

## **PM<sub>2.5</sub> Air Quality Data Update 2003-2005 Design Values**

The following is a brief summary of EPA's air quality update for PM<sub>2.5</sub> based on ambient monitoring data for the three-year period, 2003-2005. During this three-year period:

- 38 the original 39 areas designated nonattainment for the PM<sub>2.5</sub> NAAQS in April, 2005 (using 2001-2003 data) failed to meet the PM<sub>2.5</sub> NAAQS in 2003-2005 (Table 1).
- The Washington, DC-MD-VA nonattainment area met the PM<sub>2.5</sub> NAAQS for 2003-2005 (Table 1).
- The single area (Greenville-Spartanburg, SC) designated as unclassifiable for the PM<sub>2.5</sub> NAAQS in April, 2005 again failed to meet the PM<sub>2.5</sub> NAAQS in 2003-2005 (Table 1).
- Five additional areas also failed to meet the PM<sub>2.5</sub> NAAQS in 2003-2005 (Table 2).
- 2003-2005 annual standard design values for 33 of the 39 designated nonattainment areas were lower than the corresponding original base values for 1999-2001. However, only 8 areas had lower annual design values compared to the previous period (2002-2004). (Table 3)
- 2003-2005 24-hour standard design values for 23 of the 39 designated nonattainment areas were lower than the corresponding original base values for 1999-2001. Twenty areas had lower 24-hour design values compared to the previous period (2002-2004). (Table 4)

Note: All four tables are available in spreadsheet (Excel) format.

Two primary PM<sub>2.5</sub> standards were established by EPA in 1997 for the protection of public health. The annual standard is met when the 3-year average of a site's annual mean concentration is 15.0 µg/m<sup>3</sup> (micrograms per cubic meter) or less. The 24-hour standard is met when the 3-year average of a site's annual 98th percentile values is 65 µg/m<sup>3</sup> or less. The secondary PM<sub>2.5</sub> standards, established for the protection of public welfare and the environment, are the same as the primary standards. [Note: Monitoring agencies are permitted to use a spatial average for a set of sites for the annual mean standard if the set of sites meets several criteria in EPA guidance and is designated in advance.]

Air quality data from EPA's Air Quality System (AQS) were used to calculate PM<sub>2.5</sub> design values. The specific calculations are explained in footnotes to the tables below. The data used for these calculations were obtained from AQS on July 10, 2006. To date, no regulatory decisions on attainment status have been made for any area based on these specific calculations. Detailed 2003-2005 information for all PM<sub>2.5</sub> FRM sites is available in the downloadable spreadsheet file. For information concerning these data and/or calculations, contact:

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Table 1. Areas previously designated nonattainment for PM2.5.

<u>Designated Area</u>	<u>State</u>	<u>EPA Region</u>	<u>Status</u>	<u>Ann DV</u> <sup>1</sup>	<u>24-hr DV</u> <sup>2</sup>	<u>Met NAAQS 2003- 2005?</u>
Atlanta	GA	4	Nonattainment	17.4	38	no
Baltimore	MD	3	Nonattainment	16.6	41	no
Birmingham <sup>3</sup>	AL	4	Nonattainment	17.4	44	no
Canton-Masillon	OH	5	Nonattainment	16.7		no
Charleston	WV	3	Nonattainment	16.6	36	no
Chattanooga	TN-GA-AL	4	Nonattainment	16.1	36	no
Chicago-Gary-Lake County	IL-IN	5	Nonattainment	16.1	46	no
Cincinnati-Hamilton	OH-KY-IN	4,5	Nonattainment	17.9	40	no
Cleveland-Akron-Lorain	OH	5	Nonattainment	18.1	46	no
Columbus	OH	5	Nonattainment	16.0	40	no
Dayton-Springfield	OH	5	Nonattainment	15.9	40	no
Detroit-Ann Arbor	MI	5	Nonattainment	18.2	45	no
Evansville	IN	5	Nonattainment	15.7	37	no
Greensboro-Winston Salem-High Point	NC	4	Nonattainment	15.2	32	no
Harrisburg-Lebanon-Carlisle	PA	3	Nonattainment	15.8	40	no
Hickory-Morganton-Lenoir	NC	4	Nonattainment	15.3	36	no
Huntington-Ashland	WV-KY-OH	3,4,5	Nonattainment	16.3	35	no
Indianapolis	IN	5	Nonattainment	16.4	38	no
Johnstown	PA	3	Nonattainment	15.6	39	no
Knoxville	TN	4	Nonattainment	15.6	33	no
Lancaster	PA	3	Nonattainment	17.5	44	no
Libby	MT	8	Nonattainment	15.1		no
Liberty-Clairton	PA	3	Nonattainment	20.8	68	no
Los Angeles-South Coast Air Basin	CA	9	Nonattainment	22.6	65	no
Louisville	KY-IN	4,5	Nonattainment	16.5	37	no
Macon	GA	4	Nonattainment	16.1	34	no
Martinsburg, WV-Hagerstown	MD	3	Nonattainment	16.2	36	no
New York-N. New Jersey-Long Island	NY-NJ-CT	1,2	Nonattainment	17.0	46	no
Parkersburg-Marietta	WV-OH	3,5	Nonattainment	15.4	34	no
Philadelphia-Wilmington	PA-NJ-DE	2,3	Nonattainment	15.7	37	no
Pittsburgh-Beaver Valley	PA	3	Nonattainment	16.6	43	no
Reading	PA	3	Nonattainment	16.2	39	no
Rome	GA	4	Nonattainment	16.2	36	no
San Joaquin Valley	CA	9	Nonattainment	19.0	60	no
St. Louis	MO-IL	5,7	Nonattainment	17.0	40	no
Steubenville-Weirton	OH-WV	3,5	Nonattainment	17.2	45	no
Washington	DC-MD-VA	3	Nonattainment	14.8	37	yes
Wheeling	WV-OH	3,5	Nonattainment	15.3	33	no
York	PA	3	Nonattainment	17.3	41	no
Greenville-Spartanburg	SC	4	Unclassifiable	15.7	34	no

