UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

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MEMORANDUM

SUBJECT: Implementation Guidance for the 2006 24-Hour Fine Particle ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS)

OFFICE OF AIR QUALITY PLANNING AND STANDARDS

FROM: Stephen D. Page, Director
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TO: Regional Air Directors, Regions I-X

Introduction

The purpose of this memorandum is to provide guidance regarding the development of state implementation plans (SIPs) to demonstrate attainment with the 2006 24-hour $PM_{2.5}$ NAAQS.[1] In 2006, the 24-hour $PM_{2.5}$ standard was strengthened from a level of 65 micrograms per cubic meter (ug/m^3) to a level of 35 ug/m^3. The level of the annual standard remained unchanged at 15 ug/m^3. The designation of 31 nonattainment areas for the 24-hour standard became effective on December 14, 2009, and SIPs for these areas are due no later than three years from the effective date of designation, by December 14, 2012.[2]

The significant health and welfare benefits associated with reducing $PM_{2.5}$ concentrations across the country have been widely recognized since the initial fine particle NAAQS were established in 1997. The benefits of attaining the 1997 $PM_{2.5}$ NAAQS and improving health and visibility were estimated to be $20-160 billion annually, as compared to an annual cost of $7 billion. The benefits of attaining the 2006 24-hour $PM_{2.5}$ NAAQS, when considered incrementally to the 1997 NAAQS, were estimated to be $9-76 billion annually, as compared with an annual cost of $5.4 billion.[3]

In April 2007, the U.S. Environmental Protection Agency issued a detailed implementation rule to assist states with the development of SIPs to demonstrate attainment with the annual and 24-hour 1997 $PM_{2.5}$ NAAQS (the "2007 $PM_{2.5}$ Implementation Rule").[4] We believe that the overall framework and policy approach of the 2007 $PM_{2.5}$ Implementation Rule continues to provide effective and appropriate guidance on the EPA's interpretation of the general statutory requirements that states should address in their SIPs. In general, the EPA believes that the interpretations of the statute in the framework of the 2007 $PM_{2.5}$ Implementation Rule are relevant to the statutory requirements for the 2006 24-hour $PM_{2.5}$ NAAQS, for which SIPs are due by December 14, 2012. However, in light of new information that has

[1] See 71 FR 61144 (October 17, 2006). Compliance with the 2006 24-hour $PM_{2.5}$ NAAQS is determined for a monitoring site by rank-ordering all 24-hour monitoring samples taken over the course of a year, and selecting the 98th percentile value (e.g., the 3rd highest value if there are up to 120 samples during the year). The design value for the site is then calculated by averaging the 98th percentile value for each of three consecutive years. Also note that a $PM_{2.5}$ secondary standard was set at the same level as the new primary standard.

[2] An additional nonattainment area (a portion of Pinal County, Arizona) was designated on February 3, 2011, with an effective date of March 7, 2011 (76 FR 6056). The attainment demonstration SIP for this area will be due on March 7, 2014.

[3] The Regulatory Impact Analysis for the 2006 24-hour $PM_{2.5}$ NAAQS is available at: http://www.epa.gov/ttn/ecas/ria.html.

[4] See 72 FR 20586 (April 25, 2007).

become available since the issuance of the 2007 $PM_{2.5}$ Implementation Rule, this memorandum provides additional guidance to assist states with development of their SIPs for the 2006 24-hour $PM_{2.5}$ NAAQS.

Fine particle concentrations in many cities are affected by a combination of regional emissions (from sources like power plants) and local emissions (from sources like local industry, motor vehicles, and residential wood combustion). The regulatory impact analysis conducted for the 2006 24-hour $PM_{2.5}$ NAAQS placed additional emphasis on the air quality improvements that could be achieved from local reductions. We have observed that some western nonattainment areas have elevated levels of organic carbon on high fine particle days in the winter time.[5] Potential contributing sources of these emissions include the combustion of wood and other types of biomass in stoves and the use of hydronic heaters for residential and institutional heating. For these areas, SIPs for the 2006 24-hour $PM_{2.5}$ NAAQS may need to include a heavier reliance on local emission reduction measures than SIPs for the 1997 $PM_{2.5}$ NAAQS. Therefore, this memorandum includes guidance for states that have nonattainment areas with exceedances occurring exclusively during one season of the year.

The first section of this memorandum reviews the overall framework and basic statutory requirements for SIPs to demonstrate attainment with the 2006 24-hour $PM_{2.5}$ NAAQS, consistent with the 2007 $PM_{2.5}$ Implementation Rule. This section also suggests additional considerations for states in the development of their SIPs. The next sections provide guidance to states regarding the use of emissions inventories (including seasonal inventories, for some areas) for SIP planning (e.g., reasonable further progress (RFP) plans and attainment demonstrations). The last section describes how specific interpretations of the statute as outlined in various provisions in the regulatory text of the 2007 $PM_{2.5}$ Implementation Rule could help inform attainment plans for the 2006 24-hour $PM_{2.5}$ NAAQS.

Please share this guidance with the state agencies in your Region. It is important to note that any guidance contained herein is not binding on the states, the public, or the EPA.

Overall Framework for State Implementation Plans to Demonstrate Attainment

SIPs for areas violating the 2006 24-hour $PM_{2.5}$ NAAQS should meet the basic Clean Air Act (CAA) requirements set forth in section 172. The EPA outlined its interpretation of many of these provisions in the 2007 $PM_{2.5}$ Implementation Rule. In addition to regulatory provisions, the EPA provided substantial general guidance for attainment plans for $PM_{2.5}$ in the preamble to the final the 2007 $PM_{2.5}$ Implementation Rule. This section of this document includes details regarding these interpretations, and provides additional guidance, where applicable for purposes of the 2006 24-hour $PM_{2.5}$ NAAQS.

Under the CAA, each attainment plan needs to demonstrate that the area will attain the NAAQS "as expeditiously as practicable," but no later than five years from the effective date of the designation of the area. See section 172(a)(2)(A). If attainment within five years is considered impracticable by a state due to the severity of an area's air quality problem and the lack of available control measures, the state may propose in its attainment plan an attainment date of more than five years but not more than ten years from designation. The EPA will evaluate the appropriateness of the state's proposed attainment date during its rulemaking action on the attainment plan submission.

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[5] Frank, N. The Chemical Composition of $PM_{2.5}$ to Support $PM_{2.5}$ Implementation. http://www.epa.gov/ttn/naaqs/pm/presents/current_pm_monitoring_data_for_speciation-neil_frank.ppt, presented at "The $PM_{2.5}$ Implementation Program and the Area Designation Process for the 2006 $PM_{2.5}$ Standards Training Workshop Presentations," Chicago IL, June 20-21, 2007.

