSDs for the area, and most significantly, in the Rock Island County TSD.

Iowa:
The modeling shows that sources in rural Scott County do not cause or contribute to violations of the $PM_{2.5}$ NAAQS. Zero-out runs show that eliminating emissions from rural portions of the county result in only minimal reductions in $PM_{2.5}$ concentrations at the violating monitor on predicted exceedance days.

EPA Response:
As explained in the TSD, EPA believes that the rural portion of Scott County, which does not contain point sources of $PM_{2.5}$ emissions, likely does not have a significant contribution to the $PM_{2.5}$ concentrations at the violating monitor, so as to require inclusion of that portion in the nonattainment area. However, EPA's conclusion does not mean that other portions of the county containing sources of $PM_{2.5}$-related emissions from point and area sources need not be included. This is due in part to the fact that, as stated in the TSD for Iowa, zero-out techniques, although appropriate for resolving non-point sources, in this instance, are not yet capable of reliably assessing the impacts of a single source at the source receptor distances encountered in Scott County. Therefore, EPA is including the urbanized portion of the county and those nearby rural portions containing $PM_{2.5}$ emissions of concern in the nonattainment boundary for the area.

<u>Dayton-Springfield, OH</u>

Ohio:
In its initial designation recommendations to EPA in December 2007, and in its October 2008 letter responding to EPA's proposed modifications thereto, the State of Ohio has argued that Clark County should be excluded from the Dayton nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS. Ohio premised its initial recommendation on the lack of monitored violations in Clark County, relatively low SO_2 and NO_X emissions, population of 142,000 people, relatively low commuting, and the geographic location of Clark County to the northeast of the violations of the NAAQS in Montgomery County. Subsequent data from 2005-2007 indicates that Clark is violating the NAAQS and EPA accordingly notified Ohio of its intention to modify the State's recommendation to include Clark County in the Dayton nonattainment area. In its response to EPA's proposed modification, Ohio acknowledged "high pollution levels being detected in Clark County" but argued that these concentrations are attributable to sources southwest of Clark County and not due to local sources.

EPA Response:
Under section 107(d), EPA must designate as "nonattainment" both those areas that are violating the NAAQS and those areas that are contributing to violations in a nearby area. Based upon 2005 to 2007 monitoring data, Clark County is itself violating the 2006 24-hour $PM_{2.5}$ NAAQS. Thus, Ohio's arguments with respect to the level of contribution of emissions from Clark County to Montgomery County do not override the obligation of EPA to designate Clark County as nonattainment.

EPA has concluded that it is appropriate to designate Clark County as a part of the Dayton area because it is immediately adjacent to Montgomery County (which is also violating the NAAQS) and Greene County (which is contributing to violations in Montgomery). EPA agrees that the contribution of emissions in Clark County to violations in nearby Montgomery County is relatively low. For example, compared to Montgomery County, Clark County has a lower total emissions, lower population, and lower commuting levels of commuting, but the amount of each of these is not insignificant in the context of this area. In particular, the number of commuters from Clark County to other Counties within the area is approximately 60,000 and reflects a percentage of commuting comparable to that of Montgomery and Greene Counties and a number and amount of commuting comparable to that of Greene County. This information indicates some contribution from Clark County to Montgomery County. Moreover, the pollution rose for a critical Montgomery County site supports the conclusion that there is contribution from the direction of Clark County on some of the days with relatively high ambient $PM_{2.5}$ levels. Finally, EPA considered that Clark County is already a member of the Miami Valley Regional Planning Commission and has typically been included with other Dayton area counties in the nonattainment area for ozone. Under these circumstances, EPA is designating Clark County nonattainment and including it within the boundaries of the Dayton area, rather than a separate nonattainment area.

Ohio argues, on the basis of wind data, that there is also contribution from Montgomery County to Clark County. As noted above, Clark County is violating the NAAQS based upon 2005-2007 data. The new information from Ohio would perhaps support EPA designating Montgomery and Greene Counties nonattainment based upon their contribution to Clark, but EPA does not consider this necessary given that Montgomery County is itself violating the NAAQS, and that both Ohio and EPA agree that Greene County is contributing to violations in Montgomery County. Thus, the wind data could be support for designating the same three counties as part of the Dayton area, but EPA does not consider this necessary.

Detroit-Ann Arbor, MI

Michigan:
In our December 18, 2007, letter to EPA, we recommended that southeast Michigan be divided into three separate nonattainment areas consisting of St. Clair County, which appears to be influenced by Canadian emissions; Wayne County, which has higher concentrations of $PM_{2.5}$ than the other counties due to local emissions sources; and the remaining five counties as a third nonattainment area.

EPA Response:
EPA disagrees with Michigan's recommendation to divide the Detroit nonattainment area into three separate nonattainment areas. EPA generally will not divide areas because having one area allows for better planning. Instead of assessing the impact of a source on several nonattainment areas, determining the impact is simplified when there is just one area. Having a single nonattainment area also eliminates the need to integrate planning for multiple adjacent areas.

Specifically in the Detroit area, the metropolitan planning organization addresses the seven counties of the existing nonattainment area and thus is already designed to conduct planning for

the prospective nonattainment area as a whole. Michigan wrote that the air quality in Saint Clair County may be affected by international transport and that local sources influence the air quality in Wayne County. The air quality in these counties is also affected by the same common sources as all counties in the Detroit area. The populations and commuting data also indicates a connection between the metropolitan area counties. Therefore, it makes sense to have a single Detroit nonattainment area instead of dividing the area into three parts. Michigan can certainly include a mix of controls implemented for area-wide air quality improvement and specific control measures to address the unique sources affecting the air quality in Saint Clair and Wayne Counties. A single seven county nonattainment area allows Michigan the greatest flexibility in improving the air quality in the Detroit area.

Michigan:
In its October 14, 2008, letter to EPA, Michigan reiterates arguments that "the industrialized area of Wayne County is unique to the rest of the region and should be dealt with separately." To support this argument, Michigan argued that only monitors in Wayne County have shown violations of the annual $PM_{2.5}$ NAAQS since 2003. Michigan asserted that because of this monitor, six other counties in the Detroit area have "been kept in nonattainment." For the 24-hour $PM_{2.5}$ NAAQS, Michigan conceded that monitors in both Wayne and St. Clair show violations of the NAAQS with 2006-2008 data (based on analysis using data from the first half of 2008), but repeated arguments that designating a large area is "unnecessary and heavy handed."

EPA Response:
EPA disagrees with Michigan's approach to assessing what areas should be designated nonattainment under section 107(d). EPA reads the statute to require designation of those areas that are violating and those areas that are contributing to violations in nearby areas. EPA does not interpret the term "contributing" to be limited merely to the area allegedly contributing the last increment of ambient $PM_{2.5}$ that results in a violation in the area; rather, EPA interprets the term to include the full range of nearby sources of $PM_{2.5}$ and $PM_{2.5}$ precursors that are cumulatively contributing to the violation.

EPA also disagrees with Michigan's assertion that only two Detroit area counties are monitoring violations of the 24-hour $PM_{2.5}$ standard. Using 2005-2007 data, the latest available for the December 2008 designations, EPA has determined that five area counties have design values exceeding the standard. The 2005-2007 design values for Monroe (38 $\mu g/m^3$), Oakland (40), St. Clair (41), Washtenaw (39), and Wayne (43) Counties all are above 24-hour fine particulate standard. Michigan used data from only the first two quarters of 2008 to make its projections of the 2006-2008 design values in its October 2008 letter. Design values must be calculated using three complete years of monitoring data. Considering that five of seven counties in the Detroit nonattainment area have design value violating the 24-hour fine particulate standard, the high particulate concentrations are distributed through the area and not just affecting two counties.

Michigan:
Michigan argued that the $PM_{2.5}$ problem in Southeast Michigan "has been driven by the high values in the industrialized portion of Wayne County." Michigan reiterated that six other counties are being designated nonattainment for the 24-hour $PM_{2.5}$ NAAQS

> "because of one monitor that is in the most industrialized area of Wayne County, directly downwind of a steel mill, auto manufacturing plant and oil refinery." Michigan argued that this monitor is "strongly influenced" by "local sources."

Michigan argued that the "history" of PM_{10} and $PM_{2.5}$ violations in this industrial center supports "focused attainment plans" for a separate nonattainment area in Wayne County.

EPA Response:
EPA disagrees with Michigan's implications that violations of the 2006 24-hour $PM_{2.5}$ NAAQS are solely the result of emissions in the "industrialized" portion of Wayne County. EPA does not dispute that the violating monitor is near a number of stationary sources, or that the emissions from such sources do contribute to the violations at that monitor. However, EPA's obligation is to include within the nonattainment area not merely the nearest sources to the monitor, but rather to include those areas that contain emissions sources that are "contributing" to the violations at that monitor. Michigan does not contend that all of the ambient $PM_{2.5}$ at the violating monitor in Wayne is the result of emissions exclusively within the near vicinity of the monitor, nor even exclusively within Wayne County. Regardless of whether a significant percentage of the ambient $PM_{2.5}$ at the monitor was the result of emissions from sources in the near vicinity of the monitor, EPA must consider other sources that account for the remaining ambient $PM_{2.5}$ at the monitor, and EPA must promulgate boundaries that correctly include those other sources of the remaining ambient $PM_{2.5}$ within the nonattainment area.

EPA's view is that the information relevant to evaluating contribution to violations in this area compels the conclusion that areas outside Wayne County but nearby to Wayne County are contributing to the violations, as contemplated by section 107(d). Thus, for example, evidence such as the emissions inventory of direct $PM_{2.5}$ and $PM_{2.5}$ precursors for other nearby counties, the pollution roses for this area, the CES scores for other counties, and the amount of emissions reflected by commuters and VMT for other counties, all tend to support that there are emissions and emissions activities in the surrounding counties in the Detroit area that are cumulatively contributing to the ambient levels of $PM_{2.5}$ at the violating monitors in both Wayne and St. Clair Counties as well as at the other monitors in the area that are currently violating the standard. In accordance with the Clean Air Act, these sources in these areas are thus appropriate for inclusion within the nonattainment area boundaries, and thus for evaluation for control in the nonattainment plan for this area.

EPA also disagrees with Michigan's suggestion that past history with PM_{10}, and implicitly with the designation for this area for PM_{10}, is supportive of the State's view. PM_{10} is a different NAAQS, with a different size indicator, that forms differently and behaves differently in the ambient area, typically emitted by different sources and requiring different control strategies. The relevance of past history with PM_{10}, especially given the facts of this area and the nature of the $PM_{2.5}$ particles in this area, is negligible.

Michigan:
To support its arguments with respect to Wayne County, Michigan submitted a study commissioned by the Southeast Michigan Council of Governments (SEMCOG) to analyze

monitor data in the Detroit area. Michigan described the purpose of this study as to determine the "drivers (i.e., local source, regional transport, or meteorology) for high $PM_{2.5}$ days in South East Michigan." The State argued that the "drivers" of high $PM_{2.5}$ at the "majority" of monitors with high readings "are regional transport (background levels entering Southeast Michigan) and/or poor atmospheric ventilation across the network." Michigan also noted that the report indicates that ambient concentrations are caused by "regional-scale contributions, urban-scale contributions, and neighborhood-scale contributions."

EPA Response:
EPA fully agrees with the SEMCOG contractor's finding, as summarized by Michigan, that ambient concentrations reflect contributions on various scales ranging from regional scale to urban scale to neighborhood scale. Indeed, Michigan argues that the Dearborn monitor records especially high values because it reflects impacts from both an industrial zone plume and the urban scale plume. EPA agrees with this view as well. Where Michigan appears to disagree with EPA is in recommending a subdivision of the metropolitan area into three zones that Michigan argues have separate sets of local contributors, without regard for the resulting segregation of the common origins of the urban scale contribution into three separate nonattainment areas.

EPA commends SEMCOG for sponsoring work to understand the origins of the 24-hour $PM_{2.5}$ problem in Southeast Michigan. However, this work is likely to have more utility in the attainment planning phase than in the designations phase. The contractor finds that many monitors have high concentrations if and only if other monitors also have high concentrations. This finding is consistent with the premise noted above, that a significant element of high concentrations in the Detroit area is an "urban plume." However, the majority of the contractor's work is designed not to define the origins of this urban plume but rather to define the origins of concentrations in excess of the combined impact of the urban plume and regional scale contributions. This work, by its very nature, is prone to focus on the contributions of heterogeneously distributed sources that have disparate impacts at different locations. Conversely, this work, by its very nature, is prone to disregard the impacts of sources that have relatively homogeneous impacts, which can occur either because similar sources are homogeneously distributed or because the emissions undergo a process that disperses the impact (which would be expected to occur during photochemical formation of secondary particles). As a result, the study is more useful for defining subsections of the area that may have unique contributions than it is in defining what source area contributes to the relatively homogeneous "urban plume."

From this perspective, it is clear that the "drivers" identified by Michigan represent evenly distributed sources of locally significant sources that may cause some monitors to record concentrations that are distinguishable from concentrations observed elsewhere. It is equally clear that the "drivers" identified by Michigan are almost by definition not the sources distributed throughout the metropolitan area that contribute to the urban plume described by the contractor. Thus, while EPA and Michigan agree that the "drivers" must be part of the nonattainment area, EPA finds it equally important to include the range of sources that contribute to the "urban plume."

From another perspective, the concept of the "driver" of concentrations on days with high ambient $PM_{2.5}$ levels is merely using different terminology to accomplish the same goal – to argue that only the source or sources that add the last microgram of ambient $PM_{2.5}$ levels above a standard is the only source or sources contributing to the total ambient level. EPA does not agree that this is the appropriate method to evaluate the full range of sources that are cumulatively contributing to the violation of the NAAQS.

Second, it must be noted that it is likewise not appropriate to argue that regional transport from greater distances, or even from other States, is a grounds to exclude the nearby areas that are also contributing to the violations in the area. The Clean Air Act provides other tools to address the influx of regional transport, especially under section 110(a)(2)(D) and section 126. In the context of designations, it is the obligation of EPA to designate areas that are violating the NAAQS and nearby areas that are contributing to those violations. EPA does not agree that all of the ambient $PM_{2.5}$ at the violating monitors in the Detroit area comes either from the sources immediately adjacent to the monitors or from other States – there are geographic areas between those extremes that contain sources with emissions that are contributing to the violations.

The report noted that the ambient concentrations are the result of emissions from not just local and distant sources, but also from sources on an urban-scale. Having a single Detroit nonattainment area allows Michigan to address sources through the seven county area that affect the air quality and thus contribute to the violations. While EPA is not prejudging the mix of emission controls that Michigan should adopt to provide for attainment, the Act mandates that EPA promulgate a nonattainment area that includes the full area violating the standard and nearby area contributing to the violations, in part to assure that an integrated plan is developed based on consideration of control options for all sources that contribute to the violations.

Michigan:
Michigan highlighted a conceptual diagram illustrating its view of the progression of $PM_{2.5}$ concentrations along a transect running from southwest to northeast in support of its argument that the Dearborn monitor in Wayne County is in a "unique" position "in the core of the industrialized zone plume and urban scale plume, which results in much higher values due to local sources than the other monitors in the area. The State further argued that data from the New Haven monitor site, "downwind" from Detroit, did not show the same impacts of the "urban scale contributions or the industrial zone plume."

EPA Response:
The diagram supplied by Michigan as Figure 2 in its letter illustrates that the ambient concentration is affected by regional, urban, and local-scale emissions. Both EPA and the States have responsibilities for programs to reduce regional-scale emissions. The States must develop control measures to reduce both the urban and local-scale emissions to bring areas into attainment. Specifically for Detroit, Figure 2 suggests that the regional and urban-scale emission create ambient concentrations near the $PM_{2.5}$ standard (the Macomb County monitor is close to the standard). Thus Michigan would have to eliminate almost all of the local-scale emissions from the "industrial zone" to reach attainment unless there are also regional and urban-scale reductions. Therefore, Michigan's diagram highlights the importance of designating a broad

Detroit nonattainment area that includes a complete set of the sources in the Detroit metropolitan area that contribute to these violations.

Michigan:
Michigan also highlighted Table 2 in its letter to support its arguments regarding Wayne County. According to Michigan, 13 of the 15 monitors in the area, for 85 percent of the high days between 1999 and 2006, occurred on days when "the entire network was exhibiting high PM." By comparison, Michigan argued that the Dearborn and Wyandotte monitors "frequently had exceedances on days when the entire network was not exhibiting high PM." Michigan reasoned that this proves that these monitors are "significantly influenced by nearby emissions sources."

EPA Response:
This illustrates that violations can be caused by local or broader scale emissions. Local sources will cause high concentrations at nearby monitors, while emissions on a broader scale will cause high concentrations over a wide area. The fact that most or all of the Detroit area monitors will record high concentrations on the same day suggests there are broader scale sources that affect the entire area. That is, the existence of days when "the entire network was exhibiting high PM" lends support to EPA's decision to designate Southeast Michigan as a single seven-county nonattainment area.

Michigan:
Michigan also pointed to Figure 3 in its letter as evidence that the Dearborn monitor in Wayne County has "a much higher percentage of high days than other monitors." As evidence, the State noted that the Dearborn monitor has many more days above 30 $\mu g/m^3$ compared to the Allen Park monitor. Again, Michigan argued that the higher readings at the Dearborn monitor than at the Allen Park, which the State characterizes as near but upwind from the Dearborn monitor, indicate that the latter monitor has a "strong influence from local sources."

EPA Response:
As noted previously, the Act requires that EPA designate nonattainment areas that include all nearby sources that contribute to nonattainment, including both the local sources (i.e., sources nearby the monitor) and sources elsewhere in the metropolitan area that contribute to the violations. To the extent that local sources cause a monitor to observe more high concentration days, these local sources arguably make the violation more difficult to address. Nevertheless, while the Act gives the State substantial discretion in selecting what combination of controls of local sources, controls of metropolitan area sources, and controls of sources elsewhere in the State to adopt to address the nonattainment problem, the Act dictates that EPA define a nonattainment area and planning area in which the full range of nearby contributing sources are included.

Michigan:
In its October 14 letter, Michigan also pointed to Figure 5 as evidence of the "directional source" of the "excess" of PM at the Dearborn monitor. Michigan describes the figure as a "one dimensional nonparametric wind regression (1-D NWR) that estimates the expected value of concentration as a function of wind direction." Michigan also describes this as similar to a pollution rose "but with more robust mathematical support." According to the State, this figure

establishes that wind from the southwest quadrant has from 4 to 10 $\mu g/m^3$ excess of $PM_{2.5}$, and that this quadrant is the direction of "a steel mill, an auto manufacturing plant, an oil refinery and other smaller industries." By comparison, Michigan notes that other monitors show a lesser impact, less than 2 $\mu g/m^3$.

EPA Response:
EPA believes that Michigan is focusing on local deviations from broadly high concentrations and fails to address the contributions from sources throughout the metropolitan area to the "urban plume." The "expected value" appears to be largely a reflection of the sum of regional scale and metropolitan scale impacts, and the "excess" appears to be a reflection of local (neighborhood scale) source impacts. Such a differentiation may be useful for attainment planning purposes, but EPA's obligation in promulgating designations is to define a nonattainment area that includes nearby sources contributing to the "expected value" as well as sources contributing to the "excess."

Again, Michigan evidently starts from the premise that the only areas that should be designated as "nonattainment," are the area in which they claim there are sources that add the last increment of ambient $PM_{2.5}$ that results in violations at the Dearborn monitor, ignoring the other contribution from other sources in nearby areas. EPA does not subscribe to this approach, as it is the cumulative impact of emissions sources and activities throughout the Detroit area that are, in the aggregate, contributing to the total amount of ambient $PM_{2.5}$ at the violating monitor. The purpose of the designations process is not to seek only the individual source next to the monitor that adds the last increment, but rather to identify the range of sources that are contributing. This is logical, because these are the sources that will need proper evaluation in the context of the development of the nonattainment SIP, and control to assure expeditious attainment of the NAAQS, as appropriate.

Taken at face value, the analysis submitted by Michigan may well serve to identify many of the specific sources that the State must control in the nonattainment area SIP for Detroit to assure that this entire area attains the 2006 24-hour $PM_{2.5}$ NAAQS expeditiously. However, this analysis must look more broadly at all sources throughout the area designated nonattainment and assure that all source categories are evaluated for potential control, consistent with the requirements of the CAA and consistent with attainment of the NAAQS as expeditiously as practicable. After all, the widespread violations being record by monitors throughout the Detroit area are not being caused solely by a few select sources in one portion of the area.

In EPA's view, it is meaningless to claim "more robust mathematical support" for an analytical tool that pursues a different type of information that is less relevant to the issue at hand. The tool is being used to identify locally significant sources, and there is no dispute that locally significant sources should be included in the nonattainment area. Consequently, EPA's tools, which better address what areas have sources that contribute to the "urban plume," provide better information with which to determine nonattainment area boundaries.

Michigan:
Michigan argued that the evidence it provided concerning the "unique" aspects of Wayne County support designating it as a separate nonattainment area within the Detroit area.

EPA Response:
Michigan has recommended that seven counties in Southeast Michigan be designated nonattainment, and EPA agrees with this recommendation. The disagreement between EPA and Michigan relates to Michigan's recommendation that these seven counties be divided into three separate nonattainment areas rather than combined into a single nonattainment area. Since CAA section 107 requires each nonattainment area to include the area that is violating and any nearby area contributing to that violation, the recommended subdivision into multiple nonattainment areas would require justification either that the subdivided areas are not nearby or that the areas do not contribute to each other. For example, justification would need to be provided either that Wayne County is not nearby to its neighboring counties or that there is no contribution from Wayne County to the violations in various other Southeast Michigan counties and no contribution from the other counties to the violations in Wayne County. Michigan provided no such justification, and EPA believes that the evidence contradicts any such claim.

The information also suggests it would be difficult for the air quality through the Detroit area to meet the standards relying just on localized measures within Wayne County. The fact that some portions are impacted more by local sources is not unique. This is common in cities around the nation. This allows the State to determine how it will use area-wide measures combined with controls focused on specific sources to bring the area's air quality into attainment. EPA designated adjacent counties in different nonattainment areas only when the counties were clearly in separate areas. Several of the factors suggest a link between the seven counties in the Detroit area.

Michigan:
In its October 14, 2008, letter, Michigan also argued that St Clair County should be designated as a separate nonattainment area. As support for this proposal, Michigan again used the SEMCOG report. The State pointed to Figure 1 of its letter as evidence that the monitor in St. Clair County is at the northern edge of the Detroit area and "may experience different air masses than the other monitors" in the Detroit area. In addition, the State argued that the Port Huron monitor in St. Clair County "appears to be strongly influenced by the Canadian/Sarnia industrial core.

EPA Response:
EPA does not share Michigan's belief that St. Clair County should be a separate nonattainment area from Detroit. St. Clair County has the second highest sulfur dioxide emissions in the Detroit area and surrounding counties. Its emissions of fine particulate and nitrogen oxides are larger than several other Detroit area counties. So, emissions from within the county can contribute to the monitored violations in other counties. The commuting data shows a link to the Detroit area. St. Clair County is in the southeast Michigan Council of Governments with other Detroit area counties, and is also in the Detroit nonattainment areas for ozone and fine particulate under the 1997 standard. These all point to a link to the Detroit area. The pollution rose for St. Clair County (Figure 11) shows the winds tend to come from the south when the highest concentrations are monitored. Some the fine particulate concentration being monitored in St. Clair may come from emissions generated at an industrial area to the southeast near Sarnia, Ontario, Canada. Some of the $PM_{2.5}$ in St. Clair County may also come from elsewhere in the Detroit area, which is to the southwest. The Belle River power plant in St. Clair is nearly

straight south of the St. Clair County monitor. EPA concludes that the St. Clair County is being impacted by emissions from local sources and sources throughout the Detroit area, just as EPA is concluding that St. Clair County is contributing to violations elsewhere in the Detroit area. Therefore, EPA determined it was appropriate to include St. Clair County in the Detroit nonattainment area.

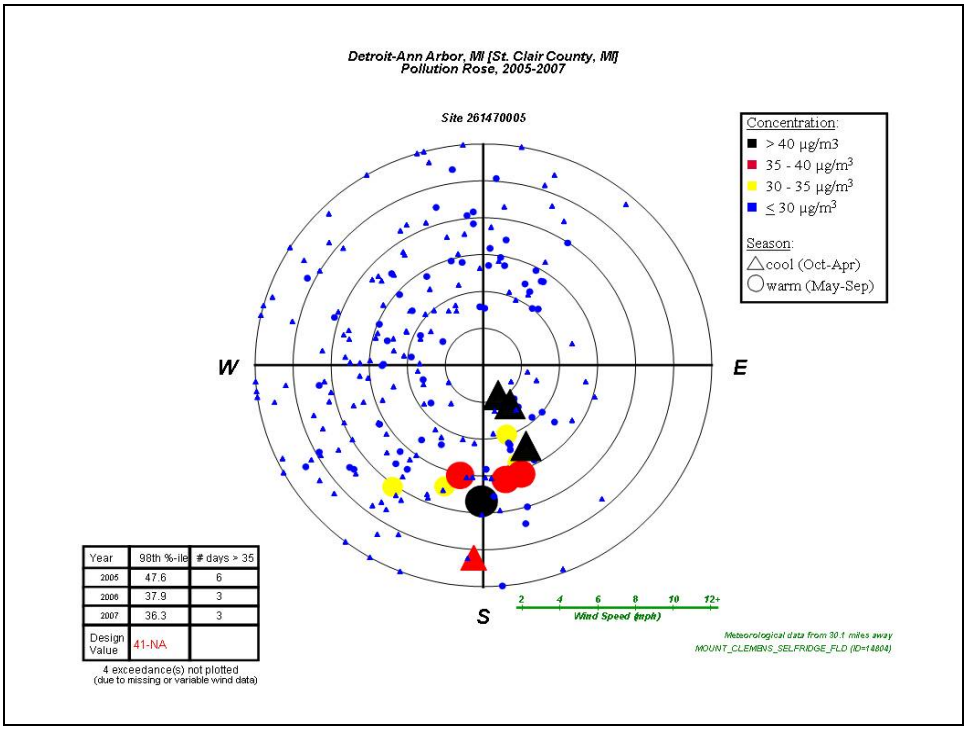


Figure 11. Pollution Rose for St. Clair County, Michigan.

Michigan:
Citing Table 3 of its letter, Michigan noted that the three year annual $PM_{2.5}$ average at the Port Huron monitor is "one of the lowest" in the Detroit area. That State argued by contrast, that the 24-hour $PM_{2.5}$ concentrations in this area are "some of the highest" and are "distinctly different" than the averages in other areas. Unlike other areas, Michigan argued that the ambient air at the Port Huron monitor are unchanged or worsening, compared to averages that appear to be improving at other monitors in the Detroit area (except for 2005). Michigan asserted that this evidence suggests that the Port Huron monitor "is being influenced by different sources than the other monitors in Southeast Michigan."

EPA Response:
EPA does not believe that the annual $PM_{2.5}$ average at the Port Huron monitor is particularly germane to the designation for the 2006 24-hour $PM_{2.5}$ NAAQS. As Michigan correctly stated, the Port Huron monitor is showing high daily concentrations of $PM_{2.5}$ well above the NAAQS, even compared to other violating counties within the Detroit area. The design values for the area monitors for 2005-2007 are: Wayne 43, Oakland 40, Washtenaw 39, and Monroe 38, with St Clair at 41. County design values can show an occasional rise even when values have been declining. So the changes from the 2004-2006 design value to the 2005-2007 design value should be not considered a trend. Three of the Detroit area counties, Oakland, St. Clair, and

Washtenaw Counties, had 2005-2007 design values higher than its 2004-2006 values. As Michigan noted, the 2005 monitored values were rather high throughout the nation. If the 2006-2008 and beyond design values remain fairly steady for St. Clair County while other Detroit area counties show a trend to lower values, Michigan could consider additional local measures for the sources with the greatest impact on the St. Clair County monitor. The effect of local-scale emissions causing the St. Clair County monitored values to vary from the trends at other area monitors does not mean that it is a different area. The variations in the temporal patterns at different monitors more likely is simply evidence that a few years of data do not provide enough data to indicate a reliable trend.

Michigan:
To support its contention that St. Clair should be a separate nonattainment area, Michigan also argued that emissions from Canada are contributing to the violations at the Port Huron monitor. Michigan utilized its "CPF" calculation in figure 9 of its letter to support this point. Michigan contends that the "excess mass" of $PM_{2.5}$ at the Port Huron monitor is coming from the south, southeast, and east, and that "one of the most industrialized areas of Canada" lies in that direction. Michigan notes that the Sarnia area in Canada contains significant sources such as oil refineries, petrochemical plants, and chemical companies, and this area has well documented air quality problems.

EPA Response:
Again, Michigan is focusing on "excess mass" and disregarding the "urban plume" that is common to monitors throughout Southeast Michigan. EPA and Michigan agree that St. Clair County contributes to violations in St. Clair County, but analyses that by their very nature do not assess the contribution of sources broadly distributed throughout Southeast Michigan and sources elsewhere with broadly distributed impacts have limited utility in defining nonattainment areas.

As noted before, the violations are also due to the local emissions and from contributions from other area counties. International emissions are not the lone source of fine particulate pollution in St. Clair County. Pollution from the power plant in St. Clair County, the rest of the Detroit area, and from the nearby Canadian sources can all be carried to the Port Huron monitor by southerly winds.

In addition, EPA notes that even if there were contribution from Canadian sources to the violations that the Port Huron monitor, that does not negate EPA's obligation to promulgate the designation for this area to provide for attainment of the NAAQS in this area. Section 107(d) does not provide for differential treatment in designations based upon transport from Canada, and obligates EPA to make designations based upon monitors and other relevant information to evaluate areas that are violating and contributing to those violations.

Although EPA obviously cannot define a nonattainment area that includes emissions sources in Canada that may be contributing to violations in the Detroit area, it is required to promulgate a designation that includes the violating areas and nearby contributing areas in Michigan within the nonattainment area. As explained in the TSD for this area, EPA has concluded that St. Clair is violating the NAAQS and must be designated nonattainment. St. Clair is also contributing to

violations in other nearby counties in the Detroit area. St. Clair is not in a separate airshed from the remainder of the Detroit area, it contains sources and source activity that contributes to the remainder of the Detroit area, and has similar sources that will require evaluation in the nonattainment plan for the area as a whole. Meteorological information indicates that St. Clair County is not separate and distinct from the rest of Detroit. This information shows a slight tendency for the winds to be coming from the direction of Wayne County on high concentration days, but it also shows the winds often come from all directions even on high concentration days. So, it is fair to conclude that St. Clair County contributes to $PM_{2.5}$ levels in the Detroit nonattainment area on high concentration days.

Michigan:
Michigan argued that because the high values at the Port Huron monitor "are likely influenced by Ontario sources," it "does not make sense to include St Clair County within the same nonattainment area as the remainder of Detroit.

EPA Response:
EPA disagrees because Canadian emissions are not the lone source of fine particulate pollution in St. Clair County. The concentrations being recorded at the Port Huron monitor are caused by pollution from local sources, sources throughout the Detroit area, and from Canadian sources. St. Clair County sources may contribute to other Detroit area counties. EPA also determined that St. Clair County is linked to Detroit area. There may be some unique aspects to the violation being recorded in St. Clair County. Still, EPA determined St. Clair County is linked with the other Detroit area counties and that all seven counties should be a single nonattainment area.

<u>Evansville, IN</u>

Indiana:
Concurrence from EPA concerning the exceptional events submission would have altered the proposed designation of Dubois County as nonattainment. Publicly proposing counties as nonattainment in August 2008 without addressing exceptional events leads to a false stigma in relation to air quality in the area. Furthermore, if the designations are to be based on 2006-2008 monitored values, 2008 exceptional event submissions must be reviewed and acted upon prior to the effective date.

EPA Response:
As discussed in the technical support document, EPA has now completed its review of Indiana's exceptional events claims. The net effect of the mix of concurrences and non-concurrences is that EPA finds Dubois County to be attaining the standard for the 2005 to 2007 period. EPA also reviewed whether the county is contributing to nearby violations in Evansville, and concluded it is not contributing and therefore Dubois County is being designated as attainment for the 2006 24-hour NAAQS.

Indiana:
If EPA reviews and approves the 2005-2007 exceptional events, Dubois County could be identified as attainment as well.

EPA Response:
EPA has reviewed Indiana's claims of exceptional events, with the result that Dubois County is being treated as attaining the standards for planning purposes. Dubois County is being designated as attainment for the 2006 standards because EPA has also judged that it does not contribute to violations in the Evansville area.

Indiana:
Counties like Warrick County, that measure air quality below the standard and are not proven to be significantly culpable for a downwind violation, should be designated attainment.

EPA Response:
In making determinations of contribution, EPA reviews all available data including the nine factors and other relevant information as explained in the TSD. Based on the best available evidence, EPA has typically concluded that nearby counties with high emission levels and other supporting data such as meteorology do contribute to nearby violations. In this case EPA reviewed all the available data as outlined in the TSD and EPA's assessment of Warrick County indicates that it is contributing to the monitored violations in Evansville, based on emission levels (92,000 tons SO2 per year; 18,000 tons NOx per year), combined with air quality and meteorological data. EPA notes again that it must designate as nonattainment counties that are contributing to nearby nonattainment even if they are monitoring attainment. Further, section 107 does not provide for designation only of areas that have a significant contribution to nearby violations. In contrast, when addressing long-range transport of pollutants under section 110(a)(2)(D) the Act specifically looks only at significant contributions from one state to another. For designations section 107 requires inclusion of all nearby areas that contribute to violations. Of course EPA analyzes all available data to be sure areas included are contributing, and in this case has concluded based on analysis of all the factors and analytic tools that Warrick County is contributing as outlined in the TSD.

Fairbanks, AK

Alaska:
The Alaska Department of Environmental Conservation (ADEC) supplemented its original boundary recommendation for Fairbanks, Alaska, stating that the entirety of data supports a modification of both the original ADEC recommended boundary and the EPA proposed boundary.

Alternatively, ADEC requested that if EPA were unable to agree with the modified boundary that ADEC either (1) be given up to an additional year to collect additional monitoring data under CAA Section 107(d)(1)(B)(i), or (2) EPA could consider and implement the proposal by ADEC to set a smaller boundary now and then expand the boundary in the future, if warranted, based on the data collected during the winter months of 2008.

EPA Response:
After EPA promulgated the latest $PM_{2.5}$ NAAQS in December 2006, States were required to submit recommendation for area designations by December 2007 based on $PM_{2.5}$ monitoring data from 2004-2006. The State submitted its recommendation for the Fairbanks area in

December 2007 as nonattainment for the $PM_{2.5}$ 24-hour standard based on that monitoring data. The nonattainment area boundary recommended by the State followed a 600 ft contour to the north and west of the City of Fairbanks, the city boundary to the east and the Tanana River to the south. In its letter modifying the State's recommendation, sent to the State of Alaska on August 18 2008, EPA used data from 2005-2007 and available data at its disposal to designate the area nonattainment and drew the boundaries to include all potential sources within the Fairbanks North Star Borough (FNSB) that could contribute to a violation of the $PM_{2.5}$ 24-hour standards at the Fairbanks Valley monitor. This boundary included major portions of the Borough to the south and east of the City of Fairbanks, which captured the military training ranges of Tanana Flats Training Area (TFTA) to the south of Fairbanks, and the Yukon Training Area (YTA) to the east of the Fairbanks (GIS maps are included in the Technical Support Document (TSD) for Alaska areas).

Generally, the CAA requires EPA to designate as nonattainment areas those which are violating the standard "or portions thereof." EPA believes that county boundaries (or in some instances CSA or CBSA boundaries for larger metropolitan areas) are an appropriate starting point for analysis in designating nonattainment areas. However, where the facts and circumstances of a particular area and analyses of relevant technical and factual information it is shown to EPA's satisfaction that only a portion of a county or jurisdictional area is violating or contributing to a violation, the Agency will designate less than a whole county or jurisdictional area. This EPA believes the State of Alaska to have done. On the 20th of October 2008, the State supplemented its response to EPA's recommendation and submitted a comprehensive technical analysis using the types of information recommended by EPA in its guidance. These analyses included, among other analyses, information recommended by the nine factors approach, to identify the sources that contribute to violations of the $PM_{2.5}$ standards at the Fairbanks monitor. After carefully reviewing the relevant information, as explained in EPA's TSD for the Fairbanks area, EPA is in agreement with the State of Alaska regarding the boundary of the nonattainment area.