1. The annual standard design values shown here are calculated in accordance with 40 CFR Part 50, Appendix N. The 3-year average annual mean concentration (annual standard design value) is computed at each site by averaging the daily FRM samples taken each quarter, averaging these quarterly averages to obtain an annual average, and then averaging the three annual averages. (Note that special rules apply if an area has been approved for spatial averaging.) In general, EPA regulations require at least 75% data capture in each quarter of a consecutive 3-year period in order for a design value to be valid. However, if an annual mean is over the level of the standard, less data (i.e., 11 samples per quarter for the corresponding 4 quarters) are sufficient to make that mean valid. Further, EPA regulations and guidance permit data substitution under certain circumstances in order to bolster completeness. (See 40 CFR Part 50, Appendix N, and also Guideline on Data Handling for the PM NAAQS.) The information presented in this update is based on data after applying the substitution guidance.

2. The 24-hour standard design values shown here are calculated in accordance with 40 CFR Part 50, Appendix N. The 3-year average 98th percentiles (daily standard design value) is computed at each site by determining the 98th percentile of the daily FRM samples taken in a given year for each of the three years, and then averaging these three numbers. In general, EPA regulations require at least 75% data capture in each quarter of a consecutive 3-year period in order for a design value to be valid. However, if an annual 98th percentile is over the level of the standard, less data (i.e., only 1 sample in that year) is sufficient to make that 98th percentile valid.

3. Two sites in Jefferson County, AL are encompassed in a Community Monitoring Zone (i.e. utilize spatial averaging); the spatially averaged design value for the CMZ is 17.4, which is the maximum for the county.

Note: Data that have been flagged for natural and exceptional events, for which documentation has been submitted and approved by the EPA (AQS concurrence field set to 'Y'), were excluded from the design value calculations.

Source: U.S. EPA's Air Quality System (AQS) as of July 10, 2006.

Table 2. Additional areas failing to meet the PM2.5 NAAQS in 2003-2005.

<u>Area</u>	<u>State</u>	<u>EPA Region</u>	<u>Ann DV <sup>1</sup></u>	<u>24-hr DV <sup>2</sup></u>
Columbus-Phenix City <sup>3</sup>	AL-GA	4	15.2	37
Richmond county (Augusta)	GA	4	15.5	33
Fayette county (Lexington)	KY	4	15.1	31
Mecklenburg county (Charlotte)	NC	4	15.3	32
Mahoning county (Youngstown)	OH	5	15.5	38

1. The annual standard design values shown here are calculated in accordance with 40 CFR Part 50, Appendix N. The 3-year average annual mean concentration (annual standard design value) is computed at each site by averaging the daily FRM samples taken each quarter, averaging these quarterly averages to obtain an annual average, and then averaging the three annual averages. (Note that special rules apply if an area has been approved for spatial averaging.) In general, EPA regulations require at least 75% data capture in each quarter of a consecutive 3-year period in order for a design value to be valid. However, if an annual mean is over the level of the standard, less data (i.e., 11 samples a quarter for the corresponding 4 quarters) are sufficient to make that mean valid. Further, EPA regulations and guidance permit data substitution under certain circumstances in order to bolster completeness. (See 40 CFR Part 50, Appendix N, and also Guideline on Data Handling for the PM NAAQS.) The information presented in this update is based on data after applying the substitution guidance.

