State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
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JON S. CORZINE
Governor

LISA P. JACKSON
Commissioner

December 17, 2007

The Honorable Alan J. Steinberg
Regional Administrator
United States Environmental Protection Agency – Region 2
290 Broadway- 26th Floor
New York, New York 10007-1866

Dear Regional Administrator Steinberg:

Enclosed please find for your review and comment a proposed revision to the New Jersey State Implementation Plan (SIP) for the Annual Fine Particulate Matter National Ambient Air Quality Standard. This proposed SIP revision contains updates to the early fine particle matter ($PM_{2.5}$) transportation conformity budgets for the portion of the Delaware Valley Regional Planning Commission planning area that is located within the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area (Mercer County). This SIP revision is necessary because of recent changes to planning assumptions that were used to develop the initial early transportation conformity budgets.

The USEPA previously approved[1] early budgets for the New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area, including Mercer County. Subsequent to this approval the New Jersey Department of Environmental Protection updated its planning assumptions regarding the age distribution of the vehicle fleet which indicated a larger fraction of the vehicle miles traveled (VMT) is attributed to the heaviest class of diesel trucks. When the updated VMT by vehicle type fractions are used, the predicted emissions of direct $PM_{2.5}$ and annual NO_x increase. These higher predictions result in values that are significantly higher than those established in the initial early budgets. The amount of the budget exceedance for Mercer County is much greater than the emission reductions that could be achieved by changes to transportation projects by 2009. The $PM_{2.5}$ attainment demonstration SIP will include transportation conformity budgets for the 13 counties designated as nonattainment in New Jersey.

[1] Final Rule, Approval and Promulgation of Implementation Plans; Carbon Monoxide Maintenance Plan, Conformity Budgets, Emissions Inventories; State of New Jersey, 71 Fed. Reg. (July 10, 2006).

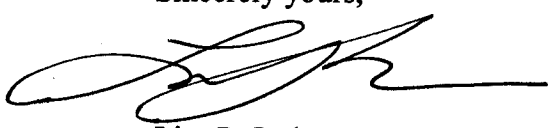
A public hearing is scheduled on New Jersey's proposal on January 28, 2008, at 10:00 a.m. in the New Jersey Department of Environmental Protection's Public Hearing Room, 401 East State Street, Trenton, New Jersey. Written comments relevant to the proposal may be submitted until the close of business on January 31, 2008 to:

Alice A. Previte, Esq.
Attn: DEP Docket No. 02-07-01/540
New Jersey Department of Environmental Protection
P.O. Box 402
401 East State Street
Trenton, N.J. 08625-0402

We are requesting parallel processing of the proposed SIP revisions in order to obtain USEPA approval prior to the Delaware Valley Regional Planning Commission's next transportation conformity determination that is scheduled for early Spring of 2008.

If you have any questions regarding this proposal, please contact William O'Sullivan, Director of the Division of Air Quality, at (609) 984-1484.

Sincerely yours,



Lisa P. Jackson
Commissioner

Enclosure: SIP Document

c: Kris Kolluri, NJDOT Commissioner
Barry Seymour, DVRPC Executive Director
Nancy Wittenberg, Assistant Commissioner
William O'Sullivan, Director

The State of New Jersey
Department of Environmental Protection

Proposed
State Implementation Plan (SIP) Revision
For Attainment of the Fine Particulate Matter
National Ambient Air Quality Standard

Update of Early Transportation Conformity
Budgets for Mercer County

December 2007

Preface

This document is a proposed revision to the State Implementation Plan for the Annual Fine Particulate Matter National Ambient Air Quality Standard. Specifically, this proposed SIP revision includes updates to the early fine particle matter ($PM_{2.5}$) transportation conformity budgets for a portion of the Delaware Valley Regional Planning Commission (Mercer County) planning area. The early budgets proposed to be updated were previously approved by the United States Environmental Protection Agency on July 10, 2006.[1]

Acknowledgments

The New Jersey Department of Environmental Protection acknowledges the efforts and assistance of the many agencies and individuals whose contributions were instrumental in the preparation of this State Implementation Plan Revision. In particular, the New Jersey Department of Environmental Protection wishes to acknowledge the many individuals within the New Jersey Department of Transportation, the United States Environmental Protection Agency Region 2, and the Delaware Valley Regional Planning Commission; and as well as staff within the New Jersey Department of Environmental Protection for their assistance and guidance.

[1] Final Rule, Approval and Promulgation of Implementation Plans; Carbon Monoxide Maintenance Plan, Conformity Budgets, Emissions Inventories; State of New Jersey, 71 Fed. Reg. 38770-72 (July 10, 2006).

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* Note: This appendix is only available electronically due to the large size of the computer files and because these files are designed to be used in a digital format.

Acronyms and Abbreviations

CFR	Code of Federal Regulations
DVMT	Daily Vehicle Miles Traveled
FMVCP	Federal Motor Vehicle Control Program
FR	Federal Register
GVWR	Gross Vehicle Weight Rating
HDDV	Heavy Duty Diesel Vehicles
I/M	Inspection and Maintenance
LDGT	Light Duty Gasoline Trucks
LDGV	Light Duty Gasoline Vehicle
NAAQS	National Ambient Air Quality Standards
NJDEP	New Jersey Department of Environmental Protection
NJR	New Jersey Register
NLEV	National Low Emission Vehicle
NO_x	Oxides of Nitrogen
$PM_{2.5}$	Fine Particulate Matter (particles with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers)
PPSUITE	Performance Evaluation and Emissions Analysis
P.L.	Public Law
RFG	Reformulated Gasoline
RVP	Reid Vapor Pressure
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_x	Oxides of Sulfur
TIP	Transportation Improvement Program
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

Executive Summary

The State of New Jersey is proposing to revise its State Implementation Plan (SIP) for attainment and maintenance of the National Ambient Air Quality Standard (NAAQS) for fine particulate matter. Specifically, this proposed SIP revision consists of revised transportation conformity fine particulate matter ($PM_{2.5}$) emission budgets for Mercer County, New Jersey. This proposed SIP revision is necessary because of recent changes to the planning assumptions that were used to develop the initial early transportation conformity budgets.

In a 2006 SIP revision,[2] New Jersey established early transportation conformity emission budgets for directly emitted fine particulate matter (direct $PM_{2.5}$) and annual oxides of nitrogen (NO_x) for the New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area. NO_x is a precursor of $PM_{2.5}$. The United States Environmental Protection Agency (USEPA) allowed areas to establish early budgets as an alternative to other interim conformity tests, prior to submittal of the $PM_{2.5}$ attainment demonstration SIP due in April 2008. To establish an early budget, an area must meet certain criteria defined by the USEPA. The New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area continues to meet these criteria. The use of early budgets is expected to be more air quality constraining than the choice of using either of the two other interim conformity tests. The initial early budgets for New Jersey were approved by the USEPA on July 10, 2006.[3]

Subsequent to this approval the New Jersey Department of Environmental Protection (NJDEP) updated its planning assumptions regarding the age distribution of the vehicle fleet and the distribution of vehicle miles traveled (VMT) between vehicle types. One of the results of this analysis was that a greater fraction of the total VMT was attributed to the heaviest class of diesel trucks (trucks greater than 60,000 pounds (lbs.) Gross Vehicle Weight Rating). The VMT fraction for this vehicle class increased from 0.65% to 4.02%. When the updated VMT by vehicle type fractions are used, the predicted emissions of direct $PM_{2.5}$[4] and annual NO_x are projected to increase. The higher emissions predictions result in values that are significantly higher than the initial early budgets. This is important in Mercer County, New Jersey.[5] The amount of the budget exceedance for Mercer County is much greater than the emission reductions that could be achieved by

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[2] NJDEP, State Implementation Plan (SIP) Revisions for the Attainment and Maintenance of the 8-Hour Carbon Monoxide National Ambient Air Quality Standard, 1-Hour Ozone National Ambient Air Quality Standard, and Fine Particulate Matter National Ambient Air Quality Standard; and the 2002 Periodic Emission Inventory, May 2006.

[3] Final Rule, Approval and Promulgation of Implementation Plans; Carbon Monoxide Maintenance Plan, Conformity Budgets, Emissions Inventories; State of New Jersey, 71 Fed. Reg. 38770-72 (July 10, 2006).

[4] Direct $PM_{2.5}$ consists of the sum of: SO_4, organic carbon, elemental carbon, particulate matter from gasoline vehicles, lead, brake particles and tire particles.

[5] In general, transportation conformity budgets are established for multi-county areas within a Metropolitan Planning Organization. In this case budgets that cover Mercer County only are required for PM2.5 because it is the only county within the Delaware Valley Regional Planning Commission's planning area that is located within the Northern New Jersey/ New York/Connecticut $PM_{2.5}$ nonattainment area.

changes to transportation projects by 2009. Therefore, a revision of the early budget for Mercer County is proposed to enable the Metropolitan Planning Organization, the Delaware Valley Regional Planning Commission, to perform its next transportation conformity regional analysis that is scheduled for spring of 2008. It is anticipated that the $PM_{2.5}$ transportation budgets that will be submitted with the $PM_{2.5}$ Attainment Demonstration SIP (scheduled for April 2008) cannot be approved by the USEPA in time for the Delaware Valley Regional Planning Commission to maintain its regular schedule of revisions to its Transportation Improvement Program.

The initial and proposed updated early transportation conformity emission budgets for Mercer County are provided in Table ES1. The proposed updated budgets are based on the latest planing assumptions. The New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area continues to meet the USEPA criteria that allow for the establishment of early transportation conformity budgets. The updated early budgets must be used in place of the existing initial early budgets for future transportation conformity determinations by the Delaware Valley Regional Planning Commission once these updated early budgets are approved by the USEPA. Updates to the early conformity budgets for the other counties within the New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area are not required at this time because recent updates to the Transportation Demand Model for those counties resulted in reductions in emission predictions that compensated for the emissions increases from the change in the VMT by vehicle type fractions.

Table ES1
Early $PM_{2.5}$ Transportation Conformity Emission Budgets
for Mercer County New Jersey
Due to VMT by Vehicle Type Fraction Updates

Early Budgets	Direct $PM_{2.5}$ Emissions[(a)] (tons per year)	Annual NO_x Emissions (tons per year)
	2009	2009
Initial	89	4,328
Updated	105	5,323

(a) Direct $PM_{2.5}$ consists of the sum of: SO_4, organic carbon, elemental carbon, particulate matter from gasoline vehicles, lead, brake particles and tire particles.

I. Introduction

The Clean Air Act[6] requires that federal actions conform to a State's State Implementation Plan (SIP). Specifically the Clean Air Act requires the action/activity will not:

- Cause or contribute to any new violation of any standard in any area;
- Increase the frequency or severity of any existing violation of any standard in any area; or,
- Delay timely attainment of any standard or any required interim emission reductions or any other milestones in any area.

To implement this requirement the Clean Air Act directed[7] the United States Environmental Protection Agency (USEPA) to issue rules that governed how conformity determinations would be conducted for two categories of actions/activities: 1) those dealing with transportation plans, programs and projects (Transportation Conformity), and 2) all other actions, e.g., projects requiring federal permits. This latter category is referred to as General Conformity.

The Federal Transportation Conformity Rule (40 C.F.R. § 93.100-160) provides the process by which the air quality impact of transportation plans, transportation improvement programs, and projects are analyzed. The agency preparing transportation plans (projections of twenty or more years), transportation improvement programs (projections of at least four years), or approving a transportation project must analyze the emissions expected from such a proposal in accordance with the Transportation Conformity Rule.[8]

For the purposes of transportation conformity, the emission budget is essentially a cap on the total emissions allocated to onroad vehicles. The projected regional 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 in 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.

Emission budgets in New Jersey are established by nonattainment area and Metropolitan Planning Organization boundary. There are three Metropolitan Planning Organizations in New Jersey that cover the geographic areas as shown in Figure I.

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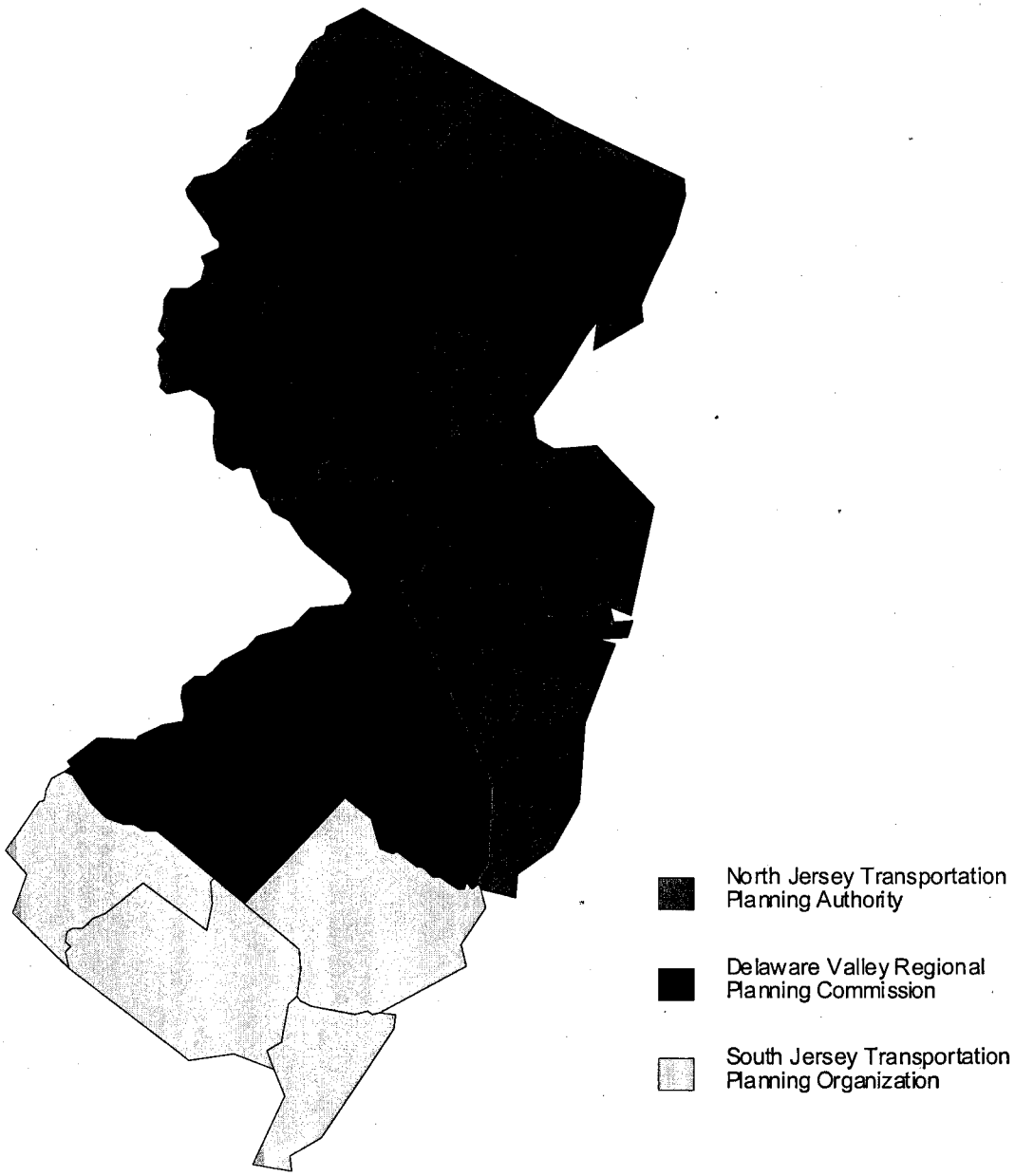
[6] 42 U.S.C. §7506
[7] 42 U.S.C. §7506
[8] For New Jersey such plans are prepared by three Metropolitan Planning Organizations (North Jersey Transportation Planning Authority, South Jersey Transportation Planning Organization and Delaware Valley Regional Planning Commission).

Figure I

Metropolitan Planning Organizations in New Jersey



The Clean Air Act provides for states to submit revisions to their State Implementation Plans (SIP) whenever state programs are modified from the existing SIP.[9] This document proposes updated early transportation conformity budget for fine particulate matter, $PM_{2.5}$, for Mercer County, New Jersey.

A. $PM_{2.5}$ General Background

Particulate matter[10] is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. Many manmade and natural sources emit particulate matter directly or emit other pollutants that react in the atmosphere to form particulate matter. Sources of fine particles include all types of combustion activities (motor vehicles, power plants, wood burning, etc.) and certain industrial processes. Other particles may be indirectly formed when gases from burning fuels react with sunlight and water vapor.

Particles less than 10 micrometers in diameter (PM_{10}) pose a health concern because they can be inhaled into and accumulate in the respiratory system. Particles less than 2.5 micrometers in diameter, $PM_{2.5}$, are referred to as "fine" particles and are believed to pose the greatest health risks. Because of their small size (approximately 1/30th the average width of a human hair), fine particles can lodge deeply into the lungs. Particles with diameters between 2.5 and 10 micrometers are referred to as "coarse."

Health studies have shown an association between exposure to fine particles and premature death. Other important effects include aggravation of respiratory disease and cardiovascular disease (as indicated by increased hospital admissions, emergency room visits, absences from school or work, and restricted activity days), lung disease, decreased lung function, asthma attacks, and certain cardiovascular problems such as heart attacks and irregular heart beat. Individuals particularly sensitive to fine particle exposure include older adults, people with heart and lung disease, and children. Roughly one out of every three people in the United States is at a higher risk of experiencing $PM_{2.5}$ related health effects: active children because they often spend a lot of time playing outdoors and their bodies are still developing and oftentimes the elderly population is at risk.

The Clean Air Act requires the USEPA to set National Ambient Air Quality Standards (NAAQS) for widespread pollutants from numerous and diverse sources that are considered harmful to public health and the environment. 42 U.S.C. § 7409. In July of 1997, the USEPA revised the primary (health-based) particulate matter standards by promulgating two $PM_{2.5}$ NAAQS: a 24-hour $PM_{2.5}$ standard set at 65 micrograms per cubic meter ($\mu g/m^3$) (24-hour average) and an annual $PM_{2.5}$ standard set at 15 $\mu g/m^3$ (annual arithmetic mean).

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[9] 42 U.S.C. § 7410.

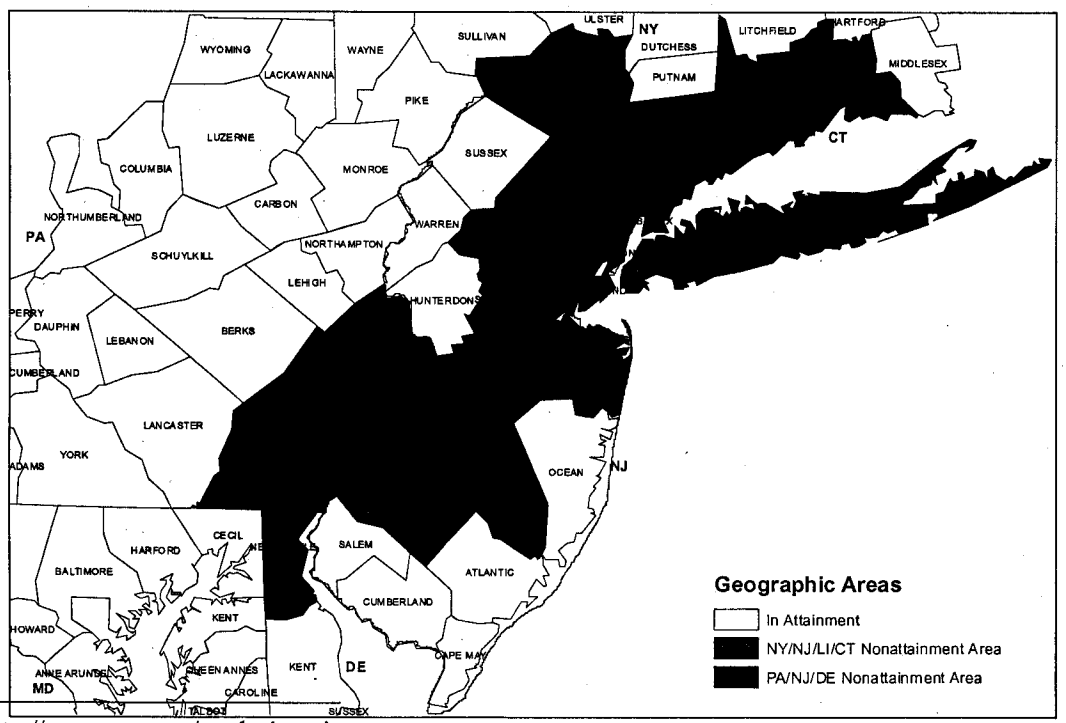
[10] Additional background information can be found at the USEPA website (http://www.epa.gov/pmdesignations/faq.htm%230).

B. $PM_{2.5}$ Nonattainment Areas in New Jersey

The USEPA issued final nonattainment area designations for the annual $PM_{2.5}$ standard on December 17, 2004. The affected New Jersey counties are shown in Figure II. Designations became effective on April 5, 2005. New Jersey is part of two nonattainment areas: ten counties in Northern New Jersey associated with New York City and three counties in Southern New Jersey associated with Philadelphia. Transportation conformity for $PM_{2.5}$ became effective on April 5, 2006. This is because there was a one-year grace period from the effective date of designations before transportation conformity applies for that standard.

States with designated $PM_{2.5}$ nonattainment areas are required to develop a SIP revision and submit it to the USEPA within three years of designation or by April of 2008.[11] This plan must include enforceable measures for reducing air pollutant emissions leading to the formation of fine particles in the atmosphere. The plan must also provide steps for the area to attain the $PM_{2.5}$ standard as quickly as possible.

Figure II
USEPA Designations of Nonattainment Areas for the Annual $PM_{2.5}$ National Ambient Air Quality Standard



[11] http://www.epa.gov/pmdesignations

II. Transportation Conformity for $PM_{2.5}$

A. Background

The Transportation Conformity Rules that established the criteria and procedures relating to transportation conformity for $PM_{2.5}$ were promulgated by the USEPA on July 1, 2004.[12] Before a SIP budget is available, either through an adequacy finding or approval by the USEPA, conformity of the transportation plan, transportation improvement program, or project not from a conforming plan is demonstrated with the interim emissions tests.[13] The interim emissions tests for $PM_{2.5}$ are either the baseline year test or the build/no-greater-than-no-build test. These tests currently apply for the three counties in the New Jersey portion of the Southern New Jersey/Philadelphia/Delaware $PM_{2.5}$ nonattainment area.

The baseline year test is passed when the emissions from the proposed transportation system are either less than or no greater than the baseline year (2002) motor vehicle emissions in a given nonattainment area. With the build/no-greater-than-no-build test conformity is demonstrated if emissions from the proposed transportation system ("build" or "action" scenario) are less than or equal to the emissions in the same future analysis year from the existing transportation system ("no-build" or "baseline" scenario). The Metropolitan Planning Organizations performing planning in $PM_{2.5}$ nonattainment areas must utilize either the baseline year test or the build/no-greater-than-no-build test until emission budgets are approved or found adequate by the USEPA.

Under certain circumstances the USEPA may approve early emission budgets for direct $PM_{2.5}$ and $PM_{2.5}$ precursors. The USEPA approved early $PM_{2.5}$ budgets in July, 2006 for the New Jersey portion of the Northern New Jersey/New York/Connecticut nonattainment area.

Four transportation related $PM_{2.5}$ precursors – oxides of nitrogen (NO_x), volatile organic compounds (VOCs), oxides of sulfur (SO_x), and ammonia (NH_3) – must be considered in the conformity process in $PM_{2.5}$ nonattainment areas. New Jersey's early budgets for $PM_{2.5}$ precursors included only the establishment of an annual NO_x budget. The USEPA requirements[14] for the consideration of $PM_{2.5}$ precursors are:

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

[12] Transportation Conformity Rule Amendments for the New 8-hour Ozone and $PM_{2.5}$ National Ambient Air Quality Standards and Miscellaneous Revisions for Existing Areas; Transportation Conformity Rule Amendments: Response to Court Decision and Additional Rule Changes; Final Rule, 69 Fed. Reg. 40004-81 (July 1, 2004).
[13] 40 C.F.R. § 93.119.
[14] Transportation Conformity Rule Amendments for the New $PM_{2.5}$ National Ambient Air Quality Standard: $PM_{2.5}$ Precursors, Final Rule, 70 Fed. Reg. 24280 (May 6, 2005).

the $PM_{2.5}$ air quality problem in a given area.

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

The following criteria are considered in making significance or insignificance findings for $PM_{2.5}$ precursors:

- The contribution of onroad emissions of the precursor to the total 2002 baseline SIP inventory;
- The current state of air quality for the area;
- The results of speciation monitoring for the area;
- The likelihood that future motor vehicle control measures will be implemented for a given precursor; and,
- Projections of future onroad emissions of the precursor.

The early budgets for $PM_{2.5}$ precursors included the establishment of an annual NO_x budget. New Jersey will discuss the significance of the other $PM_{2.5}$ precursors in the attainment demonstration SIP due in April 2008.

B. Updated Early Mercer County Transportation Conformity Emission Budgets for $PM_{2.5}$ and Annual NO_X

To establish early $PM_{2.5}$ budgets (prior to the attainment demonstration SIP revision), the USEPA requires[15] that a voluntary early $PM_{2.5}$ SIP revision be submitted that demonstrates that progress towards attainment is being made. The term "some progress toward attainment" has been interpreted by the USEPA to mean that the total 2009 inventories for direct $PM_{2.5}$ and annual NO_x to be less than the 2002 values by at least five to ten percent.[16]

In a 2006 SIP revision[17] (the "2006 SIP Revision") New Jersey established early $PM_{2.5}$ transportation conformity emission budgets including documentation of the justification for the early budgets. Early budgets were established for directly emitted fine particulate matter (direct $PM_{2.5}$) and annual NO_x (a $PM_{2.5}$ precursor) for the New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area. This nonattainment area includes one county in the Delaware Valley Regional Planning Commission planning area (Mercer County), with the other nine counties in the North

[15] 69 Fed. Reg. 40030.
[16] USEPA Region 2 and NJDEP, conference call, October 4, 2005.
[17] NJDEP, State Implementation Plan (SIP) Revisions for the Attainment and Maintenance of the 8-Hour Carbon Monoxide National Ambient Air Quality Standard, 1-Hour Ozone National Ambient Air Quality Standard, and Fine Particulate Matter National Ambient Air Quality Standard; and the 2002 Periodic Emission Inventory, May 2006.

Jersey Transportation Planning Authority planning area. The initial early budgets for New Jersey were approved by the USEPA on July 10, 2006. [18]

Rationale for a Budget Update

Subsequent to the approval of the initial early budgets, as part of our ongoing efforts to keep planning assumptions current, an analysis of the model assumptions regarding the distribution of vehicle miles traveled (VMT) between vehicle types was conducted. The initial and updated VMT by vehicle type fractions are provided in Table I. One of the most significant results of this analysis was that a greater fraction of the total VMT should be attributed to the heaviest class of diesel trucks (trucks greater than 60,000 lbs. Gross Vehicle Weight Rating).

Table I
Vehicle Miles Traveled (VMT) by Vehicle Type Fractions[a]

Composite Vehicle Classes Description	Initial VMT Fractions	Updated VMT Fractions
Light-Duty Vehicles (Passenger Cars)	0.5265	0.4802
Light-Duty Trucks 1 (0-6,000 lbs. GVWR, 0-3,750 lbs. LVW[b])	0.0075	0.0067
Light-Duty Trucks 2 (0-6,000 lbs. GVWR, 3, 751-5,750 lbs. LVW)	0.2530	0.2834
Light-Duty Trucks 3 (6,001-8,500 lbs. GVWR, 0-5,750 lbs. ALVW[c])	0.0798	0.0855
Light-Duty Trucks 4 (6,001-8,500 lbs. GVWR, 5,751 lbs. And greater ALVW)	0.0155	0.0228
Class 2b Heavy-Duty Vehicles (8,501-10,000 lbs. GVWR)	0.0428	0.0334
Class 3 Heavy-Duty Vehicles (10,001-14,000 lbs. GVWR)	0.0061	0.0078
Class 4 Heavy-Duty Vehicles (14,001-16,000 lbs. GVWR)	0.0073	0.0064
Class 5 Heavy-Duty Vehicles (16,001-19,500 lbs. GVWR)	0.0015	0.0027
Class 6 Heavy-Duty Vehicles (19,501-26,000 lbs. GVWR)	0.0051	0.0059
Class 7 Heavy-Duty Vehicles (26,001-33,000 lbs. GVWR)	0.0056	0.0060
Class 8a Heavy-Duty Vehicles (33,001-60,000 lbs. GVWR)	0.0284	0.0080
Class 8b Heavy-Duty Vehicles (>60,000 lbs. GVWR)	0.0065	0.0402
School Buses	0.0040	0.0016
Transit and Urban Buses	0.0021	0.0038
Motorcycles (All)	0.0083	0.0056
Total	1.0000	1.0000

[a]The fractions represent the fraction of VMT attributable to each vehicle type. For example, 0.5265 (52.65%) of VMT attributable to light-duty vehicles (passenger cars) was assumed when the initial early budgets were calculated. The VMT fractions were calculated using New Jersey vehicle registration data and MOBILE6 national default mileage accumulation rates.

[b]LVW = Loaded Vehicle Weight

[c]ALVW = Alternative Loaded Vehicle Weight: The adjusted loaded vehicle weight is the numerical average of the vehicle curb weight and the gross vehicle weight rating (GVWR).

When the updated VMT by vehicle type fractions are used as a model input, the predicted emissions of direct $PM_{2.5}$ and annual NO_x are higher than the initial early budgets. The

[18] Final Rule, Approval and Promulgation of Implementation Plans; Carbon Monoxide Maintenance Plan, Conformity Budgets, Emissions Inventories; State of New Jersey, 71 Fed. Reg. 38770-72 (July 10, 2006).

amount of the budget increase for Mercer County is much greater than the emission reductions that could be achieved by changes to transportation projects by 2009. Therefore, a revision of the early budget for Mercer County is needed to reflect the updated planning assumptions. It is anticipated that the $PM_{2.5}$ transportation budgets that will be submitted with the $PM_{2.5}$ Attainment Demonstration SIP (scheduled for April, 2008) cannot be approved by the USEPA in time for the Delaware Valley Regional Planning Commission to maintain its regular schedule of revisions to its Transportation Improvement Program.

The initial and proposed updated early direct $PM_{2.5}$ and annual NO_x transportation conformity emission budgets for Mercer County are provided in Table II. The proposed updated budgets are based on the latest planning assumptions including those for vehicle age distribution, VMT by vehicle type fraction, diesel sulfur level (43ppm) and 2009 projected vehicle activity data for Mercer County. Once approved by the USEPA, the updated budgets must be used for future transportation conformity determinations by the Delaware Valley Regional Planning Commission. Computer files that document the calculation of the updated budgets are provided in Appendix A.

Table II
Delaware Valley Regional Planning Commission (Mercer County)
Early Transportation Conformity Emission Budgets
Due to VMT by Vehicle Type Fraction Updates

Early Budgets	Direct $PM_{2.5}$ Emissions[(a)] (tons per year)	Annual NO_x Emissions (tons per year)
	2009	2009
Initial	89	4,328
Updated	105	5,323

(a) Direct $PM_{2.5}$ consists of the sum of: SO_4, organic carbon, elemental carbon, particulate matter from gasoline vehicles, lead, brake particles and tire particles.

The early budget criterion, that the total 2009 inventories for direct $PM_{2.5}$ and annual NO_x be less than the 2002 values by at least five to ten percent, was met for the New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area when the initial early budgets were established in the 2006 SIP Revision. In the 2006 SIP Revision it was demonstrated that the projected 2009 $PM_{2.5}$ and NO_x inventories are 6.5% and 32.3% lower than the 2002 inventories for this nonattainment area, respectively. When the updated Mercer County budget values are used, the 2009 $PM_{2.5}$ and NO_x inventories are 6.3% and 32.0% lower than the 2002 inventories for this nonattainment area, respectively. Therefore, the early budget criterion is still satisfied for this update of the early budgets for Mercer County and the projected emissions reductions are expected to contribute towards attainment of the $PM_{2.5}$ standard. The updated inventory analyses are provided in Appendix B.

Appendix B - Updated Early $PM_{2.5}$ Transportation Conformity Emission Budgets

$PM_{2.5}$ and Annual NO_x Inventories for 2002 and 2009

To establish early transportation conformity emission $PM_{2.5}$ budgets, the USEPA requires[1] that a voluntary early $PM_{2.5}$ SIP revision be submitted that demonstrates that progress towards attainment is being made. In reference to the voluntary SIP that includes early budgets, the preamble states:

> "To be approvable, such a SIP would have to include inventories for all source sectors and meet other SIP requirements. While these early SIPs would have to show some progress toward attainment, it is not a requirement that all of the reductions would come from onroad mobile vehicles."

The term "some progress toward attainment" has been interpreted by the USEPA to mean that the total 2009 inventories for direct $PM_{2.5}$ and annual NO_x to be less than the 2002 values by at least five to ten percent.[2] Annual NO_x is the only $PM_{2.5}$ precursor for which a budget is being established at this time. The five percent to ten percent criteria are met for the New Jersey portion of the Northern New Jersey/NewYork/Connecticut $PM_{2.5}$ nonattainment area but are not met for the New Jersey portion of the Southern New Jersey/Philadelphia/Delaware $PM_{2.5}$ nonattainment area. Preliminary results show a small increase in overall direct $PM_{2.5}$ emissions between 2002 and 2009 for the New Jersey portion of the Southern New Jersey/Philadelphia/Delaware $PM_{2.5}$ nonattainment area. Therefore, early $PM_{2.5}$ budgets are established for the New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area only.

In a 2006 SIP revision[3] (the "2006 SIP Revision") New Jersey established early transportation conformity emission budgets for directly emitted fine particulate matter (direct $PM_{2.5}$) and annual NO_x (a $PM_{2.5}$ precursor) for the New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area. The initial early budgets for New Jersey were approved by the USEPA on July 10, 2006.[4]

Subsequent to the approval of the initial early budgets, an analysis of the model assumptions regarding the age distribution of the vehicle fleet and the distribution of vehicle miles traveled (VMT) between vehicle types was conducted. One of the results of this analysis was that a greater fraction of the total VMT should be attributed to the heaviest class of diesel trucks (trucks greater than 60,000 lbs. Gross Vehicle Weight Rating). When the updated VMT by vehicle type fractions are used as a model input, the predicted emissions of direct $PM_{2.5}$ and annual NO_x increase. The increased predictions result in values that are significantly higher than those adopted as initial early budgets. The following inventory analyses include the updated emission predictions for Mercer

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[1] 69 Fed. Reg. 40030.

[2] USEPA Region 2 and NJDEP, conference call, October 4, 2005.

[3] NJDEP, State Implementation Plan (SIP) Revisions for the Attainment and Maintenance of the 8-Hour Carbon Monoxide National Ambient Air Quality Standard, 1-Hour Ozone National Ambient Air Quality Standard, and Fine Particulate Matter National Ambient Air Quality Standard; and the 2002 Periodic Emission Inventory, May 2006.

[4] Final Rule, Approval and Promulgation of Implementation Plans; Carbon Monoxide Maintenance Plan, Conformity Budgets, Emissions Inventories; State of New Jersey, Federal Register / Vol. 71, No. 131 / Monday, July 10, 2006.

County for 2009. All other inventory values used in this analysis in the Northern nonattainment area are the same as those documented in the 2006 SIP Revision. The bases for these inventory values were documented in the 2006 SIP Revision.[5] The purpose of the following analysis is to evaluate the impact of the updated Mercer County 2009 budget values on continuing to meet the "progress towards attainment" criteria that allows for the establishment of early transportation conformity budgets.

Table B1 shows the results of the 2002 and 2009 direct $PM_{2.5}$ inventory (with anticipated controls in place) by source type for the New Jersey counties in the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area. Emissions from controlled stationary and area sources are projected to increase by nine and three percent respectively, for a total increase of 438 tons per year. The increase is projected to be more than offset by projected decreases in $PM_{2.5}$ emissions from onroad and nonroad mobile sources, by a total of 1,327 tons per year, for an overall decrease of 887 tons per year by 2009. This represents an overall 6.4% reduction in direct $PM_{2.5}$ emissions (see Table B2). Thus the area continues to meet the USEPA's criteria for "progress toward attainment" for direct $PM_{2.5}$ emissions.

[5] NJDEP, op. cit., Section II C.

Table B1
Direct $PM_{2.5}$ Emission Inventories for 2002 and 2009 for the New Jersey Portion of the Northern New Jersey/NewYork/Connecticut $PM_{2.5}$ Nonattainment Area

	DIRECT ANNUAL $PM_{2.5}$ CONTROLLED EMISSIONS (TONS PER YEAR) [1]											
	AREA			NONROAD			STATIONARY			ONROAD		
COUNTY	2002	2009	(2009-2002)	2002	2009	(2009-2002)	2002	2009	(2009-2002)	2002	2009	(2009-2002)
BERGEN	537	569	+32	478	419	-59	149	183	+34	376	214	-162
ESSEX	411	436	+25	393	341	-51	185	222	+37	291	163	-128
HUDSON	269	286	+16	345	299	-45	1,077	1,085	+7	134	76	-58
MERCER	530	548	+18	203	177	-26	188	212	+24	141	105	-36
MIDDLESEX	467	497	+30	346	299	-47	483	553	+70	347	207	-140
MONMOUTH	981	1,002	+21	501	426	-75	55	66	+10	244	145	-100
MORRIS	1,284	1,297	+13	280	251	-29	39	45	+6	209	126	-83
PASSAIC	543	554	+11	178	151	-27	19	22	+3	141	81	-60
SOMERSET	441	452	+11	149	131	-19	55	60	+4	152	88	-64
UNION	272	289	+17	333	291	-42	540	589	+49	185	108	-78
TOTAL for New Jersey portion of the NNJ/NY/CT Area	**5,736**	**5,930**	**+193 (+3%)**	**3,206**	**2,788**	**-419 (-13%)**	**2,790**	**3,035**	**+245 (+9%)**	**2,220**	**1,312**	**-908 (-41%)**

NOTES:

(1) In order for the calculated inventory values to more closely match the actual measured levels in New Jersey air quality monitors, the fugitive dust emissions were multiplied by a dust adjustment factor of 20%. Fugitive dusts are directly released air contaminants that do not pass through an exhaust pipe, stack, flue, vent or chimney. The main sources of fugitive dusts are dust from paved and unpaved roadways, stock/storage piles, landfill activity, quarry/mining activity, raw material handling, construction and agricultural tilling.

