4.0 Analyses of Individual Nonattainment Area

4.5 Region 5 Nonattainment Areas

4.5.5 Wisconsin

Wisconsin Area Designations For the
24-Hour Fine Particle National Ambient Air Quality Standard

The table below identifies the counties in Wisconsin that EPA has designated as not attaining the 2006 24-hour fine particle ($PM_{2.5}$) standard.[1] The nonattainment areas include any tribal lands within the identified areas. A county or part thereof is designated as nonattainment if it has an air quality monitor that is violating the standard or if the county is determined to be contributing to the violation of the standard.

Area	Wisconsin Recommended Nonattainment Counties	EPA's Designated Nonattainment Counties
Green Bay	None	Brown
Madison	None	Columbia* (partial) Dane
Milwaukee	None	Milwaukee Racine Waukesha

EPA is designating the remaining counties or portions thereof in the state as "attainment/unclassifiable."

*Within Columbia County, EPA is designating only Pacific Township as part of the Madison nonattainment area.

EPA Technical Analysis for Green Bay, Wisconsin

The Green Bay area is currently designated attainment for $PM_{2.5}$. One monitor in Brown County is clearly showing a violation of the standard, and an additional monitor with incomplete data may also be indicating a violation. Despite these violations, Wisconsin recommended that the Green Bay area be designated attainment, based on projections that the area will attain the standards by 2015. However, the Clean Air Act requires that

[1] EPA designated nonattainment areas for the 1997 fine particle standards in 2005. In 2006, the 24-hour PM2.5 standard was revised from 65 micrograms per cubic meter (average of 98th percentile values for 3 consecutive years) to 35 micrograms per cubic meter; the level of the annual standard for PM2.5 remained unchanged at 15 micrograms per cubic meter (average of annual averages for 3 consecutive years).

EPA designate as nonattainment any area that is currently violating the standard or contributing to such violation, irrespective of whether the area is expected to attain the standard at some time in the future. Therefore, EPA reviewed relevant information for the three counties in the metropolitan statistical area and for surrounding counties to determine the most appropriate boundaries for the area in and around Green Bay to be designated nonattainment.

EPA determined that the appropriate nonattainment area consists of Brown County. Brown County has substantially greater emissions and more population than any surrounding county. While Outagamie County has moderate emissions and population similar to that of Brown County, these emissions and this population are primarily associated with Appleton, which is a separate urban area that is monitoring attainment of the standard. Only a small fraction of commuters from the Appleton area commute into the Green Bay area. Appleton is at the southern end of Outagamie County, further reducing its impact on concentrations in Green Bay, at the northern end of Brown County. No other factor warrants inclusion of any other county besides Brown County in the nonattainment area.

Figure 1 is a map of the counties in the nonattainment area and other relevant information such as the locations and design values of air quality monitors, and the metropolitan area boundary.

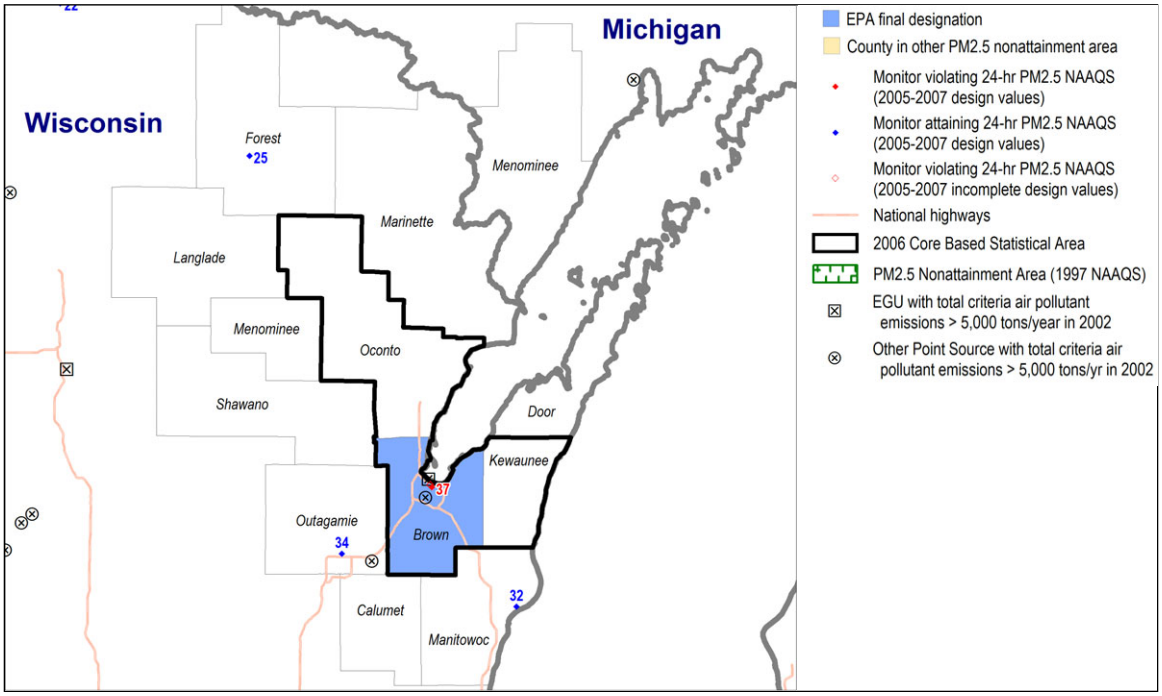


Figure 1

In its December 18, 2007 letter, Wisconsin recommended that no counties be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard.

In August 2008, EPA notified Wisconsin of its intended designations. In this letter, EPA also requested that if the State wished to provide comments on EPA's intended designation, it should do so by October 20, 2008. EPA stated that it would consider any additional information (e.g., on power plants or partial county areas) provided by the state in making final decisions on the designations.

Based on EPA's technical analysis described below, EPA designated one Wisconsin county as nonattainment for the 24-hour $PM_{2.5}$ air-quality standard as the Green Bay nonattainment area, based upon currently available information.

The following is a review of data for relevant factors for the Green Bay, Wisconsin area.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: "$PM_{2.5}$ emissions total," "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," "SO_2," "NO_x," "VOCs," and "NH_3." "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other", primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs (volatile organic compounds) and NH_3 (ammonia) are also potential $PM_{2.5}$ precursors and are included for consideration.

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

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

Table 1 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the Green Bay area. Counties that are part of the Green Bay 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 CESs

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)
Brown, WI	No	100	2,541	879	1,662	29,780	24,197	18,272	3,295
Outagamie, WI	No	22	1,525	632	894	11,572	9,663	11,671	3,090
Manitowoc, WI	No	12	949	348	600	4,392	5,831	5,893	3,111
Kewaunee, WI	No	4	371	127	244	277	1,258	2,116	1,966
Oconto, WI	No	2	445	227	218	151	1,588	3,868	1,698

Brown County has the highest CES and emissions in the area. Outagamie County is the next highest in emissions and CES. Outagamie County is in the Appleton metropolitan statistical area. The other area counties have low emissions.

Table 2 provides the data for CES weighting factors. The trajectory factors are used in CES calculations to account for seasonal meteorology. For the top 10% of days in both the cold and warm seasons, wind trajectories were run for a 48 hour period preceding the high monitor reading. The amount of time the air mass was over a county within the mixing height was calculated. The values were scaled so that the maximum value is 100. Thus, the county that is most likely to be upwind of a monitor on a high concentration day in a season is given a score of 100. The scores for the other counties will reflect the relative likelihood of being upwind. As the concentration of a pollutant will decrease as it goes further downwind, a distance weighting factor is also used in calculating the CES. The distance factor listed on Table 2 provides the distance from the center of a county to the center of the violating county. If a county is violating, the distance used is the average distance from the center to the county line.

Table 2. CES Factor Data

County	CES	Trajectory Factor- Cold	Trajectory Factor- Warm	Distance (mi)
Brown	100	100	99	12.4
Outagamie	22	87	83	24.2
Manitowoc	12	84	97	25.2
Kewaunee	4	75	83	17.7
Oconto	2	65	50	42.2

Factor 2: Air quality data

This factor considers the 24-hour $PM_{2.5}$ design values (in $\mu g/m^3$) for air quality monitors in counties in the Green Bay area based on data for the 2005-2007 period. These data are from Federal Reference Method (FRM) monitors. 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 98^{th} percentile values are 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Green Bay area are shown in Table 3.

Table 3. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2004-2006	Design Values 2005-2007
Brown, WI	No	37	37
Kewaunee, WI	No		
Oconto, WI	No		
Outagamie, WI	No	34	34
Manitowoc, WI	No	29	32

Brown County has a 2005-2007 design value that exceeds the 2006 $PM_{2.5}$ standards. Outagamie and Manitowoc Counties meet the air quality standards. Kewaunee and Oconto Counties do not have $PM_{2.5}$ air quality monitoring data.

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. Analysis of these data indicates that the days with the highest fine particle concentrations in the Green Bay area occur about 22% in the warm season and 78% in the cool season. In the warm season, the average chemical composition of the highest days is 72% sulfate, no nitrate, 24% carbon, and 3% crustal. In the cool season, the average chemical composition of the highest days is 34% sulfate, 34% nitrate, 29% carbon, and 3% crustal. These data indicate that sources of SO_2, NOx, and direct $PM_{2.5}$ emissions contribute to violations in the area.

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

Table 4 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour $PM_{2.5}$ standards. Brown County has the highest population. Kewaunee and Oconto Counties have small populations. Outagamie County has moderate population, but its population density is well less than the Brown County population density.

Table 4. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Brown, WI	No	238,610	447
Kewaunee, WI	No	20,746	60
Oconto, WI	No	37,727	37
Outagamie, WI	No	170,930	266
Manitowoc, WI	No	81,828	138

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the Green Bay area, the percent of total commuters in each county who commute within the area, and the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 5). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

Table 5. 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 within/to statistical area	Percent Commuting within/to statistical area
Brown, WI	No	2,643	108,890	92	110,410	93
Oconto, WI	No	413	6,520	38	15,330	88
Outagamie, WI	No	1,750	5,570	7	5,630	7
Kewaunee, WI	No	234	3,450	33	9,370	89
Manitowoc, WI	No	1,130	1,580	4	1,870	4

The listing of counties on Table 5 reflects a ranking based on the number of people commuting within or into the Green Bay area. The commuting within or into the statistical area data shows a high percent of commuting in Brown, Kewaunee, and Oconto Counties while Outagamie and Manitowoc Counties have limited commuting. This suggests that Brown, Kewaunee, and Oconto Counties are integrated. It also implies that there is not a strong relationship between Outagamie and Manitowoc Counties workers and the Green Bay area, reflecting the fact that Appleton (Outagamie County) and Manitowoc (Manitowoc County) are separate urban areas from Green Bay. The VMT is low in Kewaunee and Oconto Counties.

Note: The 2005 VMT data used for table 5 and 6 of the 9-factor analysis has been derived using methodology similar to that described in "Documentation for the final 2002 Mobile National Emissions Inventory, Version 3, September 2007, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002_mobile_nei_version_3_report_092807.pdf. The 2005 VMT data were taken from documentation which is still draft, but which should be released in 2008.

Factor 5: Growth rates and patterns

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

Table 6 below shows population, population growth, VMT, and VMT growth for counties that are included in the Green Bay area. Counties are listed in descending order based on VMT growth between 1996 and 2005.

Table 6. Population and VMT Growth and Percent Change

Location	Population (2005)	Population % change (2000-2005)	2005 VMT (10^6 mi)	VMT % change (1996-2005)
Kewaunee, WI	20,746	3	234	35
Outagamie, WI	170,930	6	1,750	29
Brown, WI	238,610	5	2,643	28
Oconto, WI	37,727	5	413	24
Manitowoc, WI	81,828	-1	1,130	15

There was moderate population growth for all the area counties with the exception of Manitowoc County. Manitowoc County experienced a small decrease in its population from 2000 to 2005. The VMT grew a high rate through the area. Kewaunee County led with a 35% increase from 1996 to 2005 to its small VMT. Brown and Outagamie Counties follow closely with VMT growth approaching 30%. The other counties also observed rapid VMT growth. These data suggest that the distribution of population and emissions are not changing in a way that would significantly influence the choice of boundaries of the nonattainment area.

Factor 6: Meteorology (weather/transport patterns)

For this factor, EPA considered data from National Weather Service instruments and other meteorological monitoring sites in the area. Wind direction and wind speed data for 2005-2007 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons, an October-April "cold" season and a May-September "warm" season. These high days are defined as days where any FRM or FEM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

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

The pollution rose for the Green Bay area is provided as Figure 2. Winds on high concentration days show a slight tendency to come from the South to Southwest.

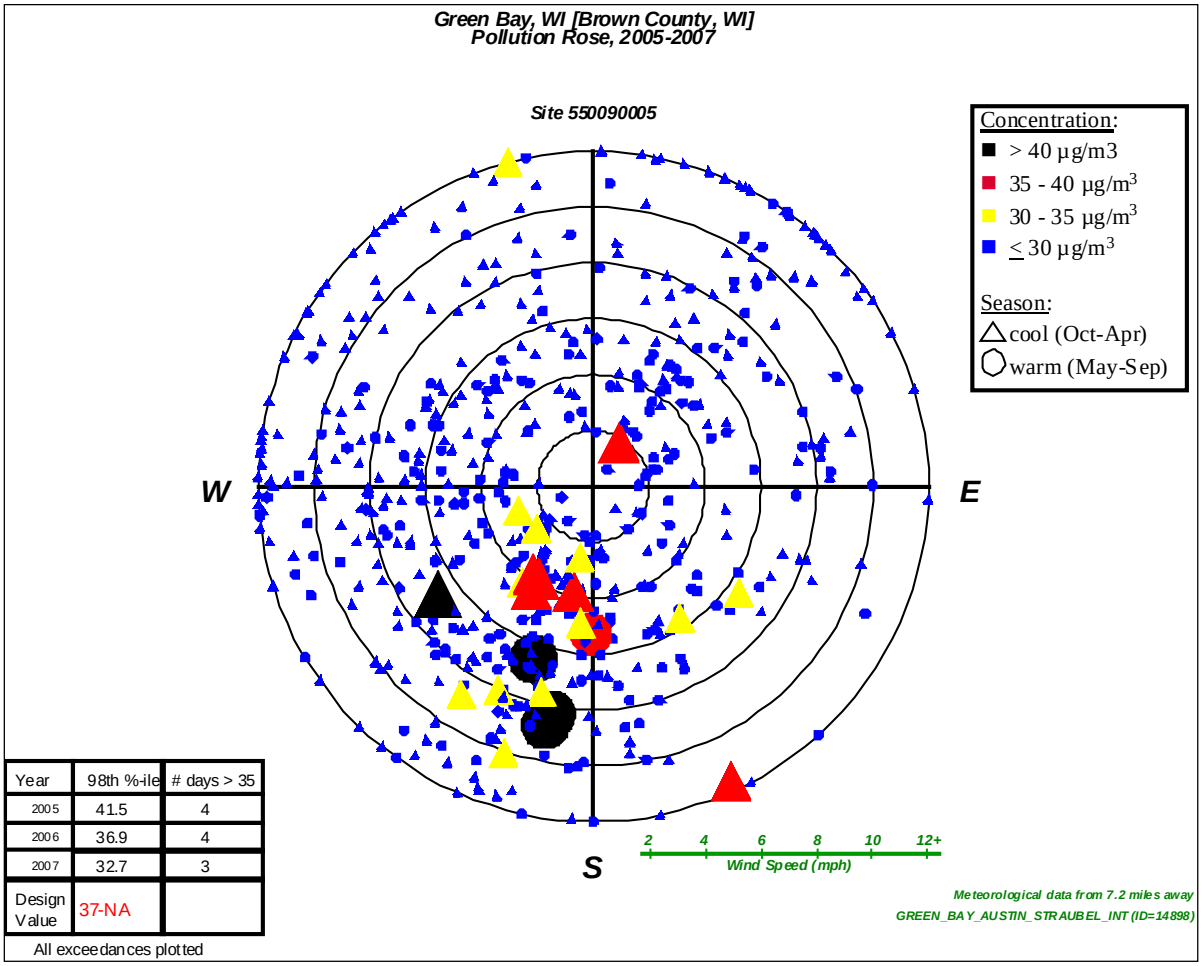


Figure 2

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

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

The geography/topography analysis evaluates the physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the area.

The Green Bay area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor did not play a significant role in the decision-making process.

Factor 8: Jurisdictional boundaries

In evaluating the jurisdictional boundary factor, EPA gave special consideration to areas that were already designated nonattainment in 2005 for violating the 1997 fine particle standards. However, this area was designated attainment for the 1997 standards, so

nonattainment area boundaries for the 1997 standards were not a factor in determining this area's boundaries.

The metropolitan planning organization for Green Bay is the Brown County Planning Commission. Its web site is **http://www.co.brown.wi.us/planning_and_land_services/** planning/county_web//transportation.html.

Factor 9: Level of control of emission sources

Under this factor, the existing level of control of emission sources is taken into consideration. The emissions data used by EPA in this technical analysis and provided in Table 1 under Factor 1 represent emissions levels taking into account any control strategies implemented in the Green Bay area before 2005 on stationary, mobile, and area sources. Data are presented for $PM_{2.5}$ components that are directly emitted, carbonaceous $PM_{2.5}$ and crustal $PM_{2.5}$, and for pollutants which react in the atmosphere to form fine particles such as SO_2, NOx, VOC, and ammonia.

In considering county-level emissions, EPA used data from the 2005 National Emissions Inventory, the most updated version of the national inventory available at the beginning of the designations process in late 2007. However, EPA recognized that for certain counties, emissions may have changed since 2005. For example, certain power plants or large sources of emissions in or near this area may have installed emission controls or otherwise significantly reduced emissions since 2005. Some States provided updated information on emissions and emission controls in their comments to EPA. EPA considered such additional information in making final designation decisions.

With regard to nearby power plants, EPA considered information about whether a specific plant installed federally enforceable emission controls by December 2008 resulting in significant emissions reductions. A control requirement is considered to be federally-enforceable if it is required by a State regulation adopted in a State implementation plan, if it is included in a federally-enforceable Title V operating permit, or if it is required by a consent decree which also requires the controls to be included in federally enforceable permit upon termination of the consent decree. In making final decisions, EPA also considered whether a facility would continue to emit pollutants which contribute to $PM_{2.5}$ exceedances even after emission controls are operational.

Wisconsin did not provide additional information regarding power plants or other large sources in the Green Bay area.

EPA Technical Analysis for Madison, Wisconsin

The Madison area is currently designated attainment for $PM_{2.5}$. One monitor in Dane County is showing a violation of the standard based on 2005 to 2007 data. Wisconsin did not acknowledge this violation and made no recommendations specifically addressing this nonattainment area. Therefore, EPA reviewed relevant information for the four

counties in the metropolitan statistical area and for surrounding counties to determine the most appropriate boundaries for the area in and around Madison to be designated nonattainment.

EPA is designating a Madison nonattainment area that includes Dane County and Pacific Township within Columbia County. Dane County is recording a violation, and the full county contributes to that violation. Columbia County does not have a monitor, and upon further review, EPA finds that only a portion of Columbia County contributes to the violation in Dane County.

Emissions in Columbia County are dominated by the emissions of a power plant known as Columbia Station. This plant emits by far most of the sulfur dioxide emitted in the Madison area, and the plant also emits a significant fraction of the nitrogen oxides emitted in the area. The remainder of Columbia County has almost no SO2 emissions and significantly less emissions than Dane County of other pollutants as well. The population of Columbia County is only 12 of the population of Dane County. Thus, EPA has judged that portions of Columbia County other than Pacific Township do not contribute to the violations in Dane County, and EPA has judged that Pacific Township, containing Columbia Station, is the only portion of Columbia County that contributes to the violations in Dane County.

The other counties in and near the Madison area have substantially lower emissions, and no other factor warrants inclusion of any other county besides Columbia and Dane Counties in the nonattainment area.

Figure 1 is a map of the counties in the nonattainment area and other relevant information such as the locations and design values of air quality monitors, and the metropolitan area boundary.

