2006 National Ambient Air Quality Standard for Fine Particulate Matter ($PM_{2.5}$): Designating Nonattainment Areas

Robert Esworthy
Specialist in Environmental Policy

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Summary

The Environmental Protection Agency (EPA) published its final revisions to the National Ambient Air Quality Standards (NAAQS) for particulate matter (particulates, or PM) on October 17, 2006. EPA's actions leading up to and following promulgation of the 2006 standard has been the subject of considerable Congressional oversight. EPA's implementation of the standard, beginning with the designation of those geographical areas not in compliance, will likewise be an area of concern and debate among many Members of Congress, states, and other stakeholders for some time.

Promulgation of NAAQS sets in motion a process under which the states and the EPA identify areas that exceed the standard ("nonattainment areas") using multi-year air quality monitoring data and other criteria, requiring states to take steps to reduce pollutant concentrations in order to achieve it. As an initial phase of this process, in its August 2008 letters responding to recommendations received from States, EPA proposed area boundaries (typically defined by counties or portions of counties) for consideration as nonattainment for the 2006 NAAQS. EPA expects to finalize these nonattainment designations by the end of 2008, with an effective date of April 2009. Following formal designation, the states have three years to submit State Implementation Plans (SIPs), which identify specific regulations and emission control requirements that would bring an area into compliance.

The 2006 NAAQS strengthened the pre-existing (1997) standard for "fine" particulate matter 2.5 micrometers or less in diameter ($PM_{2.5}$) by lowering the allowable *daily* concentration of $PM_{2.5}$ in the air. The daily standard averaged over 24-hour periods is reduced from 65 micrograms per cubic meter ($\mu g/m^3$) to 35 $\mu g/m^3$. However, the *annual* $PM_{2.5}$ standard, which addresses human health effects from chronic exposures to the pollutants, is unchanged from the 1997 standard of 15 $\mu g/m^3$. The 2006 NAAQS did not substantially modify the daily standard for slightly larger, but still inhalable, particles less than or equal to 10 micrometers (PM_{10}), retaining the 24-hour standard, but revoked the annual standard for PM_{10}.

The EPA is not requiring new nonattainment designations for PM_{10}. The 2006 tightening of the $PM_{2.5}$ standards is expected to affect areas currently designated nonattainment for the 1997 $PM_{2.5}$ NAAQS; a number of areas would be designated nonattainment for the $PM_{2.5}$ NAAQS for the first time. In its August 2008 letter to states, EPA identified 215 counties and portions of counties in 25 states for designation as nonattainment only for the revised 2006 *24-hour* $PM_{2.5}$ standard. EPA's final designations for nonattainment of the 1997 $PM_{2.5}$ NAAQS included all or part of 205 counties in 20 states and the District of Columbia, the majority of which did not meet the *annual* $PM_{2.5}$ standard. Overall, the total number of counties or portions of counties throughout the United States that will be designated "nonattainment," will increase as a result of the 2006 NAAQS.

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Introduction

Under Sections 108-109 of the Clean Air Act (CAA), Congress mandated that the Environmental Protection Agency (EPA) set national ambient (outdoor) air quality standards (or NAAQS) for pollutants whose emissions: (1) "may reasonably be anticipated to endanger public health or welfare;" and (2) "the presence of which in the ambient air results from numerous or diverse mobile or stationary sources." The statute further requires that EPA review the latest scientific studies and either reaffirm or modify previously established NAAQS every five years. The EPA has identified and promulgated NAAQS for six principal pollutants commonly referred to as "criteria pollutants": particulate matter (PM), ozone (O_3, a key measure of smog), nitrogen dioxide (NO_2, or, inclusively, nitrogen oxides,[1] NOx), sulfur oxides (SOx, or, specifically, SO_2), carbon monoxide (CO), and lead (Pb).

On October 17, 2006, the EPA published its revisions to the NAAQS for particulate matter (PM) to provide protection against potential health effects associated with short- and long-term exposure to particulates (including chronic respiratory disease and premature mortality).[2] The 2006 particulates NAAQS primarily tightened the pre-existing (1997) standard for "fine" particulate matter 2.5 micrometers or less in diameter ($PM_{2.5}$).[3] The standard for slightly larger, but still inhalable, particles less than or equal to 10 micrometers (PM_{10}) established in 1987[4] was not similarly strengthened.

Establishing NAAQS does not directly limit emissions; rather, it represents the EPA Administrator's formal judgment regarding the level of ambient pollution that will protect public health with an *adequate margin of safety*. Promulgation of NAAQS sets in motion a process under which the states and the EPA first identify geographic nonattainment areas, those areas failing to meet the NAAQS based on monitoring and analysis of relevant air quality data. States have three years from the date of EPA's final designations to submit State Implementation Plans (SIPs), which identify specific regulations and emission control requirements that will bring an area into compliance. EPA expects to finalize the nonattainment designations for the 2006 PM NAAQs by the end of 2008 with an effective date of April 2009.[5]

This report focuses primarily on the NAAQS implementation process for designating geographical nonattainment areas with respect to the tightening of the $PM_{2.5}$ standards under the 2006 particulates NAAQS, including comparisons with the final designations under the 1997 $PM_{2.5}$ NAAQS. The EPA is not requiring new nonattainment designations for PM_{10}. Also included is a brief overview of states' subsequent obligations for developing and submitting implementation plans (SIPs) for attaining or maintaining compliance with the NAAQS. **Appendix A** includes a table displaying a state and county breakdown of designated nonttainment

[1] The NAAQS is for NO_2; nitrogen gases that are ozone precursors are referred to as NOx.

[2] *Federal Register* 61143-61233, October 17, 2006. See also EPA's PM Regulatory Actions website at http://epa.gov/pm/actions.html.

[3] *Federal Register* 38652-38896, July 18, 1997. See CRS Report RL32431, *Particulate Matter ($PM_{2.5}$): Implementation of the 1997 National Ambient Air Quality Standards (NAAQS)*, by Robert Esworthy.

[4] *Federal Register* 24634-24715, July 1, 1987.

[5] See EPA's guidance on its website "Area Designations for 2006 24-Hour $PM_{2.5}$ NAAQS - Technical Information," http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

areas proposed by the states and by EPA for the 2006 $PM_{2.5}$ NAAQS, as well as the final EPA designations table for the 1997 $PM_{2.5}$ NAAQS.

For background of the process used to establish the 2006 particulates NAAQS and analysis of associated issues see CRS Report RL34762, *The National Ambient Air Quality Standard for Particulate Matter (PM): EPA's 2006 Revisions and Associated Issues*, by Robert Esworthy and James E. McCarthy.

EPA's 2006 Changes to the Particulates NAAQS

The Clean Air Act provides for two types of NAAQS: primary standards, "the attainment and maintenance of which in the judgment of the [EPA] Administrator ... are requisite to protect the public health," with "an adequate margin of safety"; and secondary standards, necessary to protect public welfare, a broad term that includes damage to crops, vegetation, property, building materials, etc.[6]

The primary NAAQS include a *daily* (24-hour) limit for both $PM_{2.5}$ and PM_{10}, and an *annual* limit for $PM_{2.5}$ (the previous annual limit for PM_{10} was revoked). To attain the annual standard, the three-year average of the weighted annual arithmetic mean PM concentration at each monitor within an area must not exceed the maximum limit set by the agency. The 24-hour standards are a concentration-based percentile form, indicating the percentage of the time that a monitoring station can exceed the standard. For example, a 98^{th} percentile 24-hour standard indicates that a monitoring station can exceed the standard 2% of the days during the year. For $PM_{2.5}$ and PM_{10}, the secondary (welfare) NAAQS are the same as the primary standards.

