



# **2006 National Ambient Air Quality Standards (NAAQS) for Fine Particulate Matter (PM<sub>2.5</sub>): Designating Nonattainment Areas**

**(name redacted)**

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## Summary

The Environmental Protection Agency (EPA) published revisions to the Clean Air Act (CAA) 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 most recent round of periodic review of the particulates NAAQS and final rule revising the PM NAAQS, published January 15, 2013, prompted further scrutiny of the ongoing implementation of the standards.

Promulgation of NAAQS sets in motion a process under which the states and EPA identify areas that exceed the national 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. The publication of the final designations for the 2006 NAAQS—and thus the effective date of the final designations—had initially been delayed pending review by the current Administration. On November 13, 2009, EPA published its final designations for the 2006 PM NAAQS that included 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 nonattainment area State Implementation Plans (SIPs), which identify specific regulations and emission control requirements that would bring a nonattainment area into compliance.

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

EPA's final nonattainment designations are only for the revised 2006 *24-hour* PM<sub>2.5</sub> standard. EPA did not require new nonattainment designations for the PM<sub>2.5</sub> annual standard and for PM<sub>10</sub>. The final designations for the 2006 PM<sub>2.5</sub> NAAQS included a few areas designated nonattainment for PM<sub>2.5</sub> for the first time, but, as expected, the majority of the counties identified overlapped with EPA's final nonattainment designations for the 1997 PM<sub>2.5</sub> NAAQS. EPA's designations for the 1997 PM<sub>2.5</sub> 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 (O<sub>3</sub>, a key measure of smog), nitrogen dioxide (NO<sub>2</sub>, or, inclusively, nitrogen oxides,<sup>1</sup> or NO<sub>x</sub>), sulfur oxides (SO<sub>x</sub>, or, specifically, SO<sub>2</sub>), 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).<sup>2</sup> The 2006 particulates NAAQS primarily tightened the pre-existing (1997) standard for “fine” particulate matter 2.5 micrometers or less in diameter (PM<sub>2.5</sub>).<sup>3</sup> The standard for slightly larger, but still inhalable, particles less than or equal to 10 micrometers (PM<sub>10</sub>) established in 1987<sup>4</sup> was not similarly changed.

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 nonattainment area State Implementation Plans (SIPs), which identify specific regulations and emission control requirements that will bring an area into compliance.<sup>5</sup> EPA published the final designations for the 2006 PM<sub>2.5</sub> NAAQS on November 13, 2009.<sup>6</sup> The final designation rule became effective December 14, 2009 (30 days from the date of publication). The EPA final designations reflected a

<sup>1</sup> The NAAQS is for NO<sub>2</sub>; nitrogen gases that are ozone precursors are referred to as NO<sub>x</sub>.

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

<sup>3</sup> *Federal Register* 38652-38896, July 18, 1997. See CRS Report RL32431, *Particulate Matter (PM<sub>2.5</sub>): Implementation of the 1997 National Ambient Air Quality Standards (NAAQS)*, by (name redacted).

<sup>4</sup> *Federal Register* 24634-24715, July 1, 1987.

<sup>5</sup> See EPA’s guidance, “Area Designations for 2006 24-Hour PM<sub>2.5</sub> NAAQS - Technical Information,” at [http://www.epa.gov/ttn/naaqs/pm/pm25\\_2006\\_techinfo.html](http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html).

<sup>6</sup> 74 *Federal Register* 58688-58781, November 13, 2009; see also “Area Designations for 2006 24-Hour Fine Particulate (PM<sub>2.5</sub>) Standards—Regulatory Actions” at <http://www.epa.gov/pmdesignations/2006standards/regs.htm#4>. In a February 3, 2011, final notice, EPA published designations of three areas as “nonattainment” or “unclassifiable/attainment” for the 2006 24-PM<sub>2.5</sub> NAAQS that were deferred in the November 13, 2009, promulgated designations, 76 *Federal Register* 6056-6066, <http://www.epa.gov/pmdesignations/2006standards/documents/2011-01/FR-2011-01.pdf>. A portion of Pinal County, AZ, was designated nonattainment, eight surrounding counties were designated unclassifiable/attainment, and Gila River Indian Community and the Ak-Chin Indian community designations were deferred pending completion of the formal consultation process; Plumas County, CA, and Shasta County, CA, were designated unclassifiable/attainment (includes surrounding counties).

change from those announced by the agency in December 22, 2008.<sup>7</sup> 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 covered by the White House January 20, 2009, memorandum,<sup>8</sup> and the Office of Management and Budget’s subsequent January 21, 2009, memorandum,<sup>9</sup> 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 2006 revisions.<sup>10</sup> A February 24, 2009, decision<sup>11</sup> by the D.C. Circuit 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 proceeded, the decision and EPA’s ongoing actions have prompted renewed interest in PM NAAQS among Members of Congress.<sup>12</sup>

Simultaneously with the ongoing implementation of the 2006 PM NAAQS, EPA initiated its next round of statutorily required periodic review of the PM NAAQS not long after the October 2006 promulgation of the standards,<sup>13</sup> in part in response to the D.C. Circuit Court’s decision. On January 15, 2013, EPA published a final rule further revising the PM NAAQS. The January 2013 revisions changed the existing (2006) annual health-based (“primary”) standard for “fine” particulate matter 2.5 micrometers or less in diameter (or PM<sub>2.5</sub>), lowering the allowable average concentration of PM<sub>2.5</sub> in the air from the current level of 15 micrograms per cubic meter (µg/m<sup>3</sup>) to a limit of 12 µg/m<sup>3</sup>. The existing primary daily (24-hour) standard for PM<sub>2.5</sub> that was reduced from 65 µg/m<sup>3</sup> to 35 µg/m<sup>3</sup> in 2006 was retained, as was the existing standard for larger, but still inhalable, “coarse” particles less than 10 micrometers in diameter, or PM<sub>10</sub>. “Secondary” standards that provide protection against “welfare” (non-health) effects, such as ecological effects and material deterioration, are identical to the primary standards and the same as in 2006. The

<sup>7</sup> See “Area Designations for 2006 24-Hour Fine Particulate (PM<sub>2.5</sub>) Standards—December 2008 Area Status (Not Final Designations)” at <http://www.epa.gov/pmdesignations/2006standards/documents/2008-12-22/12-08table.htm>.

<sup>8</sup> 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/sites/default/files/omb/assets/information\\_and\\_regulatory\\_affairs/regulatory\\_review\\_012009.pdf](http://www.whitehouse.gov/sites/default/files/omb/assets/information_and_regulatory_affairs/regulatory_review_012009.pdf). Also see Office of Management and Budget website, “Regulatory Matters,” OIRA Policies and Practices, at [http://www.whitehouse.gov/omb/international\\_regulatory\\_cooperation](http://www.whitehouse.gov/omb/international_regulatory_cooperation).

<sup>9</sup> 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; see Office of Management and Budget website “Regulatory Matters,” OIRA Policies and Practices, at [http://www.whitehouse.gov/omb/international\\_regulatory\\_cooperation](http://www.whitehouse.gov/omb/international_regulatory_cooperation).

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

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

<sup>12</sup> 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 (name redacted).

<sup>13</sup> The current review was initiated with EPA’s June 2007 general call for information, U.S. EPA, “Integrated Science Assessment for Particulate Matter: Call for Information,” 72 *Federal Register* 35462, June 28, 2007. See also EPA’s *Policy Assessment for the Review of the Particulate Matter National Ambient Air Quality Standards*, pp. 1-10 through 1-12, U.S. EPA Office of Air Quality Planning and Standards, Health and Environmental Impacts Division, EPA 454/R-11-003, April 2011, <http://www.epa.gov/ttnnaqs/standards/pm/data/20110419pmpafinal.pdf>.

proposed rule regarding the PM NAAQS published June 29, 2012,<sup>14</sup> solicited comments on two options for a 24-hour PM<sub>2.5</sub> standard to improve visibility that were not adopted in the final rule. For an overview of the revisions to the PM NAAQS published January 15, 2013, see CRS Report R42934, *Air Quality: EPA's 2013 Changes to the Particulate Matter (PM) Standard*, by (name redacted).

The following sections of this report focus primarily on the NAAQS implementation process for designating geographical nonattainment areas with respect to the revisions to the PM<sub>2.5</sub> standards under the 2006 particulates NAAQS, including comparisons with the final designations under the 1997 PM<sub>2.5</sub> NAAQS. EPA did not require new nonattainment designations for PM<sub>10</sub> 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 time line for implementing the 2006 and 1997 PM<sub>2.5</sub> 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, areas proposed by the states for the 2006 24-hour PM<sub>2.5</sub> NAAQS, as well as the final EPA nonattainment designations for the 1997 PM<sub>2.5</sub> NAAQS. **Appendix C** identifies tribes included in EPA's final nonattainment designations 2006 24-hour PM<sub>2.5</sub> NAAQS.

## EPA's 2006 Changes to the Particulates NAAQS

The Clean Air Act (CAA) 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.<sup>15</sup>

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

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<sup>14</sup> For an overview of the proposed revisions to the PM NAAQS published June 29, 2012, see CRS Report R42671, *Air Quality: EPA's 2012 Proposed Changes to the Particulate Matter (PM) Standard*, by (name redacted).

<sup>15</sup> 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)).

