



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

AUG 18 2008

REPLY TO THE ATTENTION OF:

R-19J

The Honorable Ted Strickland
Governor of Ohio
Columbus, Ohio 43215

Dear Governor Strickland:

Thank you for your recommendations on the status of fine particle (PM_{2.5}) pollution throughout Ohio. As you know, 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.

We have reviewed the December 17, 2007, and May 30, 2008, letters from Chris Korleski, Ohio Environmental Protection Agency Director, submitting Ohio's recommendations on air quality designations for the 2006 24-hour PM_{2.5} standards. We have also reviewed the technical information submitted to support Ohio's recommendations. We appreciate the effort your State has made to develop this supporting information. Consistent with the Clean Air Act, this letter is to inform you that the U.S. Environmental Protection Agency intends to make modifications to Ohio's recommended designations and boundaries.

We have enclosed a detailed description of areas where EPA intends to modify your state recommendations, and the basis for such modifications. Your Environmental Director will also receive a copy of this letter and the enclosure. Should you have additional information that you wish EPA to consider in this process, please provide it to us by October 20, 2008.

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

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

Sincerely,

A handwritten signature in cursive script that reads "Lynn Buhl".

Lynn Buhl
Regional Administrator

Enclosure

cc: Chris Korleski
Director
Ohio Environmental Protection Agency

**Review of Designations in Ohio
For the Particulate Matter Air Quality Standard**

The following table identifies the individual areas and counties comprising those areas in Ohio that EPA intends to designate as nonattainment for the 2006 fine particulate matter (PM_{2.5}) air quality standards. Following this table is 1) a discussion of each area and the basis for EPA's intended designations, and 2) a description of the data EPA examined. EPA intends to designate as attainment/unclassifiable all Ohio counties or portions of counties not identified in the table below.

Area	Current PM_{2.5} Nonattainment Area	Ohio Recommended Nonattainment Counties	EPA's Intended Nonattainment Counties
Canton- Massillon, OH	Stark	Stark	Stark
Cincinnati-Hamilton, OH- KY-IN	Butler Clermont Hamilton Warren	Butler Clermont Hamilton Warren	Butler Clermont Hamilton Warren
Cleveland- Akron-Lorain, OH	Cuyahoga Lake Lorain Medina Portage Summit Ashtabula: Ashtabula Township	Cuyahoga Lake Lorain Medina Portage Summit	Cuyahoga Lake Lorain Medina Portage Summit Ashtabula: Ashtabula Township
Columbus, OH	Delaware Fairfield Franklin Licking Coshocton: Franklin Township	Delaware Fairfield Franklin Licking	Delaware Fairfield Franklin Licking Coshocton: Franklin Township
Dayton-Springfield, OH	Clark Greene Montgomery	Greene Montgomery	Clark Greene Montgomery
Huntington-Ashland, WV- KY-OH	Adams: Monroe, Sprigg Townships Gallia: Cheshire Township Lawrence Scioto	none	Adams: Monroe, Sprigg Townships Gallia: Cheshire Township Lawrence Scioto
Parkersburg-Marietta, WV- OH	Washington	Washington	Washington

Area	Current PM_{2.5} Nonattainment Area	Ohio Recommended Nonattainment Counties	EPA's Intended Nonattainment Counties
Steubenville-Weirton, OH- WV	Jefferson	Jefferson	Jefferson
Youngstown-Warren, OH	none	Mahoning Trumbull	Mahoning Trumbull

On June 8, 2007, in a memorandum from Robert Meyers to the EPA Regional Administrators, EPA issued guidance on a timetable for designation of areas violating the PM_{2.5} air quality standards promulgated in 2006 and factors that EPA recommended states to consider as they prepared recommendations for nonattainment area boundaries. This guidance was sent to the Governor of Ohio as an attachment to a letter dated July 9, 2007, requesting the State's recommendations.

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. The technical analysis for each area identifies the counties with monitors that violate the 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

Additional background information on each of the nine factors can also be found in the background section.

EPA also computed a 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 potential impacts of counties in and near an area on violating monitors. While this metric provides a useful synthesis of important relevant information, including weighting the emissions of various pollutants according to estimates of the relative importance of each pollutant, the CES is not the exclusive variable EPA uses to consider these factors. A summary of the CES is included in the background section, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

Review for the Canton Metropolitan Statistical Area

In the Canton area, Stark County is designated nonattainment for the 1997 PM_{2.5} standards. A monitor in Stark County is recording violations of the 2006 standards. Ohio recommended that the Canton nonattainment area consist of Stark County.

EPA concurs with the state's recommendation. Although Canton is near the Cleveland and the Steubenville areas, these areas are all separate metropolitan areas, and EPA believes that the three metropolitan areas are sufficiently distinct to warrant treatment as three separate nonattainment areas. Within the Canton metropolitan statistical area, Stark County sources emit about 90 percent of the emissions in this area. In addition, establishing nonattainment boundaries that match the boundaries established for the 1997 standards will simplify planning by assuring that the same areas are subject very similar nonattainment planning requirements.

In general, the only surrounding counties with emissions comparable to the emissions of Stark County are in either the Steubenville or Cleveland areas, and no other factor warranted inclusion of any county other than Stark County in the Canton nonattainment area.

Figure 1 is a map of the counties in the Canton 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.

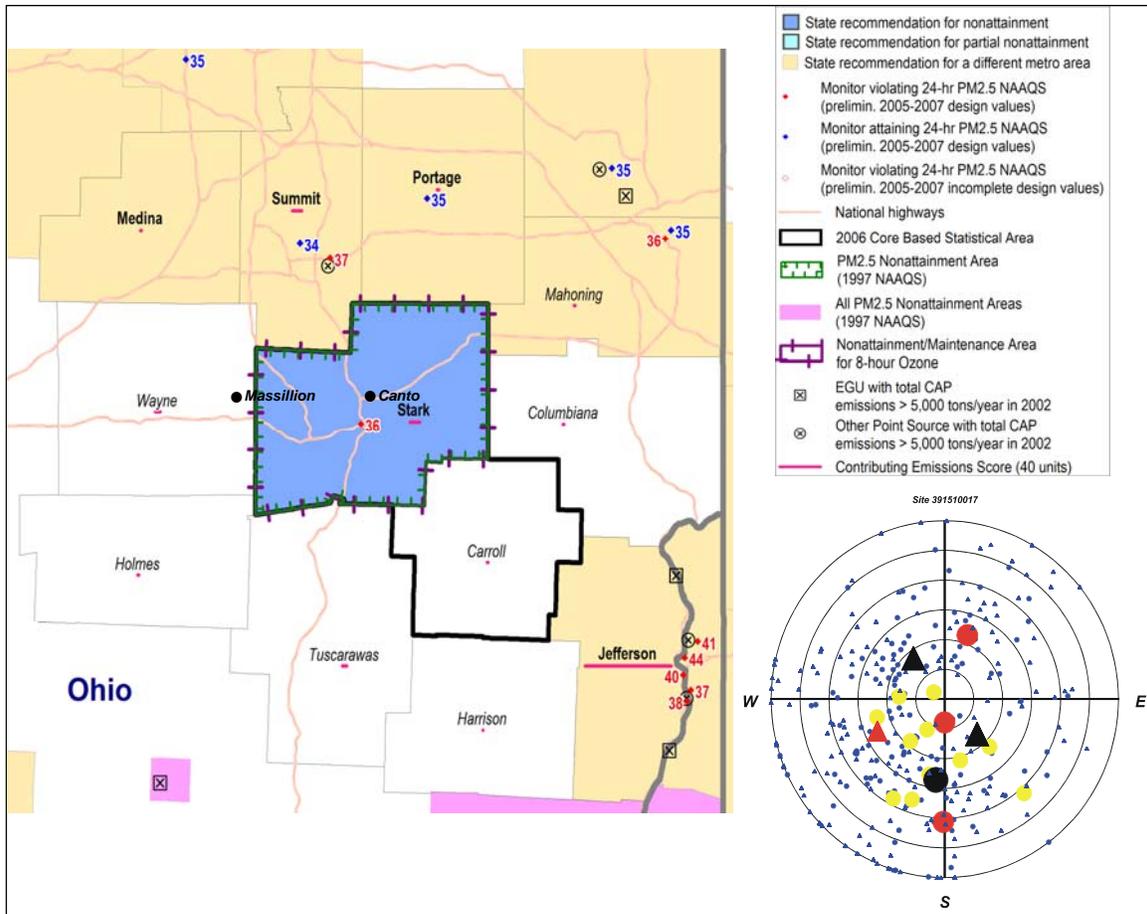


Figure 1

Factor 1: Emissions data

Table 1 shows emissions of PM_{2.5} components (given in tons per year) and the CES for potentially contributing counties in the Canton area. Counties that are part of the Canton MSA are shown in boldface. Counties are listed in descending order by CES.

Table 1. PM_{2.5} 24-hour Component Emissions, and CES.

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	Other	100	11,409	722	10,686	224,025	46,158	3,693	297
Stark, OH	Yes	11	1,488	574	915	2,334	13,046	19,011	1,902
Summit, OH	Other	11	1,031	576	454	12,545	17,359	21,753	923
Tuscarawas, OH	No	5	636	295	342	2,890	4,919	5,477	1,238
Wayne, OH	No	5	1,408	468	938	4,812	7,546	6,934	3,702
Portage, OH	Other	2	1,011	496	514	548	7,269	8,365	564
Carroll, OH	No	1	338	141	196	123	1,627	1,482	409

Stark County has emissions that are well higher than the emissions from Carroll County. Many of the counties near the Canton area, including some counties with emissions that

are similar or higher than those of Stark County, are in other areas designated nonattainment. Jefferson County is in the Weirton-Steubenville area. Summit and Portage Counties are in the Cleveland area. The emissions from Stark and Summit Counties are comparable.

Factor 2: Air quality data

The 24-hour PM_{2.5} design values for counties in the Canton area are shown in Table 2. The Stark County design value is above the 2006 standards level. Therefore, Stark County is violating the air quality standards. There is no monitoring data for Carroll County. Jefferson and Summit Counties also show violations, but these counties were evaluated as part of separate areas.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2004-06 (µg/m ³)	Design Values 2005-07 (µg/m ³)
Stark, OH	Yes	37	36
Jefferson, OH	Other	43	40
Summit, OH	Other	38	37
Tuscarawas, OH	No		
Wayne, OH	No		
Portage, OH	Other	34	35
Carroll, OH	No		

For purposes of its review, EPA used data available from the Chemical Speciation Network and the Interagency Monitoring of Protected Visual Environments (IMPROVE) network to estimate the composition of fine particle mass on days with the highest fine particle concentrations. On high concentration days during cold weather months in this area, EPA found on average a total urban contribution of 7.7 µg/m³, consisting of 0.3 µg/m³ of sulfate, 2.4 µg/m³ of nitrate, 4.7 µg/m³ of organic particles, and 0.3 µg/m³ of miscellaneous inorganic particulate. On high concentration days during warm weather months in this area, EPA found on average a total urban contribution of 6.5 µg/m³, consisting of 5.3 µg/m³ of sulfate, 1.1 µg/m³ of organic particles, and 0.1 µg/m³ of miscellaneous inorganic particulate. These estimates were used for weighting of the emissions of different pollutants in calculating the contributing emissions scores.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in the area. The Stark County population and population density are much higher than Carroll Counties. Aside from counties included in other nonattainment areas, Stark County is larger than other nearby counties. Thus, the population data suggest that Stark County is the prime candidate for inclusion in the nonattainment area.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Stark, OH	Yes	380,275	655
Jefferson, OH	Other	70,631	172
Summit, OH	Other	546,285	1302
Tuscarawas, OH	No	91,791	161
Wayne, OH	No	113,496	204
Portage, OH	Other	155,150	307
Carroll, OH	No	29,252	73

Factor 4: Traffic and commuting patterns

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (10 ⁶ mi)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into statistical area	Percent Commuting into statistical area
Stark, OH	Yes	3,049	162,800	92	141,490	80
Jefferson, OH	Other	684	20,090	70	460	2
Summit, OH	Other	4,929	201,840	78	7,670	3
Tuscarawas, OH	No	1,122	6,360	15	6,000	14
Wayne, OH	No	1,044	5,640	10	1,670	3
Portage, OH	Other	1,788	21,230	27	1,580	2
Carroll, OH	No	173	5,620	44	10,660	83

The listing of counties on Table 4 reflects a ranking based on the number of people commuting to other counties. The county that is in the Canton nonattainment area for the 1997 PM_{2.5} NAAQS is shown in boldface. There is very limited commuting from Jefferson, Portage, and Summit Counties into the Canton area. This suggests these counties are not a part of the Canton area. The Carroll County VMT is small. Thus, the commuting data support including only Stark County in the nonattainment area.

Factor 5: Growth rates and patterns

Table 5 shows population, population change, VMT, and VMT change for the counties that are included in and around the Canton area. Counties are listed in descending order based on VMT change between 1996 and 2005.

Table 5. Population and VMT Growth and Percent Change.

County	Population (2005)	Population % change (2000-05)	2005 VMT (10 ⁶ mi)	VMT % change (1996-05)
Tuscarawas, OH	91,791	1	1,122	6
Wayne, OH	113,496	2	1,044	6
Portage, OH	155,150	2	1,788	6
Summit, OH	546,285	0	4,929	1
Stark, OH	380,275	1	3,049	-1
Carroll, OH	29,252	1	173	-1
Jefferson, OH	70,631	-4	684	-6

There is little growth in the Canton area and surrounding counties. VMT declined slightly in both Carroll and Stark Counties, while their population grew slightly. Thus,

these data do not suggest trends in population of VMT that should influence the nonattainment area boundaries.

Factor 6: Meteorology (weather/transport patterns)

A pollution rose for the Canton area is provided with the map above.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The Canton area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its airshed. Therefore, this factor provides no reason to exclude any nearby county as a contributing county.

Factor 8: Jurisdictional boundaries (e.g., existing PM and ozone areas)

The major jurisdictional boundary in the Canton area is the current nonattainment area. The proposed Canton nonattainment area, consisting of Stark County, is identical to the nonattainment area designated under the 1997 PM_{2.5} standard. Designating PM_{2.5} nonattainment areas that match the boundaries of the current nonattainment areas avoids confusion of different requirements and facilitates planning.

The Stark County Regional Planning Commission/Stark County Area Transportation Study (SCATS) is the Metropolitan Planning Organization (MPO) for the Canton-Massillon, Ohio area (<http://www.rpc.co.stark.oh.us/scats.html>). This further supports just designating Stark County as nonattainment.

Factor 9: Level of control of emission sources

No recent emission controls are known to have been added in the Canton area.

Review for the Ohio Portion of the Cincinnati Combined Statistical Area

In the three-state Cincinnati area, part or all of eight counties are designated nonattainment for the 1997 standards. The four Ohio counties included in the Cincinnati nonattainment area are Butler, Clermont, Hamilton, and Warren Counties. Monitors in Butler and Hamilton Counties, Ohio, and Kenton County, Kentucky, are recording violations of the 2006 standards. Ohio recommended that the Cincinnati nonattainment area include the same four Ohio counties as are designated nonattainment for the 1997 standards.

EPA concurs with the state's recommendation. The four Ohio counties that Ohio recommended for nonattainment all have significant emissions that are geographically nearby to and commonly upwind of violating monitors. In addition, establishing nonattainment boundaries for the 2006 standards that match the boundaries established

for the 1997 standards will simplify planning by providing that all locations have consistent nonattainment planning requirements for the two sets of standards. The surrounding Ohio counties have relatively low emissions, and no other factor warrants their inclusion in the nonattainment area.

Figure 2 is a map of the counties in the Cincinnati 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 States.

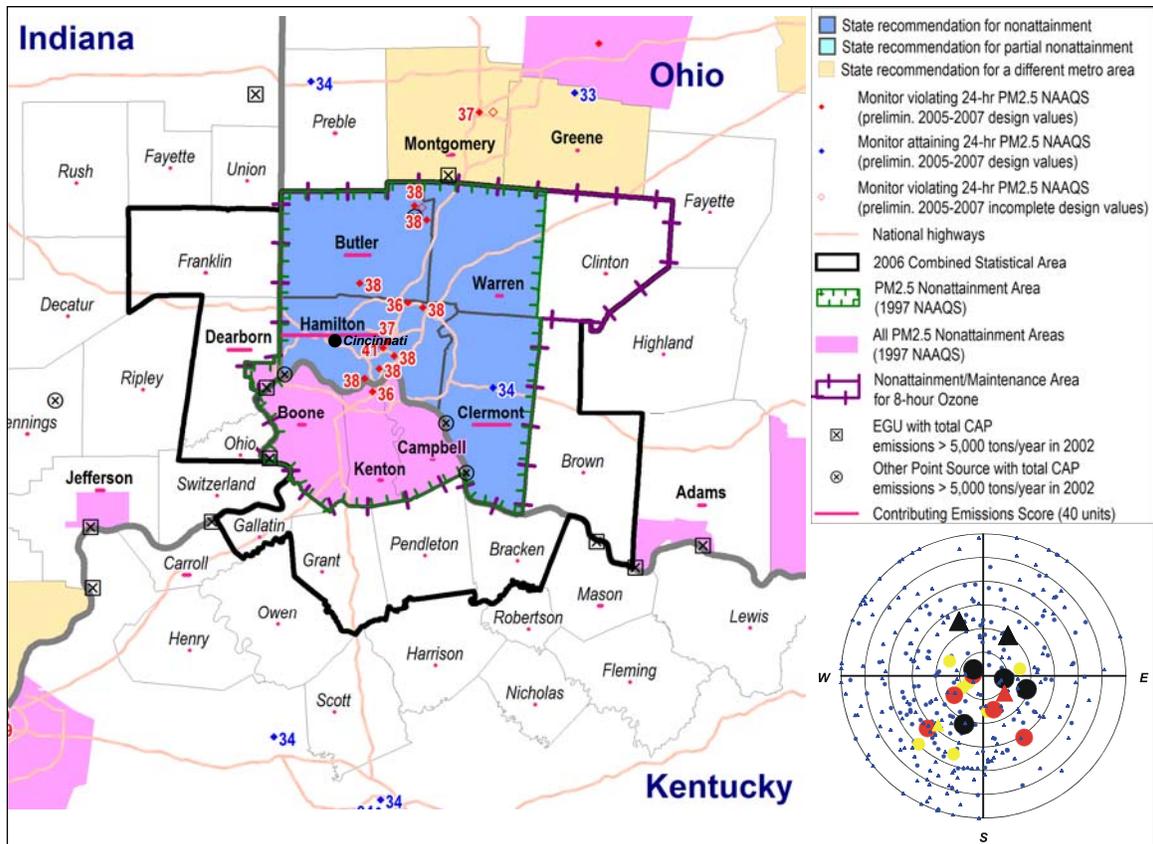


Figure 2

Factor 1: Emissions data

Table 1 shows emissions of PM_{2.5} components (given in tons per year) and the CES for potentially contributing counties in the Cincinnati area. Counties that are part of the Cincinnati nonattainment area for the 1997 PM_{2.5} NAAQS are shown in boldface. Counties are listed in descending order by CES.

Table 1. PM_{2.5} 24-hour Component Emissions, and CES.

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)
Hamilton, OH	Yes	100	6,489	1,244	5,245	88,139	50,060	38,552	2,359

Clermont, OH	Yes	36	5,399	733	4,665	90,341	35,748	6,982	407
Butler, OH	Yes	24	2,269	563	1,706	10,636	16,661	12,734	1,105
Dearborn, IN	No	22	2,780	288	2,492	47,908	12,881	3,268	229
Jefferson, IN	No	7	1,265	168	1,097	75,319	25,214	2,272	341
Boone, KY	No	6	1,629	615	1,014	5,383	10,852	5,883	286
Adams, OH	No	6	5,970	494	5,476	126,316	33,822	1,918	837
Warren, OH	Yes	5	1,304	535	768	568	7,244	7,278	792
Kenton, KY	No	3	537	269	268	1,300	6,316	5,606	266
Campbell, KY	No	2	412	179	233	731	4,231	2,923	196

The Ohio counties in the Cincinnati area all have fairly high emissions. Butler, Clermont, and Hamilton Counties all have high CES. The CES for Warren County is lower than the CES for the other Ohio counties, but its emissions are not insignificant. The sulfur dioxide emissions from Adams County are large, but it has a relatively low CES due to its distance from Cincinnati and the relative infrequency of winds blowing from Adams County toward Cincinnati on high concentration days. Adams County appears to contribute more to violations in the Huntington-Ashland area, and so EPA views it as a candidate for including in the Huntington-Ashland area rather than the Cincinnati area. Indeed, Adams County is in Huntington-Ashland nonattainment area designated under the 1997 standards. It was also evaluated with Huntington-Ashland area under the 2006 standards designations.

Factor 2: Air quality data

The 24-hour PM_{2.5} design values for counties in the Cincinnati area are shown in Table 2. In Ohio, Butler and Hamilton Counties have design values above the 2006 standards. Clermont County is monitoring air quality that meets the standards and the other counties do not have air quality data.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2004-06 ($\mu\text{g}/\text{m}^3$)	Design Values 2005-07 ($\mu\text{g}/\text{m}^3$)
Hamilton, OH	Yes	40	41
Clermont, OH	Yes		34
Butler, OH	Yes	38	38
Dearborn, IN	No		
Boone, KY	No		
Warren, OH	Yes		
Kenton, KY	No	35	36
Campbell, KY	No		

For purposes of its review, EPA used data available from the Chemical Speciation Network and the Interagency Monitoring of Protected Visual Environments (IMPROVE) network to estimate the composition of fine particle mass on days with the highest fine particle concentrations. On high concentration days during cold weather months in this area, EPA found on average a total urban contribution of $3.2 \mu\text{g}/\text{m}^3$, consisting of $1.3 \mu\text{g}/\text{m}^3$ of sulfate, $0.8 \mu\text{g}/\text{m}^3$ of nitrate, $1.1 \mu\text{g}/\text{m}^3$ of organic particles, and no miscellaneous inorganic particulate. On high concentration days during warm weather

months in this area, EPA found on average a total urban contribution of 10.9 $\mu\text{g}/\text{m}^3$ that consists entirely of sulfate. These estimates were used for weighting of the emissions of different pollutants in calculating the contributing emissions scores.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 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 give an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour $\text{PM}_{2.5}$ standards. All Ohio counties in the Cincinnati area have sizable populations and population densities.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Hamilton, OH	Yes	828,487	2007
Clermont, OH	Yes	190,329	417
Butler, OH	Yes	349,966	745
Dearborn, IN	No	48,930	160
Boone, KY	No	106,278	414
Warren, OH	Yes	196,793	484
Kenton, KY	No	153,314	930
Campbell, KY	No	87,048	547

Factor 4: Traffic and commuting patterns

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (10^6 mi)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into statistical area	Percent Commuting into statistical area
Hamilton, OH	Yes	8,132	364,380	92	391,410	98
Butler, OH	Yes	3,059	143,800	90	153,070	96
Clermont, OH	Yes	1,799	45,070	51	86,620	98
Kenton, KY	No	1,647	51,980	68	74,830	99
Warren, OH	Yes	1,692	41,510	54	62,590	82
Boone, KY	No	1,074	17,300	39	43,420	98
Campbell, KY	No	1,000	21,460	50	42,160	99
Dearborn, IN	No	708	8,920	40	20,700	92

The listing of counties on Table 4 reflects a ranking based on the number of people commuting to other counties. All counties on Table 4 are in the nonattainment area for the 1997 $\text{PM}_{2.5}$ NAAQS. The area counties all have a high percent of commuting within the statistical area. This shows that the counties are integrated into the Cincinnati area.

Factor 5: Growth rates and patterns

Table 5 below shows population, population growth, VMT and VMT growth for counties that are included in the Cincinnati area. Counties are listed in descending order based on VMT growth between 1996 and 2005.

Table 5. Population and VMT Growth and Percent Change.

County	Population (2005)	Population % change (2000-05)	2005 VMT (10 ⁶ mi)	VMT % change (1996-05)
Boone, KY	106,278	22	1,074	48
Warren, OH	196,793	22	1,692	34
Dearborn, IN	48,930	6	708	30
Butler, OH	349,966	5	3,059	28
Clermont, OH	190,329	7	1,799	16
Campbell, KY	87,048	-2	1,000	4
Hamilton, OH	828,487	-2	8,132	3
Kenton, KY	153,314	1	1,647	3

There is robust growth in portions of the Cincinnati area. In the Ohio portion of the area, Warren County enjoyed high growth in both population and VMT. The other Ohio counties had modest changes in population. Butler and Clermont Counties joined Warren County in having VMT growth well above 10%. VMT growth was just 3% in Hamilton County. The growth rate information affirms the continuing importance of the four counties that Ohio recommended for nonattainment.

Factor 6: Meteorology (weather/transport patterns)

A pollution rose for the Cincinnati area is provided with the map above. The pollution rose suggest that contributions come from all directions from the violations, suggesting that counties in all directions from the violations contribute.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The Cincinnati area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its airshed. Therefore, this factor provides no reason to exclude any nearby county as a contributing county.

Factor 8: Jurisdictional boundaries (e.g., existing PM and ozone areas)

The Ohio-Kentucky-Indiana Regional Council of Governments (OKI) is the Metropolitan Planning Organization (MPO) for Butler, Warren, Clermont, and Hamilton Counties in Ohio; Campbell, Kenton, and Boone Counties in Kentucky; and Dearborn County, Indiana. OKI webpage: <http://www.oki.org/>. Inclusion of these counties in the nonattainment area will facilitate planning.

The Ohio portion of the Cincinnati ozone nonattainment area consists of the following Ohio counties: Butler, Clermont, Clinton, Hamilton, and Warren.

The proposed Cincinnati nonattainment area is identical to the nonattainment area designated under the 1997 PM_{2.5} standard. In Ohio, the area consists of Butler, Clermont, Hamilton, and Warren Counties.

Factor 9: Level of control of emission sources

EPA is aware that emission controls are expected to be installed on a Hamilton County power plant. The controls will reduce sulfur dioxide emissions. Nevertheless, given the high sulfur dioxide emissions from Hamilton County, the county's emission will remain among the highest in the Cincinnati area.

Review for the Cleveland-Akron Combined Statistical Area

In the Cleveland area, Cuyahoga, Lake, Lorain, Medina, Portage, and Summit Counties along with Ashtabula Township in Ashtabula County are designated nonattainment for the 1997 standards. In a December 17, 2007 letter, Ohio recommended the same six full counties as nonattainment for the 2006 standards. Ohio recommended the partial county, Ashtabula County, be designated attainment for the 2006 standards. Monitoring data shows violations of the 2006 standards in both Cuyahoga and Summit Counties.

