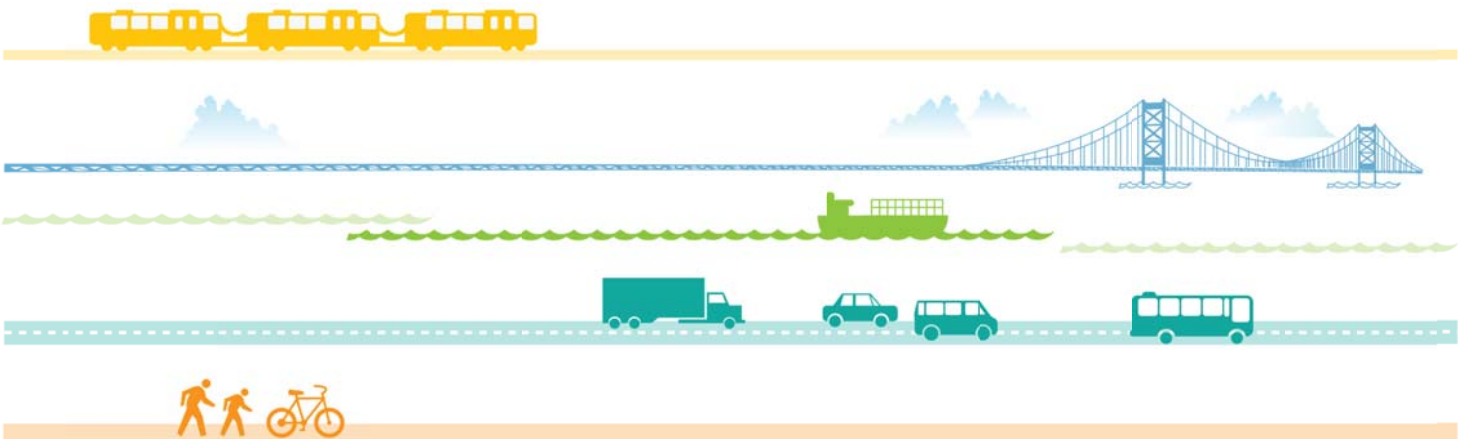


# AIR QUALITY CONFORMITY DEMONSTRATION

*for the FY2014-2017 TIP for New Jersey*



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# Glossary of Acronyms and Terms

<b>AQ</b>	Air Quality	<b>PAQ-ONE</b>	Pennsylvania Air Quality Off- Network Estimator
<b>CAA</b>	Clean Air Act (as amended)	<b>PennDOT</b>	Pennsylvania Department of Transportation
<b>CFR</b>	Code of Federal Regulations	<b>Plan</b>	DVRPC's Long-Range Plan
<b>CO</b>	Carbon Monoxide	<b>PM</b>	Particulate Matter
<b>DVRPC</b>	Delaware Valley Regional Planning Commission	<b>PM<sub>2.5</sub></b>	Fine Particulate Matter
<b>FHWA</b>	Federal Highway Administration	<b>ppm</b>	Parts per Million
<b>Final Rule</b>	Current conformity guidance under CAA	<b>SEPTA</b>	Southeastern Pennsylvania Transportation Authority
<b>FR</b>	<i>Federal Register</i>	<b>SIP</b>	State Implementation Plan
<b>FTA</b>	Federal Transit Administration	<b>SOx</b>	Sulfur Oxides
<b>FY</b>	Fiscal Year	<b>State DEPs</b>	State Departments of Environmental Protection
<b>Maintenance Area</b>	Area that previously did not meet NAAQS	<b>State DOTs</b>	State Departments of Transportation
<b>MOVES</b>	Motor Vehicle Emissions Simulator: the most recent emissions estimation model approved by the US EPA	<b>TAZ</b>	Traffic Analysis Zone
<b>MPO</b>	Metropolitan Planning Organization	<b>TCICG</b>	Transportation Conformity Interagency Consultation Group
<b>MVEB</b>	Motor Vehicle Emissions Budget	<b>TCM</b>	Transportation Control Measure
<b>NAAQS</b>	National Ambient Air Quality Standards	<b>TDM</b>	Travel Demand Model
<b>NH<sub>3</sub></b>	Ammonia	<b>TIP</b>	Transportation Improvement Program
<b>NJ DOT</b>	New Jersey Department of Transportation	<b>U.S.C.</b>	United States Code
<b>NJ Transit</b>	New Jersey Transit	<b>US DOT</b>	United States Department of Transportation
<b>NJAQ-ONE</b>	New Jersey Air Quality Off- Network Estimator	<b>US EPA</b>	United States Environmental Protection Agency
<b>Nonattainment Area</b>	Area currently not meeting the NAAQS	<b>VMT</b>	Vehicle Miles Traveled
<b>NOx</b>	Nitrogen Oxides	<b>VOCs</b>	Volatile Organic Compounds



# Executive Summary

## Overview

Transportation conformity is the process by which Metropolitan Planning Organizations (MPOs) or departments of transportation (DOTs) demonstrate that transportation projects included in a region's Long-Range Plan (Plan) or Transportation Improvement Programs (TIPs) do not cause new air quality violations, worsen existing violations, or delay timely attainment of the National Ambient Air Quality Standards (NAAQS). Transportation conformity is a requirement of the Clean Air Act (CAA) in areas that do not meet the NAAQS or have previously been in violation of the NAAQS. Areas currently not meeting the NAAQS are known as nonattainment areas. Once a previously nonattaining area meets the NAAQS and submits plans to demonstrate how the area will continue to meet federal air quality standards, the United States Environmental Protection Agency (US EPA) can re-designate that area as either an attainment area or a maintenance area. The transportation conformity requirements are still applicable for up to 20 years after a nonattainment area is re-designated to ensure that the region continues to meet the NAAQS.

A transportation conformity demonstration is required at least once every four years or when an MPO: (1) adopts a new Plan or TIP; or (2) amends, adds, or deletes a regionally significant, nonexempt project to a Plan or TIP. This conformity demonstration is required due to the new *Connections 2040* Long-Range Plan, addition of regionally significant and nonexempt projects being amended to the Fiscal Year (FY) 2013 Pennsylvania TIP and a new FY 2014 New Jersey TIP. This transportation conformity demonstration shows that the region's TIPs and *Connections 2040* Long-Range Plan are following or "conforming to" the respective State Implementation Plans (SIPs) to meet the NAAQS.

The Delaware Valley Regional Planning Commission (DVRPC) region is in nonattainment for two of the NAAQS (ozone and fine particulate matter [ $PM_{2.5}$ ]).<sup>1</sup> Portions of the region are maintenance areas for a third NAAQS (carbon monoxide [CO]).

Since ozone is not directly emitted but is formed by the combination of volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>) in the presence of sunlight, conformity is demonstrated by analysis of the component pollutants.  $PM_{2.5}$  is directly emitted, and precursor pollutants—in this case NO<sub>x</sub>—are also analyzed to demonstrate transportation conformity.

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<sup>1</sup> The US EPA has published "Clean Data Determinations" in the *Federal Register* for the DVRPC Region for the 1997 Eight-Hour Ozone Standard and the 1997 Annual  $PM_{2.5}$  Standard and has proposed a Clean Data Determination for the 2008 24-Hour  $PM_{2.5}$  Standard. The region will remain designated as nonattainment areas until the states submit, and the US EPA approves, plans to re-designate the region as either attainment or maintenance areas for each of these pollutants.

This Executive Summary highlights DVRPC's conformity demonstration for:

☞ **VOCs and NOx meeting the 1997 and 2008 Eight-Hour Ozone NAAQS requirements in:**

- ❖ the DVRPC portion of the Philadelphia–Wilmington–Atlantic City Ozone Nonattainment Area.

☞ **Direct PM<sub>2.5</sub> and Precursor NOx meeting the PM<sub>2.5</sub> NAAQS requirements in:**

- ❖ the DVRPC portion of the Philadelphia–Wilmington, Pennsylvania–New Jersey–Delaware (PA–NJ–DE) Annual PM<sub>2.5</sub> Nonattainment Area;
- ❖ the DVRPC portion of the Philadelphia–Wilmington, PA–NJ–DE 24-Hour PM<sub>2.5</sub> Nonattainment Area;
- ❖ the DVRPC portion of the New York–Northern New Jersey–Long Island, New York–New Jersey–Connecticut (NY–NJ–CT) Annual PM<sub>2.5</sub> Nonattainment Area; and
- ❖ the DVRPC portion of the New York–Northern New Jersey–Long Island, NY–NJ–CT 24-Hour PM<sub>2.5</sub> Nonattainment Area.

☞ **CO meeting the CO NAAQS requirements in:**

- ❖ the Philadelphia–Camden CO Maintenance Area;
- ❖ the City of Burlington in Burlington County, New Jersey CO Maintenance Area; and
- ❖ the City of Trenton in Mercer County, New Jersey CO Maintenance Area.

This summary serves as an inclusive document that demonstrates the transportation conformity of the DVRPC Plan and TIPs with all applicable SIPs and NAAQS requirements for the above pollutants within the noted areas. The full conformity determination document is available at [www.dvrpc.org](http://www.dvrpc.org).

## Analysis Approach

### Plan and TIP Projects

There are three categories of projects in the Plan and TIPs:

- ☞ **REGIONALLY SIGNIFICANT PