The State of New Jersey
Department of Environmental Protection

State Implementation Plan (SIP) Revision for the Attainment and Maintenance of the Fine Particulate Matter ($PM_{2.5}$) National Ambient Air Quality Standards

Redesignation Request and Maintenance Plan Proposal

July 2012

PREFACE

The fine particulate matter ($PM_{2.5}$) air quality in New Jersey and the states in its two common multi-state nonattainment areas currently shows monitored values lower than the National Ambient Air Quality Standards (NAAQS). This document acknowledges the improvement in outdoor fine particulate matter air quality by requesting that the United States Environmental Protection Agency (USEPA) redesignate the New Jersey portions of two multi-state fine particulate matter nonattainment areas to attainment in accordance with the Clean Air Act as amended in 1990.

ACKNOWLEDGMENTS

The New Jersey Department of Environmental Protection (NJDEP) acknowledges the efforts and assistance of the agencies and individuals whose contributions were instrumental in the preparation of this implementation plan revision. In particular, the Department wishes to acknowledge the individuals within the New Jersey Department of Transportation (NJDOT), the North Jersey Transportation Planning Authority, Inc. (NJTPA), Delaware Valley Regional Planning Commission (DVRPC), Region II of the United States Environmental Protection Agency, and the Mid-Atlantic Regional Air Management Association (MARAMA), AMEC Environment and Infrastructure and SRA International, Inc. for technical contractual support, as well as staff within the NJDEP for their assistance and guidance.

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* Only available electronically at: http://www.state.nj.us/dep/baqp/sip/siprevs.htm

ACRONYMS AND ABBREVIATIONS

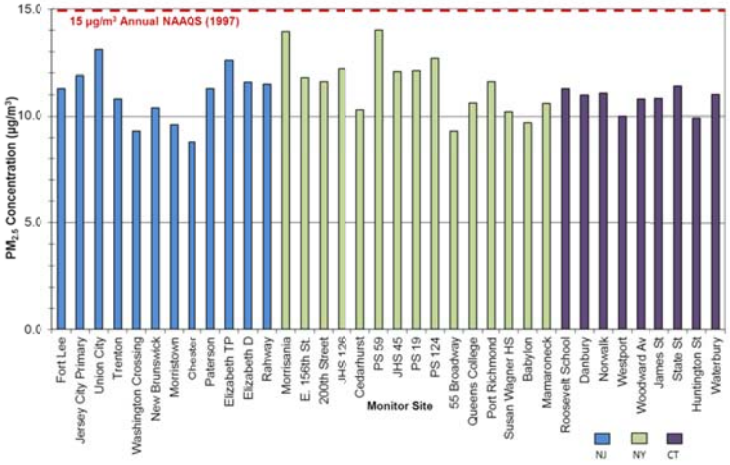
$\mu g/m^3$	Micrograms per cubic meter
AEL	Alternative Emission Limit
AIRS	Aerometric Information Retrieval System
AQS	Air Quality System
BAM	Bureau of Air Monitoring
CAA	Clean Air Act
CFR	Code of Federal Regulations
CMSA	Consolidated Metropolitan Statistical Areas
CSAPR	Cross-State Air Pollution Rule
CTG	Control Technique Guideline
DV	Design Value
DVRPC	Delaware Valley Regional Planning Commission
EGU	Electric Generating Unit
Fed. Reg.	Federal Register
FRM	Federal Reference Method
FSEL	Facility-Specific Emission Limit
HDDV	Heavy Duty Diesel Vehicle
HEDD	High Electric Demand Day
ICI	Industrial, Commercial and Institutional
I/M	Inspection and Maintenance
kW	Kilowatt
LEV	Low Emission Vehicle
MACT	Maximum Available Control Technology
MARAMA	Mid-Atlantic Regional Air Management Association
MATS	Mercury and Air Toxics Standards
MOVES	Motor Vehicle Emission Simulator
MPO	Metropolitan Planning Organization
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NJDEP	New Jersey Department of Environmental Protection
NJDOT	New Jersey Department of Transportation
N.J.R.	New Jersey Register
NJTPA	North Jersey Transportation Planning Authority
NNEM	National Nonroad Emissions Model
NNSR	Nonattainment New Source Review
NO_x	Oxides of Nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
OBD	On-Board Diagnostics
$PM_{2.5}$	Fine Particulate Matter
ppm	parts per million
PSD	Prevention of Significant Deterioration
PSEG	Public Service Electric and Gas Company
Pub.L.	Public Law
RACT	Reasonably Available Control Technology
RFP	Reasonable Further Progress
RICE	Reciprocating Internal Combustion Engine
SIP	State Implementation Plan
SIL	Significant Impact Level

SJTPO	South Jersey Transportation Planning Organization
SMC	Significant Monitoring Concentration
SO_2	Sulfur Dioxide
TCM	Transportation Control Measure
TDM	Travel Demand Model
TIP	Transportation Improvement Program
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
VMT	vehicle miles traveled

EXECUTIVE SUMMARY

This proposed Request for Redesignation demonstrates that both of the multi-state nonattainment areas associated with New Jersey (the Northern New Jersey-New York-Connecticut and Southern New Jersey-Philadelphia Nonattainment Areas) are meeting the fine particle health standards for $PM_{2.5}$ for the annual 15 µg/m^3 and daily 35 µg/m^3 standards.

Figure ES.1
2007-2009 Annual $PM_{2.5}$ Design Values
Northern New Jersey-New York-Connecticut
Nonattainment Area



The redesignation action is a major milestone in New Jersey's clean air effort. Attainment of the $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) represents a significant health benefit to the citizens of New Jersey.

Figures ES.1 through ES.4 summarize the 2009 monitoring data for both nonattainment areas for the annual and daily standards. The 2010 and 2011 monitoring data continue to show compliance with the standards.

$PM_{2.5}$ has significant health effects with no clear threshold below which adverse effects are not experienced by at least certain segments of the population. Exposure to $PM_{2.5}$ can cause a variety of health problems, such as premature mortality, decreased lung function and difficulty breathing, asthma attacks. Other effects include reduced visibility, loss of biodiversity, damage to manmade structures, sensitive forests, and farm crops, and contributes to global warming and the formation of acid rain.

Figure ES.2
2007-2009 Daily (24-Hour) $PM_{2.5}$ Design Values
Northern New Jersey-New York-Connecticut
Nonattainment Area

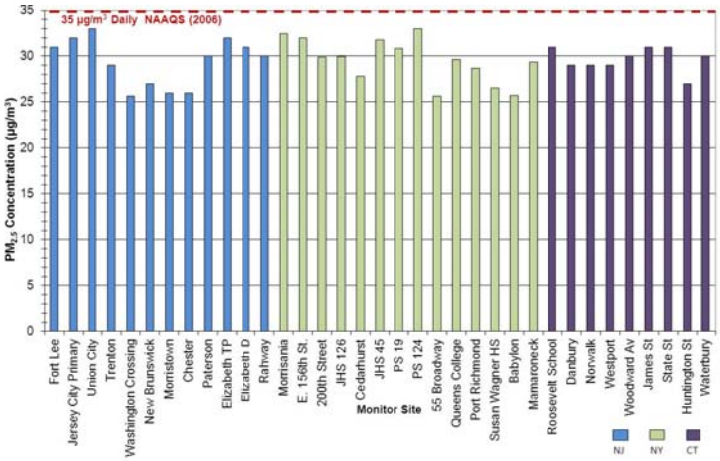


Figure ES.3
2007-2009 Annual $PM_{2.5}$ Design Values
Southern New Jersey-Philadelphia
Nonattainment Area

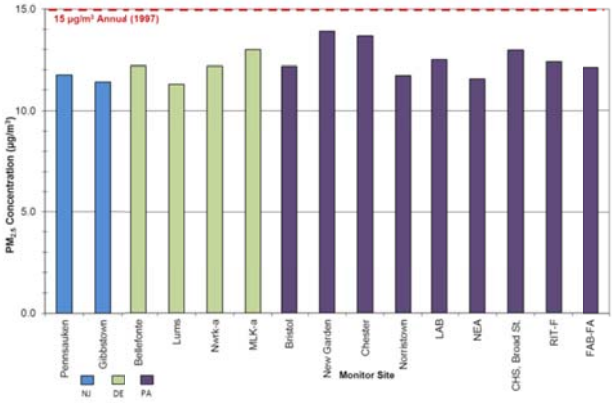
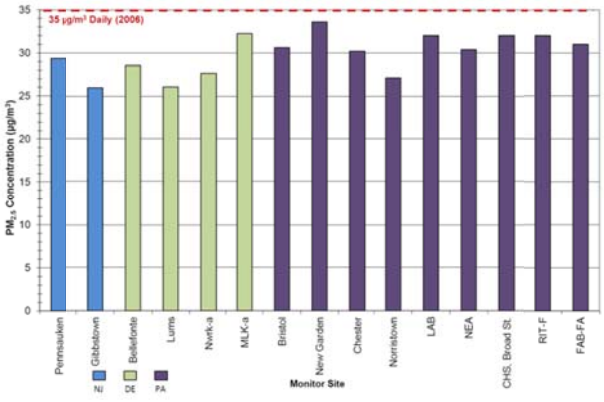


Figure ES.4
2007-2009 Daily (24-Hour) $PM_{2.5}$ Design Values
Southern New Jersey-Philadelphia



Air quality monitoring data show a trend over the past decade of improving $PM_{2.5}$ air quality, for both of New Jersey's multi-state $PM_{2.5}$ nonattainment areas, as shown in Figures ES.5 through ES.8. This reduction is due to significant decreases over the 10-year period in all six of the primary $PM_{2.5}$ components: sulfate, organic carbon, nitrate, ammonium, sulfur, and elemental carbon.

Figure ES.5
Annual PM2.5 Monitoring Design Value
Trends 1999-2011
Northern New Jersey-New York-
Connecticut Nonattainment Area

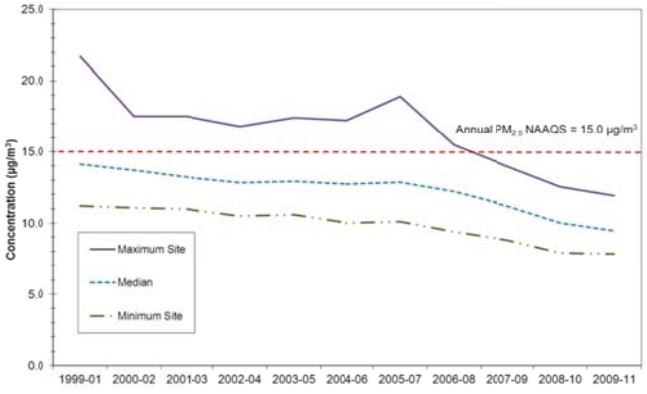
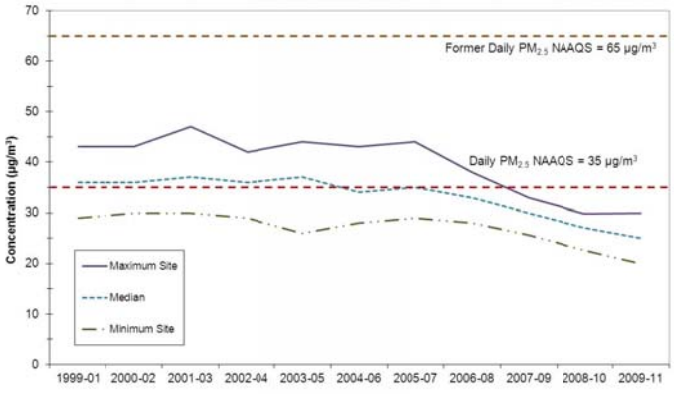


Figure ES.6
Daily (24-Hour) $PM_{2.5}$ Monitoring Design
Value Trends 1999-2011
Northern New Jersey-New York-Connecticut
Nonattainment Area



Organic carbon and sulfates are the top two largest contributors on an individual basis to the PM2.5 mass. Similar decreases are noted in the annual average data and in the top 10 percent highest $PM_{2.5}$ days, except for elemental carbon, which remains about the same.

New Jersey attained the standards due to permanent and enforceable measures that the State and Federal Government adopted or implemented.

Figure ES.7
Annual $PM_{2.5}$ Monitoring Design Value Trends 1999-2011
Southern New Jersey-Philadelphia Nonattainment Area

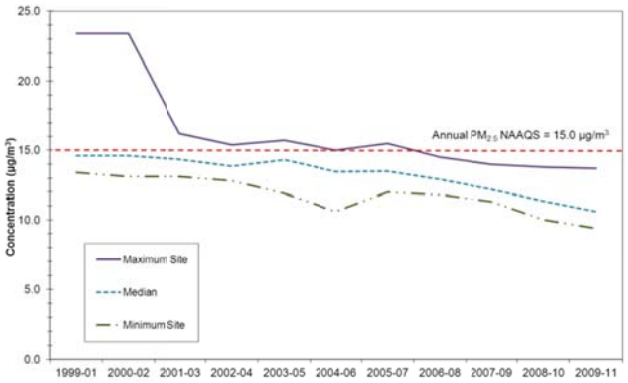
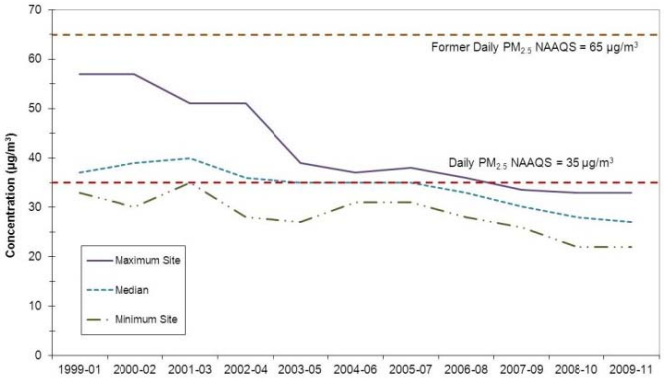


Figure ES.8
Daily (24-Hour) $PM_{2.5}$ Monitoring Design Value Trends 1999-2011
Southern New Jersey-Philadelphia Nonattainment Area



New Jersey's northern and southern nonattainment areas are projected to continue to meet the annual 15 µg/m^3 and daily 35 µg/m^3 $PM_{2.5}$ NAAQS through 2025, as emissions are projected to continue to decrease. Figures ES.9 and ES.10 show that emissions of $PM_{2.5}$ and its precursors, NO_x and SO_2, are projected to decrease from 2007 to 2025. The year 2025 represents the end of the first maintenance period to demonstrate continued compliance with the standards

Figure ES.9
$PM_{2.5}$, NO_x and SO_2 Emissions Inventory Projections 2007 to 2025
New Jersey Portion of the Northern New Jersey-New York-Connecticut Nonattainment Area

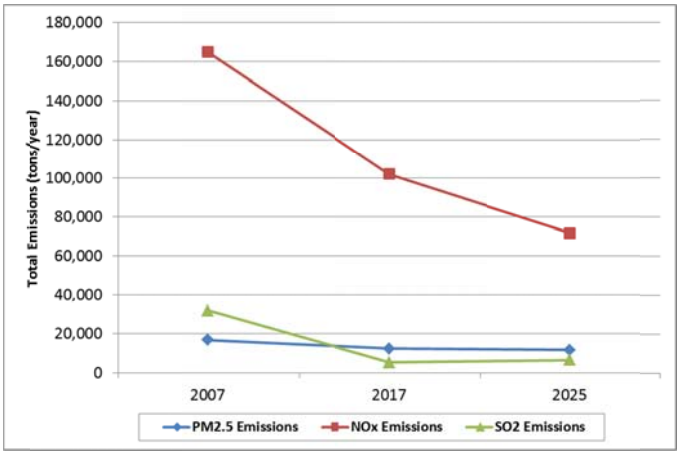
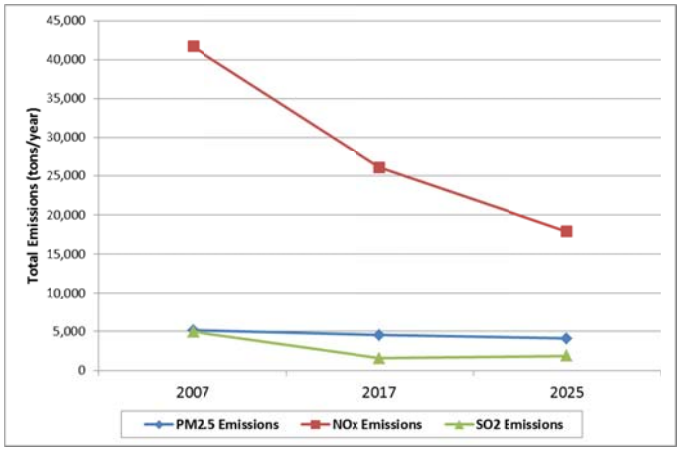


Figure ES.10
$PM_{2.5}$, NO_x and SO_2 Emissions Inventory Projections 2007 to 2025
New Jersey Portion of the Southern New Jersey-Philadelphia Nonattainment Area



New Jersey will continue to track and evaluate $PM_{2.5}$ air concentrations and take appropriate steps to maintain the NAAQS. To verify that the New Jersey portions of its shared multi-state $PM_{2.5}$ nonattainment areas remain in attainment, New Jersey will continue to operate an appropriate air monitoring network. New Jersey will work with the other states in the shared

multi-state nonattainment areas, as necessary. The proposed maintenance plan includes a contingency plan that will be promptly implemented to assess and correct a violation of the NAAQS should one occur after redesignation.

This redesignation request also includes transportation conformity budgets for New Jersey for 2009 and 2025. The purpose of these 2025 budgets is to ensure that emissions from onroad mobile sources will not grow above the planned values.

New Jersey requests that the USEPA redesignate the New Jersey portions of both of its shared multi-state $PM_{2.5}$ nonattainment areas to attainment for the annual 15 $\mu g/m^3$ and daily 35 $\mu g/m^3$ $PM_{2.5}$ NAAQS in accordance with the Clean Air Act.

1.0 INTRODUCTION

The purpose of this document is to request that the United States Environmental Protection Agency (USEPA) redesignate the New Jersey portions of both of its shared multi-state fine particulate matter ($PM_{2.5}$) nonattainment areas to attainment in accordance with the Federal Clean Air Act, 42 U.S.C. 7401 et seq. This State Implementation Plan (SIP) revision presents the proposed request for redesignation in accordance with the information required by the Clean Air Act.

This redesignation request includes the following:

1) current air quality monitoring data that show the Northern New Jersey-New York-Connecticut (NNJ-NY-CT) and the Southern New Jersey-Philadelphia (SNJ-Phila.) $PM_{2.5}$ nonattainment areas meet the $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS);

2) historical air quality monitoring data that show a significant decreasing trend in $PM_{2.5}$ concentrations over time in both $PM_{2.5}$ nonattainment areas;

3) the information necessary to support a request to the USEPA to redesignate the New Jersey portions of the NNJ-NY-CT and the SNJ-Phila. $PM_{2.5}$ nonattainment areas to attainment for the annual and daily $PM_{2.5}$ standards;

4) a Maintenance Plan that demonstrates a continuing downward trend in emissions of $PM_{2.5}$, oxides of nitrogen (NO_x) and sulfur dioxide (SO_2) emissions through 2025, and provides a Contingency Plan that would be implemented should the air quality violate the $PM_{2.5}$ NAAQS in the future; and

5) transportation conformity budgets for use in assuring maintenance of the standard.

The USEPA issued guidance to assist the states in preparing a request to redesignate areas to attainment.[1,2] These guidance documents are included as Appendix I.

[1] USEPA memorandum dated September 4, 1992, entitled *Procedures for Processing Requests to Redesignate Areas to Attainment*, from John Calcagni, Director, Air Quality Management Division, to Regional Air Directors.
[2] USEPA memorandum dated March 2, 2012, entitled *Implementation Guidance for the 2006 24-Hour Fine Particle ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS)*, from Stephen D. Page, Director, Office of Air Quality Planning and Standards, to Regional Air Directors.

New Jersey Goal to Reach 12 µg/m^3

New Jersey established a state specific goal of 12 µg/m^3 for the annual $PM_{2.5}$ standard in 2005. There is no clear threshold below which adverse health effects are not experienced by at least certain segments of the population. A goal of 12 µg/m^3 is a 20 percent reduction from the Federal annual $PM_{2.5}$ NAAQS (15 µg/m^3) established in 1997. This goal is consistent with the California Air Resources Board's (CARB) revised California annual $PM_{2.5}$ standard to 12 µg/m^3 (annual mean).[3,4] Achieving the NJDEP's goal of 12 µg/m^3 will provide greater protection of its citizens than would be achieved at 15 µg/m^3 ambient levels.

On June 14, 2012, the USEPA proposed a revision of the NAAQS for $PM_{2.5}$. The USEPA proposed to lower the annual $PM_{2.5}$ standard from 15 µg/m^3 to between 12 to 13 µg/m^3. The air quality in New Jersey is meeting the lowest end of the proposed standard range, as well as the New Jersey goal.

State Strategic Plan (SSP)

The State of New Jersey developed a draft final State Strategic Plan (SSP) to coordinate and address opportunities for responsible economic growth and redevelopment in New Jersey, while balancing environmental stewardship, improved job opportunities and social equity. [5] All state agencies are expected to align their goals and actions to support the vision of the State Strategic Plan. The goals described in the plan include targeted economic growth, effective planning for vibrant regions (including Garden State Values), preservation and enhancement of critical state resources, and tactical alignment of government.

One of the Garden State Values included in the draft final State Strategic Plan is the protection of the environment, including improved air quality, to provide for healthy communities. This proposed redesignation request helps achieve the goals of the draft final State Strategic Plan by recognizing the achievement of clean air and ensuring statewide compliance with the health standards for $PM_{2.5}$ in the future. In turn, the draft final State Strategic Plan supports the proposed redesignation plan by expanding the responsibilities for protecting air quality to all levels of State government and creating a link between the State's economic growth and redevelopment goals with the protection of public health.

Energy Master Plan (EMP)

The Energy Master Plan strategically balances the development of new sources of clean energy, including natural gas, with renewables.[6] The Energy Master Plan encompasses five overarching goals that work to drive down the cost of energy for all customers while promoting clean, environmentally safe renewable sources of energy. To advance the five overarching goals, the 2011 Energy Master Plan developed an action plan comprised of a series of concrete policy options and recommendations grouped by subject area in four sections: conventional generation and other infrastructure resources; renewable resources; energy efficiency, conservation, and demand response; and innovative technology opportunities. These actions

[3] CAEPA. Staff Report: Public Hearing to Consider Amendments to the Ambient Air Quality Standards for Particulate Matter and Sulfates. Prepared by the Staff of the Air Resources Board and the Office of Environmental Health Hazard Assessment, California Environmental Protection Agency (CAEPA), May 3, 2002.
[4] Adopted in 2002, pursuant to the Children's Environmental Health Protection Act (Senate Bill 25, Senator Martha Escutia; Stats. 1999, Ch. 731, Sec. 3).
[5] http://www.state.nj.us/state/planning/plan-draft-final.html
[6] http://www.nj.gov/emp/

will help improve air quality and maintain the NAAQS because cleaner energy sources result in lower NO_x emissions, precursors to fine particulate matter, when compared to NO_x emissions from fossil fuel- generating sources. Additionally, energy efficiency and renewable energy resources help avoid NO_x emissions. NJDEP's lower sulfur in heating oil rule is consistent with the Energy Master Plan clean energy goal. The Energy Master Plan is consistent with the State Strategic Plan which also focuses on economic development and job growth.

Environmentally Overburdened Communities in New Jersey

While unhealthy air quality negatively impacts human health throughout the northeastern United States and New Jersey, these health risks are higher for populations living near roadways and in urban areas. Improving air pollution in these affected areas is one of the NJDEP's greater challenges. New Jersey is committed to revitalizing overburdened areas by mitigating a legacy of environmental degradation, including air pollution, and the resulting adverse consequences to public health and the environment. The actions outlined in this proposed redesignation request will help New Jersey meet this commitment by continuing efforts to reduce $PM_{2.5}$ emissions from the mobile and industrial sources impacting New Jersey's overburdened areas.

To address disproportionate impacts of air toxic hazards across urban areas on highly exposed population subgroups, the NJDEP is developing methods and strategies to assess air impacts from multiple sources at the community scale. These strategies build upon the pilot projects that were initiated in Camden and Paterson, two of New Jersey's most urbanized areas, which assessed community scale air impacts. Achieving the NAAQS for fine particles is a minimum requirement for overburdened areas. Maintaining the health standards, with a focus on overburdened areas, is a commitment of this redesignation request.

2.0 BACKGROUND

The Clean Air Act requires all areas of the nation to attain and maintain compliance with National Ambient Air Quality Standards (NAAQS). The NAAQS are designed to protect public health and welfare for specific air pollutants. For $PM_{2.5}$, there are two primary, health-based NAAQS:

- an annual $PM_{2.5}$ health-based standard of 15 micrograms per cubic meter ($\mu g/m^3$); and
- a daily $PM_{2.5}$ health-based standard of 35 micrograms per cubic meter ($\mu g/m^3$) (24-hour average).[7,8]

Simultaneously, the USEPA established secondary (welfare-based) $PM_{2.5}$ standards identical to the primary standards. The secondary $PM_{2.5}$ standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

On June 14, 2012, the USEPA proposed a revision of the NAAQS for $PM_{2.5}$. The USEPA proposed to lower the annual $PM_{2.5}$ standard from 15 $\mu g/m^3$ to between 12 to 13 $\mu g/m^3$. The air quality in New Jersey is meeting the proposed standard of 12 $\mu g/m^3$.

[7] 62 Fed. Reg. 38652-760 (July 18, 1997).
[8] 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.

The USEPA set the $PM_{2.5}$ standards with 24-hour and annual averaging times to protect against effects from short- and long-term exposure identified by a number of published epidemiological studies. Attainment of the $PM_{2.5}$ NAAQS represents a significant health benefit to the citizens of New Jersey. Exposure to $PM_{2.5}$ can cause a variety of health problems, such as premature mortality, decreased lung function and difficulty breathing, asthma attacks, and other effects, such as reduced visibility, loss of biodiversity, and damage to manmade structures, sensitive forests, and farm crops, and contributes to global warming and the formation of acid rain.

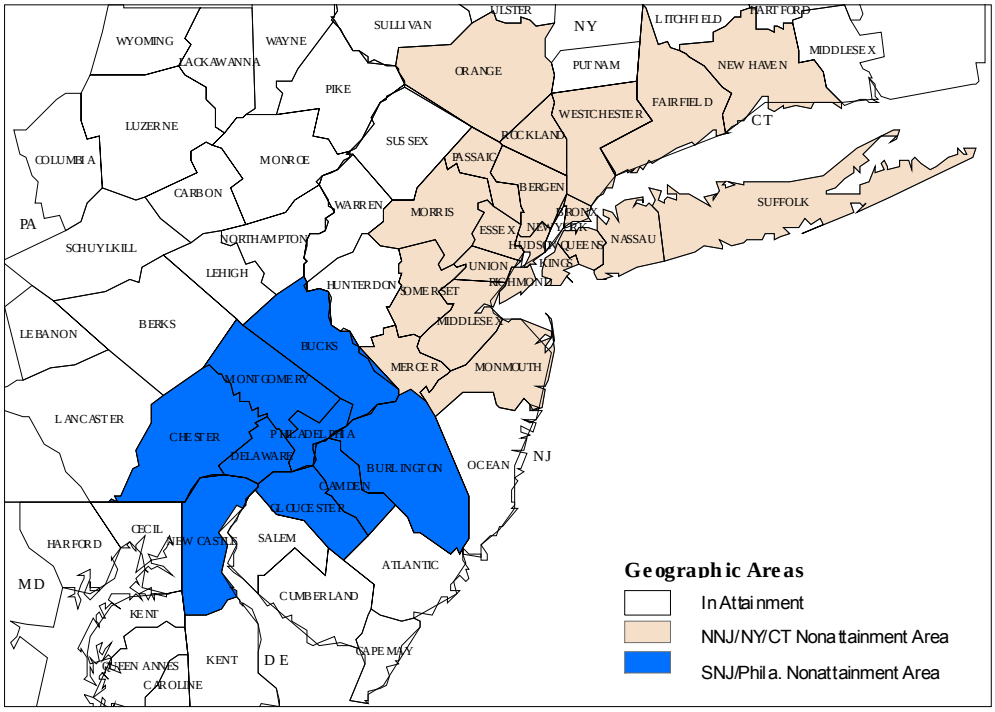
The New Jersey portion of the NNJ-NY-CT nonattainment area includes the following ten counties: Bergen, Essex, Hudson, Mercer, Middlesex, Monmouth, Morris, Passaic, Somerset and Union. Other States counties in this nonattainment area include Bronx, Kings, Nassau, New York, Orange, Queens, Richmond, Rockland, Suffolk and Westchester Counties in New York, and Fairfield and New Haven counties in Connecticut.

The New Jersey portion of the SNJ-Phila. nonattainment area includes three counties: Burlington, Camden, and Gloucester. Other States counties in this nonattainment area include Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties in Pennsylvania, and New Castle County in Delaware.

Figure 1 shows the multi-state $PM_{2.5}$ nonattainment areas which include New Jersey.

A summary of New Jersey's $PM_{2.5}$ Status, SIPs, NJDEP letters to USEPA, USEPA approvals and USEPA determinations of attainment is included as Appendix II.

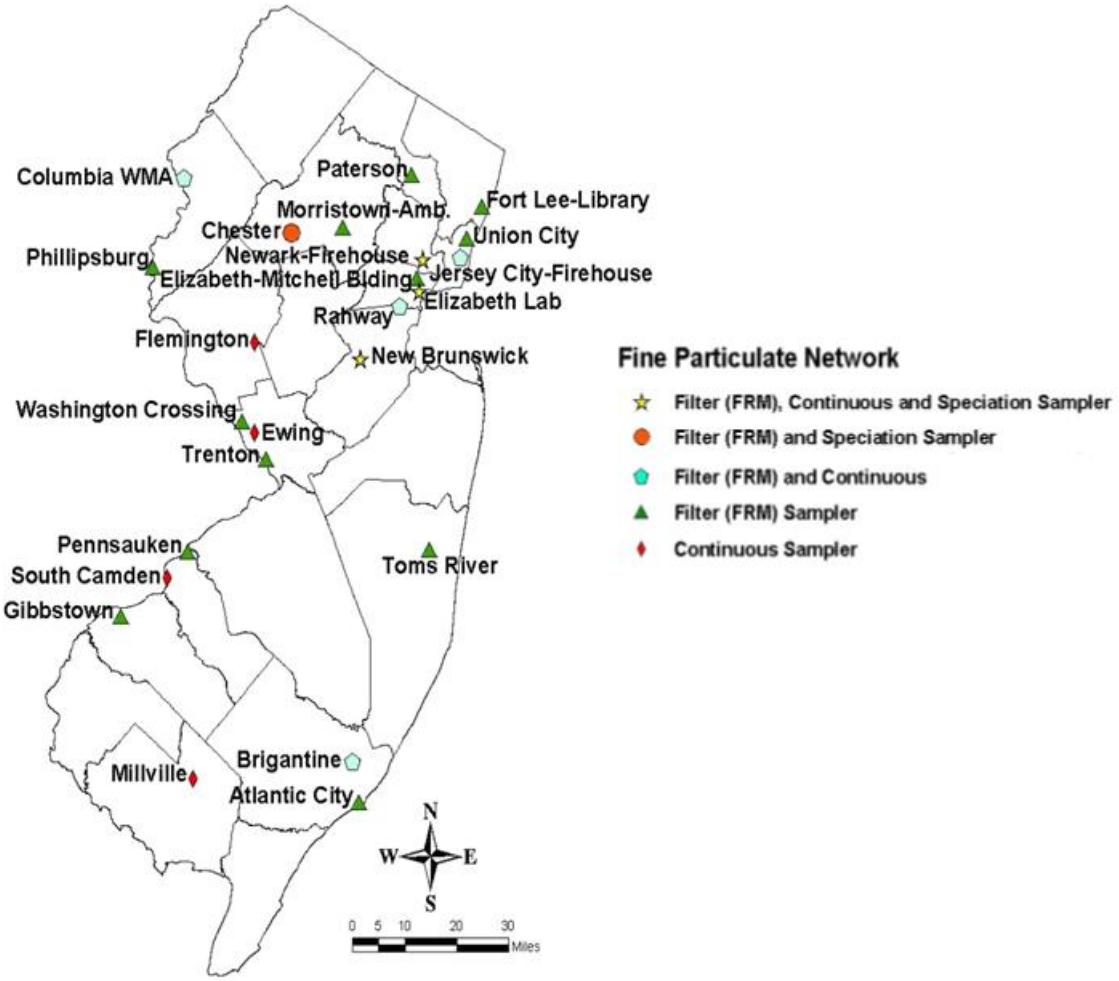
Figure 1
New Jersey's Multi-State $PM_{2.5}$ Nonattainment Areas



3.0 AIR QUALITY

In order to determine compliance with the National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$, the USEPA established criteria for the monitoring of ambient concentrations of $PM_{2.5}$ at 40 C.F.R. 58. New Jersey established monitors that meet these criteria at 20 locations as shown in Figure 2.

Figure 2
$PM_{2.5}$ Monitoring Locations in New Jersey



To determine compliance with the NAAQS, data from air quality monitors are used to calculate design values (DV)[9] at each site. The data from the monitor with the highest design value in the area are used to determine compliance with the NAAQS. Monitoring design values for $PM_{2.5}$ show a significant decreasing trend from 1999 to 2011 for both of New Jersey's multi-state $PM_{2.5}$ nonattainment areas, as shown in Figures 3 through 6. A summary of the monitoring data design values for both of New Jersey's multi-state nonattainment areas, from 1999 to 2011, is included in Appendix III.

[9] A 'design value' is a calculated concentration according to 40 CFR Appendix N to Part 50. The design value for the annual standard is the 3-year average of annual $PM_{2.5}$ arithmetic means for a single monitoring site or a group of monitoring sites. The design value for the 24-hour standard is the 3-year average of the 98th percentile 24-hour average values recorded at each monitoring site per year.

Figure 3
Annual $PM_{2.5}$ Monitoring Design Value Trends 1999-2011
Northern New Jersey-New York-Connecticut Nonattainment Area

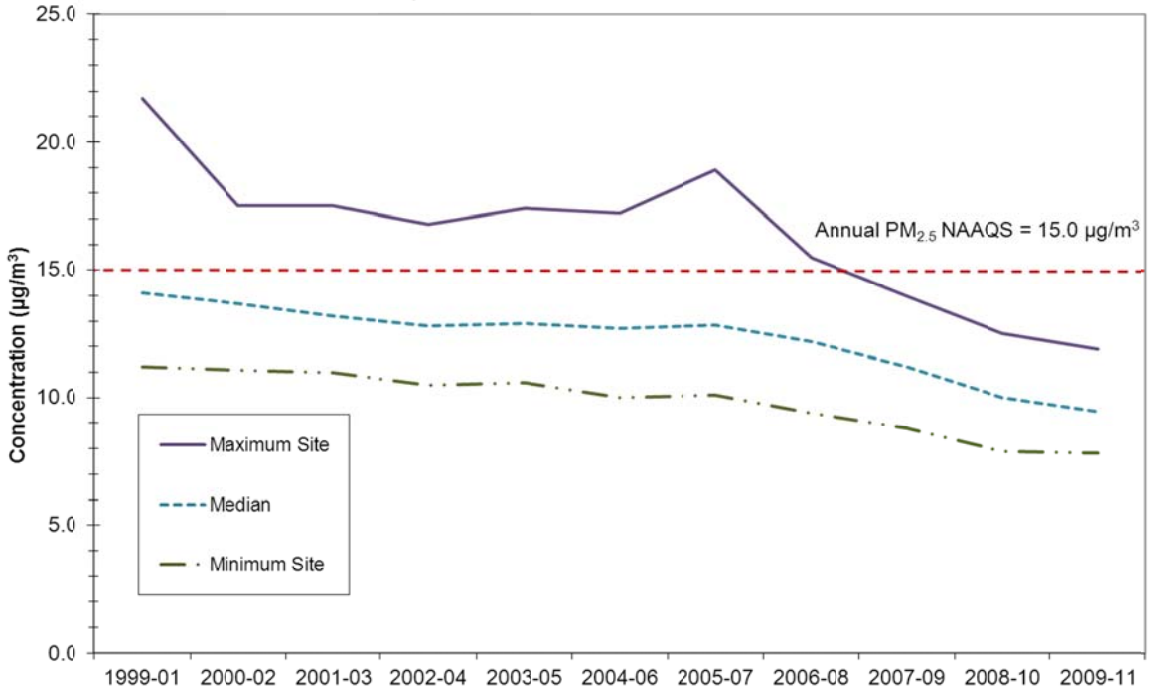


Figure 4
Daily (24-Hour) $PM_{2.5}$ Monitoring Design Value Trends 1999-2011
Northern New Jersey-New York-Connecticut Nonattainment Area

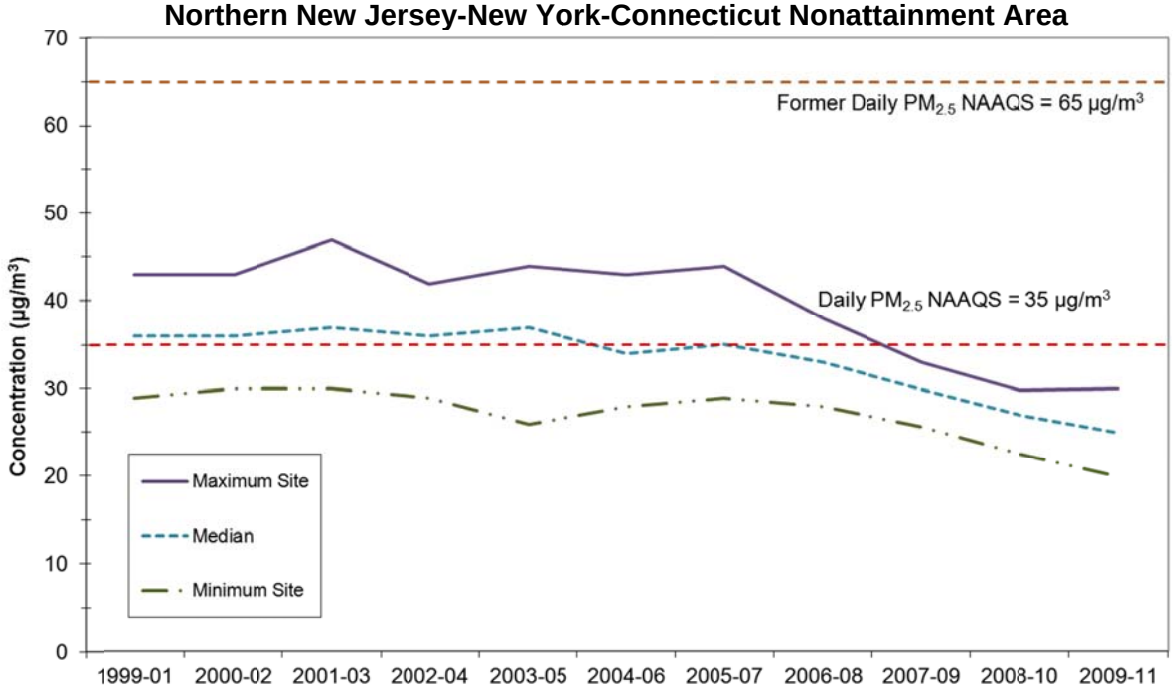


Figure 5
Annual $PM_{2.5}$ Monitoring Design Value Trends 1999-2011
Southern New Jersey-Philadelphia Nonattainment Area

