3.0 REQUIREMENTS FOR THE 1997 $PM_{2.5}$ NAAQS

The primary purpose of this proposed state implementation plan (SIP) revision is to demonstrate that New Jersey and its associated multi-state nonattainment areas will attain the 1997 annual fine particulate matter ($PM_{2.5}$) national ambient air quality standards (NAAQS) by April 5, 2010. New Jersey plans to fulfill its obligations under the federal Clean Air Act and the State's Air Pollution Control Act with respect to both the 1997 and 2006 $PM_{2.5}$ standards (see discussions of these standards in Section 1.1). The State faces several other air quality related challenges, including meeting other criteria pollutant NAAQS (such as 8-hour ozone), reducing air toxic emissions to reduce cumulative risk, and improving visibility, that are interrelated with the $PM_{2.5}$ initiatives. See Chapter 1 for more information on the $PM_{2.5}$ reductions from this proposed SIP revision relate to the State's other air quality related challenges.

As required by 42 U.S.C. § 7410(a)(1) (Section 110(a)(1)), the states are required to demonstrate attainment of the NAAQS by submitting revised State Implementation Plans (SIPs). As discussed in Chapter 1, on July 18, 1997, the United States Environmental Protection Agency (USEPA) established two new primary NAAQS for fine particles:

- an annual fine particulate matter ($PM_{2.5}$) health-based standard of 15 micrograms per cubic meter ($\mu g/m^3$) (annual arithmetic mean) and
- a daily (24-hour) $PM_{2.5}$ health-based standard of 65 micrograms per cubic meter ($\mu g/m^3$) (24-hour average).[1,2]

On October 16, 2006, the USEPA promulgated a revised $PM_{2.5}$ NAAQS, which became effective December 18, 2006.[3] The USEPA retained the existing annual standard established in 1997 and established a more stringent daily standard of 35 $\mu g/m^3$. This proposed SIP revision does not meet the requirements for the 2006 $PM_{2.5}$ NAAQS but provides progress toward attainment of the 35 $\mu g/m^3$ standard.

3.1 USEPA $PM_{2.5}$ Implementation Rule

The USEPA published its final rule to implement the 1997 $PM_{2.5}$ NAAQS on April 25, 2007.[4] A state or tribe must develop an implementation plan for any areas that are designated in nonattainment of a NAAQS. For the 1997 daily $PM_{2.5}$ standard, New Jersey continues to meet that level as demonstrated by the most current air monitoring data presented in Chapter 2. Thirteen of New Jersey's 21 counties were designated as nonattainment for the 1997 $PM_{2.5}$ standards, and are associated with two multi-state nonattainment areas (the Northern New Jersey/New York/Connecticut (NNJ/NY/CT)

[1] 62 Fed. Reg. 38652-760 (July 18, 1997).
[2] The USEPA also revised the PM_{10} NAAQS by revising the 24-hour form of the PM_{10} standard to the 99th percentile averaged over 3 years but retaining the 24-hour PM_{10} level (i.e., 150 mg/m^3) (62 Fed. Reg. 38652 (July 18, 1997)). In 2006, the USEPA revoked the annual PM_{10} standard (71 Fed. Reg. 61144 (October 17, 2006)). New Jersey was not designated in nonattainment of the PM_{10} NAAQS and continues to meet the revised PM_{10} standards.
[3] 71 Fed. Reg. 61144-233 (October 17, 2006).
[4] 72 Fed. Reg. 20586-667 (April 25, 2007).

$PM_{2.5}$ nonattainment area and the Southern New Jersey/Philadelphia (SNJ/Phila.) $PM_{2.5}$ nonattainment area), as shown in Figure 1.1 (see Chapter 1).

The SIP requirements and elements of the implementation rule are described briefly in this section. Please refer to the associated SIP chapters for additional details.

