



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

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December 17, 2009

Congressional Research Service

7-5700

www.crs.gov

R4096

CRS Report for Congress
Prepared for Members and Committees of Congress

R11173008

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 have been the subject of considerable congressional oversight. EPA's ongoing 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. On November 13, 2009, EPA published its final designations for the 2006 PM NAAQS that include 120 counties and portions of counties in 18 states as nonattainment areas based on 2006 through 2008 air quality monitoring data. The final designations, which include tribal land of 22 tribes, were effective as of December 14, 2009. States have three years from the effective date to submit State Implementation Plans (SIPs), which identify specific regulations and emission control requirements that would bring an area into compliance.

In December of 2008 EPA had identified 211 counties and portions of counties (58 areas) in 25 states for designation as nonattainment for the 2006 PM NAAQS based on 2005 through 2007 data. The publication of these designations—and thus the effective date of the final designations—was delayed pending review by the current Administration. The review was initiated, in part, in response to a White House January 20, 2009, memorandum regarding regulatory review. This review and the availability of more current air quality monitoring data resulted in the final designations published in November 2009.

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 ($\mu\text{g}/\text{m}^3$) to 35 $\mu\text{g}/\text{m}^3$. 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 $\mu\text{g}/\text{m}^3$. The 2006 NAAQS did not substantially modify the daily standard for slightly larger, but still inhalable, particles less than or equal to 10 micrometers (PM₁₀), retaining the 24-hour standard but revoking the annual standard for PM₁₀.

EPA's final nonattainment designations are only for the revised 2006 *24-hour* PM_{2.5} standard. The EPA did not require new nonattainment designations for PM₁₀. The final designations for the 2006 PM_{2.5} NAAQS include a few areas designated nonattainment for PM_{2.5} for the first time, but, as expected, the majority of the counties identified overlap with EPA's final nonattainment designations for the 1997 PM_{2.5} NAAQS. EPA's designations for the 1997 PM_{2.5} NAAQS included all or part of 204 counties in 20 states and the District of Columbia. Most of them were *only* exceeding the *annual* standard; only 12 counties were exceeding both the *24-hour* and the *annual* standards. Thus, the 2006 tightening of the *24-hour* standard resulted in an increased number of areas being designated nonattainment based on exceedances of both the *24-hour* and the *annual* standards.

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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 (O₃, a key measure of smog), nitrogen dioxide (NO₂, or, inclusively, nitrogen oxides,¹ NO_x), sulfur oxides (SO_x, or, specifically, SO₂), 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 (PM₁₀) established in 1987⁴ 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 set 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 then 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.⁵ EPA published the final designations for the 2006 PM_{2.5} NAAQS on November 13, 2009.⁶ The final designations rule is effective December 14, 2009 (30 days from the date of publication). The EPA final designations reflect a change from those announced by the agency in December 22, 2008.⁷ The publication of final designations—and thus the effective date of the final designations—had been delayed since January 2009 pending review by the incoming Administration. EPA initiated review of several previous agency decisions, including those

¹ The NAAQS is for NO₂; nitrogen gases that are ozone precursors are referred to as NO_x.

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.

⁶ *Federal Register* 58688-58781, November 13, 2009; see also EPA’s website, “Area Designations for 2006 24-Hour Fine Particulate (PM_{2.5}) Standards—Regulatory Actions,” <http://www.epa.gov/pmdesignations/2006standards/regs.htm#4>.

⁷ See EPA’s website “Area Designations for 2006 24-Hour Fine Particulate (PM_{2.5}) Standards—December 2008 Area Status (Not Final Designations),” <http://www.epa.gov/pmdesignations/2006standards/documents/2008-12-22/12-08table.htm>.

covered by the White House January 20, 2009, memorandum,⁸ and the Office of Management and Budget's subsequent January 21, 2009, memorandum,⁹ on regulatory review.

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 PM₁₀. 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 contains a comparative timeline for implementing the 2006 and 1997 PM_{2.5} NAAQS. **Appendix B** provides a state and county breakdown of EPA's November 13, 2009, final designated nonattainment areas and areas identified by EPA on December 22, 2008, proposed by the states for the 2006 PM_{2.5} NAAQS, as well as the final EPA nonattainment designations for the 1997 PM_{2.5} NAAQS. **Appendix C** identifies tribes included in EPA's final nonattainment designations 2006 PM_{2.5} NAAQS.

The 2006 particulates NAAQS generated national interest and debate, and oversight in Congress. Additionally, several states and industry, agriculture, business, and public advocacy groups petitioned the U.S. Court of Appeals for the District of Columbia Circuit, challenging certain aspects of EPA's revisions.¹⁰ A February 24, 2009, decision¹¹ by the court granted the petitions in part, denying other challenges, and remanded the standards to EPA for further consideration. While the court did not specifically vacate the 2006 PM standards, and their implementation will proceed, the decision and EPA's eventual actions may prompt renewed interest in PM NAAQS among members of Congress. For background on the process used to establish the 2006 particulates NAAQS and analysis of associated issues, including the D.C. Circuit's February 2009 decision, see CRS Report RL34762, *The National Ambient Air Quality Standards (NAAQS) 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 visibility impairment as well as damage to crops, vegetation, property, building materials, etc.¹²

⁸ Memorandum to Heads and Acting Heads of Executive Departments and Agencies from Rahm Emanuel, Assistant to the President and Chief of Staff, regarding Regulatory Review, January 20, 2009, 74 *Federal Register* 4435 January 26, 2009; the memorandum is also available at http://www.whitehouse.gov/omb/assets/information_and_regulatory_affairs/regulatory_review_012009.pdf.

⁹ Memorandum to Heads and Acting Heads of Executive Departments and Agencies from Peter R. Orszag, Director, Office of Management and Budget, regarding Implementation of Memorandum Concerning Regulatory Review, January 21, 2009, http://www.whitehouse.gov/omb/assets/agencyinformation_memoranda_2009_pdf/m09-08.pdf.

¹⁰ Cases were consolidated with *American Farm Bureau Federation v. U.S. EPA*, 2009 Westlaw 437050, No. 06-1410 (D.C. Cir. 2006).

¹¹ *American Farm Bureau Federation v. U.S. EPA*, No. 06-1410 (D.C. Cir., February 24, 2009).

¹² The use of public welfare in the CAA "includes, but is not limited to, effects on soils, water, crops, vegetation, (continued...)"

The primary NAAQS include a *daily* (24-hour) limit for both PM_{2.5} and PM₁₀, and an *annual* limit for PM_{2.5} (the previous annual limit for PM₁₀ 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 98th 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 PM₁₀, 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 PM₁₀ standards are as follows:

- **PM_{2.5}:** strengthened the *daily* (24-hour) standard, which had allowed no more than 65 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) under the 1997 PM_{2.5} NAAQS, by setting a new limit of 35 $\mu\text{g}/\text{m}^3$, based on the three-year average of the 98th percentile of 24-hour PM_{2.5} concentrations; retains the *annual* standard at 15 $\mu\text{g}/\text{m}^3$.
- **PM₁₀:** retained the *daily* standard at 150 $\mu\text{g}/\text{m}^3$ set in 1987 but changed from the 99th percentile to no more than one exceedance per year on average over three years; eliminated the *annual* maximum concentration (50 $\mu\text{g}/\text{m}^3$) standard for PM₁₀.¹³

As will be shown in more detail in the following section, strengthening the *daily standard* for PM_{2.5} has implications for those counties and partial counties 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*. The EPA is not requiring new nonattainment designations for PM₁₀ since the standards were not strengthened. To the contrary, a few counties previously designated nonattainment for PM₁₀ have been determined by EPA to be in attainment since the 2006 revisions to the particulates NAAQS were promulgated.¹⁴

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

(...continued)

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)).

¹³ 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 PM₁₀ Standards*, January 17, 2006.

¹⁴ See discussion and map in **Appendix A** depicting PM₁₀ nonattainment areas, in CRS Report RL34762, *The National Ambient Air Quality Standards (NAAQS) for Particulate Matter (PM): EPA’s 2006 Revisions and Associated Issues*, by Robert Esworthy and James E. McCarthy.