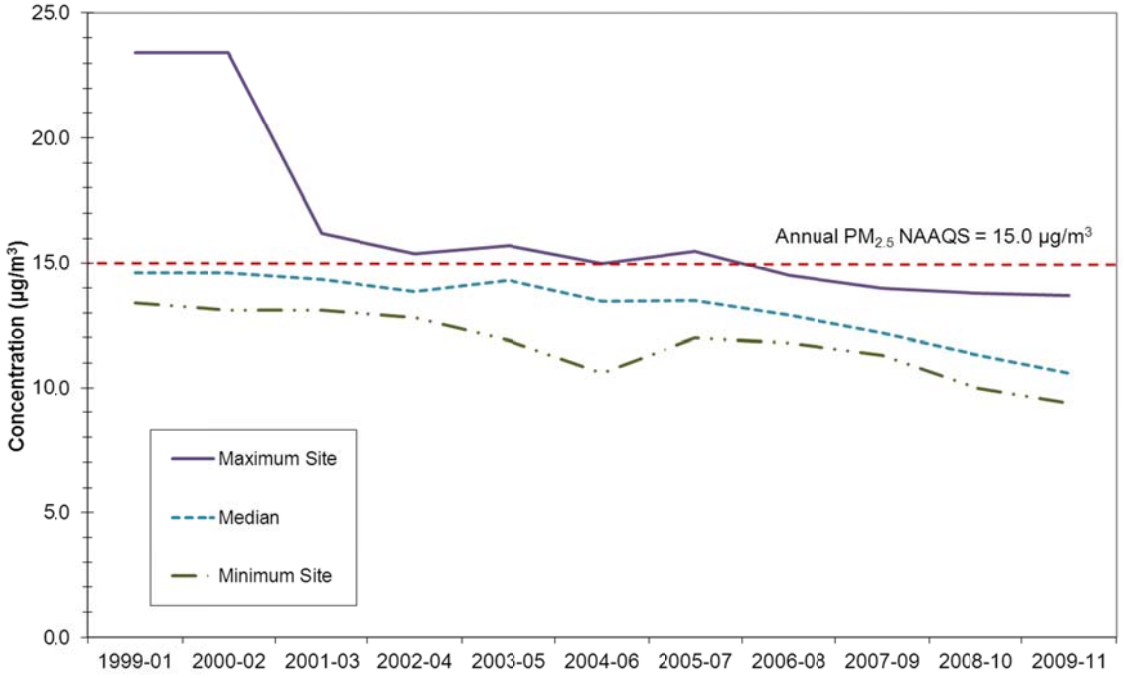
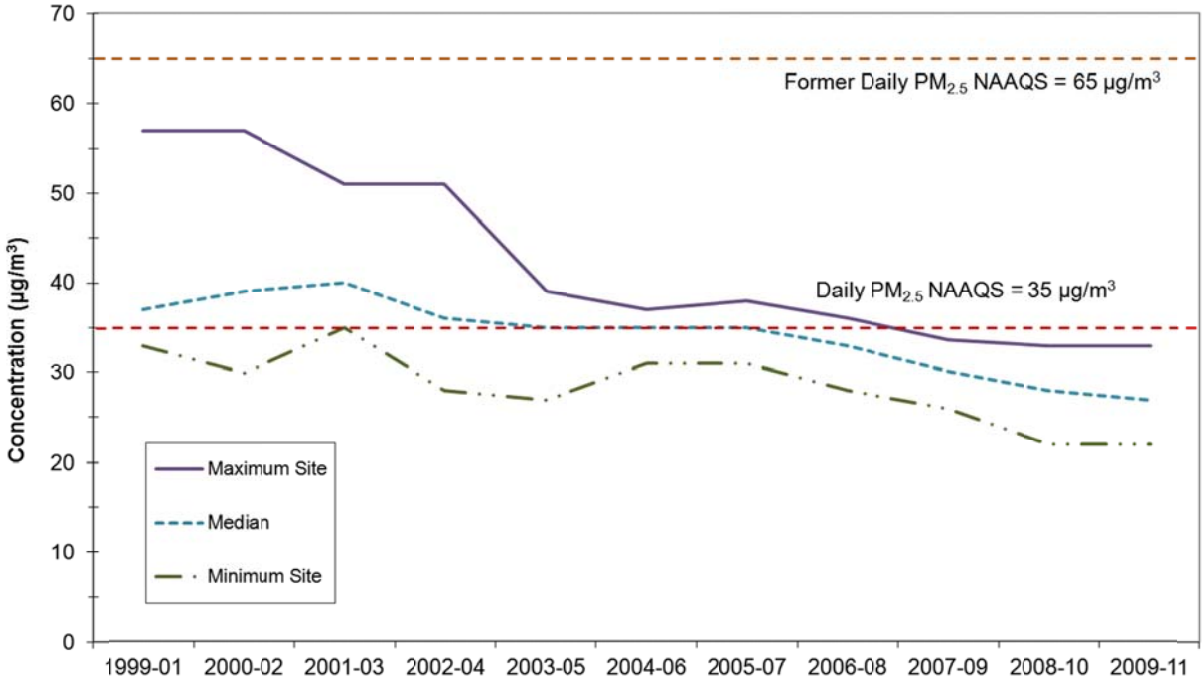


Figure 6
Daily (24-Hour) $PM_{2.5}$ Monitoring Design Value Trends 1999-2011
Southern New Jersey-Philadelphia Nonattainment Area



$PM_{2.5}$ Components

New Jersey collects data on the components of $PM_{2.5}$ at monitoring sites across the State. This is also referred to as "speciation" monitoring. The New Jersey Speciation Network currently consists of four sites (Elizabeth, Newark, New Brunswick, and Chester shown in Figure 2) [10] at which filters are collected and analyzed to determine their chemical characteristics. The speciation monitors are different than those used to measure attainment (Federal Reference Method (FRM) monitors) and use a different sampling method.

$PM_{2.5}$ is composed of many different chemical components. An evaluation of the components of $PM_{2.5}$ provides insight into the contributing pollution sources and the effect of existing control measures.

Annual statewide average speciation data are shown in Figures 7 and 8. The six most prevalent compounds are sulfate, organic carbon, nitrate, ammonium, sulfur, and elemental carbon. The "other" compounds were calculated by averaging the sum of the measured concentrations from each monitor per year.[11]

Organic carbon, sulfate and sulfur comprise approximately 65% of the total $PM_{2.5}$ mass. Studies[12] have shown that the primary sources of organic and elemental carbon are gasoline and diesel vehicles and local sources such as wood burning (depending on the area and season), while the major contributors of sulfate are from primarily power plants and burning fuels that contain sulfur, such as heating oil.

Annual

From 2002-2011, the total $PM_{2.5}$ mass measured at the speciation monitors decreased by 31% (-0.6 $\mu g/m^3$ per year). The reduction is due to significant decreases over the 10-year period in all six of the primary $PM_{2.5}$ components. Reductions of each of these components from 2002-2011 in the statewide annual averages are as follows: [13]

- Sulfate: -51% (-0.3 $\mu g/m^3$ per year)
- Sulfur: -45% (-0.08 $\mu g/m^3$ per year)
- Organic carbon: -55% (-0.25 $\mu g/m^3$ per year)
- Elemental carbon: -34% (-0.04 $\mu g/m^3$ per year)
- Ammonium: -56% (-0.13 $\mu g/m^3$ per year)
- Nitrate: -42% (-0.10 $\mu g/m^3$ per year)

The main difference noted in a comparison of the four sites is that the concentrations of organic and elemental carbon are higher at Elizabeth compared to the other three sites. This is most likely due to its proximity to high traffic volume, and motor vehicles (gasoline and diesel), which are the primary source for those species.

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[10] The Camden monitoring site is no longer operational, but is included in the historical analysis as shown in Appendix III.

[11] The number of species measured decreased from 55 to 39 in 2010.

[12] For details on other $PM_{2.5}$ speciation data studies, including seasonal trends, for New Jersey and the region, refer to: NJDEP. State Implementation Plan (SIP) Revision for the Attainment and Maintenance of the Fine Particulate Matter ($PM_{2.5}$) National Ambient Air Quality Standard: $PM_{2.5}$ Attainment Demonstration, Final, Chapter 2, Appendices B11 and B12. New Jersey Department of Environmental Protection, March 26, 2009.

[13] Refer to Appendix III for additional details.

High Days

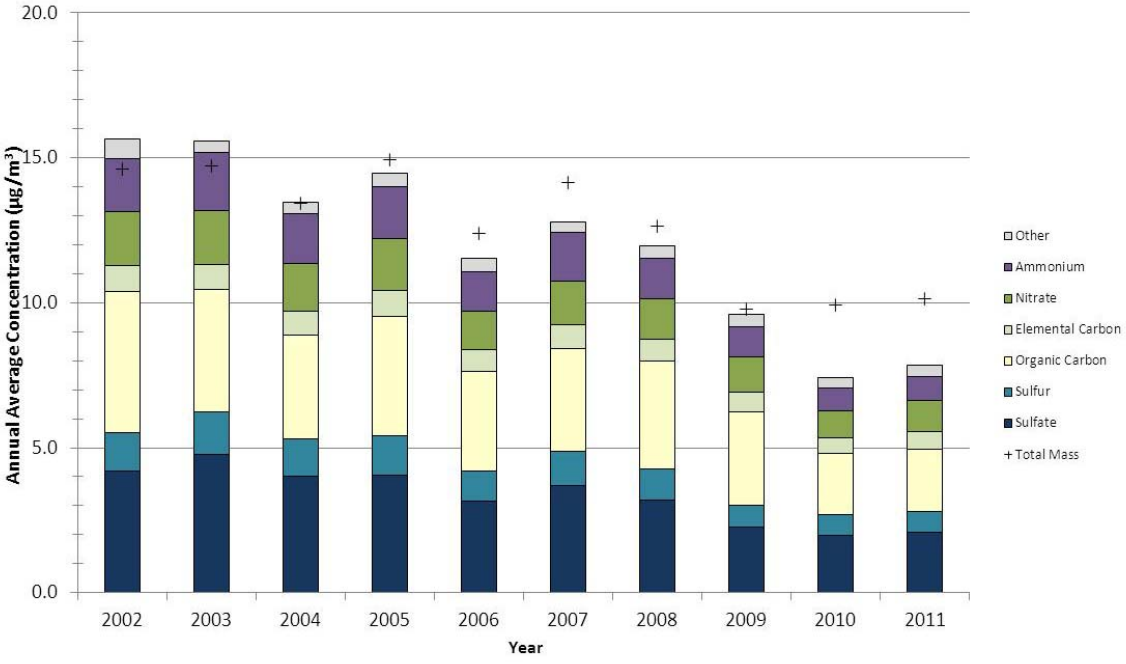
The highest and lowest ten percent (10%) of the days on which total $PM_{2.5}$ mass was measured were analyzed for each year. [14] On the days with the highest total $PM_{2.5}$ mass, concentrations decreased by 44% (-1.9 µg/m^3 per year). Reductions of each of these components from 2002-2011 on the highest (10%) days were as follows:

- Sulfate: -57% (-0.91 µg/m^3 per year)
- Sulfur: -50% (-0.26 µg/m^3 per year)
- Organic Carbon: -58% (-0.45 µg/m^3 per year)
- Elemental Carbon: 3% (0 µg/m^3 per year)
- Ammonium: -58% (-0.36 µg/m^3 per year)
- Nitrate: -42% (-0.16 µg/m^3 per year)

On the days with the lowest total $PM_{2.5}$ mass, decreases in total mass and the major species are also observed. However, there are more observed reductions of sulfate, sulfur, and organic carbon on high days compared to low days or on an annual basis. Additional data and graphs are included in Appendix III.

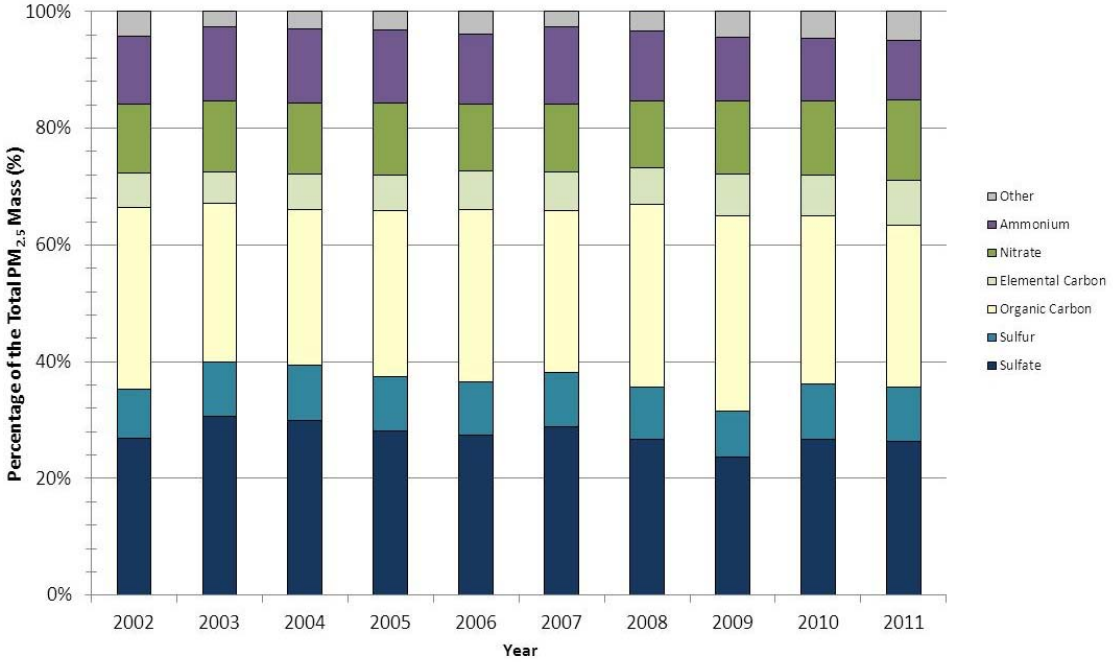
In summary, organic carbon, sulfates and sulfur make up the majority of the $PM_{2.5}$ mass. Significant decreases are noted in the annual average data and in the highest $PM_{2.5}$ days in all of the six major species from 2002-2011. Organic carbon and sulfate consistently remain the top two largest contributors on an individual basis.

Figure 7
New Jersey Statewide Averages: 2002-2011 Speciation Data (µg/m^3)



[14] See additional details in Appendix III.

Figure 8
New Jersey Statewide Averages, New Jersey: 2002-2011 Speciation Data (%)



**See Appendix III for data notes.*

4.0 REQUEST FOR REDESIGNATION OF AREA TO ATTAINMENT

The State of New Jersey is requesting the USEPA Administrator redesignate the New Jersey portion of both of New Jersey's $PM_{2.5}$ nonattainment areas to attainment of the annual 15 $\mu g/m^3$ and daily 35 $\mu g/m^3$ NAAQS for $PM_{2.5}$. In support of this request, the State is providing the following, as required by the Clean Air Act. [15, 16]

1) a demonstration that both of the $PM_{2.5}$ nonattainment areas associated with New Jersey have attained the annual 15 $\mu g/m^3$ and daily 35 $\mu g/m^3$ NAAQS for $PM_{2.5}$;

2) a demonstration that the applicable implementation plans are fully approved by the USEPA under section 110(k) of the Clean Air Act, or the requirements have been waived in accordance with a clean data determination or are anticipated to be waived with a clean data determination[17];

3) information showing that the improvement in air quality is due to permanent and enforceable reductions in emissions of $PM_{2.5}$ or its precursors;

4) information demonstrating that the State has met all applicable requirements under section 110 and Part D of the Clean Air Act;

[15] 42 U.S.C. 7407(d)(3)(E).
[16] 42 U.S.C. 7407(d)(3)(D).
[17] USEPA memorandum, dated December 14, 2004, entitled *Clean Data Policy for the Fine Particle National Ambient Air Quality Standards*, from Stephen D. Page, Director, Office of Air Quality Planning and Standards.

5) a Maintenance Plan that demonstrates the NAAQS will be maintained for 10 years beyond the date of redesignation; and

6) transportation conformity budgets for use in assuring maintenance of the standard.

4.1 Demonstration of Attainment of the $PM_{2.5}$ NAAQS

The air quality in both of the multi-state nonattainment areas associated with New Jersey attained the annual 15 µg/m^3 and daily 35 µg/m^3 NAAQS for $PM_{2.5}$. Some monitors have incomplete data, which has been addressed by data substitution and/or statistical analyses. In addition, as shown in Section 3.0, monitoring design values show a significant decreasing trend from 1999-2011 for both of New Jersey's multi-state $PM_{2.5}$ nonattainment areas.

Annual 15 µg/m^3 NAAQS

The USEPA has issued a final clean data determination for the NNJ-NY-CT nonattainment area on November 15, 2010 which determined that the entire nonattainment area had attained the annual 15 µg/m^3 $PM_{2.5}$ NAAQS for the 2007-2009 monitoring period. [18,19] The USEPA finalized a determination that the SNJ-Phila. nonattainment area is in attainment of the annual standard for 2007-2009 monitoring period.[20,21]

Daily 35 µg/m^3 NAAQS

NJDEP anticipates that USEPA will propose clean data determinations for both of the multi-state nonattainment areas associated with New Jersey for the daily 35 µg/m^3 NAAQS for $PM_{2.5}$ later this summer.

Figures 9-12 summarize the 2009 design value monitoring data for both nonattainment areas for the annual and daily standards. See Section 3.0 for details on how design values are calculated. Detailed monitoring data tables for the 2009, 2010 and 2011 monitoring data design values are included in Appendix III. The 2010 and 2011 monitoring data continue to show compliance with the standards, as well as continuing to show a decreasing trend.

[18] 75 FR 69589 (November 15, 2010).
[19] The incomplete data are addressed in the USEPA's action using a statistical bootstrapping analysis; 75 FR 45079-80 (August 2, 2010).
[20] 77 FR 28782 (May 16, 2012).
[21] The incomplete data are addressed in the USEPA's action using data substitution and a statistical bootstrapping analysis; 77 FR 3223 (January 23, 2012).

Figure 9
2007-2009 Annual $PM_{2.5}$ Design Values
Northern New Jersey-New York-Connecticut Nonattainment Area

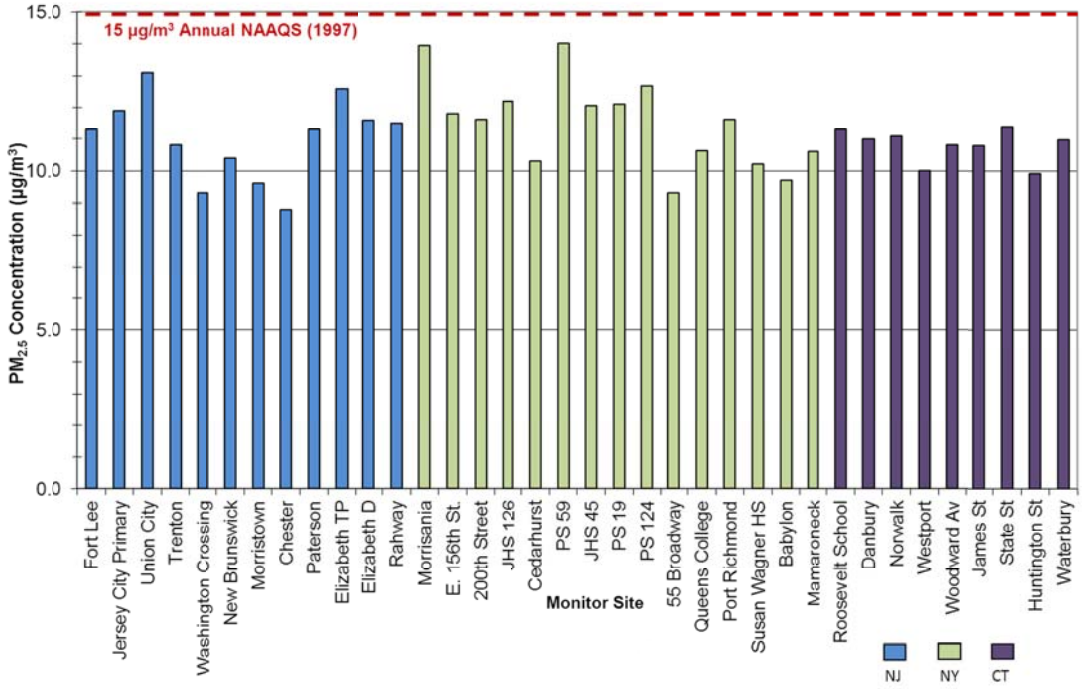


Figure 10
2007-2009 Daily (24-Hour) $PM_{2.5}$ Design Values
Northern New Jersey-New York-Connecticut Nonattainment Area

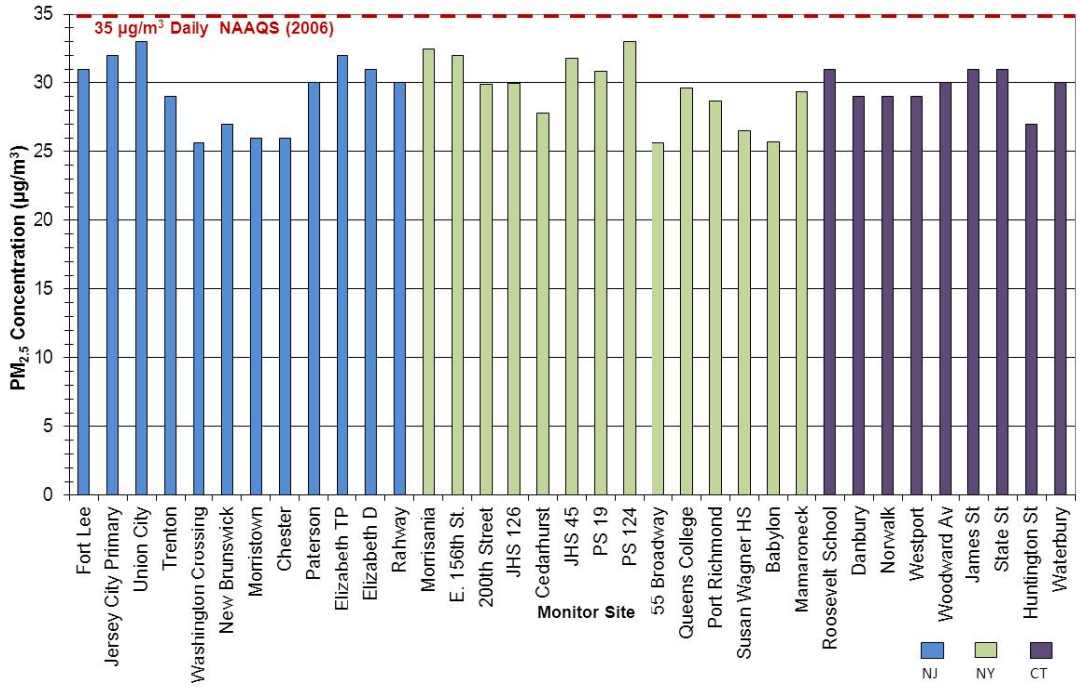


Figure 11
2007-2009 Annual $PM_{2.5}$ Design Values
Southern New Jersey-Philadelphia Nonattainment Area

