



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

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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 have been the subject of considerable congressional oversight. EPA and states' ongoing implementation of the standard, beginning with the designation of those geographical areas not in compliance, likewise has been an area of concern and debate among some Members of Congress, states, and other stakeholders for some time. EPA's more recent initiation of the next round of periodic review of the particulates NAAQS, and speculation as to the degree of stringency of any new standards, has prompted further scrutiny of the ongoing implementation. EPA is due to propose revised standards in February 2011 and promulgate them by October 2011.

Promulgation of NAAQS sets in motion a process under which the states and 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. 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 (µg/m³) to 35 µg/m³. 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 µg/m³. 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. 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. 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 or NO_x), sulfur oxides (SO_x, or, specifically, SO₂), carbon monoxide (CO), and lead (Pb).

On October 17, 2006, 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 sets in motion a process under which the states and 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, “Area Designations for 2006 24-Hour PM_{2.5} NAAQS - Technical Information,” at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

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

⁷ See “Area Designations for 2006 24-Hour Fine Particulate (PM_{2.5}) Standards—December 2008 Area Status (Not Final Designations)” at <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.

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.¹²

EPA's next round of the periodic review of the particulates NAAQS (including both PM_{2.5} and PM₁₀) is under way. The agency announced its intention to accelerate the review, in part in response to the D.C. Circuit Court's decision. EPA has targeted proposing any changes to the standards by February 2011, and October 2011 for final standards.¹³ Potential risk reduction estimates and initial staff recommendations reported in recently released draft EPA assessments¹⁴ suggest further strengthening of the particulates NAAQS. In their initial reviews of EPA's draft assessments, members of the CASAC agreed that the evidence calls into question the adequacy of protection afforded by the current standards for PM_{2.5} and PM₁₀.¹⁵ EPA's draft assessments and the issue of whether the particulates NAAQS should be strengthened or not have generated

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 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.

¹³ P. 45220 of EPA Proposed Rule: Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone, or "Proposed Transport Rule," as published in 75 *Federal Register* 45210-45465, August 2, 2010.

¹⁴ See Policy Assessment for the Review of the PM NAAQS - First External Review Draft (EPA 452/P-10-003, March 2010) and Policy Assessment for the Review of the PM NAAQS - Second External Review Draft (EPA-452/P-10-007, June 2010) available at http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_2007_pa.html. U.S. EPA, Integrated Science Assessment for Particulate Matter (Final Report) (EPA/600/R-08/139F, December 2009), and Risk Assessment to Support the Review of the PM Primary National Ambient Air Quality Standards—External Review Draft (EPA 450/P-09-006, September 2009); 74 *Federal Register* 46589-46591, September 10, 2009. Both assessments are available at http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_2007_fr.html.

¹⁵ EPA Clean Air Science Advisory Committee (CASAC) Particulate Matter (PM) Review Committee: *CASAC Review of Policy Assessment for the Review of the PM NAAQS – Second External Review Draft (June 2010)*, August 10, 2010, Draft, [http://yosemite.epa.gov/sab/sabproduct.nsf/WebCASAC/AD891A65C35DC3738525777B005B0A6F/\\$File/PM+PA-2+letter+8-10-10.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/WebCASAC/AD891A65C35DC3738525777B005B0A6F/$File/PM+PA-2+letter+8-10-10.pdf); *CASAC Review of Policy Assessment for the Review of the PM NAAQS - First External Review Draft (March 2010)*, May 17, 2010, E504EE3276D87A9E8525772700647AFB/\$File/EPA-CASAC-10-011-unsigned.pdf. See also CASAC's *Review of Quantitative Health Risk Assessment for Particulate Matter – Second External Review Draft, (February 2010)*, April 15, 2010, <http://yosemite.epa.gov/sab/sabproduct.nsf/WebCASAC/> recent additions.

considerable comment and debate, and prompted increased scrutiny of the EPA and states' implementation of the 2006 PM_{2.5} NAAQS.

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. EPA is not requiring new nonattainment designations for PM₁₀ based on the 2006 revisions to the standard. 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.

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.¹⁶

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; retained 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

¹⁶ 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)).

years; eliminated the *annual* maximum concentration (50 µg/m³) standard for PM₁₀.¹⁷

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*. 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.¹⁸

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-tribal¹⁹ 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”²⁰ 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

¹⁷ Based on 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.

¹⁸ 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.

¹⁹ Though not required, 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>.

²⁰ 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.

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.²¹ 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.²² 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.

In addition to air emission and air quality data, EPA considers a number of other relevant factors,²³ 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 Designations²⁴

On November 13, 2009, EPA published its final 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.²⁵ (See **Table B-1** in **Appendix B** for state-by-state county/area

²¹ 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).

²² Revisions to Ambient Air Monitoring Regulations, final rule, 71 *Federal Register* 61235-61328, October 17, 2006. <http://www.epa.gov/air/particlepollution/actions.html>.

²³ 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>.

²⁴ 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>.

²⁵ See footnote 6.

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.

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).

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} standard²⁶ (see **Table B-1** in **Appendix B** for a comparison of the state-by-state county/area 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,²⁷ and the Office of Management and Budget's subsequent January 21, 2009, memorandum,²⁸ 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 2009.²⁹ The effective date of the final designations rule is December 14, 2009 (30 days from the date of publication).