The six counties recommended by Ohio for inclusion in the nonattainment area all have significant emissions in relatively close proximity to violations and warrant being judged to contribute to the violations. EPA views Ashtabula County, in particular Ashtabula Township in Ashtabula County, as also having significant emissions that contribute to violations in the Cleveland area. The emissions in Ashtabula Township are primarily attributable to Cleveland Electric Illuminating's Ashtabula plant, which we understand is not installing emission controls, so that emissions from this source continue to contribute to violations in this area.

In considering county-level emissions, EPA considered 2005 emissions data from the National Emissions Inventory. EPA notes that emissions in Ashtabula County have declined in recent years, and EPA solicits further information on the causes of this decline, including any enforceable emission limits or any other reason this reduction in emissions might be expected to continue. 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
- 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
- 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)

The Cleveland area is adjacent to the Canton and Youngstown-Mercer areas. These areas have counties with relatively high emissions. As discussed elsewhere, EPA intends to designate a Canton nonattainment area that includes Stark County and a Youngstown nonattainment area that includes Trumbull and Mahoning Counties. The metropolitan areas are sufficiently distinct to warrant treatment as separate areas. Therefore, EPA does not intend to include any of these counties in the Cleveland-Akron nonattainment area.

In summary, EPA is proposing the Cleveland nonattainment area under the 2006 standards that would include the same seven county area as was designated under the 1997 standards. EPA believes that the spatial extent of sources contributing to violations of the 24-hour standard is the same as for the annual standard, and establishing nonattainment boundaries that match the boundaries established for the 1997 standards has the additional benefit of simplifying planning by assuring that the same areas are subject to very similar nonattainment planning requirements.

EPA also considered other nearby counties. Although Geauga County is part of the combined statistical area, its emissions are relatively low. Aside from Stark, Mahoning, and Trumbull Counties, the counties adjacent to the Cleveland-Akron area also have relatively low emissions, and no other factor warranted the inclusion of these counties in the Cleveland-Akron area.

Figure 3 is a map of the counties in the Cleveland 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.

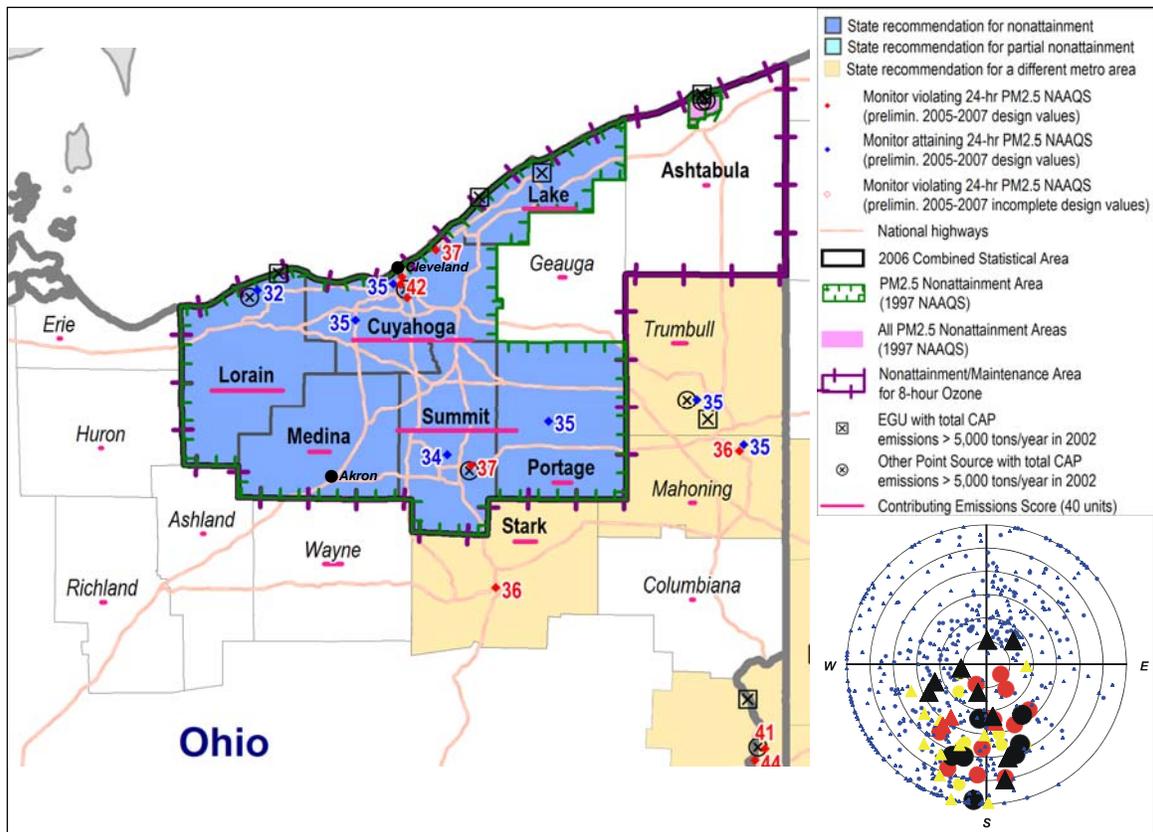


Figure 3

Factor 1: Emissions data

Table 1 shows emissions of PM_{2.5} components (given in tons per year) and the CES for potentially contributing counties in the Cleveland area. Counties that are part of the Cleveland area nonattainment area for the 1997 PM_{2.5} NAAQS are shown in boldface. Counties are listed in descending order by CES.

Table 1. PM_{2.5} 24-hour Component Emissions, and CES.

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)
Cuyahoga, OH	Yes	100	2,929	1,619	1,310	12,958	48,300	57,105	11,300
Summit, OH	Yes	100	1,031	576	454	12,545	17,359	21,753	923
Lorain, OH	Yes	60	3,691	771	2,920	44,492	23,093	15,939	933
Lake, OH	Yes	43	3,310	463	2,846	80,601	22,288	12,228	350
Stark, OH	Other	18	1,488	574	915	2,334	13,046	19,011	1,902
Medina, OH	Yes	17	1,254	558	696	761	6,853	7,731	669
Portage, OH	Yes	15	1,011	496	514	548	7,269	8,365	564
Wayne, OH	No	15	1,408	468	938	4,812	7,546	6,934	3,702
Trumbull, OH	Other	11	1,730	625	1,105	18,501	13,373	12,098	881
Geauga, OH	No	5	951	461	491	458	3,101	7,162	490
Mahoning, OH	Other	4	722	338	384	1,927	10,086	10,416	1,415
Ashtabula, OH	No	3	1,407	648	758	5,713	14,555	10,988	860

The emissions from several Cleveland area counties are high. The emissions from Medina and Portage are slightly lower than Stark County, which Ohio recommended as nonattainment in the Canton area. The relatively low CES for Ashtabula County reflects moderate emissions in the county (concentrated within Ashtabula Township) but a relatively low frequency of winds blowing from Ashtabula County to violating monitors on high concentration days and the considerable distance from the county to the violating monitors.

Factor 2: Air quality data

The 24-hour PM_{2.5} design values for counties in the Cleveland area are shown in Table 2. The Cuyahoga and Summit County design values exceed the 2006 standards. Lorain and Portage Counties have air quality that meets the standards. There is no air quality data for Lake and Medina Counties.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2004-06 (µg/m ³)	Design Values 2005-07 (µg/m ³)
Cuyahoga, OH	Yes	43	42
Summit, OH	Yes	38	37
Lorain, OH	Yes	31	32
Lake, OH	Yes	--	--
Medina, OH	Yes	--	--
Portage, OH	Yes	34	35
Ashtabula, OH	No	--	--
Stark, OH	Other	37	36
Wayne, OH	No	--	--
Trumbull, OH	Other	36	35

For purposes of its review, EPA used data available from the Chemical Speciation Network and the Interagency Monitoring of Protected Visual Environments (IMPROVE) network to estimate the composition of fine particle mass on days with the highest fine particle concentrations. On high concentration days during cold weather months in this area, EPA found on average a total urban contribution of 14.4 µg/m³, consisting of 1.8 µg/m³ of sulfate, 5.3 µg/m³ of nitrate, 6.0 µg/m³ of organic particles, and 1.3 µg/m³ of miscellaneous inorganic particulate. On high concentration days during warm weather months in this area, EPA found on average a total urban contribution of 12.7 µg/m³, consisting of 7.1 µg/m³ of sulfate, 2.9 µg/m³ of organic particles, and 2.7 µg/m³ of miscellaneous inorganic particulate. These estimates were used for weighting of the emissions of different pollutants in calculating the contributing emissions scores.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Cuyahoga, OH	Yes	1,330,428	2900

Summit, OH	Yes	546,285	1302
Lorain, OH	Yes	300,266	608
Lake, OH	Yes	232,416	1004
Medina, OH	Yes	166,968	395
Portage, OH	Yes	155,150	307
Ashtabula, OH	No	103,044	145
Wayne, OH	No	113,496	204
Geauga, OH	No	95,060	233

Cuyahoga County with the city of Cleveland has the highest population. Summit County follows with about half the population. The other counties are lower with Ashtabula, Wayne, and Geauga having the smallest population in the Cleveland area. The counties recommended for nonattainment by Ohio can be expect to have the great majority of the population-oriented emissions of the area.

Factor 4: Traffic and commuting patterns

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (10 ⁶ mi)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into statistical area	Percent Commuting into statistical area
Cuyahoga, OH	Yes	11,017	596,930	96	615,890	99
Summit, OH	Yes	4,929	237,910	92	245,630	95
Lorain, OH	Yes	3,044	38,300	29	129,280	98
Lake, OH	Yes	1,881	111,000	95	115,760	99
Medina, OH	Yes	1,721	36,030	47	73,030	96
Portage, OH	Yes	1,788	35,070	45	73,350	94
Ashtabula, OH	No	1,182	9,280	20	44,070	97
Wayne, OH	No	1,044	6,920	13	10,100	19
Geauga, OH	No	834	23,600	53	43,490	98

Cuyahoga, Lake, and Summit Counties all have a high percent of commuting into violating counties. Geauga, Medina, and Portage Counties have a fair amount of commuting into violating counties, though Geauga County has the lowest VMT in the area. The low percent of commuting into the Cleveland statistical area from Wayne County suggests that it is separate from the Cleveland area. Thus, the counties recommended for nonattainment by Ohio, along with Ashtabula County, represent an integrated area that warrants being treated together as a nonattainment area.

Factor 5: Growth rates and patterns

Table 5 below shows population, population growth, VMT and VMT growth for counties that are included in the Cleveland area. Counties are listed in descending order based on VMT change between 1996 and 2005.

Table 5. Population and VMT Growth and Percent Change.

County	Population (2005)	Population % change (2000-05)	2005 VMT (10 ⁶ mi)	VMT % change (1996-05)
Lorain, OH	300,266	5	3,044	26

Ashtabula, OH	103,044	0	1,182	13
Medina, OH	166,968	10	1,721	12
Portage, OH	155,150	2	1,788	6
Wayne, OH	113,496	2	1,044	6
Summit, OH	546,285	0	4,929	1
Lake, OH	232,416	2	1,881	1
Geauga, OH	95,060	4	921	-2
Cuyahoga, OH	1,330,428	-4	10,482	-7

The population of Medina County grew by 10% during the 2000 to 2005 period. The population change for the other counties in the area was 5% or less. Lorain County had the largest VMT percent growth. Ashtabula and Medina Counties also experienced strong VMT growth. Cuyahoga and Geauga Counties had a decrease in VMT during the 1996 to 2005 period. The growth rates suggest that the distribution of population and VMT will not change significantly during the SIP planning time horizon.

Factor 6: Meteorology (weather/transport patterns)

A pollution rose for the Cleveland area is provided with the map above. While this pollution rose suggests that the greatest contributions to high concentrations originate from the generally southerly direction, inclusion of emissions from the east and west of the violations will help provide for sound SIP planning.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The Cleveland area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor provides no reason to exclude any nearby county as a contributing county.

Factor 8: Jurisdictional boundaries (e.g., existing PM and ozone areas)

The Northeast Ohio Areawide Coordinating Agency (NOACA) is the Metropolitan Planning Organization (MPO) for Cuyahoga, Geauga, Lake (OH), Lorain, and Medina Counties. NOACA webpage, <http://www.noaca.org/>

The Cleveland ozone nonattainment area consists of the following counties: Ashtabula, Cuyahoga, Geauga, Lake, Lorain, Medina, Portage, and Summit.

The proposed Cleveland nonattainment area is identical to the nonattainment area designated under the 1997 PM_{2.5} standard, which would facilitate planning.

Factor 9: Level of control of emission sources

No emission controls have recently been installed or are being added to major sources in the Cleveland area. Therefore, this factor does not affect the Cleveland area designations.

Review for the Columbus Metropolitan Statistical Area

The Columbus, Ohio nonattainment area under the 1997 standards is comprised of Delaware, Fairfield, Franklin, and Licking Counties along with Franklin Township in Coshocton County. For the 2006 standards, Ohio recommended Delaware, Fairfield, Franklin, and Licking Counties be designated nonattainment in its December 17, 2007 letter. The partial county area, Franklin Township in Coshocton County, was not included in Ohio's recommended nonattainment area. Monitored air quality values show that Franklin County has exceeded the 2006 standards. No other county in the combined statistical area has monitoring data.

EPA agrees that the four counties recommended by Ohio to be nonattainment warrant inclusion in the nonattainment area. Franklin County likely makes the greatest contribution to violations within the area, however Delaware, Fairfield, and Licking Counties all have substantial emissions, populations, traffic, and growth rates that indicate contribution to the violations in Franklin County.

