

7.0 TRANSPORTATION CONFORMITY

7.1 Introduction

The Clean Air Act¹ 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 National Ambient Air Quality Standard (NAAQS) in any area;
- Increase the frequency or severity of any existing violation of any NAAQS in any area; or,
- Delay timely attainment of any NAAQS or any required interim emission reductions or any other milestones in any area.

To implement this requirement, the Clean Air Act directed² 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. § 93.100-129) 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.³

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. New Jersey is part of two nonattainment areas as shown in Figure 7.1: ten counties in Northern New Jersey associated with New York

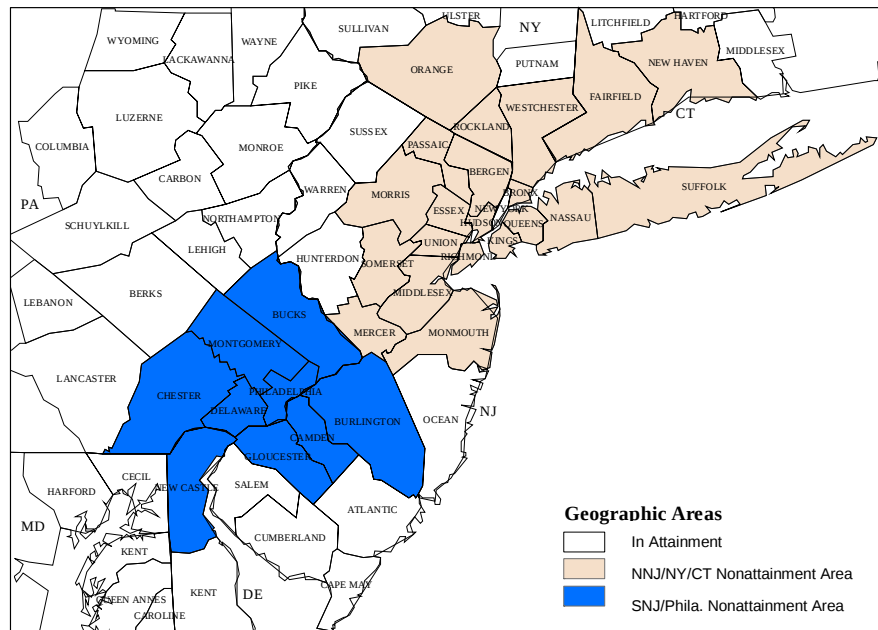
¹ 42 U.S.C. § 7506.

² 42 U.S.C. § 7506.

³ 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).

City and three counties in Southern New Jersey associated with Philadelphia.

Figure 7.1: USEPA Designations of Nonattainment Areas for the PM_{2.5} National Ambient Air Quality Standard

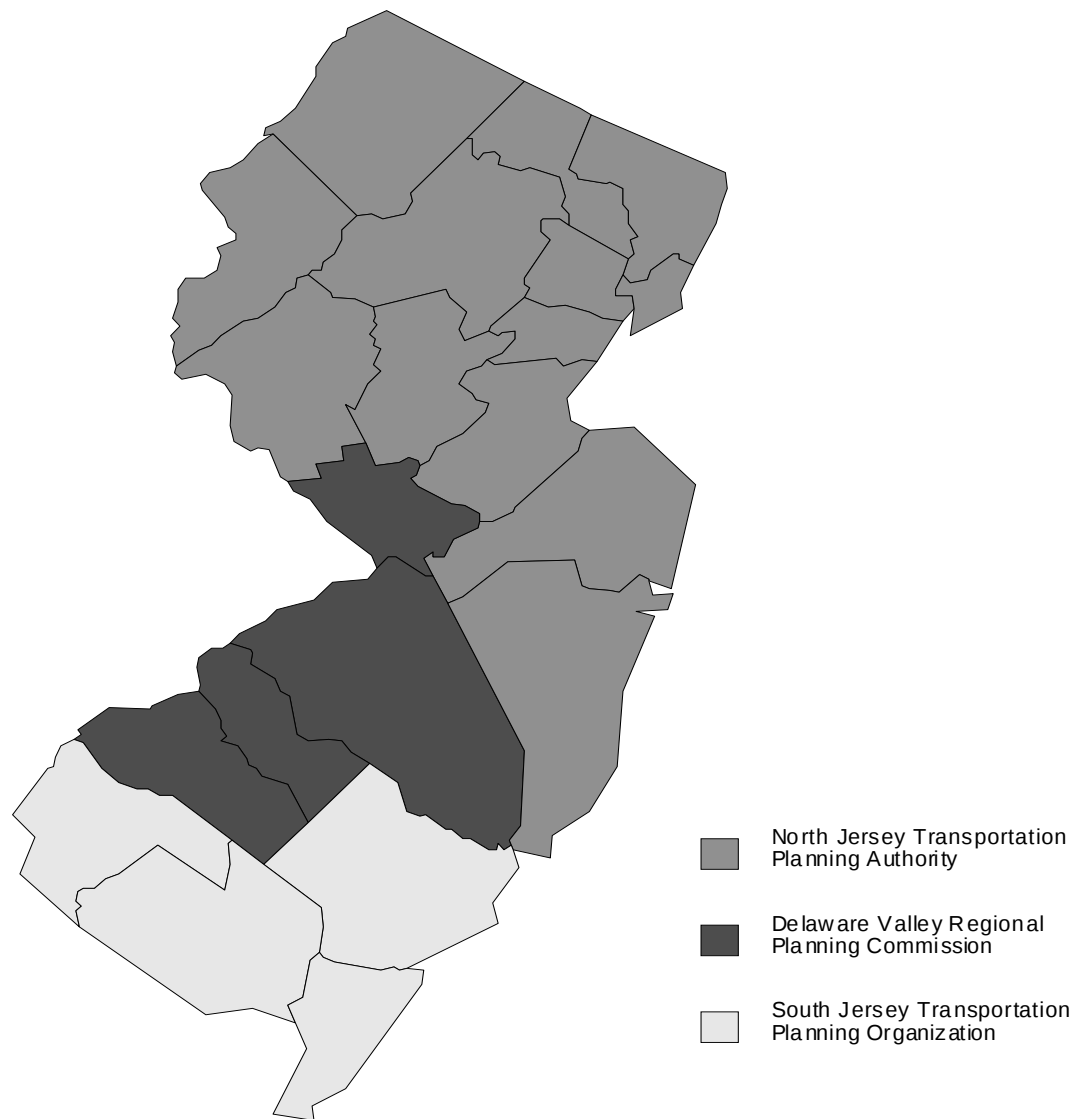


There are three Metropolitan Planning Organizations (MPOs) in New Jersey that cover the geographic areas shown in Figure 7.2. These are the North Jersey Transportation Planning Authority (NJTPA), the Delaware Valley Regional Planning Commission (DVRPC), and the South Jersey Transportation Planning Organization. Each MPO is responsible for the transportation plans and transportation improvement programs for its designated area. The MPOs each work in consultation with the Federal Highway Administration, the New Jersey Department of Transportation (NJDOT), the USEPA, and the New Jersey Department of Environmental Protection (NJDEP) to remain at or under established transportation emission budgets for their area. Transportation conformity budgets for PM_{2.5} are developed for each MPO by adding the onroad emissions from individual counties within each MPO 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 MPO planning area and the New Jersey portion of the Northern New Jersey/New York/Connecticut (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 MPO geographic area and the Northern New Jersey/New York/Connecticut nonattainment area, and
- Three counties included in the DVRPC MPO geographic area and the New Jersey

portion of the Southern New Jersey/Philadelphia (SNJ/Phila.) PM_{2.5} nonattainment area (Burlington, Camden, and Gloucester Counties).

Figure 7.2: Metropolitan Planning Organizations in New Jersey



The South Jersey Transportation Planning Organization does not have to perform transportation conformity for PM_{2.5} because the counties within their planning area are in attainment of the PM_{2.5} annual NAAQS.

7.2 Transportation Conformity for PM_{2.5}

7.2.1 Interim Tests to be used Prior to the Establishment of Budgets

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, 2004.⁴ Transportation Conformity for PM_{2.5} became effective on April 5, 2006; the effective date is based on a one-year grace period from the effective date of designations, April 5, 2005.

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.⁵ The interim emissions tests for PM_{2.5} are either the baseline year test or the build/no-greater-than-no-build test. 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 MPOs performing planning in PM_{2.5} nonattainment areas were required to 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. Currently, the NJTPA and the DVRPC are using early budgets that have been approved by the USEPA for the counties in the Northern New Jersey/New York/Connecticut nonattainment area. The DVRPC is currently using interim tests for the counties in the Southern New Jersey/Philadelphia nonattainment area.

7.2.2 PM_{2.5} Precursors

For transportation conformity, four PM_{2.5} precursors – oxides of nitrogen (NO_x), volatile organic compounds (VOCs), sulfur dioxide (SO₂), and ammonia (NH₃) – are considered in the conformity process in PM_{2.5} nonattainment areas,⁶ pursuant to the following USEPA requirements:

- Regional emissions analysis must include NO_x as a PM_{2.5} precursor in all PM_{2.5} nonattainment areas, unless the head of the state air agency and the USEPA Regional Administrator make a finding that NO_x is not a significant contributor to the PM_{2.5} air quality problem in a given area.
- Regional emissions analyses are not required for VOC, SO₂, or NH₃ 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.

⁴ 69 Fed. Reg. 40004-81 (July 1, 2004).

⁵ 40 C.F.R. § 93.119.

⁶ 70 Fed. Reg. 24280-92 (May 6, 2005).

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.

After reviewing the USEPA requirements and the criteria regarding significance, the New Jersey transportation conformity budgets for PM_{2.5} precursors will only include the establishment of an annual NO_x budget for the two PM_{2.5} nonattainment areas addressed by this attainment demonstration SIP revision.

7.2.3 Road Dust and Construction Related Fugitive Dust

The Federal Transportation Conformity Rule specifies that re-entrained road dust is to be included as a component of direct PM_{2.5} for transportation conformity regional emissions analysis only if the USEPA Regional Administrator or the director of the State air agency has made a finding that emissions from re-entrained road dust within the area are a significant contributor to the PM_{2.5} nonattainment problem and has so notified the MPO and NJDOT.⁷ Also, for PM_{2.5} areas in which the implementation plan does not identify construction-related fugitive PM_{2.5} as a significant contributor to the nonattainment problem, the fugitive PM_{2.5} emissions associated with highway and transit project construction are not required to be considered in the regional emissions analysis.⁸

The USEPA has indicated that a finding of significance for re-entrained road dust would be based on a case-by-case review of the following factors: the contribution of road dust to current and future PM_{2.5} nonattainment; an area's current design value for the PM_{2.5} standard; whether control of road dust appears necessary to reach attainment; and whether increases in re-entrained dust emissions may interfere with attainment. Such a review would include consideration of local air quality data and/or air quality or emissions modeling results.⁹

Findings of significance have not been made for either re-entrained road dust or construction-related fugitive dust for the New Jersey portions of the Northern New Jersey/New York/Connecticut and the Southern New Jersey/Philadelphia nonattainment areas. As described in Chapter 2, a number of source apportionment studies have concluded that the primary components of the PM_{2.5} mass measured in New Jersey monitors are: secondary sulfate from large-coal fired power plants located primarily in other states, automotive emissions and biomass burning. Re-entrained road dust and

⁷ 40 C.F.R. § 93.119(f)(8).

⁸ 40 C.F.R. § 93.122(f)(1).

⁹ 69 Fed. Reg. 40033 (July 1, 2004).

fugitive dust from road construction projects would be monitored as a component of soil material. Soil material makes up a relatively small percentage of the PM_{2.5} mass measured in New Jersey monitors.¹⁰ Therefore, neither re-entrained road dust emissions or fugitive dust emissions from highway and transit project construction have been included in the PM_{2.5} transportation conformity budgets.

7.2.4 Early Budgets for PM_{2.5}

In a 2006 SIP revision¹¹ (referred to hereafter as 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 nonattainment area. This nonattainment area includes one county in the DVRPC MPO planning area (Mercer County), with the other nine counties in the NJTPA MPO planning area. These early budgets for New Jersey were approved by the USEPA on July 10, 2006.¹² Once approved by the USEPA, these early budgets became the existing attainment budgets that must be used for transportation conformity determinations made by the NJTPA and the DVRPC.

In the recent 8-hour ozone attainment demonstration SIP, the Division of Air Quality (DAQ) updated the planning assumptions that were used in the transportation conformity analyses. The distribution of vehicle miles traveled (VMT) between vehicle types was updated to reflect a greater fraction of the total VMT attributed to the heaviest class of diesel trucks (trucks greater than 60,000 lbs. Gross Vehicle Weight Rating). When the updated VMT/vehicle type mix is used, the predicted emissions of direct PM_{2.5} and annual NO_x increase. The higher predictions result in values that are significantly higher than the existing budgets.

The amount of the budget exceedance for Mercer County was much greater than the emission reductions that could be achieved by changes to transportation projects by 2009. Therefore, an update to the existing budget for Mercer County was proposed on December 17, 2007 as a SIP revision.¹³ This SIP revision was approved by the USEPA, effective June 5, 2008.¹⁴ This will enable the DVRPC MPO to meet its transportation conformity requirements when it conducts its regional analysis this spring. Updates to the existing budget established for the NJTPA MPO are provided in Section 7.3.

¹⁰ Hopke, P. K. and Kim, E. Application of Advanced Factor Analysis Modeling to Apportion PM_{2.5} in New Jersey. Center for Air Resources Engineering and Science, Clarkson University, March 2005.

¹¹ 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. New Jersey Department of Environmental Protection, May 2006.

¹² 71 Fed. Reg. 38770-72 (July 10, 2006).

¹³ NJDEP. Proposed State Implementation Plan Revision For Attainment of the Fine Particulate Matter National Ambient Air Quality Standard, Update of Early Transportation Conformity Budgets for Mercer County. New Jersey Department of Environmental Protection, December 17, 2007.

¹⁴ 73 Fed. Reg. 24868 (May 6, 2008).

7.3 Budgets for Attainment of the Annual PM_{2.5} NAAQS

The existing and proposed attainment 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 Northern New Jersey/New York/Connecticut and the Southern New Jersey/Philadelphia nonattainment areas, are provided in Table 7.1. The proposed attainment budgets are based on the latest planning assumptions, including those for vehicle age distribution, VMT by vehicle type fraction, diesel sulfur level (43 ppm)¹⁵ and the 2009 projected vehicle activity data.

Each MPO used their Travel Demand Models (TDM) to estimate the 2009 projected vehicle activity data. Both MPOs used the monthly approach outlined in the USEPA guidance¹⁶ to calculate annual average emissions. This approach involves twelve sets of MOBILE6.2 modeling runs using monthly average input conditions. The 12 months of results were then averaged together to compute the annual emissions used to estimate the attainment budgets.

Once approved by the USEPA, the attainment budgets must be used for future transportation conformity determinations by the NJTPA and the DVRPC. Computer files that document the calculation of the attainment budgets are provided in Appendix D.

Table 7.1: Existing and Updated Transportation Conformity Emission Budgets for PM_{2.5} Attainment

Type of Budget	Direct PM _{2.5} Emissions ^(a) (tons per year)		NO _x Emissions (tons per year)	
	Existing	Updated	Existing	Updated
NJTPA and NNJ/NY/CT Nonattainment Area ^(b)	1,207	842	61,676	44,321
DVRPC and NNJ/NY/CT Nonattainment Area ^(c)	105	105	5,323	5,323
DVRPC and SNJ/Phila. Nonattainment Area ^(d)	No Existing Budget	341	No Existing Budget	17,319

Notes: (a) Direct PM_{2.5} consists of the sum of: SO₄, organic carbon, elemental carbon, particulate matter from gasoline vehicles, lead, 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.

¹⁵ USEPA. Technical Guidance on the Use of MOBILE6.2 for Emission Inventory Preparation. United States Environmental Protection Agency, EPA420-R-04-013, Section 5.5.3, page 64, August 2004.

¹⁶ USEPA. Guidance for Creating Annual On-Road 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.

(d) This area consists of Burlington, Camden and Gloucester Counties (New Jersey portion of the SNJ/Phila. nonattainment area).

Table 7.1 indicates that the updated attainment budgets proposed for direct PM_{2.5} and NO_x for NJTPA are 365 and 17,355 tons per year less, respectively, than the early budgets set forth in the 2006 SIP Revision. These proposed new attainment budgets incorporate the latest planning assumptions, including recent updates to the NJTPA TDM. The update of the TDM results in reductions in emission predictions that more than compensated for the increases from the update to the VMT by vehicle type fractions.

The Mercer County budget was proposed on December 17, 2007 in a separate Transportation Conformity SIP and proposed for approval by the USEPA on May 6, 2008, as discussed in Section 7.2.4. Thus, the updated budget in Table 7.1 is the same as the budget that was proposed in December 2007 in the Transportation Conformity SIP. Regarding the updated budget established for the DVRPC MPO for its three counties included in the New Jersey portion of the Southern New Jersey/Philadelphia nonattainment area, this represents the first time that a PM_{2.5} budget has been established for these counties.