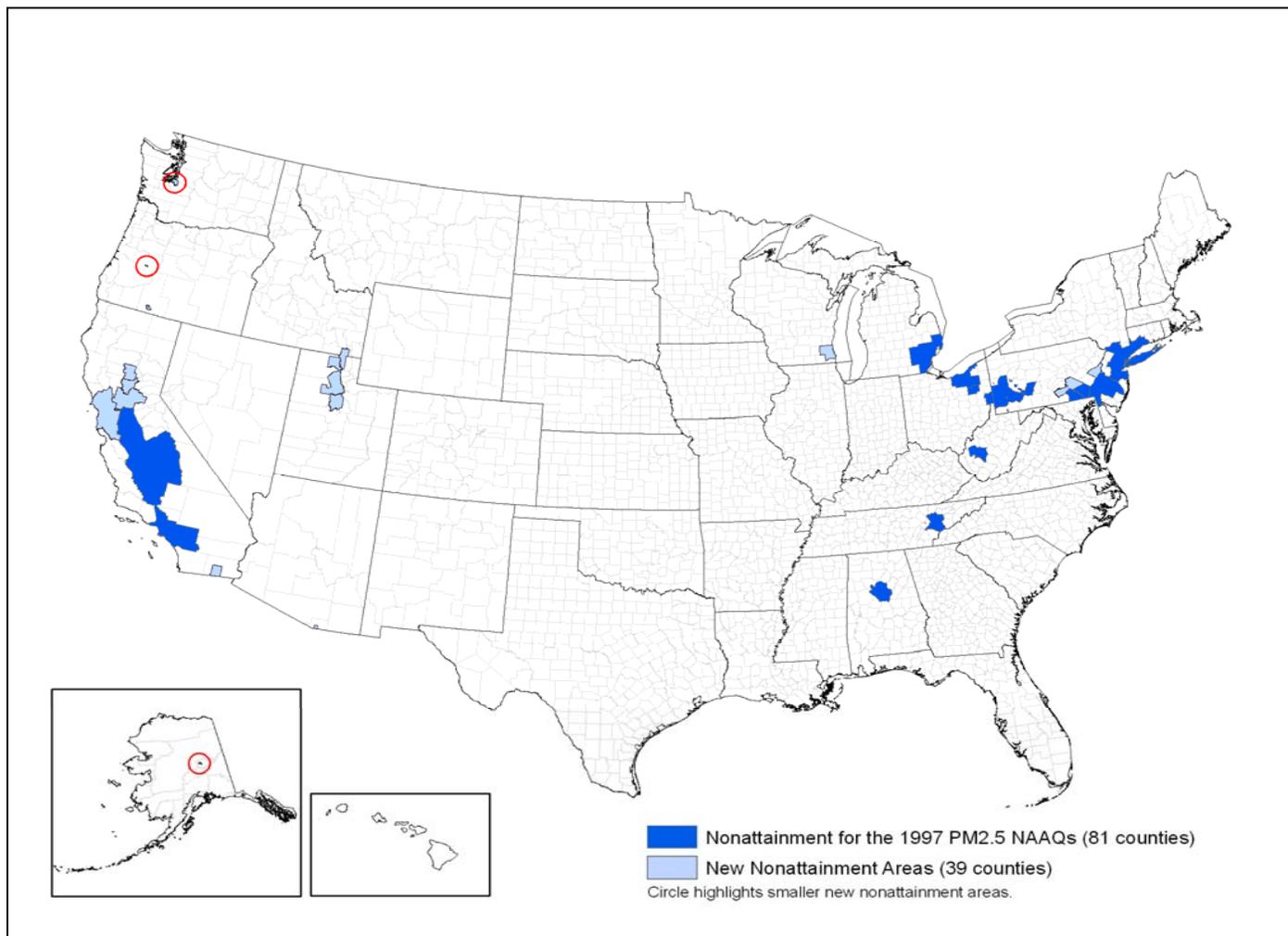
²⁶ See EPA's "Area Designations for 2006 24-Hour Fine Particulate (PM_{2.5}) Standards—December 2008 Area Status (Not Final Designations)," <http://www.epa.gov/pmdesignations/2006standards/documents/2008-12-22/12-08table.htm>.

²⁷ See footnote 8.

²⁸ See footnote 9.

²⁹ See EPA's guidance, "Area Designations for 2006 24-Hour PM_{2.5} NAAQS - Technical Information," at 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 November 13, 2009, Final Designations
 (violating the 24-hour standard (35 µg/m³) only)



Source: Prepared by the Congressional Research Service with data obtained from EPA based on EPA's final designations for the 2006 PM_{2.5} NAAQS. See U.S. EPA, "40 CFR Part 81 Air Quality Designations for the 2006 24-Hour Fine Particle (PM_{2.5}) National Ambient Air Quality Standards; Final Rule, 74 *Federal Register* 58687, November 13, 2009.

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, more than 70 million people (just less than 25% of the U.S. population³⁰) live in the 120 counties designated nonattainment for the 2006 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 Areas³¹ 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 guidance³² 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.³³ 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. EPA solicited the states’ comments and additional information for consideration in determining the final designations.³⁴ 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

³⁰ Three hundred seven million, based on U.S. Census Bureau, 2009 Population Estimates, Census 2000, <http://www.census.gov/>.

³¹ As defined by the Office of Management Budget. For more information on metropolitan areas, see <http://www.census.gov/population/www/estimates/aboutmetro.html>.

³² See EPA’s guidance at “Area Designations for 2006 24-Hour PM_{2.5} NAAQS - Technical Information,” http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

³³ For detailed information regarding state recommendations for the 2006 PM_{2.5} NAAQS, see EPA’s PM Designations website at <http://www.epa.gov/pmdesignations/2006standards/state.htm>.

³⁴ For information regarding EPA’s August 19, 2008, proposed designations and responses to states, see <http://www.epa.gov/pmdesignations/2006standards/regs.htm#2>.

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.

States (and tribal groups) had 120 days to respond to EPA's recommendations, and the agency also issued a notice³⁵ for a 30-day public comment period. As occurred with EPA's proposed nonattainment designations for the 1997 PM_{2.5} NAAQS,³⁶ 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.³⁷

As discussed previously in this report, the November 13, 2009, 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.³⁸

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.³⁹ 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.