As modified and published in the October 17, 2006 *Federal Register* Notice, the primary $PM_{2.5}$ and PM_{10} standards are as follows:

- **$PM_{2.5}$:** strengthens the *daily* (24-hour) standard, which currently allows no more than 65 micrograms per cubic meter ($\mu g/m^3$) under the 1997 $PM_{2.5}$ NAAQS, by setting a new limit of 35 $\mu g/m^3$, based on the three-year average of the 98^{th} percentile of 24-hour $PM_{2.5}$ concentrations; retains the *annual* standard at 15 $\mu g/m^3$.
- **PM_{10}:** retains the *daily* (24-hour) standard at 150 $\mu g/m^3$ set in 1987 but changes from the 99^{th} percentile to no more than one exceedance per year on average over three years; eliminates the *annual* maximum concentration (50 $\mu g/m^3$) standard for PM_{10}.[7]
- As will be shown in more detail in the following section, strengthening the *daily standard* for $PM_{2.5}$ will have implications for those counties and partial counties

[6] The use of public welfare in the CAA "includes, but is not limited to, effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being, whether caused by transformation, conversion, or combination with other air pollutants" (42 U.S.C. 7602(h)).

[7] Based on the findings in the EPA PM criteria document and staff paper, and the CASAC's concurrence, that the studies reviewed do not provide sufficient evidence regarding *long-term* exposure to warrant continuation of an annual standard, see 71 *Federal Register* 2653, *Section III. Rationale for Proposed Decision on Primary PM_{10} Standards*, January 17, 2006.

designated nonattainment for the 1997 $PM_{2.5}$ NAAQS. With only a few exceptions, most of the designated nonattainment areas for the 1997 $PM_{2.5}$ NAAQS were not meeting the *annual standard*, but were meeting the *daily (24-hour) standard*. Since the PM_{10} standard was not strengthened, no new areas will be designated as nonattainment for PM_{10}. To the contrary, a few counties previously designated nonattainment have been determined by EPA to be in attainment since the 2006 revisions to the particulates NAAQS.[8]

Designation of Geographical Nonattainment Areas

Designating geographical areas not achieving the established NAAQS based on monitoring and analysis of relevant air quality data, is a critical step in NAAQS implementation. Section 107(d) of the CAA (42 U.S.C. 7407) establishes the process for designating attainment and nonattainment areas and setting their boundaries, but allows the EPA Administrator some discretion in determining what the final boundaries of the areas will be. Areas are identified as "nonattainment" when they violate or contribute to the violation of NAAQS.

NAAQS Designation Process

The NAAQS designation process is intended as a cooperative federal-state-tribal[9] process in which states and tribes provide initial designation recommendations to EPA for consideration. In Section 107(d)(1)(A) (42 U.S.C. 7407), the statute states that the governor of each state shall submit a list to EPA of all areas in the state, "designating as ... nonattainment, any area that does not meet (*or that contributes to ambient air quality in a nearby area that does not meet*) an air quality standard" (emphasis added). Areas are identified as "attainment/unclassified"[10] when they meet the standard or when the data are insufficient for determining compliance with the NAAQS.

Following state and tribal designation submissions, the EPA Administrator has discretion to make modifications, including to the area boundaries. As required by statute (Section 107(d)1(B)(ii)), the agency must notify the states and tribes regarding any modifications, allowing them sufficient opportunity to demonstrate why a proposed modification is inappropriate, but the final determination rests with EPA.

Measuring and analyzing air quality to determine where NAAQS are not being met is a key step in determining an area's designation. Attainment or nonattainment designations are made primarily on the basis of three-years of federally referenced monitoring data.[11] EPA began

[8] See discussion, and map in **Appendix A** depicting PM_{10} nonattainment areas, in CRS Report RL34762, *The National Ambient Air Quality Standard for Particulate Matter (PM): EPA's 2006 Revisions and Associated Issues*, by Robert Esworthy and James E. McCarthy.

[9] Though not required to do so, tribes have been encouraged to submit recommendations. The area designation requirements under the CAA (Section 107) are specific with respect to states, but not to tribes. The EPA follows the same designation process for tribes per Sections 110(o) and 301(d) of the CAA and pursuant to the 1988 Tribal Authority Rule, which specifies that tribes shall be treated as states in selected cases (40 CFR Part 49). For information regarding tribes that have participated in the $PM_{2.5}$ designation recommendation process, see http://www.epa.gov/pmdesignations.

[10] Section 107(d)(1)(A)(iii) of the CAA provides that any area that EPA cannot designate on the basis of available information as meeting or not meeting the standards should be designated unclassifiable.

[11] A federally referenced monitor is one that has been accepted for use by EPA for comparison of the NAAQS by (continued...)

developing methods for monitoring fine particles at the time the $PM_{2.5}$ NAAQS were being finalized in 1997, and operation of the network of monitors for $PM_{2.5}$ was phased in from 1999 through 2000.

The network of monitors and their locations have been modified over time. Most recently, in a separate action in conjunction with the October 2006 publication of the revised particulates NAAQS, EPA amended its national air quality monitoring requirements, including those for monitoring particle pollution.[12] The amended monitoring requirements were intended to help federal, state, and local air quality agencies by adopting improvements in monitoring technology. EPA's final designations for the 2006 particulates NAAQS are to be based on 2003-2007 monitoring data.

In addition to air emission and air quality data, EPA considers a number of other relevant factors,[13] and recommends that states apply these factors in their determinations in conjunction with other technical guidance. Examples of these factors include population density and degree of urbanization (including commercial development), growth rates, traffic and commuting patterns, weather and transport patterns, and geography/topography. States and Tribes may submit additional information on factors they believe are relevant for EPA to consider.

Nonattainment areas include those counties where pollutant concentrations exceed the standard as well as those that contribute to exceedance of the standard in adjoining counties. Entire metropolitan areas tend to be designated nonattainment, even if only one county in the area has readings worse than the standard. In addition to identifying whether monitored violations are occurring, States' or Tribes' boundary recommendations for an area are to also show that violations are not occurring in those portions of the recommended area that have been excluded, and that they do not contain emission sources that contribute to the observed violations.

$PM_{2.5}$ NAAQS Designations[14]

In December 2007, 20 states provided EPA with recommended nonattainment boundaries for the 2006 revised particulates NAAQS based on 2004 to 2006 monitoring data. The states identified 46 areas comprising 116 counties, including 31 partial counties (see **Table A-1** for state by state county/area nonattainment designations). The recommended designations are primarily based on 2004-2006 monitoring data, criteria and technical guidance from EPA and assistance from its regional offices, and states' own relevant information and criteria.

The CAA does not specifically require combining neighboring counties within the same nonattainment area, but it does require the use of metropolitan statistical area boundaries in the more severely polluted areas (Section 107(d)(4)(A)(iv)). However, unlike the 1997 $PM_{2.5}$

(...continued)

meeting the design specifications and certain precision and bias (performance) specifications (40 CFR Part 58).

[12] Revisions to Ambient Air Monitoring Regulations, final rule, 71 *Federal Register* 61235-61328, October 17, 2006. http://www.epa.gov/air/particlepollution/actions.html.

[13] See Chapter 5 of the EPA Technical Support Document for December 17, 2004 final designations for the 1997 $PM_{2.5}$ NAAQS and April 2005 modifications, for explanations of these factors; available at http://www.epa.gov/pmdesignations/1997standards/tech.htm.

[14] For detailed $PM_{2.5}$ state/county geographical designation recommendations by EPA and those from individual states and tribes, for the 1997 and for the 2006 $PM_{2.5}$ NAAQS, see http://www.epa.gov/pmdesignations.

standards, Metropolitan Statistical Areas or Consolidated Metropolitan Statistical Areas[15] did not generally serve as the "presumptive boundary" for nonattainment areas under the 2006 $PM_{2.5}$ standards. Rather than establish a presumption for the minimum size of an area, in its June 2007 guidance[16] EPA instructed states and tribes to evaluate each area on a case-by-case basis. EPA expected that nonattainment areas for the 2006 24-hour $PM_{2.5}$ would include counties with monitors violating the 24-hour standard and nearby counties that contribute to that violation. EPA also recommended that states and tribes consider using common boundaries for areas to be designated as nonattainment for both the annual and 24-hour $PM_{2.5}$ standards. This information in conjunction with air emission and air quality data, as well other relevant factors as recommended in EPA's guidance, such as population density, growth rates, traffic and commuting patterns, weather and transport patterns, and geography/topography, were used by states in determining the boundaries for the designated areas.

