UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Honorable Joe Manchin III
Governor of West Virginia
1900 Kanawha Boulevard
Charleston, West Virginia 25305

AUG 1 8 2008

Dear Governor Manchin:

Thank you for your recommendations on the status of fine particle pollution ($PM_{2.5}$) throughout West Virginia. Fine particle pollution represents one of the most significant barriers to clean air facing our nation today. Health studies link these tiny particles – about 1/30th the diameter of a human hair – to serious human health problems including aggravated asthma, increased respiratory symptoms like coughing and difficult or painful breathing, chronic bronchitis, decreased lung function, and even premature death in people with heart and lung disease. Fine particle pollution can remain suspended in the air for long periods of time and create public health problems far away from emission sources. Reducing levels of fine particle pollution is an important part of our nation's commitment to clean, healthy air.

The U.S. Environmental Protection Agency (EPA) has reviewed the November 9, 2007 letter from the Honorable Stephanie R. Timmermeyer, Secretary of the Department of Environmental Protection, submitting West Virginia's recommendations on air quality designations for the 2006 24-hour $PM_{2.5}$ standard. EPA has also reviewed the technical information submitted to support the recommendations. EPA appreciates the effort West Virginia has made to develop this supporting information.

Consistent with the Clean Air Act, this letter is to inform you that the EPA intends to make modifications to West Virginia's recommended designations and boundaries. Based on 2005 to 2007 air quality monitoring data, several areas in West Virginia that were previously in attainment are now in nonattainment. EPA has enclosed a detailed description of the areas where EPA intends to modify West Virginia's recommendations, and the basis for such modification. Your Department of the Environment Secretary, the Honorable Randy C. Huffman and the Division of Air Quality Director, Mr. John A. Benedict, will also receive a copy of this letter and the enclosures. Should you have additional information that you wish to be considered by EPA in this process, please provide it to EPA Region III by October 20, 2008.

EPA has taken steps to reduce fine particle pollution across the country, such as the Clean Diesel Program, to dramatically reduce emissions from highway, nonroad, and stationary diesel engines. In addition, State programs implemented to attain the 1997 $PM_{2.5}$ standards, will also help to reduce unhealthy levels of fine particle pollution.

EPA intends to make final designation decisions for the 2006 24-hour $PM_{2.5}$ standard by December 18, 2008. If you have any questions, please do not hesitate to contact me. Please also be aware that in the near future, EPA is planning to publish a notice in the Federal Register to solicit public comments on our intended designation decisions. EPA looks forward to a continued dialogue with you as we work together to implement the $PM_{2.5}$ standards.

Sincerely,

Donald S. Welsh

Donald S. Welsh
Regional Administrator

Enclosures

cc: Honorable Randy C. Huffman, Cabinet Secretary
West Virginia Department of Environmental Protection

Mr. John A. Benedict, Division of Air Quality Director
West Virginia Department of Environmental Protection

<u>**Enclosure 1**</u>

West Virginia
Area Designations for the 2006 24-Hour
Fine Particle National Ambient Air Quality Standard

The table below identifies the counties in West Virginia that EPA intends to designate as not attaining the 2006 24-hour fine particle standard.[1] A county will be designated as nonattainment if it has an air quality monitor that is violating the standard or if the county is determined to be contributing to the violation of the standard.

Area	West Virginia Recommended Nonattainment Counties	EPA's Intended Nonattainment Counties
Charleston	Kanawha County Putnam County	Kanawha County Putnam County
Huntington-Ashland	None	Cabell County Wayne County Mason County (partial)
Morgantown	None	Monongalia County
Parkersburg	None	Wood County Pleasants County (partial)
Steubenville-Weirton	Brooke County Hancock County	Brooke County Hancock County

EPA intends to designate the remaining counties as "attainment/unclassifiable."

[1] EPA designated nonattainment areas for the 1997 fine particle standards in 2005. In 2006, the 24-hour $PM_{2.5}$ standard was revised from 65 micrograms per cubic meter (average of 98^{th} percentile values for 3 consecutive years) to 35 micrograms per cubic meter. The level of the annual standard for $PM_{2.5}$ remained unchanged at 15 micrograms per cubic meter (average of annual averages for 3 consecutive years).

Enclosure 2

Description of the Contributing Emissions Score

The Contributing Emissions Score (CES) is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Using this methodology, scores were developed for each county in and around the relevant metro area. The county with the highest contribution potential was assigned a score of 100, and other county scores were adjusted in relation to the highest county. The CES represents the relative maximum influence that emissions in that county have on a violating county. The CES, which reflects consideration of multiple factors, should be considered in evaluating the weight of evidence supporting designation decisions for each area.

The CES for each county was derived by incorporating the following significant information and variables that impact fine particle ($PM_{2.5}$) transport:

- Major $PM_{2.5}$ components: total carbon (organic carbon (OC) and elemental carbon (EC)), sulfur dioxide (SO_2), nitrogen oxides (NO_x), and inorganic particles (crustal).
- $PM_{2.5}$ emissions for the highest (generally top 5%) $PM_{2.5}$ emission days (herein called "high days" or "high $PM_{2.5}$ days") for each of two seasons, cold (October-April) and warm (May-September).
- Meteorology on high days using the NOAA HYSPLIT model for determining trajectories of air masses for specified days.
- The "urban increment" of a violating monitor, which is the urban $PM_{2.5}$ concentration that is in addition to a regional background $PM_{2.5}$ concentration, determined for each $PM_{2.5}$ component.
- Distance from each potentially contributing county to a violating county or counties.

A more detailed description of the CES can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

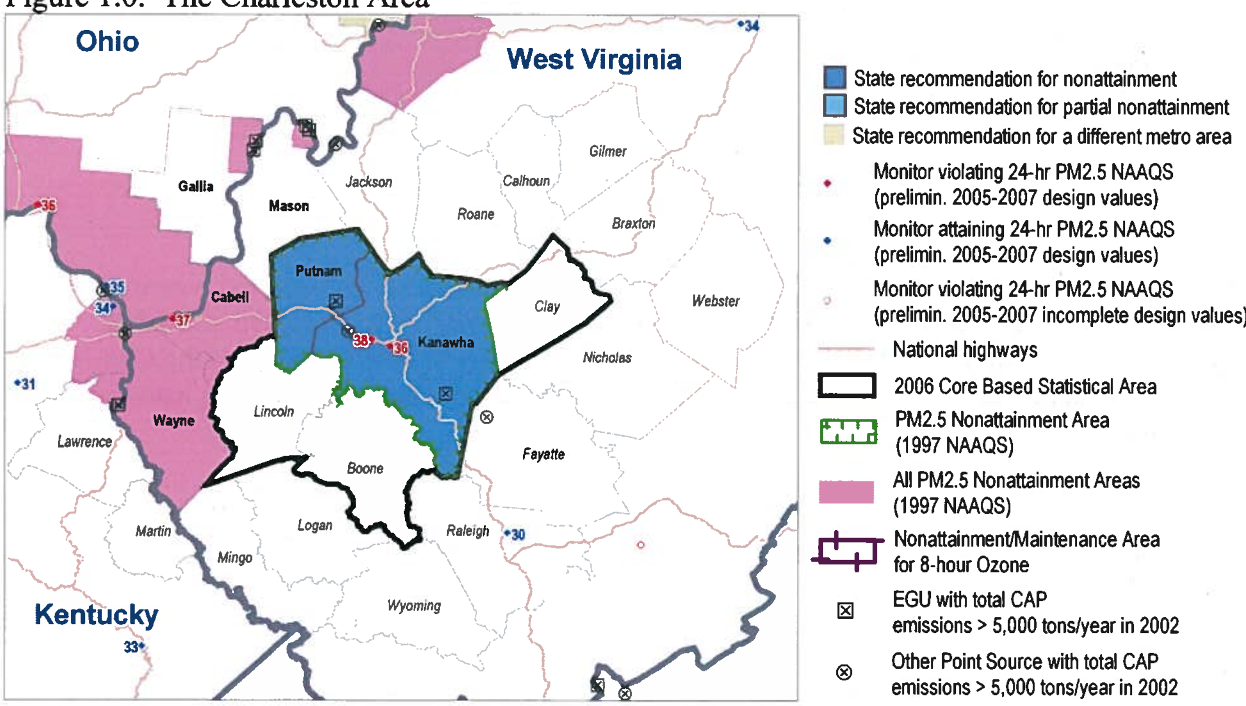
EPA Technical Analysis for the Charleston Area

Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those areas that contribute to violations. This technical analysis for the Charleston area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates the counties that potentially contribute to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

Figure 1.0 is a map which identifies the counties in the Charleston area and provides other relevant information such as the locations and design values of air quality monitors, the metropolitan area boundary, and counties recommended as nonattainment by the State.

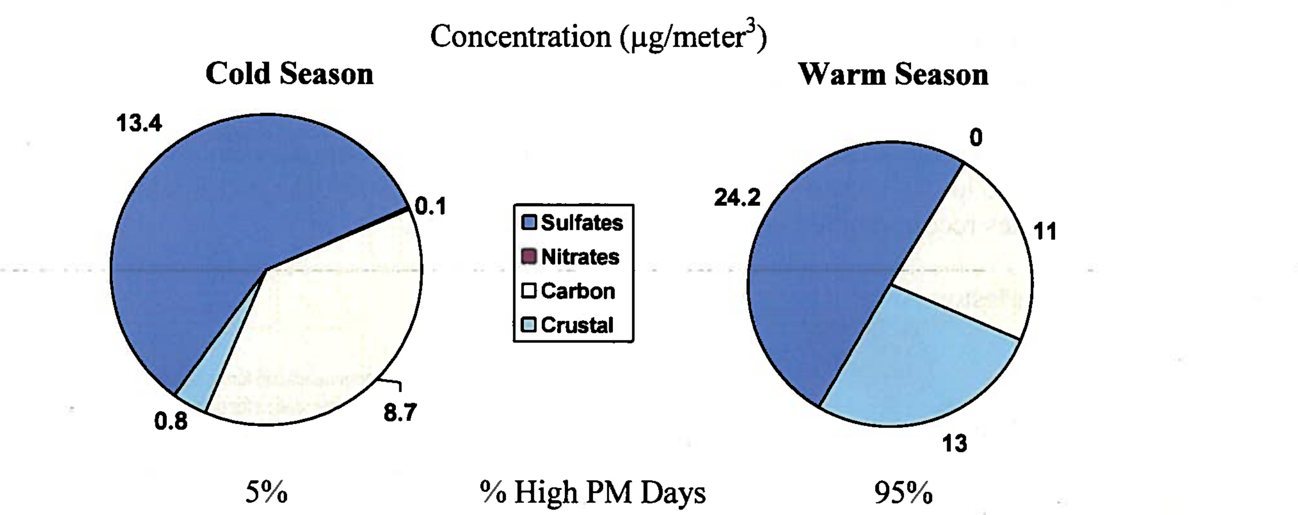
Figure 1.0. The Charleston Area



For this area, EPA previously established $PM_{2.5}$ nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS that included two full counties, Putnam and Kanawha, both located in West Virginia. In November 2007, the State of West Virginia recommended that the same counties be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. See the November 9, 2007 letter from the West Virginia Department of Environmental Protection to EPA. This data is from Federal Reference Method (FRM) and Federal Equivalent Method (FEM) monitors located in the state.

Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations occur predominantly in the summer, and the average chemical composition is illustrated in Figure 1.1, below.

Figure 1.1. $PM_{2.5}$ Composition Data for the Charleston Area



Based on EPA's 9-factor analysis described below, EPA proposes that Putnam and Kanawha Counties, the same counties as previously designated for the 1997 $PM_{2.5}$ NAAQS should be designated nonattainment for the 2006 24-hour $PM_{2.5}$ air quality standard as part of the Charleston nonattainment area, based upon currently available information. These counties are listed in the table below.

Charleston Area	State-Recommended Nonattainment Counties	EPA-Recommended Nonattainment Counties
West Virginia	Putnam County Kanawha County	Putnam County Kanawha County

The following is a summary of the 9-factor analysis for the Charleston area.

Putnam and Kanawha Counties in West Virginia comprise the Charleston nonattainment area for the 1997 $PM_{2.5}$ NAAQS, and were designated as a "basic" (Subpart 1) area for the 1997 8-hour ozone NAAQS. Furthermore, Kanawha and Putnam Counties are in the same metropolitan planning organization (MPO), the Regional Intergovernmental Council (RIC). Kanawha County has two monitors showing violations of 2006 24-hour $PM_{2.5}$ NAAQS, considering 2005-2007 data. Putnam County has no monitors, but is economically linked to Kanawha County, with over 11,000 Putnam residences commuting to Kanawha County. In addition, emissions from Putnam County, such as those from vehicles and other small area sources, and emissions from one large source, the John E Amos electric generating unit contributes to the nonattainment problem. Local emissions from Kanawha County also contribute to the Charleston area's nonattainment, including emissions from the Kanawha River electric generating unit and Bayer Cropscience. In 2005, the Kanawha River Facility emitted over 12,000 tons of SO_2 and 3,600 tons of NOx, Bayer Cropscience emitted about 3000 tons each of SO_2 and NO_x that same year. Therefore, EPA has determined that it is appropriate to include both Putnam and Kanawha Counties in the Charleston nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS.

The Charleston area, as identified in Figure 1.1, above, includes Cabell and Mason Counties, both of which are located in West Virginia. These counties and portions of Wayne County, WV, Gallia County, OH, and Gallia County, KY, are included in the Huntington-Ashland nonattainment area for the 1997 $PM_{2.5}$ NAAQS. EPA is proposing that these areas be considered for designation as nonattainment as part of the Huntington-Ashland nonattainment area for the 2006 $PM_{2.5}$ NAAQS. See the "EPA Technical Analysis for the Huntington-Ashland Area." Therefore, these areas will be excluded from further consideration for inclusion within the Charleston, WV 2006 $PM_{2.5}$ NAAQS nonattainment area.

Factor 1: Emissions Data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: "$PM_{2.5}$ emissions total," "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," "SO_2," "NO_x," "VOCs," and "NH_3." "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1.0 as separate items.) "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs (volatile organic compounds) and NH_3 (ammonia) are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

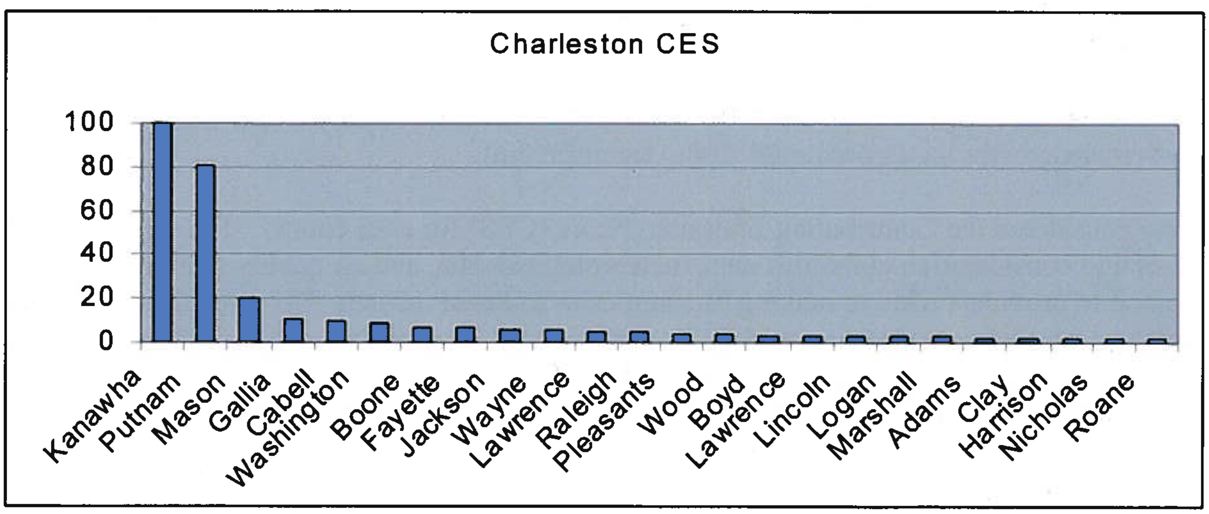
EPA also considered the Contributing Emissions Score (CES) for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive way for consideration of data for these factors. A summary of the CES is included in Enclosure 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

Table 1.0 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the Charleston area. Counties that are part of the Charleston nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface. Counties are listed in descending order by CES. Figure 1.2 is a graphic representation of the higher CES values set forth in Table 1.0.

Table 1.0. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County, State	State Recommended Nonattainment?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
Kanawha, WV	**Yes**	**100**	**2,016**	**857**	**1,159**	**21,633**	**23,985**	**15,652**	**527**
Putnam, WV	**Yes**	**81**	**4,838**	**468**	**4,370**	**113,590**	**37,387**	**3,117**	**106**
Mason, WV	No	20	3,528	305	3,222	82,856	24,561	2,496	237
Gallia, OH	No	11	7,087	499	6,588	100,704	59,035	1,939	327
Cabell, WV	No	10	1,082	434	649	4,355	10,644	5,878	181
Boone, WV	No	7	299	133	165	103	1,281	1,423	154
Fayette, WV	No	7	633	263	368	3,595	4,514	2,887	121
Jackson, WV	No	6	817	188	629	3,326	3,036	2,327	164
Wayne, WV	No	6	657	446	210	1,041	7,619	2,577	70
Raleigh, WV	No	5	675	324	352	349	3,395	4,462	141
Lawrence, KY	No	3	2,567	199	2,368	50,239	13,761	932	90
Lincoln, WV	No	3	217	90	129	48	568	879	51
Logan, WV	No	3	298	142	157	101	981	1,867	53
Clay, WV	No	2	145	50	95	44	311	513	27
Nicholas, WV	No	2	313	129	184	170	1,057	1,828	83
Roane, WV	No	2	158	57	100	86	600	916	100
Braxton, WV	No	1	269	105	164	243	1,701	1,323	83
Calhoun, WV	No	1	102	27	75	37	793	498	33
Mingo, WV	No	1	308	140	168	228	2,890	1,352	35
Wyoming, WV	No	1	465	115	351	340	3,099	1,681	47
Gilmer, WV	No	0	116	36	80	83	1,096	800	48
Martin, KY	No	0	199	70	129	174	863	518	23
Webster, WV	No	0	116	37	79	65	214	387	36

Figure 1.2. CES Values for Portions of the Charleston Area and Certain Non-Contiguous Counties)



Based upon the above data, Kanawha County, WV, has the highest CES (100). As mentioned above, Kanawha County is also the location of the only violating monitors in the Charleston area. Of the twenty-four counties in this analysis, Kanawha County, WV, has the fifth highest $PM_{2.5\text{-total}}$ and SO_2 emissions, and the fourth highest NOx emissions. Putnam County, which is adjacent to Kanawha, has the second highest CES (81). Putnam County has the highest SO_2 emissions, and the second highest total $PM_{2.5}$ and NOx emissions. Other counties in this analysis have relatively low CES values, twenty and lower.

Gallia County, OH (CES = 11) has the second highest SO_2 emissions, and the highest total $PM_{2.5}$ NOx emissions. Mason County, WV (CES = 20) has the third highest SO_2, total $PM_{2.5}$, and NOx emissions. Lawrence County, KY (CES= 3) has the fourth highest SO_2 and total $PM_{2.5}$ emissions, and the fifth highest NOx emissions. Portions of Gallia, Mason, and Lawrence Counties are included in the Huntington-Ashland nonattainment area for the 1997 $PM_{2.5}$ NAAQS. EPA Region III is recommending that the West Virginia portion of the Huntington-Ashland nonattainment area for the 2006 $PM_{2.5}$ NAAQS include the same portion of Mason County. (See the "EPA Technical Analysis for the Huntington-Ashland, West Virginia Area.").

The remaining counties in this analysis have relatively low emissions when compared to Putnam, Kanawha, Gallia, Mason, and Lawrence Counties. Based on emission levels and CES values, Putnam and Kanawha Counties area candidates for inclusion in the Charleston nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS.

Factor 2: Air Quality Data

This factor considers the 24-hour $PM_{2.5}$ design values (in $\mu g/m^3$) for air quality monitors in counties in the Charleston area based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air quality standard. The 2006 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98^{th} percentile values is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Charleston area are shown in Table 2.0, below, with the current 1997 $PM_{2.5}$ nonattainment area appearing in bold.

Table 2.0. Air Quality Data

County, State	State Recommended Nonattainment?	Daily Design Values 2003-05 ($\mu g/m^3$)	Daily Design Values 2004-06 ($\mu g/m^3$)	Daily Design Values 2005-07 ($\mu g/m^3$)
Kanawha, WV	**Yes**	**36**	**37**	**38**
Putnam, WV	**Yes**	**No monitor**		
Mason, WV	No	No monitor		
Gallia, OH	No	No monitor		
Cabell, WV	No	35	34	37
Boone, WV	No	No monitor		
Fayette, WV	No	No monitor		
Jackson, WV	No	No monitor		

Wayne, WV	No	No monitor		
Raleigh, WV	No	31	31	30
Lawrence, KY	No	No monitor		
Lincoln, WV	No	No monitor		
Logan, WV	No	No monitor		
Clay, WV	No	No monitor		
Nicholas, WV	No	No monitor		
Roane, WV	No	No monitor		
Braxton, WV	No	No monitor		
Calhoun, WV	No	No monitor		
Mingo, WV	No	No monitor		
Wyoming, WV	No	No monitor		
Gilmer, WV	No	No monitor		
Martin, KY	No	No monitor		
Webster, WV	No	No monitor		
Note: Design values shown in red represent violations of the standard				

Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with a FRM or FEM monitor. All data from Special Purpose Monitors (SPM) using an FRM, FEM, or Alternative Reference Method (ARM) which has operated for more than 24 months is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hr PM2.5 NAAQS for designation purposes.

Based upon the above data, Kanawha and Cabell Counties have monitors which show violations of the 2006 24-hour $PM_{2.5}$ standard. Therefore, these counties are candidates for inclusion in the Charleston nonattainment area. However, Cabell County is in the Huntington-Ashland nonattainment area for the 1997 $PM_{2.5}$ NAAQS. EPA Region III is recommending that the West Virginia portion of the Huntington-Ashland nonattainment area for the 2006 $PM_{2.5}$ NAAQS include Cabell County. See the "EPA Technical Analysis for the Huntington-Ashland Area."

The absence of a violating monitor alone is not a sufficient reason to eliminate counties as candidates for nonattainment status. Each county has been evaluated based on the weight of evidence of the nine factors and other relevant information.

Factor 3: Population Density and Degree of Urbanization (Including Commercial Development)

Table 3.0, below, shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. In Table 3.0, below, the current 1997 $PM_{2.5}$ nonattainment area appears in bold. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard.

Table 3.0. Population

County, State	State Recommended Nonattainment?	2005 Population	2005 Population Density (people/sq mi)
Kanawha, WV	**Yes**	**193,413**	**212**
Putnam, WV	**Yes**	**54,389**	**155**
Mason, WV	No	25,763	58
Gallia, OH	No	31,241	68
Cabell, WV	No	93,988	327
Boone, WV	No	25,613	51
Fayette, WV	No	46,558	70
Jackson, WV	No	28,306	60
Wayne, WV	No	41,959	82
Raleigh, WV	No	79,186	130
Lawrence, KY	No	16,162	39
Lincoln, WV	No	22,446	51
Logan, WV	No	36,216	80
Clay, WV	No	10,318	30
Nicholas, WV	No	26,369	40
Roane, WV	No	15,445	32
Braxton, WV	No	14,856	29
Calhoun, WV	No	7,367	26
Mingo, WV	No	27,165	64
Wyoming, WV	No	24,397	49
Gilmer, WV	No	6,962	20
Martin, KY	No	12,200	53
Webster, WV	No	9,739	18

Based upon the above data, Kanawha County has the highest population and the second highest population density of all the counties in this analysis. Cabell County, which is part of the Huntington-Ashland nonattainment area for the 1997 $PM_{2.5}$ NAAQS, has the second highest population, but the highest population density. EPA Region III is recommending that the West Virginia portion of the Huntington-Ashland nonattainment area for the 2006 $PM_{2.5}$ NAAQS include Cabell County. See the "EPA Technical Analysis for the Huntington-Ashland Area." Putnam County has the third highest population density and the fourth highest population. Raleigh County has third highest population and the fourth highest population density. All other counties have lower populations, under 50,000, and population densities under one hundred.

Factor 4: Traffic and Commuting Patterns

This factor considers the number of commuters in each county who drive to another county within the Charleston area (See Figure 1.0), the percent of total commuters in each county who commute to other counties within the Charleston area, as well as the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4.0). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

The listing of counties in Table 4.0 reflects United States 2000 Census County-To-County Worker Flow Files, and shows where people from a given county work. For example, this data indicates that 80,360 people from Kanawha County commute to counties in the Charleston area which have violating monitors (or "violating counties"). Of those 80,360 commuters, 79,906 work in Kanawha County. This indicates that residents of Kanawha County who commute within this county may be contributing to the 24-hour $PM_{2.5}$ design values for Kanawha County, which are set forth in Table 2.0 (Air Quality Data), above. Other residences of Kanawha commute to other violating counties, such as Cabell County, West Virginia. The counties that are in the nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

Table 4.0. Traffic and Commuting Patterns

County, State	State Recommended Nonattainment?	2005 VMT (millions)	Number commuting into any violating counties	Percent commuting into any violating counties	Number commuting into & within statistical area	Percent commuting into & within statistical area
Kanawha, WV	**Yes**	**2,711**	**80,360**	**92**	**84,080**	**96**
Putnam, WV	**Yes**	**547**	**12,760**	**55**	**21,160**	**91**
Mason, WV	No	249	1,080	12	760	8
Gallia, OH	No	247	290	2	130	1
Cabell, WV	No	1,230	34,640	86	3,880	10
Boone, WV	No	302	2,910	34	7,700	91
Fayette, WV	No	617	1,890	12	2,160	14
Jackson, WV	No	444	2,070	19	2,190	20
Wayne, WV	No	438	7,090	45	420	3
Raleigh, WV	No	1,088	660	2	1,700	6
Lawrence, KY	No	159	240	5	50	1
Lincoln, WV	No	147	3,200	46	4,930	71
Logan, WV	No	335	850	7	1,730	15
Clay, WV	No	104	910	30	2,420	79
Nicholas, WV	No	333	100	1	210	3
Roane, WV	No	166	1,260	24	1,360	26
Braxton, WV	No	355	320	7	380	8
Calhoun, WV	No	51	150	6	230	10
Mingo, WV	No	282	100	1	210	3
Wyoming, WV	No	207	40	1	540	8
Gilmer, WV	No	53	10	0	60	3
Martin, KY	No	150	29	1	4	0
Webster, WV	No	63	20	1	20	1
NOTE: The Charleston Metropolitan Statistical Area (MSA) was changed in June 2003 from Kanawha and Putnam Counties to included Boone, Clay, and Lincoln Counties along with Kanawha and Putnam. As of November 2007, the Charleston MSA remains those five counties.						

Note: The 2005 VMT data used for Tables 4.0 and 5.0 of this analysis has been derived using methodology similar to that described in "Documentation for the final 2002 Mobile National Emissions Inventory," Version 3, September 2007, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at:
ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002_mobile_nei_version_3_rep

ort_092807.pdf. The 2005 VMT data were taken from documentation which is still draft, but which should be released in 2008. The United States 2000 Census County-to-County Worker Flow Files can be found at: http://www.cencus.gov/population/www/cen2000/commuting/index.html.

Based upon the above data, Kanawha County (CES=100) has the highest VMT, the highest number of people commuting into a violating county and the highest number commuting into the Charleston MSA. Putnam County (CES=81) has the second highest number of people commuting into a violating county and the second highest number commuting into the Charleston MSA, but due to its lower population, only the fourth highest VMT. The vast majority of Kanawha and Putman Counties' commuters travel within those two counties (over 84,000 from Kanawha and over 21,000 from Putnam), and not the other three counties in the MSA. Note that 11,367 Putnam County residents commute to Kanawha County.

The above data also indicates that Cabell (CES=10) and Raleigh (CES=5) Counties have the second and third highest VMT in this analysis; however, the VMT for each of these counties is half that of Kanawha County. Furthermore, compared to Kanawha and Putman Counties, both Cabell and Raleigh Counties have few commuters into the Charleston MSA.

An analysis of the data for Boone(CES=7), Lincoln (CES=3) and Clay (CES=2) Counties, which are part of the Charleston MSA, reveals that these counties have relatively low VMT, when compared to Kanawha and Putman Counties, as well as many other counties in this analysis.

Factor 5: Growth Rates and Patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled for 1996-2005 for counties in the Charleston area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and is likely to be contributing to fine particle concentrations in the area.

Table 5.0 below shows population, population growth, VMT and VMT growth for counties that are included in the Charleston area. The counties that are in the nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

Table 5.0. Population and VMT Values and Percent Change

Location	Population (2005)	Population Density (2005)	Population % change (2000 - 2005)	2005 VMT (millions)	VMT % change (1996 - 2005)
Kanawha, WV	**193,413**	**212**	**(3)**	**2,711**	**14**
Putnam, WV	**54,389**	**155**	**5**	**547**	**14**
Mason, WV	25,763	58	(1)	249	36
Gallia, OH	31,241	68	1	247	0
Cabell, WV	93,988	327	(3)	1,230	41
Boone, WV	25,613	51	1	302	49
Fayette, WV	46,558	70	(2)	617	23
Jackson, WV	28,306	60	1	444	(7)
Wayne, WV	41,959	82	(2)	438	47
Raleigh, WV	79,186	130	0	1,088	12
Lawrence, KY	16,162	39	4	159	11
Lincoln, WV	22,446	51	1	147	(24)

Logan, WV	36,216	80	(4)	335	4
Clay, WV	10,318	30	0	104	(3)
Nicholas, WV	26,369	40	(1)	333	74
Roane, WV	15,445	32	0	166	(19)
Braxton, WV	14,856	29	1	355	(5)
Calhoun, WV	7,367	26	(3)	51	4
Mingo, WV	27,165	64	(3)	282	54
Wyoming, WV	24,397	49	(5)	207	(11)
Gilmer, WV	6,962	20	(3)	53	14
Martin, KY	12,200	53	(3)	150	18
Webster, WV	9,739	18	1	63	55

Based upon the above data, Kanawha and Putnam Counties both experience moderate growth in VMT, fourteen percent, from 1996 to 2005. Many other counties in this analysis had similar moderate VMT growth; certain counties had much larger increases. Most of the counties that had high VMT growth still have low VMT in 2005, as compared to Kanawha and Putnam Counties. The exception is Cabell County, whose 2005 VMT is higher than that of Putnam County. As stated above, Cabell County, which is part of the Huntington-Ashland nonattainment area for the 1997 $PM_{2.5}$ NAAQS, has the second highest population, but the highest population density. EPA Region III is recommending that the West Virginia portion of the Huntington-Ashland nonattainment area for the 2006 $PM_{2.5}$ NAAQS include Cabell County. See the "EPA Technical Analysis for the Huntington-Ashland, West Virginia Area."

Most of the counties in this analysis have had either small decreases (1-5%) or small increases (1-5%) in population from 2000 to 2005. Although Kanawha's population did shrink by three percent, it is still the highest of all the counties in this analysis. Cabell County, which has the highest population density, also experienced a three percent decrease in population. Putnam County had a five percent increase in population during this time period.

Factor 6: Meteorology (Weather/Transport Patterns)

For this factor, EPA considered data from National Weather Service instruments in the area. Wind direction and wind speed data for 2004-2006 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high days are defined as days where any FRM or FEM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

The meteorology data is also considered in each county's Contributing Emissions Score because the method for deriving this metric included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

For each air quality monitoring site, EPA developed a "pollution rose" to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. The figure identifies 24-hour $PM_{2.5}$ values by color; days exceeding 35 $\mu g/m^3$ are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of the icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

Figure 6.0 Pollution Trajectory Plot for Kanawha County, WV (Site 54-039-0010)

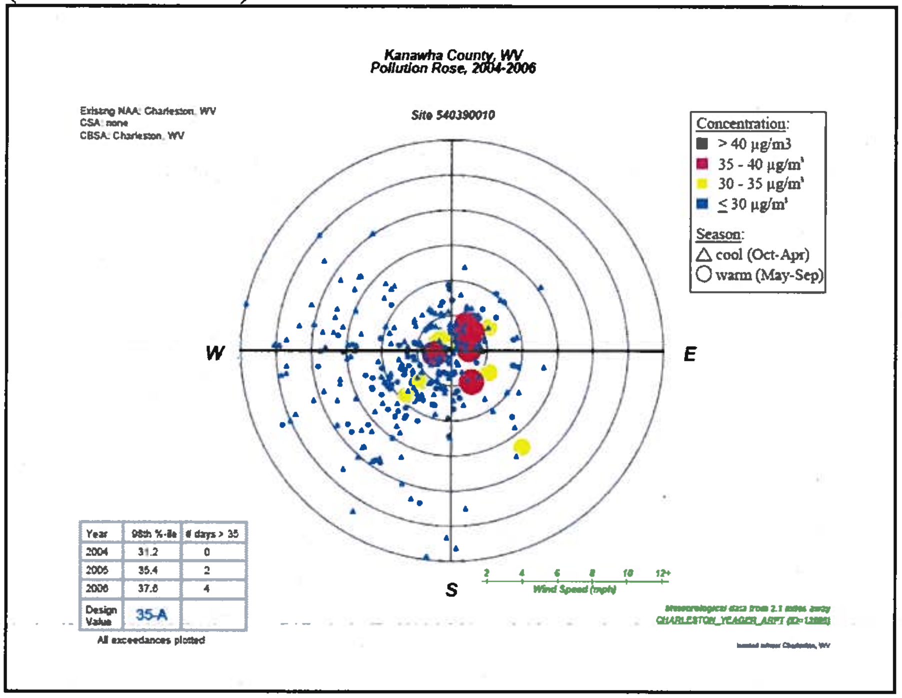
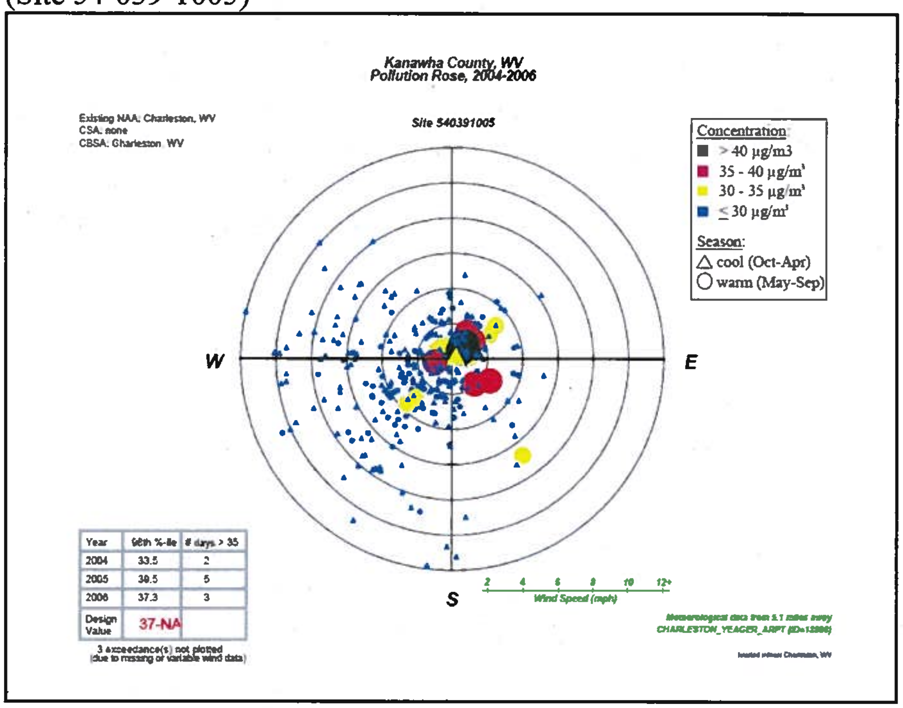


Figure 6.1 Pollution Trajectory Plot for Kanawha County, WV (Site 54-039-1005)



As shown in the pollution roses above, Figures 6.0 and 6.1, the average prevailing surface wind directions for moderate $PM_{2.5}$ days (days with $PM_{2.5} \leq 30$ μg/m^3, denoted with blue icons) are from the southwest and west. The pollution roses show that 24-hour $PM_{2.5}$ concentrations are influenced by emissions from any direction at various times. High $PM_{2.5}$ days are characterized by low wind speeds and winds from most all directions. However, this data also suggests that emissions from the northeast and southeast are more likely to contribute to the violation than emissions from other directions.

Factor 7: Geography/Topography (Mountain Ranges or Other Air Basin Boundaries)

The geography/topography analysis looks at 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 Charleston area.

The Charleston area does 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.

Factor 8: Jurisdictional Boundaries (e.g., Existing PM and Ozone Areas)

In evaluating the jurisdictional boundary factor, consideration is being given to existing boundaries and organizations that may facilitate air quality planning and the implementation of control measures to attain the standard. Areas designated as nonattainment (e.g., for $PM_{2.5}$ or 8-hour ozone standard) represent important boundaries for state air quality planning.

There are no major jurisdictional issues associated with the Charleston area. Air quality planning for both Kanawha and Putnam Counties is performed by the West Virginia Department of Environmental Protection. These counties comprise the Charleston nonattainment area for the 1997 $PM_{2.5}$ NAAQS. In addition, they were designated as a "Basic" (Subpart 1) Early Action Compact area for the 1997 8-hour ozone NAAQS, but have been redesignated to attainment for that standard. Furthermore, Kanawha and Putnam Counties are in the same metropolitan planning organization (MPO), the Regional Intergovernmental Council (RIC). Boone and Clay Counties are also served by RIC.

Factor 9: Level of Control of Emission Sources

This factor considers emission controls currently implemented for major sources in the Charleston area.

The emission estimates on Table 1.0 (under Factor 1) reflect implementation of control strategies implemented by the states in the Charleston area before and during 2005 that may influence emissions of any component of $PM_{2.5}$ emissions (i.e., total carbon, SO_2, NOx, and crustal $PM_{2.5}$).

Table 9.0 shows emissions and controls (current and projected) for EGUs with SO_2 plus NO_x emissions greater than 5000 tons. Data was obtained from the 2006 National Electric Energy Data System (NEEDS) database. Table 9.1 shows emissions for the same EGUs for the years 2002

through 2007. The data was obtained from the emissions section of EPA's Clean Air Markets Division (CAMD) website:
http://camddataandmaps.epa.gov/gdm/index.cfm?fuseaction=emissions.wizard.

Table 9.0. EGUs with SO_2 plus NO_x emissions > 5000 tons, from the 2006 NEEDS EGU database

County	Plant Name	Plant Type	Unique ID Final	2006 SO2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
Kanawha, WV	Kanawha River	Coal Steam	3936_B_2	6,651	1,941				205.0
			3936_B_1	6,343	1,792				205.0
Putnam, WV	John E Amos	Coal Steam	3935_B_3	49,463	16,960	2007	95.0	2002	1300.0
			3935_B_1	34,571	8,506	2008	95.0	2005	800.0
			3935_B_2	33,264	8,481	2008	95.0	2004	800.0
Mason, WV	Mountaineer	Coal Steam	6264_B_1	31,052	7,661	2007	95.0	2002	1300.0
	Philip Sporn	Coal Steam	3938_B_41	7,475	1,709				150.0
			3938_B_31	7,069	1,617				150.0
			3938_B_11	5,458	1,273				150.0
			3938_B_21	5,018	1,209				150.0
Gallia, OH	General James M Gavin	Coal Steam	8102_B_2	14,384	20,593	1995	98.0	2001	1300.0
			8102_B_1	10,403	13,364	1994	96.6	2001	1300.0
	Kyger Creek	Coal Steam	2876_B_4	14,629	3,903	2010	95.0	2003	217.0
			2876_B_1	13,937	3,708	2010	95.0	2003	217.0
			2876_B_2	13,830	3,628	2010	95.0	2003	217.0
			2876_B_3	12,793	3,456	2010	95.0	2003	217.0
			2876_B_5	11,968	3,168	2010	95.0	2003	217.0
Fayette, WV	Alloy Steam Station	Coal Steam	50012_B_BLR4	0	277				38.0
Lawrence, KY	Big Sandy	Coal Steam	1353_B_BSU2	35,100	10,426			2003	800.0
			1353_B_BSU1	11,376	3,419				260.0

Table 9.1. Selected EGU Emissions (2002-2007) from EPA's Clean Air Markets Division

Kanawha River, Kanawha County, WV, Facility ID: 3936					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	15,862.4	6,168.0	2,615,491.9	25,492,185
2003	12	15,686.5	6,006.0	2,473,188.5	24,105,186
2004	12	12,170.9	3,561.6	1,867,518.2	18,201,956
2005	12	12,850.8	3,602.2	2,047,546.3	19,956,615
2006	12	12,994.2	3,732.3	1,992,399.5	19,419,067
2007	12	13,384.1	4,033.2	2,182,018.3	21,267,243
John E Amos, Putnam County, WV, Facility ID: 3935					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	107,618.9	43,500.5	17,429,396.0	169,867,887

2003	12	114,017.9	45,422.9	17,650,105.5	172,028,289
2004	12	100,152.8	35,948.0	15,612,703.4	152,142,010
2005	12	112,412.3	34,619.8	17,798,214.5	173,471,966
2006	12	117,299.3	33,946.9	18,798,261.0	183,218,877
2007	12	103,546.1	33,103.6	17,418,609.0	169,772,075
Mountaineer, Mason County, WV, Facility ID: 6264					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	43,223.7	12,911.1	8,628,159.0	84,095,133
2003	12	48,035.7	16,733.5	9,477,985.4	92,378,031
2004	12	37,823.3	12,776.3	7,765,046.8	75,682,741
2005	12	42,981.9	12,746.4	9,526,714.7	92,852,958
2006	12	31,051.9	7,661.5	6,554,285.8	63,881,965
2007	12	2,301.9	12,147.4	9,846,830.5	95,972,918
Philip Sporn, Mason County, WV, Facility ID: 3938					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	40,246.1	13,184.6	5,052,085.6	49,240,608
2003	12	49,890.7	14,284.6	5,992,053.3	58,402,135
2004	12	42,473.8	10,510.9	5,559,465.4	54,185,844
2005	12	39,374.8	8,960.7	5,069,072.6	49,406,162
2006	12	39,741.0	9,239.6	5,054,471.3	49,263,839
2007	12	40,529.7	12,154.0	6,153,309.1	59,974,019
General James M Gavin, Gallia County, OH, Facility ID: 8102					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	32,380.1	43,839.2	15,353,813.6	149,647,267
2003	12	36,560.1	44,112.2	19,024,546.4	185,428,890
2004	12	33,715.7	40,631.7	19,061,592.6	185,785,491
2005	12	27,966.0	38,704.2	18,842,155.3	183,646,682
2006	12	24,786.8	33,956.7	16,997,448.8	165,667,179
2007	12	29,163.8	33,500.0	19,141,669.5	186,565,911
Kyger Creek, Gallia County, OH, Facility ID: 2876					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	74,451.7	25,317.6	6,625,110.4	64,572,199
2003	12	72,341.7	21,344.5	6,663,915.5	64,950,420
2004	12	72,850.1	18,708.5	7,531,790.2	73,409,278
2005	12	72,428.7	18,438.5	7,384,961.7	71,978,197
2006	12	67,156.7	17,862.6	7,167,983.1	69,863,416
2007	12	57,435.0	13,468.0	6,857,136.8	66,833,666
Alloy Steam Station Fayette County (WV Alloys, Inc.), WV, Facility ID: 50012					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	No Data				
2003					
2004	12	Not Reported	516.2	Not Reported	1,654,059
2005	12		441.9		1,835,243
2006	12		277.2		1,233,936
2007	12		500.4		1,734,898
Big Sandy, Lawrence County, KY, Facility ID: 1353					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)

2002	12	41,899.0	15,153.8	5,393,369.7	52,566,916
2003	12	46,959.7	12,362.4	5,961,168.3	58,101,023
2004	12	48,010.0	10,855.8	5,911,405.2	57,616,072
2005	12	50,098.4	12,490.2	6,952,256.8	67,760,805
2006	12	46,475.8	13,845.1	6,830,275.3	66,571,925
2007	12	46,750.9	14,984.7	7,177,085.6	69,952,051

As shown in Table 9.0, the scrubbers at the John E Amos plant in Putnam County, WV were projected to come on line during 2007 and 2008. However, Table 9.1 does not show any noticeable decreases in emissions from 2005 to 2007. EPA would need to review the additional information described below before it could take these reductions into consideration. Even if these controls are in place and federally enforceable by December 2008, EPA would still recommend including Putnam County in the Charleston nonattainment area. The other factors in this analysis indicate that Putnam County contributes to a violation(s) of the 2006 $PM_{2.5}$ NAAQS in Kanawha County.

As can be seen from Tables 9.0 and 9.1, since 2005, new controls have resulted in noteworthy reductions at the Mountaineer power plant in Mason County, WV. The Mountaineer facility reduced its SO_2 emissions from almost 43,000 tons in 2005 to 2,300 tons in 2007. If this 40,000 ton reduction is shown to be federally enforceable, it would likely result in a reduction of Mason County's CES from its currently calculated value of twenty.

In addition, some EGUs are expected to put controls in place in the future. The Kyger Creek plant in Gallia County, OH is expected to install scrubbers in 2010. However, EPA is only considering controls in place and federally enforceable at the time of designation, i.e., by 2008. Therefore, these planned controls are not being considered in this analysis.

In considering county-level emissions, EPA considered 2005 emissions data from the National Emissions Inventory. EPA recognizes that certain power plants or large sources of emissions in this potential nonattainment area may have installed emission controls or otherwise significantly reduced emissions since 2005 and that this information may not be reflected in this analysis. EPA will consider additional information on emission controls in making final designation decisions. In cases where specific plants already have installed emission controls or plan to install such controls in the near future, EPA requests additional information on:

- the plant name, city, county, and township/tax district,
- identification of emission units at the plant, fuel use, and megawatt capacity,
- identification of emission units on which controls will be installed, and units on which controls will not be installed,
- 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,
- the estimated pollutant emissions for each unit before and after implementation of emission controls, and
- 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 SIP revision, operating permit requirement, consent decree).

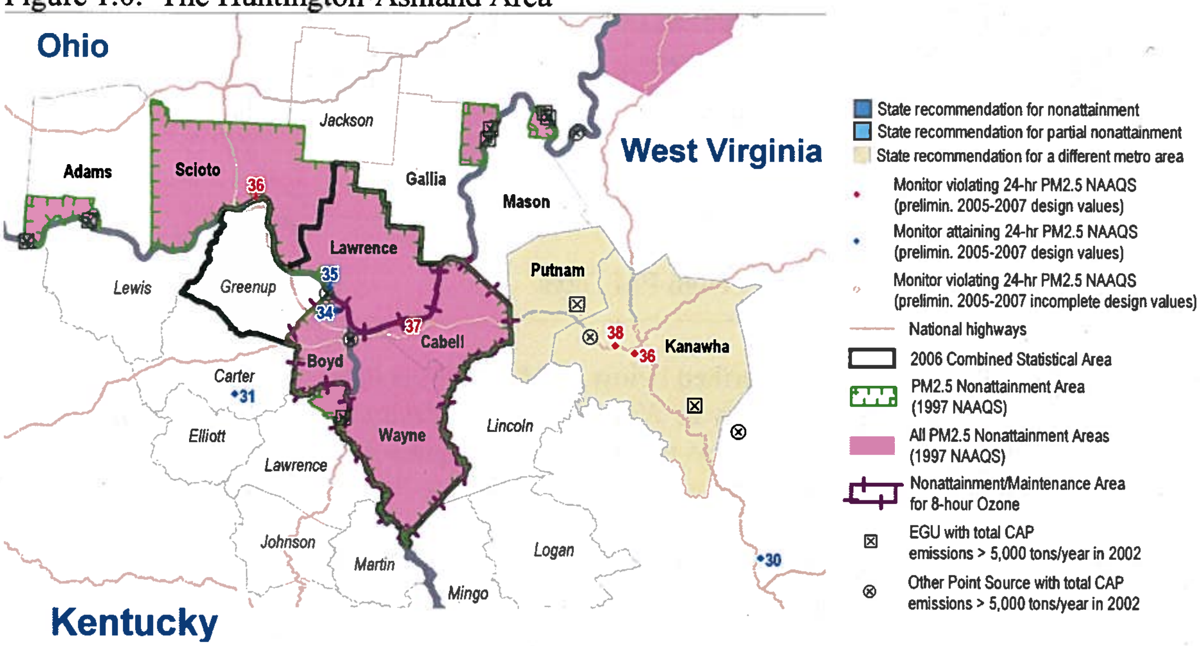
EPA Technical Analyses for the Huntington-Ashland Area

Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those areas that contribute to violations. This technical analysis for the Huntington-Ashland area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates the counties that potentially contribute to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

Figure 1.0 is a map which identifies the counties in the Huntington-Ashland area and other relevant information such as the locations and design values of air quality monitors, the metropolitan area boundary, and counties recommended as nonattainment by the State.

Figure 1.0. The Huntington-Ashland Area



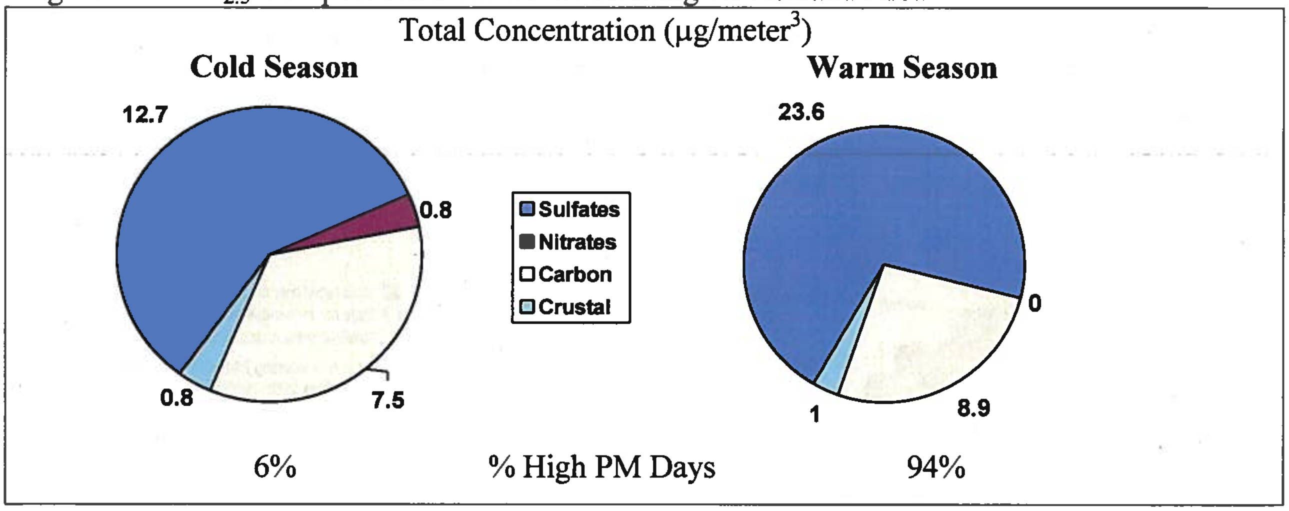
Note: West Virginia recommended attainment based on data in 2004 to 2006, and did not update its recommendation after violations of the 24-hour $PM_{2.5}$ NAAQS were discovered based upon data acquired during 2005-2007. Ohio recommended attainment despite the violation in Scioto County.

For the Huntington-Ashland area, EPA previously established $PM_{2.5}$ nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS that included five full and four partial counties, with 2 full and one partial county located in West Virginia.

In November 2007, the State of West Virginia recommended that the Huntington-Ashland area be designated as "attainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. See the November 9, 2007 letter from the West Virginia Department of Environmental Protection, received on November 19, 2007. However, based on 2005-2007 air quality data, this area is violating the 2006 24-hour $PM_{2.5}$ standard. This air quality data is from Federal Reference Method (FRM) and Federal Equivalent Method (FEM) monitors located in the state.

Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of this data indicates that the days with the highest fine particle concentrations occur predominantly in the summer and the average chemical composition are illustrated in Figure 1.1, below.

Figure 1.1. $PM_{2.5}$ Composition Data for the Huntington-Ashland Area



Based on EPA's 9-factor analysis described below, EPA proposes that Cabell and Wayne Counties and a portion of Mason County in West Virginia be designated nonattainment for the 2006 24-hour $PM_{2.5}$ air-quality standard as part of the Huntington-Ashland nonattainment area, based upon currently available information. These counties are listed in the table below.

Huntington-Ashland Area	State-Recommended Nonattainment Counties	EPA-Proposed Nonattainment Counties Within Region 3
West Virginia	None	Cabell County Wayne County Mason County (partial)

The following is a summary of the 9-factor analysis for the EPA Region III portion of the Huntington-Ashland area.

This technical analysis focuses on the existing Harrisburg-Carlisle-Lebanon nonattainment area for the 1997 $PM_{2.5}$ NAAQS and the other counties illustrated in Figure 1.0. Therefore, counties that are not identified in Figure 1.0 are not addressed within this analysis. In addition, if a county is part of another existing nonattainment area for the 1997 $PM_{2.5}$ NAAQS and the state has recommended including it in a separate nonattainment area for the 2006 $PM_{2.5}$ NAAQS, that county will not be considered for inclusion in that separate nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Putnam County and Kanawha County are part of another existing nonattainment area for the 1997 $PM_{2.5}$ NAAQS and West Virginia has recommended including each of these counties in that a separate nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Accordingly, Putnam County and Kanawha County will be excluded from further consideration for inclusion within the Huntington-Ashland nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

Cabell and Wayne Counties, plus a portion of Mason County, all in West Virginia, were included in the Huntington-Ashland nonattainment area for the 1997 $PM_{2.5}$ NAAQS, along with whole and partial counties in Ohio and Kentucky. Cabell and Wayne County, WV and Boyd County, KY made up the 8-hour ozone nonattainment area associated with the Huntington-Ashland area. These three counties now make up the Huntington-Ashland 8-hour ozone maintenance area. The air quality monitor in Cabell County shows a violation of the 2006 24-hour $PM_{2.5}$ NAAQS, based on 2005-2007 data. Wayne and Mason Counties do not have monitors. However, Wayne County, which is adjacent to Cabell County, is part of the 2006 Huntington-Ashland metropolitan statistical area. Wayne County contributes to the particulate matter concentrations in Cabell County through population-based emissions (e.g., vehicle emissions and other small area sources) and from commuters into Cabell County. Mason County, also adjacent to Cabell County, has two large electric generating units (EGUs). Therefore, EPA has determined that it is appropriate to include the same West Virginia counties in the Huntington-Ashland nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS as were designated nonattainment for the 1997 $PM_{2.5}$ NAAQS.