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

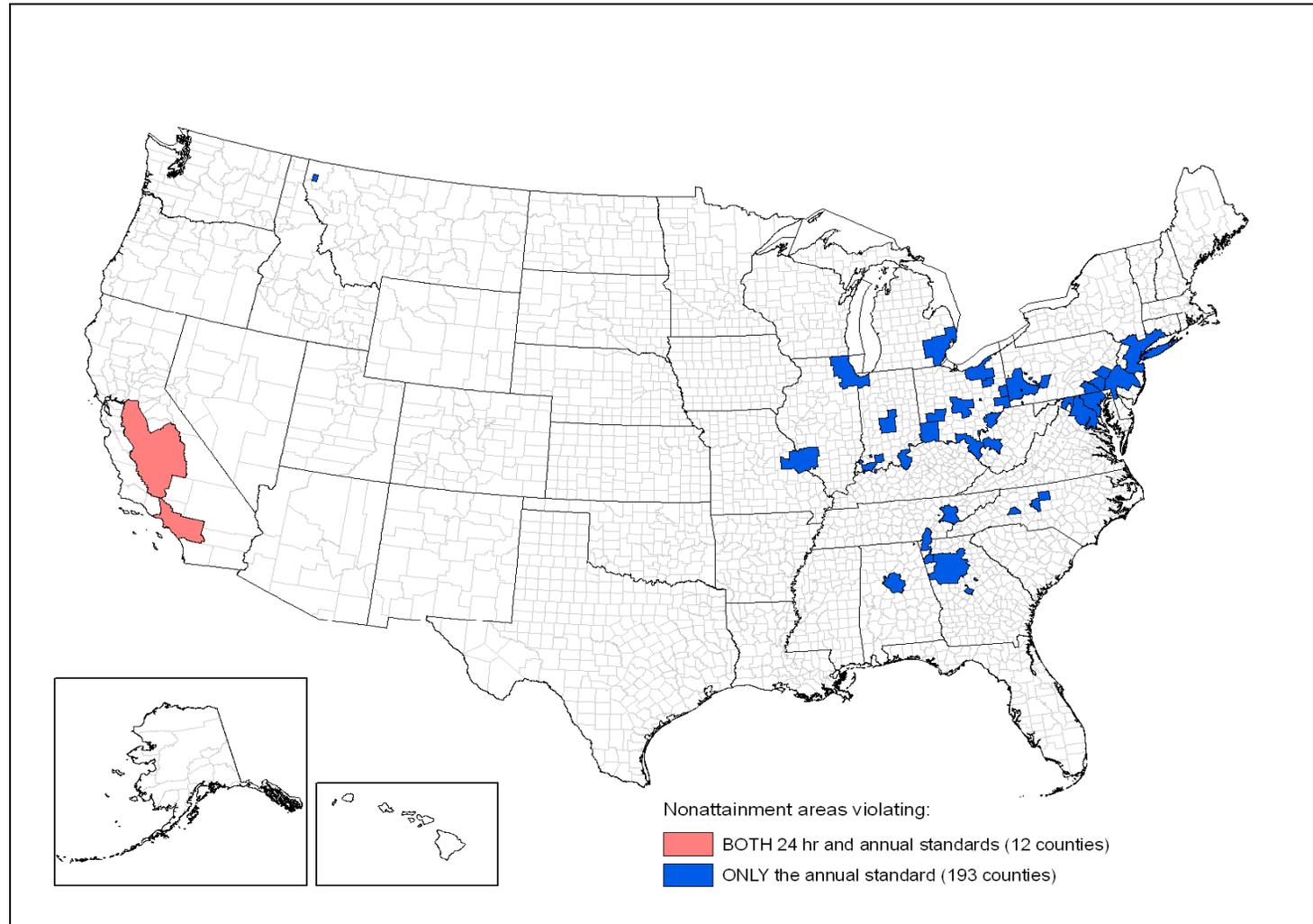
³⁶ EPA designations for the 1997 PM_{2.5} NAAQS reflected minor modifications to its proposal; primarily, 19 counties were removed from the list of nonattainment areas, and other counties were redefined by designating only specified locations ("partial") within the county as nonattainment. EPA also subsequently 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>.

³⁷ 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.

³⁸ See footnote 37.

³⁹ 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. EPA Final Designated Nonattainment Areas for the 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

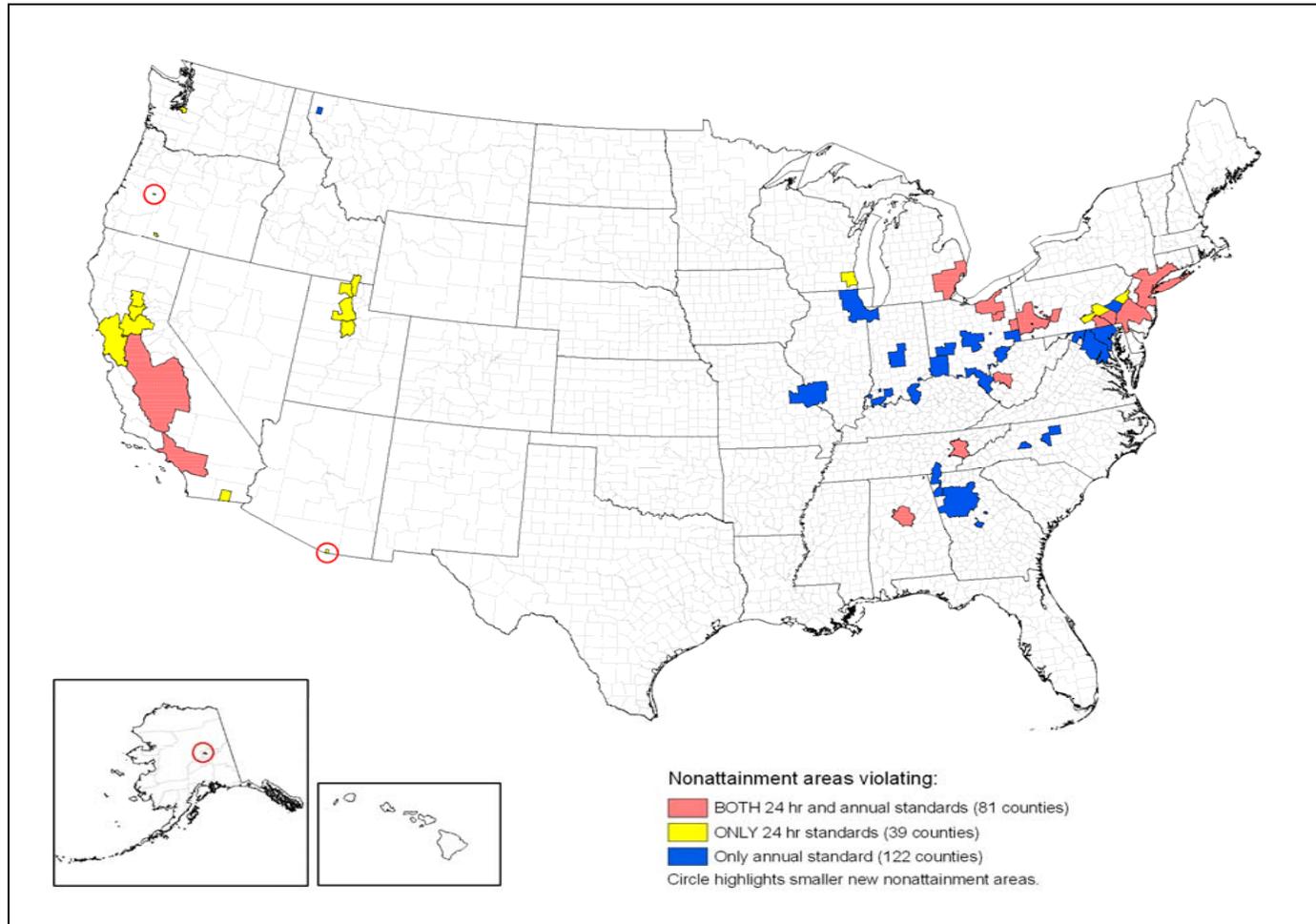
	PM _{2.5} NAAQS (annual/24-hour µg/m ³)					
	1997 Standard 15/65 µg/m ³			2006 Standard 15/35 µg/m ³		
	National	West	East	National	West	East
	Number of counties (including partial counties and D.C.)					
Total exceeding the standard	204	13	191	242	43	199
Exceeding the 24-hour and annual standards	12	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 24-hour standard, as modified under the 2006 PM_{2.5} NAAQS, with the final designated nonattainment areas for the annual standard under the 1997 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. Within three years of issuance of a NAAQS, all states are required to submit "infrastructure" plans demonstrating that they have the basic air quality management components necessary to implement the NAAQS.⁴⁰ 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 the agency's final designations.⁴¹ If states fail to develop an adequate implementation plan, EPA can impose one. Under 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.⁴²

State Implementation Plans (SIPs)

All states are required to submit SIPs that include the basic program requirements for managing air quality required in section 110(a)(2) of the CAA, showing that they have the capacity to attain,

⁴⁰ Section 110(a)(2) of the Clean Air Act. For a general overview of the NAAQS implementation plans process, see EPA's "State Implementation Plan Overview" at <http://www.epa.gov/air/urbanair/sipstatus/overview.html>.

⁴¹ Section 172 of the Clean Air Act. See EPA's "State Implementation Plan Overview" at <http://www.epa.gov/air/urbanair/sipstatus/overview.html>.

⁴² 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."

maintain, and enforce the revisions associated with the 2006 PM_{2.5} NAAQS. These “infrastructure SIP” submissions must address a number of basic elements, including:

- ambient air quality monitoring and data systems;
- programs for enforcement of control measures;
- adequate authority and resources to implement the plan;
- prohibition of interstate pollution transport.

On June 9, 2010, EPA published a finding that 23 states, the District of Columbia, and five territories had failed to submit complete “infrastructure” SIPs required within three years of promulgation of the 2006 PM_{2.5} NAAQS.⁴³ EPA’s findings notice addresses the first two of four elements under section 110(a)(2)(D)(i) to satisfy nonattainment and transport requirements. These two elements require each state to demonstrate adequate provisions for the ability to prohibit air emissions within the state which: “(1) contributes significantly to another state’s nonattainment of the NAAQS; or (2) interferes with maintenance of a NAAQS.” The findings notice initiates a two-year deadline for EPA to promulgate a Federal Implementation Plan (FIP) unless a state submits, and EPA approves, a plan to meet these two elements prior to the deadline.

Nonattainment area 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. 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. Nonattainment area SIPs for the 2006 PM_{2.5} NAAQS are required to be submitted to EPA for review and approval by December 2012, three years from the effective date of the final designations. As previously indicated, the effective date of the final designations rule is December 14, 2009 (30 days from the date of publication).

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)⁴⁴ 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.

⁴³ 75 *Federal Register* 32673-32676, June 9, 2010.

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

EPA NAAQS Implementation Rules

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.⁴⁵ 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.⁴⁶

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, by the end of 2011.⁴⁷

National Regulations

EPA expects that in many cases implementing national strategies—including the 1999 visibility protection regulations (Regional Haze Rule);⁴⁸ 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),⁴⁹ was vacated in a July 11, 2008, decision (*North Carolina v. EPA*), by the U.S. Court of Appeals for the D.C. Circuit.⁵⁰ The D.C. Circuit subsequently modified its decision on December 23, 2008,⁵¹ in response to an EPA motion,⁵² reversing its decision to vacate CAIR while EPA developed a replacement rule. The Circuit, however, left the substantive requirements of its July 2008 decision fully intact. That decision strongly suggests that there is no simple “fix”

⁴⁵ 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).

⁴⁶ 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.

⁴⁷ Information provided to CRS by EPA’s Office of Air Quality and Planning, August 26, 2010.

⁴⁸ 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.

⁴⁹ Promulgated under the CAA, 42 U.S.C. 7401 et seq., 70 *Federal Register* 25162, May 12, 2005.

⁵⁰ 531 F.3d 896 (D.C. Cir. 2008), see CRS Report RL34589, *Clean Air After the CAIR Decision: Multi-Pollutant Approaches to Controlling Powerplant Emissions*, 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>.

⁵¹ 550 F.3d 1176 (D.C. Cir. 2008).

⁵² EPA requested reconsideration on September 24, 2008, with suggestion for rehearing by the entire court. Alternatively, EPA requested that the CAIR rule be allowed to continue in effect while the agency developed a replacement program that satisfied the court’s July 2008 decision. The Natural Resources Defense Council (NRDC), the National Mining Association, and the Utility Air Regulatory Group also petitioned the court for a rehearing.

that would make CAIR acceptable to the court. The court's decision to vacate the rule drew the interest of some Members of Congress and was the subject of a July 29, 2008, congressional hearing.⁵³

EPA's May 2005 CAIR was expected to serve as the primary tool to assist downwind states in meeting the PM_{2.5} (and eight-hour ozone) 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}.⁵⁴ CAIR covered 28 states in the eastern United States and the District of Columbia, including 26 jurisdictions in the PM_{2.5} nonattainment region. As a preferred implementation strategy, EPA encouraged states to use a trading program to reduce emissions of target pollutants by up to 70% in a cost-effective manner.⁵⁵ Without CAIR, most eastern states would have a huge gap in their emission control programs.

On August 2, 2010, EPA published a proposed "Transport Rule" intended to supersede the current CAIR.⁵⁶ The proposed rule would limit sulfur dioxide (SO₂) and nitrogen oxide (NO_x) emissions from electric generating units within 31 states in the eastern United States and the District of Columbia that affect the ability of downwind states to attain and maintain compliance with the 1997 and 2006 PM_{2.5} and the 1997 ozone NAAQS. The proposal includes modifications in response to the Court's concerns, particularly with regard to certain aspects of emissions contributing to ozone.⁵⁷ The implications of this proposal have already generated considerable debate among states, industry, and other stakeholders, and have been the topic of further deliberation by Congress. The Senate Committee on Environment and Public Works Subcommittee on Clean Air and Nuclear Safety held a hearing on EPA's proposed alternative transport rule on July 22, 2010.⁵⁸ EPA scheduled three public hearings,⁵⁹ and comments on the proposal must be received on or before October 1, 2010.

EPA's development of an alternative to CAIR, and the timeliness in which it will be achieved, raises more questions with respect to the implementation of the 2006 revised PM_{2.5} NAAQS. EPA

⁵³ 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/>.

⁵⁴ Sulfur dioxide (SO₂) is a precursor (a pollutant that is transformed in air to form another air pollutant) contributing to the formation of PM_{2.5}, and NO_x is a precursor contributing to the formation of both ozone and PM_{2.5}. 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 eight-hour ozone NAAQS (70 *Federal Register* 25162, May 12, 2005).

⁵⁵ See EPA's CAIR website at <http://www.epa.gov/airmarkets/progsregs/cair/index.html>.

⁵⁶ 75 *Federal Register* 45210-45565, August 2, 2010. See also U.S. EPA, "Air Transport" website at <http://www.epa.gov/airtransport/actions.html#jul10>. EPA announced the release of the proposal on July 6, 2010.

⁵⁷ According to the fact sheet accompanying the proposal, EPA plans to propose a separate transport rule to address the 2010 ozone standard in 2011 (see footnote 56).

⁵⁸ Senate Committee on Environment and Public Works, Subcommittee on Clean Air and Nuclear Safety, hearing, "Oversight: EPA's Proposal for Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone," July 22, 2010, <http://epw.senate.gov/public/index.cfm?FuseAction=Hearings.Home>. EPA announced the release of the "Air Transport Rule" on July 6, 2010, but it was not published in the *Federal Register* until August 2, 2010.

⁵⁹ The public hearings were held Thursday, August 19, 2010, in Chicago, Illinois, on Thursday, August 26, 2010, in Philadelphia, Pennsylvania, and on Wednesday, September 1, 2010, in Atlanta, Georgia, 75 *Federal Register* 45075-45076, August 2, 2010.

anticipates finalizing the proposed “Transport Rule” published August 2, 2010,⁶⁰ by late spring 2011. In the interim, according to EPA, current CAIR requirements for reductions remain in effect, and CAIR regional control programs continue their operations pending the agency’s promulgation of an alternative transport rule.⁶¹

New Source Review⁶²

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.⁶³

EPA promulgated a rule in May 2008⁶⁴ that contained several NSR program requirements for sources that emit PM_{2.5} and the pollutants that contribute to its formation (precursors), including SIPS modifications to state NSR programs to account for emissions of PM_{2.5}. On February 11, 2010, EPA proposed⁶⁵ to repeal a portion of that rule implementing the NSR permitting program for PM_{2.5}, known as “the grandfathering provision,” in part in response to petitions⁶⁶ to reconsider the May 2008 final rule. The provision allowed applicants for federal “Prevention of Significant Deterioration” (PSD) permits to rely on requirements for coarse particles (PM₁₀) as a surrogate for meeting the permit requirements for PM_{2.5} if they applied for, and were awaiting approval for, a permit before July 15, 2008. The EPA proposal also would end the PM₁₀ Surrogate Policy in place since 1987, sooner than currently scheduled. The policy enables sources to make a demonstration of compliance with PSD requirements for PM₁₀ as a surrogate for requirements for PM_{2.5} in light of various technical issues associated with undertaking a PM_{2.5} analysis, which EPA has now determined have generally been resolved. Presently, states with EPA-approved PSD programs may use the surrogate policy until May 2011, or until EPA approves the revised State Implementation Plan (SIP) for PM_{2.5}.

⁶⁰ 75 *Federal Register* 45210-45565, August 2, 2010. See also U.S. EPA “Air Transport” at <http://www.epa.gov/airtransport/actions.html#jul10>. EPA announced the release of the proposal on July 6, 2010.

⁶¹ EPA proposed Transport Rule fact sheet, p. 5, available at <http://www.epa.gov/airtransport/actions.html>.

⁶² For an overview, including statutory authority and regulations, see EPA’s “New Source Review (NSR)” at <http://www.epa.gov/air/nsr/>.

⁶³ See Clean Air Act, Part D—Plan Requirements for Nonattainment Areas, sections 171-178, codified at 40 CFR 52.24(f)(10).

⁶⁴ Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM_{2.5}), 73 *Federal Register* 28321-28350, May 16, 2008.

⁶⁵ “Implementation of the New Source Review NSR Program for Particulate Matter Less Than 2.5 Micrometers: Proposed Repeal of Grandfathering Provision and End the PM₁₀ Surrogate Policy,” 75 *Federal Register* 6827-6836, February 11, 2010. See also EPA’s Fact Sheet at <http://www.epa.gov/air/nsr/documents/20100204repealfs.pdf>.

⁶⁶ EPA Notice granting the petition to reconsider the Natural Resources Defense Council and Sierra Club to reconsider certain provisions of the May 2008 Fine Particulates NSR Permitting final permitting rule. See EPA’s Fact Sheet at <http://www.epa.gov/air/nsr/documents/20100204repealfs.pdf>.

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),⁶⁷ 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.

On March 24, 2010, EPA published a final rule amending the transportation conformity regulation primarily to incorporate the October 17, 2006, strengthening of the 24-hour PM_{2.5} air quality standard and revocation of the annual PM₁₀ standard.⁶⁸ The final rule, which affects implementation of conformity in PM_{2.5} and PM₁₀ nonattainment and maintenance areas, also addresses a court remand concerning hot-spot analyses as they apply to PM_{2.5} and PM₁₀, as well as to carbon monoxide and nonattainment and maintenance areas.

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 some Members of Congress. 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. A February 24, 2009, decision by the U.S. Court of Appeals for the District of Columbia Circuit did not vacate the 2006 standards but granted petitions in part, denying other challenges, and remanded the standards to EPA for further consideration.⁶⁹ Although EPA and states continue the implementation of the 2006 revised PM_{2.5} standards, the next round of periodic review of the particulates NAAQS is under way, and EPA is due to propose revised standards in February 2011 and promulgate them by October 2011.

Within three years of issuance of a NAAQS, all states were required to demonstrate that they have the basic infrastructure and capacity necessary to implement the 2006 PM_{2.5} NAAQS. On June 9, 2010, EPA published a finding that 23 states, the District of Columbia, and five territories failed to submit complete “infrastructure” SIPs,⁷⁰ with respect to two of four elements under section 110(a)(2)(D)(i) to satisfy nonattainment and transport requirements. These two elements require each state to demonstrate adequate provisions for the ability to prohibit air emissions within the state which: “(1) contributes significantly to another state’s nonattainment of the NAAQS; or (2) interferes with maintenance of a NAAQS.” EPA will promulgate a Federal

⁶⁷ 42 U.S.C. 7506(c).

⁶⁸ 75 *Federal Register* 14260, March 24, 2010. Prior to the final rule EPA provided interim guidance for meeting conformity requirements: *Interim Transportation Conformity Guidance for 2006 PM_{2.5} NAAQS Nonattainment Areas* (EPA-420-B-09-036, November 2009) (<http://www.epa.gov/otaq/stateresources/transconf/policy/420b09036.pdf>). See also EPA’s “Transportation Conformity: Regulations” at <http://www.epa.gov/otaq/stateresources/transconf/conf-reg.htm>, which provides access to all transportation conformity regulations and policy guidance.

⁶⁹ *American Farm Bureau Federation v. U.S. EPA*, No. 06-1410 (D.C. Cir., February 24, 2009).

⁷⁰ 75 *Federal Register* at 32673-32676, June 9, 2010.

Implementation Plan (FIP) unless a state submits, and EPA approves, a plan to meet these two elements within two years of the Notice.

On November 13, 2009, EPA published its final designations of areas as nonattainment and unclassifiable/attainment for the 2006 PM_{2.5} NAAQS. Publication of a final designation rule for the 2006 PM_{2.5} NAAQS was delayed pending review by the agency as part of the Administration's review of several proposed and final actions introduced toward the end of the previous Administration.⁷¹ Delaying publication of the final designation rule resulted in the delay of the expected effective date of April 2009⁷² to December 14, 2009 (30 days from the date of publication).

The November 2009 final designations, based on more current monitoring data (calendar years 2006-2008), 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 questions have been raised with regard to the final designations for the 2006 PM_{2.5} NAAQS.

Three years following the publication of the final designations, state, local and tribal governments are to outline detailed control requirements in plans (or nonattainment SIPs) demonstrating how areas designated nonattainment will meet the 2006 standards. 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.

One of the key federal regulations, the May 2005 Clean Air Interstate Rule (CAIR),⁷³ that EPA expected would provide states a framework for achieving attainment with the PM_{2.5} NAAQS, was initially vacated, then temporarily reinstated by U.S. Court of Appeals for the D.C. Circuit decisions (*North Carolina v. EPA*⁷⁴) in 2008. The May 2005 CAIR was expected to serve as the primary tool to assist downwind states in meeting the PM_{2.5} (and eight-hour ozone) 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}.⁷⁵ The D.C. Circuit's modified decision reversed its decision to vacate CAIR while EPA developed a replacement rule, but left the substantive requirements of its initial decision fully intact, eliciting additional concerns with regard to the impact this may have on the implementation of the 2006 PM_{2.5} NAAQS in the

⁷¹ See footnote 8 and footnote 9.

⁷² See EPA's guidance, "Area Designations for 2006 24-Hour PM_{2.5} NAAQS - Technical Information," at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

⁷³ Promulgated under the CAA, 42 U.S.C. 7401 et seq., 70 *Federal Register* 25162, May 12, 2005.

⁷⁴ 531 F.3d 896 (D.C. Cir. 2008), July 11, 2008, and 550 F.3d 1176 (D.C. Cir. 2008), December 23, 2008.

⁷⁵ Sulfur dioxide (SO₂) is a precursor (a pollutant that is transformed in air to form another air pollutant) contributing to the formation of PM_{2.5}, and NO_x is a precursor contributing to the formation of both ozone and PM_{2.5}. 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 eight-hour ozone NAAQS (70 *Federal Register* 25162, May 12, 2005).

interim. EPA published a proposed “Transport Rule” intended to supersede the current CAIR on August 2, 2010, and anticipates finalizing the alternative in spring of 2011.⁷⁶

Recent air quality trends suggest that several factors, including national pollution control regulations such as the implementation of CAIR Phase 1, car and truck emission rules, and New Source Review (NSR) settlements, appear to be contributing to improved air quality. In a February 2010 “Air Trends” summary,⁷⁷ EPA reported that nationally, annual and 24-hour PM_{2.5} concentrations were 17% and 19% lower, respectively, in 2008 compared to 2001. Based on a comparison of results from PM_{2.5} monitoring locations (565 sites) for two three-year periods, 2001-2003 and 2006-2008, EPA reported that almost all sites showed a decline or little change in PM_{2.5} concentrations. On August 11, 2010, EPA reported that SO₂ and NO_x emissions (both PM_{2.5} precursors) had declined sharply in both 2008 and 2009; in the latter year, emissions from fossil-fueled power plants in the lower 48 states (at 5.7 million tons) were 44% below 2005 levels. NO_x emissions from the same sources declined to 1.8 million tons in 2009, a decline of 45% compared to 2005.⁷⁸ Ultimately, the continued implementation of these national regulations and associated air quality improvements should help nonattainment areas in achieving compliance with the tighter 2006 PM_{2.5} NAAQS.

Implications of the various issues discussed above with regard to implementation of the 2006 PM_{2.5} NAAQS could vary significantly from area to area based on numerous factors. 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. States are not required to submit nonattainment SIPs until December 2012, and would not have to meet the PM_{2.5} standard until December 2014 (or 2019, if qualified for an extension⁷⁹).

The D.C. Circuit’s February 2009 decision regarding challenges to the 2006 PM NAAQS, delay in designating nonattainment areas and implementing the 2006 PM_{2.5} NAAQS, impacts of the D.C. Circuit’s 2008 decision regarding the 2005 CAIR and EPA’s pending alternative transport regulation, and implications of recent preliminary findings of initial risk assessments supporting EPA’s next round of periodic review of the particulate NAAQS suggesting the need to further strengthen the standards, have prompted increased interest in the PM_{2.5} NAAQS. Concerns regarding key implementation milestones and attainment deadlines for the 2006 PM_{2.5} NAAQS will remain an issue of considerable debate for many stakeholders and interest groups, as well as Congress.

⁷⁶ 75 *Federal Register* 45210-45565, August 2, 2010. See also U.S. EPA, “Air Transport” at <http://www.epa.gov/airtransport/actions.html#jul10>. EPA announced the release of the proposal on July 6, 2010.

⁷⁷ U.S. EPA, *Our Nation’s Air: Status and Trends Through 2008*, EPA-454/R-09-002, February 2010 <http://www.epa.gov/airtrends/2010/index.html>.

⁷⁸ Data are from EPA’s “2009 Acid Rain Program Emission and Compliance Data Report,” August 11, 2010, at <http://www.epa.gov/airmarkets/progress/ARP09.html>.

⁷⁹ 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.”

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,⁸⁰ 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 data; never published)	November 13, 2009 (based on 2006-2008 monitoring data)
EPA proposes PM _{2.5} implementation rule	November 1, 2005	NA	Spring 2011
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	December 2011 (projected)
States and tribes submit revised implementation plans (SIPs) (required three years after final area designations effective date unless extension granted)	April 2008	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/naaqsrev2006.html>; for EPA's more current timeline as of August 2010, see <http://www.epa.gov/pmdesignations/2006standards/documents/2009-10-08/timeline.htm>.

⁸⁰ 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)		

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)			
<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

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)				
GEORGIA				
<i>Atlanta, GA</i>				Barrow
				Bartow
				Carroll
				Cherokee
				Clayton
				Cobb
				Coweta
				De Kalb
				Douglas
				Fayette
				Forsyth
				Fulton
				Gwinnett
				Hall
				Heard (p)
				Henry
				Newton
				Paulding
				Putnam (p)
				Rockdale
				Spalding
				Walton
<i>Chattanooga, AL-TN-GA</i>				Catoosa
				Walker
<i>Macon, GA</i>				Bibb
				Monroe (p)
<i>Rome, GA</i>				Floyd

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)				
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
		Kendall (p)		Kendall (p)
		Lake		Lake
		McHenry		McHenry
		Will		Will
<i>Davenport-Moline-Rock Island, IA-IL</i>		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>		Dearborn (p)		Dearborn (p)
<i>Evansville, IN</i>				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

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)			
<i>Lafayette-Frankfort, IN</i> <i>Louisville, KY-IN</i>		Johnson		Johnson
		Marion		Marion
		Morgan		Morgan
		Tippecanoe		
		Clark		Clark
		Floyd		Floyd
<i>Vincennes, IN</i>		Jefferson (p)		Jefferson (p)
		Knox		
IOWA				
<i>Davenport-Moline-Rock Island, IA-IL</i> <i>Muscatine, IA</i>		Scott (p)		
		Muscatine (p)		
KENTUCKY				
<i>Cincinnati-Hamilton, OH-KY-IN</i> <i>Clarksville, TN-KY</i> <i>Huntington-Ashland, WV-KY-OH</i>		Boone		Boone
		Campbell		Campbell
		Kenton		Kenton
		Muhlenberg (p)		
		Boyd		Boyd
		Lawrence (p)		Lawrence (p)
<i>Louisville, KY-IN</i>		Bullitt		Bullitt
		Jefferson		Jefferson
		McCracken		
MARYLAND				
<i>Baltimore, MD</i>		Anne Arundel		Anne Arundel
		Baltimore City		Baltimore City
		Baltimore		Baltimore
		Carroll		Carroll
		Harford		Harford
		Howard		Howard

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)			
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		
		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				
New York, NY-NJ-CT	Bergen	Bergen	Bergen	
	Essex	Essex	Essex	
	Hudson	Hudson	Hudson	
	Mercer	Mercer	Mercer	
	Middlesex	Middlesex	Middlesex	
	Monmouth	Monmouth	Monmouth	
	Morris	Morris	Morris	

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>	Passaic	Passaic		Passaic
	Somerset	Somerset		Somerset
	Union	Union		Union
	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

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)			
<i>Columbus, OH</i>		Medina	Medina	Medina
		Portage	Portage	Portage
		Summit	Summit	Summit
			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
			Washington	Washington
<i>Parkersburg- Marietta, WV-OH</i>			Washington	Washington
<i>Steubenville- Weirton, OH-WV</i>	Jefferson	Jefferson	Jefferson	Jefferson
<i>Wheeling, WV-OH</i>			Belmont	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		

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)			
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)		Greene (p)
	Lawrence (p)	Lawrence (p)		Lawrence (p)
	Washington	Washington		Washington
	Westmoreland	Westmoreland		Westmoreland
	Reading, PA		Berks	Berks
York, PA		York	York	
TENNESSEE				
Chattanooga, AL-TN-GA			Hamilton	
Clarksville, TN-KY		Humphreys (p)		
		Montgomery		
		Stewart (p)		
Knoxville-Sevierville- La Follette, TN	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>.

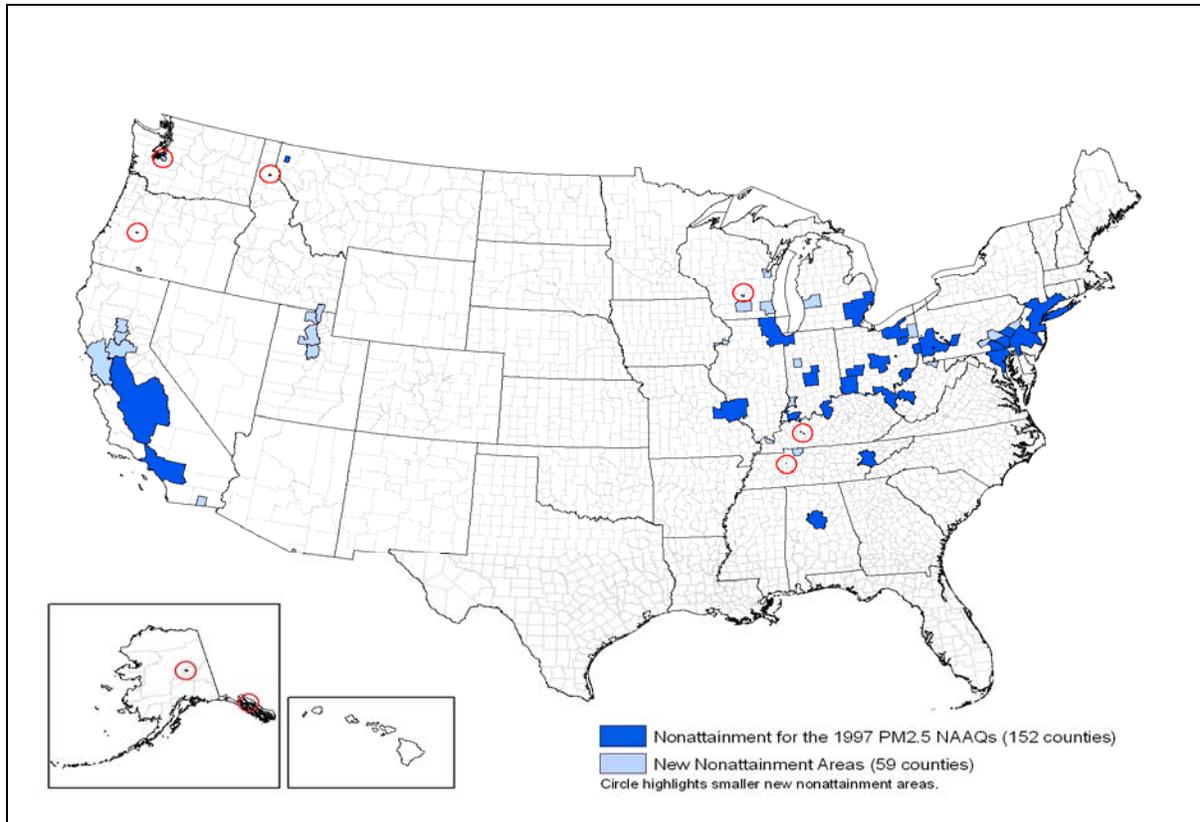
Note: The list of tribes is unofficial; official boundaries are specified in 40 CFR Part 81.

- 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.⁸¹ These designations, based on air quality monitoring data for calendar years 2005 through 2007, are indicated in the map below.

Figure D-1. 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 "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>.

⁸¹ See "Area Designations for 2006 24-Hour Fine Particulate (PM_{2.5}) Standards—December 2008 Area Status (Not Final Designations)" at <http://www.epa.gov/pmdesignations/2006standards/documents/2008-12-22/12-08table.htm>.

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