Coshocton County emissions are also substantial. Direct fine particulate and nitrogen oxides emissions are among the highest of the candidate nonattainment counties in the Columbus area, and winds sometimes carry those emissions to the violating monitor on high concentration days. Current sulfur dioxide emissions from Coshocton County far exceed the emissions from any other Columbus area county. These emissions arise predominantly from the Conesville power plant in Franklin Township. EPA understands that two units of this plant are well controlled. The company may be planning to install additional control equipment to achieve effective control of emissions of SO₂ and NO_x within a year or two, but current emissions are relatively high. Therefore, EPA believes at the present time that emissions in Franklin Township of Coshocton County are substantial and continue to contribute to nonattainment in the Columbus area.

In considering county-level emissions, EPA considered 2005 emissions data from the National Emissions Inventory. EPA welcomes further information regarding emissions from the Conesville plant. 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
- 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

- 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 intends to include Delaware, Fairfield, Franklin, and Licking Counties and Franklin Township in Coshocton County in the Columbus nonattainment area. Establishing nonattainment boundaries that match the boundaries established for the 1997 standards would have the additional benefit of simplifying planning by assuring that the same areas are subject to very similar nonattainment planning requirements. EPA examined relevant information for other counties in and around the Columbus area and concluded that other counties have relatively low emissions, and no other factor warrants inclusion of these counties in the nonattainment area.

Figure 4 is a map of the counties in the Columbus, Ohio 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.

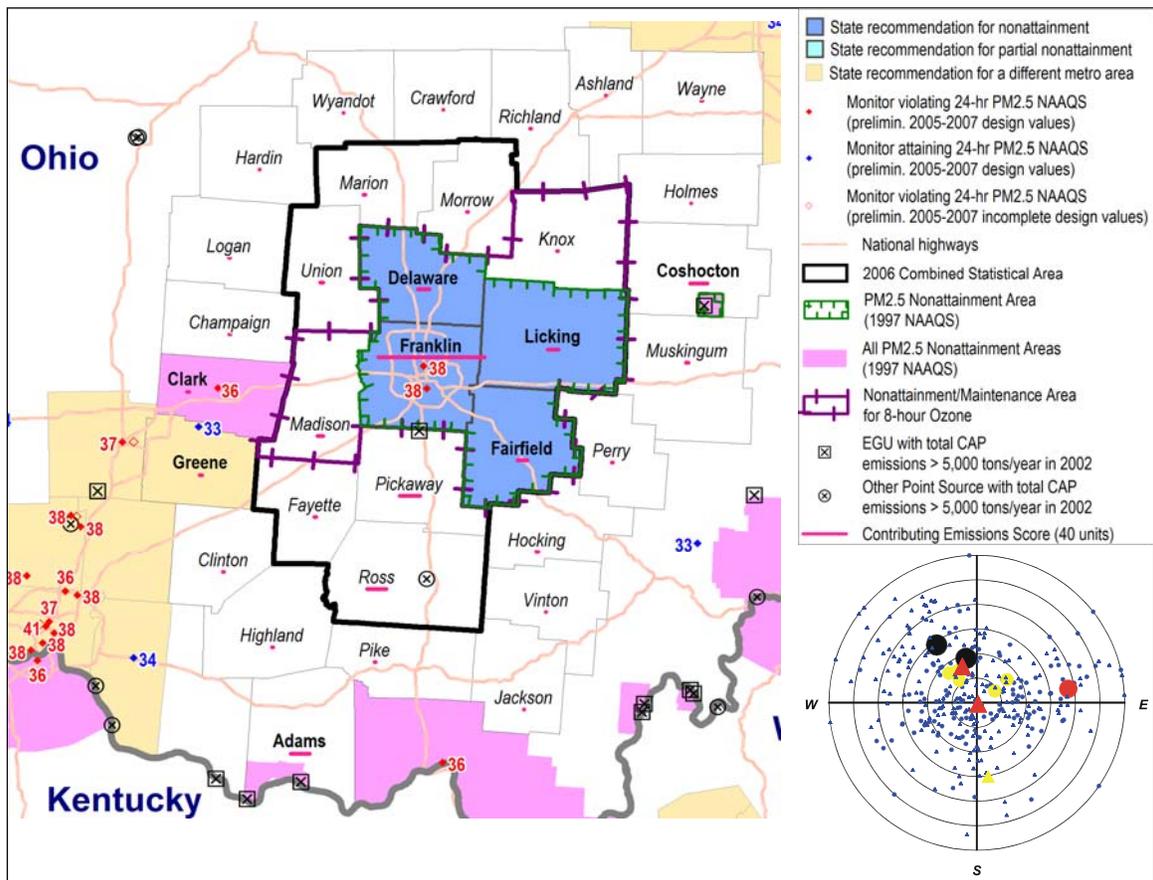


Figure 4

Factor 1: Emissions data

Table 1 shows emissions of PM_{2.5} components (given in tons per year) and the CES for potentially contributing counties in the Columbus area. Counties that are part of the Columbus nonattainment area for the 1997 PM_{2.5} NAAQS are shown in boldface. Counties are listed in descending order by CES.

Table 1. PM_{2.5} 24-hour Component Emissions, and CES.

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)
Franklin, OH	Yes	100	2,366	1,327	1,039	4,094	37,707	42,607	2,002
Pickaway, OH	No	19	1,214	233	981	6,797	5,022	3,027	1,308
Adams, OH	No	18	5,970	494	5,476	126,316	33,822	1,918	837
Ross, OH	No	18	920	339	581	24,424	6,725	3,947	1,037
Coshocton, OH	No	16	6,842	483	6,358	106,802	23,057	2,349	1,108
Delaware, OH	Yes	11	1,382	515	868	581	6,803	6,751	695
Licking, OH	Yes	10	1,949	759	1,192	766	7,437	7,326	2,626
Fairfield, OH	Yes	9	1,108	389	719	450	5,942	4,929	1,377

The CES for Franklin County is distinctly higher than the scores for the other counties. None of the scores for the other counties stand out. Adams and Coshocton Counties are notable for the high sulfur dioxide emissions from both counties. Adams County is in the Huntington-Ashland nonattainment area under the 1997 standards.

Factor 2: Air quality data

The 24-hour PM_{2.5} design values for counties in the Columbus area are shown in Table 2. Franklin County is violating the 2006 standards. There is no PM_{2.5} air quality data for the other area counties.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2004-06 (µg/m ³)	Design Values 2005-07 (µg/m ³)
Franklin, OH	Yes	38	38
Coshocton, OH	No		
Delaware, OH	Yes		
Licking, OH	Yes		
Fairfield, OH	Yes		

For purposes of its review, EPA used data available from the Chemical Speciation Network and the Interagency Monitoring of Protected Visual Environments (IMPROVE) network to estimate the composition of fine particle mass on days with the highest fine particle concentrations. On high concentration days during cold weather months in this area, EPA found on average a total urban contribution of 3.1 µg/m³, consisting of 1.1 µg/m³ of sulfate, 0.8 µg/m³ of nitrate, 1.2 µg/m³ of organic particles, and no miscellaneous inorganic particulate emissions. On high concentration days during warm weather months in this area, EPA found on average a total urban contribution of 1.0

$\mu\text{g}/\text{m}^3$ entirely consisting of sulfate. These estimates were used for weighting of the emissions of different pollutants in calculating the contributing emissions scores.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 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 give an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour $\text{PM}_{2.5}$ standards. Franklin County has the largest population in the Columbus area. It also has the highest population density. Delaware, Fairfield, and Licking also have populations over 100,000, supporting their inclusion in the nonattainment area. Pickaway and Coshocton Counties have small populations and correspondingly low population densities; the population data do not favor inclusion of these counties.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Franklin, OH	Yes	1,089,365	2007
Licking, OH	Yes	154,683	225
Delaware, OH	Yes	150,496	330
Fairfield, OH	Yes	138,403	272
Ross, OH	No	75,135	109
Pickaway, OH	No	52,837	104
Coshocton, OH	No	36,969	65
Adams, OH	No	28,454	49

Factor 4: Traffic and commuting patterns

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (10^6 mi)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into statistical area	Percent Commuting into statistical area
Franklin, OH	Yes	10,724	508,840	93	539,670	99
Licking, OH	Yes	1,669	23,780	34	68,970	97
Fairfield, OH	Yes	1,232	28,280	47	58,710	98
Delaware, OH	Yes	1,417	31,720	55	56,510	98
Ross, OH	No	654	2,360	8	27,510	91
Pickaway, OH	No	464	9,640	44	21,440	99
Coshocton, OH	No	307	270	2	970	6
Adams, OH	No	283	20	0	110	1

The listing of counties on Table 4 reflects a ranking based on the number of people commuting to other counties. The counties that are in the nonattainment area for the 1997 $\text{PM}_{2.5}$ NAAQS are shown in boldface. Franklin County has the highest VMT in the area. Ross County has a small number of commuters into violating counties. Pickaway County has a moderate percent of commuting into violating counties, similar to the figures for Delaware, Fairfield, and Licking Counties. However, the number of commuters going

into violating counties in Pickaway County is much smaller than in those other counties. The commuting data do not show a connection between Adams County and the Columbus area, supporting treating Adams County as not being part of the Columbus area.

Factor 5: Growth rates and patterns

Table 5 below shows population, population growth, VMT and VMT growth for counties that are included in the Columbus area. Counties are listed in descending order based on VMT change between 1996 and 2005.

Table 5. Population and VMT Growth and Percent Change.

Location	Population (2005)	Population % change (2000-05)	2005 VMT (10 ⁶ mi)	VMT % change (1996-05)
Delaware, OH	150,496	35	1,417	38
Licking, OH	154,683	6	1,669	22
Fairfield, OH	138,403	12	1,232	21
Franklin, OH	1,089,365	2	10,724	19
Coshocton, OH	36,969	1	307	4

Delaware County grew rapidly during the 2000 to 2005 period. Fairfield County had substantial growth while the other area counties experienced limited population expansion during that time. Delaware County also had the most VMT growth. The other counties had significant VMT growth as well with one exception. Coshocton County had just a 4% increase to its small VMT. These data support continuing to include the “collar counties” in the nonattainment area.

Factor 6: Meteorology (weather/transport patterns)

A pollution rose for the Columbus, Ohio area is provided with the map above. The pollution rose supports including emissions in various directions from Columbus in the nonattainment area, most notably including emissions to the east of Columbus.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The Columbus area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor provides no reason to exclude any nearby county as a contributing county.

Factor 8: Jurisdictional boundaries (e.g., existing PM and ozone areas)

The Mid-Ohio Regional Planning Commission (MORPC) is the Metropolitan Planning Organization (MPO) for the Columbus, Ohio area. MORPC webpage, <http://www.morpc.org/MORPC.htm>.

The area's ozone nonattainment area consists of the following counties: Delaware, Franklin, Licking, Fairfield, Madison, and Knox.

The proposed Columbus, Ohio nonattainment area is identical to the nonattainment area designated under the 1997 PM_{2.5} standard.

Factor 9: Level of control of emission sources

As noted above, some emission controls are in place and additional controls are planned for the power plant in Coshocton County. The existing controls have long been in place, so the emissions data on Table 1 already reflects the impact of these controls. Based on current information, this source continues to contribute to violations of the standards in the Columbus area.

Review for the Dayton-Springfield Metropolitan Statistical Area

The Dayton-Springfield nonattainment area as designated under the 1997 standards included Clark, Greene, and Montgomery Counties. On December 17, 2007, Ohio recommended including only Greene and Montgomery Counties in the nonattainment area under the 2006 standards. Violations are being observed in Montgomery and Clark Counties.

EPA agrees with Ohio that Montgomery and Greene Counties should be included in the nonattainment area, because emissions in these counties are relatively high and wind patterns and commuting patterns support the conclusion that these counties contribute to the observed violations. EPA believes that Clark County must also be included in the nonattainment area, because Clark County has monitored violations of the standard. Clark County also has sufficient emissions to be judged to be contributing to violations in both Clark and Montgomery Counties. Establishing nonattainment boundaries that match the boundaries established for the 1997 standards would have the additional benefit of simplifying planning by assuring that the same areas are subject to very similar nonattainment planning requirements.

Despite the proximity of the Cincinnati area to the Dayton area, EPA views these two nonattainment areas as sufficiently distinct to be treated as separate areas. Other counties in and around the Dayton area have relatively low emissions, and no other factor warrants inclusion of the counties in the nonattainment area.

Figure 5 is a map of the counties in the Dayton 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.