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-tribal¹⁵ 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”¹⁶ 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.¹⁷ EPA began 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.¹⁸ 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 PM_{2.5} NAAQS published November 13, 2009, are based on air quality monitoring data for calendar years 2006 through 2008.

¹⁵ 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>.

¹⁶ 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.

¹⁷ A federally referenced monitor is one that has been accepted for use by EPA for comparison of the NAAQS by meeting the design specifications and certain precision and bias (performance) specifications (40 CFR Part 58).

¹⁸ Revisions to Ambient Air Monitoring Regulations, final rule, 71 *Federal Register* 61235-61328, October 17, 2006. <http://www.epa.gov/air/particlepollution/actions.html>.

In addition to air emission and air quality data, EPA considers a number of other relevant factors,¹⁹ 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 Designations²⁰

On November 13, 2009, EPA published its designations of 31 areas in 18 states, comprising 120 counties (89 counties and portions of 31 additional counties) for nonattainment of the revised 2006 24-hour PM_{2.5} standard.²¹ (see **Table B-1** in **Appendix B** for state-by-state county/area nonattainment designations). The counties (and partial counties) that EPA designated as nonattainment for the 2006 PM_{2.5} NAAQS are indicated in the map in **Figure 1**. 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 EPA's November 2009 final designations, which are based on air quality monitoring data for calendar years 2006 through 2008, do not include counties violating the *annual* standard, as the level is unchanged from the 1997 PM_{2.5} NAAQS. As with the designations for the 1997 PM_{2.5} and other criteria pollutant NAAQS standards, several areas include counties from multiple states. EPA also included portions of tribal lands of 22 tribes in areas designated nonattainment (see **Appendix C** for list of Tribes included in the final 2006 24-hour PM_{2.5} NAAQS nonattainment areas).

The EPA's final designations differ from those identified by the agency on December 22, 2008, based on air quality monitoring data for calendar years 2005 through 2007. At that time, EPA had identified 58 areas in 25 states, comprising 211 counties (154 counties and portions of 57 additional counties) for designation as nonattainment of the revised 2006 24-hour PM_{2.5} standard²² (see **Table B-1** in **Appendix B** for a comparison of the state-by-state county/area

¹⁹ 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>.

²⁰ 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>.

²¹ See footnote 6.

²² See EPA's website, "Area Designations for 2006 24-Hour Fine Particulate (PM_{2.5}) Standards—December 2008 Area Status (Not Final Designations)," <http://www.epa.gov/pmdesignations/2006standards/documents/2008-12-22/12-08table.htm>.

nonattainment designations; counties (and partial counties) designated as nonattainment for the 2006 PM_{2.5} NAAQS as of December 22, 2008 are indicated on the map in **Figure D-1** of **Appendix D**).

Publication of a final designation rule for the 2006 PM_{2.5} NAAQS was delayed pending review by the agency under the current Administration. The review of the final designation rule, along with several other agency proposed and final actions introduced toward the end of the previous Administration, was initiated, in part, in response to a White House January 20, 2009, memorandum,²³ and the Office of Management and Budget's subsequent January 21, 2009, memorandum,²⁴ regarding regulatory review. During this review, EPA revised its designations based on more current monitoring data (calendar years 2006-2008).

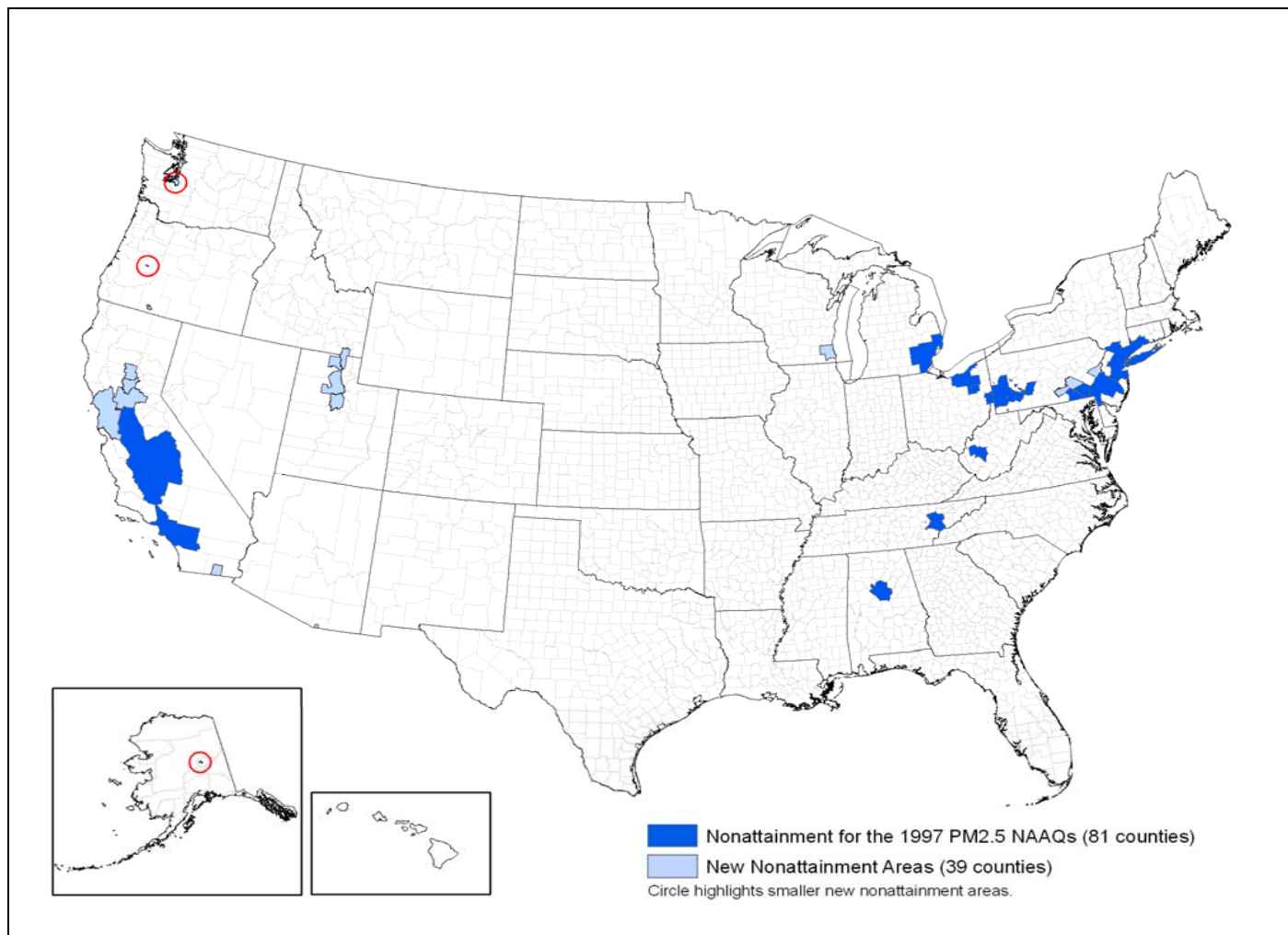
Delaying publication of the final designation rule resulted in the delay of the expected effective date, which had been scheduled for April 2009.²⁵ The effective date of the final designations rule is December 14, 2009 (30 days from the date of publication).

²³ See footnote 8.

²⁴ See footnote 9.

²⁵ 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.

Figure I. Counties in Nonattainment for the 2006 PM_{2.5} NAAQS—EPA’s December 22, 2008, Final Designations
(violating the 24-hour standard (35 µg/m³) only)



Source: Prepared by the Congressional Research Service based on EPA’s final designations for the 2006 PM_{2.5} NAAQS announced November 13, 2009, with data obtained from EPA.

The majority of U.S. counties (including partial counties and tribal lands) were designated attainment/unclassifiable. While the final number of nonattainment areas and associated counties can seem small compared with the approximately 3,000 counties throughout 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 1997 PM_{2.5} NAAQS.

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} standards, Metropolitan Statistical Areas or Consolidated Metropolitan Statistical Areas²⁶ 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 guidance²⁷ 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.

By 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.²⁸ The state-recommended designations were primarily based on air quality monitoring data for calendar years 2004 through 2006, criteria and technical guidance from EPA and assistance from its regional offices, and states’ own relevant information and criteria.

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 agency identified 57 areas in 26 states, comprising 213 counties (167 counties and portions of 46 additional counties) for designation as nonattainment for the revised 2006 24-hour PM_{2.5} standard. The EPA solicited the states’ comments and additional information for consideration in determining the final designations.²⁹ 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.

²⁶ As defined by the Office of Management Budget. For more information on metropolitan areas, see <http://www.census.gov/population/www/estimates/aboutmetro.html>.

²⁷ 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.

²⁸ For detailed information regarding state recommendations for the 2006 PM_{2.5} NAAQS, see EPA’s PM Designation website at <http://www.epa.gov/pmdesignations/2006standards/state.htm>.

²⁹ For information regarding EPA’s August 19, 2008, proposed designations, see <http://www.epa.gov/pmdesignations/2006standards/regs.htm#2>.

States (and tribal groups) had 120 days to respond to EPA's recommendations, and the agency also issued a notice³⁰ for a 30-day public comment period. As occurred with EPA's proposed nonattainment designations for the 1997 PM_{2.5} NAAQS,³¹ several states challenged the agency and maintained support for their original recommendations in response to the agency's proposed nonattainment areas for the 2006 PM_{2.5} NAAQS. EPA designations for the 2006 PM_{2.5} NAAQS as of December 22, 2008, based on 2005 through 2007 air monitoring data reflected minor modifications to those proposed; primarily, two 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.³²

As discussed previously in this report, the final designations for the 2006 PM_{2.5} NAAQS based on 2006 through 2008 monitoring data resulted in fewer nonattainment areas/counties than EPA had proposed in August 2008 and identified as of December 2008 (**Table B-1** in **Appendix B** includes a state-by-state comparison of EPA's final county/area nonattainment designations with the agency's designations as of December 22, 2008). EPA's final designations for the 2006 PM_{2.5} NAAQS published in November 2009 included 27 fewer nonattainment counties than identified as of December 2008, 26 fewer areas than proposed in August 2008, and 17 fewer areas than recommended by the states. EPA's final nonattainment designation areas included 7 fewer states and 91 fewer counties than identified as of December 2008, 7 fewer states and 95 fewer counties than proposed, and 3 fewer states and 27 fewer counties than recommended by the states.³³

Comparing the 2006 and 1997 PM_{2.5} NAAQS Designations

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 204 counties in 20 states and the District of Columbia.³⁴ As indicated in the map in **Figure 2**, below, 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 were designated attainment/unclassifiable for the 1997 PM_{2.5} NAAQS.

³⁰ 73 *Federal Register* 51259-51260, September 2, 2008.

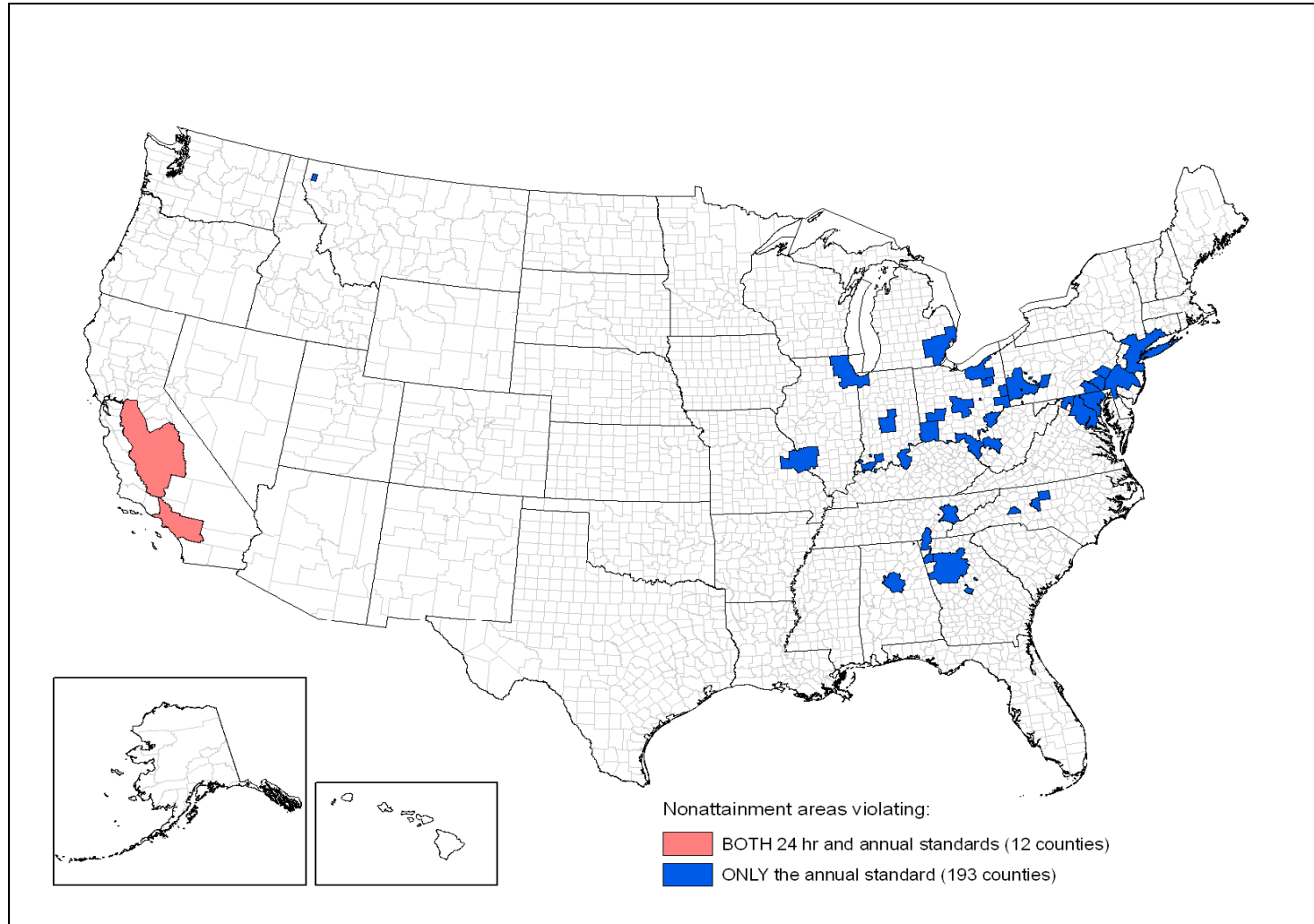
³¹ EPA designations for the 1997 PM_{2.5} NAAQS reflected minor modifications to its proposal; primarily, 19 counties were removed from the list of nonattainment areas, and other counties were redefined by designating only specified locations ("partial") within the county as nonattainment. EPA also subsequently 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. The petitions were for counties in Georgia, Illinois, Michigan, Missouri, Ohio, and West Virginia; see <http://www.epa.gov/pmdesignations/1997standards/regs.htm>.

³² See EPA's website at <http://www.epa.gov/pmdesignations/2006standards/documents/2008-12-22/12-08table.htm>, which provides a table with state-by-state comparisons of designations for the 2006 PM_{2.5} NAAQS as recommend by the states, proposed by EPA August 19, 2008, and as identified by EPA December 22, 2008.

³³ See footnote 32.

³⁴ See EPA's PM_{2.5} Designations websites at <http://www.epa.gov/pmdesignations> and <http://www.epa.gov/oar/oaqps/greenbk/qnca.html>. See also CRS Report RL32431, *Particulate Matter (PM_{2.5}): Implementation of the 1997 National Ambient Air Quality Standards (NAAQS)*, by Robert Esworthy.