To determine the most expeditious attainment date for an area, we recommend that states first identify emission reduction programs that have already been adopted and are being implemented at the federal, state, and local levels. States could then use this information to evaluate, through air quality modeling or other technical analyses, the amount of air quality improvement such programs are projected to provide for the nonattainment area within five years of the date of designation. For example, the EPA finalized the Transport Rule (also known as the Cross State Air Pollution Rule) in July 2011, which is expected to achieve significant reductions in sulfur dioxide (SO_2) and nitrogen oxides (NO_x) emissions from central and eastern states by 2014.[6] In addition, the EPA has promulgated a number of regulations over the past decade to reduce emissions from many types of mobile sources (e.g., Tier 2 on-road vehicle and standards; the 2007 heavy duty highway vehicle, engine and on-road diesel fuel rule; various non-road engine, vehicle and equipment regulations; the locomotive and marine engine rule; and the ocean-going vessel rule). All of these regulations will provide emission reductions over a broad region, which are expected to help many nonattainment areas attain the 2006 24-hour $PM_{2.5}$ NAAQS.[7]

Next, we recommend that states evaluate additional control measures and control technologies—reasonably available control measures (RACM) and reasonably available control technology (RACT)—for an area. Under the CAA, states are required to impose RACM and RACT that can be implemented on sources located in nonattainment areas and to adopt enforceable regulations to ensure these areas will attain as expeditiously as practicable. See section 172(c)(1). The 2007 $PM_{2.5}$ Implementation Rule requires that states evaluate potential RACM/RACT control measures for sources of direct $PM_{2.5}$, SO_2, and NO_x.[8] We recommend that states follow a similar approach for identifying which pollutants to control in a given nonattainment area for the 2006 24-hour $PM_{2.5}$ NAAQS. When acting upon a state's attainment plan, the EPA will evaluate the state's approach for determining which pollutants to control.

The 2007 $PM_{2.5}$ Implementation Rule also requires that after January 1, 2011, for purposes of establishing emissions limits for RACT and RACM, states establish such limits taking into consideration the condensable fraction of direct $PM_{2.5}$ emissions.[9] The reason for this delay in connection with the 1997 $PM_{2.5}$ NAAQS was the need for EPA to reevaluate the test methods for measuring condensable emissions. On December 21, 2010 (75 FR 80118), the EPA published a final notice with the revised Methods 201A and 202 providing for a more accurate emissions test. Thus, the EPA believes that to meet the statutory requirements of section 172, states should address condensable emissions in the context of evaluating RACM/RACT for affected sources for the 2006 24-hour $PM_{2.5}$ NAAQS.

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[6] The final Transport Rule was published in the Federal Register on August 8, 2011 (76 FR 48208). Through this rule, emission reductions are expected to be achieved beginning in 2012 (76 FR 48214). On December 30, 2012, the District of Columbia Circuit Court (the Court) issued an order addressing the status of the Transport Rule and the CAIR in response to motions filed by numerous parties seeking a stay of the Transport Rule pending judicial review. In that order, the Court stayed the Transport Rule pending resolution in 2012 of the petitions for review of that rule in EME Homer Generation, L.P. v. EPA (No. 11-1302 and consolidated cases).

[7] Note that section 110(a)(2)(D)(i)(I) of the CAA requires a state to ensure that emissions from sources or activities within the state do not contribute significantly to nonattainment in, or interfere with maintenance by, any other state.

[8] The 2007 $PM_{2.5}$ Implementation Rule includes a presumption that sources of NO_x must be evaluated for control measures, unless the state and the EPA demonstrates that NO_x emissions from the state do not significantly contribute to $PM_{2.5}$ concentrations in the nonattainment area. It also includes a presumption that the state does not need to evaluate sources of volatile organic carbon (VOC) or ammonia for control measures, unless the state or the EPA demonstrates that VOC or ammonia emissions from the state do significantly contribute to $PM_{2.5}$ concentrations in the nonattainment area. The EPA believes that these same presumptions would be appropriately applied with respect to the 2006 24-hour $PM_{2.5}$ NAAQS as well.

[9] See section 51.1002(c) of the 2007 $PM_{2.5}$ Implementation Rule.

Section 172 requires states to adopt measures that are RACM/RACT for the specific nonattainment area. In accordance with section 172, the preamble of the 2007 $PM_{2.5}$ Implementation Rule provides extensive guidance for considering technical and economic feasibility for potential control measures.[10] We recommend that states follow a similar approach to evaluate RACM/RACT for the 2006 24-hour $PM_{2.5}$ NAAQS. Potential measures that are reasonably available considering technological and economic feasibility would need to be adopted as RACM/RACT if, considered collectively, they would advance the attainment date by one year or more. The EPA has long taken the interpretation that section 172 of the CAA does not require adoption of measures that could not collectively advance attainment by at least a year.[11]

We recommend that a state's plan indicates whether the area can attain within five years of designation on the basis of emission reductions from existing programs and any new RACM/RACT measures that could be adopted. The EPA believes that while areas projected to attain within five years of designation as a result of modeling of existing national measures should still be required to conduct a RACT and RACM analysis, such areas may be able to conduct a limited RACT and RACM analysis that does not involve additional air quality modeling. A limited analysis of this type could involve the review of available reasonable measures, the estimation of potential emissions reductions, and the evaluation of the time needed to implement these measures.[12]

If the state determines, based on the severity of its nonattainment problem and the feasibility of pollution control measures, that it cannot attain the NAAQS within five years, then it would need to conduct further analyses to determine what attainment date (e.g., between six and ten years) would represent attainment "as expeditiously as practicable." In order to support a requested attainment date of more than five years after the effective date of designation, the state should ensure that it has done a thorough evaluation of potential RACM/RACT measures. The state analysis should demonstrate that sufficient control measures could not be adopted and implemented cumulatively in order to establish an attainment date at least one year earlier.

The 2007 $PM_{2.5}$ Implementation Rule identifies a number of key source categories that can contribute to fine particle concentrations across the country. It recognizes that each nonattainment area has its own unique characteristics and mix of sources contributing to the problem. For this reason, the 2007 $PM_{2.5}$ Implementation Rule neither requires specific control measures to be implemented in every nonattainment area, nor includes a specific source size threshold for the RACM/RACT analysis. The rule recognizes, however, that a state needing significant emissions reductions to attain the NAAQS in a given area will likely need to evaluate controls for smaller sources, while a state with an area that exceeds the NAAQS by only one microgram per cubic meter may not. We believe that a similar approach would be appropriate for the 2006 24-hour $PM_{2.5}$ NAAQS. Accordingly, we recommend that states with more severe nonattainment problems evaluate controls for smaller sources.

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[10] In June 2007, Earthjustice filed a petition for reconsideration of the 2007 $PM_{2.5}$ Implementation Rule, which asserts that the final rule revised well-established criteria used to determine the economic feasibility of controls being considered for RACT (i.e., that a source in a particular source category should be able to afford emission controls similar to controls applied by other sources in that same category) without any explanation of the legal or policy arguments in support of the new interpretation of the statute. On April 25, 2011, EPA granted the petition for reconsideration on this issue and intends to address the petition soon.

[11] See 57 FR 13498, 13560 (April 15, 1992) and 44 FR 20372, 20374 (April 4, 1979). In addition, the EPA has consistently interpreted RACM as a collection of measures that would advance the attainment date by at least 1 year, and the courts have determined that the statutory RACM requirement is ambiguous and deferred to EPA's interpretation of the requirement. See Sierra Club v. EPA, 314 F.3d 735, 744 (5th Cir. 2002) and Sierra Club v. EPA, 294 F.3d, 155 162 (D.C. Cir. 2002).

[12] See 72 FR 20612-20613 of the 2007 $PM_{2.5}$ Implementation Rule.

Air quality modeling is commonly used to demonstrate the level of air quality improvement that is projected from implementation of existing emission reduction programs and additional RACM/RACT measures under consideration. The details of emission inventory processing for attainment demonstrations and air quality modeling approaches are addressed in the EPA's modeling guidance.[13]

The preamble to the 2007 $PM_{2.5}$ Implementation Rule includes the consideration of RACM/RACT for sources participating in a regional trading program. Specifically, the preamble established a presumption that compliance with the Clean Air Interstate Rule (the CAIR) would satisfy RACM/RACT requirements for SO_2 and NO_x emissions from electric generating units (EGUs) in states participating in the CAIR cap-and-trade program for such emissions.[14] The rule indicated that states could presume that EGUs located within a given nonattainment area were meeting the RACM/RACT requirement, based solely upon a regional program that imposed controls on sources both within and outside designated nonattainment areas.