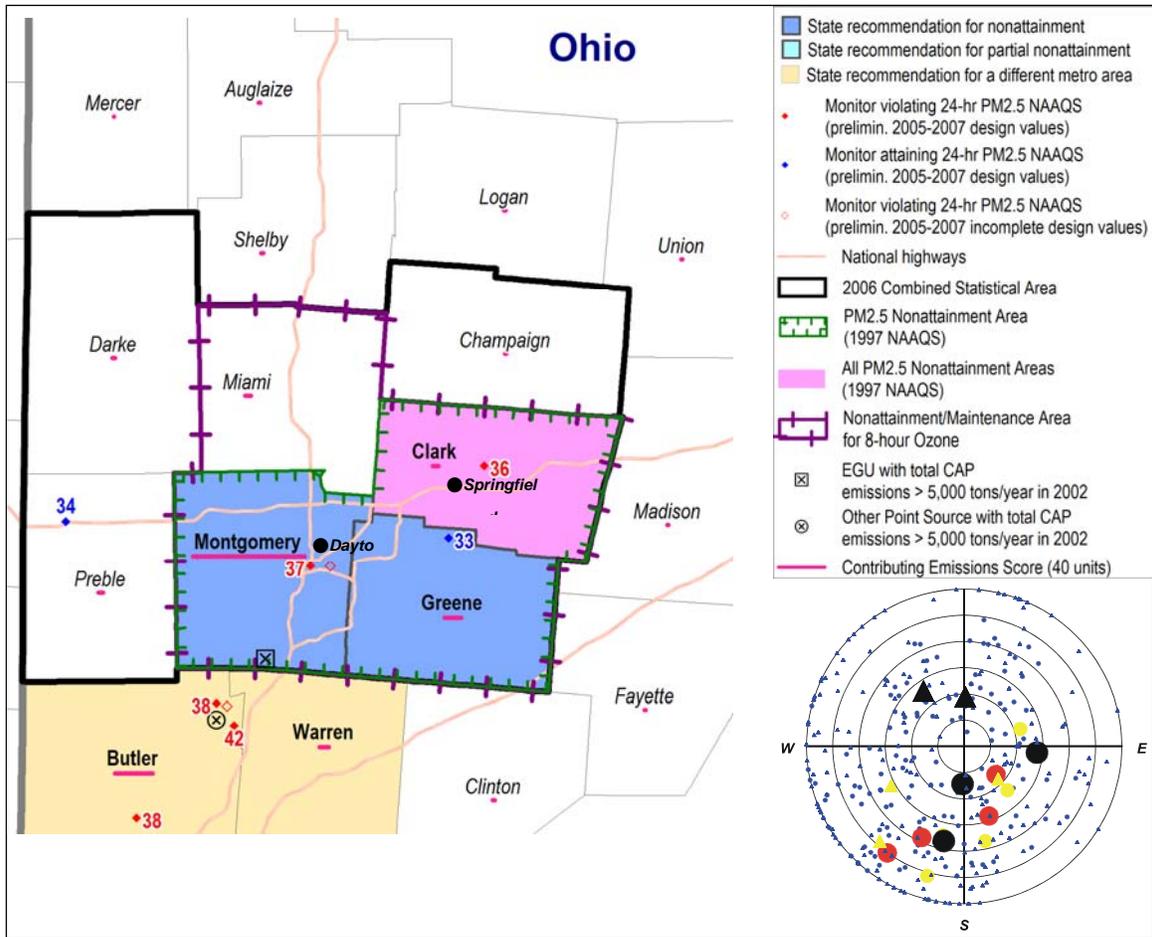


Figure 5

Factor 1: Emissions data

Table 1 shows emissions of PM_{2.5} components (given in tons per year) and the CES for potentially contributing counties in the Dayton area. Counties that are part of the Dayton nonattainment area for the 1997 PM_{2.5} NAAQS are shown in boldface. Counties are listed in descending order by CES.

Table 1. PM_{2.5} 24-hour Component Emissions, and CES.

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)
Montgomery, OH	Yes	95	1,555	637	919	9,468	21,109	21,905	1,314
Butler, OH	Other	32	2,269	563	1,706	10,636	16,661	12,734	1,105
Greene, OH	Yes	14	984	265	719	1,798	8,499	5,712	682
Clark, OH	No	5	931	288	643	426	5,533	7,427	921

The Montgomery County emissions are moderate, but are the highest in the Dayton area. Clark and Greene Counties have lower emissions. Butler County is in the Cincinnati area.

Factor 2: Air quality data

The 24-hour PM_{2.5} design values for counties in the Dayton area are shown in Table 2. Clark and Montgomery Counties both have design values that exceed the 2006 standards. Greene County meets the standards.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2004-06 ($\mu\text{g}/\text{m}^3$)	Design Values 2005-07 ($\mu\text{g}/\text{m}^3$)
Montgomery, OH	Yes	36	37
Greene, OH	Yes	31	33
Clark, OH	No	35	36

For purposes of its review, EPA used data available from the Chemical Speciation Network and the Interagency Monitoring of Protected Visual Environments (IMPROVE) network to estimate the composition of fine particle mass on days with the highest fine particle concentrations. On high concentration days during cold weather months in this area, EPA found on average a total urban contribution of $3.0 \mu\text{g}/\text{m}^3$, consisting of $0.5 \mu\text{g}/\text{m}^3$ of sulfate, $2.2 \mu\text{g}/\text{m}^3$ of nitrate, $0.3 \mu\text{g}/\text{m}^3$ of organic particles, and no miscellaneous inorganic particulate. On high concentration days during warm weather months in this area, EPA found on average a total urban contribution of $4.7 \mu\text{g}/\text{m}^3$ entirely consisting of sulfate. These estimates were used for weighting of the emissions of different pollutants in calculating the contributing emissions scores.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 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 give an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour PM_{2.5} standards. Montgomery County is the largest in the area. None of the three area counties has a notably large or small population.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Montgomery, OH	Yes	545,603	1176
Greene, OH	Yes	151,823	365
Clark, OH	No	141,908	352

Factor 4: Traffic and commuting patterns

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (10 ⁶ mi)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into statistical area	Percent Commuting into statistical area
Montgomery, OH	Yes	5,533	216,330	84	244,900	95
Greene, OH	Yes	1,515	27,800	38	68,710	95
Clark, OH	No	1,584	53,090	81	61,110	93

The listing of counties on Table 4 reflects a ranking based on 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. The percent commuting into the Dayton statistical area is at least 93% for all three counties. This indicates the counties are highly integrated. The commuting data also indicates there is limited commuting out of the Dayton area which suggests the counties are separate from the adjacent Cincinnati and Columbus areas.

Factor 5: Growth rates and patterns

Table 5 below shows population, population growth, VMT and VMT growth for counties that are included in the Dayton area. Counties are listed in descending order based on VMT percent growth between 1996 and 2005.

Table 5. Population and VMT Growth and Percent Change.

County	Population (2005)	Population % change (2000-05)	2005 VMT (10 ⁶ mi)	VMT % change (1996-2005)
Greene, OH	151,823	2	1,515	19
Clark, OH	141,908	-2	1,584	12
Montgomery, OH	545,603	-2	5,533	-2

The population change is limited for all three area counties. The VMT declined slightly from 1996 to 2005 in Montgomery County. During that period, the VMT grew by moderate amounts in Clark and Greene Counties. Thus, the distribution of population and VMT is not expected to change significantly over the SIP planning time horizon.

Factor 6: Meteorology (weather/transport patterns)

A pollution rose for the Dayton area is provided with the map above. The pollution rose supports including areas in all directions from the violating monitors in the nonattainment area.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The Dayton area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor provides no reason to exclude any nearby county as a contributing county.

Factor 8: Jurisdictional boundaries (e.g., existing PM and ozone areas)

The Miami Valley Regional Planning Commission (MVRPC) is the Metropolitan Planning Organization (MPO) for the following counties: Greene, Miami, Montgomery, and portions of Warren. MVRPC website, <http://www.mvrpc.org/index.htm>.

The Dayton ozone maintenance area consists of the following counties: Clark, Greene, Miami, and Montgomery.

The proposed Dayton nonattainment area is identical to the nonattainment area designated under the 1997 PM_{2.5} standard, which would facilitate planning.

Factor 9: Level of control of emission sources

The emission estimates on Table 1 include any control strategies implemented by the State in the Dayton area before 2005 that may influence emissions of any component of PM_{2.5} emissions (i.e., total carbon, SO₂, NO_x, and crustal PM_{2.5}). No emission controls have been added to the power plant in Montgomery County.

Review for the Huntington-Ashland Metropolitan Statistical Area

In the three-state Huntington-Ashland area, part or all of nine counties are designated nonattainment for the 1997 standards. The four Ohio counties included in this nonattainment area are all of Lawrence and Scioto Counties, Monroe and Sprigg Townships in Adams County, and Cheshire Township in Gallia County. Monitors in Scioto County, Ohio, and Cabell County, West Virginia, are recording violations of the 2006 standards. Ohio recommended that no portion of the state be included in the Huntington-Ashland area designated as nonattainment for the 2006 standards.

EPA believes that several Ohio counties should be part of the Huntington-Ashland nonattainment area for the 2006 standards. Scioto County should be included in the nonattainment area because it is violating the standard, because it is contributing to the violation within Scioto County, and because the county's emissions have a non-negligible impact on the violation in Cabell County, West Virginia. Lawrence County has a substantial fraction of the emissions in the Huntington-Ashland metropolitan statistical area, the winds very commonly blow these emissions into Cabell County, and Lawrence County is immediately adjacent to Cabell County.

The emissions from Monroe and Sprigg Townships in Adams County and from Cheshire Township in Gallia County are dominated by emissions from power plants. EPA understands that some of these emissions have long been controlled with highly effective control equipment, some of these emissions have become well controlled more recently, and some of these emissions are expected to be controlled within a few years. However, current information indicates that these counties remain large sources of PM_{2.5} and PM_{2.5} precursor emissions, in areas that are geographically near and meteorologically connected

to the violations in this area. EPA also lacks information on the extent to which these controls on these sources may be considered to be federally enforceable.

In considering county-level emissions, EPA considered 2005 emissions data from the National Emissions Inventory. EPA welcomes further information regarding any change in emissions from the relevant power plants. 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
- 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
- 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)

The surrounding Ohio counties have relatively low emissions, and no other factor warrants their inclusion in the nonattainment area.

Figure 6 is a map of 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 States.

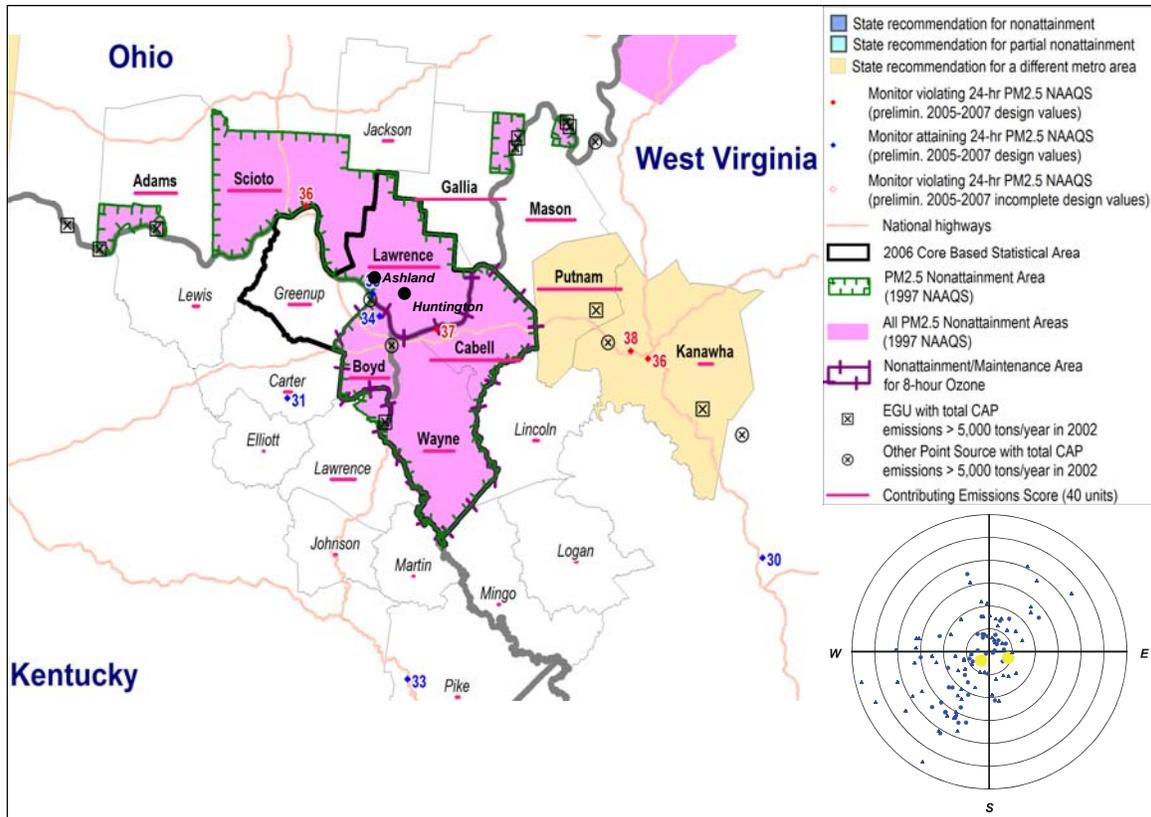


Figure 6. Note: Ohio in fact recommended attainment despite the violation in Scioto County, and West Virginia recommended attainment based on attaining data in 2004 to 2006 and did not update its recommendation after violations in 2005 to 2007 were discovered.

Factor 1: Emissions data

Table 1 shows emissions of PM_{2.5} and PM_{2.5} precursors (given in tons per year) and the CES for potentially contributing counties in the Huntington-Ashland area. Counties that are part of the Huntington-Ashland nonattainment area for the 1997 PM_{2.5} NAAQS are shown in boldface. Counties are listed in descending order by CES.

Table 1. PM_{2.5} 24-hour Component Emissions, and CES.

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
Putnam, WV	Other	92	4,838	468	4,370	113,590	37,387	3,117	106
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
Greenup, KY	No	24	319	151	169	2,183	4,102	1,694	155

Kanawha, WV	Other	15	2,016	857	1,159	21,633	23,985	15,652	527
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In Ohio, Adams and Gallia Counties have high emissions. The sulfur dioxide and oxides of nitrogen emissions are very large. The emissions are not as large in Lawrence and Scioto Counties, but they have high CES. This information suggests that emissions from these counties are contributing to the PM_{2.5} violations in the Huntington-Ashland area. This conclusion is supported by other information such as the geographic proximity of the sources and the meteorology of this area.