- **PM<sub>2.5</sub>:** tightened 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<sub>2.5</sub> NAAQS, by setting a new limit of 35  $\mu\text{g}/\text{m}^3$ , based on the three-year average of the 98<sup>th</sup> percentile of 24-hour PM<sub>2.5</sub> concentrations; retained the *annual* standard at 15  $\mu\text{g}/\text{m}^3$ .
- **PM<sub>10</sub>:** retained the *daily* standard at 150  $\mu\text{g}/\text{m}^3$  set in 1987 but changed from the 99<sup>th</sup> 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 PM<sub>10</sub>.<sup>16</sup>

As discussed in more detail in the following section, strengthening the *daily (24-hour) standard* for PM<sub>2.5</sub> had implications for those counties and partial counties designated nonattainment for the 1997 PM<sub>2.5</sub> NAAQS. With only a few exceptions, most of the designated nonattainment areas for the 1997 PM<sub>2.5</sub> NAAQS were not meeting the *annual standard*, but were meeting the *daily (24-hour) standard*. EPA is not requiring new nonattainment designations for PM<sub>10</sub> since the standards were not strengthened. To the contrary, a number of counties previously designated nonattainment for PM<sub>10</sub> have been determined by EPA to be in attainment since the 2006 revisions of the particulates NAAQS were promulgated.<sup>17</sup>

## Designation of Geographical Nonattainment Areas

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

### NAAQS Designation Process

The NAAQS designation process is intended as a cooperative federal-state-tribal<sup>18</sup> 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

<sup>16</sup> 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 PM<sub>10</sub> Standards*, January 17, 2006.

<sup>17</sup> See “Federal Register Notices Related to Particulate Matter (PM-10) Designations and Classifications” on EPA’s “Green Book” website, <http://www.epa.gov/air/oaqps/greenbk/pfnrpt4.html#firstnotice>. Also see discussion and map (**Figure 1**) depicting PM<sub>10</sub> 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 (name redacted), under the heading entitled “Rural PM<sub>10</sub> Sources.”

<sup>18</sup> Though not required, tribes have been encouraged to submit recommendations. The area designation requirements under the CAA (§107) are specific with respect to states, but not to tribes. EPA follows the same designation process for tribes per §§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 C.F.R. Part 49). For information regarding tribes that have participated in the PM<sub>2.5</sub> designation recommendation process, see <http://www.epa.gov/pmdesignations>.



quality standard” (emphasis added). Areas are identified as “attainment/unclassified”<sup>19</sup> 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 (§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.<sup>20</sup> EPA began developing methods for monitoring fine particles at the time the PM<sub>2.5</sub> NAAQS were being finalized in 1997, and operation of the network of monitors for PM<sub>2.5</sub> was phased in from 1999 through 2000.

The network of monitors and their locations have been modified over time. 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.<sup>21</sup> 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 24-hour PM<sub>2.5</sub> NAAQS published November 13, 2009, were 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,<sup>22</sup> 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.

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<sup>19</sup> §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.

<sup>20</sup> 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 C.F.R. Part 58).

<sup>21</sup> Revisions to Ambient Air Monitoring Regulations, final rule, 71 *Federal Register* 61235-61328, October 17, 2006. <http://www.epa.gov/air/particlepollution/actions.html>.

<sup>22</sup> See Chapter 5 of the EPA Technical Support Document for December 17, 2004, final designations for the 1997 PM<sub>2.5</sub> NAAQS and April 2005 modifications, for explanations of these factors; available at <http://www.epa.gov/pmdesignations/1997standards/tech.htm>.

## 2006 PM<sub>2.5</sub> 24-Hour NAAQS Designations<sup>23</sup>

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<sub>2.5</sub> standard.<sup>24</sup> (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 24-hour PM<sub>2.5</sub> NAAQS are indicated in the map in **Figure 1**. The map distinguishes those counties not previously designated nonattainment for the PM<sub>2.5</sub> NAAQS and those areas that are being designated for the 2006 24-hour PM<sub>2.5</sub> 24-hour standard, that were previously designated nonattainment for the 24-hour 1997 PM<sub>2.5</sub> NAAQS.

In the February 3, 2011, *Federal Register*,<sup>25</sup> EPA published its final designations of three areas as “nonattainment” or “unclassifiable/attainment” for the 2006 24-hour PM<sub>2.5</sub> NAAQS that were deferred at the time of the agency’s November 13, 2009, promulgated designations. Designations were deferred so that EPA could evaluate measurements of high fine particle concentrations by violating monitors. EPA designated a portion of Pinal County, AZ, as nonattainment. This designation is not reflected in the map in **Figure 1**. Eight surrounding counties were designated unclassifiable/attainment, and Gila River Indian Community and the Ak-Chin Indian community designations were deferred pending completion of the formal consultation process. Plumas County, CA, and Shasta County, CA, as well as surrounding counties, were designated unclassifiable/attainment.

EPA’s November 2009 final designations, which were 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<sub>2.5</sub> NAAQS. As with the designations for the 1997 PM<sub>2.5</sub> 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<sub>2.5</sub> NAAQS nonattainment areas).

EPA’s final designations for the 2006 24-hour PM<sub>2.5</sub> standard differed 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<sub>2.5</sub> standard<sup>26</sup> (see **Table B-1** in **Appendix B** for a comparison of the state-by-state county/area nonattainment designations; counties (and partial counties) designated

<sup>23</sup> For detailed PM<sub>2.5</sub> state/county geographical designation recommendations by EPA and those from individual states and tribes, for the 1997 and for the 2006 PM<sub>2.5</sub> NAAQS, see <http://www.epa.gov/pmdesignations>.

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

<sup>25</sup> 76 *Federal Register* 6056-6066, February 3, 2011, <http://www.epa.gov/pmdesignations/2006standards/documents/2011-01/FR-2011-01.pdf>. See also, EPA’s Fact Sheet at <http://www.epa.gov/pmdesignations/2006standards/regs.htm>.

<sup>26</sup> See EPA’s “Area Designations for 2006 24-Hour Fine Particulate (PM<sub>2.5</sub>) Standards—December 2008 Area Status (Not Final Designations),” <http://www.epa.gov/pmdesignations/2006standards/documents/2008-12-22/12-08table.htm>. The total number of nonattainment areas and counties includes the three-county (Jefferson, Shelby, and portion of Walker) area of Birmingham. In the September 20, 2010, *Federal Register*, EPA announced its determination that a three-county Alabama nonattainment area (Birmingham) has attaining data for the 2006 24-hour PM<sub>2.5</sub> NAAQS (75 *Federal Register* 57186, September 20, 2010) based on certified ambient air monitoring data showing the area monitored as in attainment for the 2006 24-hour PM<sub>2.5</sub> NAAQS based on 2007-2009 data.

as nonattainment for the 2006 24-hour PM<sub>2.5</sub> 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 24-hour PM<sub>2.5</sub> 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,<sup>27</sup> and the Office of Management and Budget's subsequent January 21, 2009, memorandum,<sup>28</sup> 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.<sup>29</sup> The effective date for the final designation rule for the 2006 PM NAAQS is December 14, 2009 (30 days from the date of publication).

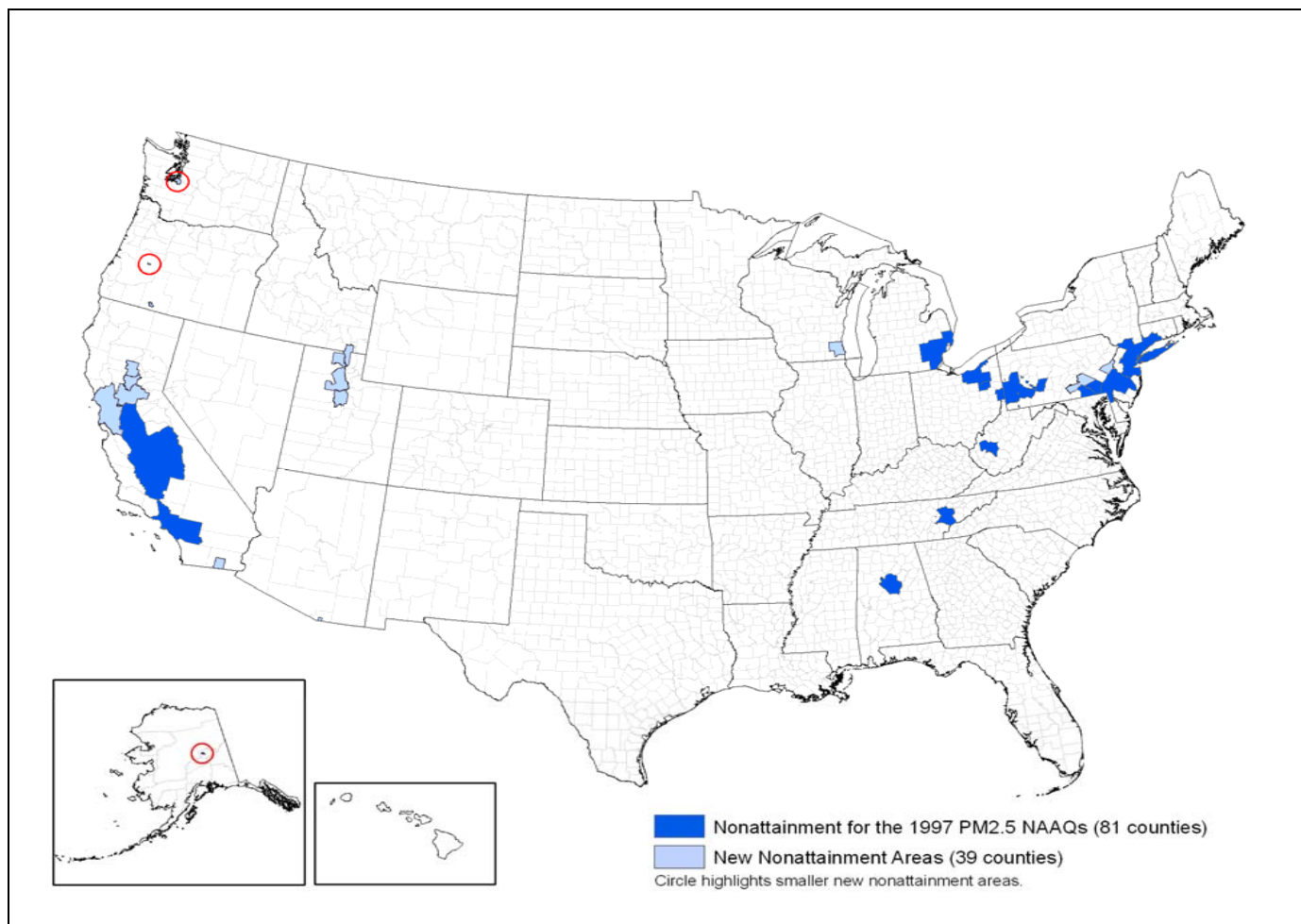
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<sup>27</sup> See footnote 8.

<sup>28</sup> See footnote 9.

<sup>29</sup> See EPA's guidance, "Area Designations for 2006 24-Hour PM<sub>2.5</sub> NAAQS - Technical Information," at [http://www.epa.gov/ttn/naaqs/pm/pm25\\_2006\\_techinfo.html](http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html).

**Figure 1. Counties in Nonattainment Only for the 2006 PM<sub>2.5</sub> NAAQS 24-Hour Standard (35 µg/m<sup>3</sup>):  
U.S. EPA Final Designations**



**Source:** Prepared by the Congressional Research Service with data obtained from EPA based on EPA's final designations for the 2006 24-hour PM<sub>2.5</sub> NAAQS. See U.S. EPA, "40 CFR Part 81 Air Quality Designations for the 2006 24-Hour Fine Particle (PM<sub>2.5</sub>) National Ambient Air Quality Standards; Final Rule," 74 *Federal Register* 58687, November 13, 2009. The map does not reflect EPA's designation of a portion of Pinal County, AZ, as nonattainment as published February 3, 2011, 76 *Federal Register* 6056-6066, February 3, 2011, <http://www.epa.gov/pmdesignations/2006standards/documents/2011-01/FR-2011-01.pdf>. Designation of this area had been previously deferred.

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 (more than 20% of the U.S. population)<sup>30</sup> live in the 120 counties designated nonattainment for the 2006 24-hour PM<sub>2.5</sub> 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 (§107(d)(4)(A)(iv)). However, unlike the 1997 PM<sub>2.5</sub> standards, Metropolitan Statistical Areas or Consolidated Metropolitan Statistical Areas<sup>31</sup> did not generally serve as the “presumptive boundary” for nonattainment areas under the 2006 24-hour PM<sub>2.5</sub> standards. Rather than establish a presumption for the minimum size of an area, in its June 2007 guidance<sup>32</sup> EPA instructed states and tribes to evaluate each area on a case-by-case basis. EPA expected that nonattainment areas for the 2006 PM<sub>2.5</sub> 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<sub>2.5</sub> 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.<sup>33</sup> 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<sub>2.5</sub> 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<sub>2.5</sub> standard. EPA solicited the states’ comments and additional information for consideration in determining the final designations.<sup>34</sup> As it did in implementing the 1997 PM<sub>2.5</sub> 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

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<sup>30</sup> Three hundred fourteen million in 2012 based on U.S. Census Bureau, “USA Quick Facts” <http://quickfacts.census.gov/qfd/states/00000.html>.

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

<sup>32</sup> See EPA’s guidance at “Area Designations for 2006 24-Hour PM<sub>2.5</sub> NAAQS - Technical Information,” [http://www.epa.gov/ttn/naaqs/pm/pm25\\_2006\\_techinfo.html](http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html).

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

<sup>34</sup> 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 notice<sup>35</sup> for a 30-day public comment period. As occurred with EPA's proposed nonattainment designations for the 1997 PM<sub>2.5</sub> NAAQS,<sup>36</sup> several states challenged the agency and maintained support for their original recommendations in response to the agency's proposed nonattainment areas for the 2006 24-hour PM<sub>2.5</sub> NAAQS. EPA designations for the 2006 24-hour PM<sub>2.5</sub> 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.<sup>37</sup>

As discussed previously in this report, the November 13, 2009, final designations for the 2006 24-hour PM<sub>2.5</sub> 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 24-hour PM<sub>2.5</sub> 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.<sup>38</sup>

## Comparing the 2006 and 1997 PM<sub>2.5</sub> NAAQS Designations

EPA's final designations for nonattainment of the 1997 PM<sub>2.5</sub> NAAQS (those areas with or contributing to air quality levels exceeding the annual and 24-hour standards or both) included all or part of 204 counties in 20 states and the District of Columbia.<sup>39</sup> As indicated in the map in Figure 2, below, the designated nonattainment areas for the 1997 24-hour and annual PM<sub>2.5</sub> 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<sub>2.5</sub> NAAQS.

<sup>35</sup> 73 *Federal Register* 51259-51260, September 2, 2008.

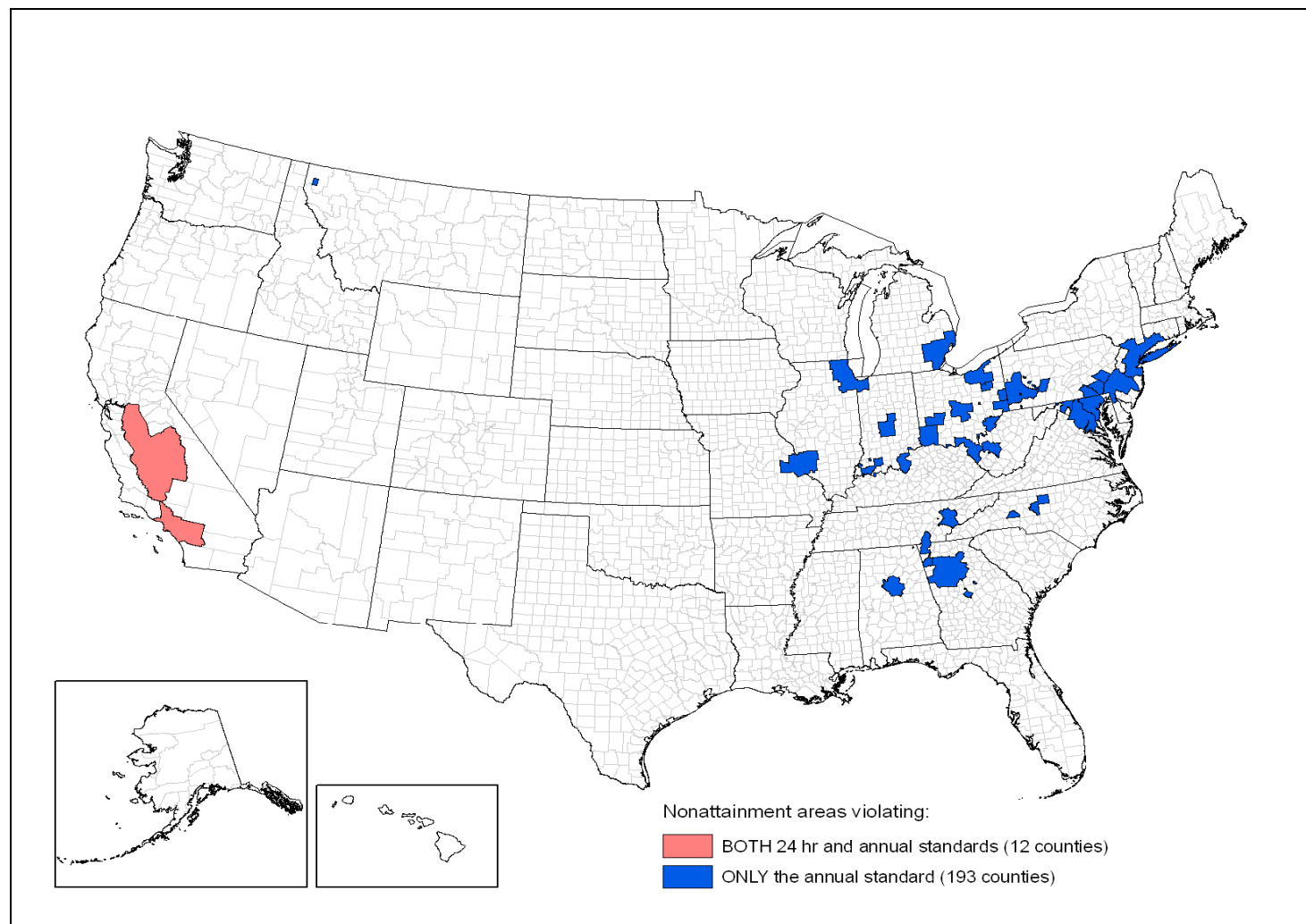
<sup>36</sup> EPA designations for the 1997 PM<sub>2.5</sub> NAAQS reflected minor modifications to its proposal; primarily, 19 counties were removed from the list of nonattainment areas, and other counties were redefined by designating only specified locations ("partial") within the county as nonattainment. 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<sub>2.5</sub> NAAQS. The petitions were for counties in Georgia, Illinois, Michigan, Missouri, Ohio, and West Virginia; see <http://www.epa.gov/pmdesignations/1997standards/regs.htm>.

<sup>37</sup> 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<sub>2.5</sub> NAAQS as recommend by the states, proposed by EPA August 19, 2008, and as identified by EPA December 22, 2008.

<sup>38</sup> See footnote 37.

<sup>39</sup> See EPA's PM<sub>2.5</sub> 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<sub>2.5</sub>): Implementation of the 1997 National Ambient Air Quality Standards (NAAQS)*, by (name redacted).