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: Prepared by the Congressional Research Service based on EPA's final designations for the 1997 PM_{2.5} NAAQS, with data obtained from EPA.

Table 1 below illustrates the comparative geographic distribution of counties designated nonattainment for the 2006 PM_{2.5} NAAQS (based on EPA's October 8, 2009, final designations), and those counties in EPA's final area designations for the 1997 PM_{2.5} NAAQS. Based on EPA's October 2009 final designations for the 2006 PM_{2.5} NAAQS, 38 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 resulted in an increased number of areas (82 counties) being designated nonattainment based on exceedances of both the 24-hour and the *annual* standard.

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

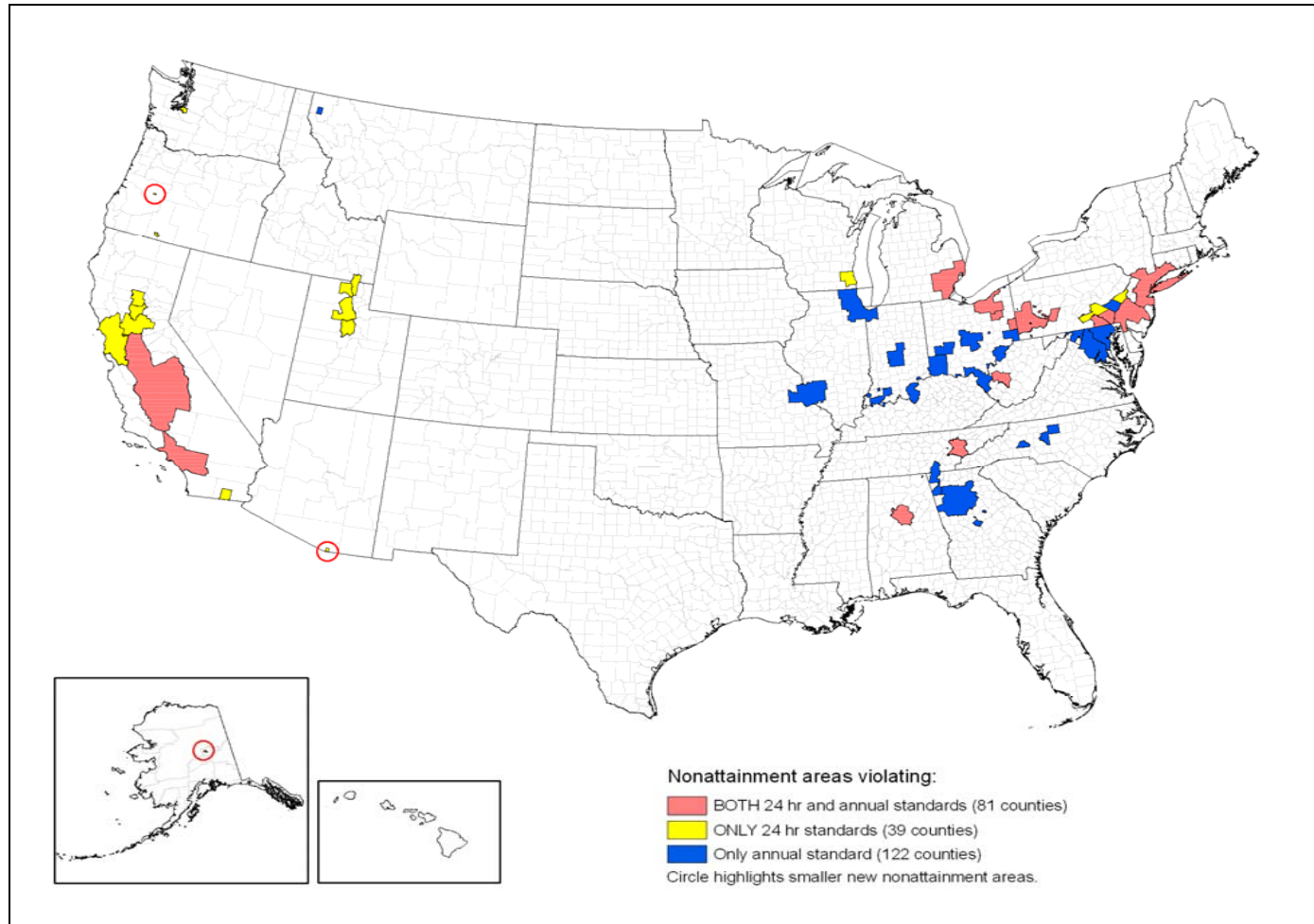
	PM _{2.5} NAAQS (annual/24-hour µg/m ³)					
	1997 Standard 15/65 µg/m ³			2006 Standard 15/35 µg/m ³		
	National	West	East	National	West	East
	Number of counties (including partial counties and D.C.)					
Total exceeding the standard	204	13	191	242	43	199
Exceeding the 24-hour and annual standards	12	12	0	81	11	70
Exceeding the 24-hour standard only	0	0	0	39	31	8
Exceeding the annual standard only	192	1	191	122	1	121

Source: Prepared by the Congressional Research Service with data compiled from EPA's websites for PM designations at <http://www.epa.gov/pmdesignations/> and <http://www.epa.gov/oar/oaqps/greenbk/qnca.html>. Nonattainment counties are based on EPA's final designations for the 2006 PM_{2.5} NAAQS for the 24-hour standard published November 13, 2009, and the final area designations for the 1997 PM_{2.5} NAAQS for the 24-hour and annual standards as of July 31, 2009.

Note: The counties in the table for the 2006 standards reflect EPA's final designations for nonattainment area boundaries for the 2006 24-hour only PM_{2.5} NAAQS based on 2006-2008 air quality monitoring data, overlaid with the final designations for the annual standards (which were unchanged) for the 1997 PM_{2.5} NAAQS as of July 31, 2009.

The map in **Figure 3**, below, shows the overlap of the final nonattainment designations for the annual and 24-hour standard under the 1997 PM_{2.5} NAAQS, with the final nonattainment areas for the 24-hour standard as modified under the 2006 PM_{2.5} NAAQS.

Figure 3. Counties Designated Nonattainment for the 2006 PM_{2.5} NAAQS
 (violating the annual (15 µg/m³) and/or 24-hour (65 µg/m³) standard)



Source: Prepared by the Congressional Research Service with data obtained from EPA. Nonattainment counties for the 24-hour standard are based on EPA's November 13, 2009, final designations for the 2006 PM_{2.5} NAAQS; nonattainment counties for the annual standard (which were unchanged) are based on EPA's final area designations for the 1997 PM_{2.5} NAAQS as of December 31, 2008. Partial counties are shown on the map as whole counties.

It is difficult to anticipate what effect the overlap of nonattainment designations 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 effective date of designation unless an extension allowed under the CAA is granted.³⁵ As previously indicated, the effective date of the final designations rule is December 14, 2009 (30 days from the date of publication).

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. SIPs are

³⁵ 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."

required to be submitted to EPA for review and approval, three years from the effective date of the final designations. Several counties designated as nonattainment for the PM_{2.5} NAAQS are designated for the first time. As noted earlier, a large portion of the nonattainment areas for the 2006 PM_{2.5} NAAQS designated by EPA November 2009, overlap with those areas designated nonattainment for the 1997 PM_{2.5} NAAQS. However, as discussed in the previous section, these areas are now unable to meet the 24-hour standard, whereas previously many of them 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)³⁶ 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.³⁷ 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.³⁸

The basic framework of the current implementation rule for the 1997 PM_{2.5} NAAQS provides guidance for implementation of the 2006 standards. EPA plans to revise the regulatory text of the implementation rule to change certain provisions that refer specifically to the 1997 PM_{2.5} standards to more generic language that would apply also to the 2006 standards, and to future revisions of the PM_{2.5} NAAQS as well, but the agency has not released a specific schedule to share for completing these revisions.³⁹

³⁶ 71 *Federal Register* 6718, February 9, 2006.

³⁷ 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).

³⁸ 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.

³⁹ Information provided to CRS by EPA’s Office of Air Quality and Planning, November 11, 2009.