Table B2
Direct $PM_{2.5}$: Calculation of the Percent Reduction in Projected 2009 Emissions From the 2002 Emissions by County

	% EMISSION REDUCTION	CONTROLLED EMISSIONS ANNUAL (TONS PER YEAR)[1]		
		TOTAL OF ALL SECTORS		
COUNTY	(2009-2002)/2002	2002	2009	2009-2002
BERGEN	-10.0%	1,540	1,385	-155
ESSEX	-9.2%	1,280	1,162	-117
HUDSON	-4.4%	1,825	1,746	-80
MERCER	-1.9%	1,062	1,042	-20
MIDDLESEX	-5.3%	1,643	1,556	-87
MONMOUTH	-8.1%	1,781	1,639	-144
MORRIS	-5.1%	1,812	1,719	-93
PASSAIC	-8.3%	881	808	-73
SOMERSET	-8.6%	797	731	-68
UNION	-4.0%	1,330	1,277	-54
TOTAL for New Jersey portion of the NNJ/NY/CT Area	**-6.4%**	**13,952**	**13,065**	**-887**

NOTES:

(1) In order for the calculated inventory values to more closely match the actual measured levels in New Jersey air quality monitors, the fugitive dust emissions were multiplied by a dust adjustment factor of 20%. Fugitive dusts are directly released air contaminants that do not pass through an exhaust pipe, stack, flue, vent or chimney. The main sources of fugitive dusts are dust from paved and unpaved roadways, stock/storage piles, landfill activity, quarry/mining activity, raw material handling, construction and agricultural tilling.

Table B3 shows the results of the 2002 and projected 2009 NO_x inventories by source type for the New Jersey counties in the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area. Emissions from stationary and area sources are projected to increase by seven percent in both categories, for a total increase of 3,698 tons per year. The increase is projected to be more than offset by projected decreases in NO_x emissions from onroad and nonroad mobile sources, by a total of 78,964 tons per year, for an overall decrease of 75,266 tons per year, or about thirty-two percent (32%), by 2009. Thus the area continues to meet the USEPA's criteria for "progress toward attainment" for direct NOx emissions.

Table B3
Annual NO_x Emission Inventories for 2002 and 2009 for the New Jersey Portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ Nonattainment Area

	CONTROLLED EMISSIONS ANNUAL (TONS PER YEAR)											
SOURCE CATEGORY	AREA			NONROAD			STATIONARY			ONROAD		
COUNTY	2002	2009	(2009-2002)	2002	2009	(2009-2002)	2002	2009	(2009-2002)	2002	2009	(2009-2002)
BERGEN	2,815	3,019	+204	6,707	5,178	-1,530	988	1,189	+201	23,917	11,198	-12,719
ESSEX	2,436	2,621	+185	8,137	7,048	-1,090	2,441	3,081	+640	16,537	7,979	-8,558
HUDSON	1,735	1,864	+129	5,976	5,291	-685	9,674	9,970	+296	7,853	3,873	-3,980
MERCER	1,257	1,354	+97	2,427	1,898	-529	13,034	13,201	+167	8,505	5,323	-3,182
MIDDLESEX	2,343	2,512	+169	4,849	3,745	-1,104	3,567	4,164	+597	22,147	10,871	-11,276
MONMOUTH	1,806	1,934	+128	4,316	3,846	-470	240	272	+31	14,860	6,973	-7,887
MORRIS	1,752	1,879	+127	3,151	2,417	-735	284	337	+53	13,748	6,398	-7,350
PASSAIC	1,361	1,452	+91	2,413	1,800	-613	122	144	+22	8,748	4,164	-4,584
SOMERSET	1,048	1,121	+74	2,097	1,570	-527	313	370	+57	9,090	4,376	-4,715
UNION	1,621	1,732	+111	5,883	4,903	-980	3,757	4,077	+320	12,294	5,844	-6,451
TOTAL for New Jersey portion of the NY/NJ/ LI/CT Area	**18,173**	**19,488**	**+1,314 (+7%)**	**45,957**	**37,694**	**-8,262 (-18%)**	**34,420**	**36,804**	**+2,384 (+7%)**	**137,701**	**66,999**	**-70,702 (-51%)**

Table B4 is a comparison of total NO_x emissions for 2002 and 2009 by source sector for the New Jersey counties in the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area. Annual NO_x emissions are projected to be lower in each county and across the entire New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area by 13.7 percent to 41.7 percent with an average of over 30 percent. Based on these annual NO_x inventories, the New Jersey portion of the Northern New Jersey/New York/Connecticut area continues to meet the USEPA criteria of a reduction of at least five to ten percent to allow the area to be considered for the establishment of early $PM_{2.5}$ budgets in a voluntary SIP.

Appendix B - Updated Early $PM_{2.5}$ Transportation Conformity Emission Budgets

$PM_{2.5}$ and Annual NO_x Inventories for 2002 and 2009

To establish early transportation conformity emission $PM_{2.5}$ budgets, the USEPA requires[1] that a voluntary early $PM_{2.5}$ SIP revision be submitted that demonstrates that progress towards attainment is being made. In reference to the voluntary SIP that includes early budgets, the preamble states:

> "To be approvable, such a SIP would have to include inventories for all source sectors and meet other SIP requirements. While these early SIPs would have to show some progress toward attainment, it is not a requirement that all of the reductions would come from onroad mobile vehicles."

The term "some progress toward attainment" has been interpreted by the USEPA to mean that the total 2009 inventories for direct $PM_{2.5}$ and annual NO_x to be less than the 2002 values by at least five to ten percent.[2] Annual NO_x is the only $PM_{2.5}$ precursor for which a budget is being established at this time. The five percent to ten percent criteria are met for the New Jersey portion of the Northern New Jersey/NewYork/Connecticut $PM_{2.5}$ nonattainment area but are not met for the New Jersey portion of the Southern New Jersey/Philadelphia/Delaware $PM_{2.5}$ nonattainment area. Preliminary results show a small increase in overall direct $PM_{2.5}$ emissions between 2002 and 2009 for the New Jersey portion of the Southern New Jersey/Philadelphia/Delaware $PM_{2.5}$ nonattainment area. Therefore, early $PM_{2.5}$ budgets are established for the New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area only.

In a 2006 SIP revision[3] (the "2006 SIP Revision") New Jersey established early transportation conformity emission budgets for directly emitted fine particulate matter (direct $PM_{2.5}$) and annual NO_x (a $PM_{2.5}$ precursor) for the New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area. The initial early budgets for New Jersey were approved by the USEPA on July 10, 2006.[4]

Subsequent to the approval of the initial early budgets, an analysis of the model assumptions regarding the age distribution of the vehicle fleet and the distribution of vehicle miles traveled (VMT) between vehicle types was conducted. One of the results of this analysis was that a greater fraction of the total VMT should be attributed to the heaviest class of diesel trucks (trucks greater than 60,000 lbs. Gross Vehicle Weight Rating). When the updated VMT by vehicle type fractions are used as a model input, the predicted emissions of direct $PM_{2.5}$ and annual NO_x increase. The increased predictions result in values that are significantly higher than those adopted as initial early budgets. The following inventory analyses include the updated emission predictions for Mercer

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[4] Final Rule, Approval and Promulgation of Implementation Plans; Carbon Monoxide Maintenance Plan, Conformity Budgets, Emissions Inventories; State of New Jersey, Federal Register / Vol. 71, No. 131 / Monday, July 10, 2006.

County for 2009. All other inventory values used in this analysis in the Northern nonattainment area are the same as those documented in the 2006 SIP Revision. The bases for these inventory values were documented in the 2006 SIP Revision.[5] The purpose of the following analysis is to evaluate the impact of the updated Mercer County 2009 budget values on continuing to meet the "progress towards attainment" criteria that allows for the establishment of early transportation conformity budgets.

Table B1 shows the results of the 2002 and 2009 direct $PM_{2.5}$ inventory (with anticipated controls in place) by source type for the New Jersey counties in the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area. Emissions from controlled stationary and area sources are projected to increase by nine and three percent respectively, for a total increase of 438 tons per year. The increase is projected to be more than offset by projected decreases in $PM_{2.5}$ emissions from onroad and nonroad mobile sources, by a total of 1,327 tons per year, for an overall decrease of 887 tons per year by 2009. This represents an overall 6.4% reduction in direct $PM_{2.5}$ emissions (see Table B2). Thus the area continues to meet the USEPA's criteria for "progress toward attainment" for direct $PM_{2.5}$ emissions.

[5] NJDEP, op. cit., Section II C.

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Direct $PM_{2.5}$ Emission Inventories for 2002 and 2009 for the New Jersey Portion of the Northern New Jersey/NewYork/Connecticut $PM_{2.5}$ Nonattainment Area

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(1) In order for the calculated inventory values to more closely match the actual measured levels in New Jersey air quality monitors, the fugitive dust emissions were multiplied by a dust adjustment factor of 20%. Fugitive dusts are directly released air contaminants that do not pass through an exhaust pipe, stack, flue, vent or chimney. The main sources of fugitive dusts are dust from paved and unpaved roadways, stock/storage piles, landfill activity, quarry/mining activity, raw material handling, construction and agricultural tilling.

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Direct $PM_{2.5}$: Calculation of the Percent Reduction in Projected 2009 Emissions From the 2002 Emissions by County

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		TOTAL OF ALL SECTORS		
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HUDSON	-4.4%	1,825	1,746	-80
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MORRIS	-5.1%	1,812	1,719	-93
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SOMERSET	-8.6%	797	731	-68
UNION	-4.0%	1,330	1,277	-54
TOTAL for New Jersey portion of the NNJ/NY/CT Area	**-6.4%**	**13,952**	**13,065**	**-887**

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Table B3 shows the results of the 2002 and projected 2009 NO_x inventories by source type for the New Jersey counties in the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area. Emissions from stationary and area sources are projected to increase by seven percent in both categories, for a total increase of 3,698 tons per year. The increase is projected to be more than offset by projected decreases in NO_x emissions from onroad and nonroad mobile sources, by a total of 78,964 tons per year, for an overall decrease of 75,266 tons per year, or about thirty-two percent (32%), by 2009. Thus the area continues to meet the USEPA's criteria for "progress toward attainment" for direct NOx emissions.

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SOURCE CATEGORY	**AREA**			**NONROAD**			**STATIONARY**			**ONROAD**		
COUNTY	**2002**	**2009**	**(2009-2002)**	**2002**	**2009**	**(2009-2002)**	**2002**	**2009**	**(2009-2002)**	**2002**	**2009**	**(2009-2002)**
BERGEN	2,815	3,019	+204	6,707	5,178	-1,530	988	1,189	+201	23,917	11,198	-12,719
ESSEX	2,436	2,621	+185	8,137	7,048	-1,090	2,441	3,081	+640	16,537	7,979	-8,558
HUDSON	1,735	1,864	+129	5,976	5,291	-685	9,674	9,970	+296	7,853	3,873	-3,980
MERCER	1,257	1,354	+97	2,427	1,898	-529	13,034	13,201	+167	8,505	5,323	-3,182
MIDDLESEX	2,343	2,512	+169	4,849	3,745	-1,104	3,567	4,164	+597	22,147	10,871	-11,276
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TOTAL for New Jersey portion of the NY/NJ/ LI/CT Area	**18,173**	**19,488**	**+1,314 (+7%)**	**45,957**	**37,694**	**-8,262 (-18%)**	**34,420**	**36,804**	**+2,384 (+7%)**	**137,701**	**66,999**	**-70,702 (-51%)**

Table B4 is a comparison of total NO_x emissions for 2002 and 2009 by source sector for the New Jersey counties in the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area. Annual NO_x emissions are projected to be lower in each county and across the entire New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area by 13.7 percent to 41.7 percent with an average of over 30 percent. Based on these annual NO_x inventories, the New Jersey portion of the Northern New Jersey/New York/Connecticut area continues to meet the USEPA criteria of a reduction of at least five to ten percent to allow the area to be considered for the establishment of early $PM_{2.5}$ budgets in a voluntary SIP.

Table B4
Annual NO_x: Calculation of the Percent Reduction in Projected 2009 Emissions From the 2002 Emissions by County

SOURCE CATEGORY	% EMISSION REDUCTION	CONTROLLED EMISSIONS ANNUAL (TONS PER YEAR) TOTAL OF ALL SECTORS		
COUNTY	(2009-2002)/2002	2002	2009	2009-2002
BERGEN	-40.2%	34,427	20,584	-13,843
ESSEX	-29.9%	29,551	20,729	-8,822
HUDSON	-16.8%	25,238	20,998	-4,240
MERCER	-13.7%	25,223	21,776	-3,447
MIDDLESEX	-35.3%	32,906	21,292	-11,614
MONMOUTH	-38.6%	21,222	13,025	-8,197
MORRIS	-41.7%	18,935	11,031	-7,904
PASSAIC	-40.2%	12,644	7,560	-5,084
SOMERSET	-40.7%	12,548	7,437	-5,112
UNION	-29.7%	23,555	16,556	-7,000
TOTAL for the New Jersey portion of the NNJ/NY/CT Area	**-31.9%**	**236,251**	**160,985**	**-75,266**

The New Jersey portion of the Northern New Jersey/New York/Connecticut $PM_{2.5}$ nonattainment area continues to meet the USEPA criterion for progress towards attainment and is eligible for establishing an early $PM_{2.5}$ transportation budget.