Because EPA has sufficient date to promulgate a designation, there is not basis for the extention under CAA Section 107(d)(1)(B)(i). While the EPA encourages collection and analysis of more information that will be helpful in solving the $PM_{2.5}$ nonattainment issues in Fairbanks, it does find any need to delay the designation to collect this information.

Alaska
Source-specific emission estimates show that area and non-road sources are responsible for 99 percent of directly emitted $PM_{2.5}$ and that point sources are responsible for 79 percent of the SO_2 and 56 percent of the NO_X emitted in Fairbanks. A summary of major permitted facilities showed that two facilities are not located within the FNSB or EPA's proposed nonattainment area. Data presented for Eielson Air Force Base showed that it is responsible for less than 5 percent of the NO_X and SO_2 emitted within the Borough. Data provided for military training ranges located to the south of Fairbanks showed very limited activity during winter months.

EPA Response:
EPA appreciates the updated emission inventory information provided by the State of Alaska. Along with the data submitted by Fort Wainwright Army Base and Eielson AFB, EPA has concluded that activity in TFTA, including the Blair Lakes Training Facility (BLTF), and the

YTA do not contribute to violations of the $PM_{2.5}$ NAAQS in Fairbanks. However, emissions data alone do not provide conclusive evidence to exclude EAFB from the NAA boundary. See EPA's TSD for Fairbanks, Alaska for further detail.

Alaska:
Prior to last winter, the only source of $PM_{2.5}$ monitoring data was from the SLAMS monitor at the State office building in downtown Fairbanks. New monitoring data from other locations paint an inconsistent picture. The Eielson Air Force Base concentrations from an earlier winter remained well below the 24-hour $PM_{2.5}$ standard for an entire winter season and comparisons showed there were large differences between values recorded on base and those recorded at the downtown monitor. The Fort Wainwright values from an earlier winter show that, despite its proximity to the downtown area, the values recorded over an entire winter season never exceeded the standard. The differences between the values recorded on base and those recorded at the downtown monitor, however, were much smaller. Data collected during an episode this past winter showed high concentrations at multiple locations. The military values suggest that concentrations throughout the region are not uniform and the data collected last winter during one episode show there may be additional areas with higher concentrations. Clearly, the data do not support a conclusion and suggest the need for an intensive monitoring program, which is what ADEC and Borough are planning for the coming winter.

EPA Response:
EPA considered this additional air quality data from Alaska in conjunction with other technical data relevant to the nine factors, and developed a scientifically-based boundary, which includes Fort Wainwright, but does not include Eielson Air Force Base.

Alaska:
The annual VMT estimate reported by EPA for Fairbanks is significantly lower than values reported by the Northern Region of the Alaska Department of Transportation and Public Facilities (ADOT&PF). EPA reports a Borough wide value of 321 million miles in 2005; discussions with ADOT&PF reported 723 million miles of travel in 2006. Roughly 58 percent of the travel (i.e., 418.7 million miles) occurred within the Fairbanks Metropolitan Area Transportation System (FMATS) area. According to comments submitted by the ADOT&PF, EPA only reported VMT for a single category of roads (i.e., collectors) and failed to report travel for the rest of the road system.

Despite the error in EPA's estimate of travel within the Borough, the conclusion with regard to potential impacts of commuters is correct. The long distances to the Borough borders and low overall population density of the region ensures that external commutes are not contributing to elevated $PM_{2.5}$ concentrations in Fairbanks.

EPA Response:
EPA obtained the data from a submission from the State of Alaska in December 2007. We appreciate the State correcting and providing us accurate data (see the TSD for FNSB area).

Alaska:
The data presented above demonstrate that the long-term growth rate throughout the populated

areas of the Borough has been stable on a long-term basis, roughly 1 percent per year, but erratic on a year-to-year basis. This insight confirms there is no need to expand the nonattainment boundaries to ensure that emissions from projected growth within the Borough are captured and controlled.

EPA Response:
EPA appreciates this information and has used this factor in combination with all other factors in its final decision (see the TSD for FNSB area.

Alaska:
High $PM_{2.5}$ days in Fairbanks are the result of very cold surface temperatures and shallow temperature inversions, calm winds creating stagnant conditions and inhibiting the transport and/or dispersion of pollutants, and local emissions in each community simultaneously producing localized air pollution increases and $PM_{2.5}$ concentrations high enough to exceed the standard in some areas. These factors indicate that the emission sources contributing to high pollution concentrations in Fairbanks are fairly localized and that the nonattainment boundary should be constrained to the populated areas where elevated concentrations occur. The large distances between the military ranges and the populated areas of Fairbanks, combined with an absence of southerly winds during $PM_{2.5}$ episodes, demonstrate that the limited emissions from these facilities do not contribute to exceedances recorded in Fairbanks. Similarly, data collected at Eielson show there is no transport of its emissions into Fairbanks prior to or during episodes except for brief periods of southeasterly flow that is shown to be part of drainage flow along the Tanana. Data collected at Fairbanks International Airport demonstrate that the dominant flow prior to and during episodes is from the northeast and there is little evidence of any flow from the west. These findings demonstrate that EPA's expansive boundaries are overly conservative and unwarranted and provide a basis for redefining the boundaries to the south, east, and west.

The State also submitted further analysis of data for three episodes in 2004 and 2005. Based on this analysis for Eielson, the data show a consistent pattern of low concentrations and calm conditions at the surface that prevent any transport to populated areas. Data for the upper air, into which the bulk of Eielson's pollutants are emitted, is coarse (i.e., soundings are taken twice per day), offering limited insight into these short, one day episodes. Despite the aloft data showing some evidence transport from the southeast, analysis of the conditions during those times shows that the transport was unlikely to affect recorded concentrations in Fairbanks due to decoupling of the aloft and surface layers by the temperature inversions examined.

EPA Response:
EPA generally concurs with this analysis. In combination with other factors, this supports the exclusion of and the military areas of TFTA, YFTA, the BLTF, and the Eielson AFB. In Fairbanks, filter analysis submitted by the State of Alaska indicates that a large proportion (40-55 percent) of $PM_{2.5}$ is secondarily formed. This indicates that the potential sources that contribute could do so by emitting direct $PM_{2.5}$ or by emitting gaseous precursors that react in the atmosphere to create fine particles and $PM_{2.5}$. The analysis by the State also shows that the SO_4 mass shows a strong correlation to $PM_{2.5}$ concentrations, which in turn indicates that sources of SO_2 are of importance when contributing sources are considered. SO_2 is a fairly stable gaseous compound and can transport long distances over a long periods of time. Although the sources at

Eielson AFB emit SO_2, the amount is less than 5 percent of the total source contribution in the region, and there is weak meteorological evidence to show a transport of such emissions and available secondary conversion mechanism for such SO_2 into SO_4. Because of these reasons, EPA concludes that sources in EAFB do not contribute to the violations of the $PM_{2.5}$ standard in Fairbanks and should therefore be excluded from the Fairbanks $PM_{2.5}$ NAA see the TSD for FNSB.

Alaska:
In light of the information, presented above, the State in concert with the Borough developed a recommended nonattainment boundary. The starting point for these recommendations was the FMATS area. Revisions to that boundary are primarily based on consideration of population density, meteorology, terrain, emissions and the lack of growth. The Final TSD for the State of Alaska includes the final PM2.5 nonattainment boundary for Fairbanks North Star Borough**.** In addition to the factors noted above, care was taken to ensure the boundary is consistent with ownership (i.e., lots were not split) and that entire neighborhoods were included within the proposed nonattainment area unless they were divided by geographical features (e.g., ridgeline) that distinguished their potential to impact Fairbanks.

Starting with the south, the proposed boundary is consistent with the FMATS boundary, which is located just to the north of the Tanana River. The eastern edge follows the FMATS boundary, which excludes Eielson, but is expanded to include populated areas adjacent to Chena Lakes, east of Nordale Road and north of Badger Road. The areas excluded to the east include undeveloped areas and swamp land. Some of the excluded areas also appear to include populated areas; however, a discussion with the Borough demographer indicated that these were artifacts of arbitrary census boundaries and in fact no one lived in those locations (the density reflects the average of the area represented, not the location of where people lived). The northern end of the eastern boundary is selected to incorporate the higher density valley to the west of Gilmore Dome but to exclude communities farther to the east. The low population density of these communities and distance from the higher density areas of Fairbanks and North Pole is seen to limit their potential impacts despite the predominant northeast wind flow.

Recognizing the potential of Goldstream Valley to impact Fairbanks, the FMATS boundary was expanded well to the north to include all areas with the potential to contribute to the drainage flow. The northern boundary is not located at the top of the ridge separating the Chatinika Valley from the Goldstream Valley as recommended by EPA. Instead the northern edge of the populated areas was selected, hence the jog in the middle of the northern boundary. To the west, the FMATS boundary was expanded to include the higher population density areas with the potential to contribute drainage to Goldstream Valley. This includes the area to the east of Ester Dome. The areas along Murphy Dome Road further to the west were excluded because of the combination of low population density, distance from the higher density populated areas and prevailing meteorology. The southwestern FMATS boundary was expanded to include Ester Valley. This area, located to the south of Ester Dome and East of Chena Ridge is seen as having the potential to contribute to drainage into Fairbanks.

EPA Response:

Because of the collective evidence presented by the technical information provided by the State of Alaska, EPA agrees with the State of Alaska and the recommended boundary for the FNSB $PM_{2.5}$ nonattainment area. For more information that the EPA used in arriving at this boundary, please refer to the Technical Support Document for Alaska $PM_{2.5}$ Designations.

Fort Belknap Indian Community, MT

Fort Belknap Indian Community:
The Fort Belknap Indian Community sent a letter to EPA's Region 8 office on September 16, 2008, asking that the lands within the exterior boundaries of the reservation be designated as unclassifiable for the annual and 24-hour standards for $PM_{2.5}$.

EPA Response:
EPA's Region 8 office responded to the Fort Belknap Indian Community on October 31, 2008, informing them of EPA's intended designations schedule for the 2006 24-hour $PM_{2.5}$ NAAQS, and offering to discuss Clean Air Act programs the Tribe may want to consider to address air quality on the Reservation.

Grand Rapids, MI

Michigan:
The EPA believes that Ottawa County should be included with Kent County, one primary reason being that the emissions from the J. H. Campbell plant EGUs in Ottawa County are impacting air quality in Kent County. However, SCR controls have been installed on one of three EGUs at the Campbell facility, which will result in significant NO_X emission decreases. Plans are also in place to install scrubbers to reduce SO_2 emissions. Both of these controls significantly reduce $PM_{2.5}$ and are likely to result in continued improvements in the $PM_{2.5}$ levels in Kent County.

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

EPA bases area designations on current air quality data and current emissions information. The comment appears to indicate that the only reason for the inclusion of Ottawa County in the Grand Rapids area is the presence of the Campbell power plant. While this plant is the largest source in the county, it is not the only reason for the inclusion of Ottawa County. Ottawa County has a large population (255,000), significant commuting (119,000) and VMT, and high emissions (46,000 tons SO_2, 28,000 tons NOx, and 3100 tons direct $PM_{2.5}$) The Campbell plant has three units without scrubbers and emissions of 30,000 tons SO2 and 9000 tons NOx. Planned emission control projects at the J.H. Campbell plant in Ottawa County may significantly reduce emissions in the future. Under section 107(d), however, EPA is assessing violations and contribution to those violations during the relevant three year period, i.e., 2005-2007, or 2006-2008 if the State elects to submit 2008 data. Even with the reductions from one unit at the Campbell facility, the emissions from Ottawa County remain high. The emissions data and meteorological data indicate a contribution to the monitored violations, and the commuting data provide a link to Kent County. Kent and Ottawa Counties form the Grand Rapids ozone

maintenance area, a well established connection between the counties. For these reasons, EPA has determined that Ottawa County should be included as a contributing county in the Grand Rapids nonattainment area.

Green Bay, WI

The Oneida Tribe of Indians of Wisconsin

Oneida Tribe:
"A unique governmental and administrative burden is created due to our political jurisdiction as an Indian Nation in which we have portions of two of Wisconsin's 72 counties located in our reservation boundaries. Unique to our situation is that Brown County would be in nonattainment status and Outagamie County would be in an attainment designation. We find this situation presents a significant burden affecting our responsibilities as a government in addressing the implementation of the Clean Air Act's two types of national air quality standards. …The 72 counties are one level of government in the state of Wisconsin as well as the 11 tribal units of government."

EPA Response:
The Oneida Tribe's situation is not unique. Every state within which EPA is designating a nonattainment area also has area that will be designated attainment. We believe it is not a significant burden either to states or to tribes (or for EPA on behalf of the tribes) to administer some jurisdictions as nonattainment and some jurisdictions as attainment. EPA further believes that the Clean Air Act does not authorize EPA to designate an area that does not contribute to violations as nonattainment simply because the governing authority has jurisdiction over land elsewhere that warrants a nonattainment designation, or conversely to designate an area that does contribute to violations as attainment due to an attainment designation elsewhere. EPA is prepared to work closely with the Tribe to facilitate air quality planning for both attainment and nonattainment areas.

Oneida Tribe:
The Oneida Tribe of Indians of Wisconsin recommends that the air management area within the jurisdiction of the Oneida Tribe of Indians of Wisconsin exterior boundaries not be determined at this time due to the fact that parts of two counties (Brown and Outagamie Counties) are located in our jurisdiction and that one is designated nonattainment and the other attainment by the EPA.

EPA Response:
With respect to state lands, EPA is required by the Clean Air Act to promulgate designations within two years of the promulgation of an air quality standard, in this case in December 2008. An extension may be granted in cases where information is insufficient to promulgate designations, but EPA does not believe those criteria for an extension are met here. EPA understands that, pursuant to the Tribal Authority Rule, EPA may grant tribes flexibility with respect to the schedules by which tribes meet relevant requirements. However, designations are an EPA action, not a tribal action, and EPA believes that promulgating tribal designations on a different timetable than state designations would foster needless confusion. EPA has sufficient data to make designations for tribal areas and thus must do so at this time consistent with the

statute. Therefore, EPA is promulgating designations for the Oneida Tribe and other tribal lands at the same time as it promulgates designations for state lands.

Oneida Tribe:
We would like to have you consider the following in future determination of the impact of pollution activities and development on the Oneida Tribe of Indians of Wisconsin membership and jurisdictional areas;

1. The concept of cumulative impact analysis involves environmental, social and cultural impacts not always adequately covered in the environmental impact assessment and statement in the normal National Environmental Policy Act processes.
2. The concept of cultural catchment areas has a direct impact on our cultural and spiritual well being. We view that the status of our health and community well being is based on the interconnectedness of the elements of science, social, economic and cultural considerations to address our holistic health approach to our world view.

EPA Response:
These comments are more germane to the attainment planning process than to designations. EPA intends to work with the Oneida Tribe of Indians of Wisconsin towards development of air quality plans in a culturally sensitive manner that considers the interconnections that are important to the tribe.

<u>Huntington-Ashland, WV-KY-OH</u>

The State of West Virginia

West Virginia:
West Virginia agrees with the data and analysis presented in EPA's analysis relating to Factor 1 (Emissions data), Factor 2 (Air quality data), and Factor 3 (Population density and Degree of urbanization). West Virginia also agrees that since there are no topographic or geographic features in the air shed, factor 7 (Geography/topography) is not a significant factor within the overall analysis, including our consideration of whether to include the Graham Tax District within the nonattainment area. West Virginia contends that the data presented in EPA's analysis underlying each of these cited factors supports exclusion of Mason County, including the Graham Tax District, from the Huntington-Ashland nonattainment area.

EPA Response:
EPA's recommendation to include the Graham Tax District within the Huntington-Ashland nonattainment area was based upon our review of available data and implementation of EPA policy and guidance as further and more fully explained in the technical support document (TSD) supporting the designation of this area for the 2006 PM2.5 NAAQS. EPA reviewed available technical data relevant to each of the factors cited by West Virginia. EPA's inclusion of the Graham Tax District as part of the nonattainment area is supported by EPA's analysis in its entirety and not solely upon individual analysis of select factors therein. EPA believes that the overall analysis supports a finding that the Graham Tax District within Mason County contains significant emissions sources that contribute to $PM_{2.5}$ ambient concentrations in the

nonattainment area, and that these sources are overwhelmingly large in comparison to emissions from the remainder of the county. Recognition that the county in whole, or that the portion containing the Graham Tax District is a lower ranking candidate based upon certain factors does not preclude EPA from determining on the basis of the analysis in its entirety that the Graham Tax District "contributes to" nonattainment of the 24-hour $PM_{2.5}$ NAAQS in the Huntington-Ashland area. Indeed, this is among the reasons that EPA concluded that it was appropriate to designate only a portion of the county instead of the entire county nonattainment.

West Virginia's comment with regard to the exclusion of Mason County from the 1997 annual $PM_{2.5}$ nonattainment area is outside the scope of this action to designate $PM_{2.5}$ nonattainment areas under the 24-hour $PM_{2.5}$ standard. Justification for the use of the tax boundary is described in section 6.3.6.2 of the TSD prepared for designations under the 1997 annual $PM_{2.5}$ standard.

West Virginia:
West Virginia states that EPA's analysis set forth in Factor 4 (Traffic and commuting patterns) includes VMT and commuter data for all of Mason County, rather than apportioning the VMT and commuter contribution from the Graham Tax District portion of the county, thus overstating the relative contribution of the tax district. The State argues that EPA's assertion that Mason County has more commuters than Adams and Gallia Counties in Ohio is not relevant because Adams County is not adjacent to the MSA. Finally, the State argues that Mason County's contribution of commuter traffic to the violating county, and also to and within the statistical area, is small.

EPA Response:
As was the case with EPA's technical analyses for all areas, including the Huntington-Ashland area, the Agency relied upon 2005 VMT for our analysis set forth in Factor 4 (Traffic and commuting patterns). In general, EPA's analysis used the most recently available actual data, rather than long-term VMT projections (as in the case of the supplemental information for 2020 conformity projections provided by West Virginia as part of its supplemental information) in our analysis of traffic and commuting patterns. For the partial county areas, EPA assessed the factors based upon county level information (with the exception of the contribution of emissions from large power plants).

EPA believes that its analysis of the available transportation data is accurate and relevant. EPA appropriately compared Mason County's contribution of commuter traffic to the violating county along with other counties subject to analysis, including Adams County, OH. Although Adams County is not adjacent to the MSA, a portion of Adams County is included in the nonattainment area for the 1997 $PM_{2.5}$ NAAQS. EPA's analysis accurately reflects that the counties of Mason, WV; Adams, OH; and Gallia, OH all have commuters traveling between 200 and 300 million miles based upon available data. EPA recognizes that there are counties within the area analysis which have greater number of commuters who drive to and within the Huntington-Ashland area. EPA did not represent that Mason County (or the Graham Tax District) contributes a regionally significant portion of total area VMT or vehicle-related emissions. We reiterate that our assessment of this individual factor does not preclude EPA from determining that on the basis of

all relevant facts and scientific data, including the nine factors, that the Graham Tax District contributes to nonattainment of the 24-hour $PM_{2.5}$ NAAQS in the Huntington-Ashland area. Again, this is among the reasons that EPA concluded that it was appropriate to designate only a portion of the county instead of the entire county nonattainment.

West Virginia:
West Virginia agrees with the population and VMT growth estimates for Mason County presented by EPA in Factor 5 (Growth rates and patterns) of its technical analysis of the Huntington-Ashland area. However, West Virginia argues that use of predictive, travel demand modeling is more appropriate than use of historical VMT growth data in assessing growth rates for this analysis. West Virginia submitted supplemental information in the form of transportation conformity analysis for Cabell and Wayne Counties and for the Graham Tax District portion of Mason County. West Virginia concluded that this data supports exclusion of Mason County from the nonattainment area on the basis of this factor.

EPA Response:
EPA consistently used historical county-level population and VMT growth estimates for all areas of the country. EPA used the same methodology for estimating historic VMT growth in all nonattainment areas analyzed. Consistent with the CAA, EPA's designations reflect EPA's analysis of data reflecting current conditions, as opposed to predictions of future conditions. EPA does not believe that the use of predictive travel demand modeling would be consistent with the CAA because such modeling does not reflect current conditions and the Act requires designation of areas based on current conditions. Rather, predictive travel demand modeling is a tool for predicting conditions that may occur after designation determinations are finalized. EPA agrees that population and VMT growth in Mason County are both relatively low, compared to the other counties in the area of analysis. West Virginia's data supports EPA's assessment that VMT growth in Mason County is growing at a faster rate, by percentage, than in most counties in the Huntington-Ashland area. EPA's assessment of this single factor is not out-come determinative and does not preclude it from determining that the substantial emissions from the Graham Tax District contributes to increased ambient $PM_{2.5}$ levels in the Huntington-Ashland area and should thus be included in the nonattainment area. Again, this is among the reasons that EPA concluded that it was appropriate to designate only a portion of the county instead of the entire county nonattainment.

West Virginia:
With respect to Factor 6 (Meteorology – weather transport patterns) of EPA's technical analysis, West Virginia provided supplemental information in order to support its contention that emissions from Mason County, including the Graham Tax District, do not contribute to the Huntington-Ashland nonattainment area and should not be included in the nonattainment designation. West Virginia used NOAA Air Resource Laboratory's HYSPLIT[2] trajectory model (using 100, 250, and 500 meter trajectory heights) to provide a limited analysis of air patterns

[2] Draxler, R.R. and Rolph, G.D., 2003. HYSPLIT (HYbrid Single-Particle Lagrangian Integrated Trajectory) Model access via NOAA ARL READY Website (http://www.arl.noaa.gov/ready/hysplit4.html). NOAA Air Resources Laboratory, Silver Spring, MD.

during each of the 26 days during which monitoring data within the Huntington-Ashland nonattainment area exceeded 30 $\mu g/m^3$. Using this model, WVDEP calculated 26 backward trajectories to track pollutants from the ambient monitor site to determine which trajectories "passed over" one of the two coal-fired power plants located in the Graham Tax District. Based upon the data provided, West Virginia concluded that, in most instances, backward trajectories originating from the nonattainment monitor did not pass through the Graham Tax District. West Virginia therefore concludes that emissions from Mason County do not contribute to the Huntington-Ashland nonattainment area and should not be included in the nonattainment designation.

West Virginia also commented on EPA's pollution rose data analysis (or pollution trajectory plot) for Cabell County. West Virginia suggests that based upon such data,

> "one would conclude that (the Graham Tax District) . . . has no significant influence on the Huntington-Ashland nonattainment area, and should not be included in the Huntington-Ashland nonattainment area."

West Virginia also argues that EPA Regions 3, 4, and 5 drew different conclusions from the same Pollution Trajectory Plot for Cabell County, WV.

EPA Response:
EPA does not believe that West Virginia's analysis supports a finding that emissions from Mason County do not contribute to the Huntington-Ashland nonattainment area and should not be included in the nonattainment designation.

West Virginia's limited backward trajectory analysis of air patterns represents a limited "direct causal relationship" test that, if adopted by EPA, would contravene the goal of the statute by narrowing its application. EPA believes that the State's proposed alternative analysis is insufficient for purposes of determining whether emissions from the Graham Tax District "contribute to" ambient air quality in the Huntington-Ashland nonattainment area.

Section 107(d)(1)(A)(i) provides that nonattainment areas must include "any area that does not meet (*or that contributes to ambient air quality in a nearby area that does not meet*)" the applicable NAAQS. 42 U.S.C. § 7407(d)(1)(A)(i). The definition of "nonattainment" specifically includes any area that "contributes to" violations of NAAQS in a nearby area, not only those that literally "cause" such violations at specific monitoring sites. Ambient $PM_{2.5}$ at every monitor reflects the cumulative impacts of many types of emissions from many sources, near and far, that result in primary and secondary formation of particles. Pursuant to section 107(d), EPA must evaluate which "nearby" areas contribute to the violations and include them within the nonattainment area.

Additionally, EPA believes that West Virginia's application of NOAA's HYSPLIT backward trajectory analysis is incomplete. For example, West Virginia's analysis used only one trajectory for each day where measurements exceeded 30 $\mu g/m^3$. If back trajectories are to serve as the sole source for determining meteorological contribution, a more thorough analysis using multiple trajectories for each day in question should have been completed to account for the entire

duration of the 24-hour $PM_{2.5}$ standard. Furthermore, West Virginia's analysis focuses on back trajectories from the monitoring site, and, therefore, does not adequately demonstrate that emissions from the Graham Tax District do not "contribute to" ambient air quality in the Huntington-Ashland nonattainment area. West Virginia's limited analysis fails to take into account that both of the coal-fired power plants located in the Graham Tax District are significant sources of direct $PM_{2.5}$ and $PM_{2.5}$ precursor (NO_x and SO_2) emissions. A more complete and relevant analysis would compute multiple forward HYSPLIT trajectories from the coal-fired power plants in question to determine if emissions from those facilities could have "passed through" any portion of the nonattainment area at issue. Recognizing that NOAA's HYSPLIT Model is a multifaceted tool, EPA believes a more complete analysis would support its contention that emissions from the Graham Tax District "contribute to" ambient air quality in the Huntington-Ashland nonattainment area**.**

EPA developed pollution trajectory plots (or "pollution roses") to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. EPA believes that such analysis is one of several factors in evaluating emission contributions to the Huntington-Ashland nonattainment area. With regard to West Virginia's comments regarding EPA's pollution trajectory plot for Cabell County, EPA believes that the data presented in the August TSD was accurate. However, as was noted in the August TSD, EPA noted at that time that eight high days were not plotted in that Cabell County pollution rose due to missing or variable wind data. However, since then EPA has updated its pollution rose data to reflect more current information, so that the pollution rose (Figure 6) presented in the updated, December 2008 TSD now covers the period from 2005-2007. It shows that four days with monitored 24-hour $PM_{2.5}$ values greater than 35 and 40 $\mu g/m^3$ in Cabell County, WV in 2005-2007 occurred when the wind came from the north-northeast. This data suggests that emissions from the north-northeast, i.e., from Mason County, WV as well as Lawrence and Boyd Counties in Ohio, likely contribute to 2006 24-hour $PM_{2.5}$ NAAQS violations. Eight other days with monitored $PM_{2.5}$ values greater than 35 and 40 $\mu g/m^3$ show winds from the southwest, east, and south. This indicates likely $PM_{2.5}$ contributions from Wayne County, WV, and Boyd and Lawrence Counties in Kentucky.

West Virginia:
West Virginia contends that, based upon the presence of emission controls and the prospect of future emission controls for the two coal-fired power plants in the Graham Tax District, and also that EPA has provided States flexibility to address SO_2 and NOx emissions from nearby sources (within 200 km) via its $PM_{2.5}$ Implementation Rule, it is unnecessary to include the Graham Tax District in the Huntington-Ashland area.

EPA Response:
Section 107(d) defines nonattainment areas as those that are violating the NAAQS, and those that are contributing to such violations in nearby areas currently. Thus, EPA determined violations of the 2006 24-hour fine particulate NAAQS based solely on the most recent three complete years of certified monitoring data. EPA set boundaries based on available data and analysis that best represents present-day conditions, and not on projected emissions reductions that may occur after designation areas are finalized. EPA recognized that due to new controls at large EGUs, there may be emission reductions of SO_2 and NO_X subsequent to 2005 that are not

accounted for in its August 2008 analysis and EPA gave States the opportunity to submit supplemental information on emissions controls to aid in making final designation decisions.

West Virginia agrees with EPA's summary data of 2002-2007 NO_x and SO_2 annual emissions and heat input for the two large, coal-fired power plants (Mountaineer and Philip Sporn) in Mason County. West Virginia also agrees that, while Mountaineer's SO_2 emissions were greatly reduced beginning in 2007 due to the installation of a scrubber, Philip Sporn lacks scrubbers to control SO_2 emissions. EPA agrees that NOx emission rates have decreased for both facilities, however, based upon the most recent available data (2007), heat input levels have increased enough to keep facility-wide NOx and SO_2 emission levels either flat or higher than 2005 levels.

EPA reviewed West Virginia's comments and determined that they presented no new additional information with regard to emissions controls for these power plants. EPA acknowledged in our analysis that SO_2 emissions will likely be reduced by the 2007 installation of wet scrubber units at Mountaineer. However, EPA maintains that, based upon currently available data, the combined NOx and SO_2 emissions from both facilities, along with other data, support a finding that emissions from the Graham Tax District contribute to $PM_{2.5}$ ambient air quality in the Huntington-Ashland nonattainment area.

The State's reference to the requirements of the PM2.5 implementation rule are at most an analogy, as that rule applies to the 1997 PM2.5 NAAQS. Even by analogy, the opportunity to take emissions reductions at sources up to 200km from a nonattainment area is premised upon the state being able to demonstrate that those emission reductions would have an impact in the nonattainment area. Moreover, the fact that emission reductions from such sources could be shown to make an improvement in the nonattainment area is not the sole test for designations under section 107(d). Under this provision, EPA must ascertain which sources are "nearby" for purposes of the designation for the nonattainment area, given the facts and circumstances of each area. Other tools under the CAA, such as section 110(a)(2)(D) and section 126 are designed to deal with interstate emission impacts, especially regional impacts.

West Virginia:
The portion of Mason County, the Graham Tax District, proposed to be included in the Huntington nonattainment area encompasses the Mountaineer and Philip Sporn power plants, both owned by American Electric Power (AEP). Mountaineer has one 1,300 MW unit which is equipped with an ESP for particulate control, an SCR for NOx control and a wet limestone scrubber for SO_2 control. These controls are federally enforceable through regulations, permits and a federal Consent Decree (AEP Consent Decree). Philip Sporn has five units, Units 1-4 are rated at 150 MW each and Unit 5 is rated at 450 MW. All five units are equipped with an ESP for particulate control, and low NOx burners for NOx control. These controls are federally enforceable through regulations and permits. In addition, AEP has been issued a no permit needed letter (dated September 25, 2008) for the installation of SNCR on two of the five units at Philip Sporn (Units 3 and 4). AEP has indicated that the installation of SNCR on these units is to comply with the provisions of the AEP Consent Decree which requires that "A total of at least 600 MW from the following list of units: Sporn Units 1-4, Clinch River Units 1-3, Tanners Creek Units 1-3, and/or Kammer Units 1-3" be retired, retrofit, or re-powered. The expected NOx reduction is 25 percent in addition to the 60 percent already achieved by the LNBs.

Historical data shows that between 2002 and 2007 the SO_2 and NOx emission rates decreased at Mountaineer and Philip Sporn while heat input increased. The Mountaineer SO_2 emission rate decreased by 95.3 percent, and the NOx emission rate decreased by 17.6 percent. The Philip Sporn SO_2 emission rate decreased by 18.2 percent, and the NOx emission rate decreased by 24.4 percent. In addition, the West Virginia Department of Environmental Protection (DEP) has conducted a RACT analysis (which was included in the Parkersburg Annual $PM_{2.5}$ SIP revision submitted to EPA on September 9, 2008) to determine the appropriate level of controls for EGUs. It was determined that SCR and wet scrubbers are not economically feasible for units the size of those at Philip Sporn. DEP believes that these units are equipped with controls that meet the definition of RACT and there is no air quality benefit to be gained by designating the Graham Tax District as nonattainment. Furthermore, EPA in the final $PM_{2.5}$ Implementation Rule stated that for SO_2 and NO_x "EPA believes that States could justify considering not only all emissions in the nonattainment area but also emissions within a distance that may be up to 200 kilometers from the nonattainment area" [72 FR 20636, 25APR2007]. Since EPA has provided States the flexibility to consider emissions from sources within 200 kilometers of the nonattainment area, it is not necessary for EPA to include the partial counties within the nonattainment areas (see table on page 14 of WV comment letter).

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

EPA disagrees with the reasons provided by West Virginia for exclusion of the Mason County Mountaineer and Philip Sporn power plants from the Huntington-Ashland nonattainment area. EPA's analysis has evaluated pollutant emissions; evidence from the pollution rose for this area that there is contribution from the direction of these sources to the rest of the nonattainment area; and the CES score that likewise indicates that emissions from the pertinent sources contribute to violations in the Huntington-Ashland area.

The 2007 emissions from the Mason County power plants were about 42,000 tons SO_2 and 20,000 tons of NOx. The plants are located about 30 miles from the closest violating monitor in the Huntington-Ashland area, a distance at which significant formation of $PM_{2.5}$ from precursors emitted by these plants can occur. The technical support document provides pollution roses for both the Cabell County site and the Scioto County site, providing evidence that the emissions from these plants can be expected on some high concentration days to have impacts on the violating monitors. EPA finds that current emissions data and meteorological information indicate that in accordance with section 107(d), Mason County is contributing to violations in the Huntington-Ashland area. It should be emphasized that the designations process is intended only to determine those areas which are contributing to a violation of the standard. Section 107(d) was not intended to also require EPA and the States to determine whether emission controls are or are not economically feasible for a particular source. The evaluation of technically and economically feasible emission controls is required as part of the SIP development process.

The State of Kentucky

Kentucky:
To have Boyd and Lawrence Counties designated nonattainment would invoke additional, substantial, unnecessary requirements on local government planning agencies. Substantial local emission reductions from Boyd and Lawrence Counties have already occurred, or will have occurred well before attainment dates for this standard. Drastic emission reductions are scheduled to occur in the mobile sector throughout the next several years that will greatly impact pollutant levels in the area. Couple these changes with those anticipated by the CAIR, or its replacements, provisions which will further reduce SO_x and NO_x emissions within the region, and the air monitoring data demonstrating attainment of the $PM_{2.5}$ standard, and the result should be that these counties be designated attainment for the $PM_{2.5}$ standard.

EPA Response:
EPA commends Boyd and Lawrence Counties for local emission reductions that have been and continue to be achieved. However, EPA's 9-factor analysis has determined that emissions from Boyd and Lawrence (partial) Counties contribute to nonattainment in nearby Cabell County, West Virginia, and that it is appropriate to include these counties in the Huntington-Ashland nonattainment area. EPA believes that consideration of all nine factors compels designating these Counties nonattainment, consistent with the existing nonattainment boundary for the annual $PM_{2.5}$ standard. As stated in Section V, EPA determined violations of the 2006 24-hour fine particulate NAAQS based solely on the most recent three complete years of certified monitoring data. EPA is setting boundaries based on available data and analysis that best represents present-day conditions, and not on projected emissions reductions that may occur after designation areas are finalized.

Kentucky:
American Electric Power (AEP), which is located in Lawrence County, Kentucky, consists of two pulverized coal-fired boilers: Unit 01 (BSU1: 2512 mmBTU/hour 260 MW) is a pulverized coal-fired, dry bottom, wall-fired unit constructed on or before January 1963, equipped with overfire air, low NOX burners and an electrostatic precipitator. Unit 02 (BSU2: 7914 mmBTU/hour 800 MW) is a pulverized coal-fired, dry bottom, wall-fired unit constructed on or before October 1969, equipped with an electrostatic precipitator, ammonia flue gas conditioning, low NOX burners, and selective catalytic reduction. Pursuant to a 10/9/2007 consent decree and for BART, AEP must install a SO2 FGD scrubber on the larger Big Sandy Unit 2 by December 31, 2015. Assuming a conservative 90 percent control on the 2007 SO2 emissions from Unit 2, the required scrubber would significantly reduce SO2 emissions from AEP Big Sandy by an estimated 36,971 tons per year when the scrubber is operational on Unit 2. Also, pursuant to the consent decree AEP Big Sandy Unit 1 now is required to continue to burn coal with a sulfur content of no greater than 1.75 lb/mmBTU on an annual basis. In addition to the FGD scrubber on Unit 2 for BART, AEP is also required for BART to install ammonia injection on Unit 1 to address inorganic condensable emissions to improve visibility in Class I areas. Given the existing and future new controls required for AEP Big Sandy by consent decree and BART, KYDAQ requests that EPA consider this information regarding the reduction in emissions at AEP for the attainment/nonattainment designations.
(see table on page 54 of Kentucky comment letter)

EPA Response:

See the overview response to comments on power plant issues, located at the beginning of Section IV.