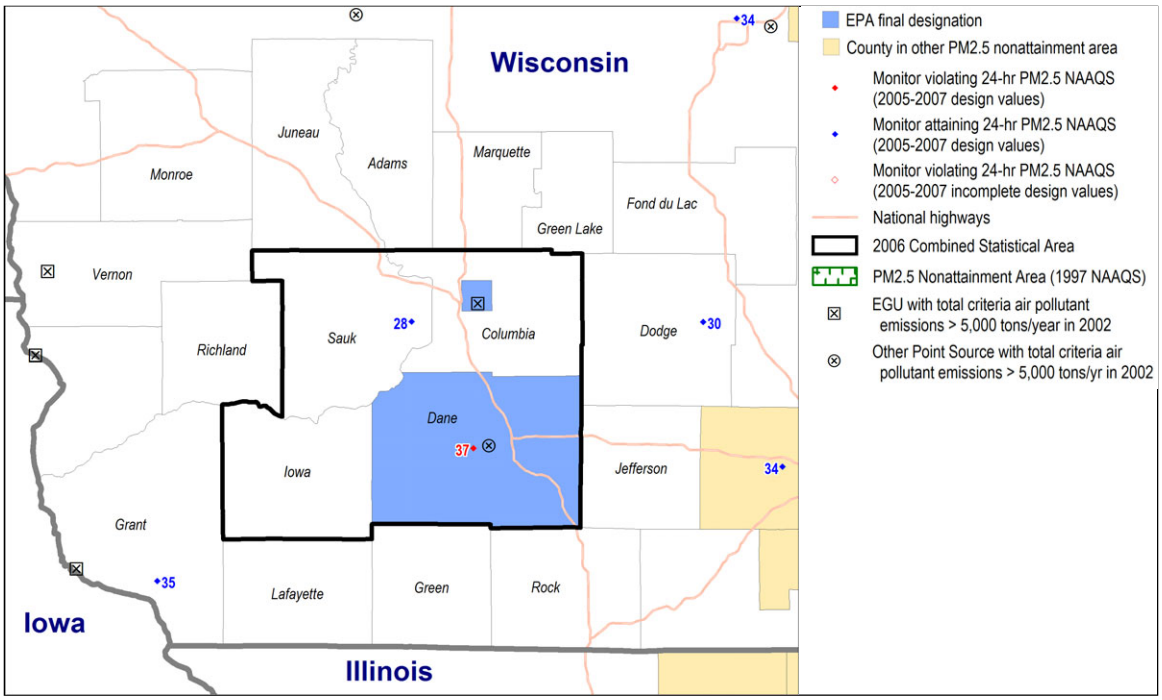


Figure 1

In April 2008, EPA notified Wisconsin that a monitor in the Madison area was violating based on 2005-2007 data. In August 2008, EPA notified Wisconsin of its intended designations. In this letter, EPA also requested that if the State wished to provide comments on EPA's intended designation, it should do so by October 20, 2008. EPA stated that it would consider any additional information (e.g., on power plants or partial county areas) provided by the state in making final decisions on the designations.

In its October 20, 2008 letter, Wisconsin provided EPA with a recommendation of attainment for this area. Wisconsin considers that Dane County is meeting the 2006 24-hour $PM_{2.5}$ standard based projects of future air quality. Dane County is currently monitoring nonattainment for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2005-2007.

Based on EPA's technical analysis described below, EPA has designated one full and one partial county in the Wisconsin as nonattainment for the 24-hour $PM_{2.5}$ air-quality standard as part of the Madison nonattainment area, based upon currently available information.

The following is a review of data for relevant factors for the Madison, Wisconsin area.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: "$PM_{2.5}$ emissions total," "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," "SO_2," "NO_x," "VOCs," and "NH_3." "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$

emissions other", primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs (volatile organic compounds) and NH_3 (ammonia) are also potential $PM_{2.5}$ precursors and are included for consideration.

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

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

Table 1 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the Madison area. Counties that are part of the Madison 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 CESs

County	State Recommended Nonattainment?	CES	$PM_{2.5}$ emissions total	$PM_{2.5}$ emissions carbon	$PM_{2.5}$ emissions other	SO_2	NOx	VOCs	NH_3
Dane, WI	No	100	4,263	1,700	2,562	8,717	18,818	29,797	5,091
Columbia, WI	No	36	1,281	373	908	26,406	11,514	6,718	2,321
Sauk, WI	No	7	902	410	493	365	2,936	5,309	2,601
Iowa, WI	No	3	364	141	223	97	1,024	2,132	2,572

The CES show that Dane County has distinctly higher emissions than nearby counties, except for the higher SO2 emissions of Columbia County. Columbia County has a CES that trails well below Dane County, but it still has substantial emissions. Columbia County has the highest sulfur dioxide emissions in the area. Most of Columbia County's emissions come from a single facility. Thus, it was appropriate to designate a partial county area containing the power plant as nonattainment. The CES and emissions are low in Iowa and Sauk Counties.

Table 2 provides the data for CES weighting factors. The trajectory factors are used in CES calculations to account for seasonal meteorology. For the top 10% of days in both the cold and warm seasons, wind trajectories were run for a 48 hour period preceding the high monitor reading. The amount of time the air mass was over a county within the mixing height was calculated. The values were scaled so that the maximum value is 100. Thus, the county that is most likely to be upwind of a monitor on a high concentration

day in a season is given a score of 100. The scores for the other counties will reflect the relative likelihood of being upwind. As the concentration of a pollutant will decrease as it goes further downwind, a distance weighting factor is also used in calculating the CES. The distance factor listed on Table 2 provides the distance from the center of a county to the center of the violating county. If a county is violating, the distance used is the average distance from the center to the county line.

Table 2. CES Factor Data

County	CES	Trajectory Factor- Cold	Trajectory Factor- Warm	Distance (mi)
Dane, WI	100	100	93	19.6
Columbia, WI	36	66	62	28.0
Sauk, WI	7	56	61	32.7
Iowa, WI	3	68	76	36.1

Factor 2: Air quality data

This factor considers the 24-hour $PM_{2.5}$ design values (in $\mu g/m^3$) for air quality monitors in counties in the Madison area based on data for the 2005-2007 period. These data are from Federal Reference Method (FRM) monitors. 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 98^{th} percentile values are 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Madison area are shown in Table 3. Dane County has a 2005-2007 design value that violates the 2006 standards while Sauk County monitoring data shows it meets the standards. There is no $PM_{2.5}$ air quality monitoring data for Columbia and Iowa Counties.

Table 3. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2004-2006	Design Values 2005-2007
Dane, WI	No	35	37
Columbia, WI	No		
Sauk, WI	No	29	28
Iowa, WI	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. Analysis of these data indicates that the days with the highest fine particle concentrations in the Madison area occur about 26% in the warm season and 74% in the cool season. In the warm season, the average chemical composition of the highest days is 72% sulfate, no nitrate, 24% carbon, and 3% crustal. In the cool season, the average chemical composition of the highest days is 34% sulfate, 34% nitrate, 29% carbon, and 3% crustal. These data indicate that sources of SO_2, NOx, and direct $PM_{2.5}$ emissions contribute to violations in the area. Sources of these types of emissions are

located throughout the seven counties that EPA has concluded should be designated nonattainment for the 2006 $PM_{2.5}$ NAAQS.

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

Table 4 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. Dane County easily has the largest population and the highest population density in the Madison area. Columbia, Iowa, and Sauk Counties all have small populations.

Table 4. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Dane, WI	No	458,333	371
Columbia, WI	No	55,122	69
Sauk, WI	No	57,738	68
Iowa, WI	No	23,535	31

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the Madison area, the percent of total commuters in each county who commute within the area, and the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 5). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

Table 5. 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 within statistical area	Percent Commuting within statistical area
Dane, WI	No	4,584	229,390	95	233,440	96
Sauk, WI	No	706	3,430	12	27,460	96
Columbia, WI	No	916	8,930	33	24,810	92
Iowa, WI	No	266	3,160	26	11,490	93

The listing of counties on Table 5 reflects a ranking based on the number of people commuting within the statistical area. Dane County has the highest VMT in the area. The other counties all have much lower VMT. Columbia County has a moderate percent of commuters going to Dane County, the violating county. The number of Columbia County commuters is still small when compared with Dane County. The VMT and commuting to a violating county statistics are low for Iowa and Columbia Counties.

Note: The 2005 VMT data used for table 5 and 6 of the 9-factor analysis has been derived using methodology similar to that described in "Documentation for the final 2002 Mobile National Emissions Inventory, Version 3, September 2007, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002_mobile_nei_version_3_report_092807.pdf. The 2005 VMT data were taken from documentation which is still draft, but which should be released in 2008.

Factor 5: Growth rates and patterns

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

Table 6 below shows population, population growth, VMT, and VMT growth for counties that are included in the Madison area. Counties are listed in descending order based on VMT growth between 1996 and 2005. Dane County experienced the most growth in both population and VMT. All area counties had limited growth from 2000 to 2005. Dane County had VMT growth that exceeded 20% from 1996 to 2005. Columbia and Iowa had better than 10% VMT growth over that period. Sauk County had a little less VMT growth. These data suggest that the distribution of population and emissions are not changing in a way that would significantly influence the choice of boundaries of the nonattainment area.

Table 6. Population and VMT Growth and Percent Change.

County	Population (2005)	Population % change (2000-2005)	2005 VMT (10^6 mi)	VMT % change (1996-2005)
Dane, WI	458,333	7	4,584	21
Iowa, WI	23,535	3	266	15
Columbia, WI	55,122	5	916	11
Sauk, WI	57,738	4	706	8

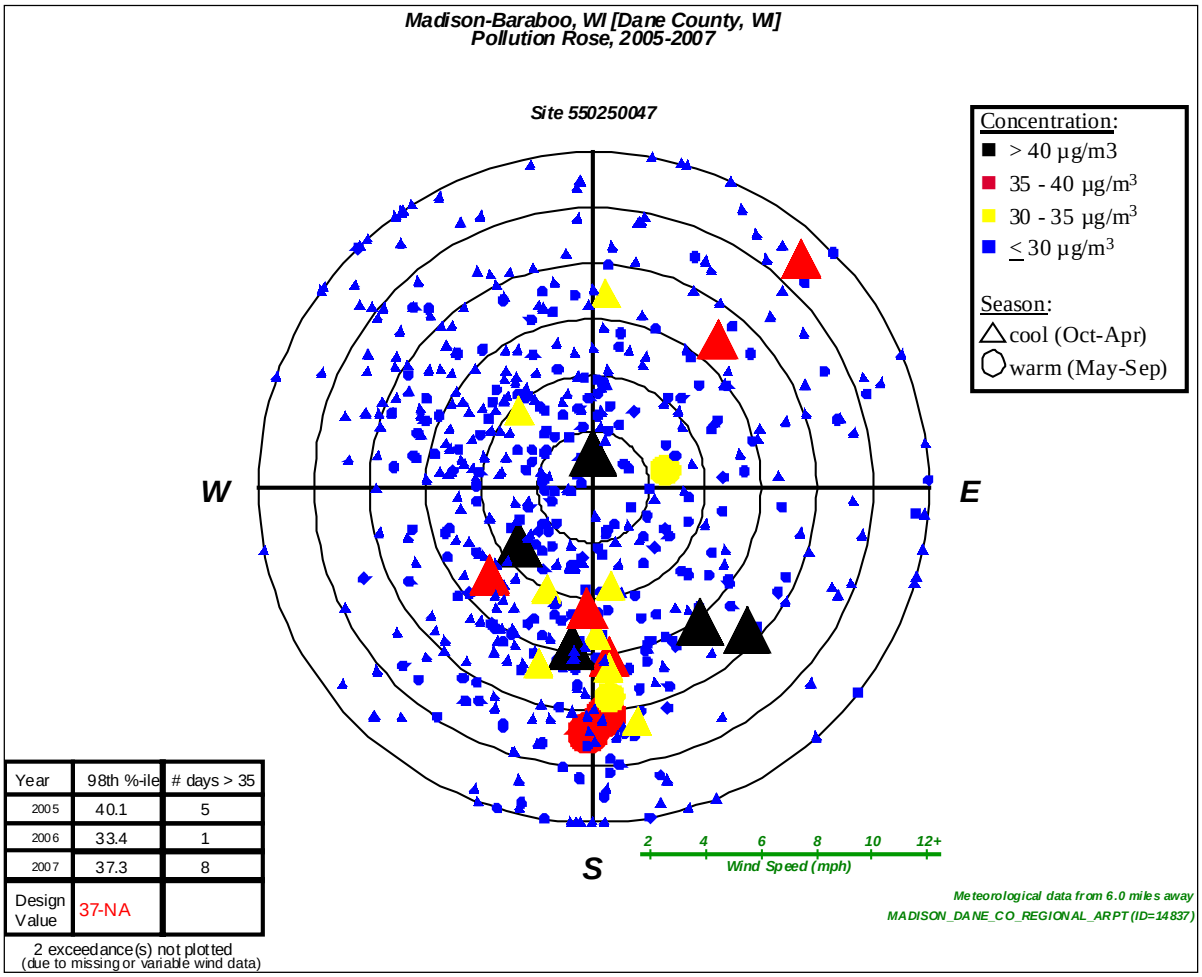
Factor 6: Meteorology (weather/transport patterns)

For this factor, EPA considered data from National Weather Service instruments and other meteorological monitoring sites in the area. Wind direction and wind speed data for 2005-2007 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons, an October-April "cold" season and a May-September "warm" season. These high days are defined as days where any FRM or FEM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

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/m^3 are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of the icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

The pollution rose for the Madison area is provided as Figure 2. Winds on high and moderate concentration days come from a variety of directions. So, counties in all directions from the violations in Dane County were considered.



Year	98th %-ile	# days > 35
2005	40.1	5
2006	33.4	1
2007	37.3	8
Design Value	37-NA	

2 exceedance(s) not plotted
(due to missing or variable wind data)

Figure 2

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

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

The geography/topography analysis evaluates the physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the area.

The Madison area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor did not play a significant role in the decision-making process.

Factor 8: Jurisdictional boundaries

In evaluating the jurisdictional boundary factor, EPA gave special consideration to areas that were already designated nonattainment in 2005 for violating the 1997 fine particle standards. However, this area was designated attainment for the 1997 standards, so nonattainment area boundaries for the 1997 standards were not a factor in determining this area's boundaries.

The Madison Area Transportation Board is the metropolitan planning organization for Dane County, Wisconsin. Its web site is www.madisonareampo.org.

Factor 9: Level of control of emission sources

Under this factor, the existing level of control of emission sources is taken into consideration. The emissions data used by EPA in this technical analysis and provided in Table 1 under Factor 1 represent emissions levels taking into account any control strategies implemented in the Madison area before 2005 on stationary, mobile, and area sources. Data are presented for $PM_{2.5}$ components that are directly emitted, carbonaceous $PM_{2.5}$ and crustal $PM_{2.5}$, and for pollutants which react in the atmosphere to form fine particles such as SO_2, NOx, VOC, and ammonia.

In considering county-level emissions, EPA used data from the 2005 National Emissions Inventory, the most updated version of the national inventory available at the beginning of the designations process in late 2007. However, EPA recognized that for certain counties, emissions may have changed since 2005. For example, certain power plants or large sources of emissions in or near this area may have installed emission controls or otherwise significantly reduced emissions since 2005. Some States provided updated information on emissions and emission controls in their comments to EPA. EPA considered such additional information in making final designation decisions.