As required by statute, EPA responded to the states with its modifications to the area designation recommendations for the 2006 $PM_{2.5}$ NAAQS for the 24-hour standard in letters dated August 19, 2008. The EPA solicited the states' comments and additional information for consideration in determining the final designations.[17] As it did in implementing the 1997 $PM_{2.5}$ NAAQS and has done with other NAAQS, EPA used its discretion to expand the size of nonattainment areas (added more counties or portions of counties) or to combine areas that a state listed as separate areas into a single larger unit, EPA also combined nonattainment counties across state lines into the same nonattainment area, if the counties are part of the same metropolitan area.

The counties that EPA has identified as nonattainment for the 2006 $PM_{2.5}$ NAAQS are indicated in the map in **Figure 1** on the next page. While the identified areas can seem small compared with the approximately 3,000 counties in the United States, nonattainment counties tend to have larger populations than those in attainment: for example, nearly 90 million people (about 30% of the U.S. population) live in the 205 counties designated nonattainment for the current 1997 $PM_{2.5}$ NAAQS. The map distinguishes those counties not previously designated nonattainment for the $PM_{2.5}$ NAAQS and those areas that are being designated for the 2006 $PM_{2.5}$ 24-hour standard, that were previously designated nonattainment for the 1997 $PM_{2.5}$ NAAQS.

The agency identified 57 areas in 26 states, comprising 215 counties (169 counties and portions of 46 additional counties) for designation as nonattainment for the revised 2006 *24-hour* $PM_{2.5}$ standard (see table in **Appendix A** for state by state county/area nonattainment designations). The EPA's designations do not identify counties violating the *annual* standard, as the level is unchanged from the 1997 $PM_{2.5}$ NAAQS. Areas include whole and partial counties and, as with the designations for the 1997 $PM_{2.5}$ and other criteria pollutant NAAQS standards, several areas include counties from multiple states.

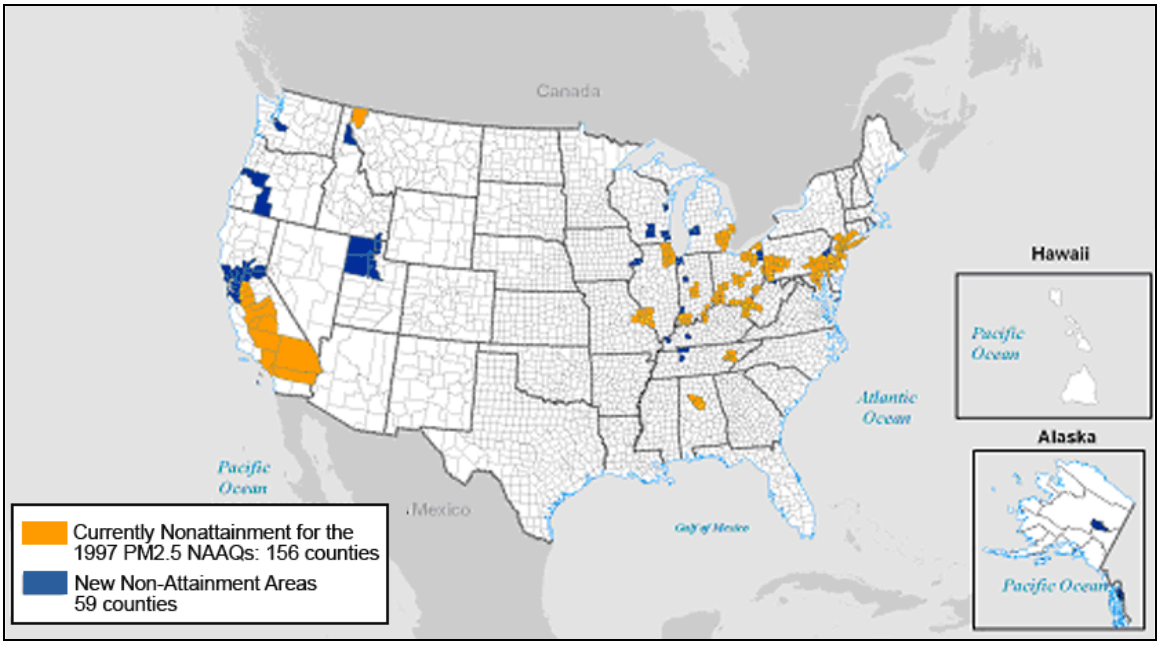
[15] As defined by the Office of Management Budget. For more information on metropolitan areas, see http://www.census.gov/population/www/estimates/aboutmetro.html.

[16] See EPA's guidance on its website "Area Designations for 2006 24-Hour $PM_{2.5}$ NAAQS—Technical Information," http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

[17] For information regarding EPA's August 19, 2008 designations, see http://www.epa.gov/pmdesignations/2006standards/regs.htm#2.

Figure 1. Counties in Nonattainment for the 2006 $PM_{2.5}$ NAAQS—EPA's August 2008 Response to States' Recommendations

(violating the 24-hour standard (35 μg/m^3) only)



Source: Prepared by the Congressional Research Service based on EPA's Responses to State Nonattainment Recommendations, August 19, 2008, with data compiled from EPA's website for PM designations. Partial counties are shown on the map as whole counties. http://www.epa.gov/pmdesignations/.

States (and tribal groups) had 120 days to respond to EPA's recommendations, and the agency also issued a notice[18] for a 30-day public comment period. EPA expects to finalize these nonattainment designations (based on 2005-2007 monitoring data[19]) by December 18, 2008, with an effective date of April 2009. The date of final designations may be extended up to one year, but no later than December 18, 2009, if the Administrator determines that the agency has insufficient information to promulgate the designations.

In responding to EPA's proposal for Nonattainment designations for the 1997 $PM_{2.5}$ NAAQS, a number of states challenged the agency and maintained support for their original recommendations. The final EPA designations for the 1997 $PM_{2.5}$ NAAQS reflected minor modifications to its proposal; primarily, 19 counties were removed from the list of nonattainment areas, and other counties were redefined by designating only specified locations ("partial") within the county as nonattainment. EPA also subsequently denied six petitions submitted to the agency requesting reconsideration of the previous designations of one or more full or partial counties as nonattainment for the 1997 $PM_{2.5}$ NAAQS.[20]

[18] 73 *Federal Register* 51257, September 2, 2008.

[19] Revisions to Ambient Air Monitoring Regulations, final rule, 71 *Federal Register* 61235-61328, October 17, 2006 http://www.epa.gov/air/particlepollution/actions.html.

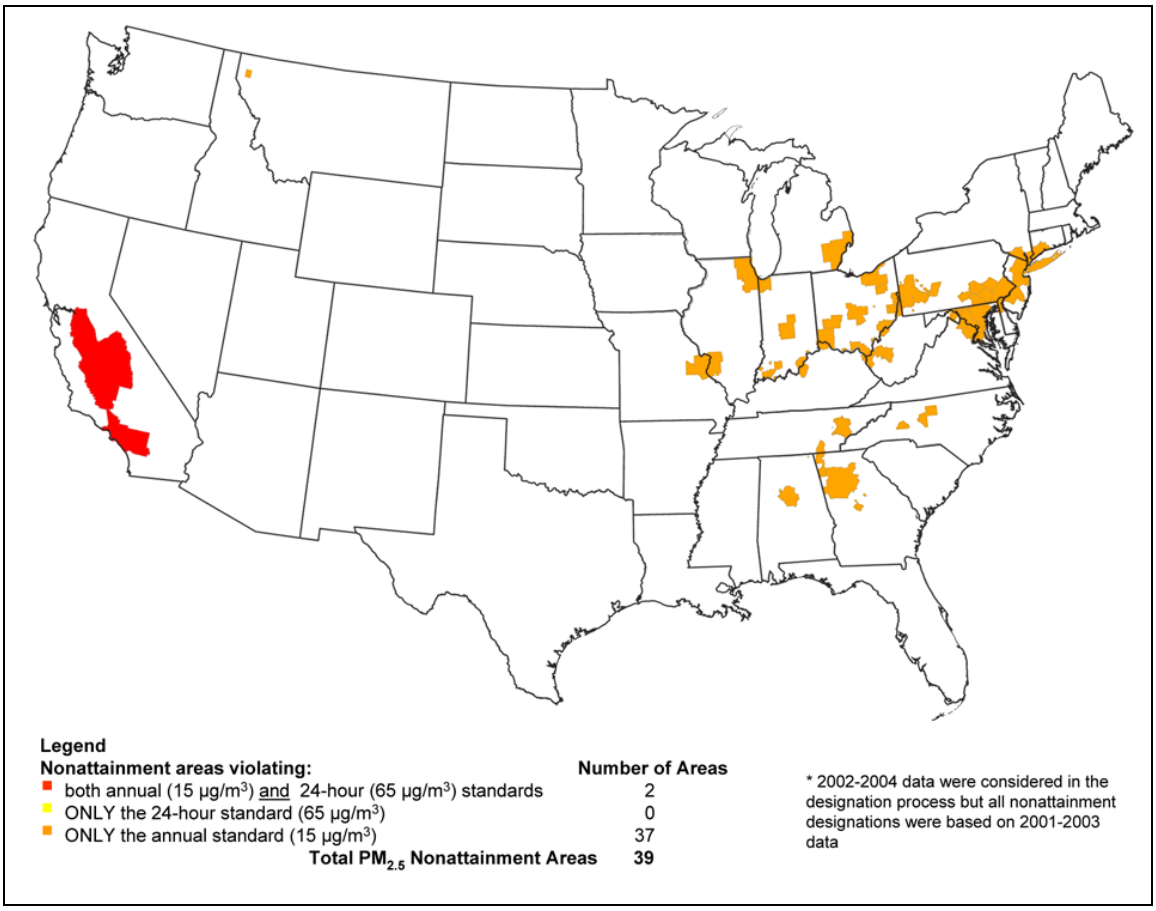
[20] The petitions were for counties in Georgia, Illinois, Michigan, Missouri, Ohio, and West Virginia; see http://www.epa.gov/pmdesignations/1997standards/regs.htm.