National Regulations

The EPA expects that in many cases implementing national strategies—including the 1999 visibility protection regulations (Regional Haze Rule);⁴⁰ 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),⁴¹ was vacated in a July 11, 2008, decision (*North Carolina v. EPA*), by the U.S. Court of Appeals for the D.C. Circuit.⁴² On December 23, 2008, the court reversed itself, allowing CAIR to remain in effect until a new rule is promulgated by EPA, noting that vacating the old rule would defeat protection of the environmental values that the rule was designed to preserve.⁴³ The first phase of this rule is to take effect in 2009 and 2010, but only for a temporary period. The court did not impose a specific deadline on EPA's development of the replacement rule, but emphasized that it was not granting an indefinite stay of its July 2008 decision. According to its Spring 2009 Semiannual Regulatory Agenda, published May 2009, EPA announced its plans to propose a replacement rule for CAIR in early 2010 (March/April).⁴⁴

EPA identified CAIR as a key component of states' SIPs to attain the PM_{2.5} standard. Implementation of CAIR would assist states in addressing the interstate transport (upwind state) emission contributions in achieving attainment of the 1997 PM_{2.5} NAAQS.⁴⁵ CAIR was a principal means by which EPA projected that nonattainment areas in the eastern half of the country would attain the ozone and fine particulate NAAQS, by mitigating interstate transport of sulfur dioxide (SO₂) and nitrogen oxide (NO_x) emissions from electric generating units that contribute to the formation of PM_{2.5}.⁴⁶ Without CAIR, most Eastern states would have a huge gap in their emission control programs. What course EPA will take to develop an alternative to CAIR, and the timeliness in which it will be achieved, likely raises more questions with respect to the implementation of the 2006 revised PM_{2.5} NAAQS.

The D.C. Circuit, however, left the substantive requirements of its July 2008 decision fully intact. That decision strongly suggests that there is no simple “fix” that would make CAIR acceptable to the court. The court's decision to vacate the rule was the subject of a July 29, 2008, congressional

⁴⁰ 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.

⁴¹ Promulgated under the CAA, 42 U.S.C. 7401 et seq., 70 *Federal Register* 25162, May 12, 2005.

⁴² 531 F.3d 896 (D.C. Cir. 2008), 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 EPA Clean Air Interstate Rule website at <http://www.epa.gov/CAIR/index.html>.

⁴³ 550 F.3d 1176 (D.C. Cir. 2008).

⁴⁴ Spring 2009: EPA Semiannual Regulatory Agenda, p. 71, May 2009, <http://www.epa.gov/lawsregs/search/regagenda.html>; see also 74 *Federal Register* 21992, May 11, 2009.

⁴⁵ See CRS Report RL32431, *Particulate Matter (PM_{2.5}): Implementation of the 1997 National Ambient Air Quality Standards (NAAQS)*, by Robert Esworthy.

⁴⁶ Sulfur dioxide (SO₂) is a precursor contributing to the formation of PM_{2.5} concentrations, and NO_x 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 SO₂ and NO_x 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).

hearing,⁴⁷ and the implications of this decision are expected to be the topic of further deliberation by Congress.

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.⁴⁸

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),⁴⁹ 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.⁵⁰ The rules generally establish the criteria and procedures for determining whether transportation plans, transportation improvement programs (TIPs), or projects conform to a state’s SIP. On May 15, 2009, EPA published proposed amendments to the transportation conformity rule that primarily affect implementation conformity in PM_{2.5} and PM₁₀ nonattainment and maintenance areas to account for the October 17, 2006, strengthening of the 24-hour PM_{2.5} air quality standard, and revoked the annual PM₁₀ standard.⁵¹ The proposed rulemaking also addresses a court remand concerning hot-spot analyses as they apply to PM_{2.5} and PM₁₀, as well as carbon monoxide, nonattainment and maintenance areas. EPA held a public hearing on June 4, 2009, and public comments were to be submitted by June 29, 2009.

⁴⁷ Senate Committee on Environment and Public Works, Subcommittee on Clean Air and Nuclear Safety, hearing, “EPA’s Clean Air Interstate Rule (CAIR): Recent Court Decision and its Implications,” July 29, 2008, <http://epw.senate.gov/public/>.

⁴⁸ See Clean Air Act, Part D—Plan Requirements for Nonattainment Areas, sections 171-178, codified at 40 CFR 52.24(f)(10).

⁴⁹ 42 U.S.C. 7506(c).

⁵⁰ 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-08-001, January 2008, <http://www.epa.gov/otaq/stateresources/transconf/regs/420b08001.pdf>.

⁵¹ 74 *Federal Register* 23024, May 15, 2009; see also EPA’s “Transportation Conformity: Regulations” website at <http://www.epa.gov/otaq/stateresources/transconf/conf-regs.htm>. The website provides access to all transportation conformity regulations, including rulemakings currently in progress.

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 increased the number of areas (typically defined by counties or portions of counties) in nonattainment, and subsequently will potentially result in an encumbrance on states to achieve compliance.

On November 13, 2009, EPA published its final designations of areas as nonattainment and unclassifiable/attainment for the 2006 PM_{2.5} NAAQS. These area designations differed from those areas EPA had included in its December 22, 2008, notifications to governors and tribal leaders and from EPA's August 2008 proposed modifications to nonattainment designation recommendations submitted by states. Historically, there have been disagreements between EPA and states, and other stakeholders, with regard to final NAAQS nonattainment designations, and there may be challenges to the final designations for the 2006 PM_{2.5} NAAQS.

As a next step, following the publication of the final designations in the *Federal Register*, 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 designated by EPA in November 2009 overlap with those areas previously designated nonattainment for 1997 PM_{2.5} NAAQS, these new designations are based on the *24-hour* standard, whereas the majority of 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 are not required to submit SIPs until December 2012, and would not have to meet the PM_{2.5} standard until December 2014 (or 2019, if qualified for an extension⁵²). 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. The EPA is not requiring new nonattainment designations for PM₁₀, and it does not anticipate any significant incremental cost impacts associated with the change in the PM₁₀ standard.

With regard to the 1997 PM_{2.5} NAAQS, states with nonattainment were required to be in compliance by April 5, 2010, unless they are granted an extension. Implementation of the 1997 PM_{2.5} NAAQS, already delayed considerably, was 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 have vacated the Clean Air Interstate Rule (CAIR).⁵³ Although the court modified its decision on December 23, 2008,⁵⁴ allowing CAIR to remain in effect until a new rule is promulgated by EPA, many questions as to how to best restore CAIR remain. EPA's development of an alternative to CAIR in response to the court's December 2008 decision raises more questions with respect to the implementation of the 2006 revised PM_{2.5} NAAQS.

⁵² 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."

⁵³ 42 U.S.C. 7401 et seq.

⁵⁴ 550 F.3d 1176 (D.C. Cir. 2008).

Concerns regarding looming key implementation milestones and attainment deadlines for the 2006 PM_{2.5} NAAQS, and associated 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

The timeline presented in **Table A-1** 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,⁵⁵ and the agency's previous and current projected timelines for the 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	
		Previous Schedule	Current Schedule
Revised standard promulgated	July 18, 1997	October 10, 2006	October 10, 2006
Revised standard effective date	September 1997	December 18, 2006	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)	December 18, 2007 (based on 2004-2006 monitoring data)
EPA notifies states and tribes regarding modifications to their recommendations	June-July 2004	August 2008	August 2008
EPA promulgates final area designations (required one year after states and tribes make recommendations)	January 5, 2005	December 22, 2008 (based on 2005-2007 monitoring data; never published)	November 13, 2009 (based on 2006-2008 monitoring data)
EPA proposes PM _{2.5} implementation rule	November 1, 2005	NA	NA
Final Area designations effective date (typically not later than 90 days after <i>Federal Register</i> publication)	April 5, 2005	April 2009 (delayed)	December 14, 2009
States with new transportation projects submit conformity determination (required within one year of the effective date of nonattainment designation)	April 5, 2006	December 22, 2009 (delayed)	December 14, 2010 (projected)
EPA promulgates final PM _{2.5} implementation rule	April 25, 2007	NA	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 (delayed)	December 2012 (projected)
NAAQS statutory compliance deadline for attainment (required within five years after final area designations effective date; up to 10 years with extension)	April 2010-2015	April 2014-2019 (delayed)	December 2014-2019 (projected)

Source: Prepared by CRS based on EPA fact sheets and guidance documents, and relevant *Federal Register* notices. For EPA's previous timeline as of January 2009, see <http://www.epa.gov/oar/particlepollution/naaqsv2006.html>; for EPA's more current timeline as of October 2009, see <http://www.epa.gov/pmdesignations/2006standards/documents/2009-10-08/timeline.htm>.