In June 2007, Earthjustice filed a petition that raised objections to this guidance and asserted that under the CAA, compliance with a regional trading program, such as the CAIR, should not be presumed to satisfy RACM/RACT requirements for individual EGU sources located in nonattainment areas. On a related issue regarding whether compliance with the NO_x SIP Call constituted RACT for sources in nonattainment areas, in 2009 the United States Court of Appeals for the District of Columbia Circuit held that allowing use of the NO_x SIP call to constitute RACT without any locally applicable analysis regarding the equivalence of NO_x SIP Call and RACT reductions: "is inconsistent with the Clean Air Act . . . in allowing participation in a regional cap-and-trade program to satisfy an area-specific statutory mandate."[15] In light of this decision, on April 25, 2011, the EPA granted the Earthjustice petition for reconsideration of the $PM_{2.5}$ presumption that CAIR satisfied RACM/RACT requirements for individual EGU sources located in nonattainment areas. For purposes of establishing RACT for EGU sources for the 2006 24-hour $PM_{2.5}$ NAAQS, states wishing to rely on regional trading programs should demonstrate that any such program produces RACT-level reductions within the nonattainment area.

As mentioned earlier, it is likely that SIPs for the 2006 24-hour $PM_{2.5}$ NAAQS may need to include a greater emphasis on reducing emissions from local sources as compared to plans to attain the 1997 $PM_{2.5}$ NAAQS. The EPA recommends that states consider studies in the published literature, which have indicated that emission reductions of direct $PM_{2.5}$ produce higher estimated health benefits per ton than reductions of other pollutants, such as SO_2 or NO_x.[16] In addition, there are studies available that provide methods for maximizing health benefits and minimizing risk inequality in designing local scale air quality plans.[17]

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[13] See the EPA Office of Air Quality Planning and Standards, April 2007. Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze. (EPA-454/B-07-002). See also "Update to the 24 Hour $PM_{2.5}$ NAAQS Modeled Attainment Test" available at http://www.epa.gov/ttn/scram/guidance/guide/Update to the 24-hour $PM_{2.5}$ Modeled Attainment Test.pdf.

[14] See $PM_{2.5}$ Implementation Rule, 72 FR 20623–5.

[15] See NRDC v. EPA, 571 F.3d 1245 (D.C. Cir. 2009).

[16] Fann, N., Fulcher, C., and B. Hubbell, 2009. The Influence of location, source, and emission type in estimates of the human health benefits of reducing a ton of air pollution. Air Quality, Atmosphere & Health. Volume 2, Number 3, 169-176, June 2009.

[17] Fann et. al., 2011. Maximizing health benefits and minimizing inequality: incorporating local-scale data in the design and evaluation of air quality policies. Society for Risk Analysis, vol. 31, no. 6, p. 908–922, June 2011.

After conducting a RACM/RACT analysis, the state needs to include a plan showing that the area will make ongoing RFP toward attainment as required by section 172(c)(2), which is commonly expressed in terms of incremental emission reductions and air quality improvement by certain interim milestone years.[18] (RFP issues are discussed in greater detail later in this guidance).

All SIPs also should include contingency measures that would take effect without further action by the state or the EPA in the event that the area fails to meet an RFP milestone or to attain by its attainment date. See CAA section 172(c)(9). Contingency measures should provide for emission reductions that would result in a level of air quality improvement comparable to one year of improvement to be achieved by the submitted SIP. (Contingency measures are discussed in greater detail later in this guidance).

Other programs required under the CAA to be implemented in any nonattainment area include new source review, transportation conformity, and general conformity. These programs are not discussed in detail in this memorandum. Each program is governed by a series of separate regulations and guidance documents. Information on new source review can be found at: http://www.epa.gov/nsr. In addition, information on transportation conformity, including the links to the current regulations and relevant guidance documents, can be found at: http://www.epa.gov/otaq/stateresources/transconf/index.htm. For information on general conformity, please visit: http://www.epa.gov/air/genconform/background.html.

Emission Inventory Components for SIP Development

Emission inventory data serve as the foundation for various types of analyses that enable states to estimate the degree to which different source sectors contribute to the nonattainment problem, as well as to estimate the air quality improvement that can be achieved through different control measures. The EPA recommends that states use the best available, current emissions inventory information for SIP development. High quality emission inventory data are essential for the development of an effective attainment demonstration. Emission inventories should be consistent with the nature of the air quality problem and the types of emission reduction strategies that will be implemented and relied upon as part of the plan.

Emission inventory data element requirements are codified in 40 CFR Part 51, Subpart A. Under this regulation, states are required to provide annual statewide inventory data for selected categories, regardless of an area's attainment status. Through 40 CFR Part 51, Subpart A, states are required to report primary (i.e., "direct") $PM_{2.5}$, which is defined as the sum of filterable $PM_{2.5}$ and condensable PM.[19] This regulation also requires reporting of SO_2, NO_x, volatile organic compounds (VOCs), and ammonia—potential precursors to $PM_{2.5}$. States submit these emissions data to EPA electronically, and the EPA merges these data with emissions data from other sources to form the national emissions inventory (NEI) every three years.

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[18] The 2007 $PM_{2.5}$ Implementation Rule states that an approvable implementation plan (submitted three years after designation) which shows the area will attain within five years after designation will be deemed to meet the RFP requirement. The EPA believes a similar interpretation would be appropriate for the 2006 24-hour $PM_{2.5}$ NAAQS.

[19] Under 40 CFR Part 51, Subpart A, filterable $PM_{2.5}$ is defined as particles that are directly emitted by a source as a solid or liquid at stack or release conditions and captured on the filter of a stack test train. Filterable $PM_{2.5}$ is particulate matter with an aerodynamic diameter equal to or less than 2.5 micrometers. Condensable PM is defined as material that is vapor phase at stack conditions, but which condenses and/or reacts upon cooling and dilution in the ambient air to form solid or liquid PM immediately after discharge from the stack. Note that all condensable PM, if measureable and present from a source, is typically in the $PM_{2.5}$ size fraction, and therefore all of it is a component of both primary $PM_{2.5}$ and primary PM_{10}.

CAA section 172(c)(3) includes the emissions inventory requirements for nonattainment areas. Under this section of the CAA, inventories for the nonattainment area must include a comprehensive, accurate, current accounting of actual emissions from all sources in the nonattainment area. The EPA believes that by requiring an accounting of actual emissions from all sources, the language in section 172(c)(3) is intended to include all emissions that contribute to the formation of a particular NAAQS pollutant. Therefore, for the 2006 24-hour $PM_{2.5}$ NAAQS, this would include direct $PM_{2.5}$ (both filterable $PM_{2.5}$ and condensable PM), as well as potential precursors (SO_2, NO_x, VOCs, and ammonia).

We expect that for many nonattainment areas, the annual statewide inventories that are developed under 40 CFR Part 51, Subpart A will serve as an appropriate starting point for the emissions inventories used for SIP development. For example, a state may choose to refine the annual statewide inventory to focus on particular sources within a nonattainment area. Although annual statewide inventories are required under 40 CFR Part 51, Subpart A, we believe that it may be appropriate in certain circumstances for states to use seasonal inventories for SIP development. More information regarding the use of seasonal inventories is included in the section "The Use of Seasonal Versus Annual Inventories."

There are several different types of inventories that are developed for SIP planning. States usually submit these inventories to the EPA in conjunction with the SIP revision they support, such as an attainment demonstration, an RFP plan, or a maintenance plan. If deemed appropriate, the EPA approves the inventory into the state's SIP. In light of this formal approval process, the EPA requires these inventories to contain thorough documentation of how the emission estimates were prepared.

A brief description of the different types of emission inventories used for SIP development is provided below. These inventories are not developed at the same time, but rather, are developed over a number of years as SIP revisions become due.

→ *Base Year Inventory for the Nonattainment Area.* This inventory is commonly used as a starting point for both the attainment demonstration and the RFP plan for an area. As required under section 172(c)(3), this inventory should include a comprehensive, accurate, current accounting of actual emissions from all sources in the nonattainment area (i.e., point, nonpoint area, on-road, and non-road sources). The base year inventory should represent emissions for one of the three years on which the area was designated nonattainment. We recommend that to meet the statutory requirements of section 172(c)(3), the base year inventory for the nonattainment area includes emissions of direct $PM_{2.5}$ (both filterable $PM_{2.5}$ and condensable PM), as well as potential precursors (SO_2, NO_x, VOCs, and ammonia).

→ *Projected Attainment Year Inventory for the Nonattainment Area.* The projected attainment year inventory includes estimated emissions for all types of emission sources located in the nonattainment area for the year in which the area is expected to attain the NAAQS, consistent with the attainment demonstration due three years after nonattainment designation. This inventory includes projected emissions for the attainment year, taking into consideration assumptions about emission changes expected since the base year, as well as any expected emission reductions from existing control measures, and any new measures that may be adopted as part of the local area attainment plan. The projected attainment year inventory for the nonattainment area can be used to calculate emissions milestones for RFP plans and motor vehicle emissions budgets, as needed for a particular area. As such, we recommend that the projected attainment inventory for the nonattainment area includes direct $PM_{2.5}$, SO_2, presumptively NO_x, as well as other precursors that have been determined to be significant through the area's SIP development process.

→ *RFP Inventories.* Per section 172(c)(2), states must include a plan showing that the area will make ongoing RFP toward attainment, which is commonly expressed in terms of incremental emission reductions and air quality improvement by certain interim milestone years. The EPA recommends that the RFP inventories include direct $PM_{2.5}$, SO_2, and presumptively NO_x, as well as other precursors that have been determined to be significant through the area's SIP development process.[20] The 2007 $PM_{2.5}$ Implementation Rule provides guidance on determining target emission reduction levels to be achieved by interim milestone years for those pollutants included in the attainment demonstration. It also discusses an alternative approach in which a different mix of pollutant changes would be acceptable if it is expected to provide an approximately equivalent level of air quality improvement.

→ *Motor Vehicle Emissions Budgets.* Motor vehicle emissions budgets ("budgets") are used for transportation conformity determinations and typically reflect emissions from on-road mobile sources included in the attainment year and any RFP inventories for the nonattainment area. They are used in analyses to determine whether a transportation plan or transportation improvement program is consistent with the SIP and therefore would not cause or contribute to a violation of the NAAQS, delay timely attainment, or interfere with any interim milestones. The EPA recommends that motor vehicle emissions budgets include direct $PM_{2.5}$ and presumptively NO_x, as well other precursors that have been determined to be significant through the area's SIP development process.[21] For a further discussion on motor vehicle emissions budgets for $PM_{2.5}$ precursors see 70 FR 24283-5 and 24287.

→ *Attainment Demonstration Modeling Inventories*. These inventories include detailed spatial and temporal elements needed to support air quality modeling, and in some cases, use methods that estimate emissions on a daily or hourly basis. There are two types of attainment demonstration modeling inventories:

1) Base Year (Baseline) Attainment Demonstration Inventory for Modeling. The base year inventory for attainment demonstration modeling commonly represents emissions from an area (sometimes a multi-state area) that may contribute to fine particle concentrations in the nonattainment area. The base year inventory should represent the best available inventory information, but the state has flexibility in determining the specific year to use.[22] The availability of good quality meteorological information and complete air quality data for the same base year is also an important consideration in selecting a base year to use. For purposes of photochemical modeling, we recommend that states include direct $PM_{2.5}$ (both

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[20] The pollutant coverage of RFP assessments is determined on an area-specific basis according to each area's attainment demonstration. In addition, for demonstrating RFP, states may choose to apply various control levels to various pollutants, so long as overall emission reductions are adequate. See 72 FR 20638-20639 of the 2007 $PM_{2.5}$ Implementation Rule for more information.

[21] The EPA does not expect that states will establish motor vehicle emissions budgets for SO_2 because on-road emissions of SO_2 are at *de minimis* levels.

[22] In some cases, the base year (baseline) attainment demonstration inventory selected for use in the attainment demonstration may be a different year from the base year inventory for the nonattainment area mentioned above. This could happen if, for example, meteorological conditions were abnormal during the selected base year inventory for the nonattainment area. Attainment demonstration modeling seeks to use meteorological years or episodes that are generally conducive to $PM_{2.5}$ formation. See the EPA's $PM_{2.5}$ modeling guidance for more information.

filterable $PM_{2.5}$ and condensable PM), as well as potential precursors (SO_2, NO_x, VOCs, and ammonia) in order to ensure that $PM_{2.5}$ concentrations are accurately modeled.[23]

2) Modeled (Projected) Attainment Year Inventory for Demonstrating Attainment. This inventory represents projected future year emissions for the overall modeling domain (sometimes a multi-state area), taking into consideration assumptions about emission changes expected since the base year, as well as any expected emission reductions from existing control measures, and any new measures that may be adopted as part of the local area attainment plan. Air quality modeling analyses evaluate the projected change in future year air quality concentrations in nonattainment areas relative to air quality concentrations observed in the base year. For purposes of photochemical modeling, we recommend that states include direct $PM_{2.5}$ (both filterable $PM_{2.5}$ and condensable PM), as well as potential precursors (SO_2, NO_x, VOCs, and ammonia) in order to ensure that $PM_{2.5}$ concentrations are accurately modeled.[24]

→ *Maintenance Plan Inventories.*[25] When an area has attained the standard, the state may submit a request to redesignate that area from nonattainment to attainment. The requirements for a request for redesignation are outlined in section 107(d)(3)(E) of the CAA.

These requirements include:

- The EPA determines that the area has attained the NAAQS (i.e., the most recent three years of complete quality assured data in AIRS-AQS show attainment);
- The EPA has fully approved the area's applicable implementation plan under section 110(k) of the CAA;
- The EPA determines the improvement in the area's air quality is due to enforceable reductions in emissions resulting from implementation of the applicable implementation plan, applicable Federal air pollution control regulations, and other permanent enforceable reductions;
- The area has a fully approved maintenance plan meeting section 175A of the CAA; and
- The state has met all of the requirements applicable (for purposes of redesignation) to the area under section 110 (the applicable infrastructure SIP requirements) and Part D (the applicable nonattainment area SIP elements).

The maintenance plan provides for the maintenance of the NAAQS in the area for at least 10 years after the redesignation (i.e., for at least 10 years from the EPA's final rule approving the redesignation). Three sets of emissions inventories are used for a maintenance plan to demonstrate maintenance under section 175A: attainment year, interim year, and final year inventories. The first represents an actual attainment year inventory, while the second and third are projections of future emissions.

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[23] In some cases, where local primary $PM_{2.5}$ emissions are the dominant source of $PM_{2.5}$ exceedances, it may be appropriate for an attainment demonstration to rely solely on dispersion models or rollback techniques. In these cases, modeling of precursors may not be necessary as long as attainment of the NAAQS can be adequately demonstrated.

[24] Ibid.

[25] This guidance document does not, and is not intended to, provide specific details regarding redesignation requests and maintenance plans. However, we believe it is helpful to include information here regarding maintenance plan inventories.

1) Maintenance Plan Attainment Year Inventory. As part of the maintenance plan, the state submits an attainment year inventory characterizing emissions in the maintenance area. This inventory is from one of the years in three-year period in which the area monitored attainment.

2) Maintenance Plan Interim Year Inventory. At least one interim year inventory is used to demonstrate that emissions in the area are not expected to exceed the attainment year inventory in the interim between the base year and the last year of the maintenance plan. The demonstration, by means of an interim year inventory, that the area will maintain the standard throughout the maintenance period is derived from CAA section 175A, which states that maintenance in the area is to be provided "for at least ten years after the redesignation," and not just in the final year. Thus, a maintenance plan includes at least one interim year inventory to establish that, during the period that maintenance is projected, emissions will remain at or below the level of the attainment year inventory.

3) Maintenance Plan Projected Final Year Inventory. This inventory includes projected emissions for the maintenance area for a period ending 10 years after EPA's final approval of the redesignation and maintenance plan. As stated above, section 175A requires a demonstration that the area will continue to attain the standard throughout the 10-year maintenance period. The maintenance plan final year inventory reflects assumptions about expected emissions changes in the maintenance area over the 10-year period due to ongoing and new national, state, and local requirements as well as other future conditions.[26] In identifying an appropriate projection year, the state should factor in the time necessary for the EPA to review and take action on the redesignation request and maintenance plan, considering that CAA section 107(d)(3)(D) provides the EPA with up to 18 months after a complete redesignation request is submitted. The EPA recommends to states that the maintenance plan demonstrate maintenance for 12 years from the time of formal submittal to allow for completion of the redesignation rulemaking process. The EPA also recommends that when the state is in the initial stages of developing the maintenance plan, the state should consult with its EPA Regional Office on an appropriate year for the final year inventory.

The Use of Seasonal Versus Annual Inventories

As mentioned earlier in this memorandum, statewide annual emission inventories are required under 40 CFR Part 51, Subpart A. We expect that for many nonattainment areas, these annual inventories will serve as an appropriate starting point for the emissions inventories used for SIP development. In contrast with the 1997 annual $PM_{2.5}$ NAAQS, where states rely only on annual inventories in the implementation process, the 2006 24-hour $PM_{2.5}$ NAAQS is designed to protect against peak exposures. Thus, for the 2006 24-hour $PM_{2.5}$ NAAQS, there are some circumstances in which the EPA believes that seasonal inventories may be useful for SIP planning purposes. For example, we have observed that in some nonattainment areas, all of the highest fine particle concentrations over the course of a year occur in one season.[27]

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[26] The maintenance plan would also establish motor vehicle emissions budgets for the last year of the maintenance period, and could include budgets for an interim year(s) if the area chooses to do so. Any budgets would address direct $PM_{2.5}$, NOx, and any other precursors that the maintenance plan identifies as being significant in order for the area to maintain the NAAQS.

[27] For more information, see: http://www.epa.gov/pmdesignations/2006NAAQS/final/TSD/tsd_D_chemical_composition_pm25.pdf.

If exceedances occur during only one season for each of the years on which the nonattainment designation is based, and this is the case for all subsequent years, we recommend that states develop a seasonal inventory and that they use this inventory for SIP planning purposes. We believe that, for some areas, a seasonal approach will enable states to expend fewer resources to determine which controls may be most effective for reducing concentrations of concern. For example, emission reduction strategies would not need to be evaluated for all seasons. In addition, fewer modeling runs may be needed to establish mobile source emission inventories (see the next section regarding the use of the Motor Vehicle Emission Simulator (MOVES) model). The determination regarding whether or not to use a seasonal inventory will be area-specific, however. The EPA recommends that each state works in consultation with it EPA Regional Office to characterize an area and to assess whether seasonal inventories are needed for sources that cause violations in a particular season.

To consider whether a seasonal inventory would be appropriate for an area, the EPA recommends that states first assess the nature of the fine particle problem in that area, focusing on the seasonality of the problem. This assessment should include consideration of information about the months during which the area experiences its exceedances;[28] the meteorology on the days with exceedances; and insights from fine particle "speciation" (chemical composition) data about key local and regional sources contributing to the area's exceedances. For example, we have observed that a number of nonattainment areas have elevated levels of organic carbon on high fine particle days only in the winter.[29] Common sources contributing to high organic carbon concentrations in this season include the combustion of wood and other types of biomass in stoves and the use of hydronic heaters for residential and institutional heating. Often these high $PM_{2.5}$ levels occur during multi-day episodes characterized by cool temperatures, low wind speeds, and inversion conditions in which cool air traps pollutants close to the ground and limits mixing in the atmosphere. The EPA has developed the "Strategies for Reducing Residential Wood Smoke" resource guide to provide states, local, and tribal governments with information on education and outreach tools, as well as regulatory approaches (e.g., example ordinances) and incentive-based programs to reduce wood smoke. The resource guide also provides information on calculating emission reductions from wood stove and fireplace changeout/retrofit programs and wood smoke curtailment programs. For more information, visit: http://www.epa.gov/ttncaaa1/t1/memoranda/strategies-doc-8-11-09.pdf.

We have also observed that some areas in the northern states have elevated ammonium nitrate levels in the winter, as nitrate remains in particle form and does not volatilize at lower temperatures. High ammonium nitrate levels are caused by the reaction of NO_x and ammonia gas in the atmosphere. NO_x emissions result from many sources that burn fossil fuels, such as cars, diesel trucks, non-road engines, and various industrial sources.

To further assess the nature of the fine particle problem in an area, we recommend that states investigate the source mix for the season in question versus a longer-time averaging period (e.g., an annual average). "Source mix" refers to the contribution of sources in question to the total $PM_{2.5}$ mass for the

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[28] The word "season" is not intended to imply specific months out of the year. For example, in some areas, the winter season may span from October through March, where in other areas, it could span from December through February. Note also that if an area experiences a high $PM_{2.5}$ event that occurs outside of the season being considered for a seasonal inventory, a seasonal inventory may still be appropriate if the event meets the definition of an exceptional event under 40 CFR 50.1 and is determined to be an exceptional event in accordance with 40 CFR 50.14.

[29] Frank, N. The Chemical Composition of $PM_{2.5}$ to Support $PM_{2.5}$ Implementation. http://www.epa.gov/ttn/naaqs/pm/presents/current_pm_monitoring_data_for_speciation-neil_frank.ppt, Presented at "The $PM_{2.5}$ Implementation Program and the Area Designation Process for the 2006 $PM_{2.5}$ Standards Training Workshop Presentations," Chicago IL, June 20-21, 2007.

time period in question. The source mix can be assessed using information such as inventory data and source attribution/source tagging studies, in which ambient $PM_{2.5}$ data or model output is apportioned to various source category types.