Comparing the 2006 and 1997 $PM_{2.5}$ NAAQS Designations

As of August 2008, EPA's final designations for nonattainment of the 1997 $PM_{2.5}$ NAAQS (those areas with or contributing to air quality levels exceeding the annual and 24-hour standards) included all or part of 205 counties in 20 states and the District of Columbia.[21] As indicated in the map in **Figure 2** the designated nonattainment areas for the 1997 $PM_{2.5}$ NAAQS are primarily concentrated in the central, mid-Atlantic, and southeastern states east of the Mississippi River, as well as in California. More than 2,900 counties in 30 states have been designated attainment/unclassifiable for the 1997 $PM_{2.5}$ NAAQS.

Figure 2. Currently Designated Nonattainment Areas 1997 $PM_{2.5}$ Standards

(violating the annual (15 µg/m³) and/or 24-hour (65 µg/m³) standard)



Sources: U.S. EPA, PM Standards Revision - 2006 Graphs and Maps, Oct. 25, 2006 http://www.epa.gov/oar/particlepollution/naaqsrev2006.html#maps. The map includes the 3-county nonattainment area in Pennsylvania determined by EPA to be in attainment in August 2008; there are no $PM_{2.5}$ nonattainment areas in Hawaii or Alaska, which were not included on the EPA map.

[21] See EPA's $PM_{2.5}$ Designations website at http://www.epa.gov/pmdesignations. See also CRS Report RL32431, *Particulate Matter ($PM_{2.5}$): Implementation of the 1997 National Ambient Air Quality Standards (NAAQS)*, by Robert Esworthy.

Based on EPA's recommendations for the 2006 $PM_{2.5}$ NAAQS, a few counties would be designated nonattainment for $PM_{2.5}$ for the first time but the majority of the counties identified overlap with EPA's final nonattainment designations for the 1997 $PM_{2.5}$ NAAQS. Most of the 1997 $PM_{2.5}$ nonattainment areas were *only* exceeding the *annual* standard; *only* 12 counties were exceeding both the *24-hour* and the *annual* standards. Thus, tightening the 24-hour standard will result in an increased number of areas being designated nonttainment based on exceedances of both the *24-hour* and the *annual* standard.

Table 1 below illustrates the comparative geographic distribution of counties projected to be in nonattainment with the 2006 $PM_{2.5}$ NAAQS (based on EPA's August 2008 letters to states and tribes), and those counties in EPA's final area designations for the 1997 $PM_{2.5}$ NAAQS. The map in **Figure 3** below, overlaps the final nonattainment designations for the annual and 24-hour standard under the 1997 $PM_{2.5}$ NAAQS, with the nonattainment areas for the 24-hour standard as modified under the 2006 $PM_{2.5}$ NAAQS, identified by EPA in its August 2008 letters to states.

Table 1. Counties Designated Nonattainment for the 1997 $PM_{2.5}$ NAAQS and Projected to be Nonattainment for the 2006 $PM_{2.5}$ NAAQS

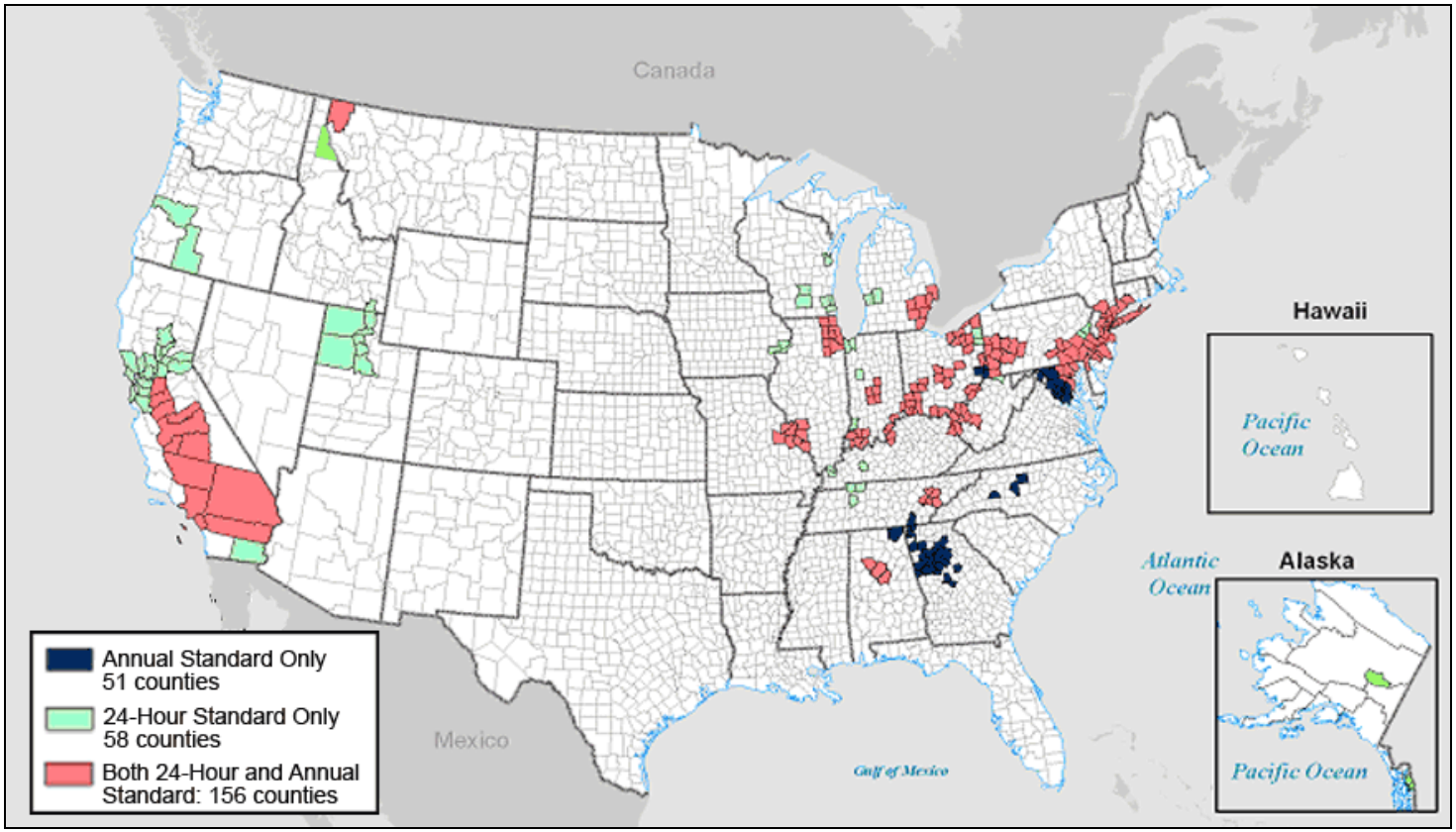
	$PM_{2.5}$ NAAQS (annual/24-hour µg/m³)					
	1997 Standard 15/65 µg/m³			2006 Standard 15/35 µg/m³		
	National	West	East	National	West	East
	Number of counties (including partial counties and D.C.)					
Total exceeding the standard	205	13	192	265	45	220
Exceeding the 24-hour and annual standards	12	12	0	156	13	143
Exceeding the 24-hour standard only	0	0	0	58	32	26
Exceeding the annual standard only	193	1	192	51	0	51

Source: Prepared by the Congressional Research Service with data compiled from EPA's website for PM designations http://www.epa.gov/pmdesignations/. Nonattainment counties for the 24-hour standard are based on those recommended by EPA in their August 2008 letters to states; Nonattainment counties for the annual standard are based on the October 2006 final area designations for the 1997 $PM_{2.5}$ NAAQS.

Note: The counties in the table for the 2006 standards reflect those designated for the 24-hour only by EPA August 2008 in response to States' recommendations for nonattainment area boundaries for the 2006 $PM_{2.5}$ NAAQS based on 2004-2006 monitoring data, combined with the final annual standards for the 1997 $PM_{2.5}$ NAAQS.

Figure 3. Counties Projected to be Designated Nonattainment for the 2006 $PM_{2.5}$ NAAQS

(violating the annual (15 µg/m^3) and/or 24-hour (65 µg/m^3) standard)



Source: Prepared by the Congressional Research Service with data compiled from EPA's website for PM designations http://www.epa.gov/pmdesignations/. Nonattainment counties for the 24-hour standard are based on those recommended by EPA in their August 2008 letters to states; nonattainment counties for the annual standard are based on the October 2006 final area designations for the 1997 $PM_{2.5}$ NAAQS. Partial counties are shown on the map as whole counties.

It is difficult to anticipate what effect this may have on current control measures in these areas. In some areas, current measures focused on achieving attainment for the annual standard may be sufficient to attain the 24-hour standard as well. Other areas may require supplementing current measures or significant modifications to ensure compliance over a shorter averaging period. The impacts could vary substantially from area to area within a state and from state to state depending on many factors, including the type and locations of primary emission sources, current control measures, the extent to which the area is exceeding the standard, topography, weather, etc.

Once designations take effect, they become an important component of state, local and tribal governments' efforts to reduce fine particle pollution. The designations govern what subsequent regulatory actions states, tribes, and EPA must take in order to improve or preserve air quality in each area.

Demonstrating Attainment with the 2006 $PM_{2.5}$ NAAQS

Under the CAA, EPA sets the nationwide standard for criteria pollutants, and EPA and states are responsible for placing limits on emissions that contribute to criteria pollution and for regulating entities emitting criteria pollutants. Areas designated attainment/unclassifiable will not have to take steps to improve air quality but under the statute they must take steps to prevent air quality from deteriorating to unhealthy levels. For those areas designated nonattainment, state, local and tribal governments must outline detailed control requirements in plans demonstrating how they will meet the 2006 $PM_{2.5}$ NAAQS. These plans, defined as state implementation plans and referred to as SIPs (TIPs for tribal implementation plans), must be submitted to EPA three years after the effective date of Agency's final designations. If states fail to develop an adequate implementation plan, EPA can impose one.

State Implementation Plans (SIPs)

SIPs include pollution control measures that will be implemented by federal, state, and local governments, and rely on models of the impact on air quality of projected emission reductions to demonstrate attainment. SIPs must identify, among other items, specific regulations, emissions limitations, and monitoring provisions that will bring an area into compliance. Under the CAA, states are required to meet the 2006 $PM_{2.5}$ standard "as expeditiously as practicable," but no later than five years from the date of designation—April 2014—unless an extension allowed under the CAA is granted.[22]

States and local governments are required to develop and implement new or revised plans (SIPs) for addressing emissions in those areas that do not meet the 2006 revised $PM_{2.5}$ NAAQS. Several counties identified by EPA in its August 2008 letters to states would be designated as nonattainment for the $PM_{2.5}$ NAAQS for the first time. As noted earlier, a large portion of the

[22] Under section 172(a)(2)(A) of the CAA, EPA may grant an area an extension of the initial attainment date for one to five years (in no case later than 10 years after the designation date for the area). A state requesting an extension must submit an implementation plan (SIP) by the required deadline that includes, among other things, sufficient information demonstrating that attainment by the initial attainment date is "impracticable."

nonattainment areas for the 2006 $PM_{2.5}$ NAAQS identified by EPA in August 2008 overlap with those areas designated nonattainment for 1997 $PM_{2.5}$ NAAQS. However, as discussed in the previous section, these counties are unable to meet the 24-hour standard, whereas previously they were designated nonattainment based on their inability to meet the annual standard. Exceeding both an annual and 24-hour standard may have implications with respect to existing SIPs, the extent of which could vary significantly from area to area based on many factors. In some cases SIPs may require substantial modifications, while in other cases the current SIP may be sufficient to achieve compliance with both standards.

In a February 2006 advance notice of proposed rulemaking (ANPR)[23] outlining an implementation plan for the transition to the 2006 particulates standards, EPA indicated that it would be beneficial for states to consider control strategies that may be useful in attaining the 2006 revised $PM_{2.5}$ NAAQS when developing their strategies for the 1997 $PM_{2.5}$ standards.

EPA NAAQS Implementation Rules

The EPA typically publishes an "implementation rule" which describes the requirements that states and tribes must meet in their implementation plans to achieve and maintain attainment.[24] The rule also provides guidance and procedures for establishing controls to achieve and maintain attainment. In addition to detailing provisions necessary to demonstrate how the 2006 $PM_{2.5}$ NAAQS will be attained, the implementation rule generally includes guidance for submitting a SIP when reaching attainment within the five-year requirement is impractical. The implementation rule takes into account existing (oft times pending) federal regulations that contribute to controlling criteria pollutants and their precursors.[25]

National Regulations

The EPA expects that in many cases implementing national strategies—including the 1999 visibility protection regulations (Regional Haze Rule);[26] voluntary diesel engine retrofit programs; and federal standards scheduled to be implemented between 2004 and 2010 on cars, light trucks, heavy-duty, and nonroad diesel engines—would provide a framework for achieving attainment with the $PM_{2.5}$ NAAQS. However, one of the key federal regulations, EPA's May 2005 Clean Air Interstate Rule (CAIR),[27] was vacated in a July 11, 2008, decision (*North Carolina v. EPA*), by the U.S. Court of Appeals for the D.C. Circuit.[28] CAIR was expected to serve as the

[23] 71 Federal Register 6718, February 9, 2006.

[24] EPA published its final implementation rule for the 1997 $PM_{2.5}$ NAAQS On April 25, 2007. The rule addresses attainment demonstration and modeling; local emission reduction measures, including reasonably available control technology (RACT), reasonably available control measures (RACM), and reasonable further progress (RFP); regional emission reduction strategies; innovative program guidance; emission inventory requirements; transportation conformity; and stationary source test methods (72 Federal Register 20586-20667, April 25, 2007).

[25] The term precursor refers to a directly emitted pollutant that, when released to the atmosphere, forms, or contributes to the formation of a secondary pollutant for which an ambient air quality standard has been adopted.

[26] 64 Federal Register 35714-35774, July 1, 1999. See CRS Report RL32483, *Visibility, Regional Haze, and the Clean Air Act: Status of Implementation*, by Larry Parker and John Blodgett, also CRS Report RL32927, *Clean Air Interstate Rule: Review and Analysis*, by Larry Parker.

[27] Promulgated under the CAA, 42 U.S.C. 7401 et seq., 70 Federal Register 25162, May 12, 2005.