The CAA requires that a nonattainment area must include not only the area that is violating the standard, but also nearby areas that contribute to the violation. Thus, for each monitor or group of monitors that indicate violations of a standard, EPA is establishing nonattainment boundaries that cover a sufficiently large area to include both the area that violates the standard and the areas that contribute to the violations. The current 2007 emissions of AEP Big Sandy in Lawrence County are 46,000 tons SO2 and 15,000 tons NOx. As described in the State's comment above, a scrubber is required on one unit by 2015 and other emission reduction activities are planned for the future. Meteorological data indicate potential impacts from Lawrence county on high PM2.5 days. While Kentucky anticipates installation and operation of additional controls, EPA must judge whether current emission levels, supported by current regulations that provide assurance of continued operation of existing controls, contribute to existing violations. If controls are required either by the Clean Air Interstate Rule or by an equivalent rule, and SIP quality modeling based on enforceable emission levels in Kentucky and elsewhere (with or without the Clean Air Interstate Rule, as the case may be) demonstrates timely attainment, then the attainment planning requirement resulting from a nonattainment designation will not be as burdensome to the Commonwealth. However, EPA cannot agree to designate areas attainment where the best evidence indicates current contribution to nonattainment. Accordingly, EPA has included Lawrence County, Kentucky in the Huntington-Ashland nonattainment area.

The State of Kentucky makes the following points as additional rationale for excluding Boyd County from the Huntington-Ashland nonattainment area.

Kentucky:
Kentucky believes that EPA's use of the contributing emissions scoring approach was skewed. A review of actual percentages of emissions contributions to an area shows that Boyd County does not have the potential to contribute to $PM_{2.5}$ levels within the region.

EPA Response:
The CES is an initial screening tool used to determine potential nonattainment area boundaries which can then be modified using additional information provided by the State or other sources. EPA has recommended other types of information for this purpose through guidance which could be considered in the final decision.

The CES for Boyd County is lower than that of some contributing counties (Cabell, WV; Gallia, OH; Lawrence, OH; Scioto, OH; Mason, WV; and Adams, OH) in the area, but higher than that of others (Wayne, WV and Lawrence, KY). Additionally, EPA does not find that emissions from Boyd County (10,501 tons of SO2; 10,123 tons NOx; and 3,458 tons direct $PM_{2.5}$) are without the potential to contribute to $PM_{2.5}$ in the region. One key source of emissions located in Boyd County is the traffic and commuting patterns.

Kentucky:
The population of Boyd County is not significant enough to have the potential to impact $PM_{2.5}$ levels in the region. Population in this area has shown a continuing decline over the last several

years and that decline is anticipated to continue. Boyd County's population actually represents only 12 percent of the population within EPA's proposed nonattainment boundaries.

EPA Response:
Although the population of Boyd County may have declined in recent years, the County remains moderate in population size and density. Of the Huntington-Ashland CSA counties that EPA stated intentions to designate as nonattainment in our August 2008 letters to State Governors, about 23 percent reside in Cabell County, WV, compared to about 12 percent living in Boyd County. The population densities of the two counties are similar at 327 persons per square mile and 305 persons per square mile Cabell and Boyd County, respectively. Boyd County has the highest population of the Kentucky counties in the area and it is one of the most densely populated counties in the area. EPA's finds this factor adds support to EPA's decision to include Boyd County in the Huntington-Ashland nonattainment area.

Kentucky:
The air monitoring data demonstrates attainment of the PM2.5 standard.

EPA Response:
Although the ambient monitor in Boyd County has a design value of 33 $\mu g/m^3$, based on 2005 – 2007 data, EPA believes sources in Boyd County contribute to the violating monitor in nearby Cabell County, WV, with a design value of 37 $\mu g/m^3$, and also to Scioto County, with a design value of 36 $\mu g/m^3$. In. In addition, EPA notes the design value of the Boyd County monitor is up from the 2004 – 2006 design value of 32 $\mu g/m^3$. Specifically, Boyd County has substantial levels of emissions and meteorological data that indicate a contribution to PM2.5 concentrations at the violating monitors on the high days. Additionally, Boyd County, which includes the city of Ashland, Kentucky, has a high degree of population density, urbanization, and commuting within the area.

The State of Kentucky makes the following points as rationale for excluding Lawrence County, Kentucky, from the Huntington-Ashland nonattainment area.

Kentucky:
Kentucky believes that EPA's use of the CES approach was skewed. A review of actual percentages of emissions contributions to an area shows that Lawrence County does not have the potential to contribute to PM2.5 levels within the region.

EPA Response:
The CES is an initial screening tool used to determine potential nonattainment area boundaries which can then be modified using additional information provided by the State or other sources. EPA has recommended other types of information for this purpose through guidance which could be considered in the final decision.

The CES for Lawrence County is lower than those for the other contributing counties (Cabell, WV; Gallia, OH; Lawrence, OH; Scioto, OH; Mason, WV; Adams, OH; Wayne, WV; and Boyd, KY) in the area. However, EPA does not find that emissions from Lawrence County (50,239 tons of SO2; 13,761 tons NOx; and 5,134 tons direct $PM_{2.5}$) are without the potential to

contribute to $PM_{2.5}$ in the region. One key source of emissions located in Lawrence County is the Big Sandy Power Plant.

Kentucky:
The air monitoring data demonstrates attainment of the $PM_{2.5}$ standard.

EPA Response:
Although there is no ambient monitor in Lawrence County, EPA believes the resident power plant contributes to the violating monitor in nearby Cabell County, WV, with a design value of 37 $\mu g/m^3$. Thus, the appropriateness of additional controls for this plant will be evaluated by the State and EPA during the development of the nonattainment area plan for this area, as necessary, in accordance with section 172. Analysis of all additional data described in the TSD indicates these counties are contributing to the violating monitor. Section 107 requires designation of areas that, although not they themselves violating, are contributing to nearby nonattainment.

The State of Ohio

Ohio:
In its October 2008 letter to EPA, Ohio objected to EPA's proposed inclusion of Lawrence and Scioto Counties in the Huntington-Ashland area. Specifically, Ohio argued that:

> "Lawrence and Scioto Counties have low population and insignificant commuting traffic. Moreover, due to the location of the monitor in Lawrence County, it is likely that the PM2.5 levels being detected are coming from sources across the Ohio River in West Virginia and Kentucky."

In addition, Ohio questioned why EPA would include Lawrence and Scioto Counties in Ohio, but exclude Greenup County Kentucky from this area. Ohio argued that this Kentucky County is located across the river from Lawrence and Scioto, and based upon CES scores and other analytical tools, Greenup, Boyd, and Lawrence Counties in Kentucky should be included in the Huntington-Ashland area.

EPA Response:
EPA disagrees with Ohio's objections to the Huntington-Ashland area. First, Scioto County is violating the 2006 24-hour $PM_{2.5}$ NAAQS based upon 2005- 2007 monitoring data. Thus, in accordance with section 107(d), EPA is required to designate that area nonattainment based on violations not contribution. Even if EPA were to agree that Scioto has modest population and commuting, relative to other counties within this area, the violation of the NAAQS in Scioto overrides those considerations. Further, Scioto County's geographic location and meteorological relationship to violations in the Huntington-Ashland area could still render its emissions, population, and commuting sufficient to conclude that it is contributing to violations in the area as well.

Second, EPA has concluded that Lawrence County, Ohio is contributing to violations in the Huntington-Ashland area based upon consideration of various forms of information that indicate it contributes to violations in the area. Lawrence County is immediately adjacent to both Scioto

County, Ohio, and Cabell County, West Virginia, each of which is violating the NAAQS based upon 2005-2007 data. Emissions inventory information indicates that emissions from sources in Lawrence are low relative to other nearby counties with large stationary sources, but nevertheless are adding to the mix of emissions in the area – over 1,000 tons per year of direct $PM_{2.5}$ and over 500 tons per year of SO_2 and over 3,700 tons per year of NO_x. The nature and sources of this contribution are reflected by the relatively large population of Lawrence relative to all other counties in this area (nearly 63,000 – placing it only behind Cabell and Scioto in population) and the relatively large amount of commuting to violating counties throughout the area and large amount of overall VMT indicating contribution from mobile sources. The CES scores for this area indicate that Lawrence County contributes to violations, and contributes nearly as much as Cabell and Gallia Counties and more than other nearby counties. EPA has concluded that the geographic proximity of Lawrence County to violations in both Cabell and Scioto Counties, the CES score (confirming contribution), and the relatively high degree of commuting supports inclusion of Lawrence County, Ohio, within the nonattainment area. This will assure that the emissions activities within Lawrence County will be evaluated and controlled, as appropriate, in the nonattainment area plan developed for this area as a whole.

Finally, EPA disagrees with Ohio's contention that inclusion of Scioto and Lawrence Counties in Ohio necessarily compels the inclusion of Greenup, Lawrence, and Boyd Counties Kentucky in the Huntington-Ashland area. As noted above, Scioto is violating the standard so a comparison of its relative degree of contribution is not germane. EPA is including Boyd County, Kentucky within the area because of its contribution, so that comparison is likewise does not support Ohio's argument. Similarly, EPA is including most of the emissions of Lawrence County, Kentucky, in the nonattainment area, so that comparison as well does not support Ohio's argument. Only Greenup County is excluded from the nonattainment area, because on balance its emissions are lower, particularly for directly emitted particulate matter, than those of other counties in the area such as Lawrence County.

Ohio:
The State of Ohio objected to EPA's proposed inclusion of Monroe and Sprigg Townships, Adams County, and Cheshire Township, Gallia County, within the nonattainment area for Huntington-Ashland for the 2006 24-hour $PM_{2.5}$ NAAQS. In its October 8, 2008, letter, Ohio generally objected to this on the grounds that "the existence of an electric generating unit in a township should not be the sole factor in determining nonattainment." More specifically, Ohio argued in that letter that each of these townships should be excluded because the source located in each are adequately controlled, or will be in the future:

> "Some emissions from the electric generating units located in Monroe and Sprigg Townships (Adams Co.) and Cheshire Township (Gallia Co.) are already controlled with highly efficient control equipment, and other emissions are expected to be controlled within year 2009. Besides electrostatic precipitators, all these units have installed flue gas desulfurization systems, which are currently operational or will be operational by July 2009. Moreover, all the units have SCR systems, which will be operating for the entire ozone season, controlling and reducing nitrogen oxides emissions. In addition, some units, in both counties, will

have SCR equipment in continuous operation (the whole year) starting in year 2009, increasing the reduction of nitrogen oxides emissions."

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

EPA disagrees with the reasons provided by Ohio for exclusion of each of these areas from the Huntington-Ashland nonattainment area. First, Ohio is incorrect that the "existence" of the source is the sole reason for EPA's inclusion of these townships. EPA's analysis has evaluated not just the existence of the source, but also other considerations including: the significant quantity of emissions of the pollutants (including $PM_{2.5}$ precursors and directly emitted $PM_{2.5}$) that speciated $PM_{2.5}$ data in this nonattainment area show to be of concern; evidence from the pollution rose for this area that there is contribution from the direction of this source to the rest of the nonattainment area; and the CES score that likewise indicates that emissions from the pertinent townships contribute to violations in the Huntington-Ashland area.

In the case of Monroe and Sprigg Townships, 2005 emissions inventories indicated that sources in Adams County emit nearly 6,000 tons per year of direct $PM_{2.5}$ and over 126,000 tons of SO_2 and over 33,000 tons of NO_x per year. The vast majority of these emissions came from the J.M. Stuart and Killen Station coal fired power plants in Monroe and Sprigg Townships. These Adams County plants are only about 40 miles from the violating monitor in Scioto County and about 70 miles from the violating monitor in Cabell County, West Virginia, distances at which significant formation of PM2.5 from precursors emitted by these plants would have occurred. The technical support document provides pollution roses for both the Cabell site and the Scioto County site, providing evidence that the emissions from these plants can be expected on some high concentration days to have impacts on the violating monitors.

As part of the public comment period, EPA received information from DP&L, the owner of both plants, indicating that a scrubber had been installed at the Killen plant in 2007 and scrubbers had been installed on all four units at the Stuart plant in mid-2008. EPA is not aware of any action that has been taken to ensure that the controls on the Killen unit are federally enforceable at this time, while the controls at the Stuart plant were installed to satisfy the provisions of a consent decree. The consent decree also requires the controls to be required in a federally-enforceable permit once the consent decree is satisfied. Based on this information, the emissions in 2009 from these Adams county plants are estimated to be about 7200 tons SO2 and 20,000 tons NOx. Taking all of this information into account, EPA finds that the Adams county plants have taken important steps to reduce emissions. However, not all of the controls are federally enforceable and the remaining emissions are not so small as to be considered to have no contribution. Based upon this evidence relevant to designations in accordance with section 107(d), EPA concluded that the emissions from Monroe and Sprigg Townships are currently still "contributing" to violations in the Huntington-Ashland area.

In the case of Gallia County, the two largest sources are located in Cheshire Township: the Kyger Creek and Gavin coal fired electric generating plants. The two units at the Gavin plant have scrubbers and SCR in place, but 2007 emissions are still substantial: 29,000 tons SO2 and

33,000 tons of NOx. The five units at the Kyger Creek plant do not have scrubbers – scrubbers are planned for 2010 – but they do have SCR installed. Like the Gavin plant, current 2007 emissions are also substantial: 57,000 tons SO_2, and 13,000 tons NOx. The plants are located about 40 miles from the violating monitors in the Huntington-Ashland area, a distance at which significant formation of $PM_{2.5}$ from precursors emitted by these plants can occur. The pollution rose and other meteorological data indicate that on high $PM_{2.5}$ days, impacts at the violating monitors can come from the direction of these plants. Moreover, the CES scores for the Huntington-Ashland area indicate that there is contribution from emissions in Gallia County to elevated levels of ambient $PM_{2.5}$ on days on when winds blow generally from the direction of those sources to the rest of the Huntington-Ashland area. The CES score for Gallia County is 100, the highest score of any contributing county in the area. Based upon this evidence relevant to designations, in accordance with section 107(d), EPA concluded that emissions from Gallia County are "contributing" to violations in the Huntington-Ashland area.

In the context of the nonattainment SIP for this area, Ohio will have the opportunity and the obligation to perform further analysis and attainment demonstration modeling that can further explore the contribution of the sources in these townships in Adams and Gallia Counties, and the appropriate course of action to reduce that amount of contribution.

EPA also disagrees with Ohio's conclusions relating to the level of control of the sources in Monroe, Sprigg, and Cheshire Townships as a basis for excluding them from the nonattainment area. As noted above, EPA has concluded that these sources do factually contribute to the violations in the nearby area, notwithstanding the current level of control at these sources. Under section 107(d), EPA believes that the level of control of emissions from the source is a relevant inquiry in the designations process to assure that EPA and the State are using up to date and accurate emissions information. EPA does not believe however that the level of control alone should be used as a basis to exclude a source that is otherwise deemed to be contributing to the violations, based upon information such as its amount of emissions, geographic location, and meteorological connection to the nearby violating area. For a source in an area that is violating, or is contributing to violations of, the NAAQS, the adequacy of control is more appropriately assessed during the development of the nonattainment area SIP for an area. Section 107(d) does not require EPA, in essence, to construct a mock-up nonattainment area plan and to predetermine appropriate levels of pollution control on behalf of the State, as a necessary step in promulgating the designation for the area. In short, the level of control of a source does not in isolation answer whether the source is contributing to the violations.

Ohio provided information on the status of emission controls at four plants in the Huntington-Ashland area. Some of the emissions have long been controlled with effective control equipment, some of the emissions have become well controlled more recently, and some of these emissions are expected to be controlled within a few years. In Gallia County, Gavin Station has long had control equipment reducing SO_2 emissions and more recently has installed controls to reduce NOx emissions, but emissions remain high. Also in Gallia County, Kyger Creek Station is expected to install SO_2 emission controls by 2010, but current emissions remain high. In Adams County, JM Stuart is subject to a consent decree requiring control of both SO_2 and NOx. Also in Adams County, Killen Station has installed control equipment both for SO_2 and for NOx, although EPA is aware of no enforceable requirement for the company to operate this equipment,

particularly if the D.C. Circuit Court of Appeals vacates CAIR. More importantly, even with these controls, total emissions from these plants remain somewhat high. The company, in comments submitted in response to EPA solicitation of public comments, stated that emissions with control would be approximately 7200 tons per year of SO_2 and 20,000 tons per year of NOx. The emissions from these facilities even with controls are sufficient enough that EPA judges that these facilities contribute to violations in Scioto and Cabell Counties. Also of concern is that no permit or other enforceable document requires operation of the control equipment at Killen Station. Therefore, EPA is including Monroe and Sprigg Townships in Adams County and Cheshire Township in Gallia County, along with Scioto and Lawrence Counties, in the Huntington-Ashland nonattainment area.

By inclusion of these townships within the nonattainment area, Ohio and EPA will evaluate these sources as part of the development of the nonattainment area plan to assure that they are adequately controlled, and controlled in a timely fashion, to provide for expeditious attainment of the 24-hour $PM_{2.5}$ NAAQS in the area, as required by the CAA. This inquiry may conclude that the sources are appropriately controlled, but that assessment should occur during the proper process contemplated by the CAA for development of nonattainment area plans.

With respect to future or planned future emissions reductions at these sources, EPA has concluded that for evaluating contribution for designations under section 107(d), it is appropriate to look at the actual level of emissions in the relevant 3 year period, whether 2005 – 2007, or 2006 – 2008 if a State elects to submit additional data for 2008. Given the present tense formulation of section 107(d), EPA does not believe it is appropriate to base designations on projections of future levels of emissions or controls. Thus, although EPA supports the plans for future controls, EPA believes it would be inappropriate to consider the controls expected in 2010 in Cheshire Township, since these emissions reductions will happen beyond the period that is appropriate for consideration in the designations process. However, these reductions will occur during the time that Ohio is developing the nonattainment area plan for this area, and they may properly be taken into account during that process. Ohio may conclude, and EPA may ultimately agree, that these reductions are all that is necessary to reduce emissions from these specific sources within the $PM_{2.5}$ nonattainment area plan for Huntington-Ashland, but it would be inappropriate to prejudge that outcome now.

Imperial County, CA

CARB:
CARB requests that EPA modify the proposed nonattainment area boundaries to be consistent with California recommendation, that only the City of Calexico and not the entire Imperial County be designated as nonattainment for the revised PM2.5 standard.

Population: The majority of Imperial County is largely unpopulated. Calexico has 24 percent of the population of Imperial County within its boundaries with the second largest population and the highest population density. The largest population area, El Centro, only nine miles north of Calexico, is in attainment of the standard.

Calexico accounts for only 5 percent of the population and 4 percent of the land area of the combined Calexico/Mexicali urban area. The population density of Imperial County is less than a fifth of the Municipality of Mexicali, in an area of roughly the same size. A similar situation is faced at the border area of Nogales, Arizona. This population disparity was noted by EPA in considering the Nogales area as a focused nonattainment area for PM2.5, retaining the rest of Santa Cruz County in attainment. CARB believes that air quality in the City of Calexico is similarly overwhelmed by the much larger City of Mexicali across the border and requests similar consideration.

Transport from the northern portion of Imperial County: In its response, EPA showed HYSPLIT model results that implied a contribution from emissions throughout Imperial County to elevated levels at the Calexico-Ethel site. However, other sites in the county showed much lower concentrations during Calexico exceedance days, indicating that the high concentrations at Calexico were unlikely to be due to a northern influence.

Transport from Mexico: With regard to transport of emissions from Mexico, in reply to a request from EPA, CARB has supplied a table showing 2005 Imperial County and Mexicali emissions. The table shows the great disparity between Imperial County and Mexicali emissions including stationary, area and mobile sources.

As noted in the EPA response table, the emissions inventory for Imperial County shows a 24 percent contribution from carbon. Chemical composition data for Calexico specifically from exceedance days at Calexico show an organic carbon contribution of over 50 percent. The seasonal pattern shows the strong wintertime increase in organic carbon. We believe the majority of these carbon emissions are the result of transport from the City and municipality of Mexicali, Mexico where residential trash and wood burning are largely unregulated. In addition, the majority of the exceedance days occurred during the December/January time period when there are increased volumes of smoke across the border.

EPA Response:
As requested by EPA, CARB provided additional information showing that the PM2.5 emissions in the Calexico area are different from those in the rest of Imperial County. The 2007 emission inventory for the entire Imperial County indicates the major sources are fugitive windblown dust, unpaved road dust and farming operations. The violating monitor in Calexico indicates that PM2.5 is 48 percent organic carbon and 22 percent ammonium nitrate. This speciation data indicates that primary sources in Calexico are residential and/or open burning and mobile sources. These sources correlate with population centers and location of major highways.

California has noted that emissions from activities in Mexicali and at the border crossing contribute significantly to PM2.5 levels in Calexico. The Calexico population is 30,000, compared to 1 million in Mexicali, Mexico. Heavy truck traffic at the border crossing contributes to mobile source emissions. The data also show that the high levels of PM2.5 emissions occur primarily in the winter months when residents south of the border heavily depend on wood as a fuel source.

EPA agrees that the PM2.5 designation for Imperial County should be limited to the areas where local sources account for the contribution to the fine particle levels on exceedance days. Therefore, EPA redefined the PM2.5 nonattainment area in Imperial County to encompass those areas within Imperial County that contain the bulk of the sources of PM2.5 and PM2.5 precursor emissions, which EPA has concluded are located primarily in the the cities of Calexico, El Centro and Brawley and environs. This nonattainment area covers 690 square miles, or 15 percent of the entire County, and it captures 86 percent of the population, as well as all major highways and stationary sources.

The Torres Martinez Desert Cahuilla Indians Reservation

Torres Martinez:
The Torres Martinez Tribe asks EPA to consider a possible designation for the Torres Martinez Reservation as "unclassifiable" rather than nonattainment for the 2006 $PM_{2.5}$ air quality standard because the following factors that EPA used in its analysis do not accurately reflect the true nature of the Torres Martinez Reservation.

The Torres Martinez Air monitoring station does not have a $PM_{2.5}$ analyzer and has not monitored for $PM_{2.5}$. This should be enough for a non-classifiable determination for a $PM_{2.5}$ designation for the Torres Martinez Tribe.

The emissions data that EPA used to determine a nonattainment status for the Reservation was based mainly from the Calexico Ethel Street air monitoring site in Imperial County. That air monitoring site is approximately 85 miles from the Headquarters of the Torres Martinez Tribe. The Torres Martinez air program staff believes that the South Coast Air Quality Management District (SCAQMD) site in Indio in Riverside County, which is located about 13 miles from Tribal Headquarters, would be a more appropriate $PM_{2.5}$ database to draw conclusions from.

The Torres Martinez Reservation is located in the Eastern Valley, not the Imperial Valley, as EPA's designation proposal factors illustrate.

EPA Response:
The Torres-Martinez Reservation spans both Imperial and Riverside Counties. The nearest PM2.5 monitor to the tribal area is the Indio monitoring station operated by South Coast AQMD (SCAQMD) in Riverside County. The design value for the Indio site (for 2005-07) is 24 ug/m3, which is below the standard of 35 ug/m3. The Tribe states that tribal lands are located in the eastern valley and that the SCAQMD monitoring data are more representative for their circumstances. EPA appreciates the clarification. The Tribe also states that the Torres Martinez Reservation does not have a $PM_{2.5}$ monitor. If a tribe has no data of its own, EPA looks to the nearest monitoring sites for an indication of the air quality in the vicinity of the tribe. In this case, as the Tribe has pointed out, the nearest monitors are operated by SCAQMD and the monitor in Indio is not violating the $PM_{2.5}$ standard. Consequently, EPA believes that a designation of attainment/unclassifiable is appropriate for the Torrez-Martinez Tribe.

Torres Martinez:
While jurisdictional boundaries facilitate planning and organizational structure for air quality

mitigation, it is the opinion of the Torres Martinez Environmental Department that NAAQS pollutants be considered on a one-by-one basis and not grouped with other pollutants for designation proposals.

EPA Response:
EPA considers pollutants on a one-by-one basis. The pollutants are those specifically mentioned in the CAA, namely, carbon monoxide, ozone, sulfur dioxide, nitrogen dioxides, lead and particulates. EPA sets the standards for each of these pollutants and makes designations based on whether areas are meeting or violating the separate standards. However, jurisdictional boundaries are a factor in the decision-making process, including existing boundaries for other pollutants.

Indianapolis, IN

Indiana:
Indiana strongly believes that a number of Indiana counties were improperly designated as nonattainment under the annual $PM_{2.5}$ standard. Indiana cites the outer counties of the Indianapolis area as an example in which the counties are attaining the standard and area and mobile sources are not culpable for the urban excess once measured in the core county.

EPA Response:
This is not the appropriate forum for challenging designations for the annual $PM_{2.5}$ standard. At issue is whether counties that are monitoring attainment are nevertheless contributing to violations nearby. As noted above, evidence with respect to Indianapolis indicates that the area continues to monitor a significant urban increment, and, contrary to Indiana's assertion, sources in the counties designated nonattainment contribute to the violations recorded in the violating county.

Indiana:
The monitors within Marion County that the surrounding counties would influence the most measure air quality below the standard. EPA should review the 2006-2008 monitoring data prior to designating any counties to nonattainment. Not only will the designation of non-contributing counties in Central Indiana be unnecessary and serve no air quality-related purpose, it will result in a tremendous amount of unnecessary work for the Indiana Department of Environmental Management (IDEM) and EPA in redesignating the area shortly after designations are effective.

EPA Response:
Proximity to monitors measuring attainment suggests that the counties are not by themselves causing violations measured at more distant monitors, but these facts do not refute EPA's findings that these counties have an impact at the violating monitors that warrants concluding that the counties contribute to the violation. EPA plans to review 2006 to 2008 data (if available from the State) and apply an attainment designation if all monitors in the area are found to be measuring attainment. Also, EPA is not designating any noncontributing counties as nonattainment. If the Indianapolis area is in fact designated nonattainment, the designation as nonattainment of Marion County and the four additional counties that contribute to violations in

Marion County will facilitate the important air quality planning that the CAA requires for such areas.

Juneau, AK

Alaska:
After reviewing the available data and EPA's analyses, the Alaska Department of Environmental Conservation (ADEC) believes the available scientific evidence does not support EPA's boundary recommendations which substantially expand upon those recommended by us. ADEC believes public health will be protected and the applicable legal requirements met by taking the actions described in Alaska's letter. For Juneau, we are requesting EPA revisit certain assumptions and include data from 2008 before making a final decision on whether a nonattainment designation is warranted, and if so, the appropriate boundaries of the nonattainment area.

EPA has presented no data demonstrating a need to expand the State's proposed $PM_{2.5}$ nonattainment boundary. A combination of population density and topographical data shows there are several distinct airsheds within Juneau. The meteorology data show there was no transport from any of those airsheds into the Mendenhall Valley prior to or during high concentration episodes. Vehicle travel into Juneau from outside areas during the winter is essentially nonexistent and traffic count data demonstrate that travel within Juneau declined over the past decade. The available monitoring data show that concentrations within the Mendenhall Valley are largely the result of combustion emissions during the winter and that design values for Lemon Creek did not exceed the 24-hour $PM_{2.5}$ standard. To address the concern about elevated $PM_{2.5}$ concentrations recorded within the Mendenhall Valley, a new ordinance was implemented to call for burn bans when concentrations approached the standard. Finally, an analysis of monitoring data recorded in the Mendenhall Valley suggests that the 2005–2007 design value does not exceed the 24-hour $PM_{2.5}$ standard.

EPA Response:
After EPA promulgated the latest $PM_{2.5}$ NAAQS in December 2006, States were required to submit recommendation for area designations by December, 2007 based on $PM_{2.5}$ monitoring data from 2004-2006. Based on this data Juneau was in attainment of the 24-hour $PM_{2.5}$ NAAQS. However, the monitor in Mendenhall Valley measured several exceedances in December 2007. A preliminary review of the 2005-2007 $PM_{2.5}$ monitoring data in April 2008, indicated that the area may potentially be in violation of the 24-hour $PM_{2.5}$ NAAQS. Based on this review, EPA invited the State to provide a recommendation for the Juneau area based on a through technical analysis of the data. The State submitted its recommendation for the Juneau area in June 2008, as nonattainment for the $PM_{2.5}$ 24-hour standard based on the monitoring data and recommended the old PM_{10} nonattainment area boundary as the $PM_{2.5}$ boundary without any further technical justification. In its letter modifying States recommendation sent to the State of Alaska on August 18, 2008, EPA used data from 2005-2007 and available data at its disposal to designate the area nonattainment and drew the boundaries to include all potential sources that could contribute to a violation of the $PM_{2.5}$ 24-hour standards at the Mendenhall Valley monitor.

Generally, the CAA requires EPA to designate as nonattainment areas those which are violating the standard "or portions thereof". And while commonly, and only as a point of departure, EPA relies on county boundaries (or in some instances CSA or CBSA boundaries) in designating nonattainment areas, where, based upon the unique facts and circumstances of a particular area and analyses of relevant technical and factual information it is shown to EPA's satisfaction based upon those analyses that only a portion of a county or jurisdictional area is violating or contributing to a violation, we will designate less than a whole county or jurisdictional area. This we believe the State of Alaska to have done. On the 20th of October 2008, the State supplemented its response to EPA's recommendation and submitted a comprehensive technical analysis using the types of information recommended by EPA in its guidance. These analyses included, among other analyses, information recommended by the nine factor approach, to identify the sources that contribute to violations of the $PM_{2.5}$ standards at the Mendenhall Valley FRM for the years 2005-2007. After analyzing all available monitoring data form the Mendenhall Valley FRM for the years 2005-2007, EPA has determined that area is in violation of the $PM_{2.5}$ NAAQS. After carefully reviewing the relevant information, as explained in EPA's TSD for the Juneau area, EPA concurs with the State of Alaska that the existing PM_{10} boundary in Juneau constitutes an appropriate boundary for the $PM_{2.5}$ nonattainment area also. This means that sources that contribute to the violation of the 24-hour $PM_{2.5}$ NAAQS are within this boundary and controlling those sources will help the area attain the 24-hour $PM_{2.5}$ standards expeditiously see the TSD for Juneau area. EPA notes that it has not chosen these boundaries because they applied for the PM10 NAAQS, but rather because EPA has determined that the same area happens to be sufficient to include the violating and contributing areas for Juneau, given the very unusual topographical and meteorological considerations of this area.

Alaska:
The State requests that EPA revisit the design value calculation to determine if, in fact, there is a $PM_{2.5}$ nonattainment area in Juneau. Second, the State requests EPA consider all 2008 data and recalculate the design value for the 2006-2008 period to insure that the area is clearly nonattainment. Finally, if it is determined that there is justification for a nonattainment area, the State recommends that EPA adopt the existing PM_{10} nonattainment area for the Mendenhall Valley.

In a conversation with Neil Frank (Senior Advisor EPA/OAR/OAQPS/AQAD) during the recent AQS conference in Milwaukee (August 2008), Barbara Trost (Acting Air Monitoring Program Manager, Alaska Department of Environmental Conservation/Air Quality) explained the State's concern and objection to how the design values for the Floyd Dryden site in Juneau had been calculated. Mr. Frank indicated that consecutive sampling days should not be included in the design value calculation. Given that Mr. Frank believed that the calculation of the Juneau design value may be flawed and considering the information provided above, the State respectfully requests that EPA review and revisit the Juneau design value to ensure that it has been properly calculated with respect to the national ambient air quality standard.

EPA Response:
40 CFR 58.12 "Operating schedules" of the monitoring regulations provides opportunity for States to request approval for seasonal sampling from the EPA Regional Administrator and Appendix N to 40 CFR Part 50 has a provision for computing "the annual 98th percentile values

when sampling frequencies are seasonal." In light of the extra collected samples, in addition to those required with the routine once in three day schedule, EPA reconsidered the 2005-07 Juneau design value to verify if the Juneau data would be eligible for this alternative computational approach.

Upon review, EPA determined that the data do not conform to a seasonal sampling schedule. The Juneau sampling approach was not described in the State monitoring plan and it did not receive prior approval by the EPA Regional Office. Furthermore, the reported sampling days do not appear to follow a systematic plan and the reasons for sampling on some extra days and not other extra days were not provided with the State comments. In particular, the relationship between extra sampling days and potential for high concentrations is not known. Given the lack of specific documentation and prior approval for the realized sampling plan, EPA does not have a basis to use 40 CFR Part 50, Appendix N, Section 4.5(a)(2) . Consequently, EPA used the "Regular procedure for identifying annual 98th percentile values," as described in Appendix N, Section 4.5(a)(1). Based on this finding, the Juneau Design Value does indicate a violation of the 24-hour $PM_{2.5}$ NAAQS. Accordingly, as explained above, EPA has determined that the existing PM_{10} boundary in Juneau constitutes an appropriate boundary for the $PM_{2.5}$ nonattainment area also.

Klamath Falls, OR

Oregon:
Oregon recommends the Klamath Falls Air Quality Zone (AQZ) as the nonattainment boundary and provided significant additional technical information justifying this boundary.

EPA Response:
EPA agrees with the State's recommendation of using the AQZ as the boundary of the Klamath Falls nonattainment area (NAA). Oregon provided additional technical information on population and woodstove density, land use, area photographs, $PM_{2.5}$ filter analysis, and meteorology. As discussed in the TSD to this action, EPA agrees with the State and now believes that only the Klamath Falls AQZ should be designated nonattainment based on EPA's conclusion that areas outside of the Klamath Falls AQZ are not contributing to the violating monitor. EPA agrees that the bulk of potential contributing residential and industrial sources are within the AQZ.

EPA considered a partial county boundary in situations where a unique situation is shown to exist in a county in which the sources captured by the partial county boundary account for nearly all of the total fine particle mass on exceedance days. In such cases, given compelling evidence, EPA considered designations of partial counties to be appropriate. EPA selected the boundaries for these partial county nonattainment areas by relying on legally recognized governmental boundaries (e.g., townships) in which the sources are located. For the Klamath Falls nonattainment area, EPA used township-range to closely match the Air Quality Zone.

Knoxville-Sevierville-LaFollette, TN

Tennessee:
The State of Tennessee accepts EPA's proposed Greater Knoxville area boundaries under one condition: EPA should not determine final designations of the Knoxville area boundaries until all data flag requests have been resolved. In their response letter, dated October 20, 2008, the State of Tennessee claims that a number of flags have been requested yet no replies have been issued. The State of Tennessee believes that, even if no data flags are approved, Knox, Anderson, Blount, London, and Roane counties are very likely to achieve attainment based on 2006 through 2008 design values.

EPA Response:
EPA has reviewed flagged data that was collected in 2007 and does not concur with the flagged data for Knoxville because a public review and comment period was not conducted as required by the Exceptional Events rule. For an event to qualify as an exceptional event, the demonstration submitted to EPA must meet all the procedural and substantive requirements of the Exceptional Events Rule at 40 CFR 50.1 and 50.14. EPA prepared a response to the exceptional event demonstration and mailed it on November 21, 2008, to the Knox County Department of Health and to the State of Tennessee.

Tennessee:
The Tennessee Valley Authority (TVA) will have scrubbers online at Bull Run Fossil Plant by the end of 2008 and, in two phases, at the Kingston Fossil Plant in 2009 and 2010.

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

The CAA requires that a nonattainment area must include not only the area that is violating the standard, but also nearby areas that contribute to the violation. Thus, for each monitor or group of monitors that indicate violations of a standard, EPA is establishing nonattainment boundaries that cover a sufficiently large area to include both the area that violates the standard and the areas that contribute to the violations.

The Greater Knoxville area includes the Bull Run plant in Anderson county (2007 emissions: 40,000 tons SO_2 and 12,000 tons NO_x) and the Kingston plant in Roane county (2007 emissions: 51,000 tons SO2 and 12,000 tons NO_x). All of Anderson county and a partial county area around the Kingston plant were designated as part of the Knoxville $PM_{2.5}$ nonattainment area in 2005. While the State anticipates installation and operation of scrubber units at the Bull Run Fossil Plant by the end of 2008, similar controls at the Kingston Fossil Plant will not be operational until 2010. EPA must judge whether current emission levels, supported by current regulations that provide assurance of continued operation of existing controls, contribute to existing violations. Furthermore, Tennessee has indicated agreement with EPA's nonattainment designation for the Greater Knoxville area upon resolution of all monitoring data flags. As stated above, EPA has reviewed flagged data that was collected in 2007 and does not concur with the flagged data for Knoxville.

<u>Logan, UT-ID</u>

Utah:
Creation of a multi-State nonattainment area for Cache County and Franklin County will unnecessarily complicate the planning process by the duplication of agencies on either side of the State border.