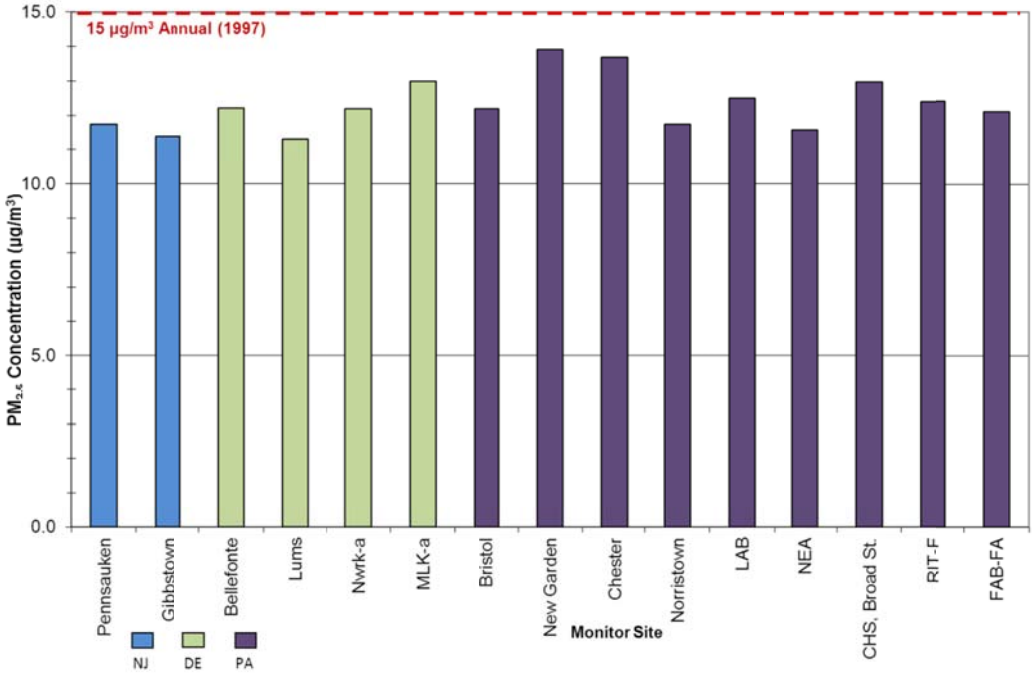
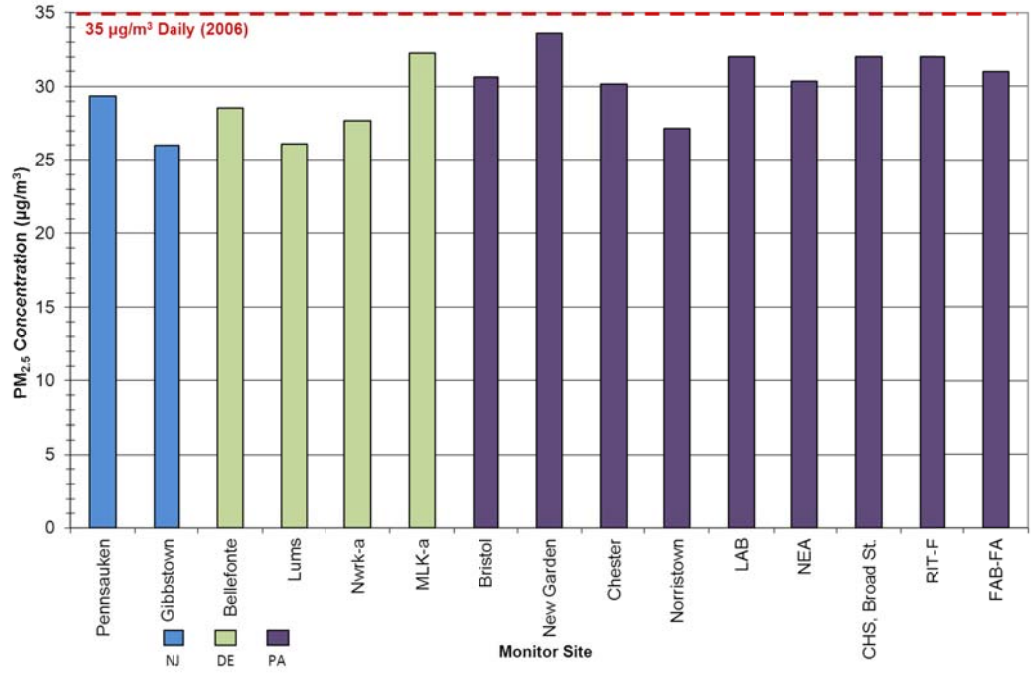


Figure 12
2007-2009 Daily (24-Hour) $PM_{2.5}$ Design Values
Southern New Jersey-Philadelphia Nonattainment Area



4.2 Clean Air Act Section 110 (k) SIP Requirements

A clean data determination suspends the requirement for states to submit certain State Implementation Plan (SIP) elements, including an attainment demonstration and contingency measure plan.[22] New Jersey submitted a SIP to the USEPA for the annual 15 µg/m^3 $PM_{2.5}$ NAAQS standard, but the USEPA has not acted upon it. New Jersey is relying on a clean data determination to suspend the SIP requirements for the daily standard.

Annual 15 µg/m^3 NAAQS

As discussed in Section 4.1, the USEPA issued a final clean data determination for the NNJ-NY-CT nonattainment area on November 15, 2010 determining the entire nonattainment area had attained the annual 15 µg/m^3 $PM_{2.5}$ NAAQS for the 2007-2009 monitoring period.[23] The USEPA finalized a determination that the SNJ-Phila. nonattainment area is in attainment of the annual standard for 2007-2009 monitoring period.[24]

Daily 35 µg/m^3 NAAQS

The NJDEP anticipates that USEPA will propose clean data determinations for both of New Jersey's multi-state nonattainment areas for the daily 35 µg/m^3 NAAQS for $PM_{2.5}$.

New Jersey submitted a request to the USEPA on October 5, 2011 requesting that the USEPA determine that both of New Jersey's multi-state nonattainment areas had attained the daily 35 µg/m^3 $PM_{2.5}$ standard.

SIP

On March 26, 2009, New Jersey submitted to the USEPA a demonstration of attainment of the annual 15 µg/m^3 $PM_{2.5}$ NAAQS for New Jersey's two shared multi-state $PM_{2.5}$ nonattainment areas.[25] New Jersey provided technical supplements to the attainment plan on December 17, 2009 and June 29, 2010 that provided additional information regarding the emission inventories, control measures, and contingency measures in the State's attainment plan. The USEPA has not taken action on approval for this SIP as of the date of this proposed redesignation request.

4.3 Permanent and Enforceable Improvement in Air Quality

The improvement in air quality in New Jersey's multi-state nonattainment areas is due to permanent and enforceable reductions in emissions of $PM_{2.5}$ and its precursors, NO_x and SO_2, from State and Federal air pollution control measures. The control measures shown in Table 1 include New Jersey measures which provided emission reductions for $PM_{2.5}$, NO_x and SO_2 from 2002 to 2009, the year modeled for the attainment demonstration, and also include additional control measures adopted in New Jersey, but not yet implemented, anticipated to provide further benefit after 2009. The table also includes VOC measures, which are not considered quantifiable precursors, but it is anticipated that these measures provide benefit towards the reduction of $PM_{2.5}$.

[22] USEPA memorandum, dated December 14, 2004, entitled *Clean Data Policy for the Fine Particle National Ambient Air Quality Standards*, from Stephen D. Page, Director, Office of Air Quality Planning and Standards.
[23] 75 FR 69589 (November 15, 2010).
[24] 77 FR 28782 (May 16, 2012).

The pre-2009 measures that have contributed towards the observed emission reductions include the State's NO_x Budget program (nitrates), Power plant consent decrees (large sulfate reductions), the Federal motor vehicle control program (organic carbon and nitrates), emission limits on boilers (nitrates), New Jersey's motor vehicle inspection and maintenance program for gasoline (organic carbon and nitrates) and diesel vehicles ($PM_{2.5}$) and New Jersey's area source VOC rules for consumer products, paints and adhesive application (organic carbon).

Table 1
New Jersey's Post 2002 Control Measures
to Reduce Emissions of PM2.5 and its Precursors

Measure	New Jersey Administrative Code	USEPA Approval	Pollutant Reduced			
			$PM_{2.5}$	SO_2	NO_x	VOC*
Low Sulfur Distillate and Residual Fuel Oil Strategies	NJAC 7:27-9	1/3/2012		x		
EGU - PSEG-Consent Decree	NA	Filed 7/26/02; amended 11/30/06	x	x	x	
EGU - Coal-fired Boilers	NJAC 7:27-4.2, 10.2, 19.4	8/3/2010	x	x	x	
EGU - Oil and Gas Fired Boilers	NJAC 7:27-4.2, 10.2, 19.4	8/3/2010			x	
EGU-High Electric Demand Day (HEDD)	NJAC 7:27-19.29	8/3/2010			x	
NO_x Budget	NJAC 7:27-30	10/1/2007			x	
Refinery Consent Decree - Sunoco	NA	Filed 12/2/03; amended 3/15/04; terminated 3/5/12	x	x	x	x
Refinery Consent Decree - Valero	NA	Filed 6/16/05	x	x	x	x
Refinery Consent Decree - ConocoPhillips	NA	Filed 1/27/05	x	x	x	x
Asphalt Production Plants	NJAC 7:27-19.9	8/3/2010			x	
NO_x Reasonably Available Control Technology) (RACT) Rule (2006)	NJAC 7:27-27.19	7/31/2007			x	
Industrial/Commercial/Institutional Boilers (2009)	NJAC 7:27-19.7	8/3/2010			x	
Glass Manufacturing	NJAC 7:27-19.10	8/3/2010			x	
Municipal Waste Combustors (Incinerators)	NJAC 7:27-19.13	8/3/2010			x	
Case by Case NO_x (Facility-Specific Emission Limits (FSELs)/Alternative Emission Limits (AELs))	NJAC 7:27-19.13	8/3/2010			x	
Sewage and Sludge incinerators	NJAC 7:27-19.28	8/3/2010			x	
On-Board Diagnostics (OBD) – (I/M) Program for Gasoline Vehicles	NJAC 7:27-15	5/21/2004			x	
Vehicle Idling Rule Amendments	NJAC 7:27-14.1, 14.3	4/14/2009	x		x	x
Diesel Smoke (I/M Cutpoint) Rule	NJAC 7:27-14	Pending	x		x	
Diesel Vehicle Retrofit Program	N.J.A.C. 7:27-32, N.J.A.C. 7:27-14	NA	x			
Architectural Coatings 2005	NJAC 7:27-23	11/30/2005				x
Portable Fuel Containers 2005	NJAC 7:27-24	1/25/2006				x
Consumer Products 2005	NJAC 7:27-24	1/25/2006				x

Table 1 New Jersey's Post 2002 Control Measures to Reduce Emissions of PM2.5 and its Precursors						
Measure	**New Jersey Administrative Code**	**USEPA Approval**	**Pollutant Reduced**			
			$PM_{2.5}$	**SO_2**	**NO_x**	**VOC***
Consumer Products 2009	**NJAC 7:27-24**	7/22/2010				x
Portable Fuel Containers 2009	NJAC 7:27-24	7/22/2010				x
Adhesives & Sealants	NJAC 7:27-26	7/22/2010				x
Petroleum Storage	NJAC 7:27-16.2	8/3/2010				x
Case by Case VOC (AELs)	N.J.A.C. 7:27-16	8/3/2010				x
Asphalt Paving (cutback and emulsified)	NJAC 7:27-16.19	8/3/2010				x
CTG Group 1: Printing	NJAC 7:27-16.7	8/3/2010				x
Energy Master Plan	NA	NA	x	x	x	x
Mercury Rule	NJAC 7:27-27	NA	x	x	x	

Notes:

* Although the USEPA does not consider VOC as a $PM_{2.5}$ precursor for SIP and conformity purposes, New Jersey anticipates some $PM_{2.5}$ benefit from the implementation of these measures. New Jersey has not quantified this benefit and is including the VOC measures in this list for informational purposes.

A detailed description of the post 2002 control measures shown in Table 1 can be found in the March 26, 2009 SIP, Section 4.0.[26]

The air quality data obtained from monitoring verify the continued improvement in air quality that was projected in the March 26, 2009 $PM_{2.5}$ Attainment Demonstration SIP for the nonattainment areas. These reductions are a result of the implementation of the SIP, state and federal state air pollution control regulations, and other permanent and enforceable reductions.

4.4 Clean Air Act Part A Section 110 and Part D Requirements

4.4.1 Infrastructure Requirements

Section 110(a)(2) of the Clean Air Act contains general requirements for nonattainment plans and lists the required elements that a state needs to demonstrate its authority to develop, implement, and enforce an air quality management program that provides for attainment and maintenance of the NAAQS. These elements include, but are not limited to, air quality monitoring, data analysis, and reporting; enforcement; resources; consultation; emergency procedures; and reductions in transported air pollution.

[26] NJDEP. State Implementation Plan (SIP) Revision for the Attainment and Maintenance of the Fine Particulate Matter ($PM_{2.5}$) National Ambient Air Quality Standard: $PM_{2.5}$ Attainment Demonstration, Final. New Jersey Department of Environmental Protection, March 26, 2009.

New Jersey has the infrastructure in place that gives it the authority to implement the NAAQS in accordance with 110(a)(2) of the Clean Air Act. Demonstrations of New Jersey's authorities for the $PM_{2.5}$ NAAQS have been summarized in submittals to the USEPA on December 22, 2006[27], February 2, 2007[28], March 9, 2007[29], February 25, 2008[30] and January 15, 2010.[31]

4.4.2 Transport

Section 110(a)(2)(D) requires each state's SIP to contain adequate provisions prohibiting any source, or other type of emissions activity, within the State from emitting any air pollutants in amounts that will:

1) Contribute significantly to nonattainment of the NAAQS for areas in another state or interfere with the maintenance of the NAAQS by another state;
2) Interfere with measures required to be included in the implementation plan for any other state related to Regional Haze and Visibility; or,
3) Interfere with measures required to be included in the implementation plan for any other state related to prevention of signification deterioration (PSD).

The USEPA analysis performed to support the Cross State Air Pollution Rule[32] (CSAPR) indicates that the multi-state nonattainment areas that include portions of New Jersey are projected in 2014 to continue to be in attainment for both the daily and annual $PM_{2.5}$ NAAQS. Based on current monitoring data, all receptors downwind and upwind of New Jersey are meeting the annual and daily $PM_{2.5}$ NAAQS.

New Jersey has implemented a number of measures to address its contribution to downwind areas. As discussed in Section 4.3, Table 1 lists New Jersey's recently adopted control measures that reduce $PM_{2.5}$, SO_2, NO_x, and VOC emissions. These measures have contributed to the reduction in $PM_{2.5}$ emissions and its precursors over the last decade, and will continue to provide further reductions in the future, as discussed in the Maintenance plan, Section 4.5. As demonstrated in Section 3.0, air quality monitoring data show a trend of improving $PM_{2.5}$ air quality over the past decade that are due to permanent and enforceable measures.

New Jersey has taken action to address emissions from power plants, setting multipollutant performance standards for electric generating units (EGUs). New Jersey's low sulfur fuel oil rule will further reduce SO_2 emissions by reducing the sulfur content of fuel oils used throughout the State, including fuel oil-fired EGUs, home heating, and industrial and commercial boilers. The low sulfur fuel rule was adopted in August of 2010, with effective dates for lower sulfur limits in 2014 and 2016. The control measures implemented in New Jersey address its contributions

[27] NJDEP. Letter to address the State's plan for addressing the transported emission requirements prescribed in Section 110(a)(2)(D)(i) of the Clean Air Act sent to the USEPA Region 2 by NJDEP Commissioner Lisa P. Jackson on December 22, 2006.
[28] NJDEP. SIP Revision pursuant to N.J.A.C. 7:27-30 CAIR NO_x Trading Program, and N.J.A.C. 7:27-31.23, and N.J.A.C. 7:27A-3.10. New Jersey Department of Environmental Protection. February 2, 2007.
[29] Update to the SIP Revision pursuant to N.J.A.C. 7:27-30 CAIR NO_x Trading Program, and N.J.A.C. 7:27-31.23, and N.J.A.C. 7:27A-3.10. New Jersey Department of Environmental Protection. March 9, 2007.
[30] NJDEP. State Implementation Plan for Meeting the Infrastructure Requirements in the Clean Air Act, New Jersey Department of Environmental Protection, February 25, 2008.
[31] NJDEP. Certification For Meeting the Infrastructure Requirements in the Clean Air Act for 35 $\mu g/m^3$ 24-Hour (2006) Fine Particulate Matter National Ambient Air Quality Standard, New Jersey Department of Environmental Protection, January 15, 2010.
[32] 76 FR 48208 (August 8, 2011)

to the downwind states and ensure that its sources' emissions do not interfere with the attainment or maintenance of the $PM_{2.5}$ NAAQS or measures that prevent significant deterioration and protect visibility in another state.

In summary, New Jersey has met its obligation to address transported pollution through the implementation of these New Jersey state specific rules, including New Jersey's power plant performance standards, along with existing Federal rules to reduce $PM_{2.5}$ pollution. In implementing these control measures, New Jersey does not rely on the trading program in the Clean Air Interstate Rule (CAIR).[33]

4.4.3 Clean Air Act Part D Requirements

Part D of the Clean Air Act consists of general requirements applicable to all areas that are designated nonattainment based on a violation of the NAAQS. The Part D requirements are presented and discussed below:

4.4.3.1 Section 172(c)(1), Reasonably Available Control Measures

As presented in the March 26, 2009 Attainment Demonstration SIP submittal, the State has met the reasonably available control measure (RACM) demonstration requirement for the 15 $\mu g/m^3$ annual standard. The USEPA has not yet taken action on approval of the attainment demonstration SIP as of the date of this proposed redesignation request, however, as discussed in Section 4.2, the USEPA issued clean data determinations for both of New Jersey's multi-state non-attainment areas for the annual 15 $\mu g/m^3$ standard, which suspends the RACM requirement for that standard.

Also as discussed in Section 4.2, the State anticipates clean data determinations for both of its multi-state nonattainment areas for the daily 35 $\mu g/m^3$ standard, which will suspend the RACM requirement for that standard.

4.4.3.2 Section 172(c)(2), Reasonable Further Progress

In accordance with the $PM_{2.5}$ Implementation Rule[34], a separate reasonable further progress (RFP) plan is not required. New Jersey submitted an attainment demonstration for the 15 $\mu g/m^3$ annual standard that shows attainment by the 2010 deadline. The $PM_{2.5}$ Implementation Rule only requires states submit a separate RFP plan if the state needs an extension of the attainment date beyond 2010. Areas that demonstrate attainment of the standard by 2010 are considered to have satisfied the requirement to show reasonable further progress toward attainment and need not submit a separate RFP plan.

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[33] In order to assist States in addressing their obligations regarding regionally transported pollution, the USEPA finalized the CAIR in 2005 to reduce SO_2 and NO_x emissions from large electric generating units (EGUs). In 2008, the D.C. Circuit remanded CAIR back to the USEPA without vacatur. In response to the court's decision, USEPA issued a new rule to address interstate transport of NO_x and SO_2 in the eastern United States (i.e., the Transport Rule, also known as the Cross-State Air Pollution Rule, or CSAPR). In the Transport Rule, USEPA finalized regulatory changes to sunset CAIR and the CAIR Federal Implementation Plans (FIPs) for control periods in 2012 and beyond. CSAPR is currently stayed pending the D.C. Circuit's review and CAIR is currently in effect.

[34] 40 CFR 51

The USEPA has not yet taken action on approval of the attainment demonstration SIP as of the date of this redesignation request, however, as discussed in Section 4.2, the USEPA issued clean data determinations for both of the multi-state non-attainment areas associated with New Jersey for the annual 15 $\mu g/m^3$ standard, which suspends the attainment demonstration/RFP requirement for that standard.

Also as discussed in Section 4.2, the State anticipates a clean data determination for the 35 $\mu g/m^3$ daily standard, which will suspend the attainment/RFP requirement for that standard.

4.4.3.3 Section 172(c)(3), Inventory

The Act requires New Jersey to develop a "comprehensive, accurate, and current inventory of actual emissions from all sources."[35] The requirement for such an inventory is satisfied by the 2007 attainment emission inventory presented in Section 4.5.2 of this proposed redesignation request.

4.4.3.4 Section 172(c)(4), New Source Review

The Nonattainment New Source Review (NNSR) permitting requirements of the Clean Air Act (CAA) Part D Section 173 are applicable to a major source located in an area designated as nonattainment for any criteria pollutant when it is constructed or when it undergoes a major modification.