$PM_{2.5}$ Precursor Policy

As discussed in Chapter 1, sulfur dioxide (SO_2), oxides of nitrogen (NO_x), volatile organic compounds (VOCs), and ammonia can all contribute to the formation of $PM_{2.5}$. Under the UESPA's final implementation rule for $PM_{2.5}$,[5] the precursor that nonattainment areas must evaluate for control measures to reduce $PM_{2.5}$ is SO_2. Sulfate has a significant regional impact on $PM_{2.5}$ concentrations and is a large component of air quality problems in all areas of the country. Studies show that sulfate is also the largest component of total $PM_{2.5}$ mass concentrations in New Jersey, as discussed in Section 2.5. There are presumptive policies for NO_x, ammonia, and VOC regarding whether or not these pollutants need to be addressed in SIPs; states have the option of reversing these policies for these precursors for an area but states must provide a technical demonstration to do so. The presumption is that NO_x should be evaluated in a SIP and for control measures, whereas ammonia and VOC are not required to be evaluated for strategies that will reduce $PM_{2.5}$ unless a state demonstrates that either or both of these pollutants are significant contributors to the $PM_{2.5}$ problem in an area. New Jersey and the states in its shared nonattainment areas agree with the USEPA's final policies for $PM_{2.5}$ precursors and did not conduct technical demonstrations to reverse these policies. Hence, New Jersey focuses on SO_2, NO_x, and direct emissions of $PM_{2.5}$ in this proposed SIP revision.

The USEPA developed similar but not identical precursor policies for other PM-related programs under the federal Clean Air Act (e.g., New Source Review (NSR), regional haze, transportation conformity, and general conformity).[6] NSR and regional haze are discussed in Chapter 4 and transportation and general conformity are discussed in Chapter 7. For transportation conformity, a different approach for a precursor was adopted under the final regulation (i.e., 71 Fed. Reg. 12468). The federal Clean Air Act (42 U.S.C. § 7506(c) (Section 176(c))) requires transportation plans, programs, and projects to conform with a state's SIP. This requirement ensures that these activities will not contribute to or create any new air quality problems or delay the attainment of a NAAQS. For transportation conformity, four transportation related $PM_{2.5}$ precursors – NO_x, VOCs, SO_x, and ammonia – must be considered in the conformity process in $PM_{2.5}$ nonattainment areas.[7] The USEPA requirements for the consideration of $PM_{2.5}$ precursors are:

- Regional emissions analysis must include NO_x as a $PM_{2.5}$ precursor in all $PM_{2.5}$ nonattainment areas, unless the head of the state air agency and the USEPA Regional Administrator make a finding that NO_x is not a significant contributor to the $PM_{2.5}$ air quality problem in a given area.

[5] 72 Fed. Reg. 20586-667 (April 25, 2007).
[6] 72 Fed. Reg. 20590 (April 25, 2007).
[7] 70 Fed. Reg. 24280-92 (May 6, 2005).

- Regional emissions analyses are not required for VOC, SO_x, or NH_3 before an approved SIP budget for such precursors is established, unless the head of the state air agency or the USEPA Regional Administrator makes a finding that onroad emissions of any of these precursors is a significant contributor.

Details of the criteria for the consideration of $PM_{2.5}$ precursors are explained in Chapter 7.

Reasonably Available Control Technology (RACT)
The Clean Air Act, the implementation plan must provide for the adoption of RACT, at a minimum, as expeditiously as practicable, in addition to any other plan provisions to attain the NAAQS. New Jersey determined that there are RACT measures that can be reasonably implemented, and expects these emission reduction strategies to also help with future attainment efforts for the more stringent 24-hour $PM_{2.5}$ standard, reduction of air toxics, and other air quality improvement purposes. Refer to Chapter 4 and Appendix A7 for additional details.

Reasonably Available Control Measures (RACM)
Control measures that would advance the attainment date are considered RACMs that must be included in the SIP. In accordance with 42 U.S.C. §7502(c)(1) (Section 172(c)(1) of the Clean Air Act), states, as part of their effort to attain the NAAQS, are required to implement all RACMs as expeditiously as practicable. Specifically, the Clean Air Act states:

> "In general – such plan provisions shall provide for the implementation of all reasonably available control measures as expeditiously as practicable (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology) and shall provide for attainment of the national primary ambient air quality standards."

The purpose of the RACM analysis is to determine whether or not reasonably available control measures for all mobile and non-RACT stationary sources exist that would advance the attainment date for nonattainment areas by one year. Refer to Chapter 4 and Appendix A8 for additional details.

Emission Inventory
Emission inventories for criteria pollutants, including $PM_{2.5}$, and their precursor pollutants are required by the USEPA through its authority under the federal Clean Air Act. The USEPA requirements are codified at 40 C.F.R. Pt. 51, Subpart Q. States need these emission inventories for demonstrating attainment and maintenance of NAAQS. New Jersey submitted its 2002 emission inventory to the USEPA in May 2006 and the USEPA approved it on July 10, 2006.[8] New Jersey's 2002 emission inventory was

[8] "The State of New Jersey Department of Environmental Protection 2002 Periodic Emission Inventory May 2006" submitted to the USEPA as Appendix D of the "The State of New Jersey NJDEP of Environmental Protection State Implementation Plan (SIP) Revisions for the Attainment and Maintenance

provided to the regional organizations for photochemical modeling exercises for the attainment demonstrations of the 8-hour ozone and 1997 annual $PM_{2.5}$ NAAQS and a regional 2002 baseline modeling emission inventory was developed for all of the states, incorporating the states' data, and projected to 2009. The regional 2002 and 2009 modeling emission inventories were used as the basis of this proposed SIP revision. As discussed in Chapter 2, Figures 2.20 and 2.21 show a comparison of $PM_{2.5}$ emissions by sector in the Northern New Jersey/New York/Connecticut and Southern New Jersey/Philadelphia nonattainment areas, respectively. Refer to Chapter 2 and Chapter 5 for additional details.

Reasonable Further Progress (RFP)
RFP is a requirement that ensures a nonattainment area is progressing toward attaining a standard in a timely fashion. For nonattainment areas with 2010 or earlier $PM_{2.5}$ attainment dates (like New Jersey's associated $PM_{2.5}$ nonattainment areas, which both have an attainment date of April 2010), no RFP submittal is necessary, as the due date of the SIP, April 5, 2008, is within two years of the attainment date.[9]

Attainment Demonstration
States with nonattainment areas are required to show through technical analyses that the standard will be met by the attainment date of April 5, 2010. Refer to Chapter 5 for additional details.

Contingency Measures
Contingency measures are required to further reduce emissions in the event an area fails to attain by its attainment date or meet a RFP milestone, as required by 42 U.S.C. § 7502(c)(9) of the Clean Air Act (Section 172(c)(9)). These contingency measures must be fully adopted rules or measures that are ready for implementation quickly without further action by the State or the USEPA upon failure to meet an RFP milestone or reach attainment.[10] By following the USEPA's guidance that encourages early implementation of contingency measures and relying on measures already implemented or under development, New Jersey is ensuring that no additional contingency measures will need to be developed and implemented beyond those identified, and is safeguarding itself against failure to meet attainment. Refer to Chapter 6 for additional details.

Section 110(a) Requirements
Under 42 U.S.C. § 7410(a)(1) and (2) (Section 110(a)(1) and (2) of the federal Clean Air Act), states are required to submit an implementation plan to the USEPA Administrator that demonstrates states' ability and authority to implement, maintain, and enforce the NAAQS. The USEPA refers to these plans as the infrastructure elements of the SIP. New Jersey submitted its proposed $PM_{2.5}$ infrastructure SIP to the USEPA on December

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of the 8-Hour Carbon Monoxide National Ambient Air Quality Standard, 1-Hour Ozone National Ambient Air Quality Standard, and Fine Particulate Matter National Ambient Air Quality Standard; and the 2002 Periodic Emission Inventory May 2006." The USEPA approved the 2002 Emission Inventory effective July 10, 2006.
[9] 72 Fed. Reg. 20633 (April 25, 2007).
[10] 72 Fed. Reg. 20642-43 (April 25, 2007).

7, 2007.[11] 42 U.S.C. § 7410(a)(2) (Section 110(a)(2)) lists the elements that are to comprise the implementation plan. 42 U.S.C. § 7410(a)(2)(D)(i) (Section 110(a)(2)(D)(i)) (hereafter referred to as Section 110 (a)(2)(D)(i)) is commonly referred to as the transport State Implementation Plan (SIP) requirement. New Jersey submitted its transport SIP letter on December 22, 2006.[12] The public hearing on New Jersey's proposed Clean Air Interstate Rule (CAIR),[13] held on March 28, 2007, included a discussion of interstate transport as outlined in the December 22, 2006 NJDEP letter to the USEPA. New Jersey's CAIR was adopted on June 19, 2007, became effective on July 16, 2007, became operative on August 17, 2007,[14] and the USEPA approved these rules on October 1, 2007.[15] Refer to Chapter 8 for additional details.

Transportation Conformity and General Conformity

The Clean Air Act (42 U.S.C. § 7506) (Section 176) requires that federal actions conform to a state's SIP. To implement this requirement the Clean Air Act directed the USEPA to issue rules that governed how conformity determinations would be conducted for two categories of actions/activities; a) those dealing with transportation plans, programs, and projects (Transportation Conformity), and b) all other actions, e.g., projects requiring federal permits. This latter category is referred to as General Conformity. *De minimis* levels for $PM_{2.5}$ were published in 2006 (71 Fed. Reg. 40420 (July 17, 2006)). Projects whose direct and indirect emissions exceed the *de minimis* levels are required to offset their emissions. The Federal Transportation Conformity Rule (40 C.F.R. Sect. 93.100-160) provides the process by which the air quality impact of transportation plans, transportation improvement programs, and projects are analyzed. Refer to Chapter 7 for additional details.

Enforcement and Compliance

Enforceable SIP regulations must include specific elements. These elements include the sources or source types subject to the requirements, the requirements, (e.g., emission limits), time frames for compliance, recordkeeping and monitoring requirements, test methods for compliance,[16] and performance and ongoing monitoring of the control measures for those regulations with an applicable emissions limit. The State expects to propose and adopt measures it needs to attain the 1997 annual $PM_{2.5}$ standard in accordance with the New Jersey Administrative Procedures Act (APA) (N.J.S.A. 52:14B-1 et seq.) and the Air Pollution Control Act (APCA) (N.J.S.A. 26:2C-1 et seq.) (Refer to Chapter 8). Once adopted, these regulations will be fully enforceable by the State.

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[11] Letter from NJDEP Commissioner Lisa P. Jackson to USEPA Regional Administrator Steinberg dated December 7, 2007. The letter is posted on the NJDEP's website at http://www.state.nj.us/dep/baqp/sip/siprevs.htm.

[12] Letter from NJDEP Commissioner Lisa P. Jackson to USEPA Regional Administrator Steinberg dated December 22, 2006. The letter is posted on the NJDEP's website at http://www.state.nj.us/dep/baqp/sip/siprevs.htm.

[13] 39 N.J.R. 300(a) (February 5, 2007).

[14] 39 N.J.R. 2637(a) (July 16, 2007). Also, see N.J.A.C. 7:27-30.

[15] 72 Fed. Reg. 55666-72 (October 1, 2007).

[16] There is no final test method for direct $PM_{2.5}$ emissions at this time. The USEPA is collecting information from stakeholders on such test methods described in the implementation rule and established a period of transition for establishing $PM_{2.5}$ emission limits (72 Fed. Reg. 20651-55 (April 25, 2007)).

Ambient Monitoring
Federal $PM_{2.5}$ monitoring regulations at 40 C.F.R. Pt. 58 that apply to the states' ambient air quality monitoring programs were revised in 2006 with the revised PM NAAQS. No new requirements or revisions were promulgated with the final implementation rule.

Nonattainment New Source Review (NNSR)
The final 1997 implementation rule did not include final $PM_{2.5}$ requirements for the NNSR program. The USEPA issued a portion of its NNSR rule on May 16, 2008.[17] Refer to Chapter 4 for additional details on this program in New Jersey.

3.2 Summary of this SIP Proposal

The remainder of this proposed SIP revision includes the following:

- A discussion of control measures
- A demonstration of attainment for the year 2010 for both $PM_{2.5}$ nonattainment areas associated with New Jersey
- A Reasonably Available Control Technology (RACT) analysis
- A Reasonably Available Control Measures (RACM) analysis
- A discussion of contingency measures
- A discussion of the State's obligations in Section 110 of the Clean Air Act
- Transportation conformity budgets
- New Jersey specific declarations and commitments

[17] 73 Fed. Reg. 28321-350 (May 16, 2008).