EPA Response:
We note that the State initially made their comment as a suggestion in the October comment letter but subsequently expressed further opposition during a meeting with EPA personnnel to the combination of portions of Cache County and Franklin County as one nonattainment area. Rather than complicating air quality planning, EPA believes that designating these two counties as a single nonattainment area will help ensure the coordination of SIP planning. There are numerous examples nationwide of multi-State and multi-jurisdictional nonattainment areas that have been successfully working together on attainment plans for meeting the standard for many years. Where areas in two different jurisdictions contribute to nonattainment, EPA believes the most effective way to achieve timely attainment is for the areas to work together to produce one air quality plan that addresses pollution activities in both jurisdictions.

Utah:
EPA produced pollution rose diagrams for the Cache Valley using non-local weather stations. Wind data from ASOS stations located at the Salt Lake City International Airport and Pocatello Regional Airport (both greater than 100 km away from the Cache Valley) were used as surrogates for wind in the Cache Valley. EPA did not discuss why local wind data from the AWOS station at Logan Airport (KLGU) or data from the DAQ Logan monitor was not used. The topography that controls the diurnal variations in wind speed and direction in the Cache Valley is completely different than that of the topography surrounding Salt Lake City and Pocatello. Further, using data from meteorological stations separated by over 200 km to represent wind conditions for locations separated by 35 km within the Cache Valley is not technically defendable (e.g., see the 90 degree difference in wind direction for pollution roses in Attachment 2, Appendix 1.B). For these reasons, the pollution rose diagrams produced by EPA must be removed as a technical justification for any argument put forth.

EPA Response:
Nationally, EPA used the nearest ASOS station to violating monitors to represent pollution roses during exceedance episodes at those monitors. These pollution roses were created in a national analysis to provide a consistent approach and data set for use in all areas. These wind roses were only one factor EPA considered in making designations, and were more significant in analyses where they were located close to the violating monitor. Specifically in the Cache Valley, the pollution rose played a relatively small role in decisions relative to the Cache Valley nonattainment area boundaries. The Cache Valley is the prototypical trapped valley: a flat basin nearly surrounded by high mountain ridges. Thus, the boundary would be as EPA and Utah recommended independent of the choice of wind rose. The only modification to boundaries occurred in Idaho in EPA's response to the Idaho boundary proposal presenting data showing that a smaller area than the entire county contributed to the violating monitor.

Utah:
The mixing height data for Cache Valley that shows average mixing heights of about 1000 feet during $PM_{2.5}$ episodes may not be accurate. The State cites alternative data from mountain side temperature sensors indicating that the mixing height is more complex than EPA described and may be as low as 300 feet.

EPA Response:
We acknowledge that vertical temperature profiles may vary by time-of-day and episode and that the mixing depth during episodes in Cache Valley may typically be lower than those that form in the Wasatch Front. We believe the vertical temperature information from Utah State will be helpful in $PM_{2.5}$ attainment planning for the Cache Valley. However, horizontal transport of emissions between the Cache Valley portions of Franklin County, Idaho and Cache County, UT will occur regardless of the mixing depth since there is no topographic feature that will inhibit air movement between the two areas within the valley. Thus mixing height is not a major factor in determining whether a portion of Franklin County, ID should be included within a single non-attainment area.

Louisville, KY-IN

The State of Kentucky

Kentucky:
To have Bullitt and Jefferson Counties designated nonattainment would invoke additional, substantial, unnecessary requirements on local government planning agencies, especially in Bullitt County where a thorough review of information shows the County is being impacted by emissions coming from outside the County. Drastic emission reductions are scheduled to occur in the mobile sector throughout the next several years that will greatly impact pollutant levels in the area. Couple these changes with those anticipated by the CAIR, or its replacements, provisions which will further reduce SO_x and NO_x emissions within the region, and the air monitoring data demonstrating attainment of the $PM_{2.5}$ standard, and the result should be that these counties be designated attainment for the $PM_{2.5}$ standard.

EPA Response:
EPA's 9-factor analysis has determined that emissions from Bullitt County contribute to nonattainment in adjacent Jefferson County, and monitoring data shows Bullitt and Jefferson Counties to be violating the 24-hour $PM_{2.5}$ NAAQS. Therefore, it is appropriate to include these Counties in the Louisville nonattainment area. It may be true that emissions from outside Bullitt County are also contributing to the violations monitored in the county, but section 107 requires designation of all areas that are currently violating the standard regardless of where the emissions are coming from. EPA believes that consideration of all nine factors compels designating these counties nonattainment, consistent with the existing nonattainment boundary for the annual $PM_{2.5}$ standard. As stated in Section V, EPA determined violations of the 2006 24-hour fine particulate NAAQS based solely on the most recent three complete years of certified monitoring data. As required by the Act, EPA is setting boundaries based on available data and analysis that best represents present-day conditions, and not on projected emissions reductions that may occur after designation areas are finalized.

The State of Kentucky makes the following points as additional rationale for excluding Bullitt County from the Louisville nonattainment area.

Kentucky:
Kentucky believes that EPA's use of the CES approach was skewed. A review of actual percentages of emissions contributions to an area shows that Bullitt County does not have the potential to contribute to $PM_{2.5}$ levels within the region.

EPA Response:
The CES is an initial screening tool used to determine potential nonattainment area boundaries which can then be modified using additional information provided by the State or other sources. EPA has recommended other types of information for this purpose through guidance which could be considered in the final decision.

The CES for Bullitt County is lower than those for other contributing counties (Jefferson, KY; Floyd, IN; and Clark, IN) in the area, but higher than that of one other county (Jefferson, IN). However, EPA does not find that emissions from this County (857 tons of SO2, 3,140 tons NOx, and 1,318 tons direct $PM_{2.5}$) are without the potential to contribute to $PM_{2.5}$ in the region. In addition, the ambient monitor in Bullitt County shows a violation of the 24-hour $PM_{2.5}$ standard and thus Bullitt County must be included within the nonattainment area.

Kentucky:
Emissions data, population, and commuter data show that the actual percentage of contribution from Bullitt County itself is exceptionally low compared to other counties within the region. This analysis actually points to Bullitt County monitor being impacted by emissions from somewhere else within the region.

EPA Response:
EPA agrees that that Bullitt County is likely being impacted by emissions coming from outside the County as well as those from within the County. However, Section 107(d)(1)(A)(i) of the Act specifies that a nonattainment area shall include "any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant." The design value for the Bullitt County monitor, based on 2005 – 2007 data, is 36 $\mu g/m^3$, which is in violation of the 24-hour PM2.5 NAAQS. Thus, Bullitt County must be designated nonattainment as violating the NAAQS even if the violation is caused in large part by emissions from outside the county.

Kentucky:
The air monitoring data demonstrates attainment of the PM2.5 Standard and a downward trend in monitored values.

EPA Response:
After review of all flagged data and exceptional events claims submitted by the Commonwealth of Kentucky, EPA has determined the 2005-2007 24-hour $PM_{2.5}$ design value for Bullitt County

to be 36 μg/m^3, which is in violation of the NAAQS. EPA also notes this design value is actually an upward trend from Bullitt County's 2004-2006 design value of 34 μg/m^3.

The State of Kentucky makes the following points as additional rationale for excluding Jefferson County from the Louisville nonattainment area.

Kentucky:
EPA should have determined that the correct data were being used for the VMT assessment. Also the VMT data should include locally derived current data which would give a more accurate picture.

EPA Response:
For 2005, a full VMT database at the county, roadway type, and vehicle type level of detail was developed from Federal Highway Administration (FHWA) information. For States and local areas that submitted VMT data that were incorporated in the 2002 NEI, the 2002 NEI VMT data were grown to 2005 using growth factors developed from the FHWA data, and these grown VMT data replaced the baseline FHWA-based VMT data. The resulting VMT database prepared for 2005 include data for all 50 States, the District of Columbia, Puerto Rico, and the Virgin Islands for each of the 12 Highway Performance Modeling System (HPMS) functional roadway types and the 28 MOBILE6 vehicle classes, for a total of 336 records per year per county. The data were prepared in the NMIM National County Database BaseYearVMT table format. At this point, States also had opportunity to submit 2005 estimates that replaced EPA's estimates for 2005. EPA believes that it used the most accurate data available for characterizing VMT in the area.

Kentucky:
Each monitor in the Louisville area would meet the daily standard if EPA approves Kentucky's submitted exceptional events flags.

EPA Response:
EPA's response to Kentucky's comments on our review of the Commonwealth's Exceptional Events submittal for Louisville is provided below.

Kentucky:
The air monitoring data demonstrates attainment of the $PM_{2.5}$ Standard and a downward trend in monitored values.

EPA Response:
After review of all flagged data and exceptional events claims submitted by the Commonwealth of Kentucky, EPA has determined the 2005-2007 24-hour $PM_{2.5}$ design value for Jefferson County to be 39 μg/m^3, which is in violation of the NAAQS. EPA also notes this design value is actually an upward trend from Jefferson County's 2004-2006 design value of 36 μg/m^3.

Review of Kentucky's Comments on EPA's Exceptional Events Review for Louisville

Comments on Step 1 Monthly Average Comparison:

Kentucky:
Annual variations in measured monthly means especially in urban settings not appropriate in every event.

EPA Response:
EPA believes that typical monthly averages over several years give a good overall initial picture of the normal concentrations during the specified time period. Another analysis method is to center the day in question over 30 days and then average that across several similar time periods to get a 'normal' concentration base for comparison. Other approaches we used considered the variability within each month. Accordingly, we used the upper 84th percentile against which we judged air quality for the event day under consideration. The 84th percentile is approximately one standard deviation from the mean and was chosen as a convenient way to initially identify concentrations which are higher than typical values.

Kentucky:
Kentucky believes EPA's use of 24-hour NAAQS as the upper benchmark appears to be in conflict with the guidance provided in 72 FR 13570, Use of a "But For" Test, 2. Final Rule.

EPA Response:
EPA considered all values which exceeded or violated the annual or 24-hour NAAQS. In the two-step analysis values that did not exceed the 24-hour NAAQS and for which the site monthly average was at or above the annual NAAQS did not meet the screening criteria of the analysis. However, in our response, it is stated that the two-step analysis is used only as a screening tool, not as a determinative tool, to identify which values are more likely to meet the requirements of the Exceptional Events Rule. EPA analyzed each claimed exceptional event to determine whether it caused an exceedance or a violation consistent with the requirements of the exceptional events rule.

Kentucky:
EPA calculated 95th percentile values that do not agree with Kentucky's calculated 95th percentile values. Explanation of how EPA' values were calculated is requested.

EPA Response:
EPA does not specify a method for daily $PM_{2.5}$ NAAQS calculations, but for our purposes of evaluating exceptional events submittals the Excel spread sheet formulas was used. There are many common approaches for estimating the percentiles. For the purposes of this analysis, EPA finds the Excel formula to be appropriate. Excel uses the following formula:

$$v_p = v_k + d(v_{k+1} - v_k)$$

Where: p is the percentile of the dataset (i.e. 95 or 84)
v_p is the pth percentile of an ordered dataset
v_k is the kth value in the ordered dataset

$$n = \frac{p}{100}(N-1)+1$$

N is the number of values in the dataset
k is the integer component of n
d is the decimal component of n
(k+d=n)

Comments on EPA denial on July 4, 2004 Submittal:

Kentucky:
EPA states that the Louisville Metropolitan Air Control District (LMACD) did not clearly demonstrate a clear causal relationship between the measured concentration and the event.

EPA Response:
EPA notes that the impacts from the fireworks did not cause the exceedance, as demonstrated in the Sonoma Technology analysis (attached in the TSD), therefore, §50.1(j)(B) and (D) of the exceptional events rule requiring a clear causal relationship to qualify as an exceptional event were not met.

Kentucky:
Kentucky believes EPA's two-step analysis that uses monthly means to determine if the event meets requirement C under the definition of an exceptional event is inappropriate for fireworks.

EPA Response:
Although EPA screened the event using the two-step analysis as stated, each of the firework events were analyzed independently by both EPA Regional staff, OAQPS and by Sonoma Technology, Inc. In the exceptional event attachment to the TSD, we explain that the two-step analysis and the inclusion of the monthly means is used only as a screening tool, and not as a determinative tool, to identify which values are more likely to meet the requirements of the Exceptional Event Rule. EPA's finding considered its own analyses together with the evidence provided by the State.

Comments on EPA's denial of July 3-4, 2005 submittal:

Kentucky:
There is an error in Table 2 for AQS ID 21-111-0051. The observed concentration of 28.9 occurred on 7/03/05 not 7/04/05.

EPA Response:
EPA concurs and has corrected this error.

Kentucky:
Kentucky contends that continuous instruments meet requirement B and provide evidence of "But For" which meets requirement D of the exceptional events rule.

EPA Response:
The empirical data collected by the continuous instruments without analysis of the data does not meet the requirements of §50.1(j)(B) and (D) or of the procedural and substantive requirements of 50.14 of the Exceptional Events Rule. EPA concludes that the fireworks did not cause an exceedance or a violation, as demonstrated in the Sonoma Technology analysis entitled Exceptional Events Analysis Louisville, Kentucky, September 30, 2008 (attached to the TSD).

Comments on EPA's denial of July 3-4, 2006 submittal:

Kentucky:
EPA's denial appears to be based on monthly means and concentrations below 35 $\mu g/m^3$. EPA concurred with a value of 31.4 $\mu g/m^3$ for the Jeffersonville, IN monitor for the same event.

EPA Response:
Although EPA screened the event using the two-step analysis as stated, each of the firework events were analyzed independently by both EPA Regional and OAQPS staff and by Sonoma Technology, Inc. For the review of these analyses, EPA concludes that the fireworks did not cause an exceedance or violation of the NAAQS. This is explained in the attachment to the TSD.

Comments on November 11-12, 2005 Fort Knox Range Fire:

Kentucky:
The observed concentrations for 21-111-0044 on 11/11/2005 should be 28.8. There was no sample collected for site 21-111-0048 on 11/11/2005.

EPA Response:
EPA concurs and has corrected this error.

Comments on July 21, 2004 Events:

Kentucky:
The data in Table 5 is incorrect. Incorrect data was used in EPA's analysis therefore, EPA should reanalyze the event.

EPA Response:
EPA used the Kentucky Technical Demonstration submittal for conducting all data analysis for Kentucky's request for exclusion of flagged data due to exceptional events. A review of the evidence provided by Kentucky and the research done by Regional staff confirms that the correct data was used during the analysis of the event on July 21, 2004. (See attachment to TSD) The error occurred inputting the data into tables for the TSD. The tables were copied from one event to the next and modified to enter the data specific for each event. As such, the error was not material and did not affect the analysis of the event. The error was a typographical error, has been corrected and does not affect the outcome of the analysis of the event.

Kentucky:
The Statement "The NOAA satellite smoke maps show no smoke plume coverage over the

Louisville, KY- IN MSA from the 20th through the 25th of July 2004" is misleading. The maps were used to show that a smoke plume had passed through the area during the event.

EPA Response:
EPA is correcting its TSD to indicate that the maps do show a smoke plume. Although the smoke map shows that the plume passed over the area, however, there is no evidence that the smoke left the higher elevations and reached ground level where it then impacted the air quality. The Sonoma analysis supports EPA's conclusion. The summary for this event is in Sonoma's Exceptional Event Analysis Louisville, Kentucky, page 13[3], which states that the "trajectory does not support long-range transport of $PM_{2.5}$ from Canada/Alaska to Louisville."

Comments on Sep 8-13, 2005 Event:

Kentucky:
The event was influenced by wildfires in two separate regions and therefore the demonstration for smoke impact from Arkansas, Mississippi, Texas and the Northeastern United States.

EPA Response:
EPA understands that Kentucky meant that the event was influenced by wildfires from Arkansas, Mississippi, Texas and the North Western United States as indicated by HYSPLIT Model for September 7-10, 2005. Satellite images depict smoke plumes at very high elevations; Kentucky did not provide any evidence to indicate that the smoke reached ground level where it would then impact air quality. The Sonoma analysis further supports EPA's conclusion. The summary for this event is in Sonoma's Exceptional Event Analysis Louisville, Kentucky, page 40, which states that the "trajectories do not show a clear impact from the fire area on the Louisville areas."

Kentucky:
The assumption that the contribution of organic carbon has to be high enough to cause the exceedance ignores the contribution of other chemical species that may be attributed to the wildfire smoke.

EPA Response:
EPA calculated organic mass increment using the following formula:
$OMI = 2x(OC_{observed} - OC_{average})$ as explained on page 14 of the Louisville TSD. This calculation uses a multiplier of 2.0 to approximate the total PM2.5 mass associated with smoke from wildfires (Turpin and Lim 2001). Kentucky did not provide any evidence that non-carbonaceous components resulted from the fire or contributed to an exceedance.

Kentucky:
The Heading September 13, 2006 for the chart is incorrect. It should be September 13, 2005.

EPA Response:
EPA concurs and has corrected this error.

Comments on July 18-20, 2006 Event:

[3] Exceptional Event Analysis, Sonoma Technology Inc., Sep 30, 2008,

Kentucky:
EPA states the HYSPLIT backward trajectory does not indicate the air mass traveling from the Kansas Wildfires. Kentucky contends that the trajectory begins in the area portion of the plume on July 16th.

EPA Response:
Satellite images depict smoke plumes at very high elevations; Kentucky did not provide any evidence to indicate that the smoke reached ground level where it would then impact air quality. The Sonoma analysis supports EPA's conclusion. The summary for this event indicate that back- trajectories indicate stagnant conditions, and source impact trajectories do not show a clear impact from the fire area sites, including July 16th.

Kentucky:
The assumption that the contribution of organic carbon has to be high enough to cause the exceedance ignores the contribution of other chemical species that may be attributed to the wildfire smoke.

EPA Response:
EPA calculated organic mass increment using the following formula: OMI= $2x(OC_{observed} - OC_{average})$ as found on page 14 of the Louisville TSD. This calculation uses a multiplier of 2.0 to approximate the total PM2.5 mass associated with smoke from wildfires (Turpin and Lim 2001). Kentucky did not provide any evidence that non-carbonaceous components resulted from the fire or contributed to an exceedance.

Comments on August 25-26, 2006 Event:

Kentucky:
The statement that the NOAA satellite smoke maps show no smoke plume coverage over Louisville, KY-IN on August 25th and 26th is misleading. The maps indicate that the smoke passed through the area.

EPA Response:
Satellite images may depict smoke plumes at very high elevations, but Kentucky did not provide any evidence to indicate that the smoke reached ground level where it would then impact air quality. The Sonoma analysis supports EPA's conclusion. The summary for this event is in Sonoma's Exceptional Event Analysis Louisville, Kentucky, page 80, which states that the "the analysis does not indicate any impact from the area of the fires on 8/25/06 or 8/26/06."

Kentucky:
The assumption that the contribution of organic carbon has to be high enough to cause the exceedance ignores the contribution of other chemical species that may be attributed to the wildfire smoke.

EPA Response:
EPA calculated organic mass increment using the following formula:

OMI = 2 x ($OC_{observed}$ - $OC_{average}$) as found on page 14 of the Louisville TSD. This calculation uses a multiplier of 2.0 to approximate the total $PM_{2.5}$ mass associated with smoke from wildfires (Turpin and Lim 2001). Kentucky did not provide any evidence that non-carbonaceous components resulted from the fire or contributed to an exceedance.

Comments on June 2, 2007 Event:

Kentucky:
EPA states that this was a stagnation event. The mild winds from the direction of the smoke plume are also consistent with the source impact tool analysis performed by EPA. Therefore denying concurrence to the event due to air stagnation event appears contradictory.

EPA Response:
Louisville was experiencing an air stagnation event from May 30 through June 2, 2007. It was originally believed that the exceedance was caused by the lack of air movement and the build up of emissions from local sources and not by the Georgia/Florida fires. The existence of the stagnation event was not the basis for the initial denial of Kentucky's request. The request was initially denied because it was believed that the exceedance was, in fact, **caused** by anthropogenic emissions which were exacerbated by the stagnation event.

The analysis found in Sonoma's Exceptional Event Analysis Louisville, Kentucky, page 92 uses the Kenton and Bullitt County sites as surrogates for the Louisville sites based on the close physical proximity to the Louisville monitor sites. The finding of this analysis as presented in the TSD is that "there is likely impact from the Georgia/Florida fires throughout Kentucky on 6/2/07." After reviewing the Sonoma analysis and the potential effect of cloud coverage on the initial evaluation of the NOAA analyzed smoke maps and the NAAPS models; EPA now concurs with the request for exclusion of flagged data at the following sites:

AQS ID	Date	Concentration	Concurrence
21-111-0044	6/2/07	36.8	Yes
21-111-0048	6/2/07	37.2	Yes
21-111-0051	6/2/07	36.3	Yes

Kentucky:
The sections appear to contradict each other. Section C states Sulfates are below seasonal averages and Section D states the maps indicate a regional event of elevated sulfate concentrations and the increased levels of sulfate negates that "But For" the event there would not have been an exceedance.

EPA Response:
EPA agrees that a contradiction exist between statements made in Section C and D. EPA has revised this analysis and corrected the contradiction. Maps in Figures 22 and 23 show low modeled levels of sulfate and moderate smoke. The moderate level of smoke, the strong trajectory analysis as depicted in Figure 21, and the Sonoma Exceptional Event Analysis, Louisville, KY were all considered and resulted in EPA revising its analysis. The revision grants concurrence on three of the values for this date.

Comments on August 2-4, 2007 Event:

Kentucky:
NOAA Satellite Fire Detection Maps do not sufficiently establish a causal.

EPA Response:
Satellite images depict smoke plumes at very high elevations; Kentucky did not provide any evidence to indicate that the smoke reached ground level where it would then impact air quality. The Sonoma analysis supports EPA's conclusion. The summary for this event is in Sonoma's Exceptional Event Analysis Louisville, Kentucky, page 105, which states that the "the analysis does not indicate any impact from the area of the fires on 8/2/07 - 8/4/07."

Kentucky:
Reference to wind speeds and calm conditions made by EPA do not match the local meteorological data provided for August 2, 2007

EPA Response:
Wind speeds were at 8 mph for approximately 45 percent on August 2, 2007. However, for the majority of the rest of the day speeds were at or below 4mph. These data are the basis for EPA's conclusion that calm conditions existed.

Kentucky:
The flagged values are clearly above the monthly mean, the 84th percentiles and the 95th percentiles and therefore are above historical fluctuations, including background.

EPA Response:
Kentucky did not provide sufficient evidence to demonstrate both a causal relationship and that "but for" the event there would have not been an exceedance of the NAAQS. For an event to qualify as an exceptional event it must show, among others, "a clear causal relationship" between the measured exceedance or violation and the event. The summary for this event is in Sonoma's Exceptional Event Analysis Louisville, Kentucky, page 105 which states that "Trajectory analysis does not indicate any impact from the area of the fires on 8/2/07 – 8/4007." Maps supporting this statement can be found on pages 98 and 99.

Kentucky:
The assumption that the contribution of organic carbon has to be high enough to cause the exceedance ignores the contribution of other chemical species that may be attributed to the wildfire smoke.

EPA Response:
EPA calculated organic mass increment using the following formula: OMI= 2x($OC_{observed}$ - $OC_{average}$) as found on page 14 of the Louisville TSD. This calculation uses a multiplier of 2.0 to approximate the total PM2.5 mass associated with smoke from wildfires (Turpin and Lim 2001). Kentucky did not provide any evidence that non-carbonaceous components resulted from the fire or contributed to an exceedance.

Comments on September 6, 2007 Event:

Kentucky:
Absence of a smoke plume over the area is misleading. Kentucky asked for additional clarification as to why EPA believes the connection was not established.

EPA Response:
Satellite images depict smoke plumes at high elevations on September 5, 2007. Kentucky did not provide any evidence to indicate that the smoke reached ground level where it would then impact air quality. The Sonoma analysis supports EPA's conclusion. The summary for this event is in Sonoma's Exceptional Event Analysis Louisville, Kentucky, page 118 (attached in the TSD) which further states that the "Trajectories do not show a clear impact from the fire area on the Louisville area." EPA made its finding on the collection of many factors and the lack of clear evidence that the smoke plume impacted the ground level monitor.

Kentucky:
Data for September 1, 2007 was below annual standard and annual average. In addition data during the event indicated five values over the 95th percentile. Therefore, Kentucky contends that data submitted was sufficient to demonstrate values were in excess of normal historical fluctuations, including background.

EPA Response:
Kentucky did not provide sufficient evidence to demonstrate both a causal relationship and that "but for" the event there would have not been an exceedance of the NAAQS. The Sonoma analysis supports EPA's conclusion. The summary for this event is in Sonoma's Exceptional Event analysis Louisville, Kentucky, page 118 which states that "Trajectories do not show a clear impact from the fire area on the Louisville area." Maps supporting this conclusion can be found on pages 110 and 111.

The State of Indiana

Indiana:
Clark, Floyd, and Jefferson Counties in Indiana are downwind of Louisville.

EPA Response:
Indiana presented wind roses for "elevated $PM_{2.5}$" days in 2005, 2006, and 2007. Indiana concluded from this that the winds generally are southerly on the analyzed days. The wind roses show more 20 percent calm days for each year. EPA has a pollution rose in its Technical Support Document which displays information on the winds and pollution levels in the 2005-2007 period. The pollution rose for Clark County, Indiana shows the winds coming from all directions, even when higher $PM_{2.5}$ concentrations occur. The pollution rose also shows many of the high concentrations occurring when the winds are light. This is consistent with Indiana's findings of many calm days. The meteorological data EPA used does not show a tendency for the winds to come from any direction, so EPA feels it is inaccurate to say the Indiana portion of the Louisville area is downwind from the Kentucky portion.

Indiana:
EPA needs to reconsider its determination that Townships with significant power plants should be designated as nonattainment based upon the cause or contribute rationale. At a minimum, EPA should consider the size of the power plant and the emission controls it has implemented. For example, the only significant source in Madison Township in Jefferson County is IKEC's Clifty Creek power plant. Five of the six 217 MW units at this plant have SCRs and scrubbers are currently under construction for all six units with various star up dates in 2009. Unless there is a documented significant contribution from this plant (or Township) to some nonattainment area, the entire designation and SIP process will accomplish nothing but employ EPA and Indiana staff in a paperwork process that will not improve the environment at all, and in fact, will divert resources from our fully addressing our actual air quality problem in Marion County.

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

EPA has determined that while future emission controls are planned for the Clifty Creek facility in 2009, the current emissions of the Clifty Creek plant in Madison Township (more than 60,000 tons SO_2 and 20,000 tons NO_x annually) contribute to $PM_{2.5}$ NAAQS violations in the Louisville area. Louisville is also an existing $PM_{2.5}$ nonattainment area which has not attained the 1997 standards. EPA finds that it is appropriate to include the same counties, including Madison Township in Jefferson county, in the nonattainment area for the 24-hour standard since air quality data indicate that the same $PM_{2.5}$ components that are the biggest contributors to $PM_{2.5}$ mass on an annual average basis (e.g., sulfate, carbon, nitrate) in this area are also key components of $PM_{2.5}$ mass on the highest days. The Clifty Creek plant, located about 35 miles from violating monitors in Louisville, is a large emitter of $PM_{2.5}$ precursors which can readily convert to particle form over this distance and contribute to nearby violations.

In this analysis, EPA has considered the size of the power plants, including any emission controls that have been implemented and are subject to requirements that will assure that those emission controls remain in place. We commend the future installation of control equipment at Clifty Creek, but, as Indiana notes, much of this control is not currently in place and cannot be considered in an assessment of current air quality and current contributions to that air quality. In addition, to our knowledge, this facility is subject to no enforceable requirement that would mandate that these controls or controls at other power plants in Indiana be operated, particularly if CAIR is vacated.

The Act mandates that any area with a violation must be designated nonattainment, and the designated area must include all nearby areas that contribute to the violation. The designated nonattainment area serves as a primary planning area, wherein lie the primary contributors to nonattainment and thus the primary candidates for control in order to achieve attainment. Indiana implies that the planning process for a larger nonattainment area including townships with large power plants requires more resources than for a smaller area, but Indiana does not further justify this view. Indiana states that a SIP-level analysis of the impact of power plants should be conducted before determining whether to require the State to expend the resources of a

SIP-level analysis on a nonattainment area that includes the power plants. EPA believes that the analytical approach used in the designations process is adequate for determining that large sources of emissions are important contributors to nearby violations. Indiana also considers the CAA mandate for States to develop plans assuring expeditious attainment of the $PM_{2.5}$ standards to require useless effort "in a paperwork process that will not improve the environment at all." EPA disagrees, and believes that contributing power plants should be included in nonattainment areas. Proper evaluation of such sources by the State, in accordance with the requirements of the CAA as part of the nonattainment area SIP developed for each area may result in additional controls for such sources that will help to achieve attainment in the area. As such sources are frequently by far the largest individual sources of direct PM2.5 and PM2.5 precursors in an area, and such emissions play a large role in the ambient PM2.5 in the area, this evaluation is appropriate and consistent with the intent behind the designations process in section 107(d).

Finally, section 107(d) does not provide for designation only of sources that "significantly" contribute to violations; it specifically refers to areas that contribute, which is thus presumably less than the contribution intended by section 110(a)(2)(D). EPA concludes that the sizeable emissions from the Clifty Creek facility clearly contribute along with various other emissions in the area to the violating monitors.

Indiana:
The partial counties with power plants that EPA stated intent to designate nonattainment are more downwind than upwind of the violating monitors within the areas U.S. EPA proposed as nonattainment. The stationary sources in those townships are heavily controlled and will continue to be. Should a mandate for CAIR be issued, Indiana will have an equivalent control program in place prior to the mandate being effective. Since all areas are projected to attain based on SIP-quality modeling, and Indiana's control program for EGUs will be equivalent to RACT, not only are reductions from facilities within the townships that U.S. EPA proposed as nonattainment not necessary, their being designated nonattainment will not result in further emission reductions or serve any purpose. Counties and townships for which monitoring data does not exist, and are not proven to be significantly culpable for a downwind violation, should be considered unclassifiable and designated attainment.

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

Contribution of a source reflects a combination of emissions level and frequency of winds blowing from the source to the violating monitor. Current emissions are quite high, and the winds blow sufficiently frequently from the source to the violating monitor for a significant impact to occur. The power plants at issue have numerous opportunities for further control beyond current control levels, and emissions are expected to remain relatively high even with anticipated controls. Indiana anticipates adopting regulations that will require installation and operation of substantial controls, but EPA must judge whether current emission levels, supported by current regulations that provide assurance of continued operation of existing controls, contribute to existing violations. If the scenario that Indiana anticipates in fact occurs, i.e. if controls are required by an equivalent Indiana rule in the event the Clean Air Interstate Rule is

vacated, and SIP quality modeling based on enforceable emission levels in Indiana and elsewhere (with or without the Clean Air Interstate Rule, as the case may be) demonstrates timely attainment, then the attainment planning requirement resulting from a nonattainment designation will not be burdensome to Indiana. Again, EPA cannot agree to designate areas as attainment based on potential future controls where the best evidence indicates current contribution to nonattainment. As noted above, the Act does not contain a significance threshold and EPA analysis concluded that these partial counties are contributing to the violating monitors.

Madison-Baraboo, WI

Wisconsin:
Your August 2008 correspondence relied on a series of assumptions that concluded Columbia, County contributes to the nonattainment violations in Dane County, and therefore should be considered as nonattainment.

EPA Response:
The Clean Air Act instructs EPA to include contributing counties in nonattainment areas. If only counties monitoring a violation were designated as nonattainment, that would place all the burden of reducing emissions to meet the air quality standards on sources in that county or counties. Including contributing counties as required by the CAA allows the emission reductions to come from both sources near the violating monitor and from nearby sources throughout the area that are contributing to the violation. The State thus has the flexibility to determine the best way to reduce emissions in the area to improve air quality. In Columbia County, the Columbia Generating Station may be subject to future emission controls due to the Mercury Multipollutant Rule, but its current emissions contribute to the violation in Dane County and EPA must make designations based on current air quality data. EPA is designating Pacific Township in Columbia County as nonattainment because the power plant generates a significant fraction of Columbia County's emissions which contribute to the violating monitor.

Wisconsin:
Dane County, in partnership with the State, City of Madison, local businesses, utilities, and citizens has also taken numerous actions to reduce emissions on a voluntary basis.

EPA Response:
EPA commends the improved air quality results from the voluntary emission reduction programs in the Madison area. The air quality improvements may be enough for the Madison area 2006-2008 monitoring data to show the area meets the standard. If that is the case, Wisconsin can early certify and submit this data to EPA following the 2008 data policy. If appropriate, EPA can designate the counties in the Madison area as attainment based on this new data demonstrating that the area is attaining the standard. The planned emission reduction will help further improve air quality, but they cannot be used in making the designation which must be based on current conditions. The uncertainty of future emission reductions and new or expanded sources, as well as the voluntary nature of the reductions, does not allow EPA to make an accurate determination of the nonattainment area if these assumptions were used. Thus, EPA considers the current emission controls in place for designations as required by the Act.

Milwaukee-Racine, WI

Wisconsin:
EPA's August 2008 correspondence relied on a series of assumptions that concluded Racine and Waukesha Counties contribute to the nonattainment violations in Milwaukee County, and therefore should be considered as nonattainment.

EPA Response:
The Clean Air Act instructs EPA to include contributing counties in nonattainment areas. If only counties monitoring a violation were designated as nonattainment, that would place all the burden of reducing emissions to meet the air quality standards on sources in that county or counties. Including contributing counties as required by the CAA allows the emission reductions to come from both sources near the violating monitor and from sources throughout the area that are contributing to the violation. The State thus has the flexibility to determine the best way to reduce emissions in the area to improve air quality.

Wisconsin requests Racine and Waukesha Counties in the Milwaukee area be designated attainment. Waukesha County is included in the nonattainment area because it has high population, high commuting, and moderate levels of emissions (12,000 tons NOx per year; 1,000 tons SO_2 per year; 2,000 tons direct $PM_{2.5}$ per year). Racine County is included in the nonattainment area because it has high population, high commuting, and moderate levels of emissions (5,800 tons NOx per year; 700 tons SO_2 per year; 1,200 tons direct $PM_{2.5}$ per year). Meteorological data indicates contributions predominantly from the south and west on high concentration days, which further supports the inclusion of Waukesha and Racine Counties in the Milwaukee nonattainment area.

Muscatine, IA

The State of Iowa

Iowa:
Measurements from local and regional monitoring networks indicate that the violating monitor in Muscatine County is influenced significantly by local (City of Muscatine) sources and by regional events outside the State. Exceedances at the Muscatine monitor occur on days when other monitors in the area record considerably lower values, suggesting that the exceedances are due to local sources. The monitor is located approximately 500 meters from the Grain Processing facility, suggesting substantial influence by emissions from the local sources on monitored values.

EPA Response:
EPA's detailed analysis of air quality data for Muscatine County is included in the Technical Support Document (TSD) for the area designation for Muscatine County. (The Muscatine County TSD was prepared by Region 7, and the Scott County, Iowa and Rock Island County, Illinois TSDs, also referenced in this document, are a joint effort by Regions 5 and 7. References herein to "TSDs" are to relevant portions of two or more TSDs as indicated by the context.) EPA agrees that on a number of exceedance days the Muscatine monitor is influenced

significantly by "local" events and by regional events outside the state. EPA also acknowledges that the monitor is located near the Grain Processing facility. However, the Clean Air Act (section 107(d)(1)(A)(i)) instructs the state and EPA to designate, as nonattainment, areas which violate a National Ambient Air Quality Standard (NAAQS), and nearby areas which contribute to violations. Iowa uses the variations in area monitored values to support its argument that only a very few sources in the Muscatine area contribute to violations in any meaningful way. EPA does not believe this provides sufficient information (without filter analyses or similar studies) alone, or in conjunction with other factors in Iowa's "cumulative weight-of-evidence" approach, to conclude that some local $PM_{2.5}$ sources contribute to violations but other nearby sources do not.

We note that the Muscatine (Garfield School) monitor near the Grain Processing facility is a federal reference method monitor (classified as population-oriented, neighborhood scale), and is designated under 40 CFR Part 58 as eligible for comparison with the 24-hour $PM_{2.5}$ NAAQS. The monitor meets EPA siting criteria, and the state has not claimed that any specific data are invalid or otherwise unrepresentative of air quality in the area. Iowa has not provided sufficient information concerning values recorded by the monitor for EPA to conclude that local source influence does not include contributions from sources outside the narrow boundary recommended by the state. Also, as explained below and in the Muscatine TSD, there is no speciation data available for the monitor which would provide further evidence of source contribution.

Iowa:
On exceedance days, an average of 32 percent of local source emissions is from the Grain Processing and Muscatine Power and Water facilities.

EPA Response:
EPA acknowledges that the AERMOD modeling results predict significant impacts from these facilities. However, the state did not attempt to model impacts from other sources in the area to determine whether other sources might also contribute. In addition there is no speciation data for the Muscatine monitor to indicate source contributions. Therefore, EPA does not consider this information sufficient to support the small boundary recommended by the state.

Iowa:
A zero-out analysis of all Muscatine County emissions outside the City of Muscatine result in only minimal reductions in $PM_{2.5}$ concentrations at the violating monitor on predicted exceedance days.

EPA Response:
The zero-out modeling is instructive but not conclusive with respect to the appropriate boundaries. In establishing boundaries for contributing sources or areas in the Muscatine area, we do not believe it is appropriate to establish a bright line regarding the amount of reduction in predicted concentration which an area must be below to show that it is not contributing to violations of the NAAQS (for example, that a 4% reduction in a zero-out run is insignificant, but some higher amount is significant). Instead, as explained in more detail in the TSDs, in this response to comments, and in other materials in the record, we are establishing the nonattainment

boundary to encompass sources of almost all of the nearby $PM_{2.5}$-related emissions in the area which could, based on available information, contribute to $PM_{2.5}$ concentrations at the violating monitor. The states will subsequently determine during development of their implementation plans the specific reductions needed, and which sources in the nonattainment area they will come from in order to achieve the NAAQS. EPA believes that the boundaries defined in this rulemaking will enable the states to perform these analyses and develop strategies to achieve the standards.

Iowa:
PSAT simulation is consistent with the zero-out results (discussed above), showing very small contributions from sulfate and nitrate emissions sources in Rock Island County, and similar contributions from Scott and Muscatine counties to particulate sulfate and nitrate concentrations at the violating monitors.

EPA Response:
EPA agrees that the primary contributing pollutant from local sources in the area to the violating monitors is direct $PM_{2.5}$ rather than precursor emissions. EPA's analysis of this information is discussed in more detail in the TSD for Scott and Muscatine counties. However, as explained elsewhere, EPA believes that other nearby sources of $PM_{2.5}$ in each area nonetheless contribute, or have the potential to contribute. (See also, the discussion of contributing emissions in the TSD for Rock Island.)

Iowa:
Iowa has re-reviewed the nine factors, in particular wind roses in the two areas, as well as the growth pattern in Rock Island County (which the commenter states indicates negative growth for the foreseeable future), and believes that the data support the smaller boundary originally recommended by the State.

EPA Response:
EPA has carefully considered all of the information submitted by Iowa regarding appropriate boundaries. Wind roses, for example, are instructive, but not dispositive of the appropriate boundary for an area. (For example, as discussed above and in the TSD, for Scott County, other local point sources in the area contribute to monitored exceedances.) EPA's review of the information, and additional information made available to EPA after the 120-day letter (and included in the docket) and has revised its 9-factor analysis based on this review (see the TSDs for a detailed discussion of the analyses). Although this analysis has caused EPA to determine that a different (partial county) boundary is appropriate, EPA does not agree, for reasons stated herein and in the TSDs, that the very small boundaries for each area suggested by the State is appropriate for these areas.

<u>Nez Perce Tribe</u>

Nez Perce Tribe
The Nez Perce Tribes recommended that EPA classify the Nez Perce Reservation as in an attainment/unclassifiable area for particulate matter $PM_{2.5}$ standards based on three years of FRM monitoring data collected from 2005-2007. The tribe provided information related to the

monitoring program, a quick look report from the EPA's Air Quality System for the monitor and the computed annual and 24-hour design values for the monitor.

EPA Response:
After review of the details of the monitoring program and the computed design values, EPA is pleased to announce that the Nez Perce Reservation will be designated as in an attainment/unclassifiable area.

Oakridge, OR
Oregon:
The Lane Regional Air Protection Agency (LRAPA) submitted comments to the EPA Docket on the recommended $PM_{2.5}$ nonattainment boundary for Oakridge. ODEQ fully supports LRAPA's recommendation and analysis that the Oakridge Urban Growth Boundary (UGB), as recommended by Governor Kulongoski in December 2007, is the most appropriate nonattainment boundary. ODEQ requests that LRAPA's comments and technical analysis be considered in the same manner as a State comment. ODEQ has worked closely with LRAPA to address $PM_{2.5}$ pollution in Oakridge, and we value this partnership to maintain clean air in Oregon.

EPA Response:
The Lane Regional Air Protection Agency (LRAPA) submitted their comments to the EPA Docket as public comments, and EPA has responded in full to LRAPA's comments in EPA's Response-to-Public-Comments document.

Paducah-Mayfield, KY-IL

The State of Kentucky

Kentucky:
To have McCracken County designated nonattainment would invoke additional, substantial, unnecessary requirements on local government planning agencies with little or no benefit to the area. Substantial local emission reductions from McCracken County have already occurred, or will have occurred well before attainment dates for this standard. Drastic emission reductions are scheduled to occur in the mobile sector throughout the next several years that will greatly impact pollutant levels in the area. Couple these changes with those anticipated by the CAIR, or its replacements, provisions which will further reduce SOx and NOx emissions within the region, and the air monitoring data demonstrating attainment of the $PM_{2.5}$ Standard, and the result should be that this County be designated attainment for the $PM_{2.5}$ Standard.

EPA Response:
EPA commends McCracken County for local emission reductions that have been and continue to be achieved. However, monitoring data shows McCracken County to be violating the 24-hour $PM_{2.5}$ NAAQS. EPA therefore finds that it is appropriate to include this County in the Paducah-Mayfield nonattainment area. EPA believes that consideration of all nine factors compels designating this County nonattainment. As stated in Section V above, EPA determined violations of the 2006 24-hour fine particulate NAAQS based solely on the most recent three

complete years of certified monitoring data. EPA is setting boundaries based on available data and analysis that best represents present-day conditions, and not on projected emissions reductions that may occur after designation areas are finalized.

The State of Kentucky makes the following points as rationale for excluding McCracken County from the Paducah-Mayfield nonattainment area.

Kentucky:
The monitor located in McCracken County would meet the daily standard if EPA approves Kentucky's submitted exceptional events dates.

EPA Response:
EPA's response to Kentucky's comments on our review of the Commonwealth's Exceptional Events submittal for Paducah-Mayfield is provided below.

Kentucky:
The population of McCracken County has shown a continuing decline over the past several years and that decline is anticipated to continue.

EPA Response:
EPA understands the population of McCracken County has shown a continuing decline over the past several years, however, the County currently makes up 47 percent of the population in the Paducah-Mayfield CSA counties that EPA stated intentions to designate as nonattainment in our August 2008 letters to State Governors. McCracken County also has a significantly higher population density then the other four counties in this area. EPA's finds this factor adds support to EPA's decision to include McCracken County in the Paducah-Mayfield nonattainment area.

Kentucky:
The air monitoring data demonstrates attainment of the PM2.5 Standard and a downward trend in monitored values.

EPA Response:
After review of all flagged data and exceptional events claims submitted by the Commonwealth of Kentucky, EPA has determined the 2005-2007 24-hour $PM_{2.5}$ design value for McCracken County to be 36 $\mu g/m^3$, which is in violation of the NAAQS. EPA also notes this design value is actually an upward trend from McCracken County's 2004-2006 design value of 33 $\mu g/m^3$.

Review of Kentucky's Comments on EPA's Exceptional Events Review for Paducah

Comments June 21-24, 2005, Events:

Kentucky:
The flagged values are clearly above the monthly mean, the 84^{th} percentiles and the 95^{th} percentiles and therefore are above historical fluctuations, including background. In support of an exceptional event determination EPA Region 4 declares that "the requested values passed both steps" of the two-step analysis.

EPA Response:
The two-step analysis was used as an aid, not a determinative tool, to help decide which values were more likely to meet the requirements of the Exceptional Event Rule. In the demonstrations submitted to EPA, Kentucky did not provide sufficient evidence to demonstrate both a causal relationship and that but for the event there would not have been an exceedance of the NAAQS. The Sonoma analysis supports EPA's conclusion. The summary for this event is in Sonoma's Exceptional Event Analysis, Kentucky, page 10, which states that the Trajectories show impact from the NE but not from fire area and indicates that the exceedance was more likely impacted by a regional sulfate event as opposed to a smoke event." This is also discussed in the TSD.

Kentucky:
Kentucky contends that NOAA "Hot spot" maps, wind roses and historical data is sufficient evidence to establish a causal relationship.

EPA Response:
The Sonoma analysis supports EPA's conclusion. The summary for this event found in Sonoma's Exceptional Event Analysis Kentucky, page 9 states that "trajectory analysis shows impact from the NE, not from fires." This is attached to the TSD. Furthermore, Kentucky did not provide evidence expected from local events such as news media reports or reports from the local Fire Marshal.

Kentucky:
Kentucky contends that organic carbon is 1.3 times higher than background level measurements, thereby confirming Kentucky's justification for exclusion under the Exceptional Event Rule.

EPA Response:
Kentucky has requested an exclusion of data under the Exceptional Event Rule for a wildfire event. Sulfate matter accounted for greater than fifty percent of the mass of the speciated fine particulate measured on June 21, 2005. Therefore, the request to exclude data impacted by the wildfire event identified on June 21st and June 24th in Kentucky's exceptional event submittal was denied. The Sonoma analysis supports EPA's conclusion. The summary for this event, found in Sonoma's Exceptional Event Analysis Kentucky, page 9, states that "High sulfate and low OC values (with respect to sulfates) indicate a sulfate event rather than a fire event." The average three-year standard deviation organic carbon in the month of June at all of the monitoring sites in Kentucky is 1.6 and the average concentration is approximately 4 $\mu g/m^3$, therefore, the organic carbon values 1.3 times higher than background measurements are not especially high and are well within expected values.

Kentucky:
Kentucky contends the following:

> "the understanding of atmospheric chemistry does not allow for generalizations to estimate contributions based o species of $PM_{2.5}$; that precursor gases react with air pollutants to form a variety of compounds; and also that the burning of biomass results in elevated sulfate concentrations."

EPA Response:
EPA disagrees with Kentucky's first statement. There are known major components of smoke from biomass burning. Through the well established speciation network, there are obvious and evident markers that show exceptional contributions of wildfire or biomass smoke in an area. While the statement regarding precursor gases reactions is an obvious statement, EPA is not sure it is completely relevant to $PM_{2.5}$ speciated compounds. Kentucky did not provide supportive discussion or include evidence from available speciation measurements where there were atypical concentrations of non-carbonaceous constituents.

EPA is not aware of research that definitively links significant amounts of sulfate production from biomass burning. We referenced Turpin and Lim (2001) paper, which is the basis for our OMI calculations used in the TSD and provide the research paper "Gaseous and Particulate Emissions from Prescribed Burning in Georgia" (Lee et al. 2005) that identifies the $PM_{2.5}$ mass from fires as composed of 60 percent organic carbon and 0.2 percent sulfate which further supports our use of the OMI method. Kentucky did not include any evidence that shows atypical levels of sulfates resulting from the event, particularly distinguishing areas impacted by the smoke compared to other locations in the region.

Comments September 10, 2005, Event:

Kentucky:
The flagged values are clearly above the monthly mean, the 84^{th} percentiles and the 95^{th} percentiles and therefore are above historical fluctuations, including background. In support of an exceptional event determination EPA Region 4 declares that "the requested values passed both steps" of the two-step analysis

EPA Response:
The two-step analysis is used as an aid, not as a determinative tool, to help decide which values were more likely to meet the requirements of the Exceptional Event Rule. Kentucky did not provide sufficient evidence to demonstrate both a causal relationship and that but for the event there would have not been an exceedance of the NAAQS.

Kentucky:
Kentucky does not concur with EPA's conclusion that request for concurrence "solely based on wind speed and wind direction"

EPA Response:
EPA notes that Kentucky provided NOAA satellite images and historical data. However, the Commonwealth's discussion of the September 10, 2005 event consists solely of the statement that "The wind direction and wind speed indicate that an air mass held the smoke plume over Kentucky for 3 days." This statement alone does not meet the requirements for an event to qualify as an exceptional event. Kentucky did not provide any evidence that indicated that the smoke reached ground level where it would then impact air quality or other evidence such as newspaper articles documenting local haze or discussions in support of the impact from this event.

The summary for the Sonoma analysis for this event is in the Exceptional Event Analysis Louisville, Kentucky, page 47 which states that "Sulfate concentrations are very high throughout the region during 9/8-9/13/05, indicating a regional sulfate event." It also states that "meteorological analysis shows a surface high centered over Kentucky that is likely causing the sulfate event." The conclusion is that the high $PM_{2.5}$ is not impacted from forest fires.

Kentucky:
EPA provides the seasonal averages for sulfates and organic carbon on September 10, 2005 when no speciation samples were collected on that day.

EPA Response:
The VIEWS maps, both for sulfate and organic carbon, are created using the measured concentrations collected from the speciation monitors and entered into the Air Quality Systems (AQS) data base. The concentration gradients shown on the maps are spatially averaged between the monitors that collected samples on any given day. Empirical data points were not available for September 10th as speciation samples were not collected by Kentucky. However, as stated, the concentration is calculated from the spatial averaging of speciation data collected by other samplers throughout the country. If you refer back to the TSD the spatially averaged sulfate concentration for September 10th, 2005 was between 14 and 16 $\mu g/m^3$ and organic carbon was between 2 and 4 $\mu g/m^3$, respectively (see Exceptional Event Analysis Louisville , Kentucky, Exceptional Event, 9/8/05-9/13/05, page 30, maps 9/10/05)

Kentucky:
EPA provided a map with the same particulate matter trace but identifies the trace as SO_4.

EPA Response:
As noted the sulfate trace for the VIEWS SO4f map generated is the same as that of the smoke plume. The VIEWS maps, both for sulfate and organic carbon, are created using the measured concentrations collected from the speciation monitors and entered into the AQS database. The concentration gradients shown on the maps are spatially averaged between the monitors that collected samples on any given day. The difference between the smoke analyzed map and the views map as discussed in the TSD is that sulfate is based on measured concentrations and is therefore at ground level and the estimated smoke is at unknown elevations.

Kentucky:
Kentucky contends the following: the understanding of atmospheric chemistry does not allow for generalizations to estimate contributions based on species of $PM_{2.5}$; that precursor gases react with air pollutants to form a variety of compounds; and also that the burning of biomass results in elevated sulfate concentrations.

EPA Response:
EPA disagrees with Kentucky's first statement. There are known major components of smoke from biomass burning. Through the well established speciation network, there are obvious and evident markers that show exceptional contributions of wildfire or biomass smoke in an area. While the statement regarding precursor gases reactions is an obvious statement, we're not sure it

is completely relevant to $PM_{2.5}$ speciated compounds. Kentucky did not provide supportive discussion or include evidence from available speciation measurements showing atypical concentrations of non-carbonaceous constituents.

EPA is not aware of research that definitively links significant amounts of sulfate production from biomass burning. We referenced Turpin and Lim (2001) paper, which is the basis for our OMI calculations used in the TSD and provide the research paper "Gaseous and Particulate Emissions from Prescribed Burning in Georgia" (Lee et al. 2005) that identifies the PM2.5 mass from fires as composed of 60 percent organic carbon and 0.2 percent sulfate which further supports our use of the OMI method. Kentucky did not include any available empirical evidence that shows atypical levels of sulfates resulting from the event, particularly distinguishing areas impacted by the smoke compared to other locations in the region.

Comments July 19, 2005, Event:

Kentucky:
The measured values flagged are clearly above the monthly mean, the 84th percentiles and the 95th percentiles and therefore are above historical fluctuations, including background. In support of an exceptional event determination EPA declares that "the requested values passed both steps" of the two-step analysis

EPA Response:
The two-step analysis is used as an aid, not as a determinative tool, to help decide which values were more likely to meet the requirements of the Exceptional Event Rule. Kentucky did not provide sufficient evidence to demonstrate both a causal relationship and that "but for" the event there would have not been an exceedance of the NAAQS. In the Sonoma Analysis the summary for this event is in the Exceptional Event Analysis, Kentucky, page 20 which states that "$PM_{2.5}$ concentration of 36.7 $\mu g/m^3$ is within the 95th percentile of summer concentrations for 2006 and just above the 95th percentile of summer concentrations for 2000-2006." EPA agrees that the concentrations were higher than the typical concentrations including background. However, this is only one of the requirements specified by the exceptional events rule. As explained in the TSD, the State did not demonstrate that the exceedance or violation would not have occurred but for the event.

Kentucky:
The data analysis along with evidence from an independent organization, NOAA, and wind speed/wind direction graphs provide evidence of the causal relationship between the measured exceedance and the exceptional event.

EPA Response:
Satellite images depicting the location of local fires and wind roses providing wind speed and winds directions traveling predominantly from the direction of local wildfires may show that there was air quality impact, but not by itself demonstrate that the event caused the exceedance or NAAQS violations. In addition, such local events should have news media reports or reports from the local Fire Marshal but Kentucky failed to submit any such reports. Satellite images depict smoke plumes at high elevations that may not impact the ambient air monitoring network

samples. Kentucky did not provide sufficient evidence that the smoke from forest fires caused the exceedance or violation The Sonoma analysis (attached in the TSD) cites a lack of strong trajectories; high regional sulfate concentrations, and meteorological conditions that were conducive to high secondary PM formation.

Kentucky:
The Paducah site was discontinued in March of 2006. EPA has not demonstrated that a sulfate event occurred in the Southeast on July 19, 2006. The NOAA analyzed smoke map trace is the same as EPA VIEWS OCf map with the same particulates matter trace but identifies the trace as organic carbon .

EPA Response:
As noted the organic carbon trace for the VIEWS OCf map generated is the same as that of the smoke plume. The VIEWS maps, both for sulfate and organic carbon, are created using the measured concentrations collected from the speciation monitors and entered into the Air Quality Systems (AQS) data base. The concentration gradients shown on the maps for July 19 are spatially averaged between the monitors that collected samples on any given day. These maps indicate a sulfate event rather than a smoke event.

Kentucky:
Kentucky contends that the high sulfate concentrations do not preclude defining the event as an exceptional event. TVA Shawnee electrical utility company reported zero hours of noncompliance during the third quarter. Therefore, the exceptional event meets the definition as defined in 40 CFR 50.1(j).

EPA Response:
First, sulfate concentrations can result from routine emissions of SO2 from nearby and regional sources. EPA is not aware of research that definitively links significant amounts of sulfate production from biomass burning. We referenced Turpin and Lim (2001) paper, and the research paper “Gaseous and Particulate Emissions from Prescribed Burning in Georgia" (Lee et al. 2005) that identifies the PM2.5 mass from fires as composed of 60% organic carbon and 0.2% sulfate which further supports our stand. Kentucky did not provide supportive discussion or include evidence from available speciation measurements showing atypical concentrations of non-carbonaceous constituents. As stated previously, organic carbon was low on that day indicating a non-smoke event.

The State of Illinois

Illinois:
The largest emission source in Massac County is the Joppa Steam Plant. The Joppa Steam Plant Consists of six boilers, each rated at 183 MW. Currently, NO_x control is achieved by the use of low NO_x burners, with overfire air also being applied at boiler 6. Currently, sulfur emissions at the Joppa plant are reduced by use of low sulfur coal in all boilers. Particulate matter emissions are controlled by cold-side ESPs. Illinois EPA urges EPA to consider that Ameren, the owner of the Joppa Steam Plant, has committed to significantly reduce both its NO_x and SO_2 emissions through the installation of new control equipment, which will be operational

before the likely attainment date of the 24-hour $PM_{2.5}$ standard. All the low NO_x burners will be supplemented with separated overfire air (SOFA) in 2010 to increase combustion efficiency. In addition, boilers 1 and 2 and boilers 5 and 6, respectively, will get new scrubbers and baghouses in 2013 and 2014. A copy of Ameren's commitment to install controls at the Joppa plant is included as Attachment 6 of the Illinois comment letter.

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

EPA has determined that while future scrubbers and baghouses are planned for the Joppa Steam Plant in 2013 and 2014, the current emissions of the plant (more than 25,000 tons SO_2 and 5000 tons NOx annually) and meteorological data indicate that it currently contributes to $PM_{2.5}$ NAAQS violations in the nearby Paducah area.

The emissions from the Joppa Steam Plant are significant. The planned emission controls for the Joppa plant have the potential to greatly reduce the plant's emission. The air quality in the Paducah area will benefit from reductions at the Joppa plant. However, EPA designates areas based on current information regarding emissions and air quality concentrations. Projections of future emissions reductions or increases are not reliable because plans can change. It would be misleading to designate area as attainment due to anticipated emission reductions or to designate an area as nonattainment based on projected new or expanding sources. The Joppa plant accounts for a majority of Massac County emissions, so in Illinois, EPA is designating just Hillerman Precinct of Massac County as part of the nonattainment area. This partial county area along with McCracken County, Kentucky, will make up the Paducah nonattainment area.

<u>Parkersburg-Marietta, WV-OH</u>

West Virginia:
West Virginia agrees with the data and analysis presented in Factor 1 (Emissions data), Factor 2 (Air quality data), and Factor 3 (Population density and degree of urbanization) of EPA's technical analysis. West Virginia also agrees that, since there are no topographic or geographic features in the air shed, Factor 7 (Geography/topography) is not a significant factor within the overall analysis. However, West Virginia contends that the data presented in EPA's analysis supports exclusion of Pleasants County, including Grant Tax District, from the Parkersburg-Marietta nonattainment area.

EPA Response:
EPA's recommendation to include the Grant Tax District within the Parkersburg-Marietta nonattainment area was based upon our review of available data and implementation of EPA policy and guidance. EPA reviewed all available technical data relevant to each of these factors cited by West Virginia. EPA's recommendation, to include the Grant Tax District as part of the nonattainment area, is supported by EPA's analysis in its entirety and not solely upon individual analysis of select factors therein. Pleasants County contains two large coal-fired power plants (Pleasants and Willow Island) and EPA's analysis supports a finding that emissions from these plants contribute to $PM_{2.5}$ formation in the nonattainment area. Recognition that Grant Tax

District is a lower ranking candidate based upon certain factors does not preclude EPA from determining on the basis of all factors that the Grant Tax District "contributes to" nonattainment in the Parkersburg-Marietta nonattainment area.

West Virginia:
Relating to Factor 4 (Traffic and commuting patterns) of EPA's technical analysis, West Virginia agrees with EPA's conclusion that, in comparison to Washington and Wood Counties, Pleasants and Wirth Counties are lower ranking candidates for nonattainment designation on the basis of traffic and commuting data. West Virginia submitted supplemental VMT growth projections (2002-2025) from the Wood-Washington-Wirt Interstate Planning Commission for Wood and Pleasants Counties to demonstrate the that the Grant Tax District of Pleasants County has a smaller overall VMT contribution to the overall nonattainment area than that of the entire county that EPA analyzed.

EPA Response:
Consistent with the CAA, EPA's designations reflect EPA's analysis of data reflecting current conditions, as opposed to predictions of future conditions. For purpose of consistency, EPA relied upon 2005 VMT for our analysis of commuting patterns within all proposed nonattainment areas. In general, EPA's analysis used the most recently available historic data, rather than long-term VMT projections. EPA does not believe that the use of predictive travel demand modeling would be consistent with the CAA because such modeling does not reflect current conditions. Rather, predictive travel demand modeling is a tool for predicting conditions that may occur after designation determinations are finalized. For the partial county areas, we assessed the factors based upon county level information (with the exception of the contribution of large power plants).

West Virginia's supplemental 2002 VMT information compares Grant Tax District VMT data to Wood County VMT data. EPA's analysis indicates that Pleasants County has low VMT relative to the other counties in the area. West Virginia's supplemental VMT information does not conflict with EPA's analysis relating to traffic and commuting patterns. Nor does this VMT information support an overall conclusion that "Grant Tax District . . . emissions should not only be insignificant in 2002, but also will be even lower in 2005." Recognition that Grant Tax District is a lower ranking candidate based upon traffic and commuting patterns does not preclude EPA from determining on the basis of all factors that the Grant Tax District "contributes to" nonattainment in the Parkersburg-Marietta nonattainment area.

West Virginia:
West Virginia states that EPA reached no definitive conclusion for Factor 5 (Growth rates and patterns) of its technical analysis for the Parkersburg-Marietta area. West Virginia argues that future VMT increases (based on its transportation conformity projections between 2002 and 2025) for the area are not expected to result in growth in highway motor vehicle emissions. West Virginia contends that conformity projections provided by the Wood-Washington-Wirt (WWW) Planning Commission demonstrate decreased NOx and direct $PM_{2.5}$ emissions in future conformity analysis years extend to 2025, and as a result, that highway emissions growth (in the WWW study area counties) is an insignificant factor for the Parkersburg area.

EPA Response:
EPA used historical county-level population and VMT growth estimates for all areas of the country. EPA did not take into consideration projected long-term trends in VMT growth beyond the $PM_{2.5}$ designation timeframes, such as future year transportation conformity analyses. EPA used the same methodology for estimating historic VMT growth in all nonattainment areas analyzed.

West Virginia:
With respect to Factor 6 (Meteorology-weather transport patterns) of EPA's technical analysis, West Virginia provided supplemental information in order to support its contentions that emissions from Grant Tax District do not contribute to violations monitored at the Wood County Ambient Monitor and that Pleasants County, including Graham Tax District, should not be included in the nonattainment designation. West Virginia used NOAA Air Resource Laboratory's HYSPLIT trajectory model (using 100, 250, and 500 meter trajectory heights) to provide a limited analysis of air patterns during each of the 19 days during which monitoring data within the Wood County Ambient Monitor exceeded 30 $\mu g/m^3$. Using this model, WVDEP calculated backward trajectories to track pollutants from the site of the monitor. West Virginia analyzed these 19 backward trajectories to determine which trajectories "passed over" Grant Tax District. Based upon the data provided, West Virginia observed that "none of the 19 trajectories on high $PM_{2.5}$ days pass through the Grant Tax District (Pleasants County partial)." Therefore, West Virginia concludes that emissions from Pleasants County do not contribute to the Parkersburg nonattainment area and should not be included in the nonattainment designation.

West Virginia also commented upon the fact that EPA's Technical Analysis did not provide a pollution trajectory plot depicting weather patterns in the Parkersburg-Marietta area. West Virginia concludes that, due to the absence of such plot, EPA has inadequate justification based on weather patterns to conclude that Pleasants County (partial) should be included in the nonattainment designation for the Parkersburg-Marietta area.

EPA Response:
EPA does not believe that West Virginia's analysis supports a finding that "emissions from Pleasants County (partial) do not contribute to the Parkersburg-Marietta nonattainment area and should not be included in the nonattainment designation."
As noted above in EPA's response to West Virginia's comments pertaining to the Huntington-Ashland nonattainment area, West Virginia's backward trajectory analysis presents a "direct causal relationship" test that inappropriately limits the geographic scope of "ambient air quality in a nearby area" to the location of an air quality monitor. The analysis presented is limited in that it seeks to show the impact of emissions from Grant Tax District only on the Wood County Ambient Monitor. Section 107(d)(1)(A)(i) provides that nonattainment areas must include "any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet)" the applicable NAAQS. 42 U.S.C. § 7407(d)(1)(A)(i). The definition of "nonattainment" specifically includes any area that "contributes to" violations of NAAQS in a nearby area, not only those that literally "cause" such violations at specific monitoring locations. Ambient $PM_{2.5}$ at every monitor reflects the cumulative impacts of many types of emissions from many sources, near and far, that result in primary and secondary formation of particles.

Additionally, EPA believes that West Virginia's application of the proposed HYSPLIT backward trajectory analysis is incomplete. West Virginia's analysis used only one trajectory for each day where measurements exceeded 30 $\mu g/m^3$. West Virginia's analysis focuses on back trajectories from the monitoring site, and, therefore, does not adequately demonstrate that emissions from the Grant Tax District does not "contribute to" ambient air quality in the Parkersburg nonattainment area. West Virginia's limited analysis fails to take into account that both of the coal-fired power plants located in the Grant Tax District are significant sources of direct $PM_{2.5}$ and precursor (NO_x and SO_2) emissions. A more complete and relevant analysis would compute multiple forward HYSPLIT trajectories from the coal-fired power plants in question to determine if emissions from those facilities could have "passed through" any portion of the nonattainment area at issue. Recognizing that NOAA's HYSPLIT Model is a multifaceted tool, EPA believes a more complete analysis would support its contention that emissions from the Grant Tax District "contribute to" ambient air quality in the Parkersburg nonattainment area.

Although EPA's Technical Analysis for the Parkersburg-Marietta area did not provide a pollution trajectory plot depicting weather patterns, EPA reasonably developed an analytical approach to evaluate the meteorological influence that counties within in the Parkersburg-Marietta area have on violations of the 24-hour $PM_{2.5}$ NAAQS in Wood County. EPA provided an analysis of NWS wind direction and wind speed data for 2004-2006, including warm season trajectory factor values which represent the meteorological influence that a particular county's emissions have on the violating county. EPA explained that for the Parkersburg-Marietta area it calculated warm season trajectory factor values because the data indicates that all of the high $PM_{2.5}$ days occur in the warm season. EPA explained that a higher trajectory factor value means that air masses -frequently traversed the county on their way to the violating county. EPA believes that the analysis presented weighs in favor of a finding that emissions from Pleasants County have a meteorological influence on Wood County. The absence of a pollution trajectory plot depicting the data does not negate the meteorological analysis presented by EPA.

West Virginia:
West Virginia contends that, based upon presence of emission controls and the prospects for future emission controls for the two coal-fired power plants in the Grant Tax District, it is unnecessary to include Grant Tax District in the Parkersburg-Marietta nonattainment area. West Virginia contends that because these units are equipped with controls that meet the definition of RACT, there is no air quality benefit to be gained by designating the Grant Tax District as nonattainment. The State also contends that EPA has provided States flexibility to address SOx and NOx emissions from nearby sources (within 200 km) via its $PM_{2.5}$ Implementation Rule.

EPA Response:
EPA determined violations of the 2006 24-hour fine particulate NAAQS based solely on the most recent three complete years of certified monitoring data. EPA set boundaries based on available data and analysis that best represents present-day conditions, and not on projected emissions reductions that may occur after designation areas are finalized. EPA recognized that due to new controls at large electric generating units (EGUs), there may be emission reductions of SO_2 and NOx subsequent to 2005 that are not accounted for in its August 2008 analysis and EPA gave States the opportunity to submit supplemental information on emissions controls to aid in making final designation decisions.

Washington County, OH and Pleasants County, WV are the only counties in the Parkersburg-Marietta area with EGUs which, during 2006, had SO_2 plus NO_x emissions greater than 5000 tons. For the two coal-fired power plants in Pleasants County (the Pleasants and Willow Island power stations), West Virginia agrees with EPA's summary data of 2002-2007 NOx and SOx annual emissions and heat input for these two power plants, as well as the level of controls expected to be in place on these facilities in the near term. Furthermore, for each of these power stations, West Virginia agrees with EPA that no new controls to reduce NOx or SO_2 have been (or will soon be) installed since 2005.

The Pleasants Power Station's SO_2 emission rate decreased slightly between 2005 and 2007, while the NOx emission rate increased slightly over the same period. Heat input levels have decreased since 2005; these decreases have resulted in slightly lower SO_2 and NOx emissions from this facility. The Willow Island facility's SO_2 and NOx emission rates decreased between 2005 and 2007, while heat input levels increased since 2005, resulting in slightly lower SO_2 and NOx emissions from the facility. However, EPA reiterates that these reductions did not stem from emissions controls added since the 2005 emissions inventory that was used by EPA in considering the emissions contribution of Pleasants County to the nonattainment area under Factor 1 of our analysis.

EPA reviewed West Virginia's comments and determined that the State has presented no new additional information with respect to emissions controls for these power plants. EPA maintains that, in light of current emissions controls, consideration of the total emissions of NOx and SOx from both facilities, along with other data, support a finding that emissions from the Grant Tax District contribute to ambient air quality in the Parkersburg-Marietta nonattainment area.

West Virginia:
The portion of Pleasants County, the Grant Tax District, proposed to be included in the Parkersburg nonattainment area encompasses the Pleasants and Willow Island power plants, both owned by Allegheny Energy. Pleasants has two units rated at 650 MW each, and both are equipped with an ESP for particulate control, an SCR for NOx control and a wet limestone scrubber for SO_2 control. The particulate and SO_2 controls are federally enforceable through regulations and permits. The year round operation of the SCR is required by State Consent Order, which was included in the Parkersburg $PM_{2.5}$ SIP revision (submitted to EPA September 9, 2008). Willow Island has two units, Unit 1 rated at 54 MW and Unit 2 rated at 181 MW. Both units are equipped with an ESP for particulate control and overfire air (OFA) for NOx control, which are federally enforceable through regulation and permits.

In addition, in December of 2007 Pleasants began scrubbing 100 percent of the flue gas, permanently eliminating the 15 percent bypass. This results in a 95 percent SO_2 removal rate for the additional 15 percent of the flue gas that is now scrubbed, for a total removal efficiency of 95 percent. Historical data shows that between 2002 and 2007 the SO_2 and NOx emission rates at Pleasants and Willow Island decreased, while heat input remained steady at Pleasants and decreased slightly at Willow Island. The Pleasants SO_2 emission rate decrease by 5.4 percent, and the NOx emission rate decreased by 34 percent. The Willow Island SO_2 emission rate decreased by 48.9 percent, and the NOx emission rate decreased by 29.7 percent. In addition,

DEP has conducted a RACT analysis (which was included in the Parkersburg $PM_{2.5}$ SIP revision submitted to EPA on September 9, 2008) to determine the appropriate level of controls for EGUs. It was determined that SCR and wet scrubbers are not economically feasible for units the size of those at Willow Island.

DEP believes that these units are equipped with controls that meet the definition of RACT and there is no air quality benefit to be gained by designating the Grant Tax District as nonattainment. Furthermore, EPA in the $PM_{2.5}$ Implementation Rule stated that for SO_2 and NOx "EPA believes that States could justify considering not only all emissions in the nonattainment area but also emissions within a distance that may be up to 200 kilometers from the nonattainment area" [72 FR 20636, 25APR2007]. Since EPA has provided States the flexibility to consider emissions from sources within 200 kilometers of the nonattainment area, it is not necessary for EPA to include the partial counties within the nonattainment areas. (see table on page 25 of WV comment letter)

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

EPA disagrees with the reasons provided by West Virginia for exclusion of the Pleasants County Pleasants and Willow Island power plants from the Parkersburg nonattainment area. EPA's analysis has evaluated pollutant emissions; evidence from the pollution rose for this area that there is contribution from the direction of these sources to the rest of the nonattainment area; and the CES score that likewise indicates that emissions from the pertinent sources contribute to violations in the Parkersburg area.

The 2007 emissions from the Pleasants County power plants were about 42,000 tons SO_2 and 11,000 tons of NOx. The plants are located 14-23 miles from the closest violating monitor in the Parkersburg area, a distance at which significant formation of $PM_{2.5}$ from precursors emitted by these plants can occur. The technical support document provides pollution roses and other meteorological data for the Parkersburg area, providing evidence that the emissions from these plants can be expected on some high concentration days to have impacts on the violating monitors. EPA finds that current emissions data and meteorological information indicate that in accordance with section 107(d), the partial county area of Pleasants County is contributing to violations in the Parkersburg area. It should be emphasized that the designations process is intended only to determine those areas which are contributing to a violation of the standard. Section 107(d) was not intended to also require EPA and the States to determine whether emission controls are or are not economically feasible for a particular source. The evaluation of technically and economically feasible emission controls is required as part of the SIP development process.

The State's reference to the requirements of the PM2.5 implementation rule are at most an analogy, as that rule applies to the 1997 PM2.5 NAAQS. Even by analogy, the opportunity to take emissions reductions at sources up to 200km from the nonattainment area is premised upon the state being able to demonstrate that those emission reductions would have an impact in the nonattainment area. Moreover, the fact that emission reductions from such sources could be

shown to make an improvement in the nonattainment area is not the sole test for designations under section 107(d). Under this provision, EPA must ascertain which sources are "nearby" for purposes of the designation for the nonattainment area, given the facts and circumstances of each area. Other tools under the CAA, such as section 110(a)(2)(D) and section 126 are designed to deal with interstate emission impacts, especially regional impacts.

Pascua Yaqui Tribe

*Pascua Yaqui***:**
The Pascua Yaqui Tribe cannot accept the decision regarding the Section 107(d)(1) Clean Air Act Designation of attainment/unclassifiable for the 2006 24-hour PM 2.5 health standard. This decision represents an arbitrary measure that has no basis in science. Pima County air testing stations northeast of the Pascua Yaqui Reservation would be incapable of presenting a representative air sample. The Pima County air testing stations are all placed east and north of the Pascua Yaqui Reservation. They are placed strategically to sample the air for the population center of Tucson, Arizona, but they are ineffectively placed for the Pascua Yaqui Reservation and the San Xavier District of the Tohono O'odham Nation**.**

According to the Western Regional Climate Center, the prevailing winds in Arizona from 1992-2002 indicate a prevailing southeast wind. Any Pima County air testing stations northeast and on the other side of the Tucson Mountains would be incapable of providing an air sample representative of the Pascua Yaqui Reservation**.** The southwest side of Tucson, Arizona occupies a bowl formed by the Tucson Mountains on the north and the high rock mountains with passes for major road on the east. The populations of the communities of Drexel Heights, Tucson Estates, Valencia West, and Three Point have all increased substantially in recent years. Increased populations equate to substantially more air pollution opportunities.

EPA Response:
EPA requires State and local agencies to have a representative monitoring network for the criteria pollutants of concern. These monitoring networks measure pollution in the air and that data is recorded in the EPA Air Quality System, or AQS. A monitoring network usually has several monitors placed throughout an area and EPA accepts the monitoring data from the network as being representative of the entire area. The Pima Department of Environmental Quality (PDEQ) has an approved monitoring network and EPA views the data from that network as a reliable indicator of the air quality in the Tucson area. The data indicates that the Tucson area is attaining the PM 2.5 annual standard. Almost the entire State of Arizona, excluding Nogales, meets the PM 2.5 standard. Since there are no monitors on the reservation and there are no monitors within the area surrounding the reservation that are showing violations, there is no scientific evidence that there is a PM 2.5 problem on the Pasqua Yaqui Reservation. Absent monitoring data that shows a violation, we cannot make a designation other than "attainment/unclassifiable".

Philadelphia-Wilmington, PA-NJ-DE

By letter dated October 15, 2008, Delaware submitted additional information to EPA to support its recommendation that EPA establish New Castle County as a separate single-county nonattainment area and not include New Castle County as part of the Philadelphia-Wilmington, PA-NJ-DE nonattainment area for the 2006 $PM_{2.5}$ NAAQS. This letter also requested a technical meeting with EPA, Region 3 representatives. On November 20, 2008, EPA, Region 3 met with representatives of Delaware's Department of Natural Resources and Environmental Control (DNREC). During this meeting, DNREC representatives submitted supplemental information, which were in the form of two power point presentations. The first presentation, entitled "New Castle County, Delaware $PM_{2.5}$ Nonattainment Area Boundaries," was presented by Ali Mirzakhalili, Administrator, DNREC Air Quality Management Section. The second presentation, entitled "CALGRID Modeling for Assessing Delaware's Emissions Impact on Downwind Counties in the $PM_{2.5}$ Nonattainment Area," was presented by Mohammed A. Majeed of DNREC. The following reflects EPA's response to each of the above submissions.

Delaware:
Delaware contends that "1) The boundaries of New Castle County encompass the full area that is violating the standard, based on actual monitoring data, 2) Delaware emissions do not significantly impact any part of the Philadelphia combined statistical area (CSA), based on EPA modeling, 3) emissions from a broad area encompassing the States of Ohio, Indiana, Pennsylvania, Michigan, West Virginia, New York, Maryland, District of Columbia, New Jersey, North Carolina, and Illinois impact Delaware (i.e., an area much broader than the Philadelphia CSA boundaries), based on EPA modeling, and 4) while New Castle County, and the Philadelphia CSA, and all other areas in the region share a transport problem, there is no evidence that supports the linking of transport mitigation to small CSA scale areas."

EPA Response:
While the Philadelphia area and the northeastern United States are impacted by regional transport, based on the types of information recommended by EPA in its guidance including nine factors, and any other relevant information, as explained in detail below, EPA has determined that emissions from New Castle County contribute to nonattainment downwind in the Philadelphia area, and it is appropriate to include New Castle County in the Philadelphia-Wilmington nonattainment area.

Factor 1: Emissions data

Delaware:
Delaware stated that while New Castle County emissions were high relative to other counties in the CSA, federally enforceable requirements will reduce emissions between 2009 and 2012. Delaware believes that EPA's use of 2005 National Emissions Inventory (NEI) and Contributing Emissions Score (CES) are not reflective of its impact on the Philadelphia CSA. Delaware has already required significant reductions in $PM_{2.5}$ and $PM_{2.5}$ precursor emissions such that New Castle County emissions will be reduced 1) to a level lower than other areas of the CSA and 2) by a percentage that is significantly more than any other county in the CSA. Delaware also indicated that these reductions are required at least two years before the attainment date.

EPA Response:

EPA determined violations of the 2006 24-hour fine particulate NAAQS based solely on the most recent three complete years of certified monitoring data. EPA set boundaries based on available data and analysis that best represents present-day conditions, and not on projected emissions reductions that may occur after designation areas are finalized.

States may account for other projected emissions reductions in their State Implementation Plans for achieving attainment, where appropriate. States will also be able to take advantage of any air quality benefits that may have already occurred from recently enacted rules by submitting the 2008 monitoring data to EPA by February 20, 2009. EPA will review 2008 monitoring data submitted by this date, and will modify designation areas if appropriate.

Furthermore, Delaware's own data indicates that even with these emission reductions in place in 2012, New Castle County still has the highest SO_2 emissions in the Philadelphia CSA, and the second highest total emissions. It is notable that sulfate emissions dominate on days with the highest fine particle concentrations in the Philadelphia area.

Delaware:
Delaware objects to EPA's use of the 2005 NEI as the basis for Factor 1 (Emissions data) and believes EPA should have used Delaware's 2009 and 2012 projection inventories.

EPA Response:
In this designation process, nationwide EPA used the 2005 NEI Version 1 as the starting point for all its technical evaluations for factor 1 (Emissions Data). The NEI is the national database of air pollutant emissions. The NEI is a comprehensive inventory that is created from many sources, including State/Local and tribal emissions data. The NEI can and has been used by EPA for modeling analyses, projecting future year control strategies, tracking progress to meet requirements of the CAA, calculating risk, and responding to public comment. In accordance with the CAA, EPA believes that the 2005 NEI provides emissions data relevant to its determination as to which areas are currently violating the $PM_{2.5}$ 24-hour NAAQS or are currently contributing to violations of the $PM_{2.5}$ 24-hour NAAQS. With respect to emission controls, as explained and for the reasons stated above, EPA is only considering emission controls in place and federally enforceable at the by December 2008. Therefore, in accordance with the CAA, EPA has determined that it is not appropriate to consider projections of future emissions such as Delaware's 2009 and 2012 projection inventories.

Delaware:
Delaware commented that EPA Clean Air Interstate Rule (CAIR) modeling has already demonstrated that the $PM_{2.5}$ transport problem is a regional problem, and explicitly demonstrates that Delaware does not significantly contribute to the Philadelphia CSA problem. The CES indicates that New Castle County impacts the Philadelphia area more than any other county, and the EPA CAIR modeling indicates that the entire State of Delaware does not contribute significantly to any part of the Philadelphia CSA (i.e., they reach opposite conclusions).

EPA Response:
EPA does not agree with Delaware's assertion that the CAIR modeling has demonstrated that Delaware does not contribute to exceedances of the PM $_{2.5}$ 24-hour NAAQS in the Philadelphia

CSA. CAIR modeling was performed to assist States in determining which areas significantly contributed to exceedances of the Ozone 8-hour and PM $_{2.5}$ annual NAAQS. The PM $_{2.5}$ concentrations resulting from the CAIR modeling are annual average concentrations. In addition, section 107(d) requires EPA to include areas that are "contributing" to violations in a nearby area, and EPA interprets this to be a different test than that of section 110(a)(2)(D) which refers to "significant" contribution. Moreover, section 107(d) refers to current facts, unlike the analysis for CAIR which examined contribution in 2010. Therefore, it is not appropriate to use CAIR modeling results to determine whether Delaware is contributing to exceedances of the PM $_{2.5}$ 24-hour NAAQS in the Philadelphia-Wilmington Area.

Factor 2: Air quality data

Delaware:
Delaware stated that in its December 12, 2007 recommendation letter, an analysis of data from the four New Castle County air monitors showed that the City of Wilmington's $PM_{2.5}$ concentrations at the Martin Luther King Boulevard (MLK) monitor range from 4 to 5 micrograms per cubic meter ($\mu g/m^3$) higher than the other monitors located northeast, west and south of the MLK monitor, and that the relatively high downtown concentrations drop off quickly to below the NAAQS within the boundaries of New Castle County. Delaware stated that these other monitors are placed in areas which represent most of the compass, thereby "encircling" the MLK monitor with "clean" ones. Delaware added that the Bellefonte monitor, which is four miles downwind from the MLK monitor, recorded 11 percent lower concentrations than the MLK monitor. In addition, Delaware stated that it obtained preliminary 2008 air quality monitoring data from the Pennsylvania Department of Environmental Protection (PADEP) for the downwind Chester monitor in Delaware County, and that this monitor will be back into attainment using the preliminary 2006-2008 data.

Delaware commented that the fact that the design values for the Pennsylvania monitors near New Castle County increased from 2004-2006 to 2005-2007 while the New Castle County monitors' design values remained the same is evidence that Delaware emission contributions and emission transport in general, are not responsible for those higher Pennsylvania values. Delaware added that, otherwise, emissions from Delaware or other upwind States would have caused Delaware monitored levels to rise as well. Delaware concluded that this confirms its assertion that the $PM_{2.5}$ nonattainment problem is highly localized in the CSA and that contributions from Delaware are not significant.

EPA Response:
EPA does not agree with Delaware's assertion that evaluation of the 24-hour $PM_{2.5}$ design values for air quality monitors in the Philadelphia-Wilmington area, based upon 2005-2007 data, shows that the "nonattainment problem" in New Castle County is limited to the boundaries of New Castle County. EPA agrees that there is a local component to the $PM_{2.5}$ nonattainment problem in downtown Wilmington. However, as explained in more detail below and in the TSD for the Philadelphia-Wilmington area, EPA has determined that emissions from New Castle County contribute to violations of the 2006 24-hour $PM_{2.5}$ standard in the Philadelphia-Wilmington area.

Considering the most recent three years of data, 2005-2007, monitors in Chester and Delaware Counties in Pennsylvania, which border New Castle County, are violating the standard. Furthermore, other monitors downwind of New Castle County in Camden and Philadelphia Counties also violate the standard. As explained above, with respect to 2008 air quality monitoring data at the Chester monitor in Delaware County, EPA determined violations of the 2006 24-hour fine particulate NAAQS based solely on the most recent three complete years of certified monitoring data. EPA set boundaries based on available data and analysis that best represents present-day conditions, and not on projected emissions reductions that may occur after designation areas are finalized.

The Delaware County design value did go up slightly, from 35 $\mu g/m^3$ using 2004-2006 data to 36 $\mu g/m^3$ using 2005-2007 data. The Chester County 2005-2007 design value is 37 $\mu g/m^3$. No 2004-2006 design value could be calculated for the Chester County monitor due to incomplete data. Therefore, it is not possible to say whether monitored values have risen there. However, the New Castle County design value has been consistently high, at 37 $\mu g/m^3$.

Delaware:
In its October 15, 2008 comment letter, Delaware states that, "Delaware has shown that the air quality is bad in downtown Wilmington, the air quality is bad in downtown Philadelphia, and the monitors between the two demonstrate that these two areas are separate and distinct. EPA's analysis did not once reference the continually-attainment Bellefonte monitoring data in its evaluation, which was clearly discussed in Delaware's recommendation. The Bellefonte monitor is downwind of the Delaware's only non-attaining monitor, and is upwind of Philadelphia counties. It lies close to major point sources (Refinery and Conectiv EGU5), and also is located between those sources and Philadelphia Counties. Its design value is 33; and this holds true for 2004-2006 and 2005-2007 data. Based on an analysis of this factor, the area of non-attainment is clearly limited to the city of Wilmington, which is completely contained within New Castle County."

EPA Response:
EPA recognizes that the monitors between downtown Philadelphia and downtown Wilmington are not as impacted by high levels of localized emissions as those monitors located in the downtown Wilmington and downtown Philadelphia areas. That does not mean that downtown Philadelphia and downtown Wilmington do not impact the air quality in downwind areas on a daily basis. Evaluation of the 24-hour $PM_{2.5}$ design values for air quality monitors in the Philadelphia-Wilmington area alone cannot support a finding that New Castle County does not contribute to exceedances of the $PM_{2.5}$ 24-hour NAAQS in the Pennsylvania and New Jersey portions of the Philadelphia-Wilmington area. Based on other relevant information and data and EPA's best scientific analysis thereof as explained in further detail below and in the TSD for the Philadelphia-Wilmington area, New Castle County should be included in the Philadelphia-Wilmington area 2006 24-hour $PM_{2.5}$ nonattainment area.

Delaware:
In 2004, Dr. Phil Hopke performed receptor modeling on the MLK monitor. Based on the results of this modeling, Delaware concludes that long-range transport of sulfate and local mobile sources of $PM_{2.5}$ dominate the mix of PM at the MLK monitor. Delaware further

concludes that local mobile source emissions near the MLK monitor, including traffic on MLK Boulevard and Interstate I-95, a large bus depot, and the CSX/Norfolk Southern Railroad, are one of the primary causes of the nonattainment problem.

EPA Response:
The modeling described by Delaware is limited in scope and does not evaluate how sources of $PM_{2.5}$ in New Castle County may be impacting other portions of the Philadelphia CSA. Receptor models are mathematical or statistical procedures for identifying and quantifying the potential sources of air pollutants at a receptor location. Unlike photochemical and dispersion air quality models, receptor models do not use pollutant emissions, meteorological data and chemical transformation mechanisms to estimate the contribution of sources to receptor concentrations. Instead, receptor models use the chemical and physical characteristics of gases and particles measured at source and receptor to both identify the presence of and to quantify potential source contributions to receptor concentrations. As stated above, receptor models are not designed to quantify the impacts of specific sources on a given location. Therefore, the results of the Hopke study give very little insight to the extent of the impact $PM_{2.5}$ emissions from New Castle County may be having in other areas.

Delaware:
On November 20, 2008, DNREC presented maps to EPA depicting 2004-2006 and 2005-2007 24-hour $PM_{2.5}$ design value gradients in northern New Castle County, southeast Pennsylvania and portions of southwest New Jersey. These maps appear to show concentration declines between the Martin Luther King Boulevard monitor in downtown Wilmington (the MLK monitor) in New Castle County and other nearby monitors in the Philadelphia area. DNREC concludes that air quality problems in New Castle County are limited to Wilmington, are completely contained within the boundaries of New Castle County, and are separate from the problems of the rest of the Philadelphia area.

EPA Response:
$PM_{2.5}$ design values presented by DNREC are "unpaired in time." These design values represent the three year average of the 98^{th} percentile 24-hour $PM_{2.5}$ concentration, which could occur on different days at different monitors. An analysis of actual $PM_{2.5}$ concentrations on days when concentrations are relatively high may show little or no difference in concentrations between New Castle County monitors and monitors in southeastern Pennsylvania and portions of southwestern New Jersey.

Factor 3: Population density and degree of urbanization (including commercial development)

Delaware:.
Delaware asserts that population and population density are not indicators of air quality; many areas with high population densities are not exceeding the $PM_{2.5}$ 24-hour NAAQS. Delaware objects to EPA's using population data as an indicator of population-based emissions (i.e. area sources) that might contribute to nonattainment, including downwind nonattainment, because emissions are evaluated in Factor 1, and it is not appropriate to evaluate emissions under both factors. Also, Delaware stated that area sources make up only six percent of overall $PM_{2.5}$ and the primary precursor emissions (SO_2 and NOx) in New Castle County. However, Delaware

comments that if the EPA is to consider population density in drawing nonattainment boundaries, then the population density of New Castle County is in line with the lower density counties in the CSA, and is 8 ½ times less than the highest county. Therefore, analysis of population data does not provide justification to include New Castle County in a Philadelphia based nonattainment area. Based upon these observations, Delaware believes this criterion for boundary considerations should be of low priority.

EPA Response:
Population and population density were one of nine factors that EPA used nation-wide to determine the appropriate boundaries for PM nonattainment area. EPA continues to believe that population, population density, and degree of urbanization are appropriate surrogate measures of the relative level of contribution between counties under consideration for a nonattainment designation. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour $PM_{2.5}$ NAAQS.

Of the nine counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, New Castle County has the fifth highest population and the fifth highest population density. EPA believes that population density data does not distinguish New Castle County from any other county in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, each of which EPA has determined should be included in the Philadelphia-Wilmington nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Rather, EPA continues to believe that New Castle County population data supports a finding that New Castle County, as a densely populated area located immediately south of Philadelphia, PA, likely contributes to violations of the 2006 $PM_{2.5}$ NAAQS within the Pennsylvania and Delaware areas of the Philadelphia-Wilmington area. EPA continues to believe that an area with a large and dense population, such as New Castle County, more likely contributes to violations than a rural area with a very low and widely dispersed population. Population density is but one factor considered in determining whether to include an area in a designated nonattainment boundary, and is not usually outcome determinative. Instead, the entire suite of technical and factual considerations and our analysis thereof informs our decisions whether an area should be included.

Factor 4: Traffic and commuting patterns

Delaware:
Delaware commented that in its December 12, 2007 recommendation letter, Delaware demonstrated that less than one percent of the commuters in the Philadelphia-Wilmington area are from New Castle County. Delaware reiterated that many of these commuters are likely to use public transportation, that the Southeastern Pennsylvania Transportation Authority (SEPTA) serves commuters from the Bucks, Chester, Delaware, Montgomery, Philadelphia, and New Castle Counties, and that SEPTA brings many of them into Center City Philadelphia.

EPA Response:
Over 237,000 New Castle County commuters work within the Philadelphia statistical area, including New Castle County. Of the nine counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, New Castle County has the fifth highest number of commuters into and within the statistical area. As stated in EPA's August 18, 2008 letter, as a

general matter, it is likely that commuters from most counties in the Philadelphia-Wilmington nonattainment area rely heavily on public transportation. However, EPA also recognized that currently available data does not clearly indicate the percentage of commuters from New Castle County to Pennsylvania which commute via SEPTA or other public transportation versus non-public transportation (such as private automobiles). The percentage of commuters from New Castle County that rely on public transportation for purposes of commuting within the Philadelphia statistical area is not clearly documented. Therefore, there is currently insufficient data to quantify the percentage of commuters from New Castle County using public transportation to commute within the Philadelphia statistical area. EPA considered available VMT data as one indicator of emissions that might contribute to nonattainment, including downwind nonattainment. The currently available VMT data does not support a finding that New Castle County, DE should be a separate single-county nonattainment area; rather, EPA believes that such data continues to support a finding that it is appropriate for New Castle County, DE to be included as part of the Philadelphia-Wilmington, PA-NJ-DE nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

Delaware:
Delaware stated that while the number of New Castle County commuters to any violating county is 228,630, this figure includes New Castle residents going to work within New Castle County. This large number of New Castle County commuters within New Castle County, and the small number of New Castle County commuters to Philadelphia, indicate this factor supports New Castle County as being separate and not part of a Philadelphia CSA based nonattainment area. Additionally, Delaware stated that it was not appropriate for EPA to present information on a relationship between emissions and vehicle miles traveled (VMT) as part of its analysis of this factor, because all emissions, including mobile source emissions, are included under factor 1 above.

EPA Response:
Mobile source emissions constitute a large portion of the emissions inventory in urban areas. Thus, mobile source use in an area, as reflected in information like the number of drivers and the VMT in an area, is relevant to determining whether an area contributes to violations in nearby areas. Of the nine counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, New Castle County has the second highest number of residents traveling into any violating county, with Philadelphia County having the highest. As with most counties in the Philadelphia area, the majority of New Castle County commuters commute within New Castle County, and the majority of Philadelphia County commuters commute within Philadelphia County. As explained above, one important indicator of contribution of a county is the emissions within that county. Commonly, these data strongly indicated contribution of relevant counties, and information regarding the location of mobile sources and their emissions had little influence on EPA's judgment. Nevertheless, since some mobile source control programs are applied based on the home station of the vehicle, one factor in judging the contribution of a county is the number of vehicles that are housed in the county. Mobile sources are important contributors to $PM_{2.5}$ concentrations, and population data can be an important indicator of the home station of these sources.

Furthermore, a county with numerous commuters and high VMT is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area. Of the nine counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, New Castle County has the third highest VMT. EPA believes that the data does not distinguish New Castle County from any other county in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, all of which EPA has determined should be included in the Philadelphia-Wilmington nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

Factor 5: Growth rates and patterns

Delaware:
Delaware commented that in its December 12, 2007 recommendation letter, it compared New Castle County's population and VMT growth rates to counties such as Gloucester, which are monitoring attainment, but EPA's August 2008 response does not appear to evaluate the "growth rate and pattern" factor at all, but rather concentrates on total population. Delaware stated that this factor, as evaluated in its December 12, 2007 recommendation letter, supports New Castle County as being different from the other counties in the Philadelphia area.

EPA Response:
Of the nine counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, New Castle County has the fourth highest population growth rate and the sixth highest VMT growth rate. EPA believes that the data does not distinguish New Castle County from any other county in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, all of which EPA has determined should be included in the Philadelphia-Wilmington nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

Factor 6: Meteorology (weather/transport patterns).

Delaware:
Delaware commented that the "wind direction from New Castle County on high PM days does not mean sources in New Castle County are the only contributors (or even minor contributors) to downwind Counties." Delaware provided National Oceanic and Atmospheric Administration (NOAA) HYSPLIT Model[4] 24-hour backward trajectories for the Philadelphia County, Broad Street and Lycoming monitors for the ten-highest PM days for 2004, 2005 and 2006. Each of these ten highest-PM days was also high concentration days in New Castle County. Delaware stated that its trajectories do not correspond well with EPA's pollution roses. Delaware commented that on these high-PM days, its HYSPLIT back trajectories do not point to Delaware, and therefore, Delaware does not "understand how EPA can conclude that on high PM days New Castle County is a major contributor."

EPA Response:
In accordance with the CAA, EPA need not make a determination as to whether, or not, "sources in New Castle County are the only contributors (or even minor contributors) to downwind

[4] Draxler, R.R. and Rolph, G.D., 2003. HYSPLIT (HYbrid Single-Particle Lagrangian Integrated Trajectory) Model access via NOAA ARL READY Website (http://www.arl.noaa.gov/ready/hysplit4.html). NOAA Air Resources Laboratory, Silver Spring, MD.

Counties." EPA recognizes that ambient $PM_{2.5}$ at every monitor reflects the cumulative impacts of many types of emissions from many sources, near and far, that result in primary and secondary formation of particles. EPA believes the backward trajectory information provided by Delaware is not dispositive as to whether or not New Castle County "contributes to" violations of NAAQS in a nearby area EPA's proposed determination. Additionally, EPA believes that the proposed analysis is limited in scope and therefore, is not complete. Delaware used HYSPLIT to calculate backward trajectories for the ten highest PM days in the years 2004-2006 at the Philadelphia County, Broad Street and Lycoming monitors. Delaware's analysis is not directly relevant because it seeks to determine whether emission sources outside New Castle County directly caused violations of the 2006 $PM_{2.5}$ NAAQS at certain monitors on certain days. The CAA definition of "nonattainment" specifically includes any area that "contributes to" violations of NAAQS in a nearby area, not only those that literally "cause" such violations at specific monitoring locations. Delaware's analyses are not complete in part because the analysis produced only one trajectory for each day at each monitor. A more robust analysis should have included multiple trajectories for each day to account for the entire duration of the twenty-four hour $PM_{2.5}$ standard. Furthermore, a significant number (seven out of 16) of the back trajectories included in the report pass trough New Castle County and directly impact the Philadelphia area. Therefore, EPA does not believe that Delaware's analysis supports a determination that New Castle County should be separated from the Philadelphia nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

Delaware:
DNREC used the California Photochemical Grid (CALGRID) model to assess the effects of New Castle County's emissions on other monitors in the Philadelphia $PM_{2.5}$ nonattainment area. The CALGRID modeling presented by Delaware on November 20, 2008 included zero-out and worse-case analyses. The zero-out analysis is meant to show the difference between the base case (with no anthropogenic emissions) and emission control strategy runs. The worst-case impact analysis is meant to show New Castle County's emissions impacts on downwind nonattainment areas counties. DNREC contends that the modeling results indicated minimal impacts from direct $PM_{2.5}$ emissions and several other $PM_{2.5}$ precursors from New Castle County to the rest of the Philadelphia area.

EPA Response:
In general, it is difficult to consider this modeling relevant for making an assessment about the contribution from any county in Delaware to the Philadelphia nonattainment monitor(s). There is no supporting evidence that the July 6 to 23, 2002 and July 30 to August 16, 2002 episodes that were modeled fully represent the highest observed $PM_{2.5}$ in Philadelphia during the 2005-2008 time period. It is not clear that July and August 2002 even represent high $PM_{2.5}$ in Philadelphia. No model performance for CALGRID at the Philadelphia monitor (or any monitor locations) is presented, making it impossible to determine when the model is performing adequately for $PM_{2.5}$ sulfate, nitrate, and other primary species. The CALGRID model is not typically used for $PM_{2.5}$ SIP submittals. Therefore, documentation regarding model chemistry and physics is needed to assess its comparability to other commonly used modeling systems. In general, a modeling system applied for less than two months in the same season is not considered an adequate representation of assessing the multitude of different meteorological conditions that can lead to high 24-hour $PM_{2.5}$ in the Northeastern United States.

The CALGRID modeling presented by DNREC is not appropriate for determining 2006 24-hour $PM_{2.5}$ nonattainment area boundaries for the following reasons:

- CALGRID is designed as a tool to "Screen emission control strategies for urban and regional attainment" (See Jeff Underhill's presentation for the OTC/MANE-VU Annual Meeting Philadelphia, PA, July 21-23, 2003, *CALGRID Modeling Overview, A First Look,* at http://www.4cleanair.org/OTCClearSkiesmodelling.pdf.) For absolute $PM_{2.5}$ predictions and response to emissions changes, results from CALGRID were not shown to be comparable to models such as the Community Multiscale Air Quality (CMAQ) model and the CAMx, which are commonly used for regulatory purposes.

- There is not any supporting information for the CALGRIDv2.45 model that shows that model chemistry and physics related to $PM_{2.5}$ (like aqueous phase chemistry, inorganic chemistry, deposition processes, etc) are comparable to state of the science one atmosphere regulatory models like CMAQ and CAMx.

- There is no model performance given for monitor(s) in Philadelphia so it is impossible to determine if the modeling system is performing adequately for $PM_{2.5}$ mass.

- The two episodes modeled with CALGRID represent warm-season simulations where regional sulfate loading is probably responsible for most of the elevated $PM_{2.5}$ concentrations in the Philadelphia $PM_{2.5}$ nonattainment area. "Local" transport may be more important for cool-season episodes and thus any impact of Delaware/New Castle County sources may be underestimated using Delaware DNREC's CALGRID runs. Consideration should be given to high winter time $PM_{2.5}$ episodes in Philadelphia. If there are none then that should be stated and supported.

- The modeling episode selected for this analysis does not have any supporting information that indicates this is a typical high $PM_{2.5}$ episode in the Philadelphia area. Multiple episodes that capture the variety of high $PM_{2.5}$ formation regimes are necessary when making a determination about contribution.

Delaware:
DNREC contends that long-range pollutant transport to the Philadelphia area overwhelms the contribution from New Castle County. To illustrate this point, DNREC provided a figure which showed $PM_{2.5}$ measurements at 22 FRM monitors in the Mid-Atlantic Regional Air Management Association (MARAMA) region every day from April through June 2003. DNREC states that $PM_{2.5}$ concentrations often rise and fall sympathetically across much of the MARAMA Region. At the same time, DNREC contends that its monitors do not correlate well with other monitors within the current Philadelphia $PM_{2.5}$ nonattainment area. This contention was used to support DNREC's argument that New Castle County is generally "isolated" from the rest of the Philadelphia $PM_{2.5}$ nonattainment area.

EPA Response:

DNREC did not provide the statistical analysis supporting this contention. It would seem unlikely that there would be significant differences between monitors that are relatively close to one another. The monitoring trends from across the MARAMA region presented by DNREC appear to indicate a good correlation across a large area of the Mid-Atlantic region, which is counter to their assertion that New Castle County is "isolated" from the rest of the region.

Delaware:
DNREC contends that CAIR modeling and its CALGRID modeling show that the entire State of Delaware's emissions do not contribute significantly to any violation of the $PM_{2.5}$ NAAQS in any part of the CSA.

EPA Response:
As stated above, the CALGRID modeling presented by DNREC is not appropriate for determining 2006 24-hour $PM_{2.5}$ nonattainment area boundaries. While EPA appreciates Delaware's efforts to complete modeling to support its $PM_{2.5}$ boundary recommendation, CALGRID is not shown to be a state-of-the-science one-atmosphere model. In addition, no model performance is presented, and the episodes selected do not appear to reflect high $PM_{2.5}$ in Philadelphia. These issues make it difficult to consider this modeling as being representative of Delaware's (New Castle County) contribution to high $PM_{2.5}$ in Philadelphia. Furthermore, EPA disagrees with Delaware's assertion that the CAIR modeling has demonstrated that Delaware does not significantly contribute to exceedances of the $PM_{2.5}$ 24-hour NAAQS in the Philadelphia CSA.

Factor 8: Jurisdictional boundaries (e.g., existing PM areas)

Delaware:
While Delaware, Pennsylvania, and New Jersey do work cooperatively together, no cooperative air planning effort to date has occurred as a result of being in a common nonattainment area. These States have historically worked together only as part of larger efforts, like Mid-Atlantic/Northeast Visibility Union (MANE-VU) and the Ozone Transport Commission (OTC). No control measures have been developed as a cooperative effort amongst these States outside of MANE-VU and OTC context.

EPA Response:
Delaware has conceded that it has worked with the other States in the Philadelphia area as part of MANE-VU and the OTC. Therefore, as stated in its August 18, 2008 letter, EPA does not anticipate that including New Castle County as part of the Philadelphia nonattainment area for the 2006 $PM_{2.5}$ NAAQS will be an undue burden on Delaware.

Delaware:
Delaware commented that no CSA scale efforts are necessary for 2006 $PM_{2.5}$ standard planning because the New Castle County nonattainment problem is separate and distinct from the Philadelphia problem.

EPA Response:

As explained above and in responses below, as well as in the TSD for the Philadelphia-Wilmington nonattainment area, EPA has determined that emissions from New Castle County contribute to downwind fine particulate concentrations in the Philadelphia CSA. Therefore, CSA-scale planning is necessary.

Factor 9: Level of control of emission sources

Delaware:
Delaware stated that in its analysis, EPA is only considering controls in place and federally enforceable at the time of designation, i.e., by 2008. Delaware does not agree with this for the reasons discussed under factor 1, above. Delaware commented that EPA's position does not makes sense in the context of factor 9, because the purpose of this factor is to not evaluate the level of emissions (i.e., not to re-evaluate Factor 1), but instead to evaluate how well sources are controlled in the area. Delaware argues that significant emission control measures have been adopted, and approved into Delaware's SIP by the EPA, and that these measures are being implemented; permits have been issued and construction has commenced, and in some cases construction has been completed. Delaware concludes that this factor cannot be evaluated without considering SIP approved control measures.

EPA Response:
In accordance with the CAA, this factor evaluates control measures that are in place and federally enforceable by December 2008 and were not reflected in the 2005 NEI. This factor is intended to consider emission reductions that were not incorporated into factor 1, but which are effective before EPA makes its final designations. In accordance with the CAA, EPA is tasked to make determinations as to which areas are currently in violation of the 2006 $PM_{2.5}$ NAAQS or contributing to violations of the 2006 $PM_{2.5}$ NAAQS in nearby areas. Therefore, and as explained above, EPA has determined that analysis of emission controls should not include projections of future emission reductions.

Delaware:
Delaware commented that the Premcor refinery has installed scrubbers on its largest SO_2 emitting sources, a fluid cracking unit and a fluid coker. Delaware believes proper evaluation of this factor demonstrates that these two large units at the Premcor refinery are very well controlled relative to SO_2, i.e., this is Best Available Control Technology (BACT).

EPA Response:
EPA recognizes that the Premcor (formerly Motiva) refinery has significantly reduced its SO_2 emissions. However, the Premcor refinery is not the only large source of emissions in New Castle County. All such sources have not yet achieved such significant emission reductions, and even considering the Premcor reductions, New Castle County's SO_2 emissions are highest in the CSA.

Delaware:
Delaware stated that under its SIP approved Reg. 1146, EGU Multi-Pollutant regulation, Edge Moor Units 3, 4, and 5 are subject to stringent NO_X and SO_2 emission limits in 2009 and 2012.

Delaware believes that proper evaluation of this factor demonstrates that these units are well controlled relative to NO_X and SO_2, i.e., this is BACT.

Delaware submitted the following additional information for the EGUs in New Castle County, DE with controls in place after 2005 (i.e., controls not reflected in the 2005 NEI).

Table 1. Delaware EGUs.

Unit		Edge Moor Unit 3		Edge Moor Unit 4		Edge Moor Unit 5	
Plant Name, City, and County,		Conectiv Edge Moor, Wilmington Delaware		Conectiv Edge Moor, Wilmington Delaware		Conectiv Edge Moor, Wilmington Delaware	
Emission Unit, fuel use, and megawatt capacity		Coal		Coal		Oil	
Controls Installed/ Controls not installed		Yes		Yes		Yes	
Type of emission control that has been or will be installed, date on which the control device will become operational, and the emission reduction efficiency of the control device		SO2: limited to 0.26 lb/MMBtu NOX: limited to 0.12 lb/MMBtu		SO2: limited to 0.26 lb/MMBtu NOX: limited to 0.12 lb/MMBtu		SO2: 0.5% Sulfur oil (max) NOX: limited to 0.12 lb/MMBtu	
The estimated pollutant emissions for each unit before and after implementation of emission controls		**2002**	**2012**	**2002**	**2012**	**2002**	**2012**
	SO2	3,344	560	5,051	970	2,133	977
	NOx	922	314	1,096	544	1,289	548
Control device operation federal enforceable date, and instrument by which federal enforceability will be ensured.		Approved in Delaware SIP on 09/29/2008		Approved in Delaware SIP on 09/29/2008		Approved in Delaware SIP on 09/29/2008	

EPA Response:
EPA commends Delaware on imposing these emission limits on the Edge Moor facility. The above information is informative regarding estimated reductions in emissions that are anticipated by 2012. Delaware's Multi-Pollutant regulation phases in emissions limits, starting in 2009, with the bulk of the reductions occurring in 2012. The estimated emissions limits given in DNREC's table, above, reflect the 2012 emissions limits.

Effective on January 1, 2009, the Edge Moor facility is subject to the following annual emissions limits:

Table 2. Moor Facility Annual Emissions Limits.

Unit	Annual NO_X Mass Emissions Limits (tons)	Annual SO_2 Mass Emissions Limits (tons)
Edge Moor 3	773	1391

Edge Moor 4	1339	2410
Edge Moor 5	1348	2427

These limits are significantly higher (about 2.5 times higher) than the emission limits given in Delaware's October 15, 2008 letter.

Starting in May 2009, the Edge Moor facility will be subject to the following emissions limits: 0.37 lb/MMBTU heat input for SO_2 and 0.125 lb/MMBTU for NO_X. Again, these emission limits are significantly higher than the emission limits given in Delaware's October 15, 2008 letter.

The above data does not provide additional information regarding controls currently in place at the Edge Moor Facility. With respect to emission controls, as explained and for the reasons stated above, EPA is only considering controls in place and federally enforceable at the time of designation, i.e., by December 2008. Therefore, in accordance with the CAA, EPA has determined that analysis of emission controls should not include projections of future emission reductions.

Delaware:
Delaware states that in evaluating the "level of emissions control" factor, EPA notes that Premcor has installed scrubbers on its largest SO_2 emitting sources; a fluid cracking unit and a fluid coker. However, EPA then seems to give much credence to the fact that even with these controls New Castle County emissions are highest in the CSA. This indicates the EPA has not evaluated this factor at all (i.e., level of control), but rather they have again evaluated factor 1 (i.e., emissions).