When development of a seasonal inventory would be appropriate, the EPA recommends that states give additional attention to refining emissions estimates for key source categories which operate predominantly during the relevant season (e.g., woodstove emissions in winter).[30] When following a seasonal approach, the EPA believes that the control strategy evaluation (based on seasonal emission reduction measures) and the assessment of future year air quality concentrations (through air quality modeling or other analyses) should be conducted for that season.[31] In addition, if a seasonal inventory approach is used, then the transportation conformity budget should pertain to the relevant season. States should work with their EPA Regional Offices to develop their seasonal inventories. This collaboration, for example, may help states determine the appropriate temporal resolution that will correlate well with the types of days that exceedances are recorded in the area.

Developing On-Road Mobile Source Emission Inventories

The EPA recommends that when developing their SIPs for the 2006 24-hour $PM_{2.5}$ NAAQS in areas outside of California, states use of the most recent version of the MOVES model to estimate on-road emissions of direct $PM_{2.5}$, NO_x and other precursors deemed significant by the state for SIPs.[32] MOVES is a state-of-the-art upgrade to the EPA's modeling tools for estimating emissions from highway vehicles, based on analysis of millions of emission test results and considerable advances in the Agency's understanding of vehicle emissions. The MOVES model provides updated vehicle emission factors, with particular improvements in the characterization of vehicle emissions under varying temperature and vehicle speed and power conditions over its predecessor MOBILE. For example, MOVES provides much better estimates of direct $PM_{2.5}$ emissions from both diesel and gasoline vehicles and accounts for how emissions vary with temperature throughout the year. The contribution of on-road motor vehicles to a nonattainment area's $PM_{2.5}$ problem depends on numerous factors, including local diesel truck traffic, fleet mix, and vehicle-miles-traveled (VMT) growth.

On-road inventories and motor vehicle emissions budgets for transportation conformity purposes would include direct $PM_{2.5}$, NO_x, and any other precursor emissions deemed significant by the state for their SIP.[33] For each relevant year, areas should choose MOVES inputs for the season of the year when

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[30] If more information is desired on how various emission sectors are temporally allocated, please see http://www.epa.gov/ttn/chief/emch/index.html#related. If additional information is required, please contact Tesh Rao at rao.venkatesh@epa.gov.

[31] Modeling should be limited to a single season only in cases where exceedances in other seasons have not occurred in the past and are not expected to occur in the future (based on ambient data and analysis of emissions). See the modeling guidance for more information.

[32] The EPA has indicated that it expected all SIPs for areas outside of California for the 2006 24-hour $PM_{2.5}$ NAAQS to include estimates of on-road emissions based on results from the MOVES model. (See question 6 of the guidance document titled, "Policy Guidance on the Use of MOVES2010 for State Implementation Plan Development, Transportation Conformity, and Other Purposes." MOVES2010a is the current version of MOVES available for use in SIP preparation outside of California. However, state and local agencies should refer to the MOVES webpage to determine the version of MOVES to be used when they begin work on their SIP for this NAAQS. This web page also contains links to guidance documents on the use of MOVES. The MOVES web page is available at: http://www.epa.gov/otaq/models/moves/index.htm. State and local agencies in California would use the most recent version of EMFAC in the preparation of SIPs for this NAAQS.

[33] A small number of areas may determine that either re-entrained road dust or dust from the construction of transportation projects are significant contributors to their $PM_{2.5}$ problems and include those emissions in the area's motor vehicle emissions budgets. [40 CFR 93.102(b)(3) and 93 CFR 122(f)(2)]. Re-entrained road dust emissions would be calculated using the latest

exceedances have occurred. If exceedances occurred in only one season for multiple years, then emissions should be estimated using MOVES inputs and other data that are relevant for that season. The resulting on-road inventories and motor vehicle emissions budgets would be for a 24-hour period (calculated in MOVES using the hourly time aggregation option with average hourly meteorology and activity) as representative days.[34] For example, if the SIP demonstrates that exceedances occurred only during the winter, the inventory and motor vehicle emissions budgets should be developed for only that season using MOVES inputs for parameters such as temperature, humidity and fuel properties that are consistent with winter time conditions. In this example, the SIP's inventory and motor vehicle emissions budgets would also be based on the best available information concerning winter time VMT, speeds, and other relevant data.

If exceedances occur in more than one season, then on-road inventories should be calculated for the full year using appropriate MOVES inputs and other data to accurately estimate on-road emissions.

Based on the information provided above, we therefore recommend that motor vehicle emissions budgets are established in one of two ways:

1. The SIP could establish motor vehicle emissions budgets for direct $PM_{2.5}$, NO_x and any other relevant precursors for such areas on an annual basis consistent with the calculation of annual on-road inventories; or

2. The SIP could establish motor vehicle emissions budgets for direct $PM_{2.5}$, NO_x and any other relevant precursors for the one season of the year when on-road motor vehicles make the most significant contribution to an area's $PM_{2.5}$ exceedances.

For example, an area may choose to take the second approach in its SIP because it can show that motor vehicles make the most significant contribution to exceedances in the winter. This may be the case if direct $PM_{2.5}$ emissions from gasoline powered vehicles are higher during that time of year and NO_x emissions from on-road vehicles contribute to nitrate concentrations that are higher in the winter than in the summer. Alternately, if an area had exceedances during the summer, the SIP may show that the exceedances in the summer are predominantly due to SO_2 emissions from large point sources, such as EGUs and other sources of direct $PM_{2.5}$ in the area, and that emissions from on-road motor vehicles are less important to the area's $PM_{2.5}$ problem during the summer. If an area chooses to establish motor vehicle emissions budgets for one season of the year, it should use MOVES inputs and other data that are relevant for the chosen season. In such a case, the resulting budgets would be for a 24-hour period calculated in MOVES on an hourly basis.

Regardless of which approach is used, we recommend that the state base the motor vehicle emissions budgets on air quality data, including available speciation data from the years on which the SIP is based and any available modeling demonstration. Decisions on which approach to take should be made after consultation occurs between states and local air and transportation agencies (including the metropolitan planning organization), the Federal Highway and Transit Administration local offices, and the EPA Regional Office.

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approved version of AP-42 or other local method that has been approved by EPA. Emissions of dust from construction of transportation projects would be calculated using AP-42 or other local method.

[34] For additional guidance on creating daily emissions inventories, refer to EPA's guidance documents located at: http://www.epa.gov/otaq/stateresources/index.htm.

It is important to note that the regional emissions analyses for subsequent transportation conformity determinations would estimate emissions using inputs consistent with the inputs used to estimate the motor vehicle emissions budgets. For example, emissions for a regional emissions analysis would be calculated using winter MOVES inputs if the budgets for the area were established for the winter season.

Developing Non-Road Emission Inventories

Areas are required to provide estimates of emissions from non-road vehicles and equipment. The EPA recommends the use of the most recent version of the EPA's NONROAD model to estimate non-road emissions in areas outside of California.[35] It should be noted that some categories of non-road sources will have higher emissions during one season as opposed to the others. For example, in northern states, emissions from construction equipment are likely to be higher in the summer as compared to the winter. This seasonal variation should be accounted for in modeling inventories and in any other seasonal inventories that are prepared.

Recommendations for the 2006 24-hour $PM_{2.5}$ NAAQS in Comparison with the 2007 $PM_{2.5}$ Implementation Rule

Attainment Dates: Section 51.1004

Under section 172(a)(2)(A) of the CAA, an area's attainment date "shall be the date by which attainment can be achieved as expeditiously as practicable, but no later than 5 years from the date such area was designated nonattainment * * * , except that the Administrator may extend the attainment date to the extent the Administrator determines appropriate, for a period no greater than 10 years from the date of designation as nonattainment considering the severity of nonattainment and the availability and feasibility of pollution control measures." For $PM_{2.5}$, a state's attainment demonstration should provide a thorough analysis of available control measures and provide a proposed attainment date supported by the analysis. Under the 2007 $PM_{2.5}$ Implementation Rule, analytical and regulatory requirements are more stringent for areas that are unable to demonstrate attainment within the first five years. The EPA believes that these same approaches are reasonable interpretations of the statute for the 2006 24-hour $PM_{2.5}$ NAAQS as well.