To implement the NAAQS for $PM_{2.5}$, the USEPA took three separate actions to establish a framework for implementing preconstruction permit review for the $PM_{2.5}$ NAAQS: (1) On May 16, 2008, the USEPA promulgated New Source Review (NSR) provisions; (2) On October 20, 2010, the USEPA promulgated a rule on increments, significant impact levels (SIL) and significant monitoring concentrations (SMC); and (3) On December 21, 2010, the USEPA promulgated rules on $PM_{2.5}$ stack test methods for stationary sources of air pollution.

In New Jersey's eight attainment counties, the final rules are implemented through prevention of significant deterioration (PSD) rules (40 CFR 52.21). In New Jersey's 13 nonattainment counties, the final rules are implemented through the 'transitional' NSR provisions contained in Appendix S of 40 CFR Part 51 and the USEPA policy memorandum dated July 21, 2011, concerning inter-pollutant offsets. The Federal provisions and policy memorandum will be superseded once New Jersey revises its Emission Offset Rule N.J.A.C. 7:27-18.

Upon USEPA approval of New Jersey's request for redesignation to attainment, the PSD program requirements of the CAA Part C would be applicable and New Jersey would implement the PSD rules throughout the entire state.

4.4.3.5 Section 176(c)(1), Conformity Requirements

Section 176(c)(1) of the Clean Air Act requires that "No department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity which does not conform to an implementation plan…"[36] Further, to ensure that Federal agencies do not cause or contribute to a new violation of the NAAQS, do not increase the frequency or severity of any existing violations of the NAAQS, and to ensure that attainment of the NAAQS is not delayed.

[35] 42 U.S.C. 7512a(a)(1).
[36] 42 U.S.C. 7506

Under the General Conformity Rule,[37] Federal agencies must work with state government in a nonattainment or maintenance area to ensure that federal actions conform to the applicable State Implementation Plan (SIP). Each federal agency must perform an applicability analysis to determine if emissions will be below de minimus levels for the criteria pollutants for which the state has a maintenance plan or is in nonattainment. If the total emissions for the project/action are above the threshold then the agency must develop a conformity determination to indicate how the project will conform to the SIP. This may include a mitigation plan, an emissions budget, New Jersey is relying on federal agencies and the USEPA to make adequate judgments to ensure all projects and actions meet New Jersey's SIPs and maintenance plans.

The New York/New Jersey Harbor Deepening Project is an example of successful implementation of General Conformity regulations by the Army Corp of Engineers and a number of New York government agencies, the USEPA and New Jersey to address and comply with the increased emissions associated with the 13-year dredging project to deepen shipping channels in the Port of New York/New Jersey to a depth of approximately 50-feet below mean sea level.

4.5 Maintenance Plan

The maintenance plan must provide a demonstration the area will continue to maintain the NAAQS for at least ten years after the redesignation and contain such additional measures as may be necessary to ensure such maintenance.[38]

This maintenance plan includes the following elements:

1) Emission Inventories: an attainment inventory that establishes emission levels that are necessary for attainment with the NAAQS; a maintenance projection inventory that estimates emissions at least ten years following redesignation; an interim projection inventory that estimates emissions between the attainment inventory and the maintenance inventory;

2) Maintenance Demonstration: a demonstration that shows future $PM_{2.5}$ emissions are not expected to exceed the level of the attainment inventory for at least ten years following redesignation, including an evaluation of an interim inventory that shows emissions are not anticipated to spike above the NAAQS during the ten year maintenance period;

3) Control Measures: The permanent and enforceable control measures that provide emission reductions during the maintenance period;

4) Monitoring Network: a description of how New Jersey will verify continued attainment with the $PM_{2.5}$ NAAQS in New Jersey and track the progress of the maintenance plan; and,

5) Contingency Plan: a plan that will be promptly implemented to correct a violation of the NAAQS should one occur after redesignation.

[37] *Ibid.*
[38] 42 U.S.C. 7505a(a).

4.5.1 Emission Inventories

The attainment inventory identifies the level of emissions in the area which is sufficient to attain the NAAQS. The attainment inventory chosen for this redesignation request is 2007. The 2007 inventory was developed regionally for SIP purposes. The maintenance inventory represents a future projected inventory at least 10 years after USEPA redesignates an area. The maintenance inventory chosen for this redesignation request is 2025. The interim inventory is an emission inventory selected between the attainment inventory and the maintenance inventory to demonstrate that emissions are not anticipated to spike above the NAAQS during the maintenance period. The interim inventory chosen for this redesignation request is 2017.[39]

The inventories are a compilation of annual emissions from $PM_{2.5}$ and its precursors, NO_x, and SO_2 for each county in the New Jersey portions of both multi-state $PM_{2.5}$ nonattainment areas. The annual inventory is chosen to represent emissions for the annual 15 $\mu g/m^3$ standard and the daily 35 $\mu g/m^3$. For nonattainment areas with exceedances of the daily standard in multiple seasons, an annual inventory is an adequate representation of inventory trends in daily emissions.[40] This is supported by a summary of monitoring data trends that shows exceedances occur any time during the year at monitors in the nonattainment areas, included in Appendix IV.

A summary of the 2007, 2017 and 2025 emissions inventories is shown in Tables 2 through 7. A detailed discussion of the development of the 2007 inventory (except for onroad) is included as Appendix V and the 2025 inventory (except for onroad) as Appendix VI. A detailed discussion of the development of the onroad inventories is included as Appendix VII. A detailed discussion of the 2017 inventory is included as Appendix VIII. Figures 13-18 show $PM_{2.5}$, NO_x, and SO_2 inventory trends by sector for 2007, 2017 and 2025.

It is anticipated the USEPA will determine that the SNJ-Phila. nonattainment area attained the daily 35 $\mu g/m^3$ NAAQS during the 2008 to 2010 monitoring period. The State believes that the 2007 inventory is an appropriate and representative inventory to use as a surrogate attainment inventory for the 2008 inventory for the SNJ-Phila. nonattainment area for the daily standard for several reasons discussed as follows:

- The 2007 inventory is the most comprehensive inventory developed by states in the region for SIP purposes;
- The monitors in the SNJ-Phila. nonattainment area showed compliance with the 35 $\mu g/m^3$ daily standard during the 2007-2009 monitoring period. However, sampling errors resulted in incomplete data for 2007 in the SNJ-Phila, which was not able to be addressed through data substitution and statistical analysis. Incomplete data also existed for the 2008-2010 monitoring period, but was able to be addressed through data substitution and statistical analysis;
- The monitors in the New Jersey portion of the SNJ-Phila. nonattainment area showed compliance with the 35 $\mu g/m^3$ daily standard during the 2007-2009 monitoring period.
- The 2007 and 2008 emission inventories are comparable, as demonstrated by a comparison of NJDEP/MARAMA's 2007 inventory with USEPA's 2008 National Emissions Inventory (NEI) included in Appendix IX;

[39] 2017 Data obtained from the *2017/2020 Emission Inventory for Regional Air Quality Modeling in the Northeast/Mid-Atlantic Region, Version 3.3,* prepared by MARAMA and dated January 23, 2012.
[40] USEPA memorandum dated March 2, 2012, entitled *Implementation Guidance for the 2006 24-Hour Fine Particle ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS)*, from Stephen D. Page, Director, Office of Air Quality Planning and Standards, to Regional Air Directors.

- The 2008 USEPA NEI has also been included in this SIP for New Jersey's multi-state SNJ-Phila. nonattainment area in Appendix IX;
- A comparison of the 2008 and 2025 inventories, as demonstrated in Appendix IX, shows that emissions will continue to decrease between 2008 and 2025 for $PM_{2.5}$ and its precursors, NO_x, and SO_2 in the SNJ-Phila. nonattainment area.

Table 2
$PM_{2.5}$, 2007 Attainment, 2017 Interim and 2025 Projection Emission Inventories by County and Sector
New Jersey Portion of Northern New Jersey-New York-Connecticut Nonattainment Area[41]

County	$PM_{2.5}$ Emissions (tons/year)																		
	Point			Area			Onroad			Nonroad			County Totals			Change		Percent Change	
	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007-2017	2007-2025	2007-2017	2007-2025
Bergen	188	256	229	597	595	622	706	348	237	383	284	236	1,875	1,483	1,324	-392	-550	-21%	-29%
Essex	230	293	272	531	531	544	389	191	117	256	192	170	1,406	1,207	1,102	-199	-304	-14%	-22%
Hudson	2,142	284	293	415	425	436	229	108	69	279	154	110	3,065	971	908	-2,094	-2,158	-68%	-70%
Mercer	1,079	974	1,047	293	296	297	339	180	90	161	108	80	1,872	1,558	1,514	-314	-358	-17%	-19%
Middlesex	458	510	512	902	901	911	597	308	186	327	229	179	2,284	1,948	1,788	-336	-496	-15%	-22%
Monmouth	33	33	34	846	846	890	272	164	128	325	204	167	1,476	1,247	1,219	-228	-257	-15%	-17%
Morris	32	33	35	742	713	700	333	175	118	219	168	143	1,327	1,089	996	-238	-330	-18%	-25%
Passaic	6	6	6	331	338	349	207	112	84	134	93	72	678	549	510	-129	-168	-19%	-25%
Somerset	72	76	80	478	483	486	218	111	75	166	129	112	934	798	753	-136	-181	-15%	-19%
Union	697	664	735	364	368	382	386	178	113	247	164	141	1,694	1,376	1,371	-318	-323	-19%	-19%
Totals	**4,937**	**3,131**	**3,243**	**5,499**	**5,496**	**5,616**	**3,677**	**1,874**	**1,218**	**2,497**	**1,725**	**1,410**	**16,610**	**12,227**	**11,487**	**-4,384**	**-5,124**	**-26%**	**-31%**

[41] USEPA transport fractions for $PM_{2.5}$ have been applied to area and nonEGU point sources to reduce fugitive dust emissions. See Appendix V for details.

Table 3
NO_x 2007 Attainment, 2017 Interim and 2025 Projection Emission Inventories by County and Sector
New Jersey Portion of Northern New Jersey-New York-Connecticut Nonattainment Area

County	NO_x Emissions (tons/year)																		
	Point			Area			Onroad			Nonroad			County Totals			Change		Percent Change	
	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007-2017	2007-2025	2007-2017	2007-2025
Bergen	851	1,070	969	2,515	2,498	2,519	16,459	7,576	3,624	5,611	3,239	2,538	25,436	14,383	9,649	-11,053	-15,787	-43%	-62%
Essex	2,361	2,881	2,705	2,094	2,068	2,070	9,629	4,731	1,967	6,281	5,489	5,566	20,366	15,169	12,308	-5,197	-8,058	-26%	-40%
Hudson	3,873	1,839	1,863	1,522	1,514	1,523	5,357	2,515	1,147	5,302	4,086	2,979	16,054	9,953	7,512	-6,101	-8,542	-38%	-53%
Mercer	2,233	1,969	2,090	1,125	1,119	1,129	8,503	4,425	1,920	1,888	1,038	729	13,749	8,552	5,868	-5,198	-7,881	-38%	-57%
Middlesex	2,065	2,350	2,218	2,187	2,175	2,198	15,111	7,268	3,201	4,637	2,744	2,068	23,999	14,537	9,685	-9,462	-14,315	-39%	-60%
Monmouth	195	184	187	1,654	1,645	1,656	8,140	4,379	1,905	4,142	3,091	2,223	14,132	9,299	5,971	-4,833	-8,161	-34%	-58%
Morris	196	169	182	1,564	1,525	1,516	9,288	4,596	2,033	2,749	1,525	1,192	13,797	7,815	4,924	-5,982	-8,873	-43%	-64%
Passaic	95	84	88	1,138	1,127	1,137	5,310	2,717	1,253	1,906	1,030	768	8,449	4,958	3,246	-3,491	-5,203	-41%	-62%
Somerset	260	240	254	939	934	944	6,083	3,013	1,448	2,040	1,115	853	9,322	5,302	3,499	-4,020	-5,824	-43%	-62%
Union	3,699	2,725	2,898	1,383	1,363	1,367	9,505	4,468	2,047	4,902	3,694	2,795	19,489	12,250	9,107	-7,239	-10,382	-37%	-53%
Totals	**15,828**	**13,512**	**13,454**	**16,122**	**15,969**	**16,059**	**93,385**	**45,687**	**20,546**	**39,457**	**27,050**	**21,711**	**164,793**	**102,218**	**71,769**	**-62,575**	**-93,024**	**-38%**	**-56%**

Table 4
SO_2 2007 Attainment, 2017 Interim and 2025 Projection Emission Inventories by County and Sector
New Jersey Portion of Northern New Jersey-New York-Connecticut Nonattainment Area

County	SO_2 Emissions (tons/year)																		
	Point			Area			Onroad			Nonroad			County Totals			Change		Percent Change	
	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007-2017	2007-2025	2007-2017	2007-2025
Bergen	46	49	47	731	60	165	110	96	98	269	38	46	1,156	243	356	-912	-800	-79%	-69%
Essex	299	183	213	739	64	168	58	53	51	805	401	466	1,901	702	899	-1,199	-1,002	-63%	-53%
Hudson	4,467	619	662	418	33	92	30	28	27	1,388	84	112	6,304	764	893	-5,540	-5,411	-88%	-86%
Mercer	14,432	1,754	1,895	331	31	76	50	41	40	110	6	7	14,924	1,831	2,018	-13,093	-12,906	-88%	-86%
Middlesex	367	247	270	574	47	130	90	85	83	376	18	24	1,407	397	507	-1,010	-900	-72%	-64%
Monmouth	43	33	35	459	60	121	62	60	63	872	46	64	1,436	198	284	-1,239	-1,152	-86%	-80%
Morris	55	21	34	683	63	159	60	54	56	124	16	20	922	155	269	-767	-653	-83%	-71%
Passaic	20	5	10	333	47	92	34	32	35	78	3	4	464	87	141	-377	-323	-81%	-70%
Somerset	35	31	34	248	20	55	36	33	36	85	5	6	404	88	131	-316	-273	-78%	-68%
Union	596	640	700	467	28	97	55	50	49	1,652	102	138	2,771	819	984	-1,952	-1,787	-70%	-64%
Totals	**20,360**	**3,583**	**3,900**	**4,983**	**452**	**1,157**	**586**	**531**	**539**	**5,761**	**719**	**888**	**31,690**	**5,285**	**6,483**	**-26,405**	**-25,206**	**-83%**	**-80%**

Table 5
$PM_{2.5}$, 2007 Attainment, 2017 Interim and 2025 Projection Emission Inventories by County and Sector
New Jersey Portion of Southern New Jersey-Philadelphia Nonattainment Area

County	$PM_{2.5}$ Emissions (tons/year)																		
	Point			Area			Onroad			Nonroad			County Totals			Change		Percent Change	
	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007-2017	2007-2025	2007-2017	2007-2025
Burlington	174	180	183	1,702	1,624	1,563	415	247	115	225	174	145	2,516	2,225	2,006	-291	-510	-12%	-20%
Camden	155	166	174	423	415	409	395	223	94	190	109	93	1,163	913	770	-249	-392	-21%	-34%
Gloucester	471	471	501	732	705	679	245	146	70	146	89	77	1,593	1,411	1,326	-182	-267	-11%	-17%
Totals	**800**	**818**	**858**	**2,857**	**2,743**	**2,651**	**1,055**	**616**	**278**	**560**	**372**	**315**	**5,159**	**4,549**	**4,102**	**-609**	**-1,056**	**-12%**	**-20%**

Table 6
NO_x 2007 Attainment, 2017 Interim and 2025 Projection Emission Inventories by County and Sector
New Jersey Portion of Southern New Jersey-Philadelphia Nonattainment Area

County	NO_x Emissions (tons/year)																		
	Point			Area			Onroad			Nonroad			County Totals			Change		Percent Change	
	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007-2017	2007-2025	2007-2017	2007-2025
Burlington	516	551	535	1,397	1,372	1,368	10,615	5,048	2,505	2,420	1,627	1,338	14,948	8,598	5,746	-6,350	-9,201	-42%	-62%
Camden	756	620	709	1,358	1,346	1,353	9,834	5,036	2,028	2,624	1,998	1,539	14,571	9,000	5,628	-5,571	-8,942	-38%	-61%
Gloucester	3,181	2,955	3,189	728	711	706	6,543	3,420	1,563	1,747	1,373	1,037	12,199	8,459	6,495	-3,740	-5,704	-31%	-47%
Totals	**4,453**	**4,126**	**4,433**	**3,483**	**3,429**	**3,427**	**26,992**	**13,504**	**6,095**	**6,790**	**4,998**	**3,915**	**41,718**	**26,057**	**17,870**	**-15,661**	**-23,848**	**-38%**	**-57%**

Table 7
SO_2 2007 Attainment, 2017 Interim and 2025 Projection Emission Inventories by County and Sector
New Jersey Portion of Southern New Jersey-Philadelphia Nonattainment Area

County	SO_2 Emissions (tons/year)																		
	Point			Area			Onroad			Nonroad			County Totals			Change		Percent Change	
	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007	2017	2025	2007-2017	2007-2025	2007-2017	2007-2025
Burlington	157	136	148	443	44	105	64	53	48	156	25	27	820	257	328	-562	-492	-69%	-60%
Camden	76	69	77	412	35	93	59	45	43	634	34	48	1,181	183	261	-998	-920	-85%	-78%
Gloucester	1,801	1,039	1,130	274	23	62	38	31	33	852	47	66	2,964	1,139	1,291	-1,825	-1,673	-62%	-56%
Totals	**2,034**	**1,243**	**1,355**	**1,129**	**102**	**260**	**161**	**129**	**124**	**1,642**	**105**	**141**	**4,965**	**1,579**	**1,880**	**-3,386**	**-3,085**	**-68%**	**-62%**

Figure 13
$PM_{2.5}$ Projected Emissions Inventory Trends[42]
New Jersey Portion of Northern New Jersey-New York-Connecticut Nonattainment Area

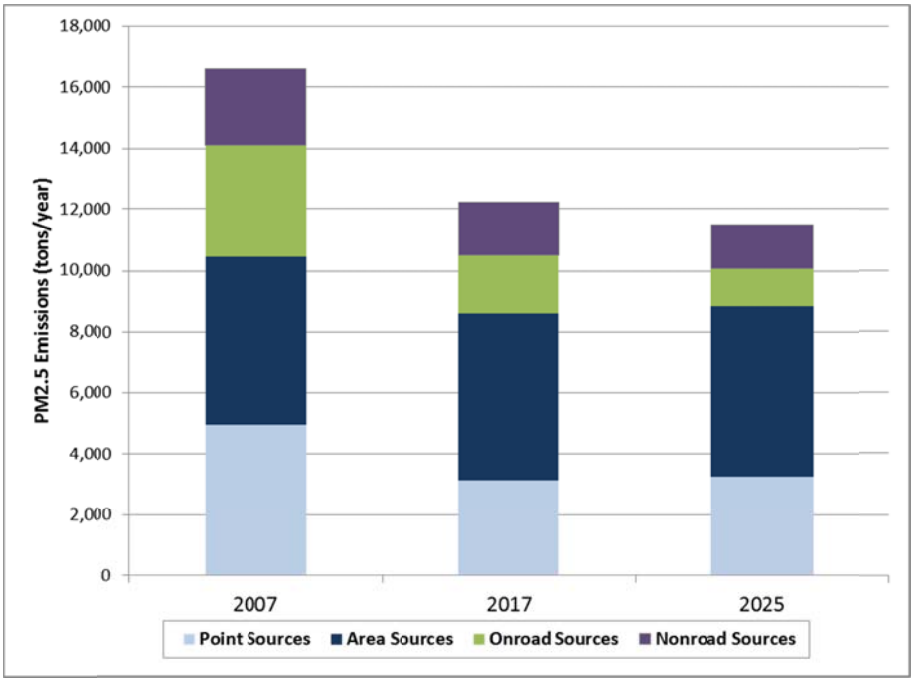
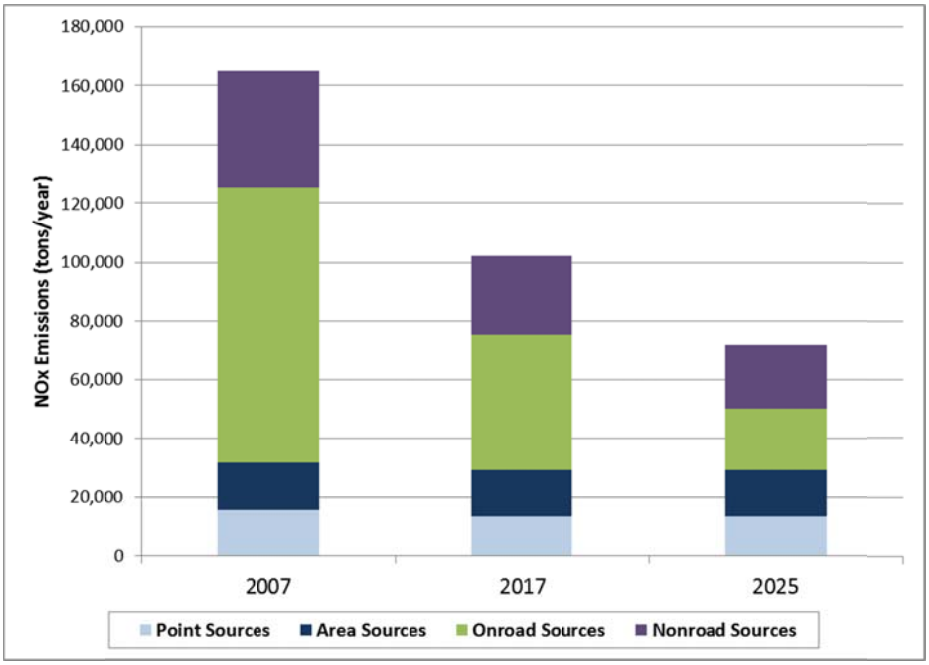


Figure 14
NO_x Projected Emissions Inventory Trends
New Jersey Portion of Northern New Jersey-New York-Connecticut Nonattainment Area



[42] USEPA transport fractions for $PM_{2.5}$ have been applied to area and nonEGU point sources to reduce fugitive dust emissions. See Appendix V for details.