Factor 2: Air quality data

The 24-hour PM_{2.5} design values for counties in the Huntington-Ashland area are shown in Table 2. Scioto County, Ohio has a 2005 to 2007 design value that exceeds the 2006 standards. Cabell County in West Virginia also violated the standard. Lawrence County, Ohio attained the 2006 standards. Adams and Gallia Counties in Ohio do not have PM_{2.5} air quality monitoring data.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2004-06 (µg/m ³)	Design Values 2005-07 (µg/m ³)
Cabell, WV	No	34	37
Gallia, OH	No		
Lawrence, OH	No	34	35
Scioto, OH	No	33	36
Mason, WV	No		
Adams, OH	No		
Boyd, KY	No	32	34
Wayne, WV	No		
Lawrence, KY	No		
Greenup, KY	No		

For purposes of its review, EPA used data available from the Chemical Speciation Network and the Interagency Monitoring of Protected Visual Environments (IMPROVE) network to estimate the composition of fine particle mass on days with the highest fine particle concentrations. On high concentration days during cold weather months in this area, EPA found on average a total urban contribution of 6.5 µg/m³, consisting of 2.7 µg/m³ of sulfate, 0.4 µg/m³ of nitrate, 3.2 µg/m³ of organic particles, and 0.2 µg/m³ of miscellaneous inorganic particulate. On high concentration days during warm weather months in this area, EPA found on average a total urban contribution of 3.3 µg/m³, consisting of 0.8 µg/m³ of sulfate and 2.5 µg/m³ of organic particles emissions. These estimates were used for weighting of the emissions of different pollutants in calculating the contributing emissions scores.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 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 give an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour PM_{2.5} standards. The county populations in the Huntington-Ashland area are all moderate to low. In Ohio, Lawrence and Scioto Counties have second and third largest populations in the area. Adams and Gallia Counties both have low populations. The low population of Adams and Gallia Counties and the fact that virtually all the emissions in these counties are emitted in the townships with major power plants supports applying a nonattainment designation to just those townships within these counties.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/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
Greenup, KY	No	37,206	105

Factor 4: Traffic and commuting patterns

The listing of counties on Table 4 reflects a ranking based on 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. Lawrence County, Ohio has a high percent commuting into the metropolitan statistical area and a moderate percent commuting into violating counties, because the county is in the metropolitan statistical area and is not a violating county. Conversely, Scioto County, has a low percent commuting into the metropolitan statistical area and a high percent commuting into violating counties, reflecting the fact that Scioto County is not part of the metropolitan statistical area but is a violating county. All the commuting figures are low for Adams and Gallia Counties in Ohio, suggesting that most of these two counties can be excluded from the nonattainment area.

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (10 ⁶ mi)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into statistical area	Percent Commuting into statistical area
Cabell, WV	No	1,230	34,670	86	35,460	88
Lawrence, OH	No	650	7,970	35	21,160	92
Boyd, KY	No	574	1,380	7	17,580	93
Wayne, WV	No	438	7,170	46	14,040	90

Greenup, KY	No	371	1,770	13	11,130	83
Scioto, OH	No	591	22,040	78	1,330	5
Lawrence, KY	No	159	250	5	920	19
Mason, WV	No	249	1,080	12	670	7
Gallia, OH	No	247	300	3	330	3
Adams, OH	No	283	130	1	20	0

Factor 5: Growth rates and patterns

Table 5 below shows population, population growth, VMT and VMT growth for counties that are included in the Huntington-Ashland area. Counties are listed in descending order based on VMT change between 1996 and 2005. Several of the Huntington-Ashland area counties encountered strong VMT growth from 1996 to 2005. In Ohio, the VMT growth was limited with Adams and Lawrence Counties having modest increases. The VMT did not change in Gallia County. It declined slightly in Scioto County. The populations of the area counties remained stable from 2000 to 2005 with small changes being observed. The Ohio counties in area followed this pattern. Adams County, Ohio matched Lawrence County, Kentucky with 4% population growth as the largest changes in the area. These changes do not suggest any significant shifts in the distribution of population or VMT to be considered in the designations process.

Table 5. Population and VMT Growth and Percent Change.

County	Population (2005)	Population % change (2000-05)	2005 VMT (10 ⁶ mi)	VMT % change (1996-2005)
Wayne, WV	41,959	-2	438	47
Cabell, WV	93,988	-3	1,230	41
Mason, WV	25,763	-1	249	36
Greenup, KY	37,206	1	371	23
Boyd, KY	49,359	-1	574	16
Lawrence, KY	16,162	4	159	11
Lawrence, OH	62,946	1	650	9
Adams, OH	28,454	4	283	7
Gallia, OH	31,241	0	247	0
Scioto, OH	76,506	-3	591	-3

Factor 6: Meteorology (weather/transport patterns)

A pollution rose for the Huntington-Ashland area is provided with the map above. Since relatively few high concentrations occurred during the period for which this pollution rose was developed, this pollution rose does not clearly indicate any particularly wind direction from which contributions are most likely to arise.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The Huntington-Ashland area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor provides no reason to exclude any nearby county as a contributing county.

Factor 8: Jurisdictional boundaries (e.g., existing PM and ozone areas)

The KYOVA Interstate Planning Commission is the Metropolitan Planning Organization (MPO) for Lawrence County, OH. KYOVA website: <http://www.state.wv.us/kyova/>.

There are no counties in the Ohio portion of the Huntington-Ashland maintenance area for the ozone standard. Boyd County, Kentucky and Cabell and Wayne Counties in West Virginia comprise the maintenance area.

The proposed Huntington-Ashland nonattainment area is identical to the nonattainment area designated under the 1997 PM_{2.5} standard.

Factor 9: Level of control of emission sources

The emission estimates on Table 1 include any control strategies implemented by the States in the Huntington-Ashland area before 2005 that may influence emissions of any component of PM_{2.5} emissions (i.e., total carbon, SO₂, NO_x, and crustal PM_{2.5}).

Review for the Parkersburg-Marietta Metropolitan Statistical Area

Parkersburg-Marietta is a two-state nonattainment area. Under the 1997 standards, Washington County, Ohio along with Pleasants (partial) and Wood Counties, West Virginia comprised the nonattainment area. A violation is being observed in Wood County, West Virginia. The analysis of the Parkersburg-Marietta area for designations under the 2006 standards examined the entire area, though this discussion only addresses the Ohio portion of the area. In a May 30, 2008 letter, Ohio recommended retaining Washington County in the Parkersburg-Marietta nonattainment area.

EPA agrees with Ohio's recommendation for this area. The emissions from Washington County are high. Sulfur dioxide emissions are especially high because of the two power plants in the county. Emission controls are limited for these facilities. The population and traffic in Washington County is comparable to the rest of the Parkersburg-Marietta area. There is no air quality monitoring in Washington County.

The surrounding Ohio counties have relatively low emissions, and no other factor warrants their inclusion in the nonattainment area.

Figure 7 is a map of the counties in the Parkersburg-Marietta 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 States.

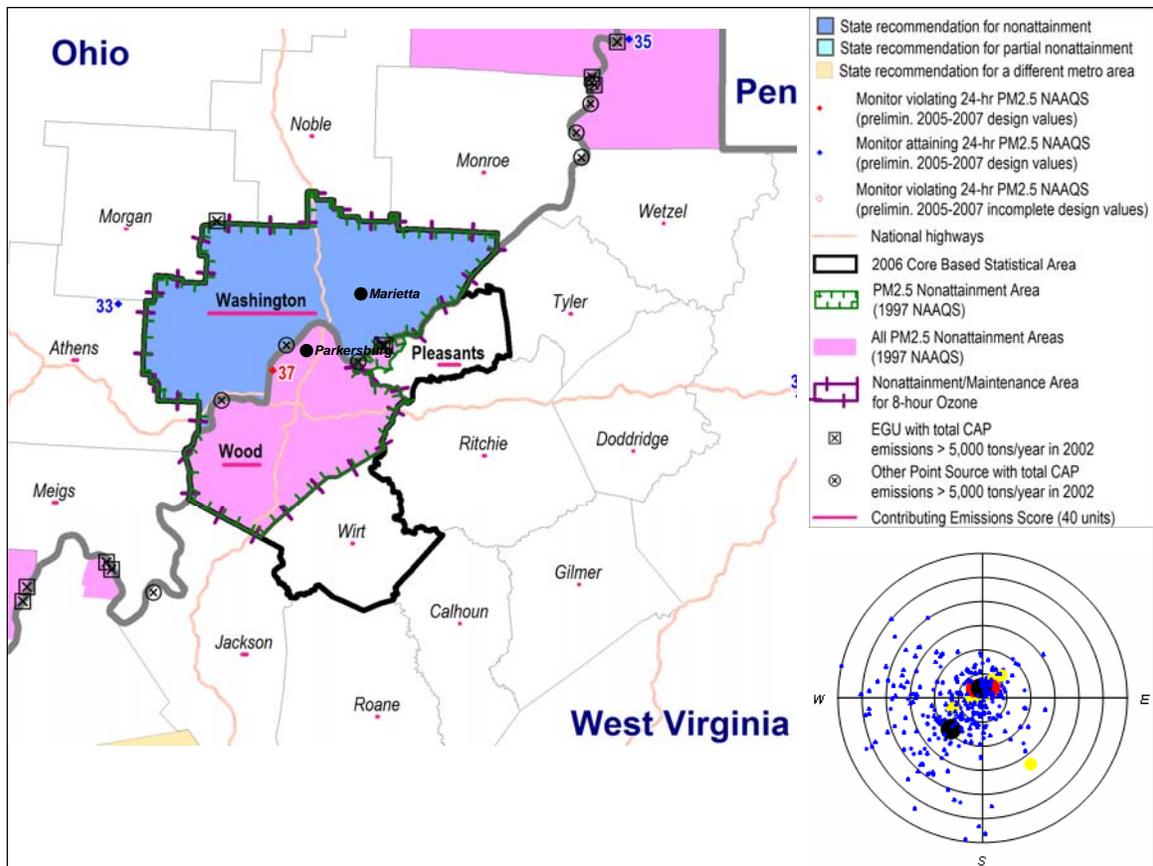


Figure 7. Note: West Virginia recommended attainment based on 2004 to 2006 data, and did not update its recommendations after a violation based on 2005 to 2007 data was discovered.

Factor 1: Emissions data

Table 1 shows emissions of PM_{2.5} components (given in tons per year) and the CES for 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.

Table 1. PM_{2.5} 24-hour Component Emissions, and CES.

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	54	977	421	557	6,243	5,866	6,295	200
Pleasants, WV	No	16	1,851	144	1,706	62,011	14,912	1,462	112
Athens, OH	No	7	465	228	236	1,459	3,275	2,352	290
Jackson, WV	No	6	817	188	629	3,326	3,036	2,327	164
Meigs, OH	No	5	321	155	168	338	2,161	1,165	834

The emissions and CES of Washington County, Ohio are the largest in the area. The emissions and CES of Athens and Meigs Counties, Ohio are well below the values of counties designated nonattainment for the 1997 PM_{2.5} standards.

Factor 2: Air quality data

The 24-hour PM_{2.5} design values for counties in the Parkersburg-Marietta area are shown in Table 2. A violation of the 2006 PM_{2.5} standards occurred in the West Virginia portion of the Parkersburg-Marietta area. Athens County, Ohio meets the standards. There is no fine particulate air quality monitoring data for Meigs and Washington Counties in Ohio.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2004-06 (µg/m ³)	Design Values 2005-07 (µg/m ³)
Washington, OH	Yes		
Wood, WV	No	35	37
Pleasants, WV	No		
Athens, OH	No	32	33
Jackson, WV	No		
Meigs, OH	No		

For purposes of its review, EPA used data available from the Chemical Speciation Network and the Interagency Monitoring of Protected Visual Environments (IMPROVE) network to estimate the composition of fine particle mass on days with the highest fine particle concentrations. On high concentration days during cold weather months in this area, EPA found on average a total urban contribution of 7.2 µg/m³, consisting of 1.6 µg/m³ of sulfate, 2.2 µg/m³ of nitrate, 3.1 µg/m³ of organic particles, and 0.3 µg/m³ of miscellaneous inorganic particulate. On high concentration days during warm weather months in this area, EPA found on average a total urban contribution of 5.5 µg/m³, consisting of 3.0 µg/m³ of sulfate, 2.4 µg/m³ of organic particles, and 0.1 µg/m³ of miscellaneous inorganic particulate. These estimates were used for weighting of the emissions of different pollutants in calculating the contributing emissions scores.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 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 give an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour PM_{2.5} standards. The population of Washington County, Ohio is slightly smaller than the Wood County, West Virginia population. Athens County, Ohio has a similar population to Washington County, Ohio. Meigs County, Ohio has a low population.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/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

Factor 4: Traffic and commuting patterns

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (10 ⁶ mi)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into statistical area	Percent Commuting into statistical area
Wood, WV	No	976	31,700	85	35,720	96
Washington, OH	Yes	686	5,930	21	26,250	94
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

The listing of counties on Table 4 reflects a ranking based on 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. The percent commuting into the Parkersburg-Marietta area information indicates that Washington, Pleasants, and Wood Counties are connected. It also suggests that Athens and Meigs Counties in Ohio are separate from the Parkersburg-Marietta area.

Factor 5: Growth rates and patterns

Table 5 below shows population, population growth, VMT and VMT growth for counties that are included in the Parkersburg-Marietta area. Counties are listed in descending order based on VMT change between 1996 and 2005. There was little population change for the counties. This is not the case for VMT change. The West Virginia counties, Pleasants and Wood Counties, had strong increases in VMT between 1996 and 2005. Washington County, Ohio had a slight decline in its VMT. The Ohio counties near the area showed little or no VMT growth.