Delaware believes proper evaluation of this factor demonstrates that these two large units at the Premcor refinery are very well controlled relative to SO_2 – BACT.

In evaluating EGUs, the EPA collected data that shows emissions and controls (current and projected) for EGUs with SO_2 plus NO_X emissions greater than 5000 tons. They obtained this data from the 2006 National Electric Energy Data System (NEEDS) database. EPA notes that with the exception of the Brunner Island facility in York County, which has a projected date of 2008 for a scrubber on one of its three units, none of the EGUs in the counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS put controls in place between 2005 and 2008. Therefore, the level of control of EGUs is not a major factor in this analysis. Delaware believes this analysis makes no sense. EPA should not be looking at the NEEDS database to determine future controls; they should look to the State and SIP approved regulations! The Delaware units identified by EPA are Edge Moor Unit 3, 4, and 5. Under Delaware's SIP approved Reg. 1146, EGU Multi-Pollutant regulation, each of these units is subject to stringent NO_X and SO_2 emission limits in 2009 and 2012. Delaware believes that proper evaluation of this factor demonstrates that these units are well controlled relative to NO_X and SO_2 – BACT (see table on page 16 of Delaware comment letter).

In summary, by 2012, New Castle County will achieve a 75 percent reduction in SO_2 emissions, a 47 percent reduction in NO_X emissions, and a 62 percent reduction in overall $PM_{2.5}$ and $PM_{2.5}$

precursor emissions, from a 2002 baseline. Other counties in the Philadelphia CSA have made only a fraction of these emission reductions. This, plus the individual unit discussion above demonstrates that the level of control of emission sources in New Castle County is greater than other areas in the CSA, and evaluation of this factor does not support including New Castle County within CSA non-attainment boundaries.

EPA Response:
See the overview response to comments on power plant issues, located at the beginning of Section IV.

EPA has evaluated each county in the area on the weight of evidence of all factors as well as any additional information provided by the State. For example, EPA considered the information on emission controls currently in place in light of other factors such as total current emissions in making a final decision on the designation of New Castle County. The fact that current emissions from New Castle county are quite high in comparison to other counties in the existing Philadelphia nonattainment area (despite facilities like Premcor having emission controls in place), along with other factors such as commuting and meteorology, were important considerations in this decision.

Delaware notes that some State rules have been adopted to achieve reductions beginning in 2009 and significant reductions are planned to be achieved by 2012. EPA commends Delaware for taking these actions. However, as noted in the overview response at the beginning of Section IV, EPA interprets section 107(d) as requiring the designation of areas which currently (i.e., through 2008) emit pollutants contributing to violations of the 24-hour standard. Therefore, in making decisions about contributing areas, EPA did not take into consideration emission controls that would be implemented after the December 2008 date for the Agency's final action on designations. EPA recognizes that implementation of future emission controls will provide important improvements in air quality and they should be included in the State implementation plans and attainment demonstrations for these designated nonattainment areas. These emission reductions should be an important element of Delaware's plan for attaining the $PM_{2.5}$ standards.

<u>Pinehurst, ID</u>

Idaho:
Since December 14, 2007, the Idaho Department of Environmental Quality (DEQ) conducted further discussion with land managers to discuss at length smoke behavior in the area surrounding the Silver Valley. The DEQ feels that it will be advantageous in the implementation process to include input from the land managers. These land managers have significant experience with prescribed fire and slash burning in Shoshone County, Idaho and the Pinehurst area. Based on input from the land managers, DEQ decided to reconsider the recommended NAA boundary. The boundary included in DEQ's December submittal was drawn along ridgelines so as to include the two main drainages into the Pinehurst valley (Pine Creek/Amy Gulch and Deer Lick Gulch), the French Gulch drainage into Kingston, and the South Fork Ridge north of the entrance to the Pine Creek drainage (see Figure 1, Letter dated October 17, 2008 from Toni Hardesty to the Docket and Elin Miller, RA, Region 10, hereafter called the letter). The concept was to include areas where the possible occurrence of slash burning could

impact Pinehurst within the NAA areas. The consultation with land managers familiar with the area have indicated that for any fires west of Pinehurst, when there is sufficient loft for smoke to clear the ridge between French Gulch and Pinehurst, the smoke stays aloft. As a result of these discussions and refined modeling, DEQ recommends that the nonattainment area boundary be modified as explained in Figure 1 of Comment 1 attached to the letter.

EPA Response:
EPA has reviewed the State of Idaho's submission. EPA commends the State of Idaho for consulting with land managers in the affected area, and getting their input to clarify smoke behavior and its interactions with terrain and meteorology in the area. With regards to the comment that "for any fires west of Pinehurst, when there is sufficient loft for smoke to clear the ridge between French Gulch and Pinehurst, the smoke stays aloft" the State has not provided any substantiating information other than this statement. Data to support this would include analysis of plume behavior in the area under different meteorological and seasonal conditions. Without supporting information and data to substantiate this statement, it is not possible for an objective reviewer to verify this information.

Idaho:
Information from the land managers prompted DEQ to reassess potential air impacts on Pinehurst. In this analysis, DEQ remodeled theoretical slash burn sources using actual terrain and meteorological data. The predicted impacts on Pinehurst were categorized to show the impact relative to a source located immediately next to the monitor. The "10 percent line" from this analysis depicts the location of all sources that could produce an impact in Pinehurst equivalent to 10 percent of a centrally located source. Another way to think of this contour is that any source outside of the line will contribute less than 10 percent, and any source inside will contribute more than 10 percent. DEQ staff believes this is a good tool to delineate the shape of an appropriate particulate matter impact boundary or area.

When compared with the original NAA boundary proposal (shown in red on Figure 1 in the comment letter), the 10 percent equal impact contour suggests that the areas of concern for impact on Pinehurst are shifted to the north and east. The 10 percent contour line also generally agreed with the boundary proposed by the land managers. In addition, overlaying the annual and seasonal wind roses on the monitor location in Pinehurst (see Figures 2 and 3 in the comment letter) confirms that the two drainages south of Pinehurst are of greatest concern for smoke impacts on Pinehurst.

Therefore, DEQ recommends the nonattainment boundary be changed to that shown in black in Figure 1.

EPA Response:
After review of this information, EPA has determined that there is not enough supporting information to verify the validity of the modeling that supports the analysis. Specific information that may have helped clarify the analysis could include specifics such as:

(1) Treatment of plume near ridgetops by the model;
(2) Meteorological data used and gridding information;

(3) Emissions data used and gridding information;
(4) Sensitivity of results to magnitude of emissions; or
(5) Analysis of flow from all channels that could potentially interact with the drainages that could impact the Pinehurst monitor.

These would have provided specificity to assess the validity of the information shared by the land managers and to consider whether a change in boundaries would be warranted. However, under the present circumstances EPA feels that the boundary recommended by the State in its December 14, 2007 letter and agreed to by EPA is well supported technically and represents a technically sound boundary for the Pinehurst Area $PM_{2.5}$ nonattainment area.

Sacramento, CA

CARB:
CARB believes that only Sacramento County should be included in the $PM_{2.5}$ nonattainment area. The only violating monitors in the Sacramento area (Sacramento T Street, Sacramento-Del Paso and Sacramento-Health Department) are located in the city of Sacramento. Data from air quality monitors in surrounding counties are well below the new standard and far outside the zone of influence established by Sacramento-Del Paso monitoring site. According to the California Regional $PM_{10}/PM_{2.5}$ Air Quality Study (CRPAQS) study by Chow (Chow, et al., 2006), a zone of influence is defined in which a concentration varies by 20 percent. Only the monitoring sites at Sacramento-T Street and Sacramento-Health Department fall within this zone. CARB also pointed out that the 2006 Design Value for the monitoring site in Placer County was 31 $\mu g/m^3$, and therefore, was not a violating monitor as stated by EPA.

The use of county-wide emissions for areas such as Placer and El Dorado Counties, mountainous regions with large rural populations, does not adequately reflect the reality of emissions within these areas. Although the majority of the population of El Dorado County resides in the western portion of the county, the population of the eastern portion, South Lake Tahoe and the surrounding mountainous area is over 25,000. The majority of the urban population of Placer County resides in the western part of the county, but almost a third resides in unincorporated areas.

Sacramento County, which encompasses the majority of the population in the region, is the only area that violates the new $PM_{2.5}$ standard. CARB analysis continues to support that violations in Sacramento are due to localized wood smoke emissions. CARB notes that Table 2 of EPA's Response is incorrect with respect to residential wood combustion emissions in Eldorado County.

EPA Response:
EPA does not agree that only Sacramento County should be designated as nonattainment for $PM_{2.5}$. EPA's boundary designation for the Sacramento $PM_{2.5}$ nonattainment area includes all of Sacramento County and parts of Yolo, Solano, Placer, and El Dorado Counties. This area includes a majority of the population, and all major point sources and highways in this area. Locations west of this area contain small, dispersed populations and do not include major travel corridors, so they were not included in the nonattainment area.

In the 2006 Chow study cited by CARB, the "zone of representation" for carbon ranged from 3 km to 21 km (2 mi to 13 mi), and averaged 13 km (8 mi). While not intended to set boundaries for planning purposes, these results do suggest the size of the area that is represented by a $PM_{2.5}$ air monitor in California. And conversely, they suggest a range of influence of urban areas, which have a relatively dense collection of organic carbon sources, i.e. wood combustion. EPA believes this study supports setting nonattainment area boundaries at least 5-10 miles beyond the edge of urbanized areas. Additional consideration of the ammonium nitrate PM2.5 fraction from mobile source NOx emissions led EPA to designate larger areas, to capture the contribution of such sources to PM2.5 NAAQS violations.

EPA's boundary for Sacramento $PM_{2.5}$ nonattainment area includes the areas with violating monitors, and the nearby contributing areas. When EPA proposed nonattainment boundaries in August 2008, the 2004-2006 and 2005-2007 design values for Placer County, based on air quality data in EPA's AQS database, were 38 $\mu g/m^3$ and 30 $\mu g/m^3$, respectively. Since then, data from July 9, 2005, which affected the 2004-2006 design value, were removed from AQS by ARB based on lab error and thereby reducing the 2004-2006 design value to 31$\mu g/m^3$. Consistent with comments provided CARB, these design values do not represent a violation of the $PM_{2.5}$ standard. However, the revised design values do not affect EPA's premise for including the western portion of Placer County, or the other surrounding counties, in the Sacramento nonattainment area.

Based on speciation data provided by CARB, organic carbon and nitrates were identified as the major components of $PM_{2.5}$ where violations occurred, which were attributed to residential woodburning and mobile sources, respectively. As both sources are associated with urban areas, the Sacramento nonattainment areas is intended to capture the full extent of the urban areas associated with the City of Sacramento so that sources potentially contributing to the violating monitors are included. Even though violations are not recorded in the surrounding counties, such as Placer County, the Sacramento urban area clearly extends into the surrounding counties.

With respect to the most recent residential wood burning emissions data for El Dorado County provided in CARB's October 15 letter, EPA agrees that this data suggests significantly less emissions than given in ARB's Almanac (updated August 8,2007). However, until the values in ARB's Almanac are revised to reflect these modifications, EPA will continue to cite the data presented in ARB's Almanac.

Finally, while EPA agrees that woodsmoke emissions are more localized, we do not agree that the contribution of mobile sources can be discounted. EPA views mobile source emissions as a significant component of regional $PM_{2.5}$ levels in the Sacramento Valley, and it appears that the combination of this regional pollution and local woodsmoke emissions in the Sacramento area lead to violations of the PM2.5 standard, particularly during stagnant conditions. Considering this, EPA looked at the location of the violating monitors and the sources of both woodsmoke and nitrates to determine the appropriate nonattainment boundary. This includes Sacramento and the surrounding urban areas where there could be significant emissions from residential wood burning. It also includes the major transportation and commuting corridors associated with

Sacramento and the surrounding urban areas which can be a significant source of the nitrate component.

Saint Louis, MO-IL

Missouri:
Information previously submitted by the State and information contained in the 120-day response continue to support the State's recommendation that all counties in Missouri should be designated as attainment or unclassifiable.

EPA Response:
Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those nearby areas that contribute to violations. EPA's review of the nine factors for the four counties and the City of St. Louis (including five counties in Illinois) shows that the Missouri portion of the bi-state area contributes to the violating monitors.

- Missouri counties contribute approximately 50% of the total tons per year (tpy) of direct $PM_{2.5}$, approximately 57% of the total tpy of NO_x, and approximately 74% of the total tpy of SO_2 emitted in the bi-state area.
- 70% or greater of the exceedance days occur during the warm season and are influenced by SO_2. As Missouri counties contribute 74% of the SO_2 emissions in the bi-state area, and are upwind during certain episode days, it is probable that Missouri counties contribute to the violations.
- 78% of the total population in the bi-state area lives on the Missouri side of the St. Louis bi-state area. Since these populated areas are upwind of the violating monitors during certain episode days; it is probable that those counties are candidates for consideration in the nonattainment area designation.
- Surface wind direction for high $PM_{2.5}$ days in Madison County, Illinois (which is the county with the violating monitors) is from the south-southwest. A majority of the Missouri part of the bi-state area is located to the south and southwest of the violating monitors.
- It is important to consider that the area in Missouri is already part of a nonattainment area for existing Ozone and PM violations. EPA's boundary recommendation for this standard is generally consistent with the previous approaches to establish boundaries in that it is inclusive of the majority of probable emissions contributors in the metropolitan area and will facilitate air quality planning.

Missouri:
Analysis of data for days with concentrations over the standard at the two Granite City sites shows, in general, two types of episode days; summer days with high concentrations (and high regional sulfate) throughout the area but higher concentrations at the Granite City sites, and other days with high concentrations only at one or both of the Granite City sites, suggesting the strong influence of local sources on violations of the standard.

EPA Response:
There is evidence to support the claim that there is a local contribution to the Granite City violating monitors from a limited number of local sources in Granite City. However, Missouri

also indicates in its comment, that there are likely monitored episodes which are regional in nature. Missouri has not provided information that confirms that that the preponderance of the mass captured on the PM2.5 filter (at the violating monitors) for all exceedance days is from local sources alone; nor has Missouri provided conclusive evidence that nearby Missouri counties are not contributing to these violations. In addition, Missouri's submittal does not address the 2005-2007 violations at the Alton monitor, which is located approximately 20 miles away. Therefore, the analysis is not only inconclusive, but is also incomplete, and does not provide a basis for concluding that emissions from the Missouri portion of the metropolitan area do not contribute to the violations.

Missouri:
Chemical mass balance source apportionment based on chemical analysis of filters from the Granite City VFW site shows a clear difference between days when the site was upwind and downwind of the local point source. Upwind days at the site, when wind vectors from rural Illinois predominated, consistently showed little impact from the local Granite City point sources, and were similar in total mass concentration to the rest of the sites in the metro area. Downwind day analysis supports attribution of a significant fraction of the $PM_{2.5}$ mass measured at the site to the local source in Granite City.

EPA Response:
EPA agrees that there is evidence to support the claim that there is a local contribution to the Granite City violating monitors from a limited number of local sources. However, Missouri has not provided information which confirms that that the preponderance of the mass captured on the PM2.5 filter (at the violating monitors) for all exceedance days is from local sources. In fact, as Missouri indicates in an earlier comment, there are likely monitored episodes which are regional in nature. Also, as explained previously, the state's analysis does not consider contributions to the Alton monitor. Consequently, insufficient evidence has been provided to support the claim that that nearby Missouri counties are not contributing to these violations, and EPA's technical analysis indicated that the Missouri counties did contribute to the violations.

Missouri:
Air quality modeling analysis conducted for the annual $PM_{2.5}$ SIP using 2002 met data show that additional sulfur dioxide controls at St. Louis area facilities will have minimal effect on reducing 24-hour $PM_{2.5}$ concentrations on days over the standard. In contrast, the model shows direct PM2.5 emissions controls at sources near the violating monitors will provide the necessary reductions.

EPA Response:
The State utilized CMAQ to estimate the effectiveness of control strategies on future $PM_{2.5}$ concentrations in the area of the violating monitors using strategies being considered for the 2012 annual PM2.5 attainment demonstrations. Four monitored PM2.5 exceedance days (at one of the Granite City sites) during 2002 were selected for evaluation. In addition, three future (2012) emission scenarios were evaluated: a baseline scenario (NO_X and SO_2 reductions at several area facilities); a scenario that included a 90 percent reduction in SO_2 emissions at Herculaneum (a lead smelter in the area); and a scenario that included both of the SO_2 reductions

previously described plus a 16 percent reduction in primary $PM_{2.5}$ emissions for US Steel Granite City. The results are described in Table 3.

Table 3. PM2.5 Modeling Results. From the MDNR 10-18-08 response.

Table 2. $PM_{2.5}$ Modeling Results

Date, 2002	Monitored $PM_{2.5}$ Concentration ($\mu g/m^3$)	Modeled 2012 $PM_{2.5}$ Conc. ($\mu g/m^3$), Future Baseline Case	Modeled 2012 $PM_{2.5}$ Conc. ($\mu g/m^3$), 90% SO_2 Reduction at Herculaneum	Modeled 2012 $PM_{2.5}$ Conc. ($\mu g/m^3$), 90% SO_2 Reduction at Herculaneum Plus 16% $PM_{2.5}$ Reduction at Granite City Works
January 5	30.2	31.2	31.2	30.5
June 22	42.9	34.4	34.4	33.0
July 16	44.8	33.86	33.86	33.9
November 27	30.5	29.3	27.7	26.7

The state modeling study relies on Missouri emission reductions of PM2.5 precursors that are not yet federally enforceable and for the most part, not yet state enforceable. It is therefore, not appropriate to rely on these potential future reductions to eliminate sources or areas from consideration in establishing current nonattainment boundaries. However, if one could assume that these reductions were permanent, enforceable and quantifiable, the modeling indicates that SO2 and NOx reductions (including reductions from sources on the Missouri side of the metropolitan area) in combination with reductions of direct PM2.5 emissions from local sources in Granite City could result in a reduction of on average of 1 ug/m3 at the violating Granite City monitors.

Consequently, the model actually confirms that both localized emissions reductions and regional emissions reductions (some of which may originate from the Missouri side of the metropolitan area) could be effective in addressing PM2.5 violations for the 24-hour standard. The analysis therefore provides further support for inclusion of the Missouri portion of the area in the nonattainment area.

Missouri:
Because there is very limited speciation data available for the Granite City sites, the CES analysis done by the EPA underestimated the effect of local sources adjacent to monitors and overestimated the contribution of urban-wide area sulfur oxides. Contrary to the assertion by EPA, Missouri analysis shows that the large portion of the $PM_{2.5}$ sulfate in the St. Louis area is from multi-State regional transport.

EPA Response:
EPA did not rely solely on the CES scores in determining what boundaries are appropriate for this non-attainment area. CES scores were just one small component of the emissions and

meteorology criteria (two of the nine criteria) that EPA considered when making its determination. Despite the fact that these speciation data were not available at the time that CES scores were calculated, a review of these data indicates that they likely would have resulted in relatively small changes to the CES. Furthermore, these data do not confirm overwhelming impact from local sources in Granite City to the exclusion of contribution from sources throughout the metropolitan area, and do not provide definitive conclusions about contributions from Missouri sources.

Missouri:
It would be instructive to examine $PM_{2.5}$ speciation measurement results on the days of interest (high days), although speciation data is not available for the two violating monitors in Illinois. It is the State's position that by evaluating this data, along with correlation data (given as R2 values in the response) the State could easily show that the two violating monitors in Illinois are impacted greatly by a local source (Granite Steel) and that the two monitors have little similarity to Missouri monitors.

EPA Response:
EPA agrees that speciation data from the violating monitors on episode days would be of use in establishing nonattainment boundaries. However, we also agree that such speciation data are not available. Using speciation data from other monitor sites (e.g. Blair Street and Arnold) has analytical limitations. The state indicated that on the two days for which speciation data for both non-violating Missouri sites are available (2/18/2004 and 6/24/ 2005), the composition of the two sites are similar. On these days, neither Blair St. nor Arnold is exceeding but at least one of the violating monitor sites in Illinois is (Table 4).

EPA agrees that there is likely a local component (in Granite City) which is contributing emissions to the violating monitors. However, Missouri has not provided information which would confirm that this local contribution is overwhelming when compared to other sources; nor has Missouri demonstrated that emissions from nearby Missouri counties (and the City of St. Louis) are insignificant in terms of their contribution to the violating monitors. EPA's technical analysis of all factors and analytic tools shows contribution from the Missouri Counties which is not overcome by the Missouri submittal.

Table 4. Days with High Concentrations at Granite City or VFW.
From the MDNR October 18, 2008 response.

Table 1. Days with high concentrations at Granite City or VFW, concentrations ug/m3

	Date	2/18/2004	7/29/2004	1/28/2005	6/24/2005	9/13/2005	2/28/2006	4/29/2006	5/8/2006	8/12/2006
AQS ID	Monitor									
29-510-0087	2nd and Mound	23.1	31.8	19.5	32.4		31.8	17.6	20.0	29.6
29-510-0086	Margaretta	13.3	30.2	18.3	31.8	23.1	30.5	17.7	19.5	30.8
29-510-0085	Blair	24.3	32.5	20.8	33.7		32.8	18.0	20.0	29.2
29-510-0007	South Broadway	23.3	28.5	18.9	36.9	21.8	29.3	17.6	18.1	31.7
29-189-2003	Hunter/Clayton	19.1	30.3	20.1	31.7	22.4	27.7		19.2	31.6
29-183-1002	W. Alton	22.5	32.4	19.9	34.2	24.4	27.2	19.3	20.7	28.1
29-099-0012	Arnold	21.0	29.1	17.4	31.8	22.9	22.6	26.1	18.2	32.4
17-163-4001	Swansea	20.3	26.6	17.6	32.4	24.9	19.0	18.7		28.1
17-163-0010	13th and Tudor			17.8		22.0	29.2	18.4		
17-119-3007	Wood River	19.8	30.0	15.7	34.7	27.3	28.3	17.3	21.9	25.1
17-119-2009	Alton		30.1			28.6	25.8	20.2		
average	all but GC & VFW	20.7	30.2	18.6	33.3	24.2	27.7	19.1	19.7	29.6
17-119-1007	Granite City	35.4	32.3	19.2	36.0	30.4	40.0	36.3	25.1	39.9
17-119-0023	VFW		35.3	35.1	41.1	36.0	27.0	28.0	37.2	32.9
average	GC & VFW	35.4	33.8	27.2	38.6	33.2	33.5	32.2	31.2	36.4
exceeds 35 ug/m3	Predominant Wind Direction	SW	SW/calm	E	W/SW	S/SW	E/NE	SE	S	E

Salt Lake City-Provo, UT

Utah:
Utah Valley is a basin that traps its own air during stagnant winter-time temperature inversions. This difference is most pronounced between Utah and Salt Lake Counties where the two air basins are separated by a high promontory called Point of the Mountain.

EPA Response:
The two counties are not separate air basins based on several factors as described in our August 18, 2008 9-factor technical analysis. The key factors were:

(1) Both EPA and the State evaluated a 6,000 ft inversion height which exceeds the height of the lowest point in the gap (Point of the Mountain) between Utah and Salt Lake Counties by at least 1000 ft.
(2) The presence of strong temperature inversions being sustained for up to three weeks
(3) Similar 2005-2007 design values for Salt Lake County at 48 micrograms and Utah County at 45 micrograms
(4) Cold dense air will move from the higher elevation of Utah Valley at 4,700 ft mean sea level (MSL) to the lowest point in the area which is Salt Lake City at 4250 ft MSL.

Furthermore, as described in the 9-factor analysis (specifically Factor 6) EPA also identified that at approximately 6,000 ft MSL there is a 4.75 mile wide opening between the two counties at Point of the Mountain that allows air masses to move uninhibited. The State did not contradict this information and only provided data from the Herriman monitor to support their comment that Utah and Salt Lake Counties are two separate air basins.

EPA used the best available meteorological data from the Salt Lake Airport and has recently evaluated additional meteorological data showing that the air mass is interconnected, moves back and forth between these two counties and is not separated by any topographical barrier.

Utah:
Based on a variety of arguments, Utah asserts that Utah County should be a separate nonattainment area from the remainder of the Wasatch Front. Among other things, Utah argues that Utah County is geographically separated from Salt Lake County, that other areas around the Country have been separated into more than one nonattainment area even where a single nonattainment area could have been created, and that planning efforts will be simplified and expedited if Utah County is designated as a separate nonattainment area.

EPA Response:
EPA has amended our August 18, 2008 proposal, relative to separating or combining Utah County and Salt Lake County. EPA has given further consideration to the State recommendation to separate the two counties and agrees to Utah County (partial) as being a separate nonattainment area. This decision is based on a broader evaluation of jurisdictional issues that the State claims will facilitate SIP planning. Regardless of whether they are a single or separate nonattainment area, both Utah County and Salt Lake County are violating the 2006 24-hour $PM_{2.5}$ standards and have similar design values. EPA anticipates that the State of Utah will have to insure that these two areas work closely together to develop a consistent strategy for attaining the NAAQS, including a combined modeling demonstration and consistent control measures. However, EPA's analysis of speciated data, pollution roses, and other analytical tools indicates that these two areas are interconnected and thus we expect that SIPs for both areas will fully account for this influence.

Utah:
Both Utah and Salt Lake County PM_{10} nonattainment areas were able to develop implementation plans that successfully met the goals and requirements of the Clean Air Act.

EPA Response:
PM_{10} nonattainment area boundaries do not give an indication of what boundaries are appropriate for $PM_{2.5}$. PM_{10} and $PM_{2.5}$ are different size particles, behave differently in the atmosphere, are often the result of emissions from different types of sources, and will probably require different controls strategies. Thus, the existing boundaries for PM_{10} nonattainment areas are of limited relevance in this area.

EPA did approve the original PM_{10} plans for these two separate areas in 1994 but has not been able to approve Utah's 2005 redesignation request for Salt Lake County for several reasons including recent violations of the PM_{10} standard. The State acknowledges problems with separating the two Counties due to the modeling demonstration used to support the attainment of the PM_{10} standard. While Utah County has not had recent violations of the PM_{10} standard prior to 2008, there have been significant exceedances. Most recently, preliminary 2008 data (not certified) show a potential PM_{10} violation in Utah County in 2008. Our experience with the PM_{10} attainment plans has shown that it is more difficult to have two separate nonattainment

areas and for the same reason mentioned by the State which is the need to use one modeling domain.

Utah:
Other EPA Regions have retained a separation of nonattainment areas with examples for Ohio and Pennsylvania.

EPA Response:
EPA's designations guidance for the 2006 $PM_{2.5}$ standard states that the criteria for determining appropriate boundaries is to be made on a case-by-case basis considering the nine factors. Not every factor was relevant in each area (e.g., in many eastern locations topography is not an issue), nor was every factor equally important to each area. Due to the complex and variable nature of $PM_{2.5}$, the important factors varied from one area to another based on local circumstances. Moreover, EPA consciously did not impose any mandatory "brightline" tests for any of the nine factors.

Additionally, the guidance called for retaining existing boundaries and to the extent possible making them identical to existing ozone boundaries. The $PM_{2.5}$ nonattainment areas for Ohio and Pennsylvania are examples of maintaining existing nonattainment boundaries. Utah is being designated nonattainment for the 24-hour $PM_{2.5}$ standard for the first time. And thus the guidance on existing boundaries does not apply and the comparison to Ohio and Pennsylvania is not relevant.

Nationwide, there are numerous examples of nonattainment boundaries in place from prior NAAQS designations or currently being proposed based on a case-by-case analysis of site specific conditions encompassing very large multi-county, multi-state and multi-jurisdiction nonattainment areas. Historically, the complexity of jurisdictions within a nonattainment area has not been an impediment to air quality improvements.

For instance, the Denver 8-hour ozone area is comprised of seven whole counties and two partial counties encompassing over 8,287 square miles including national forest land, national parks and three wilderness areas: Indian Peaks (Boulder County), Comanche Peak (Larimer County) and Lost Creek (in Jefferson County).

At the time of the Denver 8-hour ozone designation only two of the nine counties had violating monitors. In addition, there are two separate Metropolitan Planning Organizations (MPOs) which have been successfully working together to identify emission budgets for SIP planning purposes. This area also encompasses four separate Core Based Statistical Areas (CBSAs) with a population of over 3.1 million people. In terms of jurisdiction, Colorado and Utah both have State level air quality departments responsible for SIP development. The area being proposed for the Utah Wasatch Front is 150 miles in length and approximately 3,800 square miles and is less than half the area of the Denver 8-hour ozone nonattainment area.

Utah:
As technical justification for this portion of its proposal, EPA cites a 4-mile opening beneath a 6,000 ft inversion level operating as a geophysical connection between the two valleys. While

the actual connectivity and degree of air transport under cold-pool conditions are difficult to quantify, we would ask you to consider the ambient air monitor at Herriman, a location near the divide. It has a design value of only 24 $\mu g/m^3$ (for 2005-2007) which suggests that the high values observed to the North and South are in fact the result of two distinct air-sheds dominated by two separate urban centers.

EPA Response:
While the Herriman monitor is the southernmost monitor in Salt Lake County (see figure 12), it is not in a flow path between the Salt Lake and Utah valleys; rather it is located 7.3 miles to the west of the north/south gap called "Point of the Mountain." It is approximately two miles north of the 6800 ft South Mountain, and in line with the mouth of Rose Canyon, which extends upward into the Oquirrh mountains which form the western border of the Salt Lake Basin. In this location, the monitor may be subject to inputs of clean air from the west. The Magna monitor, also on the west side of the Salt Lake City Basin, but far from Point of the Mountain, is the second lowest monitor in the County, with similar siting, and also attains the NAAQS for 2005-2007.

While Herriman has had attaining design values since 2005 (after violating the 35 $\mu g/m^3$ level in 2002-2004), it is still subject to very high levels of $PM_{2.5}$ (1^{st} maxima of 69.1 $\mu g/m^3$ in 2001, 62.1 $\mu g/m^3$ in 2004 and 57.4 $\mu g/m^3$ in 2007), indicating that very elevated levels of $PM_{2.5}$ occur in this part of Salt Lake County under some meteorological conditions.

Even closer to Point of the Mountain is the Highland monitor in Utah County, only 5.8 miles to the southeast. Highland has similar siting considerations to Herriman, being in line with the mouth of Dry Creek Canyon, and lying south of the ridge separating the eastern Salt Lake County communities from the northeast Utah County communities. As is the case for Herriman in Salt Lake County, Highland often shows the lowest $PM_{2.5}$ concentration for Utah County. Despite being nearer Point of the Mountain, Highland violates the NAAQS with 2005-2007 data.

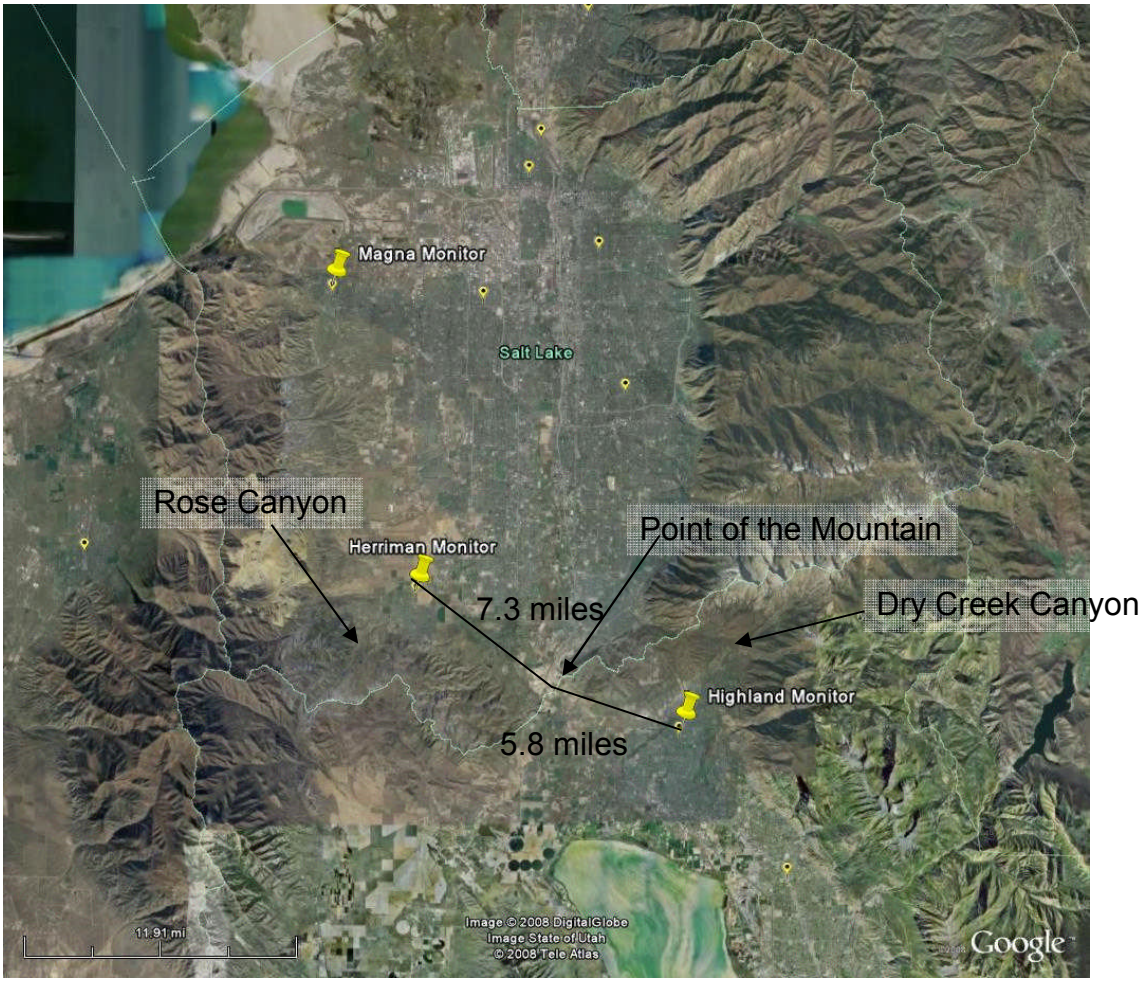


Figure 12. Position of Herriman and Highland relative to Point of the Mountain.

Utah claims that, since Herriman is between the maximum concentration Salt Lake City monitors and the maximum concentration Provo monitors, and shows a significantly lower design value, the conclusion is that there are two independent $PM_{2.5}$ airsheds with a minimum point in between. A different picture is presented by examining actual high concentration days. On January 27, 2007 Herriman monitored its maximum concentration. Concentrations for area monitors on January 27, 2007 are shown in Figure 13, along with winds at Point of the Mountain. Winds were consistently from south to north, around 5 mph, for the first twelve hours of the day, and then changed to 10 to 15 mph winds from the north from noon to sunset, showing a diurnal down valley/up valley pattern with significant transport velocities. Rather than a north/south gradient in concentration with a minimum at Point of the Mountain, Figure 13 shows more strongly an east/west gradient, with highest concentrations along the east edge of the Salt Lake and Utah Lake basins in the high population density areas, and lower concentrations at Herriman and Magna on the west side of the Salt Lake City Basin.

Figure 14 shows winds at Point of the Mountain collected by the Utah Department of Transportation (UDOT) monitor along I-15. The monitor shows moderate southerly winds in the morning and stronger northerly winds in the afternoon through the gap.