⁵⁵ 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.

Appendix B. Comparison of Final and Interim Nonattainment Designation Areas for the 2006 PM_{2.5} NAAQS and the Final Nonattainment Designation Areas for the 1997 PM_{2.5} NAAQS

Table B-1. Nonattainment Areas for the 2006 PM_{2.5} NAAQS as Identified by EPA in the October 8, 2009, Final Designations and in the December 28, 2008, Status Table, and Final Nonattainment Designations for the 1997 PM_{2.5} NAAQS

State/Area Name	2006 PM _{2.5} NAAQS		1997 PM _{2.5} NAAQS	
	EPA Final Designations	EPA Dec. 2008 Interim Designations	EPA Final Designations	EPA Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
	Counties and Partial Counties (p)			
ALABAMA				
Birmingham, AL	Jefferson	Jefferson		Jefferson
	Shelby	Shelby		Shelby
	Walker (p)	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 (p)	Santa Cruz		
CALIFORNIA				
Chico, CA	Butte (p)	Butte (p)		
Imperial County, CA	Imperial (p)	Imperial (p)		
Los Angeles, CA	Los Angeles (p)	Los Angeles (p)	Los Angeles (p)	Los Angeles (p)
	Orange	Orange	Orange	Orange
	Riverside (p)	Riverside (p)	Riverside (p)	Riverside (p)
	San Bernardino (p)	San Bernardino (p)	San Bernardino (p)	San Bernardino (p)
Sacramento, CA	El Dorado (p)	El Dorado (p)		
	Placer (p)	Placer (p)		
	Sacramento	Sacramento		
	Solano (p)	Solano (p)		
	Yolo (p)	Yolo (p)		

State/Area Name	2006 PM _{2.5} NAAQS		1997 PM _{2.5} NAAQS	
	EPA Final Designations	EPA Dec. 2008 Interim Designations	EPA Final Designations	EPA Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	Counties and Partial Counties (p)			
<i>San Francisco Bay Area, CA</i>	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)		
<i>San Joaquin Valley, CA</i>	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
<i>Yuba City-Marysville, CA</i>	Sutter	Sutter		
	Yuba (p)	Yuba (p)		
CONNECTICUT				
<i>New York, NY-NJ-CT</i>	Fairfield	Fairfield		Fairfield
	New Haven	New Haven		New Haven
DELAWARE				
<i>Philadelphia- Wilmington, PA-NJ-DE</i>	New Castle	New Castle		New Castle
DISTRICT OF COLUMBIA				
<i>Washington, DC-MD-VA</i>				Entire District
GEORGIA				
<i>Atlanta, GA</i>				Barrow
				Bartow
				Carroll
				Cherokee

2006 Fine Particulate Matter (PM_{2.5}) NAAQS Nonattainment Designations

State/Area Name	2006 PM _{2.5} NAAQS		1997 PM _{2.5} NAAQS	
	EPA Final Designations	EPA Dec. 2008 Interim Designations	EPA Final Designations	EPA Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	Counties and Partial Counties (p)			
<i>Chattanooga, AL-TN-GA</i>				Clayton
				Cobb
				Coweta
				De Kalb
				Douglas
				Fayette
				Forsyth
				Fulton
				Gwinnett
				Hall
				Heard (p)
				Henry
				Newton
				Paulding
				Putnam (p)
				Rockdale
				Spalding
			Walton	
<i>Macon, GA</i>			Catoosa	
			Walker	
<i>Rome, GA</i>			Bibb	
			Monroe (p)	
			Floyd	
IDAHO				
<i>Logan, UT-ID</i>	Franklin (p)	Franklin (p)		
<i>Pinehurst, ID</i>		Shoshone (p)		
ILLINOIS				
<i>Chicago-Gary-Lake County, IL-IN</i>		Cook	Cook	
		DuPage	DuPage	
		Grundy (p)	Grundy (p)	
		Kane	Kane	

2006 Fine Particulate Matter (PM_{2.5}) NAAQS Nonattainment Designations

State/Area Name	2006 PM _{2.5} NAAQS		1997 PM _{2.5} NAAQS		
	EPA Final Designations	EPA Dec. 2008 Interim Designations	EPA Final Designations	EPA Final Designations	
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard	
State/Area Name	Counties and Partial Counties (p)				
<i>Davenport-Moline-Rock Island, IA-IL</i>		Kendall (p)		Kendall (p)	
		Lake		Lake	
		McHenry		McHenry	
		Will		Will	
		Rock Island			
	<i>Paducah-Mayfield, KY-IL</i>		Massac (p)		
<i>St. Louis, MO-IL</i>		Madison		Madison	
		Monroe		Monroe	
		Randolph (p)		Randolph (p)	
		St. Clair		St. Clair	
INDIANA					
<i>Chicago-Gary-Lake County, IL-IN</i>		Lake		Lake	
		Porter		Porter	
<i>Cincinnati-Hamilton, OH-KY-IN</i> <i>Evansville, IN</i>		Dearborn (p)		Dearborn (p)	
				Dubois	
		Gibson (p)		Gibson (p)	
		Pike (p)		Pike (p)	
		Spencer (p)		Spencer (p)	
		Vanderburgh		Vanderburgh	
		Warrick		Warrick	
	<i>Indianapolis, IN</i>		Hamilton		Hamilton
			Hendricks		Hendricks
			Johnson		Johnson
		Marion		Marion	
<i>Lafayette-Frankfort, IN</i> <i>Louisville, KY-IN</i>		Morgan		Morgan	
		Tippecanoe			
		Clark		Clark	
<i>Vincennes, IN</i>		Floyd		Floyd	
		Jefferson (p)		Jefferson (p)	
		Knox			

2006 Fine Particulate Matter (PM_{2.5}) NAAQS Nonattainment Designations

State/Area Name	2006 PM _{2.5} NAAQS		1997 PM _{2.5} NAAQS	
	EPA Final Designations	EPA Dec. 2008 Interim Designations	EPA Final Designations	EPA Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
	Counties and Partial Counties (p)			
IOWA				
Davenport-Moline-Rock Island, IA-IL		Scott (p)		
Muscatine, IA		Muscatine (p)		
KENTUCKY				
Cincinnati-Hamilton, OH-KY-IN		Boone		Boone
		Campbell		Campbell
		Kenton		Kenton
Clarksville, TN-KY		Muhlenberg (p)		
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
		Baltimore City		Baltimore City
		Baltimore		Baltimore
		Carroll		Carroll
		Harford		Harford
		Howard		Howard
Washington, DC-MD-VA				Charles
				Frederick
				Montgomery
				Prince George's