Table 5. Population and VMT Growth and Percent Change.

County	Population (2005)	Population % change (2000-05)	2005 VMT (10 ⁶ mi)	VMT % change (1996-05)
Pleasants, WV	7,329	-2	67	37
Wood, WV	86,881	-1	976	11
Athens, OH	62,028	0	480	3
Meigs, OH	23,179	1	186	0
Washington, OH	62,155	-2	686	-1
Jackson, WV	28,306	1	444	-7

Factor 6: Meteorology (weather/transport patterns)

A pollution rose for the Parkersburg-Marietta area is provided with the map above. The pollution rose suggests that Washington County, Ohio, commonly contributes to the violations in Wood County, West Virginia.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The Parkersburg-Marietta area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor provides no reason to exclude any nearby county as a contributing county.

Factor 8: Jurisdictional boundaries (e.g., existing PM and ozone areas)

The Wood-Washington-Wirt Interstate Planning Commission (WWW) is the Metropolitan Planning Organization (MPO) for the following townships in Washington County, OH: Newport, Marietta, Fearing, Muskingum, Warren, Dunham and Belpre Townships. WWW website: <http://www.triplew.org/index.html>.

The Parkersburg-Marietta ozone maintenance area consists of the following counties: Washington County, Ohio, and Wood County, West Virginia.

The proposed Parkersburg-Marietta nonattainment area is identical to the nonattainment area designated under the 1997 PM_{2.5} standards, supporting designating the same area as nonattainment for the 2006 standards.

Factor 9: Level of control of emission sources

The emission estimates on Table 1 include any control strategies implemented by the States in the Parkersburg-Marietta area before 2005 that may influence emissions of any component of PM_{2.5} emissions (i.e., total carbon, SO₂, NO_x, and crustal PM_{2.5}). No recent additional control measures in Washington County were implemented.

Review for the Steubenville-Weirton Metropolitan Statistical Area

The Steubenville-Weirton nonattainment area designated for the 1997 standards is comprised of three counties: Jefferson County, Ohio, and Brooke and Hancock Counties, West Virginia. Violations of the 2006 standards have been monitored in all three of these counties. Ohio recommends Jefferson County in its December 17, 2007 letter to be nonattainment under the 2006 standards.

EPA agrees with Ohio's recommendation. The emissions from Jefferson County, Ohio, especially sulfur dioxide, are high. There are two power plants in Jefferson County that contribute to the high emissions. Emission controls have been added at some units of the Cardinal plant, but SO₂ emission controls at the remaining unit at Cardinal and at the several units at the Sammis plant are not expected to be installed until 2010 or later. Thus, Jefferson County emissions remain large, and continue to contribute to violations in this area

The Steubenville area is relatively near to the Pittsburgh area. However, EPA believes that these two areas are sufficiently distinct to warrant treatment as separate nonattainment areas.

Other counties around the Steubenville-Weirton area have relatively low emissions. No other factor warrants inclusion of any additional Ohio county in the Steubenville-Weirton nonattainment area.

Figure 8 is a map of the counties in the Steubenville-Weirton 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 States.

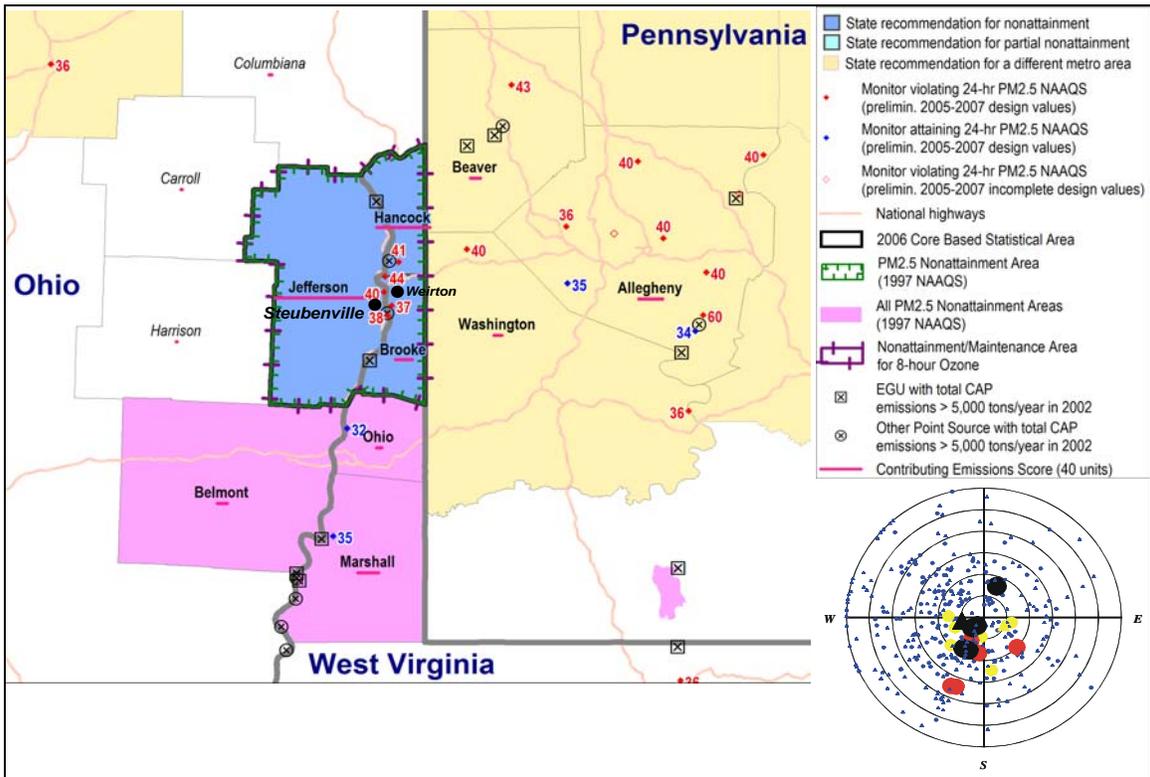


Figure 8

Factor 1: Emissions data

Table 1 shows emissions of PM_{2.5} components (given in tons per year) and the CES for 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.

Table 1. PM_{2.5} 24-hour Component Emissions, and CES.

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
Allegheny, PA	Other	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
Brooke, WV	Yes	19	579	192	388	1,349	2,131	3,436	210

Jefferson County, Ohio has the highest emissions in the area. The emissions of direct PM_{2.5}, sulfur dioxide, and nitrogen oxides are all large. Jefferson County also has the highest CES, which indicates it contributes to the area violations. Although this table does not show emissions for other Ohio counties, the emissions of other nearby counties that are not part of other areas designated nonattainment are low.

Factor 2: Air quality data

The 24-hour PM_{2.5} design values for counties in the Steubenville-Weirton area are shown in Table 2. Jefferson County, Ohio has a design value which exceeds the 2006 standards. Two West Virginia counties also violate the air quality standards.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2004-06 (µg/m ³)	Design Values 2005-07 (µg/m ³)
Jefferson, OH	Yes	43	40
Hancock, WV	Yes		41
Brooke, WV	Yes	40	44

For purposes of its review, EPA used data available from the Chemical Speciation Network and the Interagency Monitoring of Protected Visual Environments (IMPROVE) network to estimate the composition of fine particle mass on days with the highest fine particle concentrations. On high concentration days during cold weather months in this area, EPA found on average a total urban contribution of 15.5 µg/m³, consisting of 7.0 µg/m³ of sulfate, 5.7 µg/m³ of carbonaceous particles, 2.8 µg/m³ of miscellaneous inorganic particulate, and no nitrates. For high concentration days during warm weather months in this area, EPA found on average a total urban contribution of 13.7 µg/m³, consisting of 7.2 µg/m³ of sulfate, 5.6 µg/m³ of carbonaceous particles, 0.9 µg/m³ of miscellaneous inorganic particles, and no nitrates. These estimates were used for weighting of the emissions of different pollutants in calculating the contributing emissions scores.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 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 give an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour PM_{2.5} standards. Jefferson County, Ohio has a well larger population than both Brooke and Hancock Counties in West Virginia. However, the West Virginia counties

are smaller in land area which gives both population densities much larger than the Jefferson County population density.

Table 3. 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

Factor 4: Traffic and commuting patterns

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (10 ⁶ mi)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into statistical area	Percent Commuting into statistical area
Jefferson, OH	Yes	684	24,330	85	-	-
Hancock, WV	Yes	187	12,820	91	-	-
Brooke, WV	Yes	210	9,320	89	-	-

The listing of counties on Table 4 reflects a ranking based on the number of people commuting to violating counties. The commuting in the statistical area figures are not available in the Steubenville-Weirton area. All listed counties are in the nonattainment area for the 1997 PM_{2.5} NAAQS. All three area counties are in violation of the air quality standards, so it makes sense that there is a fair percent of commuting to violating counties for all three counties.

Factor 5: Growth rates and patterns

Table 5 below shows population, population growth, VMT and VMT growth for counties that are included in the Steubenville-Weirton area. Counties are listed in descending order based on VMT change between 1996 and 2005. Jefferson County, Ohio joined the West Virginia counties in experiencing a population decline from 2000 to 2005. The VMT declined in Jefferson County, but not nearly as sharply as the 32% VMT decline in Hancock County, West Virginia. The VMT was unchanged for Brooke County, West Virginia for the 1996 to 2005 period.

Table 5. Population and VMT Growth and Percent Change.

County	Population (2005)	Population % change (2000-05)	2005 VMT (10 ⁶ mi)	VMT % change (1996-05)
Brooke, WV	24,474	-4	210	0
Jefferson, OH	70,631	-4	684	-6
Hancock, WV	31,191	-4	187	-32

Factor 6: Meteorology (weather/transport patterns)

A pollution rose for the Steubenville-Weirton area is provided with the map above.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The Steubenville-Weirton area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor provides no reason to exclude any nearby county as a contributing county.

Factor 8: Jurisdictional boundaries (e.g., existing PM and ozone areas)

The Brooke-Hancock-Jefferson Metropolitan Planning Commission (BHJMPC) is the Metropolitan Planning Organization (MPO) for Jefferson County, OH. BHJMPC website: <http://www.bhjmpc.org/>

The Steubenville-Weirton ozone maintenance area consists of: Jefferson County in Ohio and Brooke and Hancock Counties in West Virginia.

The proposed Steubenville-Weirton nonattainment area is identical to the nonattainment area designated under the 1997 PM_{2.5} standard.

Factor 9: Level of control of emission sources

The emission estimates on Table 1 include any control strategies implemented by the States in the Steubenville-Weirton area before 2005 that may influence emissions of any component of PM_{2.5} emissions (i.e., total carbon, SO₂, NO_x, and crustal PM_{2.5}). Some emission controls have been added since 2005 in Jefferson County. Additional controls are probable in the next few years. Still, the amount of emissions for Jefferson County remains large, and therefore Jefferson County continues to contribute to violations in the Steubenville-Weirton nonattainment area.

**Review for the Youngstown-Warren-East Liverpool
Combined Statistical Area**

The Youngstown area is designated attainment under the 1997 standards. However, monitoring indicates a violation of the 2006 standards in Mahoning County, Ohio. Trumbull County had shown a 2004-06 violation, but data indicates it meets the standards in 2005-07. There are four counties in the combined statistical area: Columbiana, Mahoning, and Trumbull Counties in Ohio and Mercer County, Pennsylvania. Ohio recommended Mahoning and Trumbull Counties as nonattainment. EPA analyzed these and other nearby counties. Many of the nearby counties are in other metropolitan areas and thus were evaluated as part of those other areas.

EPA agrees with the state's recommendations. Within the Youngstown area, the greatest emissions and the greatest likely local contribution to the violations in the area are in Mahoning and Trumbull counties. Columbiana County emissions are moderate but are

substantially lower than those of Mahoning and Trumbull counties. Columbiana County is also excluded from the 8-hour ozone maintenance area.

As noted earlier, Youngstown is near several other urban areas, including Cleveland, Canton, and Steubenville. However, EPA views these areas as sufficiently distinct to warrant treatment as separate nonattainment areas. Of the counties that are not being included in other nonattainment areas, EPA finds that emissions of these counties are relatively low, and no other factor warrants their inclusion in the nonattainment area.

Figure 9 is a map of the counties in the Youngstown 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 States.

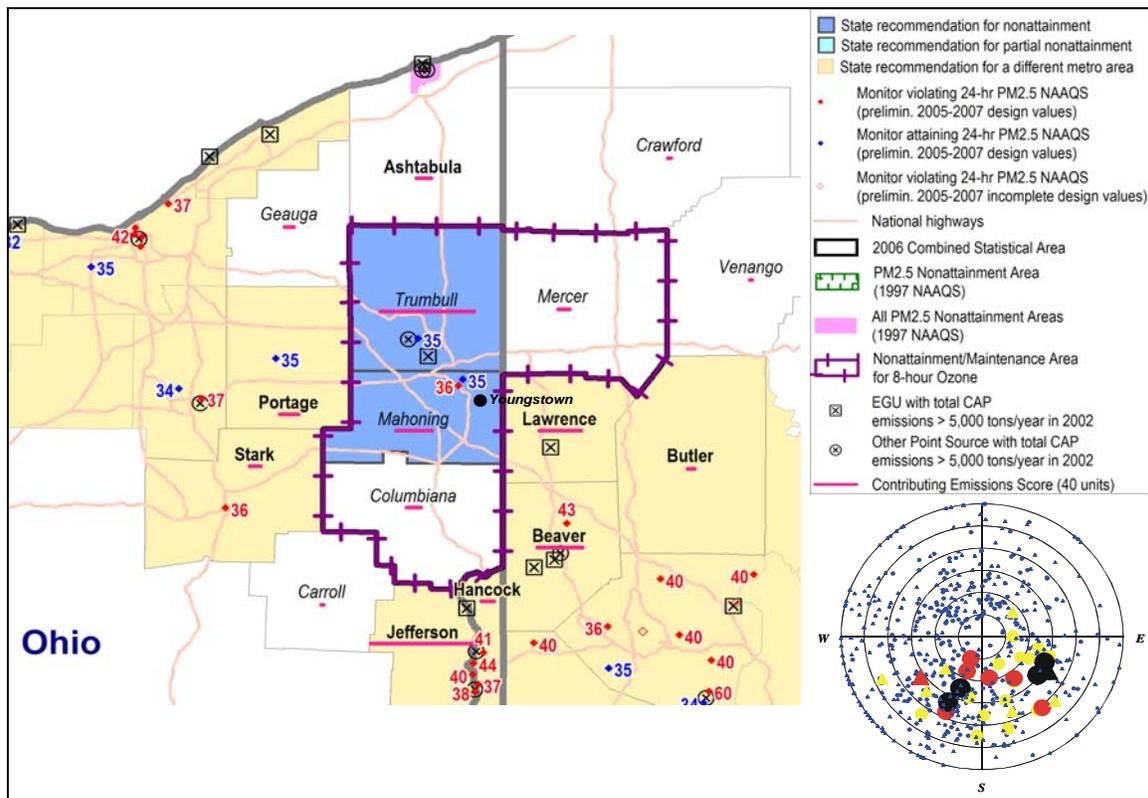


Figure 9

Factor 1: Emissions data

Table 1 shows emissions of PM_{2.5} components (given in tons per year) and the CES for potentially contributing counties in the Youngstown area. Counties are listed in descending order by CES.

Table 1. PM_{2.5} 24-hour Component Emissions, and CES.

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)

Jefferson, OH	Other	100	11,409	722	10,686	224,025	46,158	3,693	297
Trumbull, OH	Yes	89	1,730	625	1,105	18,501	13,373	12,098	881
Beaver, PA	Other	43	2,909	451	2,457	45,452	33,400	7,424	450
Lawrence, PA	Other	40	2,046	313	1,733	22,900	9,001	4,234	692
Mahoning, OH	Yes	34	722	338	384	1,927	10,086	10,416	1,415
Portage, OH	Other	18	1,011	496	514	548	7,269	8,365	564
Columbiana, OH	No	14	805	366	441	525	4,377	4,933	1,956
Mercer, PA	No	11	793	290	503	1,042	6,010	7,028	1,210

Mahoning and Trumbull Counties have the highest emissions and CES in the Youngstown area. The table indicates counties recommended as nonattainment for other areas have CES in the same range as Mahoning and Trumbull Counties. However, Jefferson County is in Steubenville-Weirton area. Beaver and Lawrence Counties in Pennsylvania are in the Pittsburgh area and Portage County, Ohio is in the Cleveland area. Within the Youngstown area, the emissions and CES are greatest for Mahoning and Trumbull Counties contribute to the violation. The emissions and CES from Columbiana County, Ohio and Mercer County, Pennsylvania are substantially smaller.

Factor 2: Air quality data

The 24-hour PM_{2.5} design values for counties in the Youngstown area are shown in Table 2. Mahoning County is in violation of the 2006 PM_{2.5} air quality standards. Trumbull County meets the standards. There is no air quality data for Columbiana County and Mercer County. There are violations in nearby counties that are in other metropolitan areas.

Table 2. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2004-06 ($\mu\text{g}/\text{m}^3$)	Design Values 2005-07 ($\mu\text{g}/\text{m}^3$)
Trumbull, OH	Yes	36	35
Mahoning, OH	Yes	37	36
Columbiana, OH	No		
Mercer, PA	No		
Jefferson, OH	Other	43	40
Beaver, PA	Other	45	43
Lawrence, PA	Other		
Portage, OH	Other	34	35

For purposes of its review, EPA used data available from the Chemical Speciation Network and the Interagency Monitoring of Protected Visual Environments (IMPROVE) network to estimate the composition of fine particle mass on days with the highest fine particle concentrations. On high concentration days during cold weather months in this area, EPA found on average a total urban contribution of 11.0 $\mu\text{g}/\text{m}^3$, consisting of 1.2 $\mu\text{g}/\text{m}^3$ of sulfate, 3.4 $\mu\text{g}/\text{m}^3$ of nitrate, 4.8 $\mu\text{g}/\text{m}^3$ of organic particles, and 1.6 $\mu\text{g}/\text{m}^3$ of miscellaneous inorganic particulate. On high concentration days during warm weather months in this area, EPA found on average a total urban contribution of 6.2 $\mu\text{g}/\text{m}^3$, consisting of 2.5 $\mu\text{g}/\text{m}^3$ of sulfate, 2.2 $\mu\text{g}/\text{m}^3$ of organic particles, and 1.5 $\mu\text{g}/\text{m}^3$ of

miscellaneous inorganic particulate. These estimates were used for weighting of the emissions of different pollutants in calculating the contributing emissions scores.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 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 give an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour PM_{2.5} standards. Mahoning and Trumbull Counties are the largest counties in the area. Columbiana and Mercer Counties each have about half the population of the larger two counties. The population density statistics reinforce this as Mahoning and Trumbull Counties densities are well larger than the densities of Columbiana and Mercer Counties.

Table 3. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Trumbull, OH	Yes	218,672	345
Mahoning, OH	Yes	253,181	599
Columbiana, OH	No	110,636	207
Mercer, PA	No	119,115	175
Jefferson, OH	Other	70,631	172
Beaver, PA	Other	176,825	399
Lawrence, PA	Other	92,412	255
Portage, OH	Other	155,150	307

Factor 4: Traffic and commuting patterns

Table 4. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (10 ⁶ mi)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into statistical area	Percent Commuting into statistical area
Mahoning, OH	Yes	2,666	99,310	91	100,200	92
Portage, OH	Other	1,788	99,310	91	100,200	92
Trumbull, OH	Yes	2,153	85,820	88	85,870	88
Mercer, PA	No	1,302	44,370	87	44,270	87
Columbiana, OH	No	872	16,360	33	39,050	79
Lawrence, PA	Other	769	7,390	18	4,730	12
Beaver, PA	Other	1,522	48,250	60	970	1
Jefferson, OH	Other	684	21,140	74	730	3

The listing of counties on Table 4 reflects a ranking based on the number of people commuting to other counties. The four Youngstown area counties have a fair amount of commuting within the statistical area. Columbiana County has a moderate amount of commuting to any violating county. The other three Youngstown area counties have a

greater number and percent of commuting into any violating county. There is a modest amount of commuting from Portage County, Ohio into the Youngstown area.

Factor 5: Growth rates and patterns

Table 5 below shows population, population growth, VMT and VMT growth for counties that are included in the Youngstown area. Counties are listed in descending order based on VMT growth between 1996 and 2005. The population change for counties near Youngstown has generally been slightly declining from 2000 to 2005. The exception is the 2% population gain in Portage County, Ohio. Mahoning and Trumbull Counties had the highest VMT growth in the area. Portage County also had VMT growth. The other counties had no change or a decrease in VMT during the 1996-2005 period.

Table 5. Population and VMT Growth and Percent Change.

County	Population (2005)	Population % change (2000-05)	2005 VMT (10 ⁶ mi)	VMT % change (1996-2005)
Mahoning, OH	253,181	-2	2,666	9
Trumbull, OH	218,672	-3	2,153	8
Portage, OH	155,150	2	1,788	6
Mercer, PA	119,115	-1	1,302	0
Beaver, PA	176,825	-2	1,522	0
Lawrence, PA	92,412	-2	769	-1
Columbiana, OH	110,636	-1	872	-2
Jefferson, OH	70,631	-4	684	-6

Factor 6: Meteorology (weather/transport patterns)

A pollution rose for the Youngstown area is provided with the map above. This factor supports the inclusion of Columbiana County in the nonattainment area, insofar as winds are commonly from the south on high concentration days. However, this factor must be viewed in concert with factor 1, which suggests that only a modest amount of emissions are carried from Columbiana County to the violating monitor.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The Youngstown area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor provides no reason to exclude any nearby county as a contributing county.

Factor 8: Jurisdictional boundaries (e.g., existing PM and ozone areas)

The Eastgate Regional Council of Governments (Eastgate) is the Metropolitan Planning Organization (MPO) for Mahoning and Trumbull Counties in Ohio. Eastgate webpage: <http://www.eastgatecog.org/>.

The Youngstown ozone maintenance area consists of the following counties: Columbiana, Mahoning, and Trumbull in Ohio and Mercer in Pennsylvania.

Factor 9: Level of control of emission sources

The emission estimates on Table 1 include any control strategies implemented by the States in the Youngstown area before 2005 that may influence emissions of any component of PM_{2.5} emissions (i.e., total carbon, SO₂, NO_x, and crustal PM_{2.5}).

Background on Criteria EPA used to define its intended nonattainment areas

On June 8, 2007, in a memorandum from Robert Meyers to the EPA Regional Administrators, EPA issued guidance on a timetable for designation of areas violating the PM_{2.5} air quality standards promulgated in 2006 and factors that EPA recommended states to consider as they prepared recommendations for nonattainment area boundaries. This guidance was sent to the Governor of Ohio as an attachment to a letter dated July 9, 2007, requesting the State's recommendations. The guidance identified nine factors: emissions, air quality, population density and degree of urbanization, traffic and commuting patterns, growth rates and patterns, meteorology, geography/topography, jurisdictional boundaries, and level of control of emission sources.

The Clean Air Act dictates that nonattainment areas be defined to include both areas that are violating the standards and nearby areas that are contributing to the violations. Assessment of areas contributing to violations is complicated by the multiple pollutants that are components of fine particulate matter, the variable significance of these multiple components, and the complexities of photochemical formation and dispersion. To facilitate its review of available information, EPA prepared a "Contributing Emissions Score" (CES) for each potentially violating county. EPA derived a CES for each relevant county using information on emissions, air quality, and meteorology. The score for each county is computed relative to the highest scoring county in the area, so that scores range between 0 and 100. These scores represent an estimate of the relative maximum influence that emissions in that County have on a violating county. The weight that the CES plays in determining the boundaries of any violating area varies from area to area depending on how well the CES methodology takes into account characteristics of an area that impact transport and dispersion of PM_{2.5} and depending on the significance of other factors.

Briefly, a CES for each county was derived by incorporating the following information and variables that impact PM_{2.5} transport into the screening approach:

- Major PM_{2.5} components: total carbon (organic carbon (OC) and elemental carbon (EC)), SO₂, 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") for each of two seasons, cold (Oct-Apr) and warm (May-Sept)
- 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/naqs/pm/pm25_2006_techinfo.html#C.

Factor 1: Emissions data

For this factor, EPA looked at county-based levels of emissions of the following PM_{2.5} components: PM_{2.5} emissions total (which includes PM_{2.5} emissions carbon and emissions other), PM_{2.5} emissions carbon (includes organic carbon OC and elemental carbon (EC)), and PM_{2.5} emissions other (which includes inorganic particles (crustal)), as well as emissions of SO₂ and NO_x which are precursors of secondary PM_{2.5} components. 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 each county's Contributing Emissions Score (CES), whose derivation is briefly described above.

Factor 2: Air quality data

This factor considers the 24-hour PM_{2.5} design values, in µg/m³, for air-quality monitors in counties in each area based on data for the 2004-2006 and 2005-2007 periods. A monitor's design value indicates whether that monitor attains a specified air-quality standard. The 24-hour PM_{2.5} standards are met when the 3-year average of a monitor's 98th percentile values are 35 µg/m³ or less. A design value is only valid if minimum data completeness criteria are met. EPA is only using air quality data collected in accordance with 40 CFR Parts 50, 53, and 58.

Factor 3: Population density and degree of urbanization (including commercial development)

The tables show the 2005 population for each county in the area being evaluated, as well as the population density for each county in the area. Population data give an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour PM_{2.5} standards.

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the area, the percent of total commuters in each county who commute to other counties within area, as well as the total vehicle miles traveled (VMT) for each county in millions of miles. 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.

The 2005 VMT data used for table 4 and 5 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/>, in particular in the file named 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.

Factor 5: Growth rates and patterns

This factor looks at the population and VMT trends for the each area from 2000 to 2005, 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 could be an appropriate county for implementing mobile-source and other emission-control strategies, thus warranting inclusion in the nonattainment area.

Factor 6: Meteorology (weather/transport patterns)

For this factor, EPA considered the most representative National Weather Service wind direction and speed data throughout the year, 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. 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.

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 µg/m³ 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.

EPA also conducted trajectory analyses to assess the likelihood that each county was upwind on high concentration days. EPA used these results directly and also used these results in computing each County’s CES. Further documentation of this analysis is provided in the documentation of the derivation of the CES.

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 airshed and, therefore, on the distribution of PM_{2.5} over the area.

Factor 8: Jurisdictional boundaries (e.g., existing PM and ozone areas)

The analysis of jurisdictional boundaries considered the planning and organizational structure of the area to determine if the implementation of controls in a potential nonattainment area can be carried out in a cohesive manner.

Factor 9: Level of control of emission sources

This factor considers emission controls currently implemented in the area. The emission estimates under Factor 1 include any control strategies implemented in each area before 2005 that may influence emissions of any component of PM_{2.5} emissions (i.e., total carbon, SO₂, NO_x, and crustal PM_{2.5}).