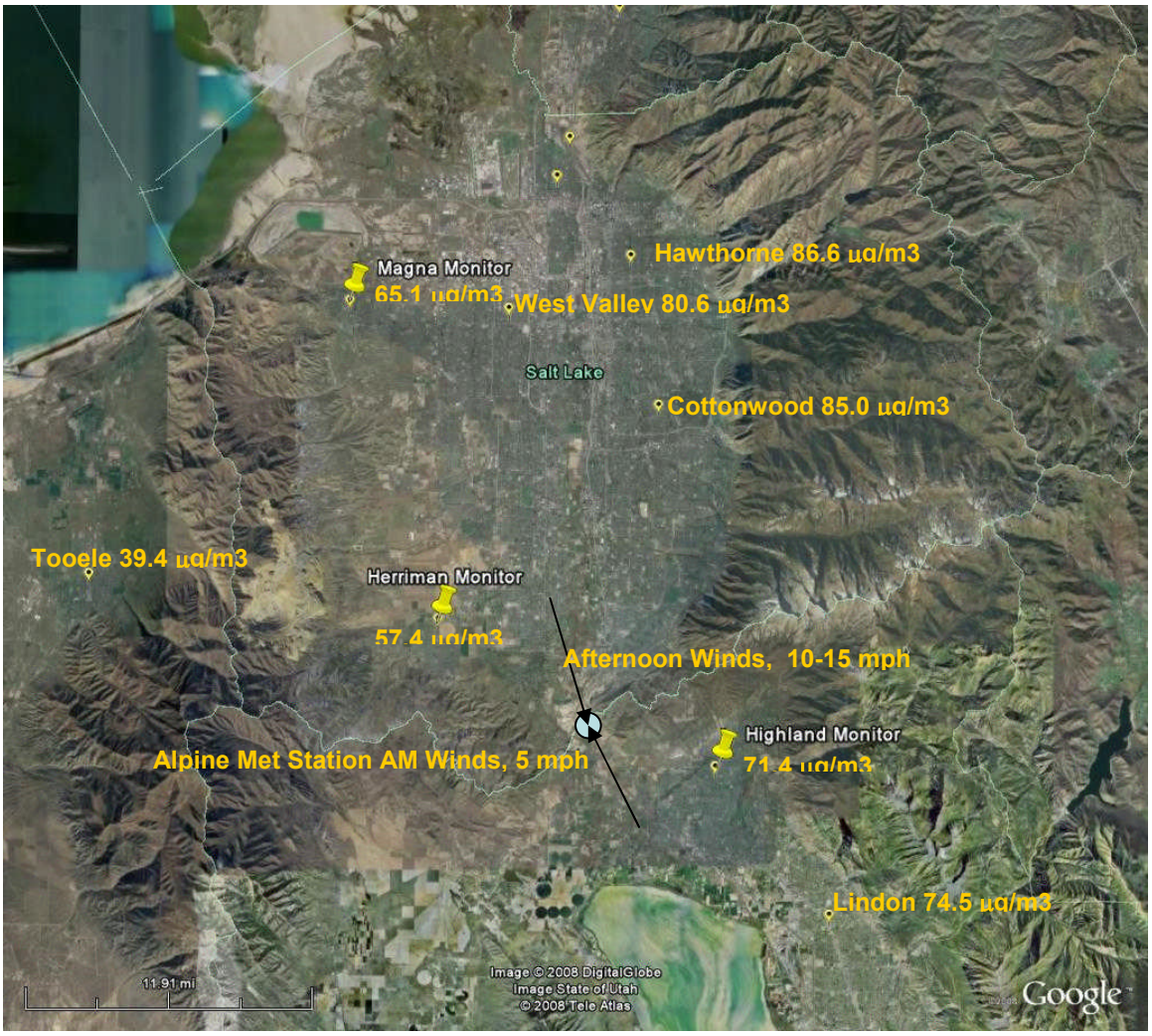


Figure 13. Concentration and Point of the Mountain Surface Winds on the Peak PM2.5 Day of 2007.

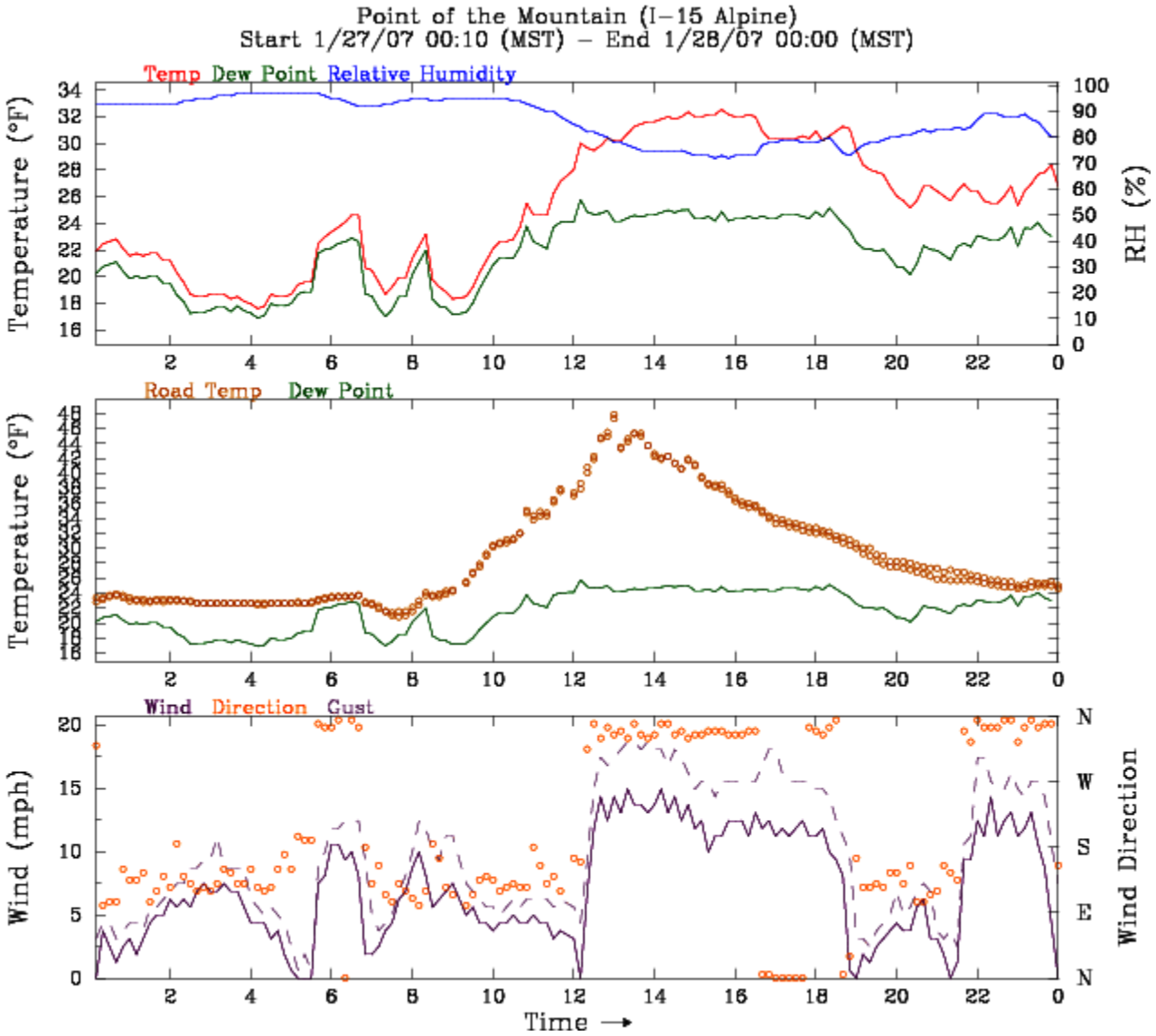


Figure 14. Point of the Mountain Meteorology, January 27, 2007.

Given the presence of significant transport winds through Point of the Mountain, the significance of low values at the Herriman monitor has a different implication. If the Herriman monitor were actually in the gap between Salt Lake County and Utah County, and if it consistently saw concentrations at 24 $\mu g/m^3$ at that location on high pollution days, this would indicate that air at 69 percent of the NAAQS is moving from one basin into the other. On an exceedance day, this level of $PM_{2.5}$ in an "outside" air injection shows that the upwind basin is contributing significantly to high $PM_{2.5}$ readings in the downwind basin. The input air leaves very little room for local emissions above this incoming "background." In fact, because of the siting of the Herriman monitor, EPA expects that the air passing Point of the Mountain has considerably higher concentrations than those measured at Herriman. Data from the UDOT meteorology station at Point of the Mountain indicates that surprisingly high transport winds pass through this gap consistently during inversion periods.

Utah:
Under EPA's proposal, where the entire area would be a single nonattainment area for $PM_{2.5}$, an inadequate conformity finding due to the planning of either MPO would result in a lapse of federal funding that would encompass the areas administered by both. This creates a scenario under which one area could be held responsible for actions taken by an organization in which it had no representation.

EPA Response:
A collaborative process is outlined in Section XII "Transportation Conformity Consultation" of Utah's SIP and addresses issues such as; transportation conformity consultation, specific roles and responsibilities, interagency collaboration and consultation process, and the dispute resolution process.

There are options available to administer the transportation conformity requirements in the entire nonattainment $PM_{2.5}$ boundary area for Salt Lake County and Utah County (and for Cache County, UT and Franklin County, ID). To address these transportation conformity issues, and many other situations, EPA's Office of Transportation and Air Quality (OTAQ) has produced two documents; "Companion Guidance for the July 1, 2004, Final Transportation Conformity Rule; Conformity Implementation in Multi-Jurisdictional Nonattainment and Maintenance Areas for Existing and New Air Quality Standards" (EPA420-B-04-012, July, 2004) and "Interim Guidance for Implementing the Transportation Conformity Provisions in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)" (EPA420-B-06-90, February, 2006.)

The "Companion Guidance" document (EPA420-B-04-012) outlines options for establishing the $PM_{2.5}$ motor vehicle emissions budgets (MVEB) on a nonattainment area-wide basis or sub-area basis. In addition, the MPOs may revert from using nonattainment area-wide budgets to demonstrate conformity by meeting their selected respective sub-area emission budgets if the MPOs make concurrent conformity determinations that demonstrate consistency of their respective plans and programs with their individual sub-area budgets. Likewise, at any time in the future, the MPOs may switch from using sub-area budgets to using nonattainment area-wide budgets. This is allowed as long as they once again perform a joint conformity determination and the sum of their sub-area motor vehicle emissions are equal to or less than the established nonattainment area-wide $PM_{2.5}$ MVEBs. This process is allowed provided that it is established in the SIP.

As noted above the EPA "Companion Guidance" document allows great flexibility for the MPOs (both Wasatch Front Regional Council and Mountainland Association of Governments) to jointly meet the necessary SIP budgets and no one MPO is penalized. This represents a unified process for addressing transportation conformity, and to work towards attainment of the $PM_{2.5}$ 24-hour NAAQS.

For example, EPA notes this process is currently being employed by the two MPOs in the Denver North Front Range 8-hour ozone nonattainment area which are; the Denver Regional Council of Governments (DRCOG), and the North Front Range Transportation and Air Quality Planning Council (NFRT&AQPC). These two MPOs, and the State of Colorado, which elected

to represent areas in the 8-hour ozone nonattainment area not covered by an MPO, have worked cooperatively to address transportation conformity issues associated with the development of the Denver North Front Range 8-hour ozone attainment SIP. Through the development of this ozone attainment SIP, Colorado has collectively considered a unified approach for addressing its regional ozone issue for an area that includes seven whole counties, two partial counties, contains approximately 3.1 million people, and a land area of approximately 8,287 square miles.

Utah:
There is also concern with respect to general conformity. EPA's proposal to annex a portion of Tooele County includes the Deseret Peak Wilderness area. Inclusion of this area would force the Forest Service to compile an abundance of documentation.

EPA Response:
By definition a "Wilderness area" is roadless; therefore, the Forest Service should not have to provide much documentation for transportation budgets. In terms of general conformity, the Forest Service would have to prepare NEPA documents to assess the emissions from a project regardless of whether the area is attainment or nonattainment.

Furthermore it is not unusual for nonattainment areas to encompass national forest, parks and wilderness areas. For example, the Denver North Front Range 8-hour ozone nonattainment area includes national forest land, Rocky Mountain national park and three wilderness areas: Indian Peaks (Boulder County), Comanche Peak (Larimer County) and Lost Creek (in Jefferson County).

Utah:
The "satellite" areas of Tooele and Box Elder Counties should not be included in the Salt Lake City-Ogden-Clearfield CSA nonattainment area. Concerning the proposal to include portions of Tooele and Box Elder Counties in the single nonattainment area for the Wasatch Front, Utah recognizes that EPA, in its evaluation of the nine factors probably gave less weight to the actual monitored data than the State did and arrived at a different conclusion.

EPA Response:
With regard to including portions of Box Elder and Tooele Counties in the Salt Lake City nonattainment area, EPA is required under section 107(d) to designate not only violating areas, but nearby areas that contribute to those violations. Thus, a key objective of the designation process was to ascertain those nearby areas with emissions sources or emissions activities that contribute to violations. EPA based its evaluation of these two areas on the types of information recommended in EPA's guidance and additional relevant information, including traffic and commuting, growth, meteorology, topography, and emissions. Taken together, this information supports the conclusion that both Box Elder and Tooele contribute to the $PM_{2.5}$ violations in adjacent counties. The fact that neither area is currently monitoring nonattainment does not address whether they contribute to violations in nearby areas.

We note there are no topographical barriers between Brigham City and Salt Lake City; the two areas are part of a single very large air basin. Based on emission transport during long periods of stagnation under persistent temperature inversions, sufficient mixing occurs allowing both Box

Elder and Tooele Valley emissions to reach the maximum concentration monitors in Salt Lake City and Ogden and contribute to NAAQS violations.

The monitor in Box Elder County has shown significant daily exceedances of the $PM_{2.5}$ standard as well as three-year design values near the level of the 2006 24-hour $PM_{2.5}$ NAAQS (and above that level for some periods historically). In Box Elder, the 2004-2006 design value was 35 $\mu g/m^3$ and the 2005-2007 design value was 29 $\mu g/m^3$; in Tooele the 2005-2007 design value was 31 $\mu g/m^3$. While not violations, these values demonstrate that these areas are subject to poor air quality at times, and it is likely that these high concentrations contribute to violations in adjacent counties on days when winds blow from this direction towards the rest of this area, and contribute to area wide ambient levels during inversions. If exceedances are caused by local emissions, it indicates emission levels high enough to leave very little margin to the NAAQS and that area emissions are high enough to contribute to the overall air quality issues of the larger basin. If exceedances are from transport from Salt Lake City then it demonstrates that Box Elder and Tooele County are in the same air shed, with sufficient mixing for the central and outlying areas to interact.

Utah:
There is really nothing to be gained, in terms of air quality mitigation, by making a nonattainment designation in these areas. As pointed out in Utah's recommendation to EPA, industrial sources are not excused from emission controls simply because they choose to locate outside a nonattainment area. Will these permitting tools remain effective when trading would be allowed between sources located 150 miles apart?

EPA Response:
We acknowledge that Utah requires PSD BACT in all major attainment area permits Statewide; therefore, we agree that industrial sources locating outside the nonattainment area are not excused from emission controls. Also, EPA recognizes that Utah requires even minor sources apply "State" defined BACT prior to obtaining a permit to construct. However, a nonattainment designation includes additional requirements that are designed to bring significant improvements to air quality. For example, Nonattainment Area New Source Review (NA NSR) includes requirements for major stationary sources, such as Lowest Achievable Emission Rate (LAER), offsets, and net air quality benefit that go beyond PSD permitting requirements.

Regarding the claim that offsets would be allowed between sources located 150 miles apart, it is our view that such offsets would only be allowed if they produce a positive net air quality benefit in the affected area. In accordance with this requirement, Utah's SIP-approved rule R307-403-3(3)(d) requires that emission offsets "… provide a positive net Air Quality benefit in the affected area of nonattainment." Unfortunately, Utah has merely assumed that offsetting reductions in emissions will provide a positive net air quality benefit regardless of the location of the emissions and the offsetting emission reductions. EPA commented on this issue in letters dated December 9, 2004, regarding the Summit Vineyard NSR permit action, and June 30, 1999, regarding the Kennecott Bingham Canyon NSR permit action. At the very least, there would have to be reasonable progress toward attainment of the applicable NAAQS. In addition, it may be appropriate for the State to identify geographical restrictions within a single nonattainment area on obtaining and using offsets.

Utah:
Also concerning the Box Elder appendage, EPA had indicated that there will likely be an effort to "harmonize" areas of nonattainment for both $PM_{2.5}$ and ozone. This area has measured ozone concentrations that are very close to the 2008 ozone standard, but only under meteorological conditions that include a steady wind from the south. This supports the notion that Brigham City is in fact being adversely impacted by the core area of ozone nonattainment. This is likely also the case with $PM_{2.5}$. EPA's proposal, however, presumes the opposite – that Brigham City is adversely impacting on the core nonattainment area and should therefore become part of the nonattainment area.

EPA Response:
EPA's 9-factor analysis did not include any discussion of the ozone exceedances that have occurred in both Box Elder and Tooele Counties. While maximum $PM_{2.5}$ and ozone concentrations in Brigham City may occur with southerly flows, when Brigham City is downwind from the largest concentration of emissions in Salt Lake County (as would be expected), this does not mean that Box Elder emissions play no role in Salt Lake City $PM_{2.5}$ and ozone concentrations. No topographical barrier exists between Brigham City and Salt Lake City; the two areas are part of a single very large air basin. Based on emission transport during long periods of stagnation under persistent temperature inversions, sufficient mixing occurs allowing Box Elder and Tooele Valley emissions to reach the maximum concentration monitors in Salt Lake City and Ogden and contribute to NAAQS violations.

The monitor in Box Elder County has shown significant exceedances of the $PM_{2.5}$ standard as well as three year design values near the 2006 NAAQS level (and above that level for some periods historically). In Box Elder, the 2004-2006 design value was 35 $\mu g/m^3$ and the 2005-2007 design value was 29 $\mu g/m^3$; Tooele's 2005-2007 design value was 31 $\mu g/m^3$. While not violations, these values demonstrate that these areas are subject to poor air quality at times. If exceedances are caused by local emissions, it indicates emission levels high enough to leave very little margin to the NAAQS and that area emissions are high enough to contribute to the overall air quality issues of the larger basin. If exceedances are due primarily to transport from Salt Lake City then it demonstrates that Box Elder and Tooele County are included in the same air shed, with sufficient mixing for the central and outlying areas to interact. Taken together, the nine factors indicate that both Box Elder and Tooele contribute to the $PM_{2.5}$ violations in adjacent counties and that the adjacent counties contribute to NAAQS exceedances in Box Elder and Tooele Counties. Based on 2008 preliminary data, the design value for Box Elder appears to be moving upward from the 2005-2007 design value, further demonstrating this interconnection.

Utah:
As we have already noted, the application of backward wind trajectories used to justify the inclusion of not only these areas, but the appendage of Utah County as well, demonstrates a flawed understanding of meteorological processes at work in Utah. These trajectories do not recognize terrain effects or the trapping of the critical boundary layer, and thus are not representative of actual air flow. Furthermore, EPA's proposal did not include any technical details in support of the trajectory model runs, making it difficult to understand some of the assumptions that were made.

EPA Response:
EPA agrees that attempts to model air motion in the Wasatch Front during wintertime inversions have not yielded completely satisfactory results. Whether considering HYSPLIT results using archived national coarse grid meteorological data sets, or Utah's more detailed approaches using UAMAERO/MM5, model performance in matching measured low level inversion period winds has been relatively poor. This difficulty in modeling cold pool winds during wintertime stagnation events has long been an issue in other western States as well. While uncertain, and providing limited usefulness in quantifying transport between different parts of the Wasatch Front, the methods suggest levels of transport that are consistent with measured surface winds and wind patterns, particularly over extended multi-day, or multi-week episodes with persistent strong wintertime inversions. For example, EPA used three sets of backtrajectories to illustrate transport from Utah County, Tooele County and Box Elder County toward Salt Lake County. Examining $PM_{2.5}$ data collected by the Utah Division of Air Quality (Utah DAQ) along the Wasatch front, $PM_{2.5}$ measurements at Brigham City in Box Elder County are consistent with the transport winds indicated by the HYSPLIT backtrajectories. On January 13, 2004 and January 26, 2006, backtrajectories indicate general flow along the Wasatch front from south to north. On both days, the Brigham City monitor recorded $PM_{2.5}$ exceedances, consistent with transport of pollutants northward from the center of the nonattainment area. On January 22, 2004, the backtrajectory indicated general flow from north to south; on that day, Brigham City was the only Wasatch Front monitor to record $PM_{2.5}$ levels below the $PM_{2.5}$ NAAQS, consistent with local Box Elder emissions being blown south into the rest of the nonattainment area. The three backtrajectories used by EPA align with measured $PM_{2.5}$ data; the response to the last comments from the Utah DAQ on the CES, in Section II, of this document shows that the backtrajectories used are also consistent with surface wind data collected by the Utah DAQ.

Under such wintertime conditions, even light winds can transport emissions throughout the $PM_{2.5}$ nonattainment area proposed by EPA. EPA has developed data sets of surface wind conditions from the Utah DAQ meteorological monitoring network that show some degree of organized transport winds during all of the inversion days analyzed (that is, periods of time lasting several hours in which most or all of the Utah DAQ met sites simultaneously show northerly wind components or, at other times, southerly wind components). While HYSPLIT may not accurately represent actual local wind conditions, the EPA assessment shows that winds measured on the ground by Utah DAQ during wintertime inversions are consistent with the archived wind fields utilized by HYSPLIT. The HYSPLIT trajectories would not be accurate enough for some applications (quantitative source attribution, for example), but are accurate enough to provide a demonstration of gross air movement within the Wasatch Front, and result in conclusions consistent with both $PM_{2.5}$ measurements and surface wind measurements.

Utah:
Furthermore, we believe that the technical basis underlying the EPA's proposal is incorrect in its use of back-trajectory analyses that fail to represent cold–pool conditions, meteorological data that was collected at the wrong locations, arbitrary inventories that were not even seasonally adjusted (and therefore overstate carbon emission) and commuting patterns that were misrepresented by a factor of 10.

EPA Response:
EPA utilized the best available tools and information in a nationally consistent manner. EPA has examined actual Utah DEQ surface wind data to evaluate the accuracy of the HYSPLIT trajectories, as well as the representativeness of the pollution roses collected at Salt Lake International Airport relative to data from other areas in the Wasatch Front.

While the accuracy of these methods is important, it must be noted that Great Salt Lake Valley and adjacent Utah Valley are closed air basins. There are no low elevation outlets. The presence of a strong, multi-day temperature inversion under wintertime conditions traps all surface level emissions, and for longer events ample time is provided for mixing along the length of the Wasatch Front given the observed non-zero wind velocities and patterns. We note that Utah has not provided any countervailing evidence, and EPA's methods and conclusions were the best available at the time of our August 18, 2008, 9-factor technical analysis. Subsequently, we have included updated pollution roses in our final Technical Support Document, which includes wind data from an additional meteorological station located at Hill Air Force Base in Ogden, Utah. The issues related to emission inventories and commuting patterns are addressed under separate comment/response.

Utah:
Along the Wasatch Front, EPA's pollution rose diagrams were created using inappropriate wind data. Wind data from the Salt Lake City International Airport to create pollution rose diagrams for Utah County, Weber County, Davis County, and Toole (sic) County while wind data from Pocatello, Idaho was used to create a pollution rose diagram for Box Elder County, Utah. These pollution rose diagrams were then used as evidence to support the exchange of precursor emissions between outlying areas and the Salt Lake City-Ogden-Clearfield CSA and Provo-Orem CBSA's. The DAQ would again like to point out that because topography controls the wind, a wind rose from Salt Lake City is not representative of the wind rose in Ogden or Provo and a wind rose from Pocatello, Idaho (mountain ranges away) is completely inappropriate to be used for Box Elder County, Utah.

EPA Response:
Utah did not provide wind roses for Box Elder, Weber, Davis Tooele or Utah Counties to demonstrate that the wind rose used was inappropriate. EPA does not disagree that local pollution roses would be more representative of local conditions. Given the siting at Salt Lake International Airport, however, the wind data there is likely to be representative of much of the southern Great Salt Lake area, and of overall flow within the greater basin. EPA has done an analysis of the Utah DAQ meteorological data to assess regional wind patterns during inversion episodes. Results show periods of uniformity in air flow. The Utah DAQ site between the Airport and the Lake shows more lake effect forcing than do other sites, but is not an outlier within the network as a whole in terms of directional patterns. Overall the analysis supports the conclusion reached independently using the Salt Lake International Airport wind rose. Throughout much of the valley, there is often widely distributed simultaneous northerly or southerly motion.

Utah:
The two-sentence statement on page 36, following Table A.3-5 of the comment letter states a conclusion that is simply not supported by the data in the table:

> "Many of the counties that are candidates for nonattainment show a higher percentage of commuters going to Salt Lake County than are commuting from Salt Lake to other counties. The counties of Box Elder at 24.1 percent, Tooele at 43.8 percent and Utah at 12.9 percent are all higher than Salt Lake at 5.4 percent which shows that emissions related to traffic and commuting from those areas are contributing to violations of the $PM_{2.5}$ standard."

Table 2 (located at the end of the comment letter) clarifies the actual contribution of VMT, and thus emissions, to the proposed nonattainment area from Box Elder and Tooele Counties. The fact that outlying counties have a higher percentage of drivers commuting outside the county than does Salt Lake County does not mean that those counties are significant contributors to the mobile emissions inventory along the Wasatch Front. Salt Lake County had an estimated 8.9 billion VMT per year in 2005. This is roughly 10 times the VMT reported for either Box Elder or Tooele. Therefore, any comparison of these relative percentages is misleading. It is more appropriate to examine in terms of actual VMT, the impact on the core nonattainment area that is due to these outlying regions. Table 1 in the comment letter shows that there is only about a 1.5 percent increase in VMT to each of the proposed nonattainment counties from commuters in Box Elder and Tooele Counties, hardly a compelling reason to conclude that this impact contributes to a violation in the nonattainment area. This is based on the assumption that approximately 27 percent of the annual VMT comes from driving to and from work.

EPA Response:
EPA presented commuting data and VMT data as supporting information with regard to the contribution of emissions to the proposed nonattainment area. This is only data for one factor (Factor 4) of the EPA's 9-factor analysis. The State only considered information from Factor 4 for 2005 and did not elaborate on the data in Factor 5, which shows significant predicted growth in both population and VMT for Box Elder and Tooele Counties. The population growth can be a surrogate measure of emissions activities, and a gauge of whether the area is integrated economically into the larger area, both of which indicate a greater degree of contribution to ambient $PM_{2.5}$.

EPA also notes that commuting VMT into the nonattainment counties does contribute to $PM_{2.5}$ violations in those counties. The populated area of both Box Elder and Tooele Counties are in the eastern portion of these Counties. The overall total VMT and the associated emissions from each of these Counties contributes to the $PM_{2.5}$ and precursor emissions to PM2.5 concentrations in the airshed. These emissions and their future growth for the overall VMT should not be discounted merely because these emissions are not specifically related to commuting.

The State uses a default factor of 27 percent for VMT from commuting to and from work from a 2004 FHWA document entitled "Summary of Travel Trends" to significantly discount the VMT. There is no indication that the State conferred with the MPO for the Wasatch Front (Wasatch Front Regional Council - WFRC) to see if they agree with this 27 percent figure and if it is

relevant for Utah. This input from WFRC would provide a localized interpretation, rather than a national default, for consideration for commuters coming from Box Elder and Tooele Counties to Davis, Salt Lake, and Weber Counties.

Utah:
Other than exceptional wind and smoke events, elevated $PM_{2.5}$ concentrations in Utah occur during wintertime quiescent ridge dominated synoptic conditions. The lack of synoptic scale forcing allows strong cold pools to form in basin or valley bottoms. Within and around these cold pools, weak large scale forcing allows terrain driven flow to develop and vertical mixing is weak to non-existent. Topography controls the wind during these conditions.

EPA Response:
EPA acknowledges the States comment as mostly true. However, the last sentence that "Topography controls the wind during these conditions" implies that there are no organized wind patterns within the cold pool. This may not be accurate. EPA has done an assessment of wind speed and direction during inversion episodes using the surface wind data collected by Utah DAQ across its network. EPA's conclusions are that while some sites experience winds dominated by local topography (down valley flow at canyon mouths, etc.) the network as a whole shows a significant amount of uniform winds. There are recurring, multi-hour periods when all or most of the network records similar wind directions at the same time; rather than being controlled by local topography, the basin as a whole shows recurring, relatively uniform responses to changes in conditions, to the extent that the regional analysis diagrams are termed "Slosh Diagrams."

<u>San Carlos Apache Indian Reservation, CA</u>

San Carlos Apache:
With regard to EPA's letter stating that EPA intends to designate the San Carlos Apache Reservation as attainment/unclassifiable for the 2006 24-hour $PM_{2.5}$ health standard, the Tribe finds this designation "challenging." The Reservation, which consists of about 1.9 million acres, is largely pristine and undeveloped. Much of the particulate matter in the air on the Reservation originates from mining related activities to the east, west, and south of the Reservation.

EPA Response:
There are no monitors on the reservation and there are no monitors in the area surrounding the reservation that are showing violations. Absent monitoring data that reflects a violation, we cannot make a designation other than "attainment/unclassifiable. Also, since the San Carlos Apache Reservation is not included within a nonattainment area and since they are not contributing to nonattainment elsewhere, EPA considers the appropriate $PM_{2.5}$ designation for the Reservation as attainment/unclassifiable.

San Carlos Apache:
The Tribe encourages the EPA to take enforcement actions which will contain and reduce fugitive emissions and particulate point sources on the Federal, State and private lands in the region which surrounds the Reservation.

The Tribe asks the EPA to take aggressive measures necessary to control particulate emissions, such as requiring the U.S. Forest Service, Bureau of Land management, State Land Department, and Gila, Graham and Pinal Counties to control industrial pollution, off road vehicle use, and the dust from unpaved roads in their areas of responsibility.

EPA Response:
EPA wants to ensure that air quality for tribal residents is healthy and will take action to address sources that are not complying with applicable laws. EPA hopes the San Carlos Apache Tribe will bring those sources to our attention. However, the designation process does not address individual sources. The designation process identifies those areas of the country that meet or do not meet the $PM_{2.5}$ standard for small particulates.

EPA requires each State to have a representative monitoring network for the criteria pollutants of concern. These monitoring networks measure pollution in the air and that data is recorded in EPA's AQS. A network usually has many monitors placed throughout a State and EPA accepts the monitoring data from the network as being representative of the State's air quality, provided the network meets EPA requirements. The Arizona Department of Environmental Quality (ADEQ) has an EPA-approved monitoring network and EPA views the data from that network as a reliable indicator of the air quality in the State of Arizona.

EPA also considers air quality data from monitors that the tribes operate on their reservations. It is EPA's understanding that are no such air monitors on the San Carlos Apache Reservation. Consequently, EPA relied on air quality data from the nearest State monitors to determine whether there was a $PM_{2.5}$ problem in the area of the San Carlos Apache Reservation. There is no data indicating that a violation of the $PM_{2.5}$ standard is occurring anywhere in the State of Arizona except in Nogales, Arizona. As a result, EPA made a designation of attainment/unclassifiable for the San Carlos Apache and all the other Tribes in Arizona because there is no scientific evidence that there is a $PM_{2.5}$ problem on tribal lands.

However, it is possible that activities are causing PM_{10} issues on the San Carlos Apache Reservation. Several of the activities mentioned in the letter are associated with dust issues throughout the State, and we can certainly work with the tribe on those issues.

San Carlos Apache:
The Tribe further requests that the EPA cause Federal agencies and the ADEQ to refrain from issuing air quality permits and other permits which will further degrade the air quality of the Reservation.

EPA Response:
The San Carlos Apache comment letter raised the issue of permits being issued by ADEQ that can further degrade air quality. The permits issued by ADEQ are designed to impose controls on the sources that hold the permit, which ensures that the source cannot degrade air quality to levels that would harm public health. The Tribe has complained that they were not informed about permits that were pending prior to issuance. EPA contacted the ADEQ Air Quality Division Director and the ADEQ Tribal Liaison to discuss the complaint and to request that the

San Carlos Apache be notified of any potential permit actions that might affect the Tribe. ADEQ committed to doing so.

San Carlos Apache:
As part of the consultation process, the Tribe requests that EPA make available to the Tribe all data which was reviewed in the process of reviewing sources of air pollution in the area surrounding the reservation and all documentation of EPA's decision making process**.**

The Tribe also requests consultation with EPA and for EPA to develop a comprehensive plan to bring activities which in surrounding areas contribute to poor air quality within the Reservation, and all documentation of your decision making process.

EPA Response:
EPA can provide the analysis submitted by the State of Arizona which shows the results of the State monitoring network. The only area in Arizona that is being designated as nonattainment for the $PM_{2.5}$ standard is the city of Nogales. EPA has prepared a TSD which provides technical information on the reasons for the designation of Nogales as nonattainment, which EPA can be found in the docket for the $PM_{2.5}$ designations at www.regulations.gov; the EPA docket number for 24-hour $PM_{2.5}$ designations is: EPA-HQ-OAR-2007-0562

Youngstown, OH

Ohio:
Ohio EPA's initial recommendation to EPA in December 2007 recommended Mahoning and Trumbull Counties as nonattainment for the new 24-hour $PM_{2.5}$ standard. However, since that time air quality has improved in the area."

EPA Response:
Both of the Youngstown area counties had 2004-2006 design values above the standard. Ohio pointed out the air quality is improving in the Youngstown area and throughout the State. The most recent design values for 2005-2007 show that Trumbull County now meets the standards and that Mahoning County is now just above the standard. Based on the most recent information, EPA is designating Mahoning and Trumbull Counties as nonattainment.

However, EPA is inviting States to submit complete, quality assured, certified 2008 air quality data to EPA earlier than the usual June 30, 2009 deadline. This early submittal deadline will be approximately 45 days prior to the 90 days after publication effective date of the final 24-hour $PM_{2.5}$ designations. If EPA agrees that a change of designation status is appropriate based on 2006-2008 air quality data, then EPA will withdraw the nonattainment designation prior to the effective date of final 24-hour $PM_{2.5}$ designations and the area would be designated as in attainment. EPA will make such a change only when the 2008 establishes that there is no violation in the area; EPA will not revisit the designated boundaries of nonattainment areas that are still violating the NAAQS.

Yuba City-Marysville, CA

CARB:
The only violating monitor in the Feather River Air Quality Management District is located in Yuba City, the largest urban area in Sutter County, home to over 65 percent of the County's population. 18 percent of Yuba County's residents live in Marysville, located in Yuba County but sharing a border with Yuba City. Combined, the two cities account for 44 percent of the population of the two counties. Based on the localized nature of the primary emission contribution to winter $PM_{2.5}$, CARB considers the combined urban area of Yuba City/Marysville an appropriate nonattainment boundary for $PM_{2.5}$.

Almost 55 percent of the $PM_{2.5}$ on exceedance days in Yuba City is composed of carbon, primarily from residential wood combustion. The low wind speeds exhibited during times of $PM_{2.5}$ exceedances, as noted in the pollution wind rose on page 16 of the EPA response, only reinforces the exceedances as resulting from localized sources such as residential wood burning.

EPA Response:
EPA designation of the $PM_{2.5}$ nonattainment area for Yuba City and Marysville area includes all of Sutter County and part of Yuba County with a boundary drawn to the eastern ridge line (based on inversion layer and topography) that fully captures the City of Marysville and the surrounding populations.

Violation of the PM2.5 standard for the 2005-2007 period occurred at the monitor located in Yuba City (design value of 40 ug/m^3). Data provided in CARB's October 15 letter indicates that 54 percent of the PM2.5 is carbon and 38 percent is nitrates, with crustal and sulfates making up the remaining 8 percent. Again, this data suggests that residential wood burning and mobile sources are the most important sources contributing to $PM_{2.5}$ exceedances, particularly during the winter season. Consistent with the rationale used in other areas, the $PM_{2.5}$ nonattainment area for Yuba and Sutter is intended to capture the full extent of urbanization associated with Yuba City and Marysville, as well as the major transportation corridors. This boundary represents 100 percent of Sutter County and approximately 75 percent of Yuba County. As a partial county designation, the nonattainment area in Yuba County includes approximately 93 percent of the population, approximately 99 percent of the non-truck traffic and approximately 97 percent of the truck traffic.

Topography was also an important consideration in developing the boundaries for Sutter and Yuba County. That is, given Sutter County is entirely within the Sacramento Valley below the approximate boundary of the winter inversion layer, there is the potential for pollution levels measured in Yuba City to represent a larger area. Given the mostly flat terrain, there was not a reason to limit the designation to a partial county. This rationale was also applied to Yuba County, where the Sierra Nevada Mountains on the eastern side of the County, combined with the winter inversion layer, was seen as physical boundary. Considering this physical boundary, which also resembles the California Air Basin boundary for the Sacramento valley, EPA defined the eastern boundary within Yuba County with township and range lines to capture this topographical boundary, as well as the major population centers and transportation networks within the County.