2. The 24-hour standard design values shown here are calculated in accordance with 40 CFR Part 50, Appendix N. The 3-year average 98th percentiles (daily standard design value) is computed at each site by determining the 98th percentile of the daily FRM samples taken in a given year for each of the three years, and then averaging these three numbers. In general, EPA regulations require at least 75% data capture in each quarter of a consecutive 3-year period in order for a design value to be valid. However, if an annual 98th percentile value is over the level of the standard, less data (i.e., only 1 sample in that year) is sufficient to make that 98th percentile valid.

3. Two sites in the Columbus-Phenix City, AL-GA metropolitan area have opted to use spatial averaging. The spatially averaged design value is 15.2 which is the maximum for the area (Community Monitoring Zone).

Note: Data that have been flagged for natural and exceptional events, for which documentation has been submitted and approved by the EPA (AQS concurrence field set to 'Y'), were excluded from the design value calculations.

Source: U.S. EPA's Air Quality System (AQS) as of July 10, 2006.

Table 3. Design value history (annual standard) for designated areas, 1999-2001 through 2003-2005

<u>Designated Area</u>	<u>State</u>	<u>EPA Region</u>	<u>Status</u>	<u>1999-2001</u>	<u>2000-2002</u>	<u>2001-2003</u>	<u>2002-2004</u>	<u>2003-2005</u>	<u>Percent change:</u>	<u>Percent change:</u>	<u>Percent change:</u>
				<u>Annual Design Value</u>	<u>Annual Design Value</u>	<u>Annual Design Value</u>	<u>Annual Design Value</u>	<u>Annual Design Value</u>	<u>1999-2001 versus 2003-2005</u>	<u>2001-2003 versus 2003-2005</u>	<u>2002-2004 versus 2003-2005</u>
Atlanta	GA	4	Nonattainment	21.2	19.3	18.0	17.5	17.4	-17.9%	-3.3%	-0.6%
Baltimore	MD	3	Nonattainment	17.8	16.9	16.6	16.3	16.6	-6.7%	0.0%	1.8%
Birmingham <sup>3</sup>	AL	4	Nonattainment	20.8	19.0	17.3	16.8	17.4	-16.3%	0.6%	3.6%
Canton-Masillon	OH	5	Nonattainment	18.3	17.9	17.3	16.5	16.7	-8.7%	-3.5%	1.2%
Charleston	WV	3	Nonattainment	18.4	17.8	17.1	16.4	16.6	-9.8%	-2.9%	1.2%
Chattanooga	TN-GA-AL	4	Nonattainment	18.9	16.9	16.1	15.7	16.1	-14.8%	0.0%	2.5%
Chicago-Gary-Lake County	IL-IN	5	Nonattainment	18.8	18.1	17.3	16.0	16.1	-14.4%	-6.9%	0.6%
Cincinnati-Hamilton	OH-KY-IN	4,5	Nonattainment	19.3	18.6	17.8	16.9	17.9	-7.3%	0.6%	5.9%
Cleveland-Akron-Lorain	OH	5	Nonattainment	20.3	19.2	18.3	17.6	18.1	-10.8%	-1.1%	2.8%
Columbus	OH	5	Nonattainment	18.0	17.1	16.7	15.7	16.0	-11.1%	-4.2%	1.9%
Dayton-Springfield	OH	5	Nonattainment	17.7	15.8	15.2	15.5	15.9	-10.2%	4.6%	2.6%
Detroit-Ann Arbor	MI	5	Nonattainment	18.9	19.9	19.5	18.6	18.2	-3.7%	-6.7%	-2.2%
Evansville	IN	5	Nonattainment		16.7	16.2	15.5	15.7		-3.1%	1.3%
Greensboro-Winston Salem-High Point	NC	4	Nonattainment	17.2	16.7	15.8	15.4	15.2	-11.6%	-3.8%	-1.3%
Harrisburg-Lebanon-Carlisle	PA	3	Nonattainment	15.5	15.6	15.7	15.4	15.8	1.9%	0.6%	2.6%
Hickory-Morgantown-Lenoir	NC	4	Nonattainment	16.9	16.2	15.5	15.1	15.3	-9.5%	-1.3%	1.3%
Huntington-Ashland	WV-KY-OH	3,4,5	Nonattainment	22.0	19.4	17.2	15.8	16.3	-25.9%	-5.2%	3.2%
Indianapolis	IN	5	Nonattainment	17.0	17.0	16.7	16.0	16.4	-3.5%	-1.8%	2.5%
Johnstown	PA	3	Nonattainment	15.3	15.8	15.8	15.3	15.6	2.0%	-1.3%	2.0%
Knoxville	TN	4	Nonattainment	20.0	17.9	16.4	15.7	15.6	-22.0%	-4.9%	-0.6%
Lancaster	PA	3	Nonattainment	16.9	17.1	17.0	16.8	17.5	3.6%	2.9%	4.2%
Libby	MT	8	Nonattainment	16.4	16.4	15.9	15.2	15.1	-7.9%	-5.0%	-0.7%
Liberty-Clairton	PA	3	Nonattainment	20.9	21.4	21.2	20.4	20.8	-0.5%	-1.9%	2.0%
Los Angeles-South Coast Air Basin	CA	9	Nonattainment	29.8	28.9	27.8	24.8	22.6	-24.2%	-18.7%	-8.9%
Louisville	KY-IN	4,5	Nonattainment	17.3	17.3	16.9	15.9	16.5	-4.6%	-2.4%	3.8%
Macon	GA	4	Nonattainment	17.6	16.4	15.2	15.5	16.1	-8.5%	5.9%	3.9%
Martinsburg, WV-Hagerstown	MD	3	Nonattainment	16.0	16.2	16.3	16.1	16.2	1.3%	-0.6%	0.6%
New York-N.Jersey-Long Island	NY-NJ-CT	1,2	Nonattainment	17.8	17.6	17.7	16.8	17.0	-4.5%	-4.0%	1.2%
Parkersburg-Marietta	WV-OH	3,5	Nonattainment	17.6	17.0	16.0	15.2	15.4	-12.5%	-3.8%	1.3%
Philadelphia-Wilmington	PA-NJ-DE	2,3	Nonattainment	16.6	16.6	16.2	15.4	15.7	-5.4%	-3.1%	1.9%
Pittsburgh-Beaver Valley	PA	3	Nonattainment	17.1	16.8	16.9	16.5	16.6	-2.9%	-1.8%	0.6%
Reading	PA	3	Nonattainment	15.6	16.7	16.4	16.1	16.2	3.8%	-1.2%	0.6%
Rome	GA	4	Nonattainment	18.3	16.1	15.6	15.5	16.2	-11.5%	3.8%	4.5%
San Joaquin Valley	CA	9	Nonattainment	24.7	23.2	21.8	20.6	19.0	-23.1%	-12.8%	-7.8%
St. Louis	MO-IL	5,7	Nonattainment	17.4	17.5	17.5	16.9	17.0	-2.3%	-2.9%	0.6%
Steubenville-Weirton	OH-WV	3,5	Nonattainment	19.0	18.3	17.8	17.0	17.2	-9.5%	-3.4%	1.2%
Washington	DC-MD-VA	3	Nonattainment	16.5	17.1	15.8	15.1	14.8	-10.3%	-6.3%	-2.0%
Wheeling	WV-OH	3,5	Nonattainment	16.5	16.0	15.7	15.1	15.3	-7.3%	-2.5%	1.3%
York	PA	3	Nonattainment	16.3	16.8	17.0	16.9	17.3	6.1%	1.8%	2.4%
Greenville-Spartanburg	SC	4	Unclassifiable	16.9	15.2	14.4	15.8	15.7	-7.1%	9.0%	-0.6%

Table 4. Design value history (daily standard) for designated areas, 1999-2001 through 2003-2005

Designated Area	State	EPA Region	Status	1999-2001 24	2000-2002 24	2001-2003 24	2002-2004 24	2003-2005 24	Percent change: 1999-2001	Percent change: 2001-2003	Percent change: 2002-2004
				hour Design Value	hour Design Value	hour Design Value	hour Design Value	hour Design Value	versus 2003-2005	versus 2003-2005	versus 2003-2005
Atlanta	GA	4	Nonattainment	60	42	39	39	38	-36.7%	-2.6%	-2.6%
Baltimore	MD	3	Nonattainment	43	41	42	41	41	-4.7%	-2.4%	0.0%
Birmingham <sup>3</sup>	AL	4	Nonattainment	49	44	40	40	44	-10.2%	10.0%	10.0%
Canton-Masillon	OH	5	Nonattainment	42	42	40	37				
Charleston	WV	3	Nonattainment	41	40	40	36	36	-12.2%	-10.0%	0.0%
Chattanooga	TN-GA-AL	4	Nonattainment	45	43	37	35	36	-20.0%	-2.7%	2.9%
Chicago-Gary-Lake County	IL-IN	5	Nonattainment	45	42	40	39	46	2.2%	15.0%	17.9%
Cincinnati-Hamilton	OH-KY-IN	4,5	Nonattainment	43	44	42	41	40	-7.0%	-4.8%	-2.4%
Cleveland-Akron-Lorain	OH	5	Nonattainment	46	45	46	45	46	0.0%	0.0%	2.2%
Columbus	OH	5	Nonattainment	40	40	40	38	40	0.0%	0.0%	5.3%
Dayton-Springfield	OH	5	Nonattainment	39	39	39	37	40	2.6%	2.6%	8.1%
Detroit-Ann Arbor	MI	5	Nonattainment	46	45	44	43	45	-2.2%	2.3%	4.7%
Evansville	IN	5	Nonattainment		40	40	37	37		-7.5%	0.0%
Greensboro-Winston Salem-High Point	NC	4	Nonattainment	39	36	35	33	32	-17.9%	-8.6%	-3.0%
Harrisburg-Lebanon-Carlisle	PA	3	Nonattainment	44	45	43	41	40	-9.1%	-7.0%	-2.4%
Hickory-Morganton-Lenoir	NC	4	Nonattainment	33	33	34	34	36	9.1%	5.9%	5.9%
Huntington-Ashland	WV-KY-OH	3,4,5	Nonattainment	45	45	41	37	35	-22.2%	-14.6%	-5.4%
Indianapolis	IN	5	Nonattainment	38	38	39	38	38	0.0%	-2.6%	0.0%
Johnstown	PA	3	Nonattainment	35	40	41	40	39	11.4%	-4.9%	-2.5%
Knoxville	TN	4	Nonattainment	42	39	35	34	33	-21.4%	-5.7%	-2.9%
Lancaster	PA	3	Nonattainment	42	43	45	42	44	4.8%	-2.2%	4.8%
Libby	MT	8	Nonattainment	47	45	45	42				
Liberty-Clairton	PA	3	Nonattainment	59	63	63	65	68	15.3%	7.9%	4.6%
Los Angeles-South Coast Air Basin	CA	9	Nonattainment	76	73	72	67	65	-14.5%	-9.7%	-3.0%
Louisville	KY-IN	4,5	Nonattainment	40	46	42	38	37	-7.5%	-11.9%	-2.6%
Macon	GA	4	Nonattainment	39	35	33	34	34	-12.8%	3.0%	0.0%
Martinsburg, WV-Hagerstown	MD	3	Nonattainment	44	44	40	39	36	-18.2%	-10.0%	-7.7%
New York-N.Jersey-Long Island	NY-NJ-CT	1,2	Nonattainment	43	47	48	50	46	7.0%	-4.2%	-8.0%
Parkersburg-Marietta	WV-OH	3,5	Nonattainment	42	39	37	35	34	-19.0%	-8.1%	-2.9%
Philadelphia-Wilmington	PA-NJ-DE	2,3	Nonattainment	40	43	43	39	37	-7.5%	-14.0%	-5.1%
Pittsburgh-Beaver Valley	PA	3	Nonattainment	43	44	45	45	43	0.0%	-4.4%	-4.4%
Reading	PA	3	Nonattainment	39	43	46	42	39	0.0%	-15.2%	-7.1%
Rome	GA	4	Nonattainment	46	37	36	35	36	-21.7%	0.0%	2.9%
San Joaquin Valley	CA	9	Nonattainment	104	90	76	62	60	-42.3%	-21.1%	-3.2%
St. Louis	MO-IL	5,7	Nonattainment	38	37	40	40	40	5.3%	0.0%	0.0%
Steubenville-Weirton	OH-WV	3,5	Nonattainment	47	47	46	47	45	-4.3%	-2.2%	-4.3%
Washington	DC-MD-VA	3	Nonattainment	41	45	44	42	37	-9.8%	-15.9%	-11.9%
Wheeling	WV-OH	3,5	Nonattainment	36	38	37	36	33	-8.3%	-10.8%	-8.3%
York	PA	3	Nonattainment	39	43	45	43	41	5.1%	-8.9%	-4.7%
Greenville-Spartanburg	SC	4	Unclassifiable	35	33	31	33	34	-2.9%	9.7%	3.0%