**Figure 2. Counties in Nonattainment for the 1997 PM<sub>2.5</sub> NAAQS Annual (15 µg/m<sup>3</sup>) and/or 24-Hour (65 µg/m<sup>3</sup>) Standards: U.S. EPA Final Designations**



**Source:** Prepared by the Congressional Research Service based on EPA's final designations for the 1997 PM<sub>2.5</sub> NAAQS, with data obtained from EPA.

**Table 1** below illustrates the comparative geographic distribution of counties designated nonattainment for the 2006 24-hour PM<sub>2.5</sub> NAAQS (based on EPA's final designations as published in the November 13, 2009, *Federal Register*), and those counties in EPA's final area designations for the annual and 24-hour 1997 PM<sub>2.5</sub> NAAQS. Based on the final designations for the 2006 24-hour PM<sub>2.5</sub> NAAQS, 38 counties would be designated nonattainment for PM<sub>2.5</sub> for the first time but the majority of the counties identified overlap with EPA's final nonattainment designations for the 1997 PM<sub>2.5</sub> NAAQS. Most of the 1997 PM<sub>2.5</sub> 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 in Nonattainment for the 1997 PM<sub>2.5</sub> NAAQS and in Nonattainment for the 2006 PM<sub>2.5</sub> NAAQS: U.S. EPA Final Designations**

	PM <sub>2.5</sub> NAAQS (annual/24-hour µg/m <sup>3</sup> )					
	1997 Standard 15/65 µg/m <sup>3</sup>			2006 Standard 15/35 µg/m <sup>3</sup>		
	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

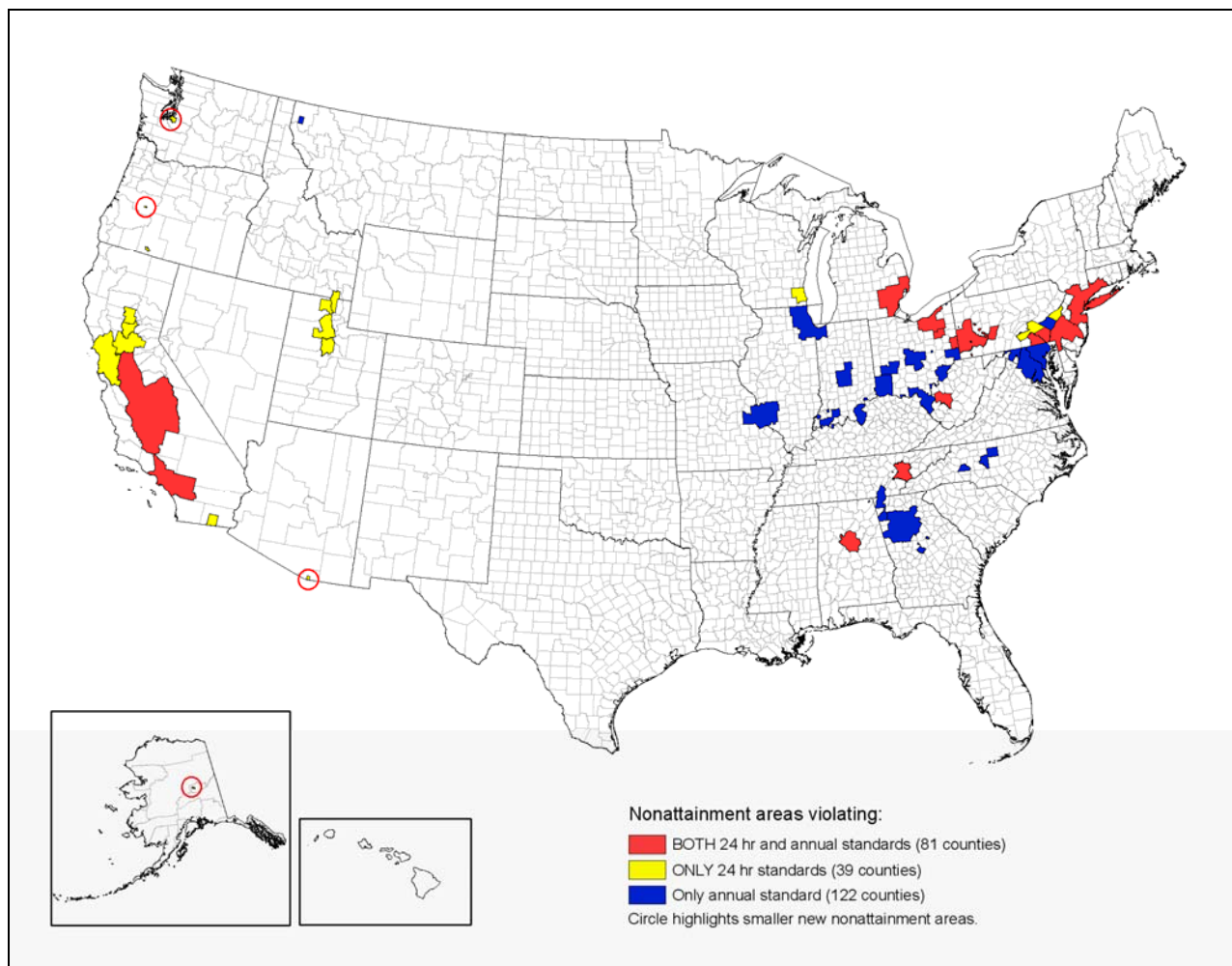
**Source:** Prepared by the Congressional Research Service with data compiled from EPA's websites for PM designations at <http://www.epa.gov/pmdesignations/> and <http://www.epa.gov/oar/oaqps/greenbk/qnca.html>. Nonattainment counties are based on EPA's final designations for the 2006 PM<sub>2.5</sub>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



**Figure 3. Counties in Nonattainment for the Revised PM<sub>2.5</sub> NAAQS Annual (15 µg/m<sup>3</sup>; Unchanged from 1997) and/or 24-Hour (35 µg/m<sup>3</sup>; as revised 2006) Standards: U.S. EPA Final Designations**



**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 24-hour PM<sub>2.5</sub> NAAQS; nonattainment counties for the annual standard (which were unchanged) are based on EPA's final area designations for the 1997 PM<sub>2.5</sub> NAAQS as of December 31, 2008. Partial counties are shown on the map as whole counties.

It is difficult to assess what effect the overlap of nonattainment designations may have had on current control measures in these areas. In some areas, current measures that focused on achieving attainment for the annual standard may have been sufficient to attain the 24-hour standard as well. Other areas may have required 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. These often involve promulgation of new regulations by states, leading to the issuance of revised air permits, which affect pollution control requirements at various facilities.

## Demonstrating Attainment with the 2006 PM<sub>2.5</sub> 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.<sup>40</sup> 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<sub>2.5</sub> NAAQS. These plans, defined as state implementation plans and referred to as SIPs (TIPs for tribal implementation plans), were to be submitted to EPA by December 2012, three years after the effective date of the agency's final designations of December 14, 2009.<sup>41</sup> If states fail to develop an adequate implementation plan, EPA can impose one. Under CAA, states are required to meet the 2006 PM<sub>2.5</sub> standard "as expeditiously as practicable," but no later than five years from the effective date of designation, which would be December 2014, unless an extension allowed under the CAA is granted.<sup>42</sup>

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<sup>40</sup> §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>.

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

<sup>42</sup> 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 (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."

## State Implementation Plans (SIPs)

Within three years of promulgation of a new or revised NAAQS (or shorter period as EPA may prescribe), Section 110(a)(1) of the CAA requires states to submit revised SIPs that provide for implementation, maintenance, and enforcement of the new or revised NAAQS. 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, maintain, and enforce the revisions associated with the 2006 PM<sub>2.5</sub> 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; and
- prohibition of interstate pollution transport.

Section 110(a)(2)(D)(i) of the act contains four elements that revised SIPs must address. The first two elements of this section require each state in its SIP to demonstrate adequate provisions for the ability to prohibit air emissions within the state that (1) contribute significantly to another state’s nonattainment of the NAAQS, or (2) interfere with another state’s maintenance of the NAAQS.

Three years from the effective date of the final designations, states and local governments are required to develop and implement new or revised plans (SIPs) for addressing emissions in those “nonattainment” areas that do not meet the new or revised NAAQS. Nonattainment area SIPs for the 2006 PM<sub>2.5</sub> NAAQS were required to be submitted to EPA for review and approval by December 2012. As previously indicated, the effective date of the final designation rule is December 14, 2009 (30 days from the date of publication). 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.

Several counties designated as nonattainment for the PM<sub>2.5</sub> NAAQS were designated for the first time. As noted earlier, a large portion of the nonattainment areas for the 2006 PM<sub>2.5</sub> NAAQS designated by EPA November 2009, overlap with those areas designated nonattainment for the 1997 PM<sub>2.5</sub> NAAQS. However, as discussed in the previous section, these areas were unable to meet the 2006 revised 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)<sup>43</sup> outlining an implementation plan for the transition to the 2006 particulates standards, EPA indicated that it

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<sup>43</sup> 71 *Federal Register* 6718, February 9, 2006.

would be beneficial for states to consider control strategies that may be useful in attaining the 2006 revised PM<sub>2.5</sub> NAAQS when developing their strategies for the 1997 PM<sub>2.5</sub> standards.

The basic framework of the implementation rule for the 1997 PM<sub>2.5</sub> NAAQS published in April of 2007 provides guidance for implementation of the 2006 standards.<sup>44</sup> The implementation rule describes the requirements that states and tribes must meet in their implementation plans to achieve and maintain attainment. The rule also provides guidance and procedures for establishing controls to achieve and maintain attainment. The implementation rule also includes guidance for submitting a SIP when reaching attainment within the five-year requirement is impractical. The implementation rule takes into account existing (oftentimes pending) federal regulations that contribute to controlling criteria pollutants and their precursors.<sup>45</sup> In addition to the 2007 implementation rule for the 1997 PM<sub>2.5</sub> NAAQS, EPA outlined implementation guidance regarding the development of SIPs to demonstrate attainment with the 2006 PM<sub>2.5</sub> NAAQS in a March 12, 2012, memorandum to EPA Regional Air Directors.<sup>46</sup>

## Status of Infrastructure SIPs

On June 9, 2010, EPA published a finding that 23 states, the District of Columbia, and 5 territories had failed to submit “infrastructure” SIPs to address the requirements of CAA Section 110(a)(2)(D)(i)(I) with respect to the 2006 PM<sub>2.5</sub> NAAQS.<sup>47</sup> On July 20, 2011, EPA published a notice finding that one additional state had failed to submit a SIP to address those requirements.<sup>48</sup> Both of EPA’s findings notices<sup>49</sup> addressed the first two of four elements under Section 110(a)(2)(D)(i) to satisfy interstate transport requirements. In an August 8, 2011, *Federal Register* notice, EPA promulgated a series of FIPs through the Cross-State Air Pollution Rule (CSAPR) which were to address the emissions from 28 states that significantly affect downwind states’ ability to attain and maintain compliance with the 2006 (and 1997) PM<sub>2.5</sub> NAAQS (as well as the 1997 ozone NAAQS).<sup>50,51</sup> These FIPs limited emissions through the regulation of electric

<sup>44</sup> EPA published its final implementation rule for the 1997 PM<sub>2.5</sub> 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).

<sup>45</sup> 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.

<sup>46</sup> March 12, 2012, Memorandum from Stephen D. Page, Director, Office of Air Quality Planning and Standards, to EPA Regional Air Directors (Regions I-X), “Implementation Guidance for the 2006 24-Hour Fine Particle (PM<sub>2.5</sub>) National Ambient Air Quality Standards (NAAQS),” [http://www.epa.gov/ttn/naaqs/pm/pdfs/20120302\\_implement\\_guidance\\_24-hr\\_pm2.5\\_naaqs.pdf](http://www.epa.gov/ttn/naaqs/pm/pdfs/20120302_implement_guidance_24-hr_pm2.5_naaqs.pdf).

<sup>47</sup> U.S. EPA, “Finding of Failure To Submit Section 110 State Implementation Plans for Interstate Transport for the 2006 National Ambient Air Quality Standards for Fine Particulate Matter,” 75 *Federal Register* 32673-32676, June 9, 2010. See also EPA’s Fact Sheet at <http://www.epa.gov/air/particlepollution/actions.html>.

<sup>48</sup> U.S. EPA, “Finding of Failure To Submit Section 110 State Implementation Plans for Interstate Transport for the 2006 National Ambient Air Quality Standards for Fine Particulate Matter,” 76 *Federal Register* 43180-43183, July 20, 2011. See also EPA’s Fact Sheet at <http://www.epa.gov/air/particlepollution/actions.html>.

<sup>49</sup> Under the CAA, the EPA findings notice initiates a two-year deadline for the agency 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.

<sup>50</sup> U.S. EPA, “Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 *Federal Register* 48208-48483, August 8, 2011, <http://www.gpo.gov/fdsys/pkg/FR-2011-08-08/pdf/2011-17600.pdf>. In the Notice, EPA also modified its prior approvals of certain SIPs, rescinding statements that the (continued...)

generating units. Eleven states identified in the findings notices were included in EPA's CSAPR. On August 21, 2012, the U.S. Court of Appeals for the District of Columbia issued a 2-1 decision to vacate and remand the CSAPR.<sup>52</sup> On October 5, 2012, the U.S. Department of Justice filed a petition<sup>53</sup> seeking en banc rehearing of the D.C. Circuit's August 21, 2012, decision regarding the CSAPR. The D.C. Circuit denied requests for both a panel and for the en banc rehearing on January 24, 2013.<sup>54</sup>

In a separate Notice published September 8, 2011, EPA notified six states, the District of Columbia, and the Commonwealth of Puerto Rico that they failed to submit complete infrastructure SIPs that include required elements to ensure the implementation of the 2006 24-hour PM<sub>2.5</sub> NAAQS.<sup>55</sup> In some cases the submission was missing only one or two elements, while others were missing multiple elements.<sup>56</sup>

At the time this report was updated, EPA had approved, or approved portions of, submissions from a number of states. In most cases the elements not approved were with regard to interstate requirements.

## National Regulations

EPA anticipated that in many cases emission reductions from implementing national regulations and strategies would provide a framework for helping states achieve attainment with the PM<sub>2.5</sub> NAAQS. These national actions include the

- Cross-State Air Pollution Rule (CSAPR);<sup>57</sup>
- Mercury and Air Toxics Standards (MATS);<sup>58</sup>
- Light-Duty Vehicle Tier 2 Rule;<sup>59</sup>

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(...continued)

submitted SIPs satisfy the interstate transport FIPs with respect to the 1997 PM<sub>2.5</sub> NAAQS (and the 1997 ozone NAAQS) for 22 states.

<sup>51</sup> U.S. EPA, "Federal Implementation Plans for Iowa, Michigan, Missouri, Oklahoma, and Wisconsin and Determination for Kansas Regarding Interstate Transport of Ozone," 76 *Federal Register* 80760-80777 December 27, 2011.

<sup>52</sup> *EME Homer City Generation, L.P. v. Environmental Protection Agency*, D.C. Cir., No. 11-1302, August 21, 2012, [http://www.cadc.uscourts.gov/internet/opinions.nsf/19346B280C78405C85257A61004DC0E5/\\$file/11-1302-1390314.pdf](http://www.cadc.uscourts.gov/internet/opinions.nsf/19346B280C78405C85257A61004DC0E5/$file/11-1302-1390314.pdf). See also U.S. EPA's website, "Cross-State Air Pollution Rule (CSAPR)," <http://epa.gov/crossstaterule/> for this decision and other related documents.

<sup>53</sup> [http://epa.gov/crossstaterule/pdfs/Rehearing\\_Petition\\_617874.pdf](http://epa.gov/crossstaterule/pdfs/Rehearing_Petition_617874.pdf). For status of the petition see EPA website "Cross-State Air Pollution Rule (CSAPR)" <http://epa.gov/crossstaterule/>.

<sup>54</sup> *EME Homer City Generation, L.P. v. Environmental Protection Agency*, D.C. Cir., No. 11-1302, January 24, 2013 Orders. See U.S. EPA's website, "Cross-State Air Pollution Rule (CSAPR)," <http://epa.gov/crossstaterule/>.

<sup>55</sup> U.S. EPA, "Findings of Failure to Submit a Complete State Implementation Plan for Section 110(a) Pertaining to the 2006 Fine Particulate Matter (PM<sub>2.5</sub>) NAAQS, 76 *Federal Register* 55577-55581, September 8, 2011.

<sup>56</sup> See the table summarizing the missing elements for each of the six states, District of Columbia, and Puerto Rico presented in EPA's Fact Sheet, available at <http://www.epa.gov/air/particlepollution/actions.html>.

<sup>57</sup> 76 *Federal Register* 48208-48483, August 8, 2011.

<sup>58</sup> 77 *Federal Register* 9304-9513, February 16, 2012.

<sup>59</sup> 65 *Federal Register* 6822-6870, February 10, 2000.

- Heavy Duty Diesel Rule;<sup>60</sup>
- Clean Air Nonroad Diesel Rule;<sup>61</sup>
- Regional Haze Regulations and Guidelines for Best Available Retrofit Technology Determinations;<sup>62</sup>
- NOx Emission Standard for New Commercial Aircraft Engines;<sup>63</sup>
- Emissions Standards for Locomotives and Marine Compression-Ignition Engines;<sup>64</sup>
- Emission Standards Ignition Engines, Control of Emissions for Nonroad Spark Ignition Engines and Equipment;<sup>65</sup>
- Category 3 Oceangoing Vessels;<sup>66</sup>
- Reciprocating Internal Combustion Engines (RICE) National Emissions Standards for Hazardous Air Pollutants (NESHAPS);<sup>67</sup> and
- New Source Performance Standards and Emissions Guidelines for Hospital/Medical/Infectious Waste Incinerators Final Rule Amendments.<sup>68</sup>

Stakeholders and some Members of Congress have been skeptical about EPA's expectations with respect to the corollary benefits associated with some of these regulations, and have raised concerns about pending efforts to delay some of the more recent programs and historical delays of others. For example, one of the key federal regulations that was designed to control emissions of air pollution that causes air quality problems in downwind states, EPA's May 2005 Clean Air Interstate Rule (CAIR),<sup>69</sup> was vacated in a July 11, 2008, decision (*North Carolina v. EPA*), by the U.S. Court of Appeals for the D.C. Circuit.<sup>70</sup> The D.C. Circuit subsequently modified its decision on December 23, 2008,<sup>71</sup> in response to an EPA motion,<sup>72</sup> reversing its decision to vacate CAIR while EPA developed a replacement rule. As discussed in the previous section of this report, the

<sup>60</sup> 65 *Federal Register* 59896-59978, October 6, 2000.

<sup>61</sup> 69 *Federal Register* 38958-39273, January 29, 2004.

<sup>62</sup> 70 *Federal Register* 39104-39172, July 6, 2005.

<sup>63</sup> 70 *Federal Register* 69644-69687, November 17, 2005.

<sup>64</sup> 73 *Federal Register* 37095-37144, republished June 30, 2008.

<sup>65</sup> 73 *Federal Register* 59034-59380, October 8, 2008.

<sup>66</sup> 75 *Federal Register* 22896-23065, April 30, 2010.

<sup>67</sup> 75 *Federal Register* 51570-51608, August 20, 2010; Proposed Amendments 77 *Federal Register* 33812-33857, June 7, 2012.