Factor 1: Emissions Data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: "$PM_{2.5}$ emissions total," "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," "SO_2," "NO_x," "VOCs," and "NH_3." "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1.0 as separate items.) "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs (volatile organic compounds) and NH_3 (ammonia) are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

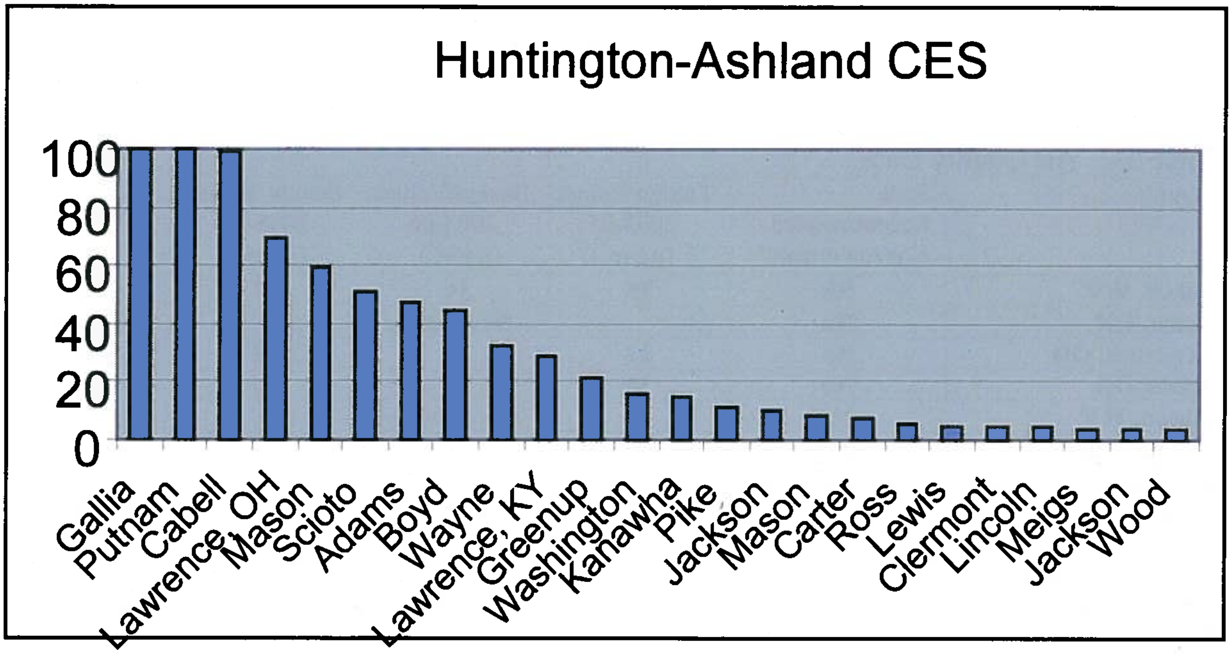
EPA also considered the Contributing Emissions Score (CES) for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive way for consideration of data for these factors. A summary of the CES is included in Enclosure 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

Table 1.0 shows emissions of $PM_{2.5}$ components (given in tons per year) and the CESs for violating and potentially contributing counties in the Huntington-Ashland Area. Counties that are part of the Huntington-Ashland Area nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface. In Table 1.0, counties are listed in descending order by CES, except that counties in the Huntington-Ashland Area nonattainment area for the 1997 $PM_{2.5}$ NAAQS are listed first. Figure 1.2 is a graphical representation of the higher CES values set forth in Table 1.0. (See Table 1.0 and Figure 1.2, below).

Table 1.0 $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County	State Recommended Nonattainment?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
Cabell, WV	No	**100**	**1,082**	**434**	**649**	**4,355**	**10,644**	**5,878**	**181**
Gallia, OH	No	**100**	**7,087**	**499**	**6,588**	**100,704**	**59,035**	**1,939**	**327**
Lawrence, OH	No	**78**	**1,078**	**672**	**406**	**573**	**3,769**	**4,847**	**316**
Scioto, OH	No	**58**	**775**	**416**	**359**	**555**	**4,981**	**4,111**	**1,349**
Mason, WV	No	**54**	**3,528**	**305**	**3,222**	**82,856**	**24,561**	**2,496**	**237**
Adams, OH	No	**46**	**5,970**	**494**	**5,476**	**126,316**	**33,822**	**1,918**	**837**
Boyd, KY	No	**44**	**1,729**	**412**	**1,317**	**10,501**	**10,123**	**5,762**	**477**
Wayne, WV	No	**33**	**657**	**446**	**210**	**1,041**	**7,619**	**2,577**	**70**
Lawrence, KY	No	**27**	**2,567**	**199**	**2,368**	**50,239**	**13,761**	**932**	**90**
Putnam, WV	Yes (other area)	92	4,838	468	4,370	113,590	37,387	3,117	106
Greenup, KY	No	24	319	151	169	2,183	4,102	1,694	155
Kanawha, WV	Yes (other)	15	2,016	857	1,159	21,633	23,985	15,652	527
Jackson, OH	No	11	361	170	190	149	1,031	1,857	380
Carter, KY	No	8	372	145	228	160	2,365	1,601	207
Lewis, KY	No	6	295	139	156	491	2,951	879	172
Lincoln, WV	No	5	217	90	129	48	568	879	51
Pike, KY	No	3	808	370	438	386	3,823	3,108	146
Johnson, KY	No	2	260	118	143	141	1,028	948	54
Logan, WV	No	2	298	142	157	101	981	1,867	53
Mingo, WV	No	2	308	140	168	228	2,890	1,352	35
Elliott, KY	No	1	89	29	59	24	159	231	79
Martin, KY	No	1	199	70	129	174	863	518	23

Figure 1.2. CES Values for the Huntington-Ashland Area (Including Non-Contiguous Counties)



Based upon the data set forth in Table 1.0, above, Adams County, OH has the highest emissions, but a mid-range CES, forty-six. This is likely due to its distance from the design value monitor in Cabell County. Cabell and Gallia Counties have the highest CESs, both at one-hundred. Gallia County has the highest $PM_{2.5}$ and NOx emissions and the third highest SO2 emissions. There are seven counties with higher emissions than Cabell County. However, Cabell County contains a violating monitor. (See Factor 2, below.) Putnam County has the third highest CES, ninety-two. Putnam County has the third highest $PM_{2.5}$ and NOx emissions, and the second highest SO2 emissions. In addition, Putnam County borders Cabell County. The next highest CES, seventy-eight, belongs to Lawrence County. The violating monitor in Cabell County is very close to the border between Lawrence and Cabell Counties. Next is Scioto County, which has relatively low emissions, compared to the other counties with CESs greater than fifty. However, Scioto County also contains a violating monitor. (See Factor 2, below.) The next highest CES, fifty-four, goes to Mason, WV, which has the third highest emissions. Of the three remaining counties in the Huntington-Ashland nonattainment area for the 1997 $PM_{2.5}$ NAAQS, Boyd, Wayne, and Lawrence, Lawrence, KY has the highest emissions and the lowest CES, twenty-seven. Boyd, KY and Wayne, WV are closer to the design value monitor in Cabell County. Greenup, KY, part of the Huntington-Ashland MSA, has low emissions when compared to most of the counties in the Huntington-Ashland nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Based on emission levels and CES values, Cabell, Wayne and Mason counties in West Virginia are candidates for a 2006 24-hour $PM_{2.5}$ nonattainment designation.

Factor 2: Air Quality Data

This factor considers the 24-hour $PM_{2.5}$ design values (in $\mu g/m^3$) for air-quality monitors in counties in the Huntington-Ashland based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air-quality standard. The 2006 24-hour

$PM_{2.5}$ standard is met when the 3-year average of a monitor's 98th percentile values is 35 μg/m^3 or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Huntington-Ashland area shown in Table 2.0.

Table 2.0. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2003-05 (μg/m^3)	Design Values 2004-06 (μg/m^3)	Design Values 2005-07 (μg/m^3)
Cabell, WV	**No**	**35**	**34**	37
Gallia, OH	**No**		**No monitor**	
Lawrence, OH	**No**	**33**	**34**	**35**
Scioto, OH	**No**	**34**	**33**	**36**
Mason, WV	**No**		**No monitor**	
Adams, OH	**No**		**No monitor**	
Boyd, KY	**No**	**33**	**32**	**34**
Wayne, WV	**No**		**No monitor**	
Lawrence, KY	**No**		**No monitor**	
Putnam, WV	Yes (other area)		No monitor	
Greenup, KY	No		No monitor	
Kanawha, WV	Yes (other area)	36	37	38
Jackson, OH	No		No monitor	
Carter, KY	No	29	29	31
Lewis, KY	No		No monitor	
Lincoln, WV	No		No monitor	
Pike, KY	No	30	30	33
Johnson, KY	No		No monitor	
Logan, WV	No		No monitor	
Mingo, WV	No		No monitor	
Elliott, KY	No		No monitor	
Martin, KY	No		No monitor	
Note: Design values shown in red represent violations of the standard.				

Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with a FRM or FEM monitor. All data from Special Purpose Monitors (SPM) using an FRM, FEM, or Alternative Reference Method (ARM) which has operated for more than 24 months is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hr $PM_{2.5}$ NAAQS for designation purposes.

The data set forth in Table 2.0 indicates that, in EPA Region III, monitors located in Cabell (CES = 100) and Kanawha Counties (CES = 15) in West Virginia show violations of the 2006 24-hour $PM_{2.5}$ standard. Therefore, these counties are candidates for inclusion in the Huntington-Ashland nonattainment area for the 2006 $PM_{2.5}$ NAAQS. However, Kanawha County is part of the Charleston nonattainment area for the 1997 $PM_{2.5}$ standard. West Virginia has recommended including Kanawha County in the Charleston nonattainment area for 2006 24-hour $PM_{2.5}$ standard. In addition, monitors located in Scioto County, OH, which is part of EPA Region 5, show a violation of the 2006 24-hour $PM_{2.5}$ standard. Therefore, this county is also a candidate for inclusion in the Huntington-Ashland nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Cabell and Scioto Counties are part of the Huntington-Ashland nonattainment area for the 1997 $PM_{2.5}$ standard.

This factor alone is not sufficient to eliminate the other EPA Region III counties in the Huntington-Ashland area as candidates for nonattainment status. EPA considered each county's CES as well as the eight other factors (plus other relevant factors or circumstances) when determining which counties to include in the Huntington-Ashland nonattainment area.

Factor 3: Population Density and Degree of Urbanization (Including Commercial Development)

Table 3.0 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data provides an indication of whether it is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard.

Table 3.0. Population

County, State	State Recommended Nonattainment	2005 Population	2005 Population Density (people/sq mi)
Cabell, WV	**No**	**93,988**	**327**
Gallia, OH	**No**	**31,241**	**68**
Lawrence, OH	**No**	**62,946**	**134**
Scioto, OH	**No**	**76,506**	**124**
Mason, WV	**No**	**25,763**	**58**
Adams, OH	**No**	**28,454**	**49**
Boyd, KY	**No**	**49,359**	**305**
Wayne, WV	**No**	**41,959**	**82**
Lawrence, KY	**No**	**16,162**	**39**
Putnam, WV	Yes (other area)	54,389	155
Greenup, KY	No	37,206	105
Kanawha, WV	Yes (other area)	193,413	212
Jackson, OH	No	33,576	80
Carter, KY	No	27,253	66
Lewis, KY	No	13,879	28
Lincoln, WV	No	22,446	51
Pike, KY	No	66,754	85
Johnson, KY	No	23,968	91
Logan, WV	No	36,216	80
Mingo, WV	No	27,165	64
Elliott, KY	No	6,967	30
Martin, KY	No	12,200	53

Based upon the above data, Cabell County, WV has the highest population and the highest population density. With a population density of 305 people per square mile, Boyd County, KY, also has a relatively high population density for this area. Of the other counties within the

Huntington-Ashland nonattainment area for the 1997 $PM_{2.5}$ NAAQS (shown in bold), the next highest populations and population densities are in Lawrence and Scioto Counties, in Ohio. The remaining counties all have population densities under one-hundred people per square mile.

Factor 4: Traffic and Commuting Patterns

This factor considers the number of commuters in each county who drive to another county within the Huntington-Ashland area; the percent of total commuters in each county who commute to other counties within the Huntington-Ashland area; and the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4.0). A county with numerous commuters is generally an integral part of an urban area and could be an appropriate county for implementing mobile-source emission control strategies, thus warranting inclusion in the nonattainment area.

Table 4.0. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (millions)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into & within statistical area	Percent Commuting into & within statistical area
Cabell, WV	**No**	**1,230**	**34,670**	**86**	**35,460**	**88**
Gallia, OH	**No**	**247**	**300**	**3**	**330**	**3**
Lawrence, OH	**No**	**650**	**7,970**	**35**	**21,160**	**92**
Scioto, OH	**No**	**591**	**22,040**	**78**	**1,330**	**5**
Mason, WV	**No**	**249**	**1,080**	**12**	**670**	**7**
Adams, OH	**No**	**283**	**130**	**1**	**20**	**0**
Boyd, KY	**No**	**574**	**1,380**	**7**	**17,580**	**93**
Wayne, WV	**No**	**438**	**7,170**	**46**	**14,040**	**90**
Lawrence, KY	**No**	**159**	**250**	**5**	**920**	**19**
Putnam, WV	Yes (other area)	547	12,760	55	1,560	7
Greenup, KY	No	371	1,770	13	11,130	83
Kanawha, WV	Yes (other area)	2,711	80,360	92	550	1
Jackson, OH	No	298	220	2	40	0
Carter, KY	No	664	280	3	2,090	21
Lewis, KY	No	170	340	7	170	4
Lincoln, WV	No	147	3,200	46	1,340	19
Pike, KY	No	800	60	0	60	0
Johnson, KY	No	224			160	2
Logan, WV	No	335	850	7	170	2
Mingo, WV	No	282	100	1	90	1
Elliott, KY	No	53	20	1	130	7
Martin, KY	No	150			70	2

Note: The 2005 VMT data used for Tables 4.0 and 5.0 of the 9-factor analysis has been derived using methodology similar to that described in "Documentation for the final 2002 Mobile National Emissions Inventory, Version 3, September 2007, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002_mobile_nei_version_3_report_092807.pdf. The 2005 VMT data were taken from documentation which is still draft, but which should be released in 2008. The United States 2000 Census County-to-County Worker Flow Files can be found at: http://www.cencus.gov/population/www/cen2000/commuting/index.html.

The listing of counties on Table 4.0 reflects the number of people commuting to other counties. The counties that are in the nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

Kanawha, WV has the highest VMT by far. However, Kanawha County is part of the Charleston nonattainment area for the 1997 $PM_{2.5}$ standard, and West Virginia recommended including the County in the Charleston nonattainment area for 2006 24-hour $PM_{2.5}$ standard. Furthermore, Kanawha has very few commuters, fifty, into the Huntington-Ashland statistical area.

As stated previously, the 2006 Huntington-Ashland MSA is comprised of Cabell, WV, Wayne, WV, Boyd, KY, Greenup, KY, and Lawrence, OH. Cabell, WV has the second highest VMT, and the largest number commuting into or within the Huntington-Ashland MSA. The county with the next highest VMT and commuters into or within the MSA is Lawrence, OH. Boyd, KY, Wayne, WV, and Scioto, OH all have VMT between 400 and 600. However, Boyd and Wayne Counties have many more commuters into and within the MSA. Adams, OH, Mason, WV, and Gallia, OH all have VMT between 200 and 300, but, of the three, Masson County has by far the most commuters into the MSA. Lawrence, KY has lower VMT than the other counties in the Huntington-Ashland nonattainment area for the 1997 $PM_{2.5}$ standard. However, it has more commuters into the MSA than Adams, Mason, and Gallia Counties.

Factor 5: Growth Rates and Patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled for 1996-2005 for counties in the Huntington-Ashland area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

Table 5.0 below shows population, population growth, VMT, and VMT growth for counties that are included in the Huntington-Ashland area.

Table 5.0. Population and VMT Growth and Percent Change

Location	Population (2005)	Population Growth (2000 - 2005)	Population % change (2000 - 2005)	2005 VMT (1000s mi)	VMT % change (1996 to 2005)
Cabell, WV	**93,988**	**-2,907**	**(3)**	**1,230**	**41**
Gallia, OH	**31,241**	**293**	**0.9**	**247**	**0**
Lawrence, OH	**62,946**	**623**	**1**	**650**	**9**
Scioto, OH	**76,506**	**-2,366**	**(3)**	**591**	**(3)**
Mason, WV	**25,763**	**-260**	**(1)**	**249**	**36**
Adams, OH	**28,454**	**1,094**	**4**	**283**	**7**
Boyd, KY	**49,359**	**-499**	**(1)**	**574**	**16**
Wayne, WV	**41,959**	**-856**	**(2)**	**438**	**47**
Lawrence, KY	**16,162**	**622**	**4**	**159**	**11**
Putnam, WV	54,389	2,590	5	547	14
Greenup, KY	37,206	368	1	371	23
Kanawha, WV	193,413	-5,982	(3)	2,711	14
Jackson, OH	33,576	978	3	298	14
Carter, KY	27,253	270	1	664	18

Lewis, KY	13,879	-283	(2)	170	39
Lincoln, WV	22,446	222	1	147	(24)
Pike, KY	66,754	-2,065	(3)	800	26
Johnson, KY	23,968	698	3	224	6
Logan, WV	36,216	-1,509	(4)	335	4
Mingo, WV	27,165	-840	(3)	282	54
Elliott, KY	6,967	203	3	53	15
Martin, KY	12,200	-377	(3)	150	18

Based upon the above data, it appears that half of the counties in the Huntington-Ashland nonattainment area for the 1997 $PM_{2.5}$ standard experienced a decrease in populations, from one to three percent, from 2000 to 2005, while the other half experienced increases from about one percent to four percent. However, VMT in the majority of these counties increases from 1996 to 2005. Wayne, Cabell, and Mason Counties, WV had the largest percent increases in VMT, from thirsty-six to fort-seven percent. Only Scioto, OH, had decreased VMT.

Factor 6: Meteorology (Weather/Transport Patterns)

For this factor, EPA considered data from National Weather Service instruments in the area. Wind direction and wind speed data for 2004-2006 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high $PM_{2.5}$ days are defined as days where any FRM or FEM air-quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

For this factor, EPA also considered each county's CES, which includes an analysis of trajectories of air masses for high $PM_{2.5}$ days. The trajectory factor values, shown in the following table, represent the trajectory weight used to calculate the CES. The given value is normalized to the maximum so that the range is 0 to 100 with the county having the highest weight getting a value of 100. The number represents the meteorological influence a particular county's emissions have on the violating county. Higher values mean that air masses frequently traversed the county on their way to the violating county. The magnitude of the factor is not related to a county's emissions.

Table 6.0. Trajectory and Distance Factors

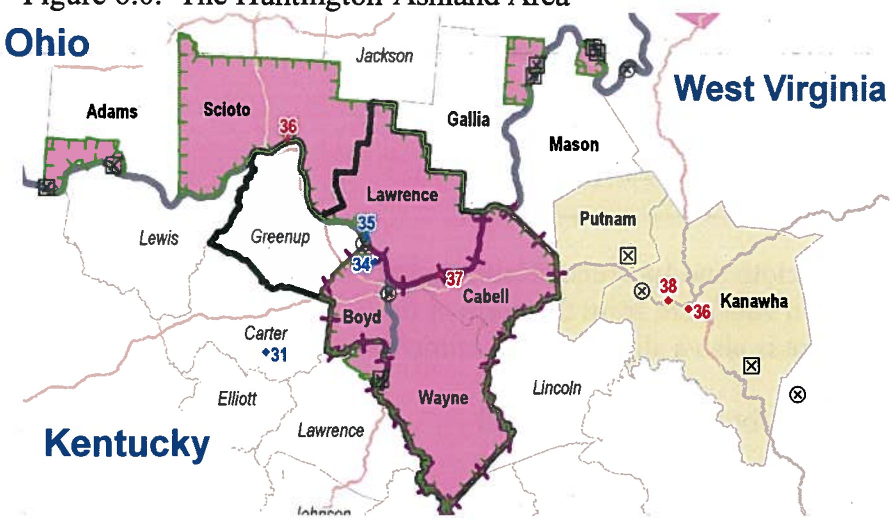
County, State	Trajectory Factor Cold Season	Trajectory Factor Warm Season	Distance Factor (miles)
Cabell, WV	**100**	**85**	**9**
Gallia, OH	**70**	**82**	**28**
Lawrence, OH	**96**	**100**	**21.3**
Scioto, OH	**46**	**57**	**45.6**
Mason, WV	**62**	**66**	**27.6**
Adams, OH	**20**	**28**	**71.2**
Boyd, KY	**100**	**91**	**23.3**
Wayne, WV	**89**	**66**	**21.5**
Lawrence, KY	**78**	**58**	**35**
Putnam, WV	66	54	21.1
Greenup, KY	71	74	38.3
Kanawha, WV	34	23	41.4
Jackson, OH	45	60	46.3

Carter, KY	62	58	40.2
Lewis, KY	32	41	61.2
Lincoln, WV	71	47	20.4
Pike, KY	33	15	65.4
Johnson, KY	55	34	49.3
Logan, WV	35	18	43.9
Mingo, WV	39	21	46.5
Elliott, KY	54	44	47.5
Martin, KY	54	31	43.7

Please note that the trajectory factories and distances in Table 6.0 relate to Cabell County, which contains the design monitor. There is a second violating monitor in Scioto County, OH. The monitor in Scioto County is approximately 35 miles northwest of the monitor in Cabell County. Obviously, trajectory factories from the counties in this analysis to Scioto County will be quite different than those listed in this table.

Lawrence, OH, Boyd, KY, and Cabell, WV have the highest cold and warm season trajectory factors. Wayne, WV has the next highest warm season trajectory, and Gallia, OH has the next highest cold season trajectory factor. Lawrence and Greenup in Kentucky and Lincoln, WV have the next highest trajectory factors.

Figure 6.0. The Huntington-Ashland Area

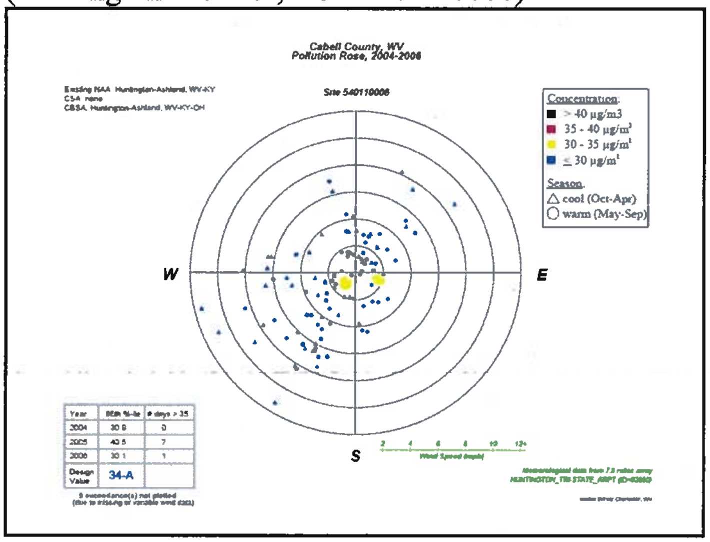


For each air quality monitoring site, EPA developed a pollution trajectory plot (or "pollution rose") to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. The figure identifies 24-hour $PM_{2.5}$ values by red and black icons; days exceeding 35 $\mu g/m^3$ are denoted with a red or black icon. These icons are either dots or triangles. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of each icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

Meteorology data is also considered in each county's Contributing Emissions Score because the method for deriving this metric included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

The pollution rose for Cabell County is shown in Figure 6.1, below. It shows that the two high $PM_{2.5}$ days (days with monitored $PM_{2.5}$ values greater than 30 $\mu g/m^3$) in Cabell County in 2004-2006 occurred when the wind came at low speeds from the southwest or the southeast. Note that eight high days were not plotted in this pollution rose due to missing or variable wind data. Days showing winds from the southwest, northeast, west, and north are less than or equal to 30 $\mu g/m^3$.

Figure 6.1. Pollution Trajectory Plot for Cabell County, WV
(Huntington Monitor, Site 54-011-0006)



The following pollution roses for Scioto and Lawrence Counties in OH, Figures 6.2 and 6.3, show that high PM days occur when winds are from the north or the south, at low speeds. However, in Lawrence County there is also a slight easterly component.

Figure 6.2. Pollution Trajectory Plot for Scioto County, OH
(Monitor, Site 39-145-0013)

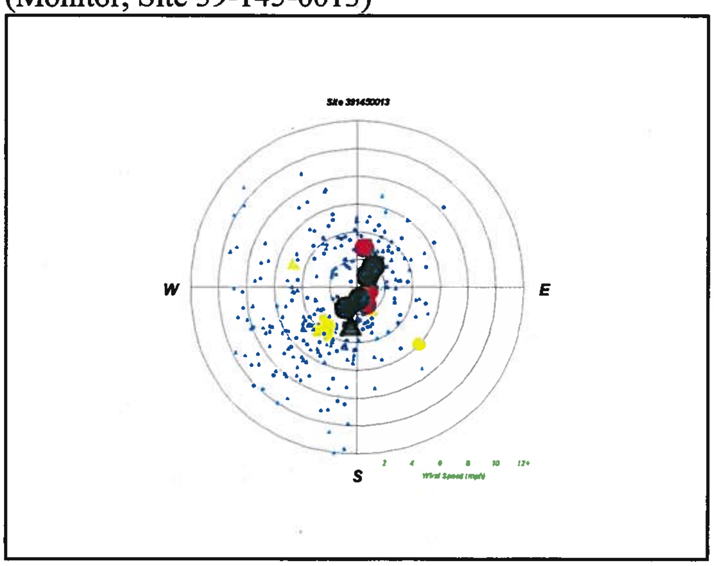
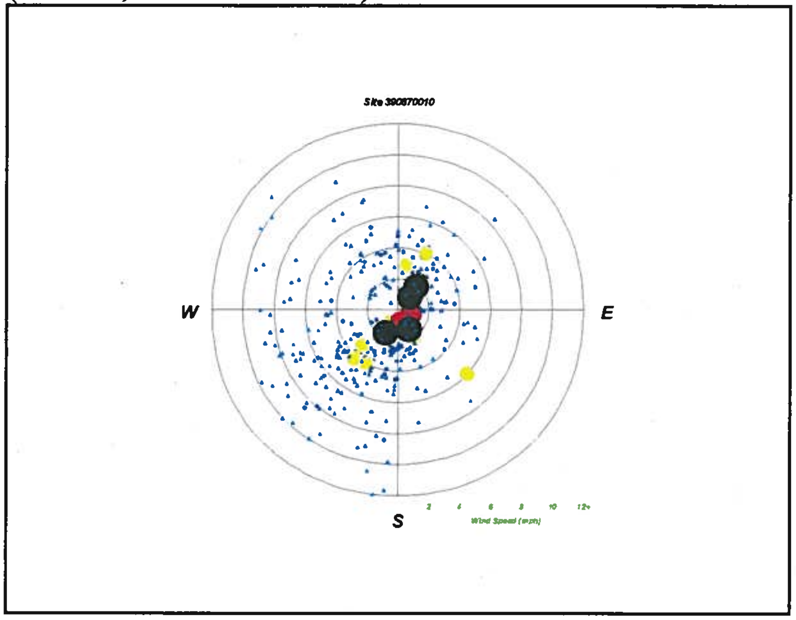
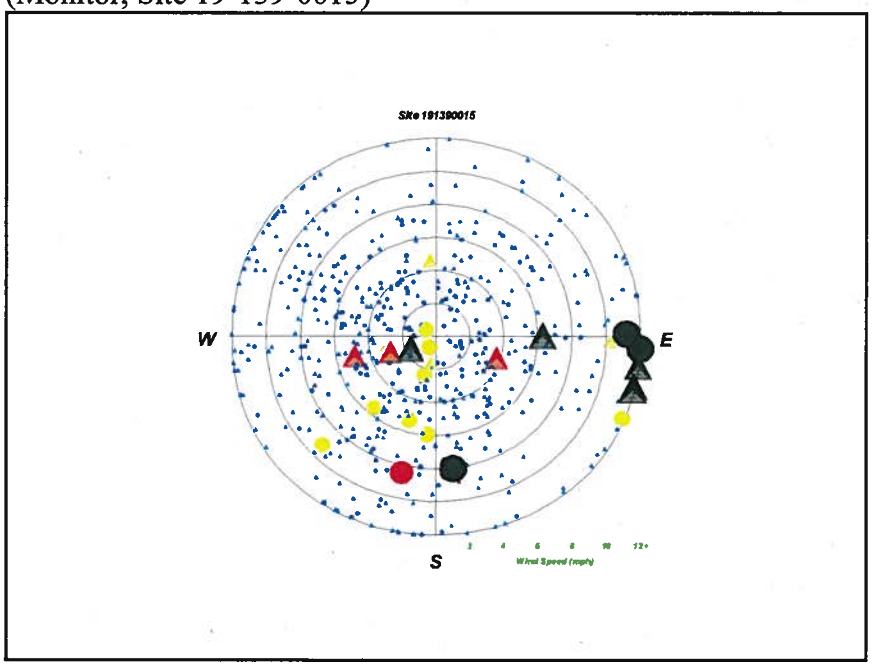


Figure 6.3. Pollution Trajectory Plot for Lawrence County, OH (Monitor, Site 39-087-0010)



The pollution rose for Boyd County, KY, Figure 6.4, is very different from the others. It shows high PM days when winds are at moderate to high speeds from the east, low speeds from the west, and high speeds from the south.