State/Area Name	2006 PM _{2.5} NAAQS		1997 PM _{2.5} NAAQS	
	EPA Final Designations	EPA Dec. 2008 Interim Designations	EPA Final Designations	EPA Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
	Counties and Partial Counties (p)			
<i>Martinsburg, WV- Hagerstown, MD</i>				Washington
MICHIGAN				
<i>Detroit-Ann Arbor, MI</i>	Livingston	Livingston		Livingston
	Macomb	Macomb		Macomb
	Monroe	Monroe		Monroe
	Oakland	Oakland		Oakland
	St. Clair	St. Clair		St. Clair
	Washtenaw	Washtenaw		Washtenaw
	Wayne	Wayne		Wayne
<i>Grand Rapids, MI</i>		Kent		
		Ottawa		
MISSOURI				
<i>St. Louis, MO-IL</i>		Franklin		Franklin
		Jefferson		Jefferson
		St. Charles		St. Charles
		St. Louis		St. Louis
		St. Louis City		St. Louis City
MONTANA				
<i>Libby, MT</i>		Lincoln (p)		Lincoln (p)
NEW JERSEY				
<i>New York, NY-NJ-CT</i>	Bergen	Bergen		Bergen
	Essex	Essex		Essex
	Hudson	Hudson		Hudson
	Mercer	Mercer		Mercer
	Middlesex	Middlesex		Middlesex
	Monmouth	Monmouth		Monmouth
	Morris	Morris		Morris
	Passaic	Passaic		Passaic
	Somerset	Somerset		Somerset
	Union	Union		Union

2006 Fine Particulate Matter (PM_{2.5}) NAAQS Nonattainment Designations

State/Area Name	2006 PM _{2.5} NAAQS		1997 PM _{2.5} NAAQS	
	EPA Final Designations	EPA Dec. 2008 Interim Designations	EPA Final Designations	EPA Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
State/Area Name	Counties and Partial Counties (p)			
<i>Philadelphia- Wilmington, PA-NJ-DE</i>	Burlington	Burlington		Burlington
	Camden	Camden		Camden
	Gloucester	Gloucester		Gloucester
NEW YORK				
<i>New York, NY-NJ-CT</i>	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				
<i>Hickory, NC</i>				Catawba
<i>Greensboro-Winston Salem-High Point, NC</i>				Davidson
				Guilford
OHIO				
<i>Canton-Massillon, OH</i>	Stark	Stark		Stark
<i>Cincinnati-Hamilton, OH-KY-IN</i>		Butler		Butler
		Clermont		Clermont
		Hamilton		Hamilton
		Warren		Warren
<i>Cleveland-Akron- Lorain, OH</i>				Ashtabula (p)
	Cuyahoga	Cuyahoga		Cuyahoga
	Lake	Lake		Lake
	Lorain	Lorain		Lorain
	Medina	Medina		Medina
	Portage	Portage		Portage
	Summit	Summit		Summit

State/Area Name	2006 PM _{2.5} NAAQS		1997 PM _{2.5} NAAQS	
	EPA Final Designations	EPA Dec. 2008 Interim Designations	EPA Final Designations	EPA Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
	Counties and Partial Counties (p)			
<i>Columbus, OH</i>		Coshocton (p)		Coshocton (p)
		Delaware		Delaware
		Fairfield		Fairfield
		Franklin		Franklin
		Licking		Licking
<i>Dayton-Springfield, OH</i>		Clark		Clark
		Greene		Greene
		Montgomery		Montgomery
<i>Huntington-Ashland, WV-KY-OH</i>		Adams (p)		Adams (p)
		Gallia (p)		Gallia (p)
		Lawrence		Lawrence
		Scioto		Scioto
<i>Parkersburg- Marietta, WV-OH</i>		Washington		Washington
<i>Steubenville- Weirton, OH-WV</i>	Jefferson	Jefferson		Jefferson
<i>Wheeling, WV-OH</i>				Belmont
<i>Youngstown, OH</i>		Mahoning		
		Trumbull		
OREGON				
<i>Klamath Falls, OR</i>	Klamath (p)	Klamath (p)		
<i>Oakridge, OR</i>	Lane (p)	Lane (p)		
PENNSYLVANIA				
<i>Allentown, PA</i>	Lehigh	Lehigh		
	Northampton	Northampton		
<i>Harrisburg-Lebanon-Carlisle, PA</i>	Cumberland	Cumberland		a
	Dauphin	Dauphin		
	Lebanon	Lebanon		
	York			
<i>Johnstown, PA</i>	Cambria	Cambria		Cambria
	Indiana (p)	Indiana (p)		Indiana (p)
<i>Lancaster, PA</i>	Lancaster	Lancaster		Lancaster

State/Area Name	2006 PM _{2.5} NAAQS		1997 PM _{2.5} NAAQS	
	EPA Final Designations	EPA Dec. 2008 Interim Designations	EPA Final Designations	EPA Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
	Counties and Partial Counties (p)			
<i>Liberty-Clairton, PA</i>	Allegheny (p)	Allegheny (p)		Allegheny (p)
<i>Philadelphia-Wilmington, PA-NJ-DE</i>	Bucks	Bucks		Bucks
	Chester	Chester		Chester
	Delaware	Delaware		Delaware
	Montgomery	Montgomery		Montgomery
	Philadelphia	Philadelphia		Philadelphia
<i>Pittsburgh-Beaver Valley, PA</i>	Allegheny (p)	Allegheny (p)		Allegheny (p)
	Armstrong (p)	Armstrong (p)		Armstrong (p)
	Beaver	Beaver		Beaver
	Butler	Butler		Butler
	Greene (p)	Greene (p)		Greene (p)
	Lawrence (p)	Lawrence (p)		Lawrence (p)
	Washington	Washington		Washington
	Westmoreland	Westmoreland		Westmoreland
<i>Reading, PA</i>		Berks		Berks
<i>York, PA</i>		York		York
TENNESSEE				
<i>Chattanooga, AL-TN-GA</i>				Hamilton
<i>Clarksville, TN-KY</i>		Humphreys (p)		
		Montgomery		
		Stewart (p)		
<i>Knoxville-Sevierville- La Follette, TN</i>	Anderson	Anderson		Anderson
	Blount	Blount		Blount
	Knox	Knox		Knox
	Loudon	Loudon		Loudon
	Roane (p)	Roane (p)		Roane (p)

State/Area Name	2006 PM _{2.5} NAAQS		1997 PM _{2.5} NAAQS	
	EPA Final Designations	EPA Dec. 2008 Interim Designations	EPA Final Designations	EPA Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
	Counties and Partial Counties (p)			
UTAH				
<i>Logan, UT-ID</i>	Cache (p)	Cache (p)		
<i>Provo, UT</i>	Utah (p)	Utah (p)		
<i>Salt Lake City, UT</i>	Box Elder (p)	Box Elder (p)		
	Davis	Davis		
	Salt Lake	Salt Lake		
	Tooele (p)	Tooele (p)		
	Weber (p)	Weber (p)		
VIRGINIA				
<i>Washington, DC-MD-VA</i>			Alexandria City	
			Arlington	
			Fairfax City	
			Fairfax Co	
			Falls Church City	
			Loudoun	
			Manassas City	
			Manassas Park City	
		Prince William		
WASHINGTON				
<i>Seattle-Tacoma, WA</i>	Pierce (p)	Pierce (p)		
WEST VIRGINIA				
<i>Charleston, WV</i>	Kanawha	Kanawha	Kanawha	
	Putnam	Putnam	Putnam	
<i>Huntington-Ashland, WV-KY-OH</i>		Cabell	Cabell	
		Mason (p)	Mason (p)	
		Wayne	Wayne	
<i>Martinsburg, WV-Hagerstown, MD</i>			Berkeley	
<i>Morgantown, WV</i>		Monongalia		
<i>Parkersburg- Marietta, WV-OH</i>		Pleasants (p)	Pleasants (p)	
		Wood	Wood	

State/Area Name	2006 PM _{2.5} NAAQS		1997 PM _{2.5} NAAQS	
	EPA Final Designations	EPA Dec. 2008 Interim Designations	EPA Final Designations	EPA Final Designations
	24-Hour Standard	24-Hour Standard	24-Hour Standard	Annual Standard
	Counties and Partial Counties (p)			
Steubenville- Weirton, OH-WV	Brooke	Brooke		Brooke
	Hancock	Hancock		Hancock
Wheeling, WV-OH				Marshall
				Ohio
WISCONSIN				
Green Bay, WI		Brown		
Madison-Baraboo, WI		Columbia (p)		
		Dane		
Milwaukee-Racine, WI	Milwaukee	Milwaukee		
	Racine	Racine		
	Waukesha	Waukesha		
TOTALS				
	18 states	25 states	1 state	20 states and D.C.
	31 areas	58 areas	2 areas	38 areas
	120 counties	211 counties	12 counties	204 counties
	90 whole counties	154 whole counties	9 whole counties	173 whole counties
	30 partial counties	57 partial counties	3 partial counties	31 partial counties

Source: Compiled by CRS using data from EPA PM designations websites. In some designated areas, EPA included cities in the total count of whole and partial counties, with the exception of the District of Columbia.