<sup>68</sup> 74 *Federal Register* 51368-51415, October 6, 2009.

<sup>69</sup> Promulgated under the CAA, 42 U.S.C. 7401 et seq., see U.S. EPA, "Ambient air quality standards, national—Fine particulate matter and ozone; interstate transport control measures," 70 *Federal Register* 25162, May 12, 2005.

<sup>70</sup> *North Carolina v. EPA*, 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 (name redacted), (name redacted), and (name redacted); also see EPA's Clean Air Interstate Rule website at <http://www.epa.gov/CAIR/index.html>.

<sup>71</sup> 550 F.3d 1176 (D.C. Cir. 2008).

<sup>72</sup> 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.

subsequent replacement rule, the Cross-State Air Pollution Rule (“Cross-State Rule” or CSAPR),<sup>73</sup> was to have gone into effect in 2012 but was stayed in December 2011, then vacated on August 21, 2012, by the D.C. Circuit Court of Appeals.<sup>74</sup> The U.S. Department of Justice filed a petition<sup>75</sup> on October 5, 2012, seeking en banc rehearing of the D.C. Circuit’s August 21, 2012, decision regarding the CSAPR, which was subsequently denied by the D.C. Circuit on January 24, 2013.

Additionally, EPA itself has stayed the Mercury and Air Toxics Standards (MATS), pending reconsideration. Other remanded rules include the hazardous air pollutant (“MACT”) standards for boilers and cement kilns. EPA has delayed implementation of the boiler MACT rules for more than a year and a half while considering changes to the requirements. The agency has also extended the compliance deadline for the cement kiln MACT by two years.

These actions have had a disruptive effect on certain aspects of the implementation of the 2006 revised PM<sub>2.5</sub> NAAQS.

## New Source Review<sup>76</sup>

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.<sup>77</sup>

EPA promulgated a rule in May 2008<sup>78</sup> that contained several NSR program requirements for sources that emit PM<sub>2.5</sub> and the pollutants that contribute to its formation (precursors), including SIPS modifications to state NSR programs to account for emissions of PM<sub>2.5</sub>. On October 20, 2010, EPA published a final rule amending requirements under the Clean Air Act PSD program

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<sup>73</sup> See U.S. EPA, “Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals,” 76 *Federal Register* 48208-48483, August 8, 2011, <http://www.gpo.gov/fdsys/pkg/FR-2011-08-08/pdf/2011-17600.pdf>. Explanatory and background material can be found on EPA’s website at <http://www.epa.gov/crossstaterule/actions.html>.

<sup>74</sup> *EME Homer City Generation, L.P. v. Environmental Protection Agency*, D.C. Cir., No. 11-1302, August 21, 2012, [http://www.cadc.uscourts.gov/internet/opinions.nsf/19346B280C78405C85257A61004DC0E5/\\$file/11-1302-1390314.pdf](http://www.cadc.uscourts.gov/internet/opinions.nsf/19346B280C78405C85257A61004DC0E5/$file/11-1302-1390314.pdf). See also U.S. EPA’s website “Cross-State Air Pollution Rule (CSAPR)” for this decision and other related documents.

<sup>75</sup> [http://epa.gov/crossstaterule/pdfs/Rehearing\\_Petition\\_617874.pdf](http://epa.gov/crossstaterule/pdfs/Rehearing_Petition_617874.pdf). For status of the petition see EPA website “Cross-State Air Pollution Rule (CSAPR)” <http://epa.gov/crossstaterule/>.

<sup>76</sup> For an overview, including statutory authority and regulations, see EPA’s “New Source Review (NSR)” at <http://www.epa.gov/air/nsr/>.

<sup>77</sup> See Clean Air Act, Part D—Plan Requirements for Nonattainment Areas, §§171-178, codified at 40 C.F.R. 52.24(f)(10). §166 of the CAA authorizes EPA to establish regulations for PSD of any pollutant for which EPA has issued a national standard.

<sup>78</sup> Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM<sub>2.5</sub>), 73 *Federal Register* 28321-28350, May 16, 2008.

for PM<sub>2.5</sub>.<sup>79</sup> This final rule establishes several components addressing air quality modeling and monitoring provisions when making PSD permitting determinations for fine particle pollution. The final rule adds maximum allowable increases in ambient pollutant concentrations or “increments,” which is the mechanism used to estimate significant deterioration of ambient air quality for a pollutant. EPA also added two screening tools, referred to as Significant Impact Levels (SILs) and Significant Monitoring Concentration (SMC) for PM<sub>2.5</sub>. SILs are used to determine whether a proposed source’s emissions will have a “significant” impact on air quality in the area; the SMC may be used to determine if a source must submit to the permitting authority one year of pre-construction air quality monitoring data prior to constructing or modifying a facility.<sup>80</sup>

On May 10, 2011, EPA issued a final rule to repeal a provision in the rule implementing the NSR permitting program for PM<sub>2.5</sub>, known as “the grandfathering provision,” in part in response to petitions<sup>81</sup> to reconsider the May 2008 final NSR rule.<sup>82</sup> The provision allowed applicants for federal PSD permits to rely on requirements for coarse particles (PM<sub>10</sub>) as a surrogate for meeting the permit requirements for PM<sub>2.5</sub> if they applied for, and were awaiting approval for, a permit before July 15, 2008. The EPA decided not to take any action that would end the PM<sub>10</sub> Surrogate Policy. The policy enables sources to make a demonstration of compliance with PSD requirements for PM<sub>10</sub> as a surrogate for requirements for PM<sub>2.5</sub> in light of various technical issues associated with undertaking a PM<sub>2.5</sub> analysis, which EPA has now determined have generally been resolved. States with EPA-approved PSD programs could use the surrogate policy until May 2011, or until EPA approved the revised State Implementation Plan (SIP) for PM<sub>2.5</sub>. The agency had proposed to end the policy which had been in place since 1987, sooner than currently scheduled.<sup>83</sup>

## 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),<sup>84</sup> 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

<sup>79</sup> “Prevention of Significant Deterioration (PSD) for Particulate Matter Less Than 2.5 Micrometers (PM<sub>2.5</sub>)—Increments, Significant Impact Levels (SILs) and Significant Monitoring Concentration (SMC),” 75 *Federal Register* 64864, <http://www.gpo.gov/fdsys/pkg/FR-2010-10-20/pdf/2010-25132.pdf>. See also EPA’s Fact Sheet at <http://www.epa.gov/nsr/documents/20100929factsheet.pdf>.

<sup>80</sup> EPA’s Fact Sheet at <http://www.epa.gov/nsr/documents/20100929factsheet.pdf>.

<sup>81</sup> 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>.

<sup>82</sup> See “Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM<sub>2.5</sub>); Final Rule to Repeal Grandfather Provision,” 76 *Federal Register* 28646-28991, May 18, 2011, <http://www.gpo.gov/fdsys/pkg/FR-2011-05-18/pdf/2011-12089.pdf>. See also EPA’s Fact Sheet at <http://www.epa.gov/air/nsr/documents/20110512grandfatherfs.pdf>.

<sup>83</sup> EPA proposed repealing the “grandfather” provision, February 11, 2010, see “Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers: Proposed Repeal of Grandfathering Provision and End the PM<sub>10</sub> 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>.

<sup>84</sup> 42 U.S.C. 7506(c).



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<sub>2.5</sub> air quality standard and revocation of the annual PM<sub>10</sub> standard.<sup>85</sup> The final rule, which affects implementation of conformity in PM<sub>2.5</sub> and PM<sub>10</sub> nonattainment and maintenance areas, also addresses a court remand concerning hot-spot analyses as they apply to PM<sub>2.5</sub> and PM<sub>10</sub>, as well as to carbon monoxide and nonattainment and maintenance areas.

On March 14, 2012, EPA published a final rule restructuring sections of the conformity rule (40 C.F.R. 93.109 and 93.119) so that existing requirements apply to new or revised NAAQS, and released associated implementation guidance in July 2012. The rule is intended to remove the need to amend the transportation conformity rule merely to reference specific new NAAQS.

## 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 revisions of the PM<sub>2.5</sub> 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.<sup>86</sup> Although EPA and states continue the implementation of the 2006 revised PM<sub>2.5</sub> standards, the EPA recently completed the next round of periodic review of the particulates NAAQS, and on January 15, 2013, EPA published a final rule further revising the PM<sub>2.5</sub> standards.

On November 13, 2009, EPA published its final designations of areas as nonattainment and unclassifiable/attainment for the 2006 24-hour PM<sub>2.5</sub> NAAQS. Publication of a final designation rule for the 2006 24-hour PM<sub>2.5</sub> 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.<sup>87</sup> Delaying publication of the final designation rule resulted in the delay of the expected effective date of April 2009<sup>88</sup> 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

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<sup>85</sup> <http://www.epa.gov/otaq/stateresources/transconf/regs/420b12046.pdf>, see also 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<sub>2.5</sub> NAAQS Nonattainment Areas* (EPA-420-B-09-036, November 2009). 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.

<sup>86</sup> *American Farm Bureau Federation v. U.S. EPA*, No. 06-1410 (D.C. Cir., February 24, 2009).

<sup>87</sup> See footnote 8 and footnote 9.

<sup>88</sup> See EPA's guidance, "Area Designations for 2006 24-Hour PM<sub>2.5</sub> NAAQS - Technical Information," at [http://www.epa.gov/ttn/naaqs/pm/pm25\\_2006\\_techinfo.html](http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html).

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 24-hour PM<sub>2.5</sub> NAAQS.