With regard to nearby power plants, EPA considered information about whether a specific plant installed federally enforceable emission controls by December 2008 resulting in significant emissions reductions. A control requirement is considered to be federally-enforceable if it is required by a State regulation adopted in a State implementation plan, if it is included in a federally-enforceable Title V operating permit, or if it is required by a consent decree which also requires the controls to be included in federally enforceable permit upon termination of the consent decree. In making final decisions, EPA also considered whether a facility would continue to emit pollutants which contribute to $PM_{2.5}$ exceedances even after emission controls are operational.

Wisconsin did not provide additional information regarding power plants or other large sources in the Madison area.

EPA Technical Analysis for Milwaukee, Wisconsin

The Milwaukee area is currently designated attainment for $PM_{2.5}$. Several monitors in Milwaukee County are showing violations of the standard, several of which are well above the standard. Despite these violations, Wisconsin recommended that the Milwaukee area be designated attainment, based on projections that the area will attain the standards by 2015. However, the Clean Air Act requires that EPA designate as nonattainment any area that is currently violating the standard or contributing to such violation, irrespective of whether the area is expected to attain the standard at some time in the future. Therefore, EPA reviewed relevant information for the five counties in the combined statistical area and for surrounding counties to determine the most appropriate boundaries for the area in and around Milwaukee to be designated nonattainment.

EPA is designating a Milwaukee nonattainment area consisting of Milwaukee, Racine, and Waukesha Counties. As noted above, Milwaukee County is observing violations at multiple locations. Waukesha County has relatively high emissions, and the winds commonly blow these emissions into Milwaukee County on high concentration days. Waukesha also has substantial population, a high percentage of which population commutes into Milwaukee County. Racine County also has relatively high emissions which commonly blow into Milwaukee County.

EPA has judged that Kenosha, Ozaukee, and Washington Counties do not contribute to violations in the nonattainment area. The 2005 emissions inventory shows high emissions in Kenosha County, but these 2005 emissions were attributable in large part to the WEPCO Pleasant Prairie power plant. By the end of 2006, this plant had highly effective NOx control equipment in place on both units, and by the end of 2007 the plant had highly effective SO_2 control equipment in place on both units. As a result, Kenosha County now has relatively low emissions which EPA believes no longer contribute to violations in Milwaukee County. A federally enforceable consent decree, which must be replaced with a permit establishing the same requirements before the terms of the consent decree expire, assures that these emissions will remain low. Ozaukee and Washington Counties have moderate emissions and a moderate fraction of the commuters from these counties commute into Milwaukee County. However, the population in these counties is lower than the population in Milwaukee, Racine, and Waukesha Counties, the frequency with which the wind blows from these counties into Milwaukee County on high concentration days is lower, and the emissions are enough lower than the emissions of Milwaukee, Racine, and Waukesha Counties for EPA to judge that these counties do not contribute to the violations.

EPA also reviewed relevant information for counties adjacent to the combined statistical area in order to determine the appropriate nonattainment area. These other counties have

relatively low emissions, and no other factor warranted inclusion of the counties in the nonattainment area.

Figure 1 is a map of the counties in the nonattainment area and other relevant information such as the locations and design values of air quality monitors, and the metropolitan area boundary.

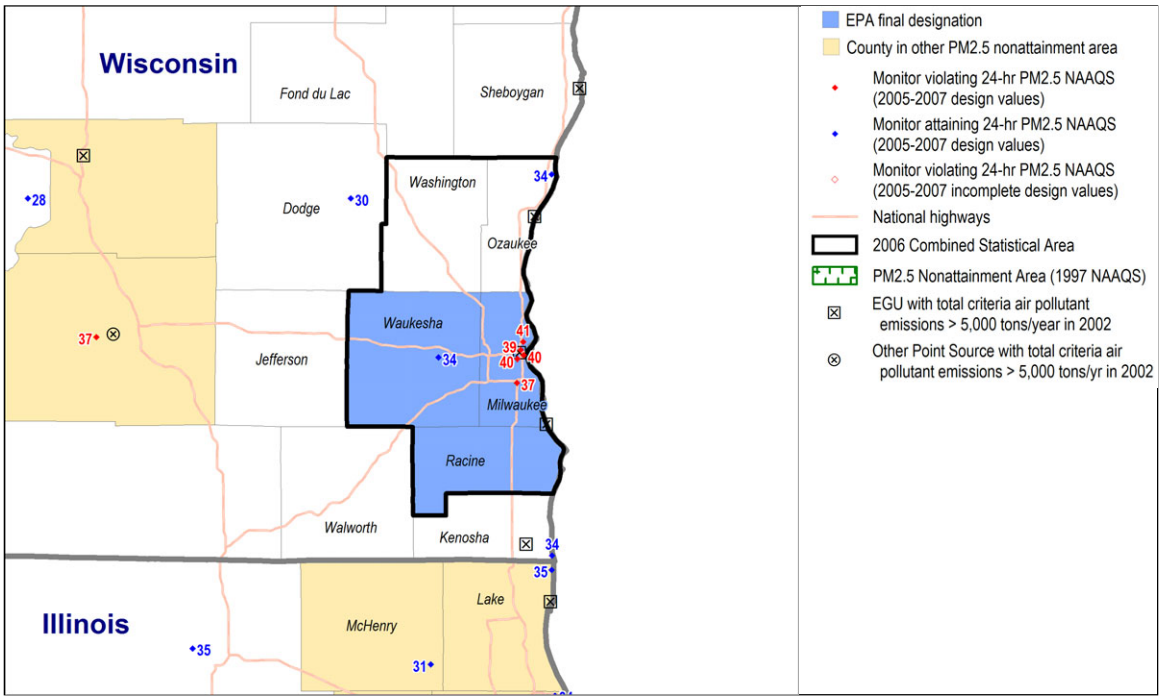


Figure 1

In its December 18, 2007 letter, Wisconsin recommended that no counties be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard.

In August 2008, EPA notified Wisconsin of its intended designations. In this letter, EPA also requested that if the State wished to provide comments on EPA's intended designation, it should do so by October 20, 2008. EPA stated that it would consider any additional information (e.g., on power plants or partial county areas) provided by the state in making final decisions on the designations.

Based on EPA's technical analysis described below, EPA designated three Wisconsin counties as nonattainment for the 24-hour $PM_{2.5}$ air-quality standard as the Milwaukee nonattainment area, based upon currently available information.

The following is a review of data for relevant factors for the Milwaukee, Wisconsin area.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: "$PM_{2.5}$ emissions total," "$PM_{2.5}$ emissions carbon,"

"$PM_{2.5}$ emissions other," "SO_2," "NO_x," "VOCs," and "NH_3." "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other", primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs (volatile organic compounds) and NH_3 (ammonia) are also potential $PM_{2.5}$ precursors and are included for consideration.

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

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

Table 1 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the Milwaukee area. Counties that are part of the Milwaukee 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 CESs

County	State Recommended Nonattainment?	CES	$PM_{2.5}$ emissions total	$PM_{2.5}$ emissions carbon	$PM_{2.5}$ emissions other	SO_2	NOx	VOCs	NH_3
Milwaukee, WI	No	100	5,802	2,583	3,219	24,239	36,376	48,898	1,181
Waukesha, WI	No	34	2,134	1,132	1,002	1,020	12,168	24,705	893
Kenosha, WI	No	17	1,489	460	1,030	33,988	15,967	7,857	647
Racine, WI	No	12	1,242	547	695	761	5,858	11,809	791
Lake, IL	Other	12	2,657	1,070	1,587	14,719	29,478	32,778	747
McHenry, IL	Other	7	2,102	634	1,468	592	9,493	10,596	1,224
Ozaukee, WI	No	5	841	344	496	377	4,492	5,421	871
Washington, WI	No	5	807	391	416	337	4,090	9,053	1,410

Milwaukee County has the highest emissions for most of the pollutants and the highest CES in the area. Waukesha and Racine Counties have lower emissions and CES. Still, the emissions and scores indicate that the counties may contribute the violations in the area. Kenosha County also has a moderate CES, but this is due to the high sulfur dioxide emissions. The CES was calculated using 2005 emissions data. As shown on Table 1, the sulfur dioxide emissions for Kenosha County were the highest in the area. Sharp sulfur dioxide emissions reductions, mandated under a federal consent decree, have

occurred at a Kenosha County power plant which has greatly reduced the county's impact on the Milwaukee area violations.

Table 2 provides the data for CES weighting factors. The trajectory factors are used in CES calculations to account for seasonal meteorology. For the top 10% of days in both the cold and warm seasons, wind trajectories were run for a 48 hour period preceding the high monitor reading. The amount of time the air mass was over a county within the mixing height was calculated. The values were scaled so that the maximum value is 100. Thus, the county that is most likely to be upwind of a monitor on a high concentration day in a season is given a score of 100. The scores for the other counties will reflect the relative likelihood of being upwind. As the concentration of a pollutant will decrease as it goes further downwind, a distance weighting factor is also used in calculating the CES. The distance factor listed on Table 2 provides the distance from the center of a county to the center of the violating county. If a county is violating, the distance used is the average distance from the center to the county line.

Table 2. CES Factor Data

County	CES	Trajectory Factor- Cold	Trajectory Factor- Warm	Distance (mi)
Milwaukee, WI	100	100	100	8.1
Waukesha, WI	34	70	88	16.6
Kenosha, WI	17	71	88	30.5
Racine, WI	12	86	97	20.4
Lake, IL	12	51	70	48
McHenry, WI	7	39	59	53.8
Ozaukee, WI	5	58	68	24.2
Washington, WI	5	42	64	27.5

Factor 2: Air quality data

This factor considers the 24-hour $PM_{2.5}$ design values (in $\mu g/m^3$) for air quality monitors in counties in the Milwaukee area based on data for the 2005-2007 period. These data are from Federal Reference Method (FRM) monitors. 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 98^{th} percentile values are 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for counties in the Milwaukee area are shown in Table 3.

Table 3. Air Quality Data

County	State Recommended Nonattainment?	Design Values 2004-2006	Design Values 2005-2007
Milwaukee, WI	No	41	41
Waukesha, WI	No	36	34
Racine, WI	No		
Ozaukee, WI	No	31	34

Washington, WI	No		
Kenosha, WI	No	32	34
Lake, IL	Other	33	35
McHenry, IL	Other	31	31

The design value for Milwaukee County exceeds the 2006 $PM_{2.5}$ standards. The 2004-2006 design value for Waukesha County was above the standard, but it is now below the standards based on 2005-2007 data. Kenosha and Ozaukee Counties also meet the air quality standards. There are no $PM_{2.5}$ air quality data for Racine and Washington Counties.

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. Analysis of these data indicates that the days with the highest fine particle concentrations in the Milwaukee area occur about 27% in the warm season and 73% in the cool season. In the warm season, the average chemical composition of the highest days is 73% sulfate, no nitrate, 24% carbon, and 3% crustal. In the cool season, the average chemical composition of the highest days is 20% sulfate, 58% nitrate, 19% carbon, and 3% crustal. These data indicate that sources of SO_2, NOx, and direct $PM_{2.5}$ emissions contribute to violations in the area.

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

Table 4 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour $PM_{2.5}$ standards. Milwaukee County has the largest population and highest population density. Waukesha County has the next largest population. Racine, Kenosha, and Washington Counties follow with lower populations. Lake County, Illinois has a significant population, but it is in the Chicago nonattainment area.

Table 4. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Milwaukee, WI	No	918,673	3788
Lake, IL	Other	704,086	1504
Waukesha, WI	No	378,804	654
McHenry, IL	Other	304,701	499
Racine, WI	No	195,219	574
Kenosha, WI	No	160,382	574
Washington, WI	No	125,928	289
Ozaukee, WI	No	85,983	368

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the Milwaukee area, the percent of total commuters in each county who commute within the area, and the total Vehicle Miles Traveled (VMT) for each county in millions of miles (see Table 5). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

Table 5. 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 within/to statistical area	Percent Commuting within/to statistical area
Milwaukee, WI	No	8,924	402,450	94	419,000	98
Waukesha, WI	No	3,423	180,500	94	186,020	97
Racine, WI	No	1,395	17,060	19	78,740	88
Washington, WI	No	1,107	24,320	38	61,010	96
Ozaukee, WI	No	967	17,420	40	41,900	96
Kenosha, WI	No	1,250	2,990	4	9,660	13
Lake, IL	Other	6,016	950	0	1,430	1
McHenry, IL	Other	2,104	130	0	200	0

The listing of counties on Table 5 reflects a ranking based on the number of people commuting to other counties. Kenosha County along with Lake and McHenry Counties in Illinois have rather limited commuting to the Milwaukee statistical area. All three counties are in the Chicago statistical area. The commuting statistics also show a link between the other counties as all have a high percent of commuting within the Milwaukee area. Milwaukee and Waukesha Counties have the highest number and percentage of workers who commute to a violating county.

Note: The 2005 VMT data used for table 5 and 6 of the 9-factor analysis has been derived using methodology similar to that described in "Documentation for the final 2002 Mobile National Emissions Inventory, Version 3, September 2007, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002_mobile_nei_version_3_report_092807.pdf. The 2005 VMT data were taken from documentation which is still draft, but which should be released in 2008.

Factor 5: Growth rates and patterns

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

Table 6 below shows population, population growth, VMT, and VMT growth for counties that are included in the Milwaukee area. Counties are listed in descending order based on VMT growth between 1996 and 2005.

Table 6. Population and VMT Growth and Percent Change

County	Population (2005)	Population % change (2000-05)	2005 VMT (10^6 mi)	VMT % change (1996-2005)
McHenry, IL	304,701	16	2,104	196
Lake, IL	704,086	9	6,016	82
Kenosha, WI	160,382	7	1,250	12
Washington, WI	125,928	7	1,107	10
Ozaukee, WI	85,983	4	967	9
Racine, WI	195,219	3	1,395	7
Waukesha, WI	378,804	5	3,423	4
Milwaukee, WI	918,673	-2	8,924	1

The counties in the Chicago statistical area, Kenosha and Lake and McHenry, Illinois, have the highest growth rates. The population and VMT growth is higher for these three than for the five counties in the Milwaukee statistical area. The population growth is limited for the Milwaukee area counties. Milwaukee County lost population from 2000 to 2005. The growth of VMT was moderate for the Milwaukee area counties from 1996 to 2005. These data suggest that the distribution of population and emissions within the Milwaukee area are not changing in a way that would significantly influence the choice of boundaries of the nonattainment area.