[28] 531 F.3d 896 (D.C. Cir. 2008). For a more detailed discussion of the court's decision and its implications, see CRS Report RL34589, *Clean Air After the CAIR Decision: Back to Square One?*, by James E. McCarthy, Larry Parker, and Robert Meltz.

primary tool to assist downwind states in meeting the $PM_{2.5}$ (and 8-hour ozone) NAAQS by mitigating interstate transport of sulfur dioxide (SO2) and nitrogen oxide (NOx) emissions from electric generating units that contribute to the formation of $PM_{2.5}$.[29]

The D.C. Circuit Court's decision to vacate CAIR puts the focus back on § 126 petitions as the available means to address interstate transport of air pollutants in the immediate future. Under § 126 of the CAA, areas may petition EPA to impose controls on upwind sources that significantly contribute to their nonattainment of the standard. EPA has never granted a § 126 petition in the manner outlined by the statute. The D.C. Circuit's decision regarding the CAIR could result in significant delays, and has garnered attention in Congress.[30]

New Source Review

Designated nonattainment areas also are subject to new source review (NSR) requirements. Enacted as part of the 1977 CAA Amendments and modified in the 1990 CAA Amendments, NSR is designed to ensure that newly constructed facilities, or substantially modified existing facilities, do not result in violation of applicable air quality standards. NSR provisions outline permitting requirements both for construction of new major pollution sources and for modifications to existing major pollution sources. The specific NSR requirements for affected sources depend on whether the sources are subject to Prevention of Significant Deterioration (PSD) or nonattainment provisions.[31]

Transportation Conformity

If new or revised SIPs for attainment establish or revise a transportation-related emissions budget, or add or delete transportation control measures (TCMs), they will trigger "conformity" determinations. Transportation conformity is required by the CAA, Section 176(c),[32] to prohibit federal funding and approval for highway and transit projects unless they are consistent with ("conform to") the air quality goals established by a SIP, and will not cause new air quality violations, worsen existing violations, or delay timely attainment of the national ambient air quality standards.

EPA promulgated several transportation conformity rules and rule amendments since the statute was strengthened as part of the 1990 CAA.[33] The rules generally establish the criteria and

[29] Sulfur dioxide (SO_2) is a precursor contributing to the formation of $PM_{2.5}$ concentrations, and NOx is a precursor (a pollutant that is transformed in air to form another air pollutant) contributing to the formation of both ozone and $PM_{2.5}$ concentrations. EPA has concluded that SO_2 and NOx emissions, through the phenomenon of air pollution transport, contribute significantly to downwind nonattainment, or interfere with maintenance, of the $PM_{2.5}$ and 8-hour ozone NAAQS (70 Federal Register 25162, May 12, 2005).

[30] For a more detailed discussion of the court's decision and its implications, see CRS Report RL34589, *Clean Air After the CAIR Decision: Back to Square One?*, by James E. McCarthy, Larry Parker, and Robert Meltz, also see related discussion in CRS Report RL32431, *Particulate Matter ($PM_{2.5}$): Implementation of the 1997 National Ambient Air Quality Standards (NAAQS)*, by Robert Esworthy.

[31] See Clean Air Act, Part D—Plan Requirements for Nonattainment Areas, sections 171-178, codified at 40 CFR 52.24(f)(10).

[32] 42 U.S.C. 7506(c).

[33] EPA conformity rule promulgated on November 24, 1993 (58 Federal Register 62188), and subsequently amended; see EPA's "Chronological List of Transportation Conformity Rulemakings" at http://www.epa.gov/otaq/stateresources/transconf/conf-regs-c.htm, and "Transportation Conformity Regulations Current as of January 2008," EPA420-B-08-
(continued...)

procedures for determining whether transportation plans, transportation improvement programs (TIPs), or projects conform to a state's SIP.

Conclusions

The designation of geographical areas unable to meet the NAAQS is a critical step in NAAQS implementation, and historically has been an issue of concern and debate among EPA, states and tribes, various stakeholders, and many Members of Congress. The EPA's 2006 tightening of the $PM_{2.5}$ standards will increase the number of areas (typically defined by counties or portions of counties) in nonattainment, and subsequently potentially result in an encumbrance on states to achieve compliance.

In August 2008 letters to states, EPA provided its proposed modifications to nonattainment designation recommendations submitted by states for the 2006 $PM_{2.5}$ NAAQS. EPA intends to finalize the designations for the 2006 $PM_{2.5}$ NAAQS by December 18, 2008, although this determination could be delayed up to a year if the Administrator determines that the agency has insufficient information. Historically, there have been disagreements between EPA and states, and other stakeholders, with regard to final NAAQS nonattainment designations.

Following the final nonattainment determination, State, local and tribal governments are to outline detailed control requirements in plans (or SIPs) demonstrating how areas designated nonattainment will meet the 2006 $PM_{2.5}$ NAAQS. Although a large portion of the nonattainment areas for the 2006 $PM_{2.5}$ NAAQS identified by EPA in August 2008 overlap with those areas designated nonattainment for 1997 $PM_{2.5}$ NAAQS, these new designations are based on the *24-hour* standard, whereas the previous designations were based on the *annual* standard. The implications of this with regard to SIPs could vary significantly from area to area based on numerous factors.

States would not be required to submit SIPs until 2012, and would not have to meet the $PM_{2.5}$ standard until 2014 (or April 2019, if qualified for an extension[34]). The EPA is not requiring new nonattainment designations for PM_{10}, and it does not anticipate any significant incremental cost impacts associated with the change in the PM_{10} standard. The associated impacts on specific geographical nonattainment areas would be speculative at best, because compliance with the 2006 revised particulates NAAQS is several years off.

With regard to the 1997 $PM_{2.5}$ NAAQS, states with nonattainment areas must be in compliance with the 1997 $PM_{2.5}$ NAAQS by April 5, 2010, unless they are granted an extension. Implementation of the 1997 $PM_{2.5}$ NAAQS, already delayed considerably, is threatened with further delay as a result of the U.S. Court of Appeals for the D.C. Circuit's July 11, 2008, decision (*North Carolina v. EPA*) that would vacate the Clean Air Interstate Rule (CAIR).[35] Further delays

(...continued)

001, January 2008, http://www.epa.gov/otaq/stateresources/transconf/regs/420b08001.pdf.

[34] Under § 172(a)(2)(A) of the CAA, EPA may grant an area an extension of the initial attainment date for one to five years (not later than 10 years after the designation date for the area). A state requesting an extension must submit an implementation plan (SIP) by the required deadline that includes, among other things, sufficient information demonstrating that attainment by the initial attainment date is "impracticable."

[35] 42 U.S.C. 7401 et seq.

in implementing 1997 $PM_{2.5}$ NAAQS would have direct implications for implementing the 2006 $PM_{2.5}$ NAAQS.

Concerns regarding looming key implementation milestones and attainment deadlines for the 2006 $PM_{2.5}$ NAAQS, and associated delays effecting implementation of the current 1997 $PM_{2.5}$ NAAQS, will remain an issue of considerable debate for many stakeholders and interest groups, as well as Congress.

Appendix A. Comparative Timeline for Implementing the 1997 and 2006 $PM_{2.5}$ NAAQS

Table A-1. Schedule for Implementation of the 1997 and the 2006 $PM_{2.5}$ NAAQS

Milestones	1997 $PM_{2.5}$ NAAQS	2006 $PM_{2.5}$ NAAQS
Revised standard promulgated	July 18, 1997	October 10, 2006
Revised standard effective date	September 1997	December 18, 2006
State-tribal area designation recommendations	February 2004 (based on 2000-2002 monitoring data)	December 18, 2007 (based on 2004-2006 monitoring data)
EPA notifies states and tribes regarding modifications to their recommendations	June-July 2004	August 2008
EPA promulgates final area designations (required one year after states and tribes make recommendations)	January 5, 2005	December 18, 2008
EPA proposes $PM_{2.5}$ implementation rule	November 1, 2005	NA
Final Area designations effective date (typically not later than 90 days after *Federal Register* publication)	April 5, 2005	April 2009
States with new transportation projects submit conformity determination (required within one year of the effective date of nonattainment designation)	April 5, 2006	December 18, 2009 (projected)
EPA promulgates final $PM_{2.5}$ implementation rule	April 25, 2007	NA
States and tribes submit revised implementation plans (SIPs) (required three years after final area designations effective date unless extension granted)	April 2008 (ongoing)	April 2012
NAAQS statutory compliance deadline for attainment (required within five years after final area designations effective date; up to ten years with extension)	April 2010-2015	April 2014-2019

Source: Prepared by the Congressional Research Service based on U.S. Environmental Protection Agency fact sheets and guidance documents, and relevant *Federal Register* notices.