Within three years of promulgation of the 2006 PM<sub>2.5</sub> NAAQS, all states were required to demonstrate that they have the basic infrastructure and capacity necessary to implement the 2006 PM<sub>2.5</sub> NAAQS. By December 19, 2012, three years following the publication of the final designations, state, local, and tribal governments were to submit 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<sub>2.5</sub> NAAQS designated by EPA in November 2009 overlap with those areas previously designated nonattainment for 1997 PM<sub>2.5</sub> NAAQS, these new designations are based on the *24-hour* standard, whereas the majority of the previous designations were based on the *annual* standard.

EPA anticipated that in many cases emission reductions from implementing national regulations and strategies would provide a framework for helping states achieve attainment with the PM<sub>2.5</sub> NAAQS. However, decisions by the D.C. Circuit to vacate two key federal regulations designed to control emissions of air pollution that causes air quality problems in downwind states, EPA's May 2005 CAIR<sup>89</sup> and its replacement CSAPR published in 2011,<sup>90</sup> have elicited concerns with regard to the implications this may have on the implementation of the 2006 PM<sub>2.5</sub> NAAQS.

Nevertheless, recent air quality trends suggest that several factors, including national pollution control regulations, appear to be contributing to improved air quality. In a February 2012 report, "Our Nation's Air—Status and Trends through 2010,"<sup>91</sup> EPA reported that nationally, annual and 24-hour PM<sub>2.5</sub> concentrations were 24% and 28% lower, respectively, in 2010 compared to 2001. In its February 2012 report, EPA indicated that nationally, annual mean concentrations of SO<sub>2</sub> and NO<sub>x</sub> (both PM<sub>2.5</sub> precursors) decreased 33% and 50%, respectively, between 2001 and 2010. EPA expects air quality to continue to improve with implementation of more recently adopted regulations and states' work to meet current and recently revised national air quality standards. Key regulations include the Locomotive Engines and Marine Compression-Ignition Engines Rule, the Tier 2 Vehicle and Gasoline Sulfur Rule, the Heavy-Duty Highway Diesel Rule, the Clean Air Non-Road Diesel Rule, and the Mobile Source Air Toxics Rule.

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<sub>2.5</sub> NAAQS.

The D.C. Circuit's February 2009 decision regarding challenges to the 2006 PM NAAQS, delays in designating nonattainment areas and implementing the 2006 PM<sub>2.5</sub> NAAQS, impacts of the D.C. Circuit's decisions regarding the 2005 CAIR and 2011 CSAPR transport regulations, and potential implications of EPA's January 2013 revisions to the PM<sub>2.5</sub> NAAQS have prompted

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<sup>89</sup> Promulgated under the CAA, 42 U.S.C. 7401 et seq., see U.S. EPA, "Ambient air quality standards, national—Fine particulate matter and ozone; interstate transport control measures," 70 *Federal Register* 25162, May 12, 2005.

<sup>90</sup> 76 *Federal Register* 48208-48483, August 8, 2011.

<sup>91</sup> U.S. EPA, *Our Nation's Air—Status and Trends through 2010*, EPA-454/R-12-001, February 2012, <http://www.epa.gov/airtrends/2011/>.

increased interest in the 2006 PM<sub>2.5</sub> NAAQS revisions. Implications of the various issues could vary significantly from area to area based on numerous factors. The associated impacts on specific geographical nonattainment areas would be speculative at best. Implementation milestones and attainment deadlines for the 2006 PM<sub>2.5</sub> NAAQS remain an area of concern for many stakeholders and interest groups, as well as Congress.

## Appendix A. Comparative Time Line for Implementing the 1997 and 2006 PM<sub>2.5</sub> NAAQS

The time line presented in **Table A-1** reflects the most recent key milestone dates for implementing the 1997 and the 2006 PM<sub>2.5</sub> NAAQS, including actual completions. These milestones are driven primarily by statutory requirements. The table follows an EPA milestone schedule outlined in an April 1, 2003, memorandum to EPA regional administrators that also provided the nonbinding guidance for implementation of the 1997 PM<sub>2.5</sub> area designations,<sup>92</sup> and the agency's previous and current projected time lines for the 2006 PM<sub>2.5</sub> NAAQS.

**Table A-1. Schedule for Implementation of the 1997 and the 2006 PM<sub>2.5</sub> NAAQS**

Milestones	1997 PM <sub>2.5</sub> NAAQS	2006 PM <sub>2.5</sub> 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 <sub>2.5</sub> 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 (delayed)
EPA promulgates final PM <sub>2.5</sub> implementation rule	April 25, 2007	NA	December 2011 (projected delayed)
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 <http://www.epa.gov/pmdesignations/2006standards/regs.htm>; for EPA's time line as of July 19, 2012, see <http://www.epa.gov/pmdesignations/2006standards/documents/2011-01/timeline.htm>.

<sup>92</sup> EPA memorandum, April 1, 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](http://www.epa.gov/ttn/naaqs/pm/pm25_guide.html).

## Appendix B. Comparison of EPA's Final and Interim Nonattainment Designation Areas for the 2006 24-Hour PM<sub>2.5</sub> NAAQS and the Final Nonattainment Designation Areas for the 1997 PM<sub>2.5</sub> NAAQS

**Table B-1. Nonattainment Areas for the 2006 24-Hour PM<sub>2.5</sub> NAAQS as Identified by EPA in the October 8, 2009, Final Designations and in the December 28, 2008, Status Table, and Nonattainment Designations for the Annual and 24-Hour 1997 PM<sub>2.5</sub> NAAQS**

State/Area Name	2006 PM <sub>2.5</sub> NAAQS		1997 PM <sub>2.5</sub> 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 <sup>a</sup>	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		
Pinal, CA	Pinal (p) (designated February 3, 2011) <sup>b</sup>			
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)		

State/Area Name	2006 PM <sub>2.5</sub> NAAQS		1997 PM <sub>2.5</sub> 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)			
San Francisco Bay Area, CA	Yolo (p)	Yolo (p)		
	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)		
San Joaquin Valley, CA	Sonoma (p)	Sonoma (p)		
	Fresno	Fresno	Fresno	Fresno
	Kern (p)	Kern (p)	Kern (p)	Kern (p)
	Kings	Kings	Kings	Kings
	Madera	Madera	Madera	Madera
	Merced	Merced	Merced	Merced
	San Joaquin	San Joaquin	San Joaquin	San Joaquin
	Stanislaus	Stanislaus	Stanislaus	Stanislaus
	Tulare	Tulare	Tulare	Tulare
Yuba City-Marysville, CA	Sutter	Sutter		
	Yuba (p)	Yuba (p)		
<b>CONNECTICUT</b>				
New York, NY-NJ-CT	Fairfield	Fairfield		Fairfield
	New Haven	New Haven		New Haven
<b>DELAWARE</b>				
Philadelphia- Wilmington, PA-NJ-DE	New Castle	New Castle		New Castle
<b>DISTRICT OF COLUMBIA</b>				
Washington, DC-MD-VA				Entire District

State/Area Name	2006 PM <sub>2.5</sub> NAAQS		1997 PM <sub>2.5</sub> 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)				
<b>GEORGIA</b>				
Atlanta, GA				Barrow
				Bartow
				Carroll
				Cherokee
				Clayton
				Cobb
				Coweta
				De Kalb
				Douglas
				Fayette
				Forsyth
				Fulton
				Gwinnett
				Hall
				Heard (p)
				Henry
				Newton
				Paulding
				Putnam (p)
				Rockdale
				Spalding
				Walton
Chattanooga, AL-TN-GA				Catoosa
				Walker
Macon, GA				Bibb
				Monroe (p)
Rome, GA				Floyd

State/Area Name	2006 PM <sub>2.5</sub> NAAQS		1997 PM <sub>2.5</sub> 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				
Logan, UT-ID	Franklin (p)	Franklin (p)		
Pinehurst, ID		Shoshone (p)		
ILLINOIS				
Chicago-Gary-Lake County, IL-IN		Cook		Cook
		DuPage		DuPage
		Grundy (p)		Grundy (p)
		Kane		Kane
		Kendall (p)		Kendall (p)
		Lake		Lake
		McHenry		McHenry
		Will		Will
Davenport-Moline-Rock Island, IA-IL		Rock Island		
Paducah-Mayfield, KY-IL		Massac (p)		
St. Louis, MO-IL		Madison		Madison
		Monroe		Monroe
		Randolph (p)		Randolph (p)
		St. Clair		St. Clair
INDIANA				
Chicago-Gary-Lake County, IL-IN		Lake		Lake
		Porter		Porter
Cincinnati-Hamilton, OH-KY-IN		Dearborn (p)		Dearborn (p)
Evansville, IN				Dubois
		Gibson (p)		Gibson (p)
		Pike (p)		Pike (p)
		Spencer (p)		Spencer (p)
		Vanderburgh		Vanderburgh
		Warrick		Warrick
Indianapolis, IN		Hamilton		Hamilton
		Hendricks		Hendricks



State/Area Name	2006 PM <sub>2.5</sub> NAAQS		1997 PM <sub>2.5</sub> 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)				
Lafayette-Frankfort, IN Louisville, KY-IN		Johnson		Johnson
		Marion		Marion
		Morgan		Morgan
		Tippecanoe		
		Clark		Clark
		Floyd		Floyd
		Jefferson (p)		Jefferson (p)
Vincennes, IN		Knox		
<b>IOWA</b>				
Davenport-Moline-Rock Island, IA-IL		Scott (p)		
Muscatine, IA		Muscatine (p)		
<b>KENTUCKY</b>				
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		
<b>MARYLAND</b>				
Baltimore, MD		Anne Arundel		Anne Arundel
		Baltimore City		Baltimore City
		Baltimore		Baltimore
		Carroll		Carroll
		Harford		Harford
		Howard		Howard

State/Area Name	2006 PM <sub>2.5</sub> NAAQS		1997 PM <sub>2.5</sub> 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 Washington
Martinsburg, WV- Hagerstown, MD				
<b>MICHIGAN</b>				
Detroit-Ann Arbor, MI	Livingston Macomb Monroe Oakland St. Clair Washtenaw Wayne	Livingston Macomb Monroe Oakland St. Clair Washtenaw Wayne		Livingston Macomb Monroe Oakland St. Clair Washtenaw Wayne
Grand Rapids, MI		Kent Ottawa		
<b>MISSOURI</b>				
St. Louis, MO-IL		Franklin Jefferson St. Charles St. Louis St. Louis City		Franklin Jefferson St. Charles St. Louis St. Louis City
<b>MONTANA</b>				
Libby, MT		Lincoln (p)		Lincoln (p)
<b>NEW JERSEY</b>				
New York, NY-NJ-CT	Bergen Essex Hudson Mercer Middlesex Monmouth Morris	Bergen Essex Hudson Mercer Middlesex Monmouth Morris		Bergen Essex Hudson Mercer Middlesex Monmouth Morris

State/Area Name	2006 PM <sub>2.5</sub> NAAQS		1997 PM <sub>2.5</sub> 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
<b>NEW YORK</b>				
<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
<b>NORTH CAROLINA</b>				
<i>Hickory, NC</i>				Catawba
<i>Greensboro-Winston Salem-High Point, NC</i>				Davidson
				Guilford
<b>OHIO</b>				
<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

State/Area Name	2006 PM <sub>2.5</sub> NAAQS		1997 PM <sub>2.5</sub> 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)				
Columbus, OH	Medina	Medina		Medina
	Portage	Portage		Portage
	Summit	Summit		Summit
		Coshocton (p)		Coshocton (p)
		Delaware		Delaware
		Fairfield		Fairfield
		Franklin		Franklin
		Licking		Licking
Dayton-Springfield, OH		Clark		Clark
		Greene		Greene
		Montgomery		Montgomery
Huntington-Ashland, WV-KY-OH		Adams (p)		Adams (p)
		Gallia (p)		Gallia (p)
		Lawrence		Lawrence
		Scioto		Scioto
Parkersburg- Marietta, WV-OH		Washington		Washington
Steubenville- Weirton, OH-WV	Jefferson	Jefferson		Jefferson
Wheeling, WV-OH				Belmont
Youngstown, OH		Mahoning		
		Trumbull		
<b>OREGON</b>				
Klamath Falls, OR	Klamath (p)	Klamath (p)		
Oakridge, OR	Lane (p)	Lane (p)		
<b>PENNSYLVANIA</b>				
Allentown, PA	Lehigh	Lehigh		
	Northampton	Northampton		
Harrisburg-Lebanon-Carlisle, PA	Cumberland	Cumberland		c
	Dauphin	Dauphin		
	Lebanon	Lebanon		

State/Area Name	2006 PM <sub>2.5</sub> NAAQS		1997 PM <sub>2.5</sub> 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)			
Johnstown, PA	York			
	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
Pittsburgh-Beaver Valley, PA	Montgomery	Montgomery		Montgomery
	Philadelphia	Philadelphia		Philadelphia
	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
<b>TENNESSEE</b>				
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 <sub>2.5</sub> NAAQS		1997 PM <sub>2.5</sub> 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)				
<b>UTAH</b>				
<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)		
<b>VIRGINIA</b>				
<i>Washington, DC-MD-VA</i>			Alexandria City	
			Arlington	
			Fairfax City	
			Fairfax Co	
			Falls Church City	
			Loudoun	
			Manassas City	
			Manassas Park City	
			Prince William	
<b>WASHINGTON</b>				
<i>Seattle-Tacoma, WA</i>	Pierce (p)	Pierce (p)		
<b>WEST VIRGINIA</b>				
<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 <sub>2.5</sub> NAAQS		1997 PM <sub>2.5</sub> 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
<b>WISCONSIN</b>				
Green Bay, WI		Brown		
Madison-Baraboo, WI		Columbia (p)		
		Dane		
Milwaukee-Racine, WI	Milwaukee	Milwaukee		
	Racine	Racine		
	Waukesha	Waukesha		
<b>TOTALS</b>				
	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.

- In the September 20, 2010, *Federal Register*, EPA announced its determination that a three-county (Jefferson, Shelby, and portion of Walker) Alabama nonattainment area (Birmingham) has attaining data for the 2006 24-hour PM<sub>2.5</sub> NAAQS (75 *Federal Register* 57186, September 20, 2010). The clean air data determination was based on certified ambient air monitoring data showing the area monitored as in attainment for the 2006 24-hour PM<sub>2.5</sub> NAAQS based on 2007-2009 data.
- In a February 3, 2011 final notice, EPA published designations of three areas as “nonattainment” or “unclassifiable/attainment” for the 2006 24-PM<sub>2.5</sub> NAAQS that were deferred in the November 13, 2009, promulgated designations, 76 *Federal Register* 6056-6066, <http://www.epa.gov/pmdesignations/2006standards/documents/2011-01/FR-2011-01.pdf>.
- 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<sub>2.5</sub> NAAQS was in attainment (73 *Federal Register* 49949, August 25, 2008). The determination was based on certified ambient air monitoring data showing the area monitored as in attainment for the 1997 PM<sub>2.5</sub> NAAQS since the 2004-2006 monitoring period.

## Appendix C. Tribal Lands: U.S. EPA Designations for the 2006 PM<sub>2.5</sub> NAAQS 24-Hour Standard

**Table C-1. EPA's October 8, 2009, Geographic Designations for 2006 PM NAAQS: Tribes in 24-Hour PM<sub>2.5</sub> Nonattainment Areas**

State/Area Name	Tribes
<b>CALIFORNIA</b>	
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
<b>WASHINGTON</b>	
Seattle-Tacoma, WA	Puyallup Tribe of the Puyallup Reservation, Washington
<b>WISCONSIN<sup>a</sup></b>	
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 C.F.R. 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.

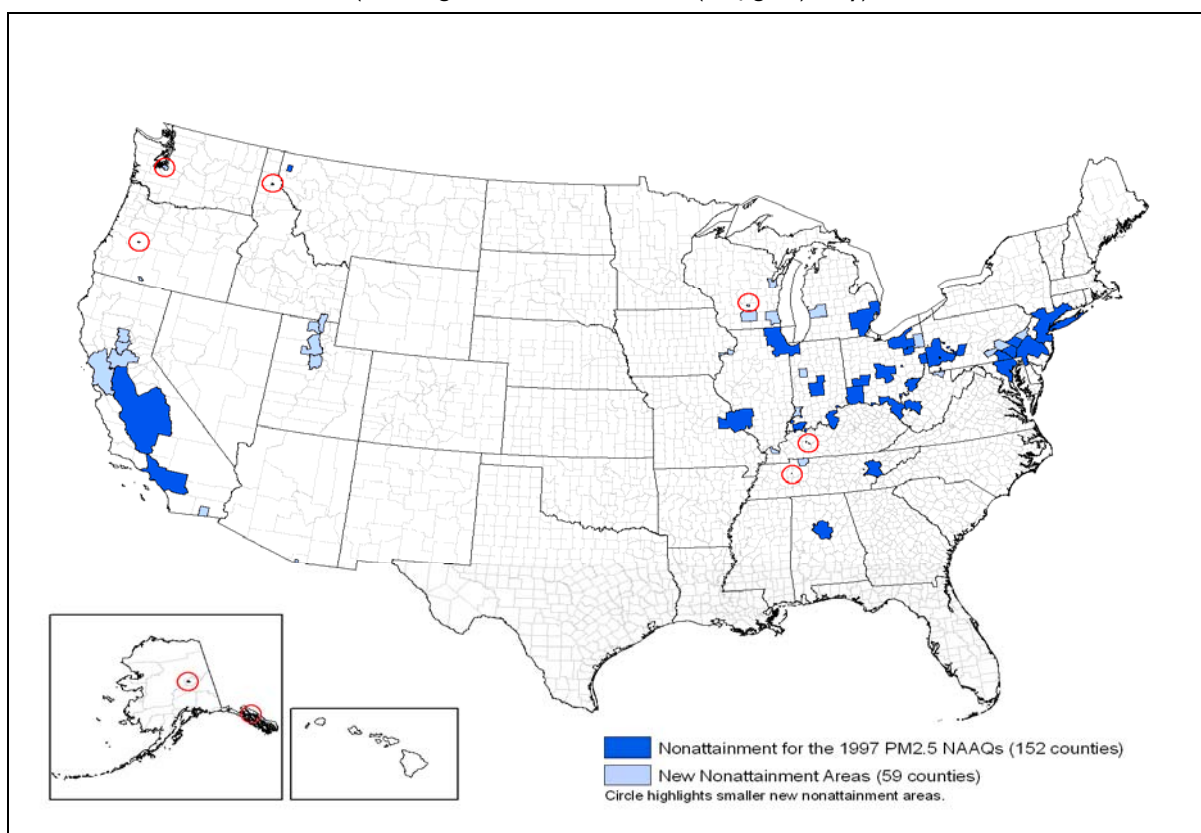


## Appendix D. Map Depicting Counties in Nonattainment for the 2006 24-Hour PM<sub>2.5</sub> NAAQS: EPA's Designation as of December 22, 2008

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<sub>2.5</sub> standard.<sup>93</sup> These designations, based on air quality monitoring data for calendar years 2005 through 2007, are indicated in the map below for purposes of comparison with the November 2009 final designations.

**Figure D-I. Counties in Nonattainment for the 24-Hour 2006 PM<sub>2.5</sub> NAAQS: EPA's Designations as of December 22, 2008**

(violating the 24-hour standard (35 µg/m<sup>3</sup>) only)



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

<sup>93</sup> See "Area Designations for 2006 24-Hour Fine Particulate (PM<sub>2.5</sub>) 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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