Factor 6: Meteorology (weather/transport patterns)

For this factor, EPA considered data from National Weather Service instruments and other meteorological monitoring sites in the area. Wind direction and wind speed data for 2005-2007 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons, an October-April "cold" season and a May-September "warm" season. These high days are defined as days where any FRM or FEM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

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

The pollution rose for the Milwaukee area is provided as Figure 2. Winds on high and moderate concentration days come from a variety of directions. So, counties in all directions from the violations were considered.

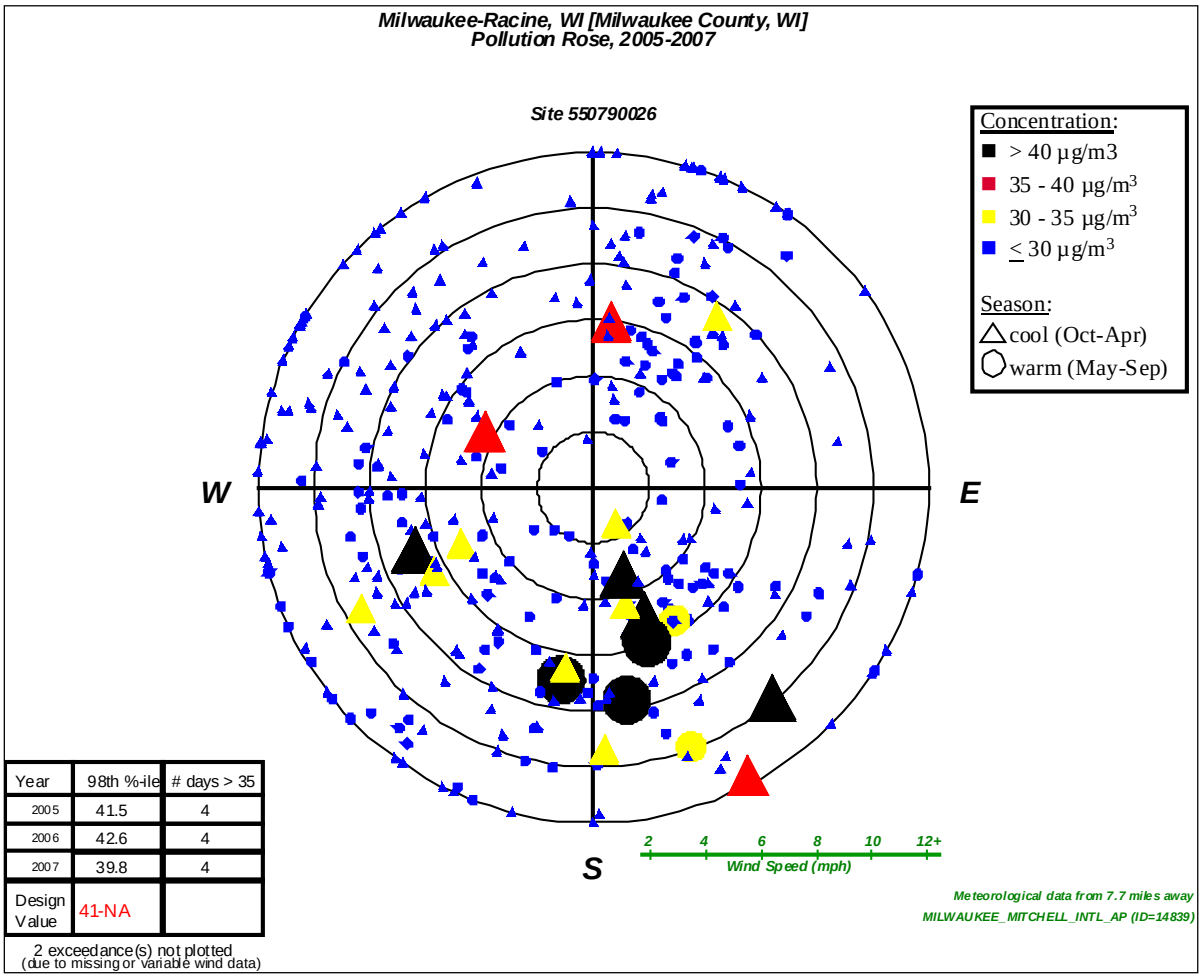


Figure 2

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

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

The geography/topography analysis evaluates the physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the area.

The Milwaukee area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor did not play a significant role in the decision-making process.

Factor 8: Jurisdictional boundaries

In evaluating the jurisdictional boundary factor, EPA gave special consideration to areas that were already designated nonattainment in 2005 for violating the 1997 fine particle standards. However, this area was designated attainment for the 1997 standards, so nonattainment area boundaries for the 1997 standards were not a factor in determining this area's boundaries.

The Southeastern Wisconsin Regional Planning Commission is the metropolitan planning organization for the Milwaukee area. Its web site is www.sewrpc.org.

The Milwaukee, Wisconsin ozone nonattainment area is composed of Kenosha, Milwaukee, Ozaukee, Racine, Washington, and Waukesha Counties.

Factor 9: Level of control of emission sources

Under this factor, the existing level of control of emission sources is taken into consideration. The emissions data used by EPA in this technical analysis and provided in Table 1 under Factor 1 represent emissions levels taking into account any control strategies implemented in the Milwaukee area before 2005 on stationary, mobile, and area sources. Data are presented for $PM_{2.5}$ components that are directly emitted, carbonaceous $PM_{2.5}$ and crustal $PM_{2.5}$, and for pollutants which react in the atmosphere to form fine particles such as SO_2, NOx, VOC, and ammonia.

In considering county-level emissions, EPA used data from the 2005 National Emissions Inventory, the most updated version of the national inventory available at the beginning of the designations process in late 2007. However, EPA recognized that for certain counties, emissions may have changed since 2005. For example, certain power plants or large sources of emissions in or near this area may have installed emission controls or otherwise significantly reduced emissions since 2005. Some States provided updated information on emissions and emission controls in their comments to EPA. EPA considered such additional information in making final designation decisions.

With regard to nearby power plants, EPA considered information about whether a specific plant installed federally enforceable emission controls by December 2008 resulting in significant emissions reductions. A control requirement is considered to be federally-enforceable if it is required by a State regulation adopted in a State implementation plan, if it is included in a federally-enforceable Title V operating permit, or if it is required by a consent decree which also requires the controls to be included in federally enforceable permit upon termination of the consent decree. In making final decisions, EPA also considered whether a facility would continue to emit pollutants which contribute to $PM_{2.5}$ exceedances even after emission controls are operational.

Wisconsin provided additional information on future emission reductions from a combination of regulatory requirements (CAIR, BART, the WE Energy consent decree, and RACT) and a Wisconsin multipollutant bill. However, Wisconsin does not provide

specific information on emission reductions at specific plants, and the information focuses on future emission reductions that do not speak to current emission levels and their contribution to current air quality. Therefore, these future reductions are not germane to EPA's promulgation of boundaries of areas that currently contribute to current violations.