Because the designation of nonattainment areas for the 2006 24-hour $PM_{2.5}$ NAAQS became effective on December 14, 2009, the presumptive five-year attainment date for many areas would be no later than December 14, 2014, just two weeks short of the end of the calendar year. The form of the 24-hour $PM_{2.5}$ NAAQS relies on evaluating three full calendar years of air quality data to calculate the design value for the area. To determine attainment, the EPA commonly uses the three most recent calendar years of complete air quality data that are available. Because calendar year 2014 would not be complete on December 14, 2014, this could be read to suggest that control measures taking effect at the beginning of 2014, and the resulting air quality improvements, could not be considered in the attainment determination. However, we note that states can take 2014 into account in their attainment demonstrations, and the EPA will consider the approvability of attainment demonstration SIPs on a case-by-case basis. For example, an attainment demonstration that is intended to show attainment within

[35] More information and guidance on NONROAD is available at: http://www.epa.gov/otaq/nonrdmdl.htm. Information on emissions from marine sources and locomotives are available at http://www.epa.gov/otaq/marine.htm and http://www.epa.gov/otaq/locomotives.htm, respectively. Areas in California should consult with EPA Region 9 to determine the appropriate model for estimating non-road emissions.

five years of designation may be approvable if control measures to reach attainment are scheduled to be operational at the beginning of 2014.[36] Under this example, this approach would provide states with the opportunity to use air quality data from 2012 through 2014 to assess attainment for the 2006 24-hour $PM_{2.5}$ NAAQS.

One-Year Extension of the Attainment Date: Section 51.1005

Section 51.1005 of the 2007 $PM_{2.5}$ Implementation Rule describes the criteria governing when an area may apply for a one-year extension of the attainment date pursuant to section 172(a)(2)(C)(ii) of the CAA. The EPA believes that an appropriate interpretation of this provision with respect to the 2006 24-hour $PM_{2.5}$ NAAQS would be that if an area has a design value which exceeds the standard based on three consecutive years of air quality data, but the third year's data indicate improved air quality such that the $PM_{2.5}$ concentration for that one year is below the level of the standard (e.g., the 98th percentile 24-hour concentration for that one year is equal to or less than 35 ug/m^3), then the area has improving air quality and may apply to the EPA for a one-year extension of the attainment date.

The regulatory text of the 2007 $PM_{2.5}$ Implementation Rule (see paragraphs 51.1005(a)(2) and (b)(2)) provides that a state "may apply" for a one-year attainment date extension if the 98th percentile concentration for the previous year was equal to or less than the 1997 24-hour $PM_{2.5}$ NAAQS of 65 ug/m^3. With respect to implementing the 2006 24-hour $PM_{2.5}$ NAAQS, if states choose to apply for a one-year extension, we recommend that they show that the area's 98th percentile concentration for the previous year is less than the 2006 24-hour $PM_{2.5}$ NAAQS, i.e., 35 ug/m^3.

Emission Inventory Requirements: Section 51.1008

The regulatory text of section 51.1008(b) of the 2007 $PM_{2.5}$ Implementation Rule states that "[F]or inventories required for submission under paragraph (a) of this section, a baseline emission inventory is required for the attainment demonstration required under section 51.1007 and for meeting RFP requirements under section 51.1009. As determined on the date of designation, the base year for this inventory shall be the most recent calendar year for which a complete inventory was required to be submitted to the EPA pursuant to subpart A of this part. The baseline emission inventory for calendar year 2002 or other suitable year shall be used for attainment planning and RFP plans for areas initially designated nonattainment for the $PM_{2.5}$ NAAQS in 2004-2005."

The overall intent of this provision is for states to use the best available information in their analyses. States should use the most recently updated information when developing their emission inventories for the nonattainment area for use in their attainment plans (and for RFP plans for any area that needs to submit one). For purposes of developing plans to attain the 2006 24-hour $PM_{2.5}$ NAAQS, the EPA believes that the statute provides adequate flexibility to states to use the most recent "suitable year" for their analyses.

As mentioned earlier, if a seasonal inventory approach is followed, the EPA recommends that states give additional attention to refining emissions estimates for key source categories which operate predominantly during the relevant season (e.g., woodstoves in winter) in order to identify which

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[36] See EDF v. EPA, 369 F.3d 193 (D.C. Circuit 2004); Sierra Club v. EPA, 356 F3d (D.C. Circuit 2004) amended 2004 WL 877850 (D.C. Circuit 2004).

emissions sources are contributing to the season-specific nonattainment. The emission inventory used for SIP purposes would pertain to the particular season in which exceedances occur for multiple years. If exceedances occur in more than one season, then we recommend that states use an annual inventory.

Reasonable Further Progress: Section 51.1009

This section addresses two issues related to RFP: the specific years for emission reduction milestones to be included in an RFP plan for the 2006 24-hour $PM_{2.5}$ NAAQS; and the geographic region to be represented in the plan.

Milestone Years. Section 51.1009 of the 2007 $PM_{2.5}$ Implementation Rule requires any area that submits an approvable demonstration for an attainment date of more than five years from the effective date of designation to also submit an RFP plan. The 2007 $PM_{2.5}$ Implementation Rule includes two approaches for demonstrating compliance with interim RFP milestones: either by showing that emission reductions provide for "generally linear progress," or alternatively by showing that air quality improvement provides for "generally linear progress." The EPA believes this interpretation of the statute would also be appropriate for the 2006 24-hour $PM_{2.5}$ NAAQS. We recommend that the state develop an RFP plan that uses emission inventory information and related data consistent with what is used for the attainment demonstration. We further recommend that the plan includes emission reduction milestones showing that in each applicable milestone year, emissions will be at a level consistent with "generally linear progress" in reducing emissions between the base year and the attainment year.

Section 51.1009(c)(1) of the 2007 $PM_{2.5}$ Implementation Rule requires that an area with an attainment date of more than 5 years and less than 9 years includes 2009 emission milestones for direct $PM_{2.5}$ and $PM_{2.5}$ attainment plan precursors. Section 51.1009(c)(2) states that an area with an attainment date of 9 or 10 years from designation must include 2009 and 2012 emission milestones for direct $PM_{2.5}$ and $PM_{2.5}$ attainment plan precursors.

In other words, for the 1997 $PM_{2.5}$ NAAQS, the 2007 $PM_{2.5}$ Implementation Rule requires an area with an attainment date of 6-8 years from the date of designation (i.e., 2011 to 2013) to include an emission milestone in 2009. The 2007 $PM_{2.5}$ Implementation Rule requires an area with an attainment date of 9 or 10 years from the date of designation (i.e., 2014 to 2015) to include emission milestones in 2009 and in 2012. The EPA recommends that the framework of the 2007 $PM_{2.5}$ Implementation Rule and the associated plan submission timelines be similarly applied and interpreted in relative terms for purposes of developing RFP plans for the 2006 24-hour $PM_{2.5}$ NAAQS.