Figure 6.4. Pollution Trajectory Plot for Boyd County, KY (Monitor, Site 19-139-0015)



Factor 7: Geography/Topography (Mountain Ranges or Other Air Basin Boundaries)

The geography/topography analysis looks at 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 Huntington-Ashland area.

The Huntington-Ashland area does 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.

Factor 8: Jurisdictional Boundaries (e.g., Existing $PM_{2.5}$ and Ozone Areas)

In evaluating the jurisdictional boundary factor, consideration is being given to existing boundaries and organizations that may facilitate air quality planning and the implementation of control measures to attain the standard. Areas designated as nonattainment (e.g., for $PM_{2.5}$ or 8-hour ozone standard) represent important boundaries for state air quality planning.

From an EPA Region III perspective, the major jurisdictional boundaries in the Huntington-Ashland area are the state lines between West Virginia and Kentucky and between West Virginia and Ohio. Counties in Kentucky and Ohio impact the violating monitor in Cabell County, WV. Furthermore, Scioto County, OH, in EPA Region 5 has an air-quality monitors that violates the 2006 $PM_{2.5}$ NAAQS. The State of West Virginia has no jurisdictional say in the air-quality regulations and policies (e.g., transportation policies) developed by Ohio or Kentucky to address $PM_{2.5}$ emissions in the areas with the violating monitors.

On the other hand, areas designated as 8-hour ozone nonattainment areas are also important boundaries for State air-quality planning. Cabell and Wayne County, WV and Boyd County, KY were included in the 8-hour ozone nonattainment area associated with the Huntington-Ashland area. These three counties now make up the Huntington-Ashland 8-hour ozone maintenance area. Other counties included in this 9-factor analysis were also designated as 8-hour ozone nonattainment areas, but are not associated with the Huntington-Ashland area. A goal in designating $PM_{2.5}$ nonattainment areas is to achieve a degree of consistency with ozone nonattainment areas. Comparison of ozone areas with potential $PM_{2.5}$ nonattainment areas, therefore, gives added weight to designation of Cabell and Wayne County, WV and Boyd County, KY.

Factor 9: Level of Control of Emission Sources

This factor considers emission controls currently implemented in the Huntington-Ashland area. The emission estimates on Table 1.0 (under Factor 1) reflect implementation of control strategies implemented by the States in the Huntington-Ashland area before and during 2005 that may influence emissions of any component of $PM_{2.5}$ emissions (i.e., total carbon, SO_2, NOx, and crustal $PM_{2.5}$).

In West Virginia, Ohio, and Kentucky, there may be some emission reductions of SO_2 and NOx subsequent to 2005 that are not accounted for elsewhere in this analysis, due to new controls at large electric generating units (EGUs).

Table 9.0 shows emissions and controls (current and projected) for EGUs with SO_2 plus NO_x emissions greater than 5000 tons. Data was obtained from the 2006 National Electric Energy Data System (NEEDS) database. Table 9.1 shows emissions for the same EGUs for the years 2002 through 2008. The data was obtained from the emissions section of EPA's Clean Air Markets Division (CAMD) website: http://camddataandmaps.epa.gov/gdm/index.cfm?fuseaction=emissions.wizard.

Table 9.0. EGUs with SO_2 plus NO_x emissions > 5000 tons, from the 2006 NEEDS EGU database

County	Plant Name	Plant Type	Unique ID Final	2006 SO2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
Gallia, OH	General James M Gavin	Coal Steam	8102_B_2	14,384	20,593	1995	98.0	2001	1300.0
			8102_B_1	10,403	13,364	1994	96.6	2001	1300.0
	Kyger Creek	Coal Steam	2876_B_4	14,629	3,903	2010	95.0	2003	217.0
			2876_B_1	13,937	3,708	2010	95.0	2003	217.0
			2876_B_2	13,830	3,628	2010	95.0	2003	217.0
			2876_B_3	12,793	3,456	2010	95.0	2003	217.0
			2876_B_5	11,968	3,168	2010	95.0	2003	217.0
Mason, WV	Mountaineer	Coal Steam	6264_B_1	31,052	7,661	2007	95.0	2002	1300.0
	Philip Sporn	Coal Steam	3938_B_41	7,475	1,709				150.0
			3938_B_31	7,069	1,617				150.0
			3938_B_11	5,458	1,273				150.0
			3938_B_21	5,018	1,209				150.0
Adams, OH	JM Stuart	Coal Steam	2850_B_3	29,966	6,614	2008	95.0	2003	597.0
			2850_B_2	27,207	7,739	2008	95.0	2003	597.0
			2850_B_4	23,294	5,858	2008	95.0	2003	597.0
			2850_B_1	23,182	5,307	2008	95.0	2003	585.0
	Killen Station	Coal Steam	6031_B_2	22,825	7,185	2007	89.0	2003	615.0
Lawrence, KY	Big Sandy	Coal Steam	1353_B_BSU2	35,100	10,426			2003	800.0
			1353_B_BSU1	11,376	3,419				260.0
Putnam, WV	John E Amos	Coal Steam	3935_B_3	49,463	16,960	2007	95.0	2002	1300.0
			3935_B_1	34,571	8,506	2008	95.0	2005	800.0
			3935_B_2	33,264	8,481	2008	95.0	2004	800.0
Kanawha, WV	Kanawha River	Coal Steam	3936_B_2	6,651	1,941				205.0
			3936_B_1	6,343	1,792				205.0

Table 9.1. EGU 2002 to 2007 Emissions from EPA's CAMD

General James M Gavin, Gallia County, OH, Facility ID: 8102

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	32,380.1	43,839.2	15,353,813.6	149,647,267
2003	12	36,560.1	44,112.2	19,024,546.4	185,428,890
2004	12	33,715.7	40,631.7	19,061,592.6	185,785,491
2005	12	27,966.0	38,704.2	18,842,155.3	183,646,682
2006	12	24,786.8	33,956.7	16,997,448.8	165,667,179
2007	12	29,163.8	33,500.0	19,141,669.5	186,565,911

Kyger Creek, Gallia County, OH, Facility ID: 2876

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	74,451.7	25,317.6	6,625,110.4	64,572,199
2003	12	72,341.7	21,344.5	6,663,915.5	64,950,420
2004	12	72,850.1	18,708.5	7,531,790.2	73,409,278
2005	12	72,428.7	18,438.5	7,384,961.7	71,978,197
2006	12	67,156.7	17,862.6	7,167,983.1	69,863,416
2007	12	57,435.0	13,468.0	6,857,136.8	66,833,666

Mountaineer, Mason County, WV, Facility ID: 6264

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	43,223.7	12,911.1	8,628,159.0	84,095,133
2003	12	48,035.7	16,733.5	9,477,985.4	92,378,031
2004	12	37,823.3	12,776.3	7,765,046.8	75,682,741
2005	12	42,981.9	12,746.4	9,526,714.7	92,852,958
2006	12	31,051.9	7,661.5	6,554,285.8	63,881,965
2007	12	2,301.9	12,147.4	9,846,830.5	95,972,918

Philip Sporn, Mason County, WV, Facility ID: 3938

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	40,246.1	13,184.6	5,052,085.6	49,240,608
2003	12	49,890.7	14,284.6	5,992,053.3	58,402,135
2004	12	42,473.8	10,510.9	5,559,465.4	54,185,844
2005	12	39,374.8	8,960.7	5,069,072.6	49,406,162
2006	12	39,741.0	9,239.6	5,054,471.3	49,263,839
2007	12	40,529.7	12,154.0	6,153,309.1	59,974,019

JM Stuart, Adams County, OH, Facility ID: 2850

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	117,549.1	46,768.9	15,575,642.3	151,809,365
2003	12	124,199.3	47,368.6	15,149,597.4	147,656,929
2004	12	115,566.2	27,931.1	13,653,398.8	133,074,136
2005	12	106,225.5	24,420.7	13,817,921.8	134,677,617
2006	12	103,648.5	25,518.2	13,710,852.6	133,634,076
2007	12	107,318.1	25,137.4	14,268,966.6	139,073,870

Killen Station, Adams County, OH, Facility ID: 6031					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	19,664.1	7,934.7	3,741,384.5	36,476,849
2003	12	23,724.4	10,819.8	4,592,312.8	44,834,155
2004	12	23,049.2	7,131.3	4,244,389.5	41,377,089
2005	12	19,565.4	5,966.6	3,637,462.0	35,471,017
2006	12	22,824.9	7,184.6	4,284,185.5	41,790,006
2007	12	8,600.9	8,409.9	4,414,558.6	43,064,968

Big Sandy, Lawrence County, KY, Facility ID: 1353					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	41,899.0	15,153.8	5,393,369.7	52,566,916
2003	12	46,959.7	12,362.4	5,961,168.3	58,101,023
2004	12	48,010.0	10,855.8	5,911,405.2	57,616,072
2005	12	50,098.4	12,490.2	6,952,256.8	67,760,805
2006	12	46,475.8	13,845.1	6,830,275.3	66,571,925
2007	12	46,750.9	14,984.7	7,177,085.6	69,952,051

John E Amos, Putnam County, WV, Facility ID: 3935					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	107,618.9	43,500.5	17,429,396.0	169,867,887
2003	12	114,017.9	45,422.9	17,650,105.5	172,028,289
2004	12	100,152.8	35,948.0	15,612,703.4	152,142,010
2005	12	112,412.3	34,619.8	17,798,214.5	173,471,966
2006	12	117,299.3	33,946.9	18,798,261.0	183,218,877
2007	12	103,546.1	33,103.6	17,418,609.0	169,772,075

Kanawha River, Kanawha County, WV, Facility ID: 3936					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	15,862.4	6,168.0	2,615,491.9	25,492,185
2003	12	15,686.5	6,006.0	2,473,188.5	24,105,186
2004	12	12,170.9	3,561.6	1,867,518.2	18,201,956
2005	12	12,850.8	3,602.2	2,047,546.3	19,956,615
2006	12	12,994.2	3,732.3	1,992,399.5	19,419,067
2007	12	13,384.1	4,033.2	2,182,018.3	21,267,243

As can be seen from Tables 9.0 and 9.1, since 2005, these new controls have resulted in significant reductions at the Mountaineer power plant in Mason County, WV and the Killen Station plant in Adams County, OH. The scrubbers at the JM Stuart plant in Adams County, OH and the John E Amos plant in Putnam County, WV will come online some time in 2008. Therefore, at this time EPA believes that the data set forth in Table 9.1 does not capture the level of control that is expected to be achieved once the scrubbers are fully online, 95% SO_2 reduction.

The data in Table 9.1 indicates that SO_2 emissions from the Mountaineer, Mason County, WV, Facility were reduced from almost 43,000 tons in 2005 to 2,300 tons in 2007. If this 40,000 ton reduction is shown to be federally enforceable, it would likely result in a reduction of Mason County's CES from its currently calculated value of twenty. However, emissions from the Philip

Sporn, Mason County, WV, Facility remain uncontrolled. The Philip Sporn plant had emissions of 40,529.7 tons in 2007. Therefore, based upon consideration of the above data, EPA believes that it is appropriate to consider including portions of Mason County within the Huntington-Ashland nonattainment area for the 24-hour $PM_{2.5}$ NAAQS.

In addition to the above, EPA understands that some EGUs are expected to put new or additional controls in place in the future. EPA understands that the Kyger Creek plant in Gallia County, OH is expected to install scrubbers in 2010. However, EPA is only considering controls in place and federally enforceable at the time of designation, i.e., by 2008. Therefore, these future planned controls are not being considered in this analysis.

In considering county-level emissions, EPA considered 2005 emissions data from the National Emissions Inventory. EPA recognizes that certain power plants or large sources of emissions in this potential nonattainment area may have installed emission controls or otherwise significantly reduced emissions since 2005 and that this information may not be reflected in this analysis. EPA will consider additional information on emission controls in making final designation decisions. In cases where specific plants installed emission controls subsequent to 2005, which are not reflected within the above emissions data, or plan to install such controls in the near future, EPA requests additional information on:

- the plant name, city, county, and township/tax district,
- identification of emission units at the plant, fuel use, and megawatt capacity,
- identification of emission units on which controls will be installed, and units on which controls will not be installed,
- 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,
- the estimated pollutant emissions for each unit before and after implementation of emission controls, and
- 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 SIP revision, operating permit requirement, consent decree).

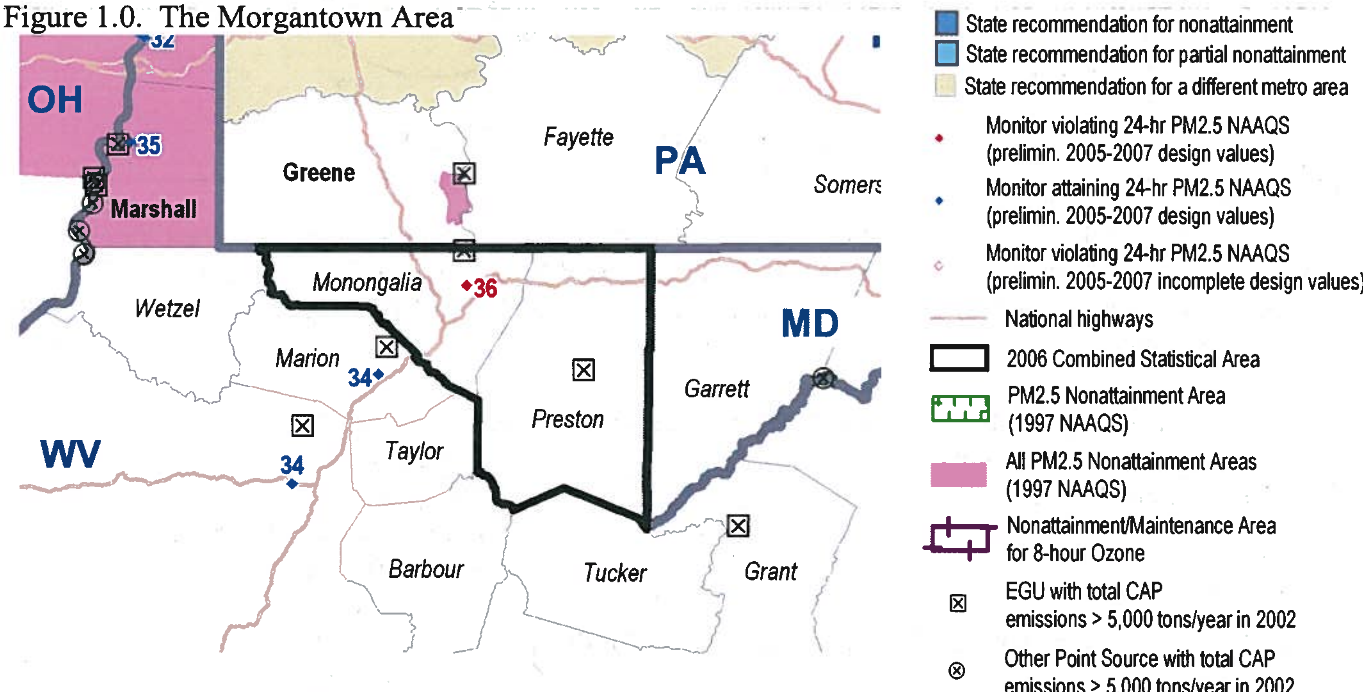
EPA Technical Analyses for the Morgantown Area

Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those areas that contribute to violations. This technical analysis for the Morgantown area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates the counties that potentially contribute to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

Figure 1.0 is a map which identifies the counties in the Morgantown area and provides other relevant information such as the locations and design values of air quality monitors, the metropolitan area boundary, and counties recommended as nonattainment by the State.

Figure 1.0. The Morgantown Area



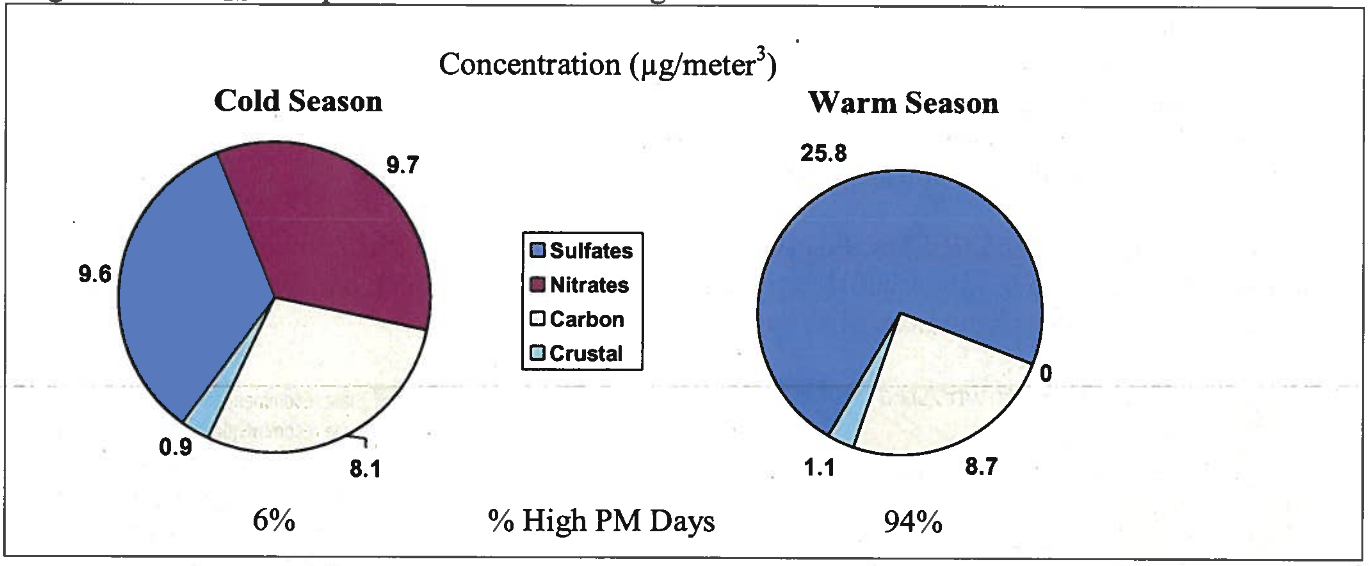
Note: West Virginia recommended attainment for the Morgantown area based on 2004 to 2006 data, and did not update its recommendation after a violation based on 2005 to 2007 data was discovered.

In November 2007, the State of West Virginia recommended that no areas be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard in the Morgantown area, based on air quality data from 2004-2006. See the November 9, 2007 letter from the West Virginia Department of

Environmental Protection to EPA. These data are from Federal Reference Method (FRM) and Federal Equivalent Method (FEM) monitors located in the state. However, since the area now has violations based on 2005-2007 data, EPA must consider which areas could be contributing to the violations and thus be appropriate for inclusion in the designated nonattainment area.

Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations occur predominantly in the summer. The average chemical composition of the highest days in the summer (warm season) is illustrated in Figure 1.1.

Figure 1.1. $PM_{2.5}$ Composition Data for the Morgantown Area



Based on EPA's 9-factor analysis described below, EPA believes that one county in West Virginia should be designated nonattainment for the 2006 24-hour $PM_{2.5}$ air quality standard as part of the Morgantown nonattainment area, based upon currently available 2005-2007 data. This county is listed in the table below.

Morgantown	State-Recommended Nonattainment Counties	EPA-Proposed Nonattainment Counties
West Virginia	None	Monongalia County - Newly violating area with 2005 to 2007 data

The following is a summary of the 9-factor analysis for the Morgantown area.

Morgantown was not a nonattainment area for either the 1997 $PM_{2.5}$ standard or the 1997 8-hour ozone standard. The Morgantown metropolitan statistical area is comprised of Monongalia and Preston Counties, in West Virginia. This technical analysis for the Morgantown area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates the counties that potentially contribute to fine particle concentrations in the area. Monongalia County has one monitor showing a violation of 2006 24-hour $PM_{2.5}$ NAAQS, considering 2005-2007 data. Thus, the area must be designated nonattainment consistent with Clean Air Act section 107(d). Preston County has no air quality monitor. As discussed below, emissions from Monongalia County are about four times those of Preston County. Furthermore, Preston Counties population and vehicle miles traveled (VMT) are less than half that of Monongalia County, and its population density is less than one-third that of Monongalia County. In addition, only about 3200 Preston County residents commute to Monongalia County. Moreover, meteorological data indicates that prevailing winds in the area are from the north, northwest, and west. Preston County is east of the violating monitor in the Morgantown area, which is in northeastern Monongalia County. For these reasons, EPA has determined that Preston County does not contribute to the $PM_{2.5}$ nonattainment problem in the Morgantown area.

EPA's technical analysis shows that Monongalia County contributes the most to the nonattainment of the 2006 24-hour $PM_{2.5}$ standard in the area. Allegheny and Greene Counties in Pennsylvania also contribute to the nonattainment of the 2006 24-hour $PM_{2.5}$ standard in the area. However, Allegheny County and a portion of Greene County that contains a large electric generating unit are part of the Pittsburgh nonattainment area for the 1997 $PM_{2.5}$ NAAQS. EPA recommends that Allegheny County and that same portion of Greene County be included in the Pittsburgh nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Accordingly, EPA has provided data related to Allegheny County and Greene County for informational purposes, however no analysis of such data is provided herein. Further analysis of data related to Allegheny and Greene Counties may be found in EPA's Technical Analysis for the Pittsburgh-Beaver Valley Area.

Marshall County, Harrison County and Marion County each have monitors which show attainment with the 2006 $PM_{2.5}$ NAAQS. Although Marshall County is part of the Wheeling nonattainment area for the 1997 $PM_{2.5}$ NAAQS, data relating to Marshall County is discussed in this analysis because, for purposes of the 2006 $PM_{2.5}$ NAAQS, there is no separate analysis for this county.

Based upon the analysis set forth below, EPA recommends that the Morgantown nonattainment area for the 2006 $PM_{2.5}$ NAAQS consist of a single county, Monongalia County, WV.

Factor 1: Emissions Data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: "$PM_{2.5}$ emissions total," "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," "SO_2," "NO_x," "VOCs," and "NH_3." "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown on the template or data spreadsheet as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs (volatile organic compounds) and NH_3 (ammonia) are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

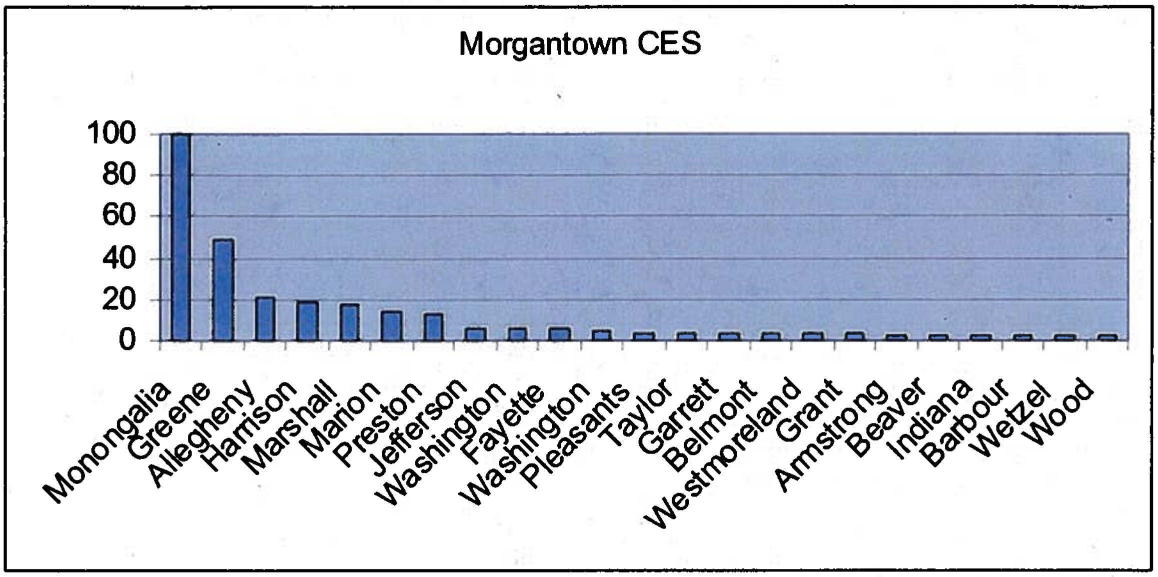
EPA also considered the Contributing Emissions Score (CES) for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive way for consideration of data for these factors. A summary of the CES is included in Enclosure 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

Table 1.0 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the Morgantown area. Counties are listed in descending order by CES. Figure 1.2 provides a graphical representation of the higher CES values set forth in Table 1.0.

Table 1.0. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County, State	State Recommended Nonattainment?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
Monongalia, WV		100	5,105	469	4,636	84,301	12,953	5,081	211
Greene, PA		49	8,873	592	8,280	146,554	20,374	2,642	350
Allegheny, PA	Yes - other area	21	5,221	2,245	2,975	51,471	63,290	46,690	2,249
Harrison, WV		19	2,752	415	2,338	5,287	23,807	4,587	253
Marshall, WV		17	4,604	309	4,295	118,021	39,932	3,230	146
Marion, WV		14	561	189	372	3,513	4,099	3,016	112
Preston, WV		13	1,219	162	1,057	17,171	3,968	1,610	260
Fayette, PA		6	657	298	360	1,291	4,064	5,377	521
Taylor, WV		4	266	51	215	424	1,457	752	63
Grant, WV		3	6,241	343	5,897	4,642	24,190	1,145	824
Garrett, MD		3	552	288	264	858	2,499	3,527	556
Wetzel, WV		3	197	85	111	691	3,985	2,065	43
Barbour, WV		2	210	62	149	108	668	709	79
Somerset, PA		1	903	425	479	1,844	4,654	5,591	1,596
Randolph, WV		1	289	137	152	217	2,562	2,292	143
Tucker, WV		1	234	50	185	131	547	704	29

Figure 1.2. CES Values for the Morgantown Area (Including Non-Contiguous Counties)



Based upon the data set forth on Table 1.0, Greene County, PA has the highest emissions, but the second highest CES. The violating monitor is located in Monongalia, WV. Monongalia County has the highest CES. This high score may be due to the fact that there is a large source (the Fort Martin Power Station) close to the violating monitor. As discussed above, Allegheny County, PA and Marshall and Harrison Counties, WV have the next highest emissions and comparable CESs. Allegheny County and a portion of Greene County in Pennsylvania are part of the Pittsburgh nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Pennsylvania has recommended that Allegheny County be included in the Pittsburgh nonattainment area for the 2006 24-hour PM NAAQS.

Note that Monongalia and Preston Counties in West Virginia make up the 2006 Morgantown Metropolitan Statistical Area (MSA). This new MSA was first defined in June 2003, based on Census 2000 data. Compared to Monongalia County, Preston County has a low CES value and low emissions. Based upon the above data, it appears that emissions from Monongalia County are about four times those of Preston County. However, because Preston County is part of the Morgantown MSA, further analysis is warranted to determine if it should be included in the Morgantown nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS.

Factor 2: Air Quality Data

This factor considers the 24-hour $PM_{2.5}$ design values (in $\mu g/m^3$) for air quality monitors in counties in the Morgantown area. A monitor's design value indicates whether that monitor attains a specified air quality standard. The 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98^{th} percentile value is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Morgantown area are shown in Table 2.0.

Table 2.0. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2003-05 (µg/m³)	Design Values 2004-06 (µg/m³)	Design Values 2005-07 (µg/m³)
Monongalia, WV	No	36	34	36
Greene, PA	No	No monitor		
Allegheny, PA [Liberty-Clairton]*	Yes - other area [Yes - other area]	52 [68]	45 [65]	40 [60]
Harrison, WV	No	32	35	34
Marshall, WV	No	33	34	35
Marion, WV	No	34	34	34
Preston, WV	No	No monitor		
Fayette, PA	No	No monitor		
Taylor, WV	No	No monitor		
Grant, WV	No	No monitor		
Garrett, MD	No	No monitor		
Wetzel, WV	No	No monitor		
Barbour, WV	No	No monitor		
Somerset, PA	No	No monitor		
Randolph, WV	No	No monitor		
Tucker, WV	No	No monitor		

Notes:

1. *Allegheny County, except for the Liberty-Clairton area, is currently in the Pittsburgh-Beaver Valley $PM_{2.5}$ nonattainment area. The Liberty-Clairton area is currently a separate $PM_{2.5}$ nonattainment area.
2. Note: Design values shown in red represent violations of the standard

Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with a FRM or FEM monitor. All data from Special Purpose Monitors (SPM) using an FRM, FEM, or Alternative Reference Method (ARM) which has operated for more than 24 months is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hour $PM_{2.5}$ NAAQS for designation purposes.

In EPA Region 3, Monongalia County in West Virginia with a CES = 100 (See Table 1.0 under Factor 1) shows a violation of the 2006 24-hour $PM_{2.5}$ standard. Therefore, this county is a candidate for inclusion in the Morgantown nonattainment area. In addition, Allegheny County (CES = 21) in Pennsylvania shows a violation of the 2006 24-hour $PM_{2.5}$ standard. Pennsylvania has recommended that Allegheny County be included in the Pittsburgh nonattainment area. Greene County, which has the second highest CES (49), does not have a monitor. The counties with the next three highest CESs, Harrison (19), Marshall (17), and Marion (14), have monitors that do not show violations of the 2006 24-hour $PM_{2.5}$ NAAQS.

However, this factor alone is not sufficient to eliminate the other counties in the Morgantown area as candidates for nonattainment status. EPA considered each county's CES as well as the eight other factors (plus other relevant factors or circumstances) when determining which counties to include in the Morgantown nonattainment area.

Factor 3: Population Density and Degree of Urbanization (Including Commercial Development)

Table 3.0 shows the 2005 population for each county in the Morgantown area being evaluated, as well as the population density for each county in that area. Population data provides an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour $PM_{2.5}$ standard.

Table 3.0. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Monongalia, WV	No	84,592	231
Greene, PA	No	40,408	70
Allegheny, PA	Yes - other areas	1,233,036	1658
Harrison, WV	No	68,369	164
Marshall, WV	No	34,250	110
Marion, WV	No	56,662	182
Preston, WV	No	30,052	46
Fayette, PA	No	146,206	183
Taylor, WV	No	16,182	93
Grant, WV	No	11,688	24
Garrett, MD	No	29,863	46
Wetzel, WV	No	16,974	47
Barbour, WV	No	15,656	46
Somerset, PA	No	78,796	73
Randolph, WV	No	28,506	27
Tucker, WV	No	6,948	17

The above data indicates that Allegheny County, part of the Pittsburgh nonattainment area for the 1997 $PM_{2.5}$ standard, has the highest population, 1,233,036 people. All other counties with CESs higher than ten have 2005 populations less than 100,000. Fayette County, PA, with a CES of 6 (See Table 1.0 under Factor 1), has the second highest population, 146,206. As stated above, Preston County, WV is part of the Morgantown MSA. In 2005, Preston County's population was roughly less than half of Monongalia County's, and is low when compared with any urbanized area, such as Allegheny County, PA. Furthermore, Preston County's population density, 46, is extremely low compared to the population density of Monongalia County and many other counties in this analysis.

Factor 4: Traffic and Commuting Patterns

This factor considers the number of commuters in each county who drive to another county within the Morgantown area; the percent of total commuters in each county who commute to other counties within the Morgantown area, as well as the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4.0). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

Table 4.0. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (millions)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into & within statistical area	Percent Commuting into & within statistical area
Monongalia, WV	No	727	32,120	88	32,630	89
Greene, PA	No	367	1,440	10	1,450	10
Allegheny, PA	Yes - other area	10,003	564,260	97	71	0
Harrison, WV	No	1,023	550	2	570	2
Marshall, WV	No	217	50	0	50	0
Marion, WV	No	656	3,010	13	3,060	13
Preston, WV	No	293	3,170	27	9,650	83
Fayette, PA	No	927	1,520	3	1,580	3
Taylor, WV	No	109	630	10	770	13
Grant, WV	No	104	26	1	18	0
Garrett, MD	No	487	100	1	430	3
Wetzel, WV	No	141	80	1	80	1
Barbour, WV	No	122	80	1	110	2
Somerset, PA	No	997	30	0	30	0
Randolph, WV	No	327	20	0	100	1
Tucker, WV	No	67	30	1	60	2

Note: The 2005 VMT data used for Table 4.0 and 5.0 of the 9-factor analysis has been derived using methodology similar to that described in "Documentation for the final 2002 Mobile National Emissions Inventory," Version 3, September 2007, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002_mobile_nei_version_3_report_092807.pdf. The 2005 VMT data were taken from documentation which is still draft, but which should be released in 2008. The United States 2000 Census County-to-County Worker Flow Files can be found at: http://www.census.gov/population/www/cen2000/commuting/index.html.

Table 4.0 indicates that VMT and numbers of commuters from Allegheny County dwarf all other counties, including the counties with CESs greater than ten: Monongalia, Greene, Harrison, Marshall, Marion, and Preston. Monongalia County is bordered by Wetzel, Marion, Taylor, and Preston Counties in West Virginia, and Greene and Fayette Counties in Pennsylvania. Of those surrounding counties, Preston has the highest number of commuters into the statistical area. Preston County, which is part of the Morgantown MSA, has 83 percent of the commuters into the MSA. However, the number of people commuting into any violating counties, or into the statistical area from Preston County, are one-tenth and one-third, respectively, that of the commuters from Monongalia County. More importantly, while 9,650 commuters from Preston County commute into the statistical area, 6,483 of those commuters are traveling within Preston County.

VMT in Preston County, WV is less than half that of the VMT in Monongalia County, WV which is also low when compared with any urbanized area, such as Allegheny County, PA. Finally, the VMT and commuting figures for Preston County are ver low, in comparison to more populated areas where vehicle emissions are more relevant. As demonstrated in Table 4.1, vehicle emissions from Preston County are minimal when compared to a more populated area, such as, Allegheny County, PA.

Table 4.1. Highway Vehicle Emissions for the Morgantown Area and Selected Nearby Counties

Highway Vehicle Emissions (Tier 11) 2005 NEI, Version 1			Total County Emissions
County, State	Pollutant	Tons	Tons
Monongalia, WV	NOx	1767	12,953
Greene, PA		786	20,374
Allegheny, PA		18403	63,290
Harrison, WV		2454	24,055
Marshall, WV		427	39,932
Marion, WV		1567	4,099
Preston, WV		750	3,968
Monongalia, WV	PM25-PRI	33	5,105
Greene, PA		14	8,873
Allegheny, PA		311	5,221
Harrison, WV		46	3,256
Marshall, WV		7	4,604
Marion, WV		37	561
Preston, WV		15	1,219
Monongalia, WV	SO2	41	84,301
Greene, PA		18	146,554
Allegheny, PA		392	51,471
Harrison, WV		57	5,302
Marshall, WV		10	118,021
Marion, WV		36	3,513
Preston, WV		18	17,171
Monongalia, WV	VOC	1102	5,081
Greene, PA		526	2,642
Allegheny, PA		14,938	46,690
Harrison, WV		1569	4,588
Marshall, WV		347	3,230
Marion, WV		996	3,016
Preston, WV		409	1,610
Monongalia, WV	NH3	73	211
Greene, PA		38	350
Allegheny, PA		1052	2,249
Harrison, WV		103	253
Marshall, WV		23	146
Marion, WV		66	112
Preston, WV		29	260

Factor 5: Growth Rates and Patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled (VMT) for 1996-2005 for counties in the Morgantown area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and is likely to be contributing to fine particle concentrations in the area.

Table 5.0 below shows population, population growth, VMT, and VMT growth for counties that are included in the Morgantown area.

Table 5.0. Population and VMT Values and Percent Change

Location	Population (2005)	Population Growth (2000 - 2005)	Population % change (2000 - 2005)	2005 VMT (1000s mi)	VMT% change (1996 to 2005)
Monongalia, WV	84,592	2,464	3	727	(18)
Greene, PA	40,408	-408	(1)	367	(19)
Allegheny, PA	1,233,036	-51,377	(4)	10,003	(3)
Harrison, WV	68,369	-283	(0.4)	1,023	(26)
Marshall, WV	34,250	-1,059	(3)	217	44
Marion, WV	56,406	-192	(0.3)	656	(11)
Preston, WV	30,052	875	3	293	70
Fayette, PA	146,206	-2,984	(2)	927	(14)
Taylor, WV	16,182	210	1.3	109	24
Grant, WV	11,688	450	4	104	(35)
Garrett, MD	29,863	60	0.2	487	8
Wetzel, WV	16,974	-707	(4)	141	8
Barbour, WV	15,656	155	1	122	1
Somerset, PA	78,796	-1,608	(2)	997	41
Randolph, WV	28,506	282	1	327	19
Tucker, WV	6,948	-366	(5)	67	3

Based on the data above, Monongalia and Preston Counties had small increases (3%) in population from 2000 to 2005. All other counties with CESs over ten and/or bordering Monongalia County experienced decreases in population during the same time period. Between 1996 and 2005, VMT decreased in most of these same counties, except for Preston and Marshall Counties, which had considerable VMT growth. However, the 2005 VMT in Preston and Marshall Counties are still extremely low, 293,000 miles and 217,000 miles, respectively.

Factor 6: Meteorology (Weather/Transport Patterns)

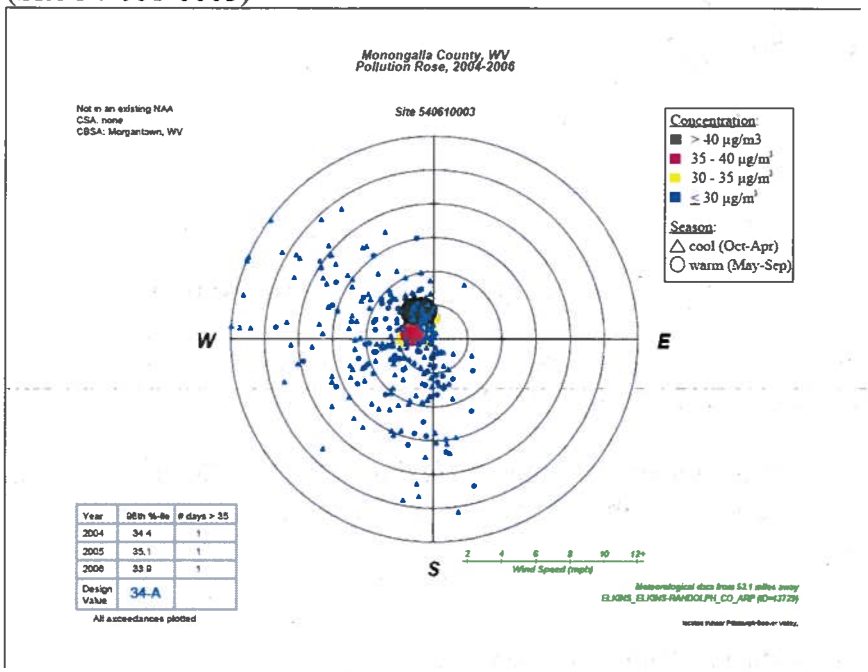
For this factor, EPA considered data from National Weather Service instruments in the Morgantown area. Wind direction and wind speed data for 2004-2006 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high days are defined as days where any FRM or FEM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

The meteorology factor is also considered in each county's Contributing Emissions Score because the method for deriving this metric included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

For each air quality monitoring site, EPA developed a "pollution rose" to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. Figure 6.0 identifies 24-hour $PM_{2.5}$ values by color and days exceeding 35 $\mu g/m^3$ are denoted with a red or black icon. A dot indicates the day occurred in the warm season and a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of an icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

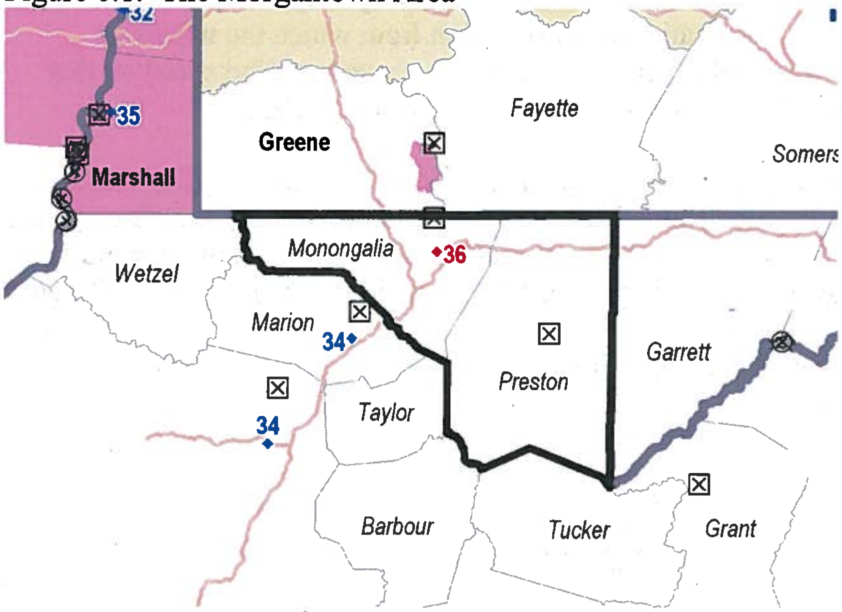
The following pollution rose for Monongalia County shows that days with monitored $PM_{2.5}$ values greater than 35 µg/m^3 occurred when the wind came from the north, northwest, and west. Days with $PM_{2.5}$ in the 30 to 35 µg/m^3 range show winds from the north and west. The days showing winds from the west, southwest, and south are associated with $PM_{2.5}$ concentrations less than or equal to 30 µg/m^3.

Figure 6.0. Pollution Trajectory Plot for Monongalia County, WV
(Site 54-061-0003)



As shown in Figure 6.1, the violating monitor in the Morgantown area is in northern Monongalia County. Preston County is southeast of the violating monitor. Therefore, emissions from Preston County do not appear to impact the violating monitor on high days (with monitored values greater than 35 µg/m^3). It is more likely that particulate matter from the Pittsburgh area to the north, the Steubenville area to the south, and the Canton area in the southwest are impacting the monitor in the Morgantown area.

Figure 6.1. The Morgantown Area



Factor 7: Geography/Topography (Mountain Ranges or Other Air Basin Boundaries)

The geography/topography analysis looks at 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 Morgantown area.

The Morgantown area does 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.

Factor 8: Jurisdictional Boundaries (e.g., Existing PM and Ozone Areas)

In evaluating the jurisdictional boundary factor, consideration should be given to existing boundaries and organizations that may facilitate air quality planning and the implementation of control measures to attain the standard. Areas designated as nonattainment (e.g., for $PM_{2.5}$ or 8-hour ozone standard) represent important boundaries for state air quality planning.

Of the counties in this analysis, Greene County, PA has the highest emissions and the second highest CES value (See Table 1.0 under Factor 1). Greene County is just north of the violating monitor. A portion of Greene County (which contains a large power plant) is currently in the Pittsburgh nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Because of jurisdictional boundaries and for ease of planning, EPA proposes to include that same portion of the county in the Pittsburgh nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Likewise, Allegheny County, PA has the third highest CES. Allegheny County, PA is currently in the Pittsburgh nonattainment area for the 1997 $PM_{2.5}$ NAAQS. As discussed above, Pennsylvania has recommended including Allegheny County in the Pittsburgh nonattainment area for the 2006 $PM_{2.5}$ NAAQS, and EPA concurs with this recommendation.

Factor 9: Level of Control of Emission Sources

This factor considers emission controls currently implemented in the Morgantown area

The emission estimates on Table 1.0 under Factor 1 include any control strategies established by the States in the Morgantown area before 2005 that may influence emissions of any component of $PM_{2.5}$ emissions (i.e., total carbon, SO_2, NOx, and crustal $PM_{2.5}$).

In West Virginia and Pennsylvania, there may be some emission reductions of SO_2 and NOx subsequent to 2005 that are not accounted for elsewhere in this analysis, due to new controls at large electric generating units (EGUs).

Table 9.0 shows emissions and controls (current and projected) for EGUs with SO_2 plus NO_x emissions greater than 5000 tons. Data was obtained from the 2006 National Electric Energy Data System (NEEDS) database. Table 9.1 shows emissions for the same EGUs for the years 2002 through 2007. The data was obtained from the emissions section of EPA's Clean Air Markets Division (CAMD) website: http://camddataandmaps.epa.gov/gdm/index.cfm?fuseaction=emissions.wizard.

As can be seen from Tables 9.0 and 9.1, since 2005, these new controls have resulted in significant reductions at the Mitchell power plant in Marshall County, WV. In 2005, the Mitchell plant emitted 53,765 tons of SO_2 and 20,026 tons of NOx, when the annual heat input was 64,325,953 million British Thermal Units (mmBTUs). In 2007, the Mitchell plant emitted 6,084 tons of SO_2 and 14,682 tons of NOx when the annual heat input was higher, 88,045,916 mmBTUs. These reductions of 47681 tons of SO_2 and 5,344 tons of NOx from 2005 to 2007 are significant, especially when compared to the county's total emissions in 2005, 118,021 tons of SO_2 and 39,932 tons of NOx. Therefore, it is likely that Marshall County's CES would be lower than the calculated value of seventeen, if the 2007 emissions data was considered.

New controls also resulted in modest emission reductions at the Fort Martin Power Station in Monongalia County, WV. However, the reductions at Fort Martin are not nearly as substantial as those described above for the Mitchell plant.

Some EGUs are expected to put controls in place in the future. The Hatfield's Ferry Power Station in Greene County, PA and the Cheswick plant in Allegheny County, PA are expected to install scrubbers in 2009. However, EPA is only considering controls in place and federally enforceable at the time of designation, i.e., by 2008. Therefore, these planned controls are not being considered in this analysis.

Table 9.0. EGUs with SO_2 and NO_x emissions > 5000 tons, from the 2006 NEEDS EGU database

County	Plant Name	Plant Type	Unique ID Final	2006 SO2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW	1997 $PM_{2.5}$ Nonattainment Area
Monongalia, WV	Fort Martin Power Station	Coal Steam	3943_B_2	42,296	4,771	2006	95.0		555.0	None
			3943_B_1	45,269	5,319	2006	95.0		552.0	
Greene, PA	Hatfield's Ferry Power Station	Coal Steam	3179_B_1	55,558	8,901	2009	95.0		530.0	Pittsburgh (partial)
			3179_B_2	45,405	6,701	2009	95.0		530.0	
			3179_B_3	34,119	4,453	2009	95.0		530.0	
Allegheny,	Cheswick	Coal	8226_B_1	32,373	4,221	2009	95.0	2003	580.0	Pittsburgh

PA		Steam								
Harrison, WV	Harrison Power Station	Coal Steam	3944_B_3	1,519	6,088	1995	98.0	2003	651.0	None
			3944_B_2	1,595	7,702	1995	98.0	2003	642.0	
			3944_B_1	1,949	7,365	1995	98.0	2001	640.0	
Marshall, WV	Mitchell	Coal Steam	3948_B_1	26,240	8,798	2007	95.0	1993	800.0	Wheeling
			3948_B_2	25,766	7,596	2006	95.0	1994	800.0	
	Kammer	Coal Steam	3947_B_1	14,251	3,858				210.0	
			3947_B_3	14,002	3,748				210.0	
			3947_B_2	12,497	3,193				210.0	
Marion, WV	Rivesville	Coal Steam	3945_B_8	1,700	761				91.0	None
			3945_B_7	25	16				46.0	
Preston, WV	Albright	Coal Steam	3942_B_3	8,469	979				137.0	None
			3942_B_2	3,660	608				73.0	
			3942_B_1	3,100	663				73.0	
Grant, WV	Mt Storm	Coal Steam	3954_B_2	1,191	7,478	2001	95.5	2003	524.0	None
			3954_B_1	1,067	6,442	2002	95.5	2003	524.0	
			3954_B_3	881	8,544	1994	95.0	2004	521.0	
	North Branch	Coal Steam	7537_B_1A	473	657		91.6		37.0	
			7537_B_1B	394	551		91.6		37.0	

Table 9.1. EGU 2002 to 2007 Emissions from EPA's CAMD

Fort Martin Power Station, Monongalia County, WV, Facility ID: 3943					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	91,119.3	11,235.7	7,551,652.1	73,602,855
2003	12	102,522.3	11,582.1	7,693,243.9	74,982,901
2004	12	99,869.0	10,889.8	7,461,624.9	72,725,403
2005	12	82,820.5	9,089.0	6,729,296.8	65,587,709
2006	12	87,565.1	10,090.0	7,726,961.8	75,311,502
2007	12	88,031.6	8,995.3	6,726,766.8	65,563,012
Hatfield's Ferry Power Station , Greene County, PA, Facility ID: 3179					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	158,712.6	23,064.7	10,043,621.5	97,891,124
2003	12	139,423.9	17,642.8	8,566,912.0	83,503,429
2004	12	148,458.6	19,198.8	9,130,158.0	88,987,877
2005	12	145,621.2	17,449.6	8,768,387.5	85,461,894
2006	12	135,082.2	20,055.6	9,139,990.4	89,083,716
2007	12	144,929.7	23,671.5	10,173,087.9	99,152,896
Cheswick, Allegheny County, PA, Facility ID: 8226					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	42,017.9	5,761.2	3,376,491.2	32,977,678
2003	12	45,432.8	4,704.7	3,727,784.1	36,352,654

2004	12	40,982.1	4,926.8	3,198,899.6	31,220,642
2005	12	37,320.1	3,913.6	2,921,151.9	28,510,285
2006	12	32,372.6	4,220.7	2,818,930.7	27,498,505
2007	12	34,088.9	4,455.0	2,903,425.1	28,314,056
Harrison Power Station, Harrison County, WV, Facility ID: 3944					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	8,691.5	28,629.2	13,997,732.0	136,430,137
2003	12	13,145.2	22,234.7	13,049,706.2	127,190,158
2004	12	9,868.6	23,872.6	14,488,660.3	141,214,989
2005	12	4,765.5	19,365.6	12,961,434.6	126,329,763
2006	12	5,062.6	21,154.2	13,450,027.5	131,091,928
2007	12	4,737.5	19,858.5	13,570,101.3	132,262,186
Mitchell, Marshall County, WV, Facility ID: 3948					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	56,009.2	29,593.1	8,641,347.9	84,222,423
2003	12	59,330.9	29,660.9	8,991,537.2	87,636,839
2004	12	62,617.0	23,575.2	8,627,594.8	84,089,902
2005	12	53,765.1	20,026.4	6,599,845.3	64,325,953
2006	12	52,005.5	16,394.6	7,076,633.7	68,972,995
2007	12	6,084.4	14,682.4	9,033,512.4	88,045,916
Kammer, Marshall County, WV, Facility ID: 3947					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	39,096.2	13,173.9	3,694,205.5	36,005,906
2003	12	42,216.1	11,968.5	3,562,163.2	34,718,914
2004	12	40,016.3	10,883.3	3,320,586.7	32,364,383
2005	12	42,574.0	11,516.3	3,722,892.7	36,285,498
2006	12	40,750.2	10,798.1	3,464,587.1	33,767,863
2007	12	43,126.6	11,100.7	3,991,447.0	38,902,989
Rivesville Power Station, Marion County, WV, Facility ID: 3945					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	4,412.2	2,027.1	570,549.6	5,560,922
2003	12	5,355.5	2,235.1	663,083.0	6,462,782
2004	12	1,921.5	757.3	236,062.5	2,300,787
2005	12	1,769.3	747.6	251,001.7	2,446,417
2006	12	1,725.1	777.0	244,100.5	2,379,179
2007	12	2,884.2	1,023.9	349,500.8	3,406,413
Albright Power Station, Preston County, WV, Facility ID: 3942					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	20,560.1	4,672.3	1,702,180.5	16,590,381
2003	12	25,424.6	5,599.6	2,138,410.0	20,842,162
2004	12	15,984.9	2,725.0	1,230,785.0	11,995,936
2005	12	16,922.8	2,495.6	1,290,853.3	12,581,428
2006	12	15,228.9	2,249.7	1,168,370.4	11,387,612
2007	12	20,792.9	3,185.7	1,610,136.3	15,693,371
Mount Storm Power Station, Grant County, WV, Facility ID: 3954					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	23,370.2	39,854.6	12,818,014.6	124,931,891

2003	12	7,133.6	21,961.9	10,711,229.8	104,397,987
2004	12	5,563.6	26,240.8	12,966,450.5	126,378,686
2005	12	3,471.4	22,555.9	12,047,554.9	117,422,557
2006	12	3,139.1	22,463.7	12,464,709.0	121,488,414
2007	12	2,773.4	17,868.1	10,700,711.1	104,295,430
North Branch Power Station, Grant County, WV, Facility ID: 7537					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	519.5	693.7	441,429.7	4,302,363
2003	12	559.4	840.4	569,294.2	5,548,857
2004	12	986.6	1,360.8	804,790.0	7,843,951
2005	12	1,072.8	1,365.2	817,330.1	7,966,229
2006	12	867.0	1,208.6	727,475.5	7,090,420
2007	12	1,033.5	1,378.6	771,565.4	7,520,154

In considering county level emissions, EPA considered 2005 emissions data from the National Emissions Inventory. EPA recognizes that certain power plants or large sources of emissions in this potential nonattainment area may have installed emission controls or otherwise significantly reduced emissions since 2005 and that this information may not be reflected in this analysis. EPA will consider additional information on emission controls in making final designation decisions. In cases where specific plants already have installed emission controls subsequent to 2005, or plan to install such controls in the near future, EPA requests additional information on:

- the plant name, city, county, and township/tax district,
- identification of emission units at the plant, fuel use, and megawatt capacity,
- identification of emission units on which controls will be installed, and units on which controls will not be installed,
- 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,
- the estimated pollutant emissions for each unit before and after implementation of emission controls, and
- 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 SIP revision, operating permit requirement, consent decree).

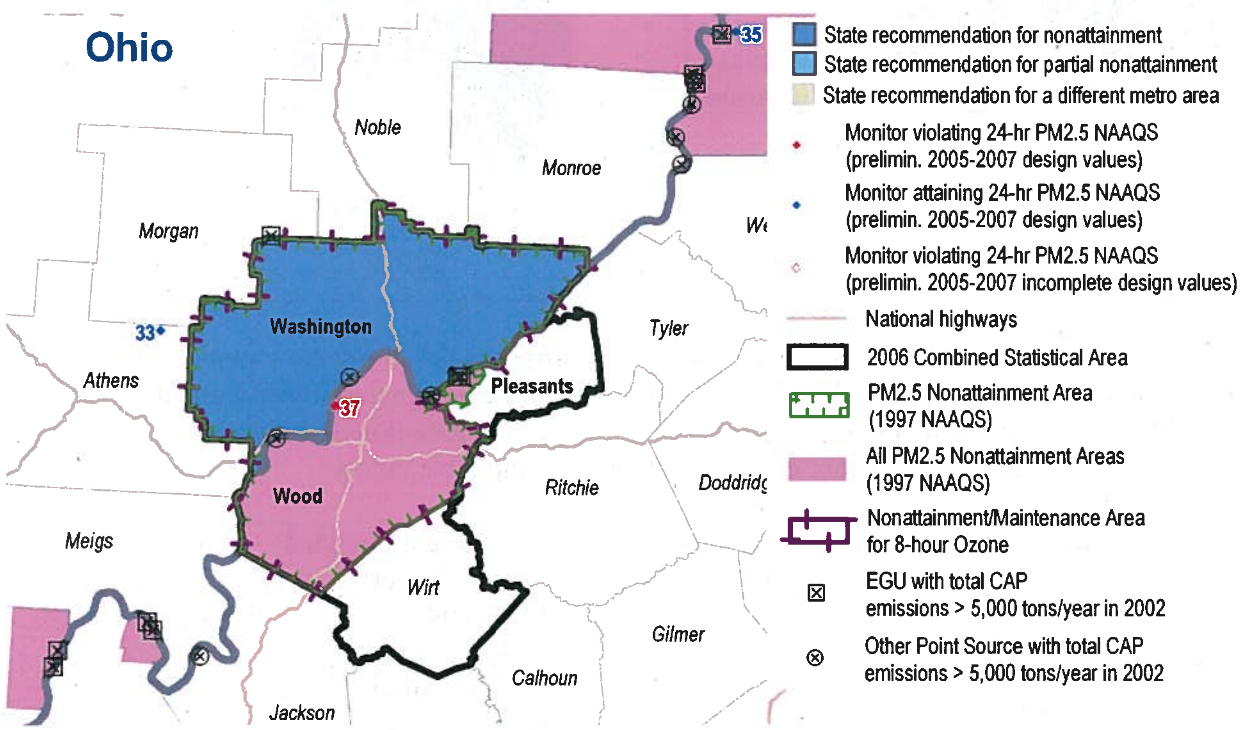
EPA Technical Analysis for Parkersburg-Marietta Area

Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those areas that contribute to violations. This technical analysis for the Parkersburg-Marietta area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates the counties that potentially contribute to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

Figure 1.0 is a map which identifies the counties in the Parkersburg-Marietta area and provides other relevant information such as the locations and design values of air quality monitors, the metropolitan area boundary, and counties recommended as nonattainment by the State.

Figure 1.0. The Parkersburg-Marietta Area



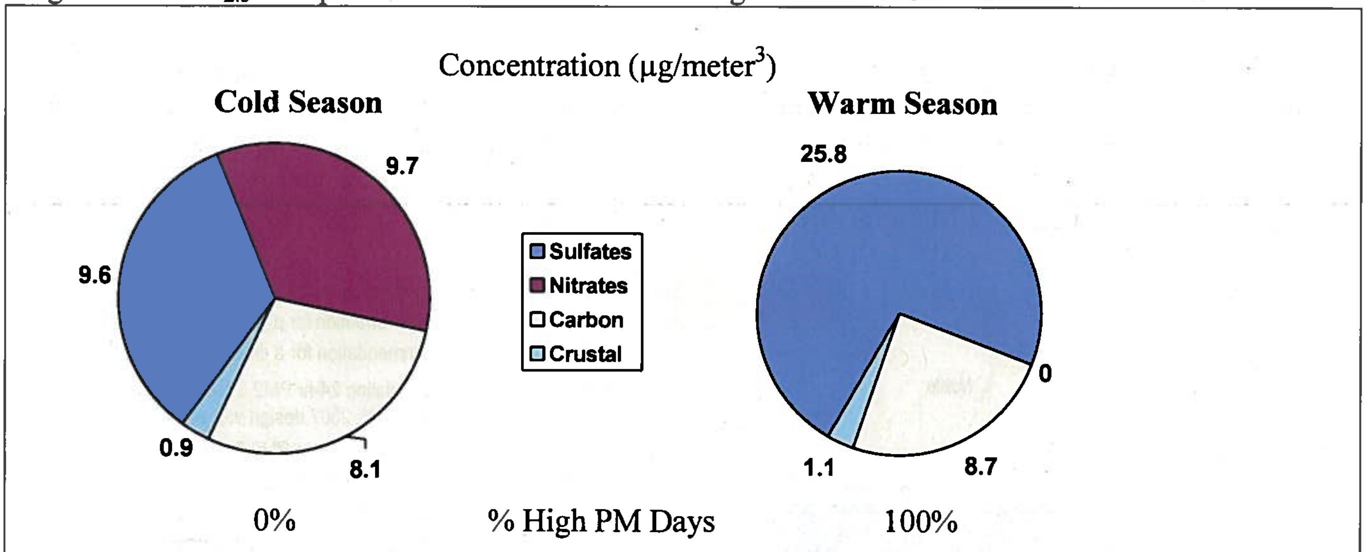
Note: West Virginia recommended attainment for its portion of the Parkersburg-Marietta area based on 2004 to 2006 data, and did not update its recommendation after a violation based on the 2007 data was discovered.

For this area, EPA previously established $PM_{2.5}$ nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS that included two full counties and one partial county, with one full county and one partial county being located in West Virginia.

In November 2007, the State of West Virginia recommended that no areas be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard in the Parkersburg-Marietta area, based on air quality data from 2004-2006. See the November 9, 2007 letter from the West Virginia Department of Environmental Protection to EPA. This data is from Federal Reference Method (FRM) and Federal Equivalent Method (FEM) monitors located in the state.

Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations occur in the warm season. The average chemical composition of the highest days is typically characterized by high levels of sulfates in the warm season as illustrated in Figure 1.1.

Figure 1.1. $PM_{2.5}$ Composition Data for the Parkersburg-Marietta Area



Based on EPA's 9-factor analysis described below, EPA proposes that the same counties as previously designated nonattainment for the 1997 $PM_{2.5}$ NAAQS should be designated nonattainment for the 2006 24-hour $PM_{2.5}$ air quality standard as part of the Parkersburg-Marietta nonattainment area, based upon currently available information. These counties are listed in the table below.

Parkersburg-Marietta	State-Recommended Nonattainment Counties	EPA-Recommended Nonattainment Counties
West Virginia	None	Pleasants County (partial) Wood County – Newly violating area with 2005 to 2007 data

The following is a summary of the 9-factor analysis for the EPA Region III portion of the Parkersburg-Marietta area.

The Region III portion of the Parkersburg-Marietta nonattainment area for the 1997 $PM_{2.5}$ NAAQS was defined as Wood County, WV and a portion of Pleasants County, WV. Based upon the data described below, EPA has determined that the same boundary is appropriate for the Parkersburg-Marietta nonattainment area under the 2006 $PM_{2.5}$ NAAQS. Washington County, OH, has an air quality monitor violating the 2006 24-hour $PM_{2.5}$ NAAQS.

As discussed below, Wood County has one monitor showing a violation of 2006 24-hour $PM_{2.5}$ NAAQS, considering 2005-2007 data. Thus, the area must be designated nonattainment consistent with Clean Air Act section 107(d). EPA believes that local emissions, within Wood County, contribute to the violation of 2006 24-hour $PM_{2.5}$ NAAQS. However, EPA also believes that emissions from other counties contribute to the violations of the 2006 24-hour $PM_{2.5}$ NAAQS in the Parkersburg-Marietta area. Pleasants County, WV, does not have an air quality monitor. EPA has analyzed population, vehicle miles traveled and commuter data related to Pleasants County. Based upon such analysis, EPA believes that Pleasants County – as a whole – is a low ranking candidate for inclusion in the Parkersburg-Marietta nonattainment area for the 2006 $PM_{2.5}$ NAAQS. However, as discussed below, EPA has reason to believe that emissions from two electric generating units (EGUs) in Pleasants County contribute to violations of the 2006 24-hour $PM_{2.5}$ NAAQS in the Parkersburg-Marietta area.

Factor 1: Emissions Data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: "$PM_{2.5}$ emissions total," "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," "SO_2," "NO_x," "VOCs," and "NH_3." "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NOx, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1.0 as separate items.) "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs (volatile organic compounds) and NH_3 (ammonia) are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

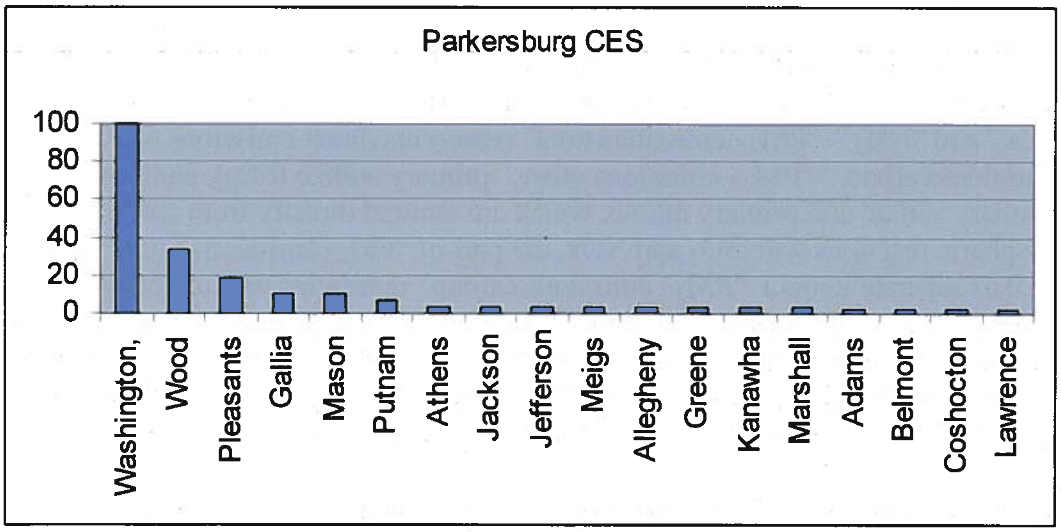
EPA also considered the Contributing Emissions Score (CES) for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive way for consideration of data for these factors. A summary of the CES is included in Enclosure 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

Table 1.0 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the Parkersburg-Marietta area. Counties that are part of the Parkersburg-Marietta nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface. Counties are listed in descending order by CES. Figure 1.2 is a graphical representation of the higher CES values set forth in Table 1.0.

Table 1.0. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County	State Recommended Nonattainment ?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
Washington, OH	**Yes**	**100**	**8,286**	**741**	**7,545**	**164,357**	**24,331**	**5,194**	**1,344**
Wood, WV	**No**	**34**	**977**	**421**	**557**	**6,243**	**5,866**	**6,295**	**200**
Pleasants, WV	**No**	**19**	**1,851**	**144**	**1,706**	**62,011**	**14,912**	**1,462**	**112**
Athens, OH	No	4	465	228	236	1,459	3,275	2,352	290
Jackson, WV	No	4	817	188	629	3,326	3,036	2,327	164
Meigs, OH	No	3	321	155	168	338	2,161	1,165	834
Monroe, OH	No	1	514	153	362	3,434	2,478	1,101	240
Morgan, OH	No	1	221	88	133	34	401	767	243
Noble, OH	No	1	213	92	121	57	1,395	1,043	197
Ritchie, WV	No	1	132	43	88	129	709	713	68
Roane, WV	No	1	158	57	100	86	600	916	100
Tyler, WV	No	1	171	56	115	491	1,418	1,946	52
Wirt, WV	No	1	94	24	70	18	134	473	45
Calhoun, WV	No	0	102	27	75	37	793	498	33
Wetzel, WV	No	0	197	85	111	691	3,985	2,065	43
Doddridge, WV	No	0	104	28	76	53	963	435	51
Gilmer, WV	No	0	116	36	80	83	1,096	800	48

Figure 1.2. CES Values for the Parkersburg-Marietta Area (Including Non-Contiguous Counties)



Washington, Wood, and Pleasants Counties, which make up the Parkersburg-Marietta nonattainment area for the 1997 $PM_{2.5}$ NAAQS, have the three highest CESs. Washington and Pleasants Counties have high levels of sulfur dioxide emissions, indicating a contribution to the high sulfate levels (more than 25 $\mu g/m^3$) observed on high $PM_{2.5}$ days in the area (see Figure 1.1, above). As discussed in Factor 9, below, EPA believes that the combination of the sulfur dioxides emissions from the two EGUs in Pleasants County contribute to the high sulfate levels (more than 25 $\mu g/m^3$) observed on high $PM_{2.5}$ days in the area. See Table 9.1, below. All other counties in this analysis have CESs less than five.

Washington County, CES = 100, has by far the highest $PM_{2.5}$, SO_2, NO_x, and NH_3 emissions. Pleasants County, CES = 19, has the next highest emissions, but the third highest CES. Except for VOCs, Wood County, CES = 34, has much lower emissions than Pleasants County. It is likely that the

CES for Wood County is higher than Pleasants simply because Wood County contains the violating monitor.

Based on emissions levels and CES values, Washington, Wood, and Pleasants Counties are candidates for a 2006 24-hour $PM_{2.5}$ nonattainment designation based upon this factor.

Factor 2: Air Quality Data

This factor considers the 24-hour $PM_{2.5}$ design values (in $\mu g/m^3$) for air quality monitors in counties in the Parkersburg-Marietta area based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air quality standard. The 2006 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98th percentile values is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Parkersburg-Marietta area are shown in Table 2.0.

Table 2.0. Air Quality Data

County	State Recommended Nonattainment?	24-hr $PM_{2.5}$ Design Values, 2003-2005 ($\mu g/m^3$)	24-hr $PM_{2.5}$ Design Values, 2004-2006 ($\mu g/m^3$)	24-hr $PM_{2.5}$ Design Values, 2005-2007 ($\mu g/m^3$)
Washington, OH	**Yes**	**No monitor**		
Wood, WV	**No**	**34**	**35**	**37**
Pleasants, WV	**No**	**No monitor**		
Athens, OH	No		32	33
Jackson, WV	No	No monitor		
Meigs, OH	No	No monitor		
Monroe, OH	No	No monitor		
Morgan, OH	No	No monitor		
Noble, OH	No	No monitor		
Ritchie, WV	No	No monitor		
Roane, WV	No	No monitor		
Tyler, WV	No	No monitor		
Wirt, WV	No	No monitor		
Calhoun, WV	No	No monitor		
Wetzel, WV	No	No monitor		
Doddridge, WV	No	No monitor		
Gilmer, WV	No	No monitor		
Note: Design values shown in red represent violations of the standard.				

Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with a FRM or FEM monitor. All data from Special Purpose Monitors (SPM) using an FRM, FEM, or Alternative Reference Method (ARM) which has operated for more than 24 months is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hour $PM_{2.5}$ NAAQS for designation purposes.

The above data in Table 2.0 indicates that Wood County, WV, shows a violation of the 2006 24-hour $PM_{2.5}$ standard. Therefore, this county is included in the Parkersburg-Marietta nonattainment area. Wood County has the second highest CES and the third highest emissions, as explained above, in Factor 1. However, the absence of a violating monitor alone is not a sufficient reason to eliminate counties as candidates for inclusion in the Parkersburg-Marietta nonattainment area. Each county has been evaluated based on the weight of evidence of the nine factors and other relevant information.

Factor 3: Population Density and Degree of Urbanization (Including Commercial Development)

Table 3.0 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard.

Table 3.0. Population

County, State	State Recommended Nonattainment	2005 Population	2005 Population Density (people/sq mi)
Washington, OH	**Yes**	**62,155**	**98**
Wood, WV	**No**	**86,881**	**231**
Pleasants, WV	**No**	**7,329**	**54**
Athens, OH	No	62,028	121
Jackson, WV	No	28,306	60
Meigs, OH	No	23,179	54
Monroe, OH	No	14,736	32
Morgan, OH	No	14,895	35
Noble, OH	No	14,097	35
Ritchie, WV	No	10,529	23
Roane, WV	No	15,445	32
Tyler, WV	No	9,303	36
Wirt, WV	No	5,882	25
Calhoun, WV	No	7,367	26
Wetzel, WV	No	16,974	47
Doddridge, WV	No	7,474	23
Gilmer, WV	No	6,962	20

Wood County, WV, which is part of the Parkersburg-Marietta-Vienna metropolitan statistical area (MSA) and 1997 $PM_{2.5}$ nonattainment area, has the highest population and highest population density. The next highest are Washington, OH, also part of the Parkersburg-Marietta-Vienna MSA and 1997 $PM_{2.5}$ nonattainment area, and Athens, OH, which comprises the Athens MSA. Pleasants and Wirt Counties, which make up the remainder of the Parkersburg-Marietta-Vienna MSA, and all other counties in this analysis have very low populations and population densities. Therefore, these counties with lower populations are low ranking candidates for a nonattainment designation based upon this factor.

Factor 4: Traffic and Commuting Patterns

This factor considers the number of commuters in each county who drive to another county within the Parkersburg-Marietta area, the percent of total commuters in each county who commute to other counties within the Parkersburg-Marietta area, as well as the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4.0). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

The listing of counties on Table 4.0 reflects the number of people commuting to other counties. The counties that are in the nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

Table 4.0. Traffic and Commuting Patterns

County, State	State Recommended Nonattainment?	Vehicle Miles Traveled in 2005 (millions)	Number commuting into any violating counties	Percent commuting into any violating counties	Number commuting into & within statistical area	Percent commuting into & within statistical area
Washington, OH	**Yes**	**686**	**5,930**	**21**	**26,250**	**94**
Wood, WV	**No**	**976**	**31,700**	**85**	**35,720**	**96**
Pleasants, WV	**No**	**67**	**640**	**22**	**2,460**	**86**
Athens, OH	No	480	560	2	1,030	4
Jackson, WV	No	444	610	6	690	6
Meigs, OH	No	186	290	3	630	7
Monroe, OH	No	159	50	1	280	5
Morgan, OH	No	104	50	1	560	10
Noble, OH	No	324	30	1	490	10
Ritchie, WV	No	125	780	20	1,110	29
Roane, WV	No	166	130	2	130	3
Tyler, WV	No	68	190	6	370	11
Wirt, WV	No	38	1,160	53	1,950	89
Calhoun, WV	No	51	80	3	110	5
Wetzel, WV	No	141	60	1	150	3
Doddridge, WV	No	87	80	3	100	4
Gilmer, WV	No	53	20	1	20	1

Note: The 2005 VMT data used for Tables 4.0 and 5.0 of the 9-factor analysis has been derived using methodology similar to that described in "Documentation for the final 2002 Mobile National Emissions Inventory, Version 3," September 2007, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002_mobile_nei_version_3_report_092807.pdf. The 2005 VMT data were taken from documentation which is still draft, but which should be released in 2008. See also the "US 2000 Census County-To-County Worker Flow Files," which may be found at: http://www.census.gov/population/www/cen2000/commuting/index.html.

Washington and Wood Counties, which are part of the Parkersburg-Marietta-Vienna MSA and 1997 $PM_{2.5}$ nonattainment area, have the highest VMT, and the highest numbers of commuters into the statistical area. Pleasants and Wirt Counties, which make up the remainder of the Parkersburg-Marietta-Vienna MSA, have the next highest numbers of commuters into the statistical area, but very low VMT. However, based upon the above data, the number of commuters into the statistical area from these counties is less than the number of commuters within and from Washington and Wood Counties. Therefore, Pleasants and Wirt Counties are lower ranking candidates for a nonattainment designation based upon this factor.

Factor 5: Growth Rates and Patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled for 1996-2005 for counties in Parkersburg-Marietta area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and is likely to be contributing to fine particle concentrations in the area.

Table 5.0 below shows population, population growth, VMT, and VMT growth for counties that are included in the Parkersburg-Marietta area.

Table 5.0. Population and VMT Values and Percent Change

County, State	State Recommended Nonattainment	2005 Population	Percent Population Change (2000-05)	Vehicle Miles Traveled in 2005 (millions annually)	Percent VMT Growth (1996-2005)
Washington, OH	**Yes**	**62,155**	**(2)**	**686**	**(1)**
Wood, WV	**No**	**86,881**	**(1)**	**976**	**11**
Pleasants, WV	**No**	**7,329**	**(2)**	**67**	**37**
Athens, OH	No	62,028	-0.3	480	3
Jackson, WV	No	28,306	1	444	(7)
Meigs, OH	No	23,179	1	186	0
Monroe, OH	No	14,736	(3)	159	19
Morgan, OH	No	14,895	0.4	104	(7)
Noble, OH	No	14,097	0.7	324	(0)
Ritchie, WV	No	10,529	2	125	82
Roane, WV	No	15,445	-0.3	166	(19)
Tyler, WV	No	9,303	(3)	68	18
Wirt, WV	No	5,882	0.4	38	61
Calhoun, WV	No	7,367	(3)	51	4
Wetzel, WV	No	16,974	(4)	141	1
Doddridge, WV	No	7,474	1	87	79
Gilmer, WV	No	6,962	(3)	53	14

The Parkersburg-Marietta-Vienna MSA includes Washington, Wood, Pleasants, and Wirt Counties. The three counties with the highest CESs, Washington, Wood, and Pleasants, all experienced slight decreases in population, one to two percent, from 2000 to 2005. However, Wood and Pleasants

Counties experienced high VMT growth, 11 and 37 percent, respectively, from 1996 to 2005. Even with a large percentage increase, VMT in Pleasants County is still much lower than Washington and Wood Counties. Wirt County had a slight population increase, while the VMT increased by 61 percent. However, 2005 population and VMT in Wirt County are still much lower than Washington and Wood Counties, and somewhat lower than Pleasants County.

Factor 6: Meteorology (Weather/Transport Patterns)

For this factor, EPA considered data from National Weather Service instruments in the area. Wind direction and wind speed data for 2004-2006 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high $PM_{2.5}$ days are defined as days where any FRM or FEM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

Meteorology data is also considered in each county's Contributing Emissions Score (CES) because the method for deriving the CES included an analysis of trajectories of air masses for high $PM_{2.5}$ days. See Factor 1 Emissions Data, above.

The trajectory factor values, shown in Table 6.0, represent the trajectory weight used to calculate the CES. The given value is normalized to the maximum so that the range is 0 to 100 with the county having the highest weight getting a value of 100. The number represents the meteorological influence a particular county's emissions have on the violating county. Higher values mean that air masses frequently traversed the county on their way to the violating county. The magnitude of the factor is not related to a county's emissions. The warm season trajectory factors are given in Table 6.0, below. EPA did not calculate cold season trajectory factors for the Parkersburg-Marietta area because the data indicates that all of the high $PM_{2.5}$ days occur in the warm season. A pollution trajectory plot for data related to the violating monitor in Wood County, WV, is not available at this time.

Table 6.0. Trajectory and Distance Factors

County, State	Trajectory Factor Warm Season	Distance Factor (miles)
Washington, OH	85	14.7
Wood, WV	100	10.7
Pleasants, WV	75	21.5
Athens, OH	77	32
Jackson, WV	66	29
Meigs, OH	78	32.1
Monroe, OH	39	41.3
Morgan, OH	58	31.7
Noble, OH	47	38
Ritchie, WV	67	22.6
Roane, WV	51	34.7
Tyler, WV	44	39.9
Wirt, WV	82	13.9
Calhoun, WV	51	34.2
Wetzel, WV	36	40.7
Doddridge, WV	40	42.7
Gilmer, WV	26	51.5

Wood County, WV, where the violating monitor is located, has the highest warm season trajectory factor. Washington County, OH, has the second highest trajectory factor. This indicates that air masses are more likely to pass through Wood and Washington Counties, as compared to other counties in the analysis, on their way to the violating monitor located in Wood County. The next highest trajectory factors belong to Wirt, Meigs, Athens, and Pleasants Counties. As shown in Table 1.0, emissions from Wirt, Meigs, and Athens Counties are quite low compared to other counties in this analysis. Conversely, emissions in Pleasants County are high compared to other counties in this analysis.

Factor 7: Geography/Topography (Mountain Ranges or Other Air Basin Boundaries)

The geography/topography analysis looks at 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 Parkersburg-Marietta area.

The Parkersburg-Marietta area does 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.

Factor 8: Jurisdictional Boundaries (e.g., Existing PM and Ozone Areas)

In evaluating the jurisdictional boundary factor, consideration is being given to existing boundaries and organizations that may facilitate air quality planning and the implementation of control measures to attain the standard. Areas designated as nonattainment (e.g., for $PM_{2.5}$ or 8-hour ozone standard) represent important boundaries for state air quality planning.

From an EPA Region III perspective, the major jurisdictional boundary in the Parkersburg-Marietta area is the State line between West Virginia and Ohio. The violating monitor is in Wood County, WV, but as shown in the above discussion, it is being affected by emissions from Washington County, OH. Due to the effect of emissions from Washington County, OH, on the violating monitor in Wood County, WV, it is important that the states of West Virginia and Ohio work collaboratively to reduce such emissions.

On the other hand, areas designated as 8-hour ozone nonattainment areas are also important boundaries for State air quality planning. Wood County in West Virginia and Washington County in Ohio were included in the ozone nonattainment area associated with the Parkesburg-Marietta area. They now comprise the Parkesburg-Marietta ozone maintenance area. A goal in designating $PM_{2.5}$ nonattainment areas is to achieve a degree of consistency with ozone nonattainment areas.

Factor 9: Level of Control of Emission Sources

This factor considers emission controls currently implemented for major sources in the Parkersburg-Marietta area.

The emission estimates on Table 1.0 (under Factor 1) reflect implementation of control strategies implemented by the states in the Parkersburg-Marietta area before or during 2005 that may influence emissions of any component of $PM_{2.5}$ emissions (i.e., total carbon, SO_2, NO_x, and crustal $PM_{2.5}$).

In West Virginia and Ohio, there may be some emission reductions of SO_2 and NOx subsequent to 2005 that are not accounted for elsewhere in this analysis, due to new controls at large electric generating units (EGUs).

Table 9.0 shows emissions and controls (current and projected) for EGUs with SO_2 plus NO_x emissions greater than 5000 tons. Data was obtained from the 2006 National Electric Energy Data System (NEEDS) database. Tables 9.1 shows emissions for the same EGUs for the years 2002 through 2007. The data was obtained from the emissions section of EPA's Clean Air Markets Division (CAMD) website:
http://camddataandmaps.epa.gov/gdm/index.cfm?fuseaction=emissions.wizard

Washington County, OH and Pleasants County, WV are the only counties in the Parkersburg-Marietta area with EGUs which had 2006 SO_2 plus NO_x emissions greater than 5000 tons. As can be seen from Tables 9.0 and 9.1, emissions from the EGUs in Washington and Pleasants Counties have remained relatively constant since 2005. Therefore, the level of control of emission sources did not play a significant role in the decision-making process.

As noted above, emissions from Washington and Pleasants Counties appear to have high levels of sulfur dioxide, indicating a contribution to the high sulfate levels (more than 25 $\mu g/m^3$) observed on high $PM_{2.5}$ days in the Parkersburg-Marietta area (see Figure 1.1, above). Based upon the data set forth below, EPA believes that the combination of the sulfur dioxides emissions from the two EGUs in Pleasants County contribute to these high sulfate levels.