The timeline presented in **Table A-1** above reflects the most recent key milestone dates for implementing the 1997 and the 2006 $PM_{2.5}$ NAAQS, including actual completions. These milestones are driven primarily by statutory requirements. The table follows an EPA milestone schedule outlined in an April 21, 2003, memorandum to EPA regional administrators that also provided the nonbinding guidance for implementation of the 1997 $PM_{2.5}$ area designations,[36] and the agency's projected timeline for the 2006 $PM_{2.5}$ NAAQS.[37]

[36] EPA memorandum, April 21, 2003, from the Office of Air and Radiation Assistant Administrator Jeffrey R. Holmstead to EPA Regional Administrators, available at [http://www.epa.gov/ttn/naaqs/pm/pm25_guide.html].

[37] See [http://www.epa.gov/oar/particlepollution/naaqsrev2006.html].

Appendix B. Comparison of Recommended Nonattainment Areas for the 2006 $PM_{2.5}$ NAAQS and the Final Nonattainment Designations for the 1997 $PM_{2.5}$ NAAQS

Table B-1. Recommended Nonattainment Areas for the 2006 $PM_{2.5}$ NAAQS and Final Nonattainment Designations for the 1997 $PM_{2.5}$ NAAQS

	2006 $PM_{2.5}$ NAAQS		1997 $PM_{2.5}$ NAAQS	
	EPA Recommended	State Recommended	Final Designations	Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	Counties and Partial Counties (p)			
ALABAMA				
Birmingham, AL	Jefferson	Jefferson		Jefferson
	Shelby			Shelby
	Walker (p)			Walker (p)
Chattanooga, AL-TN-GA				Jackson (p)
ALASKA				
Fairbanks, AK	Fairbanks N. Star (p)	Fairbanks N. Star (p)		
Juneau, AK	Juneau (p)			
ARIZONA				
Nogales, AZ	Santa Cruz	Santa Cruz (p)		
CALIFORNIA				
Chico, CA	Butte	Butte (p)		
Imperial County, CA	Imperial	Imperial (p)		
Los Angeles, CA	Los Angeles (p)		Los Angeles (p)	Los Angeles (p)
	Orange		Orange	Orange
	Riverside (p)		Riverside (p)	Riverside (p)
	San Bernardino (p)		San Bernardino (p)	San Bernardino (p)
Sacramento, CA	El Dorado (p)			
	Placer (p)			
	Sacramento	Sacramento		
	Solano (p)			
	Yolo			

	2006 $PM_{2.5}$ NAAQS		1997 $PM_{2.5}$ NAAQS	
	EPA Recommended	State Recommended	Final Designations	Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	**Counties and Partial Counties (p)**			
San Francisco Bay Area, CA	Alameda	Alameda		
	Contra Costa	Contra Costa		
	Marin	Marin		
	Napa	Napa		
	San Francisco	San Francisco		
	San Mateo	San Mateo		
	Santa Clara	Santa Clara		
	Solano (p)	Solano (p)		
	Sonoma (p)	Sonoma (p)		
San Joaquin Valley, CA	Fresno	Fresno	Fresno	Fresno
	Kern (p)	Kern (p)	Kern (p)	Kern (p)
	Kings	Kings	Kings	Kings
	Madera	Madera	Madera	Madera
	Merced	Merced	Merced	Merced
	San Joaquin	San Joaquin	San Joaquin	San Joaquin
	Stanislaus	Stanislaus	Stanislaus	Stanislaus
	Tulare	Tulare	Tulare	Tulare
Yuba City-Marysville, CA	Sutter	Sutter (p)		
	Yuba	Yuba(p)		
CONNECTICUT				
New York, NY-NJ-CT	Fairfield	Fairfield		Fairfield
	New Haven	New Haven		New Haven
DELAWARE				
Philadelphia-Wilmington, PA-NJ-DE	New Castle	New Castle		New Castle
DISTRICT OF COLUMBIA				
Washington, DC-MD-VA			Entire District	

	2006 $PM_{2.5}$ NAAQS		1997 $PM_{2.5}$ NAAQS	
	EPA Recommended	State Recommended	Final Designations	Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	**Counties and Partial Counties (p)**			
GEORGIA				
Atlanta, GA				Barrow
				Bartow
				Carroll
				Cherokee
				Clayton
				Cobb
				Coweta
				De Kalb
				Douglas
				Fayette
				Forsyth
				Fulton
				Gwinnett
				Hall
				Heard (p)
				Henry
				Newton
				Paulding
				Putnam (p)
				Rockdale
Atlanta, GA (cont.)				Spalding
				Walton
Chattanooga, AL-TN-GA				Catoosa
				Walker
Macon, GA				Bibb
				Monroe (p)
Rome, GA				Floyd
IDAHO				
Logan, UT-ID	Franklin (p)	Franklin (p)		
Pinehurst, ID		Shoshone (p)		

	2006 $PM_{2.5}$ NAAQS		1997 $PM_{2.5}$ NAAQS	
	EPA Recommended	State Recommended	Final Designations	Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	Counties and Partial Counties (p)			
ILLINOIS				
Chicago-Gary-Lake County, IL-IN	Cook	Cook		Cook
	DuPage	DuPage		DuPage
	Grundy (p)	Grundy (p)		Grundy (p)
	Kane	Kane		Kane
	Kendall (p)	Kendall (p)		Kendall (p)
	Lake	Lake		Lake
	McHenry	McHenry		McHenry
	Will	Will		Will
Davenport-Moline-Rock Island, IA-IL	Rock Island			
Paducah-Mayfield, KY-IL	Massac			
St. Louis, MO-IL	Madison	Madison		Madison
	Monroe	Monroe		Monroe
	Randolph (p)	Randolph (p)		Randolph (p)
	St. Clair	St. Clair		St. Clair
INDIANA				
Chicago-Gary-Lake County, IL-IN	Lake	Lake		
	Porter			
Cincinnati-Hamilton, OH-KY-IN	Dearborn (p)			Dearborn (p)
Evansville, IN	Dubois			Dubois
	Gibson (p)			Gibson (p)
	Pike (p)			Pike (p)
	Spencer (p)			Spencer (p)
	Vanderburgh	Vanderburgh		Vanderburgh
	Warrick			Warrick
Indianapolis, IN	Hamilton			Hamilton
	Hendricks			Hendricks
	Johnson			Johnson
	Marion	Marion		Marion

	2006 $PM_{2.5}$ NAAQS		1997 $PM_{2.5}$ NAAQS	
	EPA Recommended	State Recommended	Final Designations	Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	**Counties and Partial Counties (p)**			
	Morgan			Morgan
Lafayette-Frankfort, IN	Tippecanoe	Tippecanoe		
Louisville, KY-IN	Clark			Clark
	Floyd			Floyd
	Jefferson (p)			Jefferson (p)
Vincennes, IN	Knox	Knox		
IOWA				
Davenport-Moline-Rock Island, IA-IL	Scott	Scott (p)		
Muscatine, IA	Muscatine	Muscatine (p)		
KENTUCKY				
Cincinnati-Hamilton, OH-KY-IN	Boone	Boone		Boone
	Campbell	Campbell		Campbell
	Kenton	Kenton		Kenton
Clarksville, TN-KY	Muhlenberg			
Huntington-Ashland, WV-KY-OH	Boyd			Boyd
	Lawrence (p)			Lawrence (p)
Louisville, KY-IN	Bullitt			Bullitt
	Jefferson			Jefferson
Paducah-Mayfield, KY-IL	McCracken			
MARYLAND				
Baltimore, MD	Anne Arundel	Anne Arundel		Anne Arundel
	Baltimore City	Baltimore City		Baltimore City
	Baltimore	Baltimore		Baltimore
	Carroll	Carroll		Carroll
	Harford	Harford		Harford
	Howard	Howard		Howard

	2006 $PM_{2.5}$ NAAQS		1997 $PM_{2.5}$ NAAQS	
	EPA Recommended	State Recommended	Final Designations	Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	**Counties and Partial Counties (p)**			
Washington, DC-MD-VA				Charles
				Frederick
				Montgomery
				Prince George's
Martinsburg, WV-Hagerstown, MD				Washington
MICHIGAN				
Detroit-Ann Arbor, MI	Livingston	Livingston		Livingston
	Macomb	Macomb		Macomb
	Monroe	Monroe		Monroe
	Oakland	Oakland		Oakland
	St. Clair	St. Clair		St. Clair
	Washtenaw	Washtenaw		Washtenaw
	Wayne	Wayne		Wayne
Grand Rapids, MI	Kent	Kent		
	Ottawa			
MISSOURI				
St. Louis, MO-IL	Franklin			Franklin
	Jefferson			Jefferson
	St. Charles			St. Charles
	St. Louis			St. Louis
	St. Louis City			St. Louis City
MONTANA				
Libby, MT	Lincoln (p)			Lincoln (p)
NEW JERSEY				
Allentown, PA		Warren (p)		
New York, NY-NJ-CT	Bergen	Bergen		Bergen
	Essex	Essex		Essex
	Hudson	Hudson		Hudson
	Mercer	Mercer		Mercer
	Middlesex	Middlesex		Middlesex
	Monmouth	Monmouth		Monmouth

	2006 $PM_{2.5}$ NAAQS		1997 $PM_{2.5}$ NAAQS	
	EPA Recommended	State Recommended	Final Designations	Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	**Counties and Partial Counties (p)**			
	Morris	Morris		Morris
	Passaic	Passaic		Passaic
New York, NY-NJ-CT (cont.)	Somerset	Somerset		Somerset
	Union	Union		Union
Philadelphia-Wilmington, PA-NJ-DE	Burlington	Burlington		Burlington
	Camden	Camden		Camden
	Gloucester	Gloucester		Gloucester
NEW YORK				
New York, NY-NJ-CT	Bronx	Bronx		Bronx
	Kings	Kings		Kings
	Nassau	Nassau		Nassau
	New York	New York		New York
	Orange	Orange		Orange
	Queens	Queens		Queens
	Richmond	Richmond		Richmond
	Rockland	Rockland		Rockland
	Suffolk	Suffolk		Suffolk
	Westchester	Westchester		Westchester
NORTH CAROLINA				
Hickory, NC				Catawba
Greensboro- Winston Salem-High Point, NC				Davidson
				Guilford
OHIO				
Canton-Massillon, OH	Stark	Stark		Stark
Cincinnati-Hamilton, OH-KY-IN	Butler	Butler		Butler
	Clermont	Clermont		Clermont
	Hamilton	Hamilton		Hamilton
	Warren	Warren		Warren

	2006 $PM_{2.5}$ NAAQS		1997 $PM_{2.5}$ NAAQS	
	EPA Recommended	State Recommended	Final Designations	Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	**Counties and Partial Counties (p)**			
Cleveland-Akron-Lorain, OH	Ashtabula (p)			Ashtabula (p)
	Cuyahoga	Cuyahoga		Cuyahoga
	Lake	Lake		Lake
	Lorain	Lorain		Lorain
	Medina	Medina		Medina
	Portage	Portage		Portage
	Summit	Summit		Summit
Columbus, OH	Coshocton (p)			Coshocton (p)
	Delaware	Delaware		Delaware
	Fairfield	Fairfield		Fairfield
	Franklin	Franklin		Franklin
	Licking	Licking		Licking
Dayton-Springfield, OH	Clark			Clark
	Greene	Greene		Greene
	Montgomery	Montgomery		Montgomery
Huntington-Ashland, WV-KY-OH	Adams (p)			Adams (p)
	Gallia (p)			Gallia (p)
	Lawrence			Lawrence
	Scioto			Scioto
Parkersburg- Marietta, WV-OH	Washington	Washington		Washington
Steubenville- Weirton, OH-WV	Jefferson	Jefferson		Jefferson
Wheeling, WV-OH				Belmont
Youngstown, OH	Mahoning	Mahoning		
	Trumbull	Trumbull		
OREGON				
Klamath Falls, OR	Klamath (p)	Klamath (p)		
Oakridge, OR	Lane (p)	Lane (p)		

	2006 $PM_{2.5}$ NAAQS		1997 $PM_{2.5}$ NAAQS	
	EPA Recommended	State Recommended	Final Designations	Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	Counties and Partial Counties (p)			
PENNSYLVANIA				
Allentown, PA	Lehigh	Lehigh		
	Northampton	Northampton		
Harrisburg-Lebanon-Carlisle, PA	Cumberland	Cumberland		Cumberland
	Dauphin	Dauphin		Dauphin
	Lebanon	Lebanon		Lebanon
Johnstown, PA	Cambria	Cambria		Cambria
	Indiana (p)	Indiana (p)		Indiana (p)
Lancaster, PA	Lancaster	Lancaster		Lancaster
Liberty-Clairton, PA	Allegheny (p)	Allegheny (p)		Allegheny (p)
Philadelphia-Wilmington, PA-NJ-DE	Bucks	Bucks		Bucks
	Chester	Chester		Chester
	Delaware	Delaware		Delaware
	Montgomery	Montgomery		Montgomery
	Philadelphia	Philadelphia		Philadelphia
Pittsburgh-Beaver Valley, PA	Allegheny (p)	Allegheny (p)		Allegheny (p)
	Armstrong (p)	Armstrong (p)		Armstrong (p)
	Beaver	Beaver		Beaver
	Butler	Butler		Butler
	Greene (p)			Greene (p)
	Lawrence (p)	Lawrence (p)		Lawrence (p)
	Washington	Washington		Washington
	Westmoreland	Westmoreland		Westmoreland
Reading, PA	Berks	Berks		Berks
York, PA	York	York		York

	2006 $PM_{2.5}$ NAAQS		1997 $PM_{2.5}$ NAAQS	
	EPA Recommended	State Recommended	Final Designations	Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	**Counties and Partial Counties (p)**			
TENNESSEE				
Chattanooga, AL-TN-GA				Hamilton
Clarksville, TN-KY	Humphreys			
	Montgomery			
	Stewart			
Knoxville-Sevierville- La Follette, TN	Anderson			Anderson
	Blount			Blount
	Knox			Knox
	Loudon			Loudon
	Roane (p)			Roane (p)
UTAH				
Logan, UT-ID	Cache (p)	Cache (p)		
Salt Lake City, UT	Box Elder (p)			
	Davis	Davis		
	Salt Lake	Salt Lake		
	Tooele (p)			
	Utah (p)	Utah (p)		
	Weber (p)	Weber (p)		
VIRGINIA				
Washington, DC-MD-VA				Alexandria
				Arlington
				Fairfax City
				Fairfax Co
				Falls Church
				Loudoun
				Manassas
				Manassas Park
				Prince William

	2006 $PM_{2.5}$ NAAQS		1997 $PM_{2.5}$ NAAQS	
	EPA Recommended	State Recommended	Final Designations	Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	**Counties and Partial Counties (p)**			
WASHINGTON				
Seattle-Tacoma, WA	Pierce (p)	Pierce (p)		
WEST VIRGINIA				
Charleston, WV	Kanawha	Kanawha		Kanawha
	Putnam	Putnam		Putnam
Huntington-Ashland, WV-KY-OH	Cabell			Cabell
	Mason (p)			Mason (p)
	Wayne			Wayne
Martinsburg, WV-Hagerstown, MD				Berkeley
Morgantown, WV	Monongalia			
Parkersburg- Marietta, WV-OH	Pleasants (p)			Pleasants (p)
	Wood			Wood
Steubenville- Weirton, OH-WV	Brooke	Brooke		Brooke
	Hancock	Hancock		Hancock
Wheeling, WV-OH				Marshall
				Ohio
WISCONSIN				
Green Bay, WI	Brown			
Madison-Baraboo, WI	Columbia			
	Dane			
Milwaukee-Racine, WI	Milwaukee			
	Racine			
	Waukesha			
	TOTALS			
	25 states	20 states	1 state	20 states and D.C.
	57 areas	46 areas	2 areas	39 areas
	169 whole counties	116 whole counties	9 whole counties	176 whole counties
	46 partial counties	31 partial counties	3 partial counties	32 partial counties

Source: Compiled by CRS using data from EPA PM designations websites.

Author Contact Information

Robert Esworthy
Specialist in Environmental Policy
resworthy@crs.loc.gov, 7-7236