Therefore, for purposes of implementation of the 2006 24-hour $PM_{2.5}$ NAAQS, EPA believes that it would be appropriate to apply an analogous framework. For an area with an attainment date of 6-8 years from the date of designation (i.e., 2015 to 2017 if the area was designated in 2009), under this interpretation the RFP plan would need a milestone for one interim year, in this case, 2014. For an area with an attainment date of 9 or 10 years from the date of designation (i.e., 2018 to 2019 if the area was designated in 2009), the RFP plan would need milestones for two interim years, 2014 and 2017. Thus, in reviewing implementation plans, submitted by areas that were designated nonattainment in 2009 for the 2006 24-hour $PM_{2.5}$ NAAQS, EPA intends to consider the appropriate interim milestone years to be 2014 and (if necessary) 2017.

We recognize that each nonattainment area has its own unique characteristics (e.g., physical features, source population, seasonal nature of exceedances, types of emission reduction programs adopted)

which will affect how the area can demonstrate reasonable further progress toward attainment. Therefore, each RFP plan will be evaluated on a case-by-case basis.

Geographic Region. Reasonable further progress is defined under CAA section 171(1) to mean "such annual incremental reductions in emissions of the relevant air pollutant as are required by this part or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date." RFP for $PM_{2.5}$ is required under section 172. Section 172(c)(3) states that nonattainment area plans must include a comprehensive inventory of emissions from "all sources . . . in [the nonattainment] area." The 2007 $PM_{2.5}$ Implementation Rule includes provisions for calculating emission reduction milestones using the base year and projected attainment year emission inventories for the relevant "geographic area" represented in the RFP plan. From the discussion of the geographic area in the preamble, one can infer that the default geographic area would be the nonattainment area. However, the preamble also includes discussion of a policy that allowed states to take credit for reductions of NO_x and SO_2 emissions up to 200 kilometers (km) from outside the nonattainment area (and potentially for reductions of VOC or ammonia as well) only when certain conditions are met, including that when taking RFP credit for emissions reductions achieved outside of a nonattainment area, the baseline emissions inventory for the nonattainment area contain all, rather than a select few, sources in the outside area.

In 2007, the EPA received a petition for reconsideration of this policy for the 1997 $PM_{2.5}$ NAAQS. In addition, in 2006, the EPA received a petition for reconsideration of a similar policy in the implementation rule for the 1997 8-hour ozone NAAQS.[37] The petitions for both $PM_{2.5}$ and ozone challenged the allowance of emissions reductions from outside of the nonattainment area for meeting RFP requirements.

Additionally, in 2009, the United States Court of Appeals for the District of Columbia Circuit (the Court) examined the phrase "in the area" included in separate provisions relating to reductions from the application of RACT. In the Phase 2 Ozone Implementation Rule, EPA had explained that because an interstate emissions trading program would achieve beyond RACT-level NO_x reductions regionally, areas did not have to meet the RACT-level reductions required under CAA section 182(b)(2) solely from within the nonattainment area. The Court, however, concluded that the phrase "in the area" means that reductions must occur from sources within the area and "reductions from outside the nonattainment area do not satisfy the requirement."[38] On December 22, 2010, (75 FR 80420), the EPA proposed a rule to reflect its reconsideration of the RFP policy for ozone. In light of the Court decision emphasizing that "in the area" means in the nonattainment area and due to the proposed action for ozone, the EPA granted the petition for reconsideration of the RFP policy for $PM_{2.5}$ on May 13, 2010.

The EPA acknowledges that attainment plans for some areas may include a certain level of emission reductions (and air quality improvement) from sources within the nonattainment area, and also a certain level of emission reductions (and air quality improvement) attributed to sources outside the nonattainment area. The EPA will be addressing this issue in response to the petition for reconsideration pertaining to the 2007 $PM_{2.5}$ Implementation Rule. Therefore, for purposes of meeting the RFP

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[37] In the preamble to the Phase 2 Ozone Implementation Rule, EPA stated that credit could be taken for VOC and NO_x emission reductions within 100 km and 200 km, respectively, from outside the nonattainment area under certain circumstances.

[38] See NRDC v. EPA, 571 F.3d 1245 at 1256 (D.C. Cir. 2009).

requirement for the 2006 24-hour $PM_{2.5}$ NAAQS, states should rely only on emission reductions achieved from sources within the nonattainment area.

Contingency Measures: Section 51.1012

Contingency measures, required pursuant to section 172(c)(9) of the CAA, are emission reduction measures that are to be undertaken by a state if the area fails to attain the NAAQS by its attainment date or fails to make RFP toward attainment. These contingency measures must take effect without further action by the state.

The preamble of the 2007 $PM_{2.5}$ Implementation Rule (see 79 FR 20642-20645) notes that contingency measures "should provide for emission reductions equivalent to about one year of reductions needed for reasonable further progress (RFP)." The term "one year of reductions needed for RFP" requires clarification. This phrase may be confusing because all areas technically are not required to develop a separate RFP plan under the 2007 $PM_{2.5}$ Implementation Rule. The basic concept is that an area's set of contingency measures should provide for an amount of emission reductions that would achieve "one year's worth" of air quality improvement proportional to the overall amount of air quality improvement to be achieved by the area's attainment plan; or alternatively, an amount of emission reductions (for all pollutants subject to control measures in the attainment plan) that would achieve one year's worth of emission reductions proportional to the overall amount of emission reductions needed to show attainment. Contingency measures can include measures that achieve emission reductions from outside the nonattainment area as well as from within the nonattainment area, provided that the measures produce the appropriate air quality impact within the nonattainment area.

The EPA believes a similar interpretation of the contingency measures requirements under section 172(c)(9) would be appropriate for the 2006 24-hour $PM_{2.5}$ NAAQS. Included below is an example to illustrate this concept.

- Assume that the area in question was designated nonattainment in December 2009 with a 2006-2008 design value of 41 ug/m^3.
  → The SIP would be due in December 2012 and attainment would generally need to occur within five years, based on air quality data through December 2014.

- Assume that the state analysis uses a 2008 base year emissions inventory and a future year projection inventory for 2014.
  → To demonstrate attainment, the area needs to reduce its air quality concentration from 41 ug/m^3 in 2008 to 35 ug/m^3 in 2014, equal to a rate of change of 1 ug/m^3 per year. The attainment plan demonstrates that this level of air quality improvement would be achieved by reducing emissions between 2008 and 2014 by the following amounts: 1,200 tons of $PM_{2.5}$; 6,000 tons of NO_x; and 6,000 tons of SO_2.
  → Thus, the target level for contingency measures for the area could be identified in two ways: 1) The area would need to provide an air quality improvement of 1 ug/m^3 in the area, based on an adequate technical demonstration provided in the state plan. The emission reductions to be achieved by the contingency measures can be from any one or a combination of all pollutants addressed in the attainment plan, provided that the state plan shows that the cumulative effect of the adopted contingency measures would result in a 1 ug/m^3 improvement in the fine particle concentration in the nonattainment area; and 2) The contingency measures for the area would be one-sixth (or approximately 17 percent) of the

overall emission reductions needed between 2008 and 2014 to show attainment. In this example, these amounts would be the following: 200 tons of $PM_{2.5}$; 1,000 tons of NO_x; and 1,000 tons of SO_2.

Questions Regarding This Guidance

In general, questions may be directed to Rich Damberg at (919) 541-5592 or damberg.rich@epa.gov; and Kristin Riha at (919) 541-2031 or riha.kristin@epa.gov. Specific questions on transportation conformity should be directed to Meg Patulski at (734) 214-4842 or patulski.meg@epa.gov. Any questions on the use of the MOVES model should be sent to: mobile@epa.gov.

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