Table 9.0. EGUs with SO_2 plus NO_x emissions > 5000 tons, from the 2006 NEEDS EGU database

County	Plant Name	Plant Type	Unique ID Final	2006 SO2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
Washington County, OH	Muskingum River	Coal Steam	2872_B_5	49,594	7,567			2005	585.0
			2872_B_3	20,133	2,646				205.0
			2872_B_4	16,155	2,210				205.0
			2872_B_2	18,734	2,654				190.0
			2872_B_1	18,368	2,869				190.0
	Richard Gorsuch	Coal Steam	7286_B_2	5,781	732				50.0
			7286_B_1	5,261	665				50.0
			7286_B_4	4,841	645				50.0
			7286_B_3	4,599	594				50.0
Pleasants County, WV	Pleasants Power Station	Coal Steam	6004_B_1	23,336	5,444	1979	97.0	2003	639.0
			6004_B_2	19,532	4,069	1980	97.0	2003	639.0
	Willow Island	Coal Steam	3946_B_2	3,028	1,993				181.0
			3946_B_1	831	351				54.0

Table 9.1. EGU 2002 to 2007 Emissions from EPA's CAMD

Muskingum River, Washington County, OH, Facility ID: 2872					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	115,525.8	27,338.9	8,163,693.8	79,568,209
2003	12	139,120.4	25,443.2	7,553,225.2	73,618,137
2004	12	141,151.5	20,937.1	7,488,800.1	72,990,175
2005	12	134,562.8	15,696.9	7,093,557.6	69,138,013
2006	12	122,983.7	17,945.8	7,022,055.7	68,441,134
2007	12	132,458.9	21,005.9	8,050,570.1	78,465,661
Richard Gorsuch, Washington County, OH, Facility ID: 7286					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	31,006.4	3,227.7	1,731,019.9	16,871,555
2003	12	29,212.8	2,917.9	1,620,171.0	15,791,143
2004	12	29,664.5	2,625.0	1,623,635.8	15,824,934
2005	12	23,612.4	2,309.1	1,411,187.1	13,754,229
2006	12	20,482.7	2,635.7	1,459,806.4	14,228,154
2007	12	27,357.8	3,352.0	1,778,479.8	17,341,796
Pleasants Power Station, Pleasants County, WV, Facility ID: 6004					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	41,909.1	13,714.4	7,705,839.5	75,105,623
2003	12	44,396.2	9,273.4	7,931,743.2	77,307,448
2004	12	38,782.2	6,464.5	6,763,256.1	65,918,797
2005	12	47,203.5	9,790.7	8,782,931.2	85,603,621
2006	12	42,867.1	9,512.2	7,992,028.6	77,895,030
2007	12	38,437.5	8,762.7	7,471,145.8	72,818,187
Willow Island Power Station, Pleasants County, WV, Facility ID: 3946					
Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	14,456.5	5,945.8	1,369,016.7	13,314,118
2003	12	12,139.5	5,297.0	1,284,656.5	12,521,089
2004	12	5,527.0	2,744.3	609,979.6	5,945,251
2005	12	5,091.4	2,525.3	717,516.8	6,993,335
2006	12	3,859.2	2,344.3	744,192.0	7,253,283
2007	12	4,327.7	2,448.9	799,862.3	7,795,985

In considering county-level emissions, EPA considered 2005 emissions data from the National Emissions Inventory. EPA recognizes that certain power plants or large sources of emissions in this potential nonattainment area may have installed emission controls or otherwise significantly reduced emissions since 2005 and that this information may not be reflected in this analysis. EPA will consider additional information on emission controls in making final designation decisions. In cases where specific plants installed emission controls subsequent to 2005, or plan to install such controls in the near future, EPA requests additional information on:

- the plant name, city, county, and township/tax district,
- identification of emission units at the plant, fuel use, and megawatt capacity,
- identification of emission units on which controls will be installed, and units on which controls will not be installed,
- 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,

- the estimated pollutant emissions for each unit before and after implementation of emission controls, and
- 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 SIP revision, operating permit requirement, consent decree).

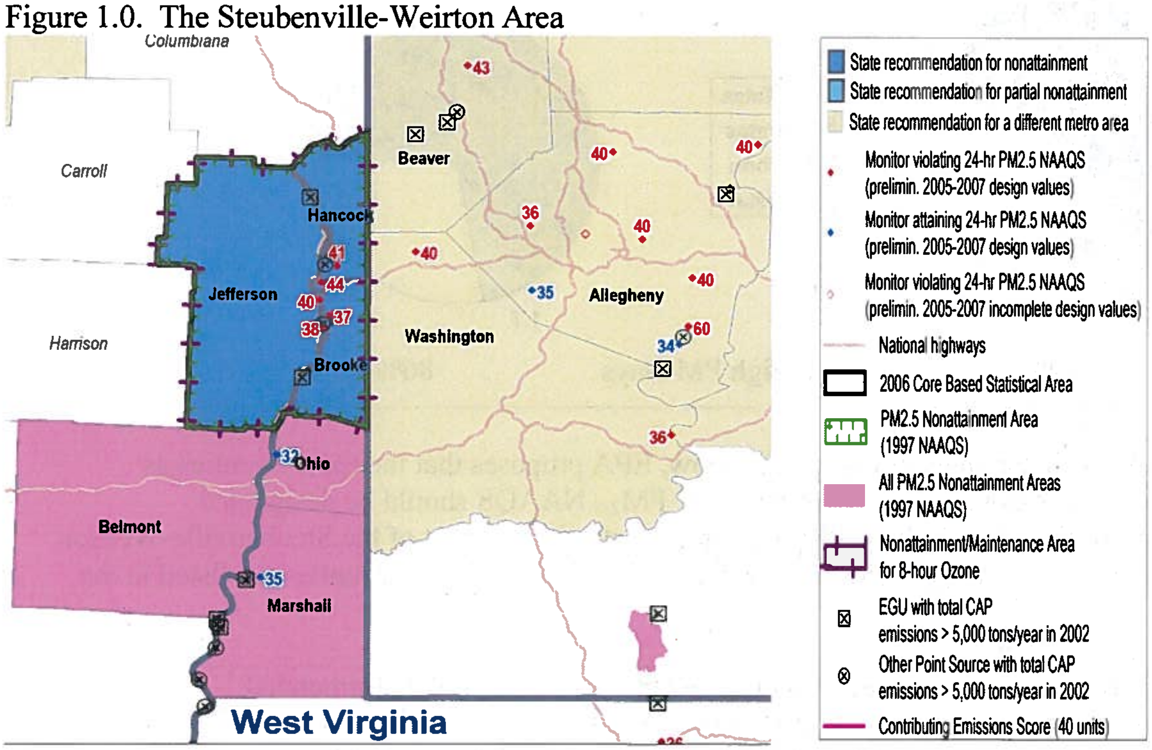
EPA Technical Analysis for Steubenville-Weirton Area

Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those areas that contribute to violations. This technical analysis for Steubenville-Weirton area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates the counties that potentially contribute to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

Figure 1.0 is a map which identifies the counties in Steubenville-Weirton area and provides other relevant information such as the locations and design values of air quality monitors, the metropolitan area boundary, and counties recommended as nonattainment by the State.

Figure 1.0. The Steubenville-Weirton Area

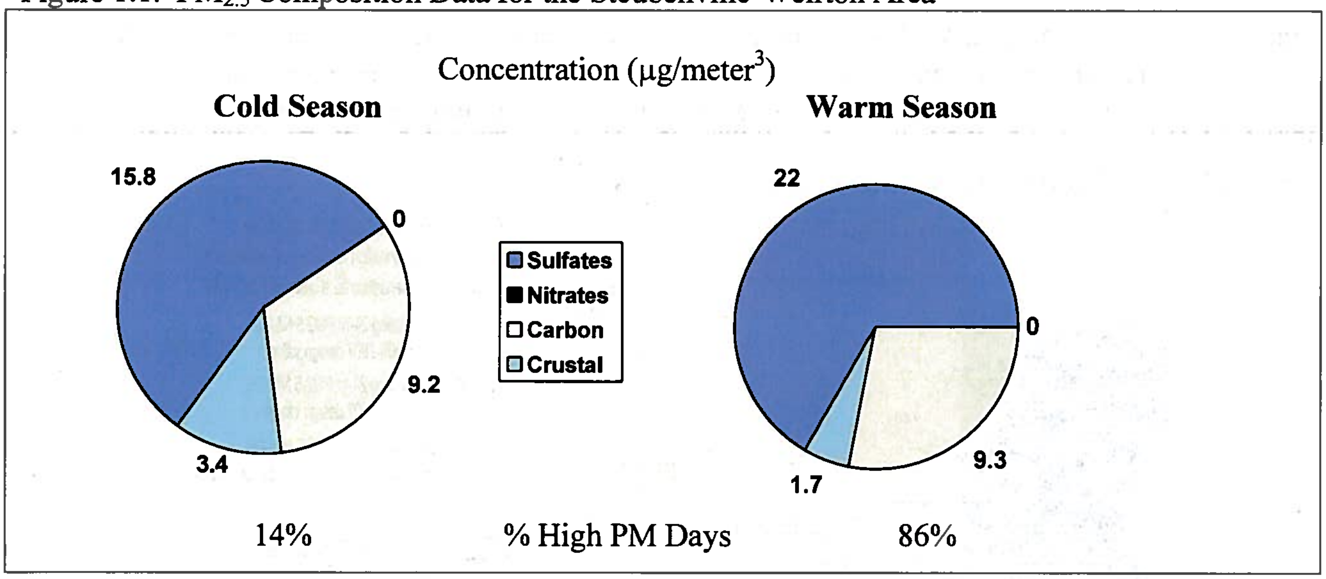


For this area, EPA previously established $PM_{2.5}$ nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS that included three full counties (Brooke, Hancock and Jefferson Counties), with Brooke County and Hancock County being located in West Virginia.

In November 2007, West Virginia recommended that the same counties, Brooke and Hancock Counties, be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. See the November 9, 2007 letter from the West Virginia Department of Environmental Protection, received on November 13, 2007.
This data is from Federal Reference Method (FRM) and Federal Equivalent Method (FEM) monitors located in the state.

Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations occur predominantly in the warm seasons and the average chemical composition of the highest days are typically characterized by high levels of sulfates. See Figure 1.1, below.

Figure 1.1. $PM_{2.5}$ Composition Data for the Steubenville-Weirton Area



Based on EPA's 9-factor analysis described below, EPA proposes that the same counties as previously designated nonattainment for the 1997 $PM_{2.5}$ NAAQS should be designated nonattainment for the 2006 24-hour $PM_{2.5}$ air-quality standard as part of the Steubenville-Weirton nonattainment area, based upon currently available information. These counties are listed in the table below.

Steubenville-Weirton	State-Recommended Nonattainment Counties	EPA-Recommended Nonattainment Counties
West Virginia	Brooke County Hancock County	Brooke County Hancock County

The following is a summary of the 9-factor analysis for the EPA Region III portion of the Steubenville-Weirton area.

Hancock and Brooke Counties, along with Jefferson County, OH, make up the Steubenville-Weirton nonattainment area for the 1997 $PM_{2.5}$ NAAQS as well as the Steubenville-Weirton metropolitan statistical area (MSA). All three of these counties have air quality monitors that show violations of 2006 24-hour $PM_{2.5}$ NAAQS, considering 2005-2007 data. These counties are economically linked to each other. The vast majority of commuters from these counties work within the MSA: Hancock (91%), Brooke (89%), and Jefferson (85%). Jefferson County, OH, has two large power plants accounting for close to 200,000 tons of SO_2 emissions in 2005. Weirton Steel, a large source of direct $PM_{2.5}$ emissions, is located in Hancock County, WV. Hancock and Brooke Counties also contribute to particulate matter concentrations in the Steubenville-Weirton area through population-based emissions sources, such as those from vehicles and other small area sources. Hancock and Brooke Counties have similar population densities and similar vehicle miles traveled (VMT) data. These two counties also have experienced similar decreases in population in recent years. Meteorological data shows that the air quality monitors in the Steubenville-Weirton area are influenced by winds from all directions. However, in Hancock and Brooke Counties, it appears that many more high $PM_{2.5}$ days (days with monitored values greater than $35\mu g/m^3$) coincide with winds from the southwest, south, and west. This data indicates that the Steubenville-Weirton area is being influenced by local emissions as well as emissions and transported pollution from the many metropolitan areas around it and power plants in the Ohio River Valley. Considering these factors, EPA has determined that it is appropriate to include Hancock and Brooke Counties, WV, in the EPA Region 3 portion of Steubenville-Weirton nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS.

Most of Allegheny County, and Beaver and Washington Counties are part of the Pittsburgh-Beaver Valley nonattainment area for the 1997 $PM_{2.5}$ NAAQS. A portion of Allegheny County is in the Liberty-Clairton nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Pennsylvania has recommended that these counties be included in the same nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. The Pittsburgh-Beaver Valley and Liberty-Clairton areas are separate and distinct from the Steubenville-Weirton area, and are not associated economically or jurisdictionally. They are in separate metropolitan statistical areas and are served by separate metropolitan planning boards. Also, there is little commuting between the two areas. Accordingly, these counties will be excluded from further consideration for inclusion within the Steubenville-Weirton nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

Factor 1: Emissions Data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: "$PM_{2.5}$ emissions total," "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," "SO_2," "NO_x," "VOCs," and "NH_3." "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1.0 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs (volatile organic compounds) and NH_3 (ammonia) are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

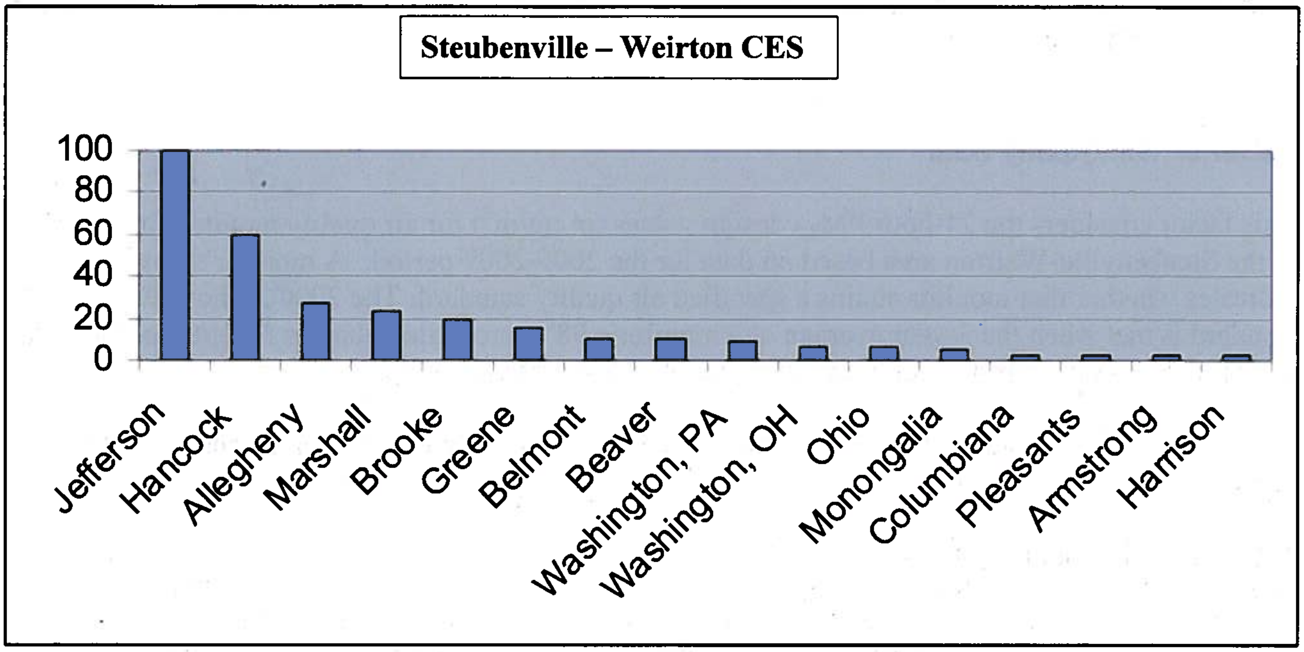
EPA also considered the Contributing Emissions Score (CES) for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive way for consideration of data for these factors. A summary of the CES is included in Enclosure 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

Table 1.0 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the Steubenville-Weirton area. Counties that are part of the Steubenville-Weirton nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface. Counties are listed in descending order by CES, except that counties in the Steubenville-Weirton nonattainment area for the 1997 $PM_{2.5}$ NAAQS are listed first. Figure 1.2 is a graphical representation of the higher CES values set forth in Table 1.0. See Table 1.0 and Figure 1.2, below.

Table 1.0. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County	State Recommended Nonattainment ?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ Emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NO_x (tpy)	VOCs (tpy)	NH_3 (tpy)
Jefferson, OH	**Yes**	**100**	**11,409**	**722**	**10,686**	**224,025**	**46,158**	**3,693**	**297**
Hancock, WV	**Yes**	**60**	**3,781**	**704**	**3,077**	**2,039**	**4,404**	**2,298**	**830**
Brooke, WV	**Yes**	**19**	**579**	**192**	**388**	**1,349**	**2,131**	**3,436**	**210**
Allegheny, PA	Yes- other area	27	5,221	2,245	2,975	51,471	63,290	46,690	2,249
Marshall, WV	No	23	4,604	309	4,295	118,021	39,932	3,230	146
Beaver, PA	Yes -other area	11	2,909	451	2,457	45,452	33,400	7,424	450
Belmont, OH	No	11	2,976	392	2,583	38,026	9,991	4,762	668
Washington, PA	Yes - other area	9	1,683	514	1,170	6,318	16,311	9,297	919
Ohio, WV	No	6	303	147	157	541	3,326	2,633	108
Columbiana, OH	No	3	805	366	441	525	4,377	4,933	1,956
Carroll, OH	No	1	338	141	196	123	1,627	1,482	409
Harrison, OH	No	1	215	96	120	130	659	1,079	355

Figure 1.2. CES Values for the Steubenville-Weirton Area (Including Non-Contiguous Counties)



The above data in Table 1.0 and Figure 1.2 indicates that Jefferson County, OH has the highest CES and the highest emissions of $PM_{2.5}$ and SO_2. Furthermore, Allegheny County, PA has the second highest $PM_{2.5}$ emissions and Marshall County, WV has the second highest SO_2 emission. Emissions from Hancock County, WV are low compared to Jefferson and Allegheny Counties. However, it has the second highest CES. This is likely due to high levels of direct $PM_{2.5}$ emissions from sources in the county, including the Weirton Steel facility.

Most of Allegheny County (except for the Liberty-Clairton area) in Pennsylvania is part of the Pittsburgh-Beaver Valley nonattainment area for the 1997 $PM_{2.5}$ NAAQS. The Liberty-Clairton nonattainment area, comprised of the five municipalities within Allegheny County, is designated as a separate nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Pennsylvania has recommended that Allegheny County be included in those nonattainment areas for the 2006 24-hour PM NAAQS. As explained in detail in Factor 8, below, Allegheny County, PA, the Pittsburgh-Beaver Valley area, and the Liberty-Clairton area are distinct from the Steubenville-Weirton area. They are in separate metropolitan statistical areas (MSAs) and are served by separate metropolitan planning organizations. Therefore, EPA has determined that it is appropriate to include Allegheny County in the separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that emissions from the Allegheny County contribute to the Steubenville-Weirton nonattainment area, that contribution will be lessened by emission controls put in place in those separate nonattainment areas.

As shown in Factor 9, below, emissions from Marshall County have been greatly reduced since 2005. Therefore, the impact of emissions from Marshall County on the Steubenville-Weirton area has also been greatly reduced, and the CES value for Marshall County would likely be much lower if it were calculated with these lower emissions. Furthermore, Marshall County is in a separate

MSA and is served by a separate metropolitan planning board. Furthermore, there is little commuting from Marshall County into the Steubenville-Weirton MSA. Therefore, EPA has determined that Marshall County should not be included in the Steubenville-Weirton nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS.

Factor 2: Air Quality Data

This factor considers the 24-hour $PM_{2.5}$ design values (in $\mu g/m^3$) for air quality monitors in counties in the Steubenville-Weirton area based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air quality standard. The 2006 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98^{th} percentile values is $35 \mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Steubenville-Weirton area are shown in Table 2.0.

Table 2.0. Air Quality Data

County	State Recommended Nonattainment?	24-hr $PM_{2.5}$ Design Values, 2004-2006 ($\mu g/m^3$)	24-hr $PM_{2.5}$ Design Values, 2004-2006 ($\mu g/m^3$)	24-hr $PM_{2.5}$ Design Values, 2004-2006 ($\mu g/m^3$)
Jefferson, OH	**Yes**	**46**	**43**	**40**
Hancock, WV	**Yes**	**45**	**40**	**41**
Brooke, WV	**Yes**	**42**	**43**	**44**
Allegheny, PA	Yes	68	65	60
Marshall, WV	No	33	34	35
Beaver, PA	Yes	43	45	43
Belmont, OH	No	No monitor		
Washington, PA	Yes	36	38	40
Ohio, WV	No	No monitor		
Columbiana, OH	No	No monitor		
Carroll, OH	No	No monitor		
Harrison, OH	No	No monitor		
Note: Design values shown in red represent violations of the standard.				

Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with a FRM or FEM monitor. All data from Special Purpose Monitors (SPM) using an FRM, FEM, or Alternative Reference Method (ARM) which has operated for more than 24 months is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hour $PM_{2.5}$ NAAQS for designation purposes.

Based upon the above data related to areas within EPA Region III, monitors located in Hancock and Brooke Counties, in West Virginia, and in Allegheny, Beaver, and Washington Counties, in Pennsylvania show violations of the 2006 24-hour $PM_{2.5}$ standard. Therefore, these counties are candidates for inclusion in the Steubenville-Weirton nonattainment area. However, most of Allegheny, Beaver, and Washington Counties are part of the Pittsburgh-Beaver Valley nonattainment area for the 1997 $PM_{2.5}$ NAAQS. A portion of Allegheny County is in the Liberty-Clairton nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Pennsylvania has recommended that these counties be included in the same nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. The Pittsburgh-Beaver Valley and Liberty-Clairton areas are separate and distinct from the Steubenville-Weirton area, and are not associated economically or jurisdictionally. They are in separate metropolitan statistical areas and are served by separate metropolitan planning boards. Also, there is little commuting between the two areas. Therefore, EPA has determined that it is appropriate to include Allegheny, Beaver and Washington Counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that emissions from the Allegheny, Beaver and Washington Counties contribute to the Steubenville-Weirton nonattainment area, that contribution will be lessened by emission controls put in place in those separate nonattainment areas.

However, the absence of a violating monitor alone is not a sufficient reason to eliminate counties as candidates for nonattainment status. Each county has been evaluated based on the weight of evidence of the nine factors and other relevant information.

Factor 3: Population Density and Degree of Urbanization (Including Commercial Development)

Table 3.0, below, shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard.

Table 3.0. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Jefferson, OH	**Yes**	**70,631**	**172**
Hancock, WV	**Yes**	**31,191**	**354**
Brooke, WV	**Yes**	**24,474**	**265**
Allegheny, PA	Yes	1,233,036	1,658
Marshall, WV	No	34,250	110
Beaver, PA	Yes	176,825	399
Belmont, OH	No	69,089	128
Washington, PA	Yes	206,418	240
Ohio, WV	No	44,958	414
Columbiana, OH	No	110,636	207
Carroll, OH	No	29,252	73
Harrison, OH	No	15,881	39

The above data indicates that Jefferson, Hancock, and Brooke counties, which are included in the Steubenville-Weirton MSA and the Steubenville-Weirton nonattainment area for the 1997 $PM_{2.5}$ NAAQS, all have much lower populations than Allegheny, Beaver, and Washington Counties in the Pittsburgh MSA. The Steubenville-Weirton and Pittsburgh MSAs are separate and distinct areas, with little commuting between them. They are not economically or jurisdictionally associated with each other. Therefore, EPA has determined that it is appropriate to include Allegheny, Beaver and Washington Counties in separate nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that population-based emissions from the Allegheny, Beaver and Washington Counties contribute to the Steubenville-Weirton nonattainment area, that contribution will be lessened by emission controls put in place in those separate nonattainment areas.

Marshall County, WV and Belmont, Carroll, and Harrison Counties, OH, have much lower population densities than the other counties in this analysis. Therefore, these counties rank low for this factor.

Factor 4: Traffic and Commuting Patterns

This factor considers the number of commuters in each county who drive to another county within the Steubenville-Weirton area, the percent of total commuters in each county who commute to other counties within the Steubenville-Weirton area, as well as the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 4.0). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

Table 4.0. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (millions)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into & within statistical area
Jefferson, OH	**Yes**	**684**	**24,330**	**85**	**22,933**
Hancock, WV	**Yes**	**187**	**12,820**	**91**	**10,575**
Brooke, WV	**Yes**	**210**	**9,320**	**89**	**8,091**
Allegheny, PA	Yes	10,003	551,530	95	430
Marshall, WV	No	217	790	6	310
Beaver, PA	Yes	1,522	71,680	89	245
Belmont, OH	No	1,111	1,620	6	1,280
Washington, PA	Yes	2,399	82,330	92	859
Ohio, WV	No	514	1,650	8	880
Columbiana, OH	No	872	4,760	10	2,110
Carroll, OH	No	173	190	1	180
Harrison, OH	No	146	750	12	690

Note: The 2005 VMT data used for Tables 4.0 and 5.0 of the 9-factor analysis has been derived using methodology similar to that described in "Documentation for the final 2002 Mobile National Emissions Inventory, Version 3, September 2007, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002_mobile_nei_version_3_report_092807.pdf . The 2005 VMT data were taken from documentation which is still draft, but which should be released in 2008. The United States 2000 Census County-to-County Worker Flow Files can be found at: http://www.cencus.gov/population/www/cen2000/commuting/index.html.

The listing of counties in Table 4.0 reflects a ranking based on the number of people commuting to other counties. The counties that are in the Steubenville-Weirton nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

As mentioned above, Jefferson, Hancock, and Brooke counties are in the Steubenville-Weirton MSA and the Steubenville-Weirton nonattainment area for the 1997 $PM_{2.5}$ NAAQS. The above data indicates that the VMT for these counties is much lower than the VMT for Allegheny, Beaver, and Washington Counties in the Pittsburgh MSA, or Belmont, OH in the Wheeling MSA. However, very few commuters from Allegheny, Beaver, and Washington Counties, which are in the Pittsburgh MSA, commute into the Steubenville-Weirton MSA. Jefferson, Hancock, and Brooke Counties have the highest numbers of commuters into and within the MSA. Jefferson and Hancock Counties have the highest CESs. Therefore, these counties are candidates for inclusion within the Steubenville-Weirton nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

Marshall County, WV and Carroll and Harrison Counties, OH, have much lower VMT than the other counties in this analysis. They also have very few commuters traveling into the Steubenville-Weirton MSA. Therefore, these counties rank low for this factor.

Factor 5: Growth Rates and Patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled for 1996-2005 for counties in the Steubenville-Weirton area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and is likely to be contributing to fine particle concentrations in the area.

Table 5.0, below, presents data related to population, population growth, VMT and VMT growth for counties that are within the Steubenville-Weirton area. Counties that are part of the Steubenville-Weirton nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

Table 5.0. Population and VMT Values and Percent Change

Location	Population (2005)	Population Density (2005)	Population % change (2000 - 2005)	2005 VMT (millions)	VMT % change (1996 to 2005)
Jefferson, OH	**70,631**	172	**(4)**	**684**	**(6)**
Hancock, WV	**31,191**	354	**(4)**	**187**	**(32)**
Brooke, WV	**24,474**	265	**(4)**	**210**	**0**
Allegheny, PA	1,233,036	1658	(4)	10,003	(3)
Marshall, WV	34,250	110	(3)	217	(11)
Beaver, PA	76,825	399	(2)	1,522	0
Belmont, OH	69,089	128	(1)	1,111	13
Washington, PA	206,418	240	2	2,399	25
Ohio, WV	44,958	414	(5)	514	5
Columbiana, OH	110,636	207	(1)	72	(2)
Carroll, OH	29,252	73	1	173	(7)
Harrison, OH	15,881	39	0.4	146	9

All counties with a CES greater than ten, as listed in Table 1.0, above, have experienced decreases in population from 2000 to 2005. Similarly, these counties have experienced zero or negative growth in VMT from 1996 to 2005. Consequently, the above data did not play a significant role in this recommendation.

Factor 6: Meteorology (Weather/Transport patterns)

For this factor, EPA considered data from National Weather Service instruments in the area. Wind direction and wind speed data for 2004-2006 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high days are defined as days where any FRM or FEM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

Meteorology data is also considered in each county's Contributing Emissions Score (CES) because the method for deriving the CES included an analysis of trajectories of air masses for high $PM_{2.5}$ days.

For each air quality monitoring site, EPA developed a pollution trajectory plot, or "pollution rose", to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. The figure identifies 24-hour $PM_{2.5}$ values by color; days exceeding $35\mu g/m^3$ are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of an icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

Table 6.0 lists trajectory factors and distant factors for counties within the Steubenville-Weirton area. Counties that are part of the Steubenville-Weirton nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

Table 6.0. Trajectory and Distance Factors

County, State	Trajectory Factor Cold Season	Trajectory Factor Warm Season	Distance Factor (miles)
Jefferson, OH	**76**	**75**	**10.8**
Hancock, WV	**76**	**70**	**13.1**
Brooke, WV	**98**	**95**	**11.4**
Allegheny, PA	43	33	38.9
Marshall, WV	91	95	35
Beaver, PA	50	38	29.2
Belmont, OH	69	66	28.6
Washington, PA	75	69	28.8
Ohio, WV	100	100	20.3
Columbiana, OH	34	28	26.4
Carroll, OH	29	24	23
Harrison, OH	47	42	20

Base upon the above data, Ohio County, WV has the highest trajectory factors: 100 for both cold and warm season. However, based upon data set forth in Table 1.0, Ohio County has low emissions. Brooke County, part of the Steubenville-Weirton MSA and the Steubenville-Weirton nonattainment area for the 1997 $PM_{2.5}$ NAAQS, has the second highest trajectory factors: 98 for cold season and 95 for the high season. The third highest is Marshall County, WV. Based upon data set forth in Table 1.0, Marshall County had relatively high emissions in 2005. However, as explained below, these emissions have decreased considerably since 2005. (See Factor 9, below) Marshall and Ohio Counties are part of the Wheeling nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Jefferson and Hancock Counties have the next highest CESs. As mentioned above, these counties are in the Steubenville-Weirton MSA and in the Steubenville-Weirton nonattainment area for the 1997 $PM_{2.5}$ NAAQS.

The "pollution roses" shown below for the Steubenville-Weirton area, see Figures 6.0 through 6.4, demonstrate that the monitors in Hancock, Brooke, and Jefferson Counties are influenced by winds from all directions. However, in Hancock and Brooke Counties, it appears that many more high $PM_{2.5}$ days (days with monitored values greater than $35 \mu g/m^3$) coincide with winds from the southwest, south, and west. However, a few of these high $PM_{2.5}$ days show winds from the south east, and one rare day with winds from the northeast. High $PM_{2.5}$ days in Jefferson County are predominantly during days with winds from the west, but show more days with winds from the northeast and northwest than Hancock and Brooke Counties. This data indicates that the Steubenville-Weirton area is being influenced by the many metropolitan areas around it, including the Canton, Youngstown, Pittsburgh, and Wheeling area.

Figure 6.0. Pollution Trajectory Plot for Hancock County, WV (Site 54-029-0011)

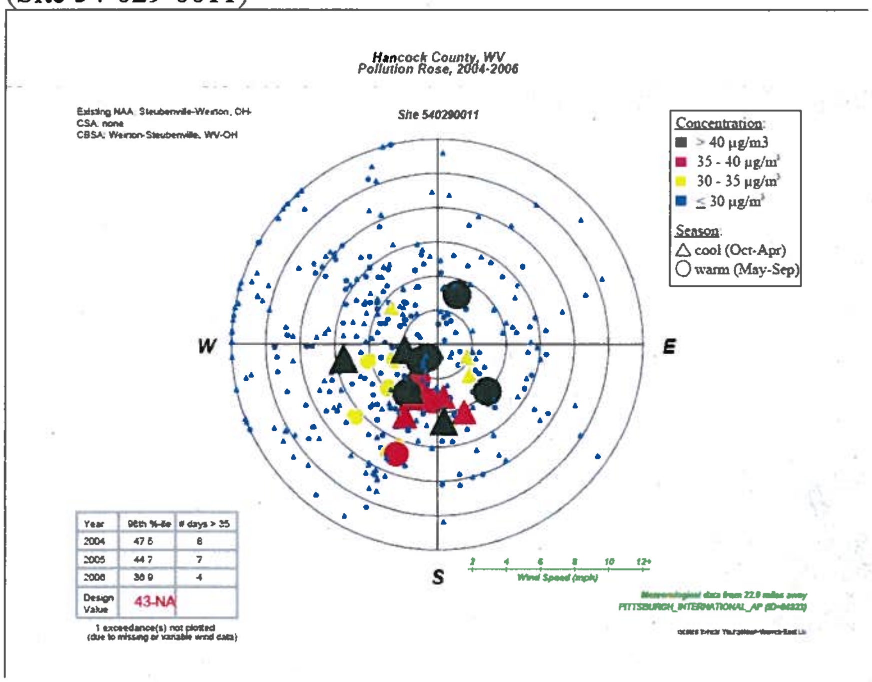


Figure 6.1. Pollution Trajectory Plot for Hancock County, WV (Site 54-029-1004)

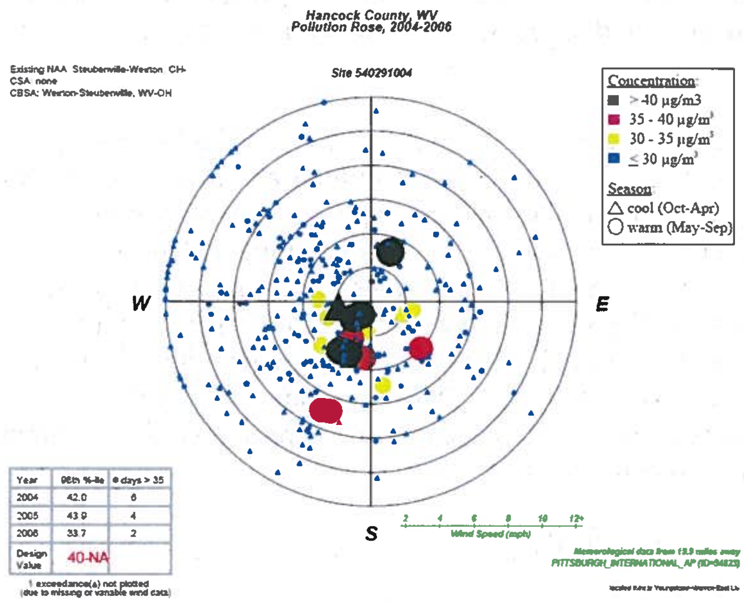


Figure 6.2. Pollution Trajectory Plot for Brooke County, WV (Site 54-009-0005)

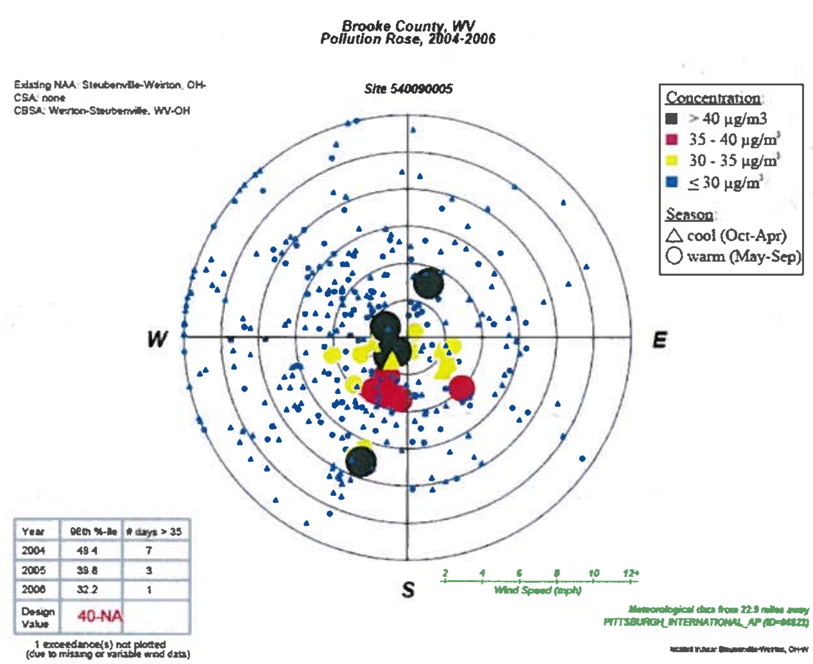


Figure 6.3. Pollution Trajectory Plot for Jefferson County, OH (Site 39-081-0017)

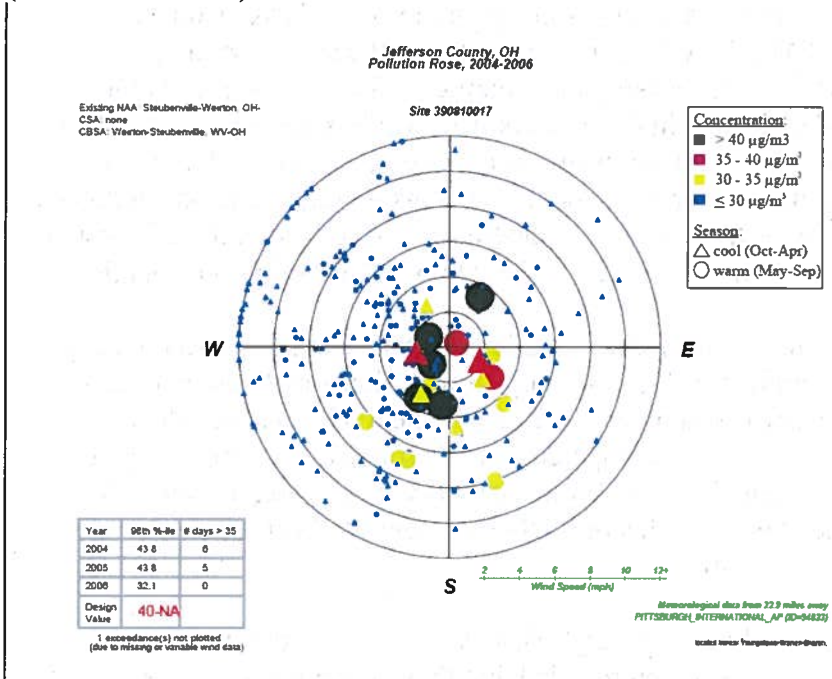
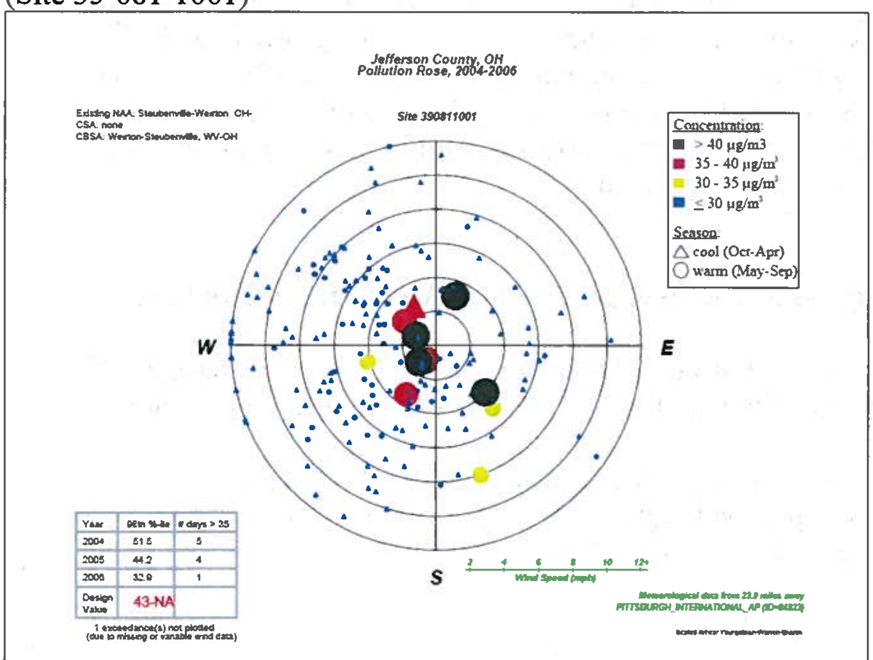


Figure 6.4. Pollution Trajectory Plot for Jefferson County, OH (Site 35-081-1001)



The pollution roses for Hancock County, Figures 6.0 and 6.1, above, show that high PM days occur predominantly when winds are from the southwest, i.e., Jefferson County and other areas further southwest. Figures 6.0 and 6.1 also show occasional high PM days with winds from due south and from the northeast and southeast. This indicates an influence from Ohio and possibly Marshall

Counties, as well as Beaver and Washington Counties. Figure 6.2, the pollution rose for Brooke County, WV shows that high PM days occur predominantly when winds are from the south-southwest and west, indicating that emissions from Jefferson County impact Brooke County. Figure 6.2 also shows occasional high PM days with winds from the northeast and southeast. This indicates influences from Hancock, Beaver and Washington Counties. The pollution roses for Jefferson County, OH, Figures 6.3 and 6.4, show high PM days with winds at low speeds from all points of the compass. This is indicative of an impact from a local emission source. Jefferson County has two large power plants accounting for close to 200,000 tons of SO_2 emissions in 2005. Figures 6.3 and 6.4 show occasional high PM days with winds from the southeast and southwest at higher speeds. This indicates influences from Belmont, Brooke, Ohio and Washington Counties.

Jefferson County ranks the highest for this factor. Beaver and Washington Counties also rank high for this factor. The pollution rose data indicates that Belmont, Brooke, Hancock Ohio and Marshall Counties occasional impacts the air quality monitors in the Steubenville-Weirton area. However, their ranking for this factor is relatively low, when compared to Jefferson, Beaver, and Washington Counties. Jefferson County is part of the Steubenville-Weirton nonattainment area for the 1997 $PM_{2.5}$ NAAQS, and has been recommended for inclusion in the Steubenville-Weirton nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

Beaver and Washington Counties are part of the Pittsburgh-Beaver Valley nonattainment area for the 1997 $PM_{2.5}$ NAAQS, and Pennsylvania has recommended that they be included in the same nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS. Beaver and Washington Counties are in an area that is separate and distinct from the Steubenville-Weirton area. They are in separate MSAs and are served by separate metropolitan planning boards. Also, there is little commuting between the two areas. Therefore, EPA has determined that it is appropriate to include Beaver and Washington Counties in the Pittsburgh-Beaver Valley nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS. To the extent that emissions from the Beaver and Washington Counties contribute to the Steubenville-Weirton nonattainment area, that contribution will be lessened by emission controls put in place in that separate nonattainment area.

Factor 7: Geography/Topography (Mountain Ranges or Other Air Basin Boundaries)

The geography/topography analysis looks at 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 Steubenville-Weirton area.

The Steubenville-Weirton area does 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.

Factor 8: Jurisdictional Boundaries (e.g., Existing $PM_{2.5}$ and Ozone Areas)

In evaluating the jurisdictional boundary factor, consideration should be given to existing boundaries and organizations that may facilitate air quality planning and the implementation of control measures to attain the standard. Areas designated as nonattainment (e.g., for $PM_{2.5}$ or 8-hour ozone standard) represent important boundaries for state air quality planning.

From an EPA Region 3 perspective, the major jurisdictional boundary in the Steubenville-Weirton area is the State line between West Virginia and Ohio. Counties with air-quality monitors that violate the 2006 24-hour $PM_{2.5}$ NAAQS in the Steubenville-Weirton area include Jefferson County, OH and Brooke and Hancock, WV. It is important that the states of West Virginia and Ohio work collaboratively to reduce such violations.

On the other hand, the areas designated as 8-hour ozone nonattainment areas are also important boundaries for State air-quality planning. Hancock and Brooke Counties in EPA Region 3, along with Jefferson County, OH, in EPA Region 5, were included in the ozone nonattainment area associated with the Steubenville-Weirton area. Now these counties comprise the Steubenville-Weirton ozone maintenance area. Other counties included in this technical analysis are also designated as 8-hour ozone nonattainment areas, but are not designated nonattainment within the Steubenville-Weirton area. A goal in designating $PM_{2.5}$ nonattainment areas is to achieve a degree of consistency with ozone nonattainment areas. Comparison of ozone areas with potential $PM_{2.5}$ nonattainment areas, therefore, gives added weight to designation of Hancock and Brooke Counties as nonattainment for the 2006 $PM_{2.5}$ NAAQS.

The Steubenville-Weirton area borders other large metropolitan areas. These Metropolitan areas are in separate metropolitan statistical areas (MSAs):

- The Steubenville-Weirton area includes Brooke and Hancock Counties, WV, and Jefferson County, OH.
- The Pittsburgh MSA includes Allegheny, Armstrong, Beaver, Butler, Fayette, Washington, and Westmoreland Counties in Pennsylvania. The Pittsburgh MSA plus the New Castle Micropolitan Statistical Area (Lawrence County) make up the Pittsburgh-New Castle Combined Statistical Area (CSA)
- The Wheeling MSA is comprised of Marshall and Ohio Counties, WV and Belmont County, OH.

These areas are served by separate metropolitan planning organizations (MPOs). The MPO for the Steubenville-Weirton area is the Brooke-Hancock-Jefferson Metropolitan Planning Commission. The Wheeling area is served by the Belomar Regional Counci The Southwestern Pennsylvania Commission is the MPO for the Pittsburgh- New Castle CSA, plus Greene County, PA.

Factor 9: Level of Control of Emission Sources

This factor considers emission controls currently implemented for major sources in the Steubenville-Weirton area.

The emission estimates set forth in Table 1.0 (under Factor 1) reflect implementation of control strategies implemented by the states in the Steubenville-Weirton area before and during 2005 that may influence emissions of any component of $PM_{2.5}$ emissions (i.e., total carbon, SO_2, NOx, and crustal $PM_{2.5}$).

In West Virginia, Ohio and Pennsylvania, there may be some emission reductions of SO_2 and NOx subsequent to 2005 that are not accounted for elsewhere in this analysis, due to new controls at large electric generating units (EGUs).

Table 9.0 shows emissions and controls (current and projected) for EGUs with SO_2 plus NO_x emissions greater than 5000 tons. Data was obtained from the 2006 National Electric Energy Data System (NEEDS) database. Tables 9.1 shows emissions for the same EGUs for the years 2002 through 2007. This data was obtained from the emissions section of EPA's Clean Air Markets Division (CAMD) website:
http://camddataandmaps.epa.gov/gdm/index.cfm?fuseaction=emissions.wizard.

Table 9.0. EGUs with SO_2 plus NO_x emissions > 5000 tons, from the 2006 NEEDS EGU database

County	Plant Name	Unique ID Final	2006 SO2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
Jefferson, OH	Cardinal	2828_B_3	25,320	6,715	2010	95.0	2003	630.0
		2828_B_1	37,115	4,190	2007	95.0	2003	600.0
		2828_B_2	24,445	6,243	2007	95.0	2003	600.0
	W H Sammis	2866_B_7	25,739	6,714	2011	95.0		630.0
		2866_B_6	26,028	6,292	2011	95.0		630.0
		2866_B_5	10,021	2,453		50.0		300.0
		2866_B_1	6,679	1,478		50.0		180.0
		2866_B_2	6,339	1,391		50.0		180.0
		2866_B_3	5,956	1,166		50.0		180.0
		2866_B_4	5,629	1,098		50.0		180.0
Allegheny, PA	Cheswick	8226_B_1	32,373	4,221	2010	95.0	2003	580.0
Marshall, WV	Mitchell	3948_B_1	26,240	8,798	2007	95.0	1993	800.0
		3948_B_2	25,766	7,596	2006	95.0	1994	800.0
	Kammer	3947_B_1	14,251	3,858				210.0
		3947_B_3	14,002	3,748				210.0
		3947_B_2	12,497	3,193				210.0
Beaver, PA	AES Beaver Valley Partners	10676_B_4	0	277	1980	92.0		43.0
		10676_B_2	0	261	1980	92.0		43.0
		10676_B_3	0	250	1980	92.0		43.0
	Bruce Mansfield	6094_B_3	13,307	9,055	1977	98.0	2004	850.0
		6094_B_2	6,984	7,349	1973	98.0	2003	830.0
		6094_B_1	3,140	9,321	1973	98.0	2003	830.0
	G F Weaton	50130_B_BLR1				28.6		56.0

	Power Station	50130_B_BLR2				28.6		56.0
Belmont, OH	R E Burger	2864_B_7	8,730	1,720	2010	95.0		156.0
		2864_B_8	8,565	1,685	2010	95.0		156.0
		2864_B_5	0	0				47.0
		2864_B_6	0	0				47.0
Washington, PA	Beech Hollow Power Project	82704_B_1 -	new plant on line in 2011		2011	95.0	2011	272.0
	Elrama	3098_B_4	2,096	2,730	1975	89.0		173.5
		3098_B_3	922	1,218	1975	89.0		103.0
		3098_B_1	906	1,179	1975	89.0		94.0
		3098_B_2	896	1,169	1975	89.0		94.0
	Mitchell Power Station	3181_B_33	923	2,735	1980	96.9		277.0
		3181_B_3	5	3				27.3
		3181_B_1	2	1				27.3
		3181_B_2	1	0				27.3

Table 9.1. Selected EGU Emissions (2002-2007) from EPA's Clean Air Markets Division

Cardinal, Jefferson County, OH, Facility ID: 2828

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	74,750.6	23,378.8	8,409,740.2	81,967,531
2003	12	96,928.5	20,742.0	9,961,957.8	97,095,065
2004	12	100,134.6	17,494.5	10,258,034.7	99,980,929
2005	12	115,847.6	15,849.9	10,874,807.3	105,992,276
2006	12	86,879.5	17,148.1	10,985,695.2	107,073,045
2007	12	81,288.3	15,595.6	10,598,681.6	103,301,042

WH Sammis, Jefferson County, OH, Facility ID: 2866

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	145,113.8	38,623.2	15,854,575.9	154,533,809
2003	12	164,397.8	40,369.2	16,694,526.2	162,714,725
2004	12	127,113.9	29,626.0	14,196,168.4	138,364,289
2005	12	106,566.1	25,155.7	15,401,305.9	150,110,208
2006	12	86,391.7	20,591.8	15,761,761.9	153,623,312
2007	12	101,788.8	19,957.9	15,677,290.8	152,800,149

Cheswick, Allegheny County, PA, Facility ID: 8226

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	42,017.9	5,761.2	3,376,491.2	32,977,678
2003	12	45,432.8	4,704.7	3,727,784.1	36,352,654
2004	12	40,982.1	4,926.8	3,198,899.6	31,220,642
2005	12	37,320.1	3,913.6	2,921,151.9	28,510,285
2006	12	32,372.6	4,220.7	2,818,930.7	27,498,505
2007	12	34,088.9	4,455.0	2,903,425.1	28,314,056

Mitchell, Marshall County, WV, Facility ID: 3948

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	56,009.2	29,593.1	8,641,347.9	84,222,423
2003	12	59,330.9	29,660.9	8,991,537.2	87,636,839
2004	12	62,617.0	23,575.2	8,627,594.8	84,089,902
2005	12	53,765.1	20,026.4	6,599,845.3	64,325,953
2006	12	52,005.5	16,394.6	7,076,633.7	68,972,995
2007	12	6,084.4	14,682.4	9,033,512.4	88,045,916

Kammer, Marshall County, WV, Facility ID: 3947

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	39,096.2	13,173.9	3,694,205.5	36,005,906
2003	12	42,216.1	11,968.5	3,562,163.2	34,718,914
2004	12	40,016.3	10,883.3	3,320,586.7	32,364,383
2005	12	42,574.0	11,516.3	3,722,892.7	36,285,498
2006	12	40,750.2	10,798.1	3,464,587.1	33,767,863
2007	12	43,126.6	11,100.7	3,991,447.0	38,902,989

AES Beaver Valley Partners, Beaver County, PA, Facility ID: 10676

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	No Data	No Data	No Data	No Data	No Data
2003	6		964.7		4,966,487
2004	6		940.4		5,151,622
2005	6		885.5		4,703,946
2006	6		933.3		4,802,489
2007	6		1,098.8		5,363,531

Bruce Mansfield, Beaver County, PA, Facility ID: 6094

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	30,312.6	29,868.7	15,411,598.8	150,210,585
2003	12	31,923.0	23,500.8	15,265,479.0	148,786,383
2004	12	37,987.8	24,077.3	17,654,260.5	172,068,960
2005	12	33,122.6	23,453.0	17,290,117.2	168,519,577
2006	12	23,431.0	25,724.6	17,375,622.9	169,353,166
2007	12	20,546.2	24,859.0	17,387,361.0	169,467,508

GF Weaton, Beaver County, PA, Facility ID: 50130

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	No Data	No Data	No Data	No Data	No Data
2003	12		1,395.6		7,092,743
2004	9		914.0		5,043,710
2005	6		546.9		3,301,642
2006	6		521.8		3,742,986
2007	6		567.7		3,813,510

R E Burger, Belmont County, OH, Facility ID: 2864

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)

2002	12	35,453.7	6,757.9	2,175,988.7	21,208,479
2003	12	29,929.8	3,603.4	1,783,723.4	17,385,166
2004	12	26,774.5	3,178.5	1,677,688.8	16,351,747
2005	12	37,598.3	5,358.6	2,465,490.1	24,031,261
2006	12	17,295.4	3,405.5	1,950,259.7	19,008,416
2007	12	22,508.5	3,403.3	2,038,237.3	19,865,844

Elrama, Washington County, PA, Facility ID:

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	5,395.2	8,078.7	3,469,030.9	33,811,222
2003	12	3,563.2	5,874.7	2,687,750.0	26,196,355
2004	12	3,645.0	5,520.9	2,500,488.4	24,371,235
2005	12	3,216.0	4,686.0	2,009,719.2	19,587,977
2006	12	4,821.1	6,295.9	2,671,698.0	26,039,969
2007	12	4,267.4	6,027.7	2,343,388.4	22,840,062

Mitchell Power Station, Washington County, PA, Facility ID:

Year	# of Months Reported	SO_2 Tons	NO_x Tons	CO_2 Tons	Heat Input (mmBtu)
2002	12	1,164.3	2,275.2	1,288,266.5	12,598,036
2003	12	1,442.9	2,269.3	1,675,735.1	16,377,269
2004	12	1,268.2	1,859.1	1,520,854.4	14,830,174
2005	12	1,519.8	2,439.9	1,772,999.4	17,290,962
2006	12	930.3	2,739.7	1,734,947.8	16,921,756
2007	12	633.6	1,491.6	908,844.8	8,869,946

Based upon the data set forth in Tables 9.1 and 9.2, it appears that, since 2005, new controls (scrubbers on-line in 2006 and 2007) have resulted in significant reductions at the Mitchell power plant in Marshall County, WV. In 2005, the Mitchell plant emitted 53,765 tons of SO_2 and 20,026 tons of NOx, when the annual heat input was 64,325,953 million British Thermal Units (mmBTUs). In 2007, the Mitchell plant emitted 6,084 tons of SO_2 and 14,682 tons of NOx when the annual heat input was higher, 88,045,916 mmBTUs. This reduction of 47,681 tons of SO_2 and 5,344 tons of NOx from 2005 to 2007 is significant. These reductions are significant compared to the county's total emissions in 2005, 118,021 tons of SO_2 and 39,932 tons of NOx. (These reductions in emissions are equivalent to a 40% reduction in SO_2 and a 13% reduction in NOx.) Therefore, if 2007 emissions data were considered, it is likely that the Marshall County's CES would be lower than the calculated value of 23.

To a lesser degree, SO_2 emissions from the Cardinal plant in Jefferson County have decreased from 2005 to 2007, due to new controls (scrubbers on-line in 2007). In 2005, the Cardinal plant emitted 115,848 tons of SO_2 when the annual heat input was 105,992,276mmBTUs. In 2007, the Cardinal plant emitted 81,288 tons of SO_2 when the annual heat input was 103,301,042mmBTUs. This reduction of 34,560 tons of SO_2 from 2005 to 2007 is 15% of the county's total emissions in 2005, 224,025 tons. NOx emissions in the same period were relatively unchanged. These reductions in emissions from the Cardinal plant are not nearly as substantial as those described above for the Mitchell plant, and would probably not impact Jefferson County's CES.

Considering the emission reductions that have already occurred in Marshall County, EPA has determined that it is appropriate to not include Marshall County in the Steubenville-Weirton nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS. Jefferson County, OH is the only other county in this analysis that has an EGU with new controls since 2005. However, as stated above, the level of control was small compared to what occurred in Marshall County. Therefore for Jefferson County and the other counties in this analysis, data relating to the level of emissions control did not play a significant role in the decision-making process.

EPA recognizes that some of the above listed EGUs are expected to implement additional emission controls in the future.

In considering county-level emissions, EPA considered 2005 emissions data from the National Emissions Inventory. EPA recognizes that certain power plants or large sources of emissions in this potential nonattainment area may have installed emission controls or otherwise significantly reduced emissions since 2005 and that this information may not be reflected in this analysis. EPA will consider additional information on emission controls in making final designation decisions. In cases where specific plants already have installed emission controls subsequent to 2005, or plan to install such controls in the near future, EPA requests additional information on:

- the plant name, city, county, and township/tax district,
- identification of emission units at the plant, fuel use, and megawatt capacity,
- identification of emission units on which controls will be installed, and units on which controls will not be installed,
- 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,
- the estimated pollutant emissions for each unit before and after implementation of emission controls, and
- 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 SIP revision, operating permit requirement, consent decree).