Figure 15
SO_2 Projected Emissions Inventory Trends
New Jersey Portion of Northern New Jersey-New York-Connecticut Nonattainment Area[43]

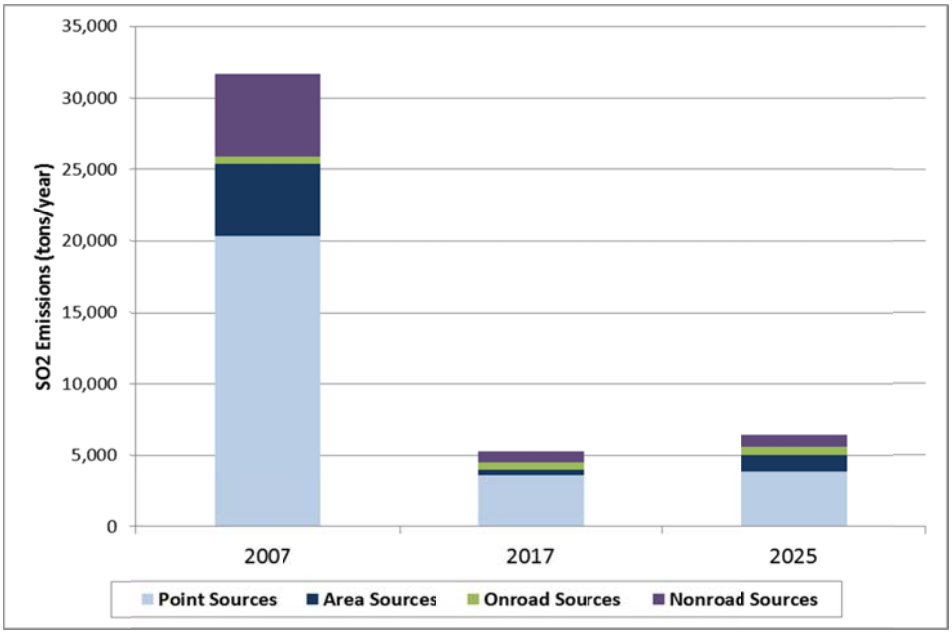
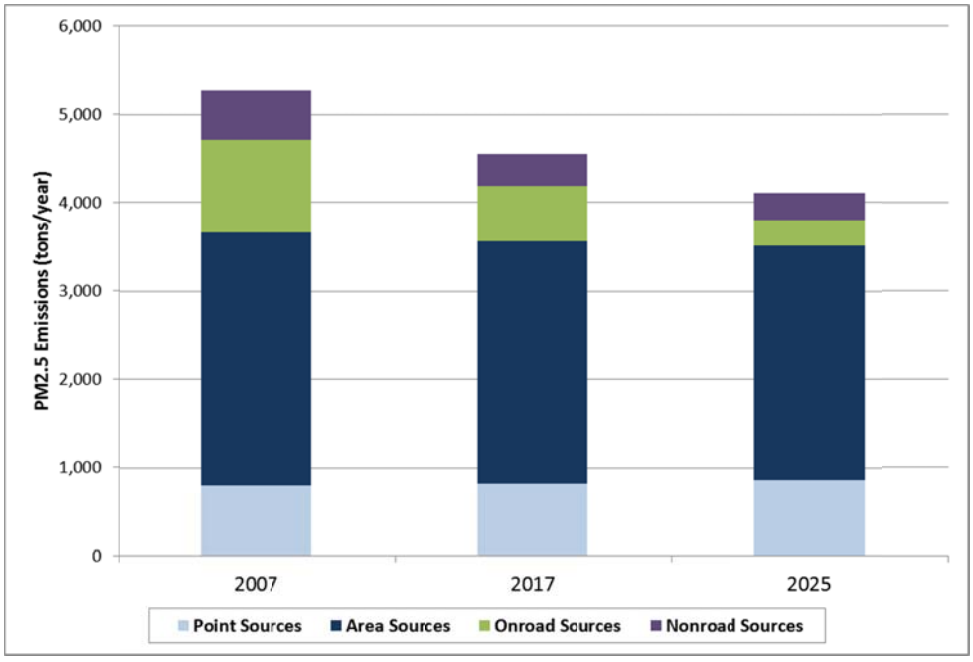


Figure 16
$PM_{2.5}$ Projected Emissions Inventory Trends[44]
New Jersey Portion of Southern New Jersey-Philadelphia Nonattainment Area



[43] See Section 4.5.2 text for a discussion of SO_2 trends.
[44] USEPA transport fractions for $PM_{2.5}$ have been applied to area and nonEGU point sources to reduce fugitive dust emissions. See Appendix V for details.

Figure 17
NO_x Projected Emissions Inventory Trends
New Jersey Portion of Southern New Jersey-Philadelphia Nonattainment Area

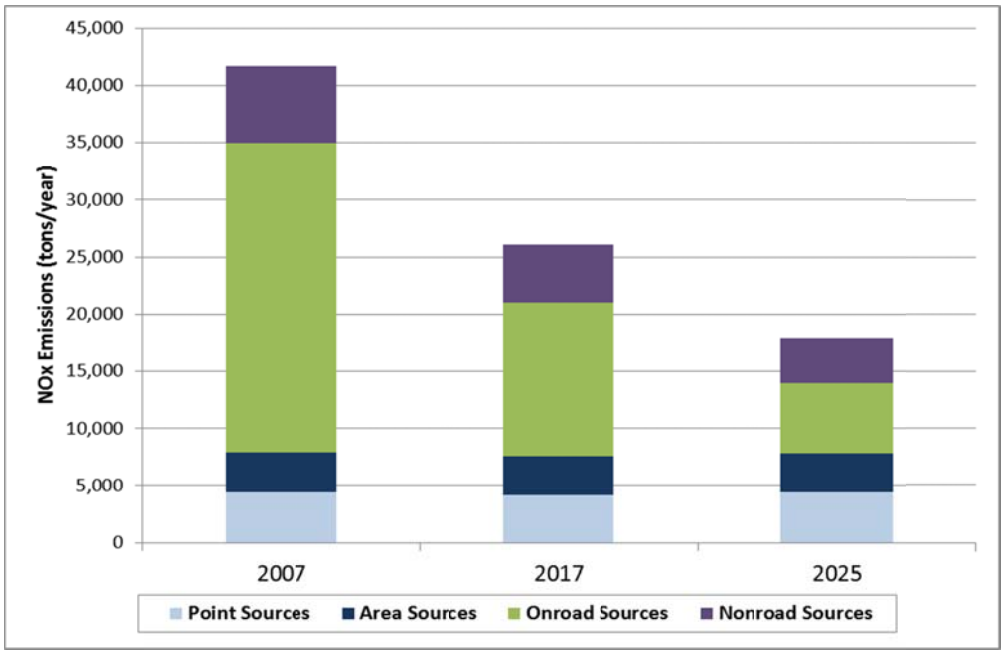
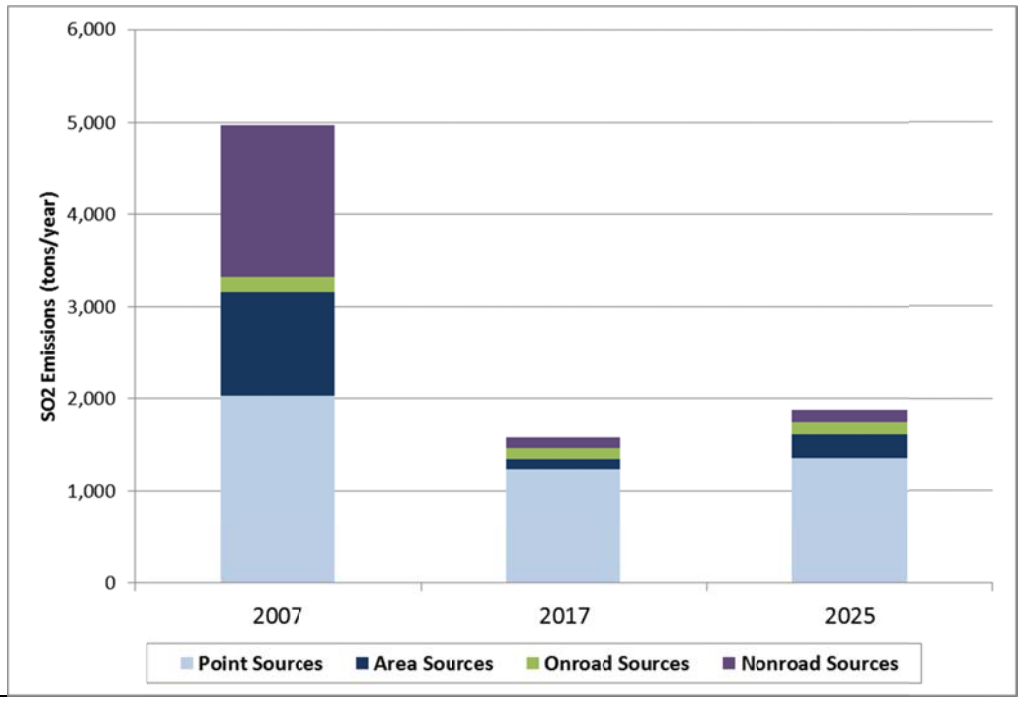


Figure 18
SO_2 Projected Emissions Inventory Trends
New Jersey Portion of Southern New Jersey-Philadelphia Nonattainment Area[45]



[45] See Section 4.5.2 text for a discussion of SO_2 trends.

4.5.2 Maintenance Demonstration

New Jersey demonstrates maintenance of the NAAQS by showing that future projected emissions are less than or equal to the attainment year inventory in both of its nonattainment areas.[46] If the future year emissions are less than or equal to attainment year emissions modeling is not necessary.[47,48] Emissions of $PM_{2.5}$, NO_x and SO_2 are projected to decrease between 2007 and 2025 in both the NNJ-NY-CT NAA and the SNJ.-Phila. nonattainment area. $PM_{2.5}$ emissions are projected to decrease by 5,124 tpy (31%) in the NNJ-NY-CT nonattainment area and by 1,056 tpy (20%) in the SNJ-Phila. nonattainment area; NO_x emissions are projected to decrease by 93,024 tpy (56%) in the NNJ-NY-CT nonattainment area and by 23,848 tpy (57%) in the SNJ-Phila. nonattainment area; and SO_2 emissions are projected to decrease by 25,206 tpy (80%) in the NNJ-NY-CT nonattainment area and by 3,085 tpy (62%) in the SNJ-Phila. nonattainment area from 2007-2025.

The projection emission inventories for $PM_{2.5}$, NO_x and SO_2 demonstrate a significant decrease from 2007 to 2025 and that emissions will not increase above the attainment inventory. The details of this demonstration are shown in Tables 2 through 7 and Figures 13 through 18 in Section 4.5.1 and in Tables 8 and 9 in this Section.

In addition, the 2008 USEPA National Emissions Inventory for New Jerseys southern nonattainment area has been included in Appendix IX. A summary of emissions in the Appendix demonstrates that there is also a significant decrease in $PM_{2.5}$, NO_x and SO_2 in the nonattainment area from 2008 to 2025.

The inventory charts show a significant decrease in SO_2 emissions from 2007 to 2025. A slight increase in emissions is depicted in the charts from 2017 to 2025. This is due to variations in inventory calculation methodologies, not actual anticipation of increased emissions. The anticipated emission reductions from New Jersey rules (most specifically low sulfur fuel and boilers) in the 2025 inventory were underestimated to be conservative, as a safety factor. The result of this conservative approach is a slight increase in emissions from 2017 to 2025. This is discussed in more detail in Appendices VI and VIII.

The anticipated emission reductions beyond 2007 demonstrate that existing permanent and enforceable control measures are sufficient to maintain compliance with the $PM_{2.5}$ annual 15 $\mu g/m^3$ and daily 35 $\mu g/m^3$ NAAQS through 2025. Each of the control measures that are included in the Maintenance Plan, that contribute to emission reductions during the maintenance period, is described in Section 4.5.3.

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[46] USEPA memorandum dated September 4, 1992, entitled *Procedures for Processing Requests to Redesignate Areas to Attainment*, from John Calcagni, Director, Air Quality Management Division, to Regional Air Directors, page 9.
[47] *Ibid*.
[48] *Wall v. EPA*, 265 F.3d426 (6th Cir. 2001), *Sierra Club v. EPA*, 375 F. 3d 537 (7th Cir. 2004). See also 66 FR 53094, 53099–53100 (October 19, 2001), 68 FR 25413, 25430–25432 (May 12, 2003), 76 FR 79600 (December 22, 2011).

Table 8
2007, 2017 and 2025 $PM_{2.5}$ NO_x and SO_2 Emissions Summary
Multi-State (NJ, NY, CT) Northern New Jersey-New York-Connecticut Nonattainment Area

SECTOR	Annual (tons) 2007	Annual (tons) 2017	Annual (tons) 2025	Change (tpy) from 2007 to 2017	Change (%) from 2007 to 2017	Change (tpy) from 2007 to 2025	Change (%) from 2007 to 2025
Oxides of Nitrogen (NO_x)							
Point	57,045	53,489	55,259	-3,556	-6%	-1,786	-3%
Area	64,044	58,014	56,873	-6,030	-9%	-7,171	-11%
Onroad	252,723	149,227	74,474	-103,496	-41%	-178,249	-71%
Nonroad	117,863	77,298	45,591	-40,565	-34%	-72,272	-61%
Total	**491,675**	**338,029**	**232,198**	**-153,646**	**-31%**	**-259,477**	**-53%**
Direct $PM_{2.5}$							
Point	7,797	5,804	6,364	-1,993	-26%	-1,433	-18%
Area	18,512	18,574	19,318	62	0%	806	4%
Onroad	10,189	7,060	4,878	-3,129	-31%	-5,311	-52%
Nonroad	7,631	5,051	2,283	-2,580	-34%	-5,348	-70%
Total	**44,131**	**36,489**	**32,844**	**-7,642**	**-17%**	**-11,287**	**-26%**
Sulfur Dioxide (SO_2)							
Point	68,529	48,538	50,218	-19,991	-29%	-18,311	-27%
Area	42,122	11,006	10,353	-31,116	-74%	-31,769	-75%
Onroad	1,750	1,597	1,564	-153	-9%	-186	-11%
Nonroad	14,027	2,657	2,013	-11,370	-81%	-12,014	-86%
Total	**126,427**	**63,798**	**64,149**	**-62,629**	**-50%**	**-62,278**	**-49%**

Notes:

1. 2007 and 2025 Data obtained from *Technical Support Document for the Development of the 2025 Emission Inventory for PM Counties in the MANE-VU Region, Version 3.3, Exhibit 7.8, page 88,* prepared by MARAMA and dated January 23, 2012.
2. 2017 Data obtained from the *2017/2020 Emission Inventory for Regional Air Quality Modeling in the Northeast/Mid-Atlantic Region, Version 3.3,* prepared by MARAMA and dated January 23, 2012.
3. A discussion of the 2017 inventory is included as Appendix VIII
4. The multi-state nonattainment area summary may vary slightly from each states individual final SIP inventory, due to final SIP inventory updates in each state.

Table 9
2007, 2017 and 2025 $PM_{2.5}$ NO_x and SO_2 Emissions Summary
Multi-State (NJ, PA, DE) Southern New Jersey-Philadelphia Nonattainment Area

SECTOR	Annual (tons) 2007	Annual (tons) 2017	Annual (tons) 2025	Change (tpy) from 2007 to 2017	Change (%) from 2007 to 2017	Change (tpy) from 2007 to 2025	Change (%) from 2007 to 2025
Oxides of Nitrogen (NO_x)							
Point	31,759	19,591	19,817	-12,168	-38%	-11,942	-38%
Area	18,043	17,528	17,741	-515	-3%	-302	-2%
Onroad	106,315	61,089	26,648	-45,226	-43%	-79,667	-75%
Nonroad	31,850	20,935	17,662	-10,915	-34%	-14,188	-45%
Total	**187,967**	**119,143**	**81,869**	**-68,824**	**-37%**	**-106,098**	**-56%**
Direct $PM_{2.5}$							
Point	4,572	3,825	3,875	-747	-16%	-697	-15%
Area	13,811	13,358	12,983	-453	-3%	-828	-6%
Onroad	3,795	2,490	1,443	-1,305	-34%	-2,352	-62%
Nonroad	2,466	1,606	1,358	-860	-35%	-1,108	-45%
Total	**24,644**	**21,279**	**19,657**	**-3,365**	**-14%**	**-4,987**	**-20%**
Sulfur Dioxide (SO_2)							
Point	35,035	13,375	13,553	-21,660	-62%	-21,482	-61%
Area	16,763	13,466	9,756	-3,297	-20%	-7,007	-42%
Onroad	773	567	422	-206	-27%	-351	-45%
Nonroad	6,134	851	709	-5,283	-86%	-5,425	-88%
Total	**58,705**	**28,260**	**24,440**	**-30,445**	**-52%**	**-34,265**	**-58%**

Notes:

1. 2007 and 2025 Data obtained from *Technical Support Document for the Development of the 2025 Emission Inventory for PM Counties in the MANE-VU Region, Version 3.3, Exhibit 7.8, page 88,* prepared by MARAMA and dated January 23, 2012.
2. 2017 Data obtained from the *2017/2020 Emission Inventory for Regional Air Quality Modeling in the Northeast/Mid-Atlantic Region, Version 3.3,* prepared by MARAMA and dated January 23, 2012.
3. A discussion of the 2017 inventory is included as Appendix VIII
4. The multi-state nonattainment area summary may vary slightly from each states individual final SIP inventory, due to final SIP inventory updates in each state.

4.5.3 $PM_{2.5}$ Control Measures

4.5.3.1 Maintenance Plan Control Measures

The permanent and enforceable maintenance plan control measures that are relied on to provide continued attainment beyond the attainment year, 2007, are included in Tables 10 and 11.

These control measures are anticipated to provide continued emissions reductions in the future of $PM_{2.5}$ and its precursors, NO_x and SO_2, The control measures shown in Tables 10 and 11 are those which are estimated to provide emission reductions for $PM_{2.5}$, NO_x and SO_2 from a 2007 inventory base year to 2025, the maintenance plan year. A detailed description of the post 2007 control measures shown in Tables 10 and 11 can be found in the March 26, 2009 SIP, Section 4.0.[49], and/or in the New Jersey rule referenced in the tables.

A description of how the emission reduction benefits from the rules were estimated is included in Appendix VI.

[49] NJDEP. State Implementation Plan (SIP) Revision for the Attainment and Maintenance of the Fine Particulate Matter ($PM_{2.5}$) National Ambient Air Quality Standard: $PM_{2.5}$ Attainment Demonstration, Final. New Jersey Department of Environmental Protection, March 26, 2009.

Table 10
Projected Emissions and Control Measure Benefits Summary
New Jersey Portion of Northern New Jersey-New York-Connecticut Nonattainment Area

Sector	Federal or State	Control Measure	New Jersey Administrative Code	EPA Approval	Pollutants	2007 Inventory			2025 Inventory		
						$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy	$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy
POINT SOURCES											
Point Source Control Measure Benefits, post 2007											
Point	Federal/ New Jersey	EGU-PSE&G Hudson Consent Decrees	NA	Filed 7/26/02; amended 11/30/06	PM, SO_2, NO_x	NA	NA	NA	1,786	2,015	3,645
Point	Federal/ New Jersey	EGU-PSE&G Mercer Consent Decrees	NA	Filed 7/26/02; amended 11/30/06	SO_2	NA	NA	NA	NA	NA	12,036
Point	New Jersey	EGU - Oil and Gas Fired Boilers	NJAC 7:27-4.2, 10.2, 19.4	8/3/2010	SO_2, NO_x	NA	NA	NA	NA	322	154
Point	New Jersey	EGU - Coal-fired Boilers	NJAC 7:27-4.2, 10.2, 19.4	8/3/2010	PM, SO_2, NO_x	NA	NA	NA	NA	NA	NA
Point	New Jersey	EGU-High Electric Demand Day (HEDD)	NJAC 7:27-19.29	8/3/2010	SO_2, NO_x	NA	NA	NA	NA	NQ	NQ
Point	Federal	ICI Boiler MACT	NA	NA	PM	NA	NA	NA	0	NA	NA
Point/ Area	Federal	RICE MACT	NA	NA	PM, NO_x	NA	NA	NA	1	72	NA
Point	Federal/ New Jersey	Refinery Consent Decrees (Sunoco, Valero, and ConocoPhillips)	NA	6/16/05	PM, SO_2, NO_x	NA	NA	NA	NA	1,140	NA
Point	New Jersey	Asphalt Production Plants	NJAC 7:27-19.9	8/3/2010	NO_x	NA	NA	NA	NA	35	NA
Point	New Jersey	Case by Case NO_x Emission Limit Determinations (FSELs/AELs)	NJAC 7:27-19.13	8/3/2010	NO_x	NA	NA	NA	NQ	NQ	NQ
Point	New Jersey	Glass Manufacturing	NJAC 7:27-19.10	8/3/2010	NO_x	NA	NA	NA	NA	NA	NA
Point/ Area	New Jersey	ICI Boiler Rule 2006	NJAC 7:27-16.8, 19.7	7/31/2007	NO_x	NA	NA	NA	NA	43	NA
Point	New Jersey	ICI Boiler Rule 2009	NJAC 7:27-19.7	8/3/2010	NO_x	NA	NA	NA	NA	344	NA
Point/ Area	New Jersey	Low Sulfur Distillate and Residual Fuel Strategies	NJAC 7:27-9	1/03/2012	SO_2	NA	NA	NA	NA	NA	237
Point	New Jersey	Municipal Waste Combustors (Incinerators)	NJAC 7:27-19.13	8/3/2010	NO_x	NA	NA	NA	NA	NA	NA
Point	New Jersey	Sewage and Sludge Incinerators	NJAC 7:27-19.28	8/3/2010	NO_x	NA	NA	NA	NQ	NQ	NQ
Total Point Source Control Measure Benefits, post 2007						NA	NA	NA	**1,787**	**3,971**	**16,072**

Table 10
Projected Emissions and Control Measure Benefits Summary
New Jersey Portion of Northern New Jersey-New York-Connecticut Nonattainment Area

Sector	Federal or State	Control Measure	New Jersey Administrative Code	EPA Approval	Pollutants	2007 Inventory			2025 Inventory		
						$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy	$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy
Point Source Emissions, Growth Only						NA	NA	NA	**5,031**	**17,426**	**19,972**
Point Source Emissions Grown and Controlled						**4,937**	**15,827**	**20,359**	**3,243**	**13,454**	**3,900**
AREA SOURCES											
Area Source Control Measures Benefits, post 2007											
Area	Federal	Residential Woodstove NSPS (Note 1)	NA	NA	PM, NOx, CO, VOC	NA	NA	NA	238	10	2
Point/ Area	Federal	RICE	NA	NA	NOx, PM	NA	NA	NA	8	0	0
Point/ Area	Federal/ New Jersey	Combined RICE and ICI Boiler Rule 2006	NJAC 7:27-16.8, 19.7	7/31/2007	NOx	NA	NA	NA	0	536	0
Point/ Area	New Jersey	ICI Boiler Rule 2006	NJAC 7:27-16.8, 19.7	7/31/2007	NO_x	NA	NA	NA	0	21	0
Point/ Area	New Jersey	Low Sulfur Distillate and Residual Fuel Strategies	NJAC 7:27-9	1/3/2012	SO_2	NA	NA	NA	0	0	2,599
Total Area Source Benefits, post 2007						NA	NA	NA	**245**	**567**	**2,601**
Area Source Emissions, Growth Only						NA	NA	NA	**5,600**	**16,675**	**3,755**
Area Source Emissions Grown and Controlled						**5,475**	**16,119**	**4,983**	**5,592**	**16,055**	**1,157**
ONROAD SOURCES											
Onroad Source Control Measures											
Onroad	Federal	Heavy Duty Diesel Vehicle (HDDV) Defeat Device Settlement	NA	NA	NO_x	NA	NA	NA	NQ	NQ	NQ
Onroad	Federal	Tier 2 Vehicle Program/Low Sulfur Fuels	NA	NA	PM, NO_x, CO, VOC	NA	NA	NA	Note 2	Note 2	Note 2
Onroad	Federal	2007 Heavy-Duty Highway Rule - Vehicle Standards and Diesel Fuel Sulfur Control	NA	NA	PM, NO_x, CO, VOC	NA	NA	NA	Note 2	Note 2	Note 2
Onroad	New Jersey	Vehicle Idling Rule Amendments	NJAC 7:27-14.1, 14.3	4/14/2009	PM, NO_x, CO, VOC	NA	NA	NA	NQ	NQ	NQ
Onroad	New Jersey	Diesel I/M Program	NJAC 7:27-14	Pending	$PM_{2.5}$, NO_x	NA	NA	NA	NQ	NQ	NQ

Table 10
Projected Emissions and Control Measure Benefits Summary
New Jersey Portion of Northern New Jersey-New York-Connecticut Nonattainment Area

Sector	Federal or State	Control Measure	New Jersey Administrative Code	EPA Approval	Pollutants	2007 Inventory			2025 Inventory		
						$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy	$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy
Onroad	New Jersey	New Jersey Low Emission Vehicle (LEV) Program	NJAC 7:27-29	2/13/2008, Updated 9/28/10 per California Waiver	PM, SO_2, NO_x, VOC,	NA	NA	NA	Note 2	Note 2	Note 2
Onroad	New Jersey	I/M Program for Gasoline Vehicles	NJAC 7:27-15	5/21/2004	VOC, NO_x, CO	NA	NA	NA	Note 2	Note 2	Note 2
Total Onroad Control Measure Benefits, post 2007						NA	NA	NA	**2,460**	**72,839**	**47**
Onroad Emissions, Grown and Controlled						**3,677**	**93,385**	**586**	**1,218**	**20,546**	**539**
NONROAD SOURCES											
Onroad Source Control Measures											
Nonroad	Federal	Diesel Marine Engines over 37 kW	NA	NA	NO_x, VOC	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	Large Industrial Spark-Ignition Engines over 19 kW	NA	NA	NO_x, CO	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	Locomotive Engines and Marine Compression-Ignition Engines Less Than 30 Liters per Cylinder	NA	NA	PM, NO_x, (CO, VOC)	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	New Nonroad Engine Standards	NA	NA	VOC, NO_x, PM	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	Nonroad Diesel Engines	NA	NA	PM, NO_x, CO, VOC	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	Phase 2 Standards for New Nonroad Spark-Ignition Nonhandheld Engines at or below 19 kW	NA	NA	NOx, VOC, CO	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	Phase 2 Standards for Small Spark-Ignition Handheld Engines at or below 19 kW	NA	NA	NOx, VOC, CO	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	Recreational Vehicles (includes snowmobiles, off-highway motorcycles, and all-terrain vehicles)	NA	NA	NOx, CO, HC,	NA	NA	NA	Note 2	Note 2	Note 2

Table 10
Projected Emissions and Control Measure Benefits Summary
New Jersey Portion of Northern New Jersey-New York-Connecticut Nonattainment Area

Sector	Federal or State	Control Measure	New Jersey Administrative Code	EPA Approval	Pollutants	2007 Inventory			2025 Inventory		
						$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy	$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy
Nonroad	New Jersey	Nonroad Motor Vehicle Control Programs (Fleet turnover 2010)	NA	NA	PM	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	New Jersey	Ports	NA	NA	PM	NA	NA	NA	Note 2	Note 2	Note 2
Total Nonroad Control Measure Benefits, post 2007						NA	NA	NA	**1,655**	**23,034**	**9,837**
Nonroad Source Emissions, Growth Only						NA	NA	NA	**3,065**	**44,848**	**10,724**
Nonroad Emissions, Grown and Controlled						**2,497**	**39,457**	**5,761**	**1,410**	**21,814**	**887**
TOTALS						**16,587**	**164,788**	**31,689**	**14,913**	**99,472**	**34,991**
TOTAL BENEFITS, post 2007						NA	NA	NA	**6,148**	**100,433**	**28,558**
TOTAL EMISSIONS, Grown and Controlled						NA	NA	NA	**11,462**	**71,847**	**6,482**

Notes:

NA = Not Applicable

NQ = Not Quantified, not included in the benefit total

1. Benefits from area source Residential Woodstove NSPS are accounted for in both the "Growth Only" and "Growth and Controlled" Totals.
2. Included in benefit total, not quantified individually

Table 11
Projected Emissions and Control Measure Benefits Summary
New Jersey Portion of Southern New Jersey-Philadelphia Nonattainment Area

Sector	Federal or State	Control Measure	New Jersey Administrative Code	EPA Approval	Pollutants	2007 Inventory			2025 Inventory		
						$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy	$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy
POINT SOURCES											
Point Source Control Measure Benefits, post 2007											
Point	Federal/ New Jersey	EGU-PSE&G Hudson Consent Decrees	NA	Filed 7/26/02; amended 11/30/06	PM, SO_2, NO_x	NA	NA	NA	NA	NA	NA
Point	Federal/ New Jersey	EGU-PSE&G Mercer Consent Decrees	NA	Filed 7/26/02; amended 11/30/06	SO_2	NA	NA	NA	NA	NA	NA
Point	New Jersey	EGU - Oil and Gas Fired Boilers	NJAC 7:27-4.2, 10.2, 19.4	8/3/2010	SO_2, NO_x	NA	NA	NA	NA	30	22
Point	New Jersey	EGU - Coal-fired Boilers	NJAC 7:27-4.2, 10.2, 19.4	8/3/2010	PM, SO_2, NO_x	NA	NA	NA	NA	NA	NA
Point	New Jersey	EGU-High Electric Demand Day (HEDD)	NJAC 7:27-19.29	8/3/2010	SO_2, NO_x	NA	NA	NA	NA	NQ	NQ
Point	Federal	ICI Boiler MACT	NA	NA	PM	NA	NA	NA	1	NA	NA
Point/ Area	Federal	RICE MACT	NA	NA	PM, NO_x	NA	NA	NA	0	2	NA
Point	Federal/ New Jersey	Refinery Consent Decrees (Sunoco, Valero, and ConocoPhillips)	NA	6/16/05	PM, SO_2, NO_x	NA	NA	NA	50	375	804
Point	New Jersey	Asphalt Production Plants	NJAC 7:27-19.9	8/3/2010	NO_x	NA	NA	NA	NA	5	NA
Point	New Jersey	Case by Case NO_x Emission Limit Determinations (FSELs/AELs)	NJAC 7:27-19.13	8/3/2010	NO_x	NA	NA	NA	NQ	NQ	NQ
Point	New Jersey	Glass Manufacturing	NJAC 7:27-19.10	8/3/2010	NO_x	NA	NA	NA	NA	3	NA
Point/ Area	New Jersey	ICI Boiler Rule 2006	NJAC 7:27-16.8, 19.7	7/31/2007	NO_x	NA	NA	NA	NA	4	NA
Point	New Jersey	ICI Boiler Rule 2009	NJAC 7:27-19.7	8/3/2010	NO_x	NA	NA	NA	NA	79	NA
Point/ Area	New Jersey	Low Sulfur Distillate and Residual Fuel Strategies	NJAC 7:27-9	1/3/2012	SO_2	NA	NA	NA	NA	NA	44
Point	New Jersey	Municipal Waste Combustors (Incinerators)	NJAC 7:27-19.13	8/3/2010	NO_x	NA	NA	NA	NA	181	NA
Point	New Jersey	Sewage and Sludge Incinerators	NJAC 7:27-19.28	8/3/2010	NO_x	NA	NA	NA	NQ	NQ	NQ
Total Point Source Control Measure Benefits, post 2007						NA	NA	NA	**51**	**678**	**870**
Point Source Emissions, Growth Only						NA	NA	NA	**910**	**5,110**	**2,225**

Table 11
Projected Emissions and Control Measure Benefits Summary
New Jersey Portion of Southern New Jersey-Philadelphia Nonattainment Area

Sector	Federal or State	Control Measure	New Jersey Administrative Code	EPA Approval	Pollutants	2007 Inventory			2025 Inventory		
						$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy	$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy
Point Source Emissions Grown and Controlled						**799**	**4,453**	**2,035**	**859**	**4,432**	**1,355**
AREA SOURCES											
Area Source Control Measures Benefits, post 2007											
Area	Federal	Residential Woodstove NSPS (Note 1)	NA	NA	PM, NO_x, CO, VOC	NA	NA	NA	255	16	3
Point/ Area	Federal	RICE	NA	NA	NO_x, PM	NA	NA	NA	1	0	0
Point/ Area	Federal/ New Jersey	Combined RICE and ICI Boiler Rule 2006	NJAC 7:27-16.8, 19.7	7/31/2007	NO_x	NA	NA	NA	0	97	0
Point/ Area	New Jersey	ICI Boiler Rule 2006	NJAC 7:27-16.8, 19.7	7/31/2007	NO_x	NA	NA	NA	0	4	0
Point/ Area	New Jersey	Low Sulfur Distillate and Residual Fuel Strategies	NJAC 7:27-9	1/3/2012	SO_2	NA	NA	NA	0	0	584
Total Area Source Benefits, post 2007						NA	NA	NA	**257**	**117**	**587**
Area Source Emissions, Growth Only						NA	NA	NA	**4,964**	**3,882**	**844**
Area Source Emissions Grown and Controlled						**5,168**	**3,826**	**1,129**	**4,962**	**3,769**	**260**
ONROAD SOURCES											
Onroad Source Control Measures											
Onroad	Federal	Heavy Duty Diesel Vehicle (HDDV) Defeat Device Settlement	NA	NA	NO_x	NA	NA	NA	NQ	NQ	NQ
Onroad	Federal	Tier 2 Vehicle Program/Low Sulfur Fuels	NA	NA	PM, NO_x, CO, VOC	NA	NA	NA	Note 2	Note 2	Note 2
Onroad	Federal	2007 Heavy-Duty Highway Rule - Vehicle Standards and Diesel Fuel Sulfur Control	NA	NA	PM, NO_x, CO, VOC	NA	NA	NA	Note 2	Note 2	Note 2
Onroad	New Jersey	Vehicle Idling Rule Amendments	NJAC 7:27-14.1, 14.3	4/14/2009	PM, NO_x, CO, VOC	NA	NA	NA	NQ	NQ	NQ
Onroad	New Jersey	Diesel I/M Program	NJAC 7:27-14	Pending	$PM_{2.5}$, NO_x	NA	NA	NA	NQ	NQ	NQ
Onroad	New Jersey	New Jersey Low Emission Vehicle (LEV) Program	NJAC 7:27-29	2/13/2008, updated 9/28/10 per	PM, SO_2, NO_x, VOC,	NA	NA	NA	Note 2	Note 2	Note 2

Table 11
Projected Emissions and Control Measure Benefits Summary
New Jersey Portion of Southern New Jersey-Philadelphia Nonattainment Area

Sector	Federal or State	Control Measure	New Jersey Administrative Code	EPA Approval	Pollutants	2007 Inventory			2025 Inventory		
						$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy	$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy
				California Waiver							
Onroad	New Jersey	I/M Program for Gasoline Vehicles	NJAC 7:27-15	5/21/2004	VOC, NO_x, CO	NA	NA	NA	Note 2	Note 2	Note 2
Total Onroad Control Measure Benefits, post 2007						NA	NA	NA	**777**	**20,897**	**31**
Onroad Emissions, Grown and Controlled						**1,055**	**26,992**	**161**	**278**	**6,095**	**130**
NONROAD SOURCES											
Onroad Source Control Measures											
Nonroad	Federal	Diesel Marine Engines over 37 kW	NA	NA	NO_x, VOC	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	Large Industrial Spark-Ignition Engines over 19 kW	NA	NA	NO_x, CO	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	Locomotive Engines and Marine Compression-Ignition Engines Less Than 30 Liters per Cylinder	NA	NA	PM, NO_x, (CO, VOC)	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	New Nonroad Engine Standards	NA	NA	VOC, NO_x, PM	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	Nonroad Diesel Engines	NA	NA	PM, NO_x, CO, VOC	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	Phase 2 Standards for New Nonroad Spark-Ignition Nonhandheld Engines at or below 19 kW	NA	NA	NO_x, VOC, CO	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	Phase 2 Standards for Small Spark-Ignition Handheld Engines at or below 19 kW	NA	NA	NO_x, VOC, CO	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	Federal	Recreational Vehicles (includes snowmobiles, off-highway motorcycles, and all-terrain vehicles)	NA	NA	NO_x, CO, HC,	NA	NA	NA	Note 2	Note 2	Note 2
Nonroad	New Jersey	Nonroad Motor Vehicle Control Programs (Fleet turnover 2010)	NA	NA	PM	NA	NA	NA	Note 2	Note 2	Note 2

Table 11
Projected Emissions and Control Measure Benefits Summary
New Jersey Portion of Southern New Jersey-Philadelphia Nonattainment Area

Sector	Federal or State	Control Measure	New Jersey Administrative Code	EPA Approval	Pollutants	2007 Inventory			2025 Inventory		
						$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy	$PM_{2.5}$ tpy	NO_x tpy	SO_2 tpy
Nonroad	New Jersey	Ports	NA	NA	PM	NA	NA	NA	Note 2	Note 2	Note 2
Total Nonroad Control Measure Benefits, post 2007						NA	NA	NA	**398**	**4,025**	**3,262**
Nonroad Source Emissions, Growth Only						NA	NA	NA	**713**	**8005**	**3402**
Nonroad Emissions, Grown and Controlled						**560**	**6,790**	**1,642**	**315**	**3,980**	**140**
TOTALS						**7,583**	**42,060**	**4,966**	**6,864**	**23,046**	**6,601**
TOTAL BENEFITS, post 2007						NA	NA	NA	**1,484**	**25,764**	**4,750**
TOTAL EMISSIONS, Grown and Controlled						NA	NA	NA	**6,413**	**18,229**	**1,885**

Notes:

NA = Not Applicable

NQ = Not Quantified, not included in the benefit total

1. Benefits from area source Residential Woodstove NSPS are accounted for in both the "Growth Only" and "Growth and Controlled" Totals.
2. Included in benefit total, not quantified individually

4.5.3.2 Other Emission Reductions

Other emission reductions not included in the maintenance plan that contribute to improving air quality from 2007 to 2025 and beyond include:

Federal Mercury and Air Toxics Standards

On December 16, 2011, the USEPA promulgated the Mercury and Air Toxics Standards (MATS) to reduce emissions of toxic pollutants from power plants.[50] The MATS are national Clean Air Act standards to reduce mercury and other toxic emissions from new and existing coal- and oil-fired electric utility steam generating units (EGUs). The standards will reduce emissions of metals, including mercury (Hg), arsenic (As), chromium (Cr) and nickel (Ni), acid gases, including hydrogen chloride (HCl) and hydrogen fluoride (HF). Emission controls to reduce air toxics will also reduce emissions of $PM_{2.5}$ and SO_2. The MATS includes revisions to the Federal New Source Performance Standards (NSPS) for new fossil-fuel-fired electric generating units, including revised numerical emission limits for PM, SO_2, and NO_X.

Existing sources have 4 years, if needed, to comply with MATS. The USEPA estimates that there are approximately 1,400 units affected by this action, which includes approximately 1,100 existing coal-fired units and 300 oil fired units at about 600 power plants. USEPA lists 73 facilities in New Jersey, Pennsylvania, Delaware, New York and Connecticut that could potentially be affected by the MATS.

It is expected that the MATS will also result in the conversion of most New Jersey sources that burn No. 6 fuel oil to gas. The New Jersey coal power plants either already comply with MATS (6 units) or will comply by the MATS compliance deadline (2 units). It is expected that the MATS will result in significant emission reductions from upwind sources, resulting in further improvement to the air quality in New Jersey.

Diesel Retrofit Program (N.J.A.C 7:27-32)

The existing rule requires the installation of retrofit emission control technology on garbage trucks, commercial buses and publicly owned onroad vehicles and off-road equipment. Due to public health impacts, these vehicles were chosen because they operate in residential areas, some of which are overburdened urban communities. The retrofits are scheduled to occur between 2008 and 2015. These rules will reduce the emissions of fine diesel particles. The program regulates publicly-owned and certain privately-owned fleets. In 2009, an estimated retrofit population of 24,000 onroad vehicles and off-road equipment was expected to be affected by the mandatory retrofit program. As of 2012, 18,300 of these onroad vehicles and off-road equipment have either been retrofitted or are projected to be retrofitted, since some of the vehicles were either retired as a compliance option or exempt from the rule.

New Jersey Clean Construction Program

NJDEP established a voluntary program to reduce harmful diesel particulate emissions from nonroad construction equipment operating in New Jersey, with a particular focus on equipment used in urban areas. Through this program, retrofit devices are installed on construction equipment using funding provided by USEPA under the American Recovery and Reinvestment Act, and the Diesel Emissions Reduction Act.

[50] 77 Fed. Reg. 9304 (February 16, 2012)

The NJDEP and NJDOT area implementing Governor Christie's 2011 Executive Order #60, which requires a three year pilot program to install pollution-control devices on nonroad construction equipment used on selected N.J. Department of Transportation (NJDOT) projects. The projects on which the pollution control devices will be installed are jointly chosen by the NJDEP and NJDOT, with preference given to selecting projects in urban areas where cumulative exposure to pollution creates a disproportionate impact on the people living in those communities. The goal is to install tailpipe particulate retrofits on 175 pieces of nonroad construction equipment by Summer 2014. Further details can be found online at: http://www.stopthesoot.org/clean2.html.

B.L. England Administrative Consent Order

On May 18, 2012, NJDEP amended its Administrative Consent Order with B.L. England in Cape May County. Under the amended agreement, B.L. England will further reduce all air pollutants by shutting down one of its coal-fired units (Unit 1) and converting two others to natural gas (Unit 2 is currently burns coal and Unit 3 currently burns fuel oil). The agreement commits to the cessation of coal-fired Unit 1 by fall 2013 and for the conversion of Units 2 and 3 to natural gas by May 2016. Unit 2, which currently only operates durning peak demand periods, will be shut down by May 2015, to allow for the conversion. Operations will be limited in an effort to reduce pollution during the time leading up to the conversion shutdown.

The repowering and shutdown will reduce NO_x emissions by approximately 98 percent, or 2,800 tons per year, and will reduce SO_2 emissions by approximately 99.9 percent, or 2,800 tons per year. The emission reductions from this agreement will go beyond those estimated from NJDEPs performance standards for EGUs included in Tables 10 and 11. A copy of the Adminstrative Consent Order can be found online at: http://www.nj.gov/dep/docs/20120613104728.pdf.

4.5.4 Monitoring Network and Verification of Continued Attainment

New Jersey will track the air quality for continued attainment of the $PM_{2.5}$ NAAQS, as required by the maintenance plan, by evaluating future monitoring data. New Jersey will review ambient $PM_{2.5}$ monitoring data as it becomes available to evaluate any risk of impending NAAQS violations as discussed further in the Contingency Plan.

To verify that New Jersey's multi-state $PM_{2.5}$ nonattainment areas remain in attainment, New Jersey will continue to operate an appropriate air monitoring network in New Jersey.[51] The air monitoring results will detect any changes in the ambient air quality, as well as assist the State in determining whether or not it is necessary to implement any contingency measures.

The State will work with the USEPA each year through the air monitoring network review process, as required by 40 CFR Part 58 to determine: 1) the adequacy of the $PM_{2.5}$ monitoring network; 2) if additional monitoring is needed; and 3) if/when sites can be discontinued or relocated. Due to the possibility of an unexpected occurrence affecting one or more of the required monitors, the State will work closely with the USEPA to either replace it or move the monitor(s) to a new location, if necessary. Any changes to the monitoring network will be made

[51] As specified in the USEPA memorandum dated September 4, 1992, entitled *Procedures for Processing Requests to Redesignate Areas to Attainment*, from John Calcagni, Director, Air Quality Management Division, to Regional Air Directors, the State will operate an adequate network for 10 years following the redesignation. In addition, eight years into the maintenance plan, the State will submit a second 10 year maintenance plan.

through the air monitoring network review process. This review process undergoes a public notice period, usually in the May- June time period each year, and then is subject to approval by the USEPA. Air monitoring data will continue to be quality assured according to the requirements in the USEPA regulations.[52]

4.5.5 Contingency Plan

The Clean Air Act requires Maintenance Plans include contingency provisions.[53] The purpose of the contingency provisions is to assure that any violations of the NAAQS will be corrected promptly. The NJDEP will use the following triggers (determination of when to start an action) and perform the following actions in accordance with the described schedule, as its contingency plan:

1. If monitored $PM_{2.5}$ concentrations in any year exceed the level of the NAAQS, NJDEP will evaluate all appropriate data to determine the cause of the elevated levels. Such data assessment will include appropriate air quality data, meteorological data, activity data for relevant sources, information on any unusual events (e.g. forest fires, natural disasters), transport from out of state sources, violation of an existing rule or permit, and any other related data to try to determine the cause of the violation. This assessment will be performed when the annual average $PM_{2.5}$ concentration for the previous year exceeds 15 $\mu g/m^3$ at any New Jersey monitoring site, or when the 98^{th} percentile of the 24-hour average daily concentrations exceeds 35 $\mu g/m^3$ at any New Jersey air monitoring site. NJDEP will perform this evaluation within six months of the data certification. New Jersey will work with the other states in its shared multi-state nonattainment areas as necessary.

2. If annual or 24-hour $PM_{2.5}$ design values (3 year average of the annual average, or 3 year average if the 98^{th} percentile of the 24-hour average daily concentrations, respectively) exceed 15 $\mu g/m^3$ or 35 $\mu g/m^3$, NJDEP will evaluate all appropriate data to determine the cause using the same analyses discussed in Item number 1. NJDEP will perform this evaluation within six months of the determination of a violation.

3. Based on any findings, New Jersey will make a judgment on whether the violation was caused by an exceptional event or a violation of an existing rule or permit. Any violation of an existing rule or permit will be addressed with appropriate enforcement action. If it is determined that the violation was caused by an exceptional event, the State will implement USEPA's exceptional event procedures. The State will rely on one or more of the following contingency measures and implementation schedule for any other violation:

- **Onroad Vehicle Fleet Turnover:** Emission reductions will be achieved from onroad motor vehicle fleet turnover from the existing State and Federal rules for motor vehicles. The turnover of the onroad fleet of cars and trucks will result in additional NO_x and PM emission reductions each year because the new vehicles have significantly lower emission standards than the vehicles they are replacing. The rules for this measure are already promulgated and are already being implemented.

- **Nonroad Vehicle and Equipment Fleet Turnover:** Emission reductions will be achieved from nonroad vehicles and equipment fleet turnover from existing Federal rules. The turnover will result in additional NO_x and PM emission reductions each year because the new vehicles and equipment have lower emission standards than the

[52] 40 CFR 58.
[53] 42 U.S.C. 7505a(d).

vehicles and equipment they are replacing. The rules for this measure are already promulgated and are already being implemented.

- **Low Sulfur Fuel Rule N.J.A.C. 7:27- 9 (prior to July 2016):** The low sulfur fuel rule was adopted in August of 2010, with future effective limits in July 2014 and July 2016. If a violation occurs prior to the final effective date of the new limits in the rule (July 2016), significant additional SO_2 emission reductions will be achieved after the new limits are implemented. Therefore, this measure can be applied as a contingency measure in the event of a violation between the time period of the redesignation to July 2016. The rules for this measure are already promulgated, but not yet fully implemented.

- **Diesel Retrofit Program, Diesel Inspection and Maintenance Program, Vehicle Idling N.J.A.C. 7:27- 14 and 32:** Emission reductions will be achieved from New Jersey's programs and rules for diesel retrofits, diesel inspection and maintenance and vehicle idling, that are not included in the inventory demonstration in the maintenance plan. These programs provide real benefits that are not currently quantified in the inventory. The rules for these measures are already promulgated and are already being implemented.

4. If necessary, New Jersey will evaluate the feasibility and applicability of additional measures, how they relate to the cause and location of the violation, and if these additional measures would correct the violation. An evaluation of additional measures may include:

- New control measures that have been adopted for other purposesResidential wood burning strategies
- Fugitive dust reductions at stationary sources
- Lower particulate limits for No. 6 fuel oil-fired boilers
- Lower particulate limits for stationary diesel engines
- Working with the local metropolitan planning agencies to implement transportation control measures such as: traffic flow improvements, transit improvements, trip reduction programs, arterial and signal improvement projects, bicycle projects, or other new transportation measures.

NJDEP will perform this evaluation within six months of the determination of a violation. If it is determined that a new rule is required or appropriate to correct a violation of the NAAQS, NJDEP will propose a new rule within 18 months of the determination of a violation. NJDEP will take final action on the proposed rule within 30 months of the determination of a violation.

4.6 Transportation Conformity

4.6.1 Introduction

The Clean Air Act[54] requires that Federal actions conform to a state's State Implementation Plan (SIP). For the purposes of transportation conformity, the projected emissions calculated based on a transportation plan, transportation improvement program, or project, may not exceed the motor vehicle emissions budget or cap contained in the appropriate SIP. Emissions projected to occur in future years for which no motor vehicle emissions budgets are specifically established must be less than or equal to the motor vehicle emissions budget established for the most recent prior year.

[54] 42 U.S.C. § 7506.

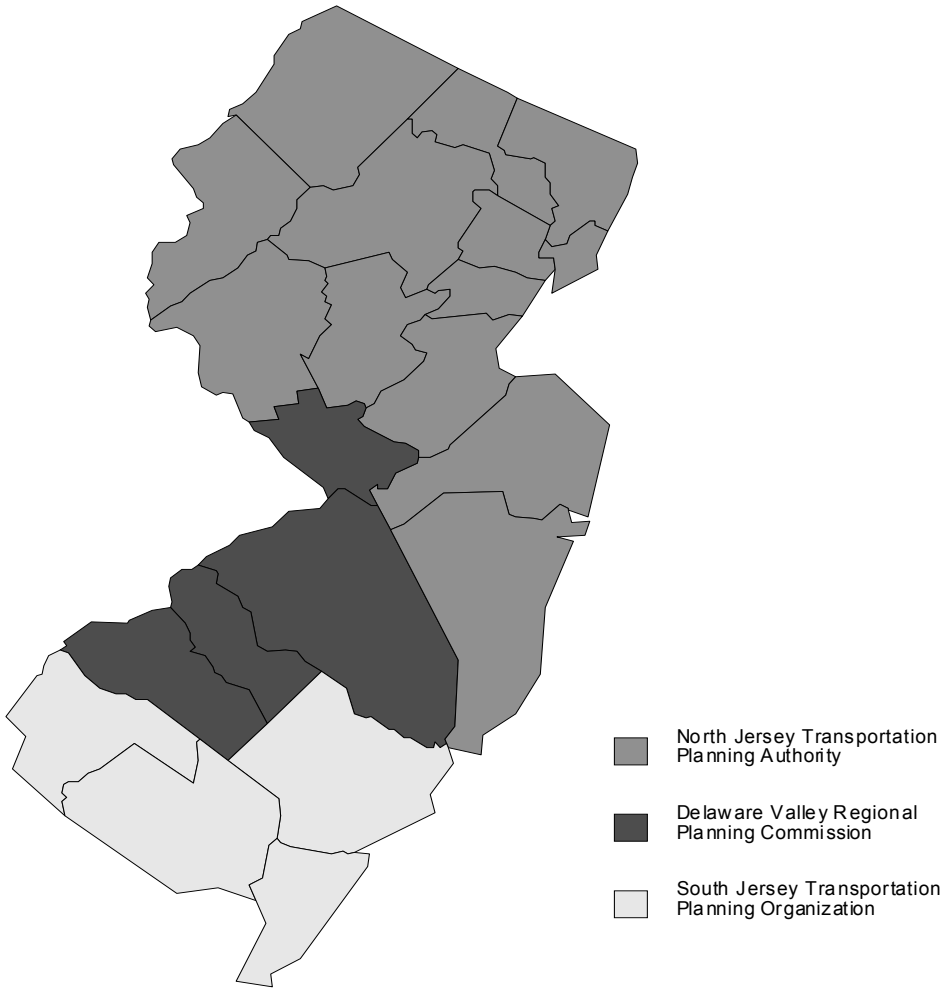
Emission budgets in New Jersey are established by nonattainment area and Metropolitan Planning Organization (MPO) boundary.

There are three Metropolitan Planning Organizations in New Jersey that cover the geographic areas shown in Figure 19. These are the North Jersey Transportation Planning Authority (NJTPA), the Delaware Valley Regional Planning Commission (DVRPC), and the South Jersey Transportation Planning Organization (SJTPO). Each Metropolitan Planning Organization is responsible for the transportation plans and transportation improvement programs for its designated area. The Metropolitan Planning Organizations each work in consultation with the Federal Highway Administration, the New Jersey Department of Transportation, the USEPA, and the New Jersey Department of Environmental Protection to remain at or under established transportation emission budgets for their area. Transportation conformity budgets for $PM_{2.5}$ are developed for each Metropolitan Planning Organization by adding the onroad emissions from individual counties within each Metropolitan Planning Organization planning area located within the New Jersey portions of the $PM_{2.5}$ nonattainment areas. This results in the formation of the following three areas for budget development:

- Nine counties located in the NJTPA Metropolitan Planning Organization planning area and the New Jersey portion of the NNJ-NY-CT $PM_{2.5}$ nonattainment area (Bergen, Essex, Hudson, Middlesex, Monmouth, Morris, Passaic, Somerset, and Union counties),
- Mercer county located in the DVRPC Metropolitan Planning Organization geographic area and the NNJ-NY-CT nonattainment area, and
- Three counties included in the DVRPC Metropolitan Planning Organization geographic area and the New Jersey portion of the SNJ/Phila. $PM_{2.5}$ nonattainment area (Burlington, Camden, and Gloucester counties).

The South Jersey Transportation Planning Organization does not have to perform transportation conformity for $PM_{2.5}$ because all counties within their planning area have been, and continue to be, designated attainment of the $PM_{2.5}$ 15 $\mu g/m^3$ annual and 35 $\mu g/m^3$ daily NAAQSs. Additional background information concerning transportation conformity is provided in Appendix X.

Figure 19
Metropolitan Planning Organizations in New Jersey



4.6.2 Budgets for Attainment and Maintenance of the Annual and Daily $PM_{2.5}$ NAAQS

The new transportation conformity emission budgets for directly emitted fine particulate matter (direct $PM_{2.5}$) and annual NO_x (a $PM_{2.5}$ precursor), by MPO planning area for the New Jersey portions of the NNJ-NY-CT and the SNJ-Phila. nonattainment areas, are provided in Table 12. The set of budgets in Table 12 represent annual emissions. New Jersey is simultaneously establishing these same values as the transportation conformity budgets for the $PM_{2.5}$ annual NAAQS and the $PM_{2.5}$ daily NAAQS. Exceedances of the $PM_{2.5}$ daily NAAQS have historically been distributed throughout all four seasons of the year, therefore the transportation conformity budgets applicable to the $PM_{2.5}$ daily NAAQS are represented as annual average emissions. The budgets are based on the latest planning assumptions, including use of the MOVES model. New Jersey is establishing budgets for 2009 and 2025 for this $PM_{2.5}$ redesignation and maintenance plan SIP revision. The monitoring data show attainment of the standards for 2009. The 2025 budgets represent the last year of the maintenance period for the $PM_{2.5}$ standards.

Table 12
Transportation Conformity Emission Budgets for Both the $PM_{2.5}$ Daily NAAQS and $PM_{2.5}$ Annual NAAQS

	Direct $PM_{2.5}$ Emissions[(a)] (tons per year)		NO_x Emissions (tons per year)	
Year of Budget	**2009**	**2025**	**2009**	**2025**
NJTPA and NNJ/NY/CT Nonattainment Area[(b)]	2,736	1,509	67,272	25,437
DVRPC and NNJ/NY/CT Nonattainment Area[(c)]	224	119	5,835	2,551
DVRPC and SNJ/Phila. Nonattainment Area[(d)]	680	363	18,254	8,003

Notes: (a) Direct $PM_{2.5}$ consists of the sum of: SO_4, organic carbon, elemental carbon, brake particles, and tire particles.
(b) This area consists of Bergen, Essex, Hudson, Middlesex, Monmouth, Morris, Passaic, Somerset and Union Counties (New Jersey portion of the NNJ-NY-CT nonattainment area also located in the NJTPA planning area).
(c) This area consists of Mercer County.
(d) This area consists of Burlington, Camden and Gloucester Counties (New Jersey portion of the SNJ/Phila. nonattainment area).

Each Metropolitan Planning Organization used its Travel Demand Models (TDM) to estimate the actual 2009 and projected 2025 vehicle activity data. Both Metropolitan Planning Organizations used the monthly approach outlined in the USEPA guidance[55] to calculate annual average emissions.

It is important to note that from 2009 to 2025 onroad emissions budgets indicate significant declines in the onroad inventories for both $PM_{2.5}$ and NO_x. Also, 2009 (the year of the first budget) corresponds to a date in which the monitoring data show attainment of the standards. Therefore, the current SIP continues to reflect a set of control measures designed to further decrease regional onroad emissions and continued improvements in air quality are expected. The purpose of the 2025 budgets is to ensure that attainment of the $PM_{2.5}$ standards will be maintained throughout the time period covered by this proposed SIP revision. The budgets are based on the inventory projections for 2025 for the onroad sector as well as the inventory projections for the other sectors (nonroad mobile, area, and stationary sources). As shown in Table 13, the 2025 projected inventories for $PM_{2.5}$ and $PM_{2.5}$ precursors are significantly less than their respective base year (2007) inventories. These projected emission reductions allows the addition of a safety margin to the 2025 onroad inventory values to establish the 2025 transportation conformity budgets.[56] The safety margin is some portion of the difference between the emissions necessary to achieve the milestone (attainment or maintenance goals)

[55] USEPA. Guidance for Creating Annual Onroad Mobile Source Emission Inventories for $PM_{2.5}$ Nonattainment Areas for Use in SIPs and Conformity. United States Environmental Protection Agency, EPA420-B-05-008, page 7, August 2005.

[56] 40 CFR 93.124

and future year projected emissions. Safety margins are incorporated so that the 2025 transportation conformity emission budgets represent constraints on emissions from onroad sources that will maintain attainment of the NAAQS. New Jersey has elected to use only 8% of the total emissions available as safety margins (2007 minus 2025 inventories) for each pollutant in the establishment of the 2025 budgets. This should be sufficient to accommodate expected improvements to the MOVES inputs and methodology in the future while still ensuring that emissions remain well below attainment levels. The 2025 budgets for direct $PM_{2.5}$ and NO_x in Table 12 include the safety margin emissions. The calculation of the safety margins for the 2025 budgets is summarized in Table 13.

Table 13
Calculation of 2025 Transportation Conformity Emission Budgets

Area	Direct $PM_{2.5}$ Emissions[(a)] (tons per year)				NO_x Emissions (tons per year)			
	Onroad 2025 Inventory	Total Emission Reduction From 2007[(b)]	Safety Margin (8% of Tot Emis. Red. From 2007)	2025 Conformity Budget	Onroad 2025 Inventory	Total Emission Reduction From 2007[(b)]	Safety Margin (8% of Tot Emis. Red. From 2007)	2025 Conformity Budget
NJTPA and NNJ/NY/CT NAA[(c)]	1,128	4,766	381	1,509	18,626	85,142	6,811	25,437
DVRPC and NNJ/NY/CT NAA[(d)]	90	358	29	119	1,920	7,881	630	2,551
DVRPC and SNJ/Phila. NAA[(e)]	278	1,056	85	363	6,095	23,848	1,908	8,003

Notes: (a) Direct $PM_{2.5}$ consists of the sum of: SO_4, organic carbon, elemental carbon, brake particles, and tire particles.
(b) This is the difference in estimated emissions from all sources between 2007 and 2025 using emission inventories from this maintenance plan. Details regarding these inventories are provided in Section 4.5.2. .
(c) This area consists of Bergen, Essex, Hudson, Middlesex, Monmouth, Morris, Passaic, Somerset and Union Counties (New Jersey portion of the NNJ-NY-CT nonattainment area also located in the NJTPA planning area).
(d) This area consists of Mercer County.
(e) This area consists of Burlington, Camden and Gloucester Counties (New Jersey portion of the SNJ/Phila. nonattainment area).

Once these budgets are deemed adequate or are approved by the USEPA (whichever occurs first), these budgets must be used for subsequent transportation conformity determinations by the NJTPA and the DVRPC. The MOVES inputs used to generate the budgets are documented in Appendix VII. Computer files that document the calculation of the budgets are provided in the Attachments to Appendix VII.

5.0 CONCLUSION

Air quality monitoring data show measured $PM_{2.5}$ levels are well below the NAAQS, with a trend of improving $PM_{2.5}$ air quality over the past decade. New Jersey's northern and southern nonattainment areas are projected to continue to meet the annual 15 $\mu g/m^3$ and daily 35 $\mu g/m^3$ health based $PM_{2.5}$ NAAQS through 2025. Continued attainment is projected based on permanent and enforceable measures that the State and Federal Government have adopted or implemented as shown in the Maintenance Plan. The NJDEP will track and evaluate ambient $PM_{2.5}$ air concentrations and take appropriate steps to maintain the NAAQS. New Jersey requests that the USEPA redesignate the New Jersey portion of both of New Jersey's multi-state $PM_{2.5}$ nonattainment areas to attainment for the annual 15 $\mu g/m^3$ and daily 35 $\mu g/m^3$ health based $PM_{2.5}$ NAAQS in accordance with the Clean Air Act.