- a. In the August 25, 2008, *Federal Register*, EPA announced its determination that a three-county (Harrisburg, Lebanon, Carlisle) Pennsylvania nonattainment area for the 1997 PM_{2.5} NAAQS was in attainment (73 *Federal Register* 49949, August 25, 2008). The determination was based on certified ambient air monitoring data showing that the area monitored as in attainment for the 1997 PM_{2.5} NAAQS since the 2004-2006 monitoring period.

Appendix C. Tribal Lands—Designations for the 2006 PM_{2.5} NAAQS 24-Hour Standard

Table C-1. EPA's October 8, 2009 Geographic Designations for 2006 PM NAAQS: Tribes in 24-Hour PM_{2.5} Nonattainment Areas

State/Area Name	Tribes
CALIFORNIA	
Chico, CA	Enterprise Rancheria of Maidu Indians of California Mechoopda Indian Tribe of Chico Rancheria Mooretown Rancheria of Maidu Indians of California
Los Angeles, CA	Cahuilla Band of Mission Indians of the Cahuilla Reservation Morongo Band of Cahuilla Mission Indians of the Morongo Reservation Pechanga Band of Luiseno Mission Indians of the Pechanga Reservation Ramona Band or Village of Cahuilla Mission Indians of California San Manuel Band of Serrano Mission Indians of the San Manuel Reservation Soboba Band of Luiseno Mission Indians of the Soboba Reservation
Sacramento, CA	Shingle Springs Band of Miwok Indians, Shingle Springs Rancheria (Verona Tract) United Auburn Indian Community of the Auburn Rancheria of California
San Francisco Bay Area, CA	Federated Indians of Graton Rancheria Lytton Rancheria of California
San Joaquin Valley, CA	Big Sandy Rancheria of Mono Indians of California Santa Rosa Indian Community of the Santa Rosa Rancheria, California Cold Springs Rancheria of Mono Indians of California North Fork Rancheria of Mono Indians of California Picayune Rancheria of Chukchansi Indians of California Table Mountain Rancheria of California Tule River Indian Tribe of the Tule River Reservation
WASHINGTON	
Seattle-Tacoma, WA	Puyallup Tribe of the Puyallup Reservation, Washington
WISCONSIN^a	
Milwaukee-Racine, WI	Forest County Potawatomi Tribe

Source: U.S. EPA, final designations as of October 8, 2009. Compiled by CRS using Tribal recommendations and EPA responses, <http://www.epa.gov/pmdesignations/2006standards/tribal.htm>.

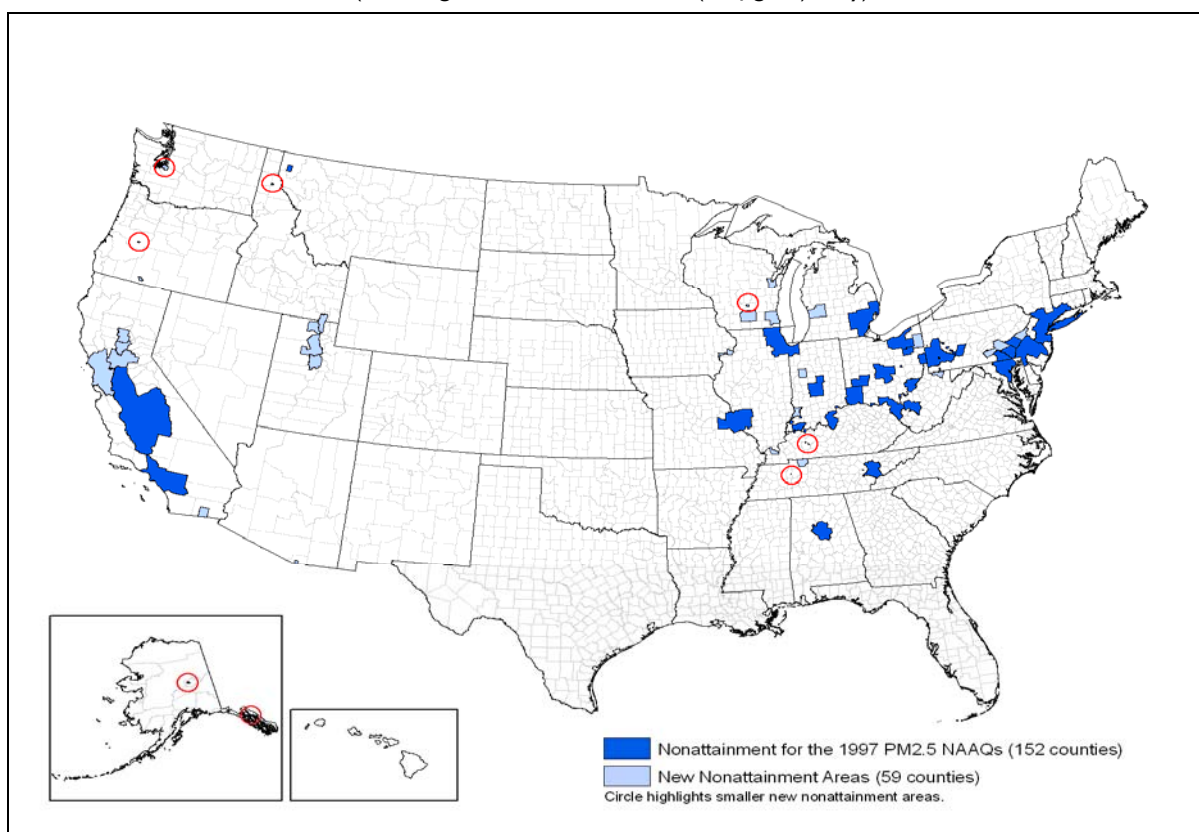
Note: The list of tribes is unofficial; official boundaries are specified in 40 CFR Part 81.

- a. The Forest County Potawatomi Tribe was not included in EPA's December 22, 2008 designations, <http://www.epa.gov/pmdesignations/2006standards/Dec08/tribal.htm>. The December 22, 2008 designations included the Oneida Tribe of Wisconsin and the Ho-Chunk Nation of Wisconsin in the Green Bay and Madison-Baraboo nonattainment areas respectively. These two areas were not designated nonattainment in EPA's November 13, 2009 final designations.

Appendix D. Map Depicting Counties in Nonattainment for the 2006 PM_{2.5} NAAQS—EPA’s Designation as of December 22, 2008

On December 22, 2008, EPA had identified 58 areas in 25 states, comprising 211 counties (154 counties and portions of 57 additional counties) for designation as nonattainment for the revised 2006 24-hour PM_{2.5} standard.⁵⁶ These designations, based on air quality monitoring data for calendar years 2005 through 2007, are indicated in the map below.

Figure D-I. Counties in Nonattainment for the 2006 PM_{2.5} NAAQS—EPA’s Designations as of December 22, 2008, (violating the 24-hour standard (35 µg/m³) only)



Source: Prepared by the Congressional Research Service based on EPA’s designations for the 2006 PM_{2.5} NAAQS as of December 22, 2008, with data obtained from EPA. See EPA’s website, “Area Designations for 2006 24-Hour Fine Particulate (PM_{2.5}) Standards—December 2008 Area Status (Not Final Designations),” <http://www.epa.gov/pmdesignations/2006standards/documents/2008-12-22/12-08table.htm>.

⁵⁶ See EPA’s website, “Area Designations for 2006 24-Hour Fine Particulate (PM_{2.5}) Standards—December 2008 Area Status (Not Final Designations),” <http://www.epa.gov/pmdesignations/2006standards/documents/2008-12-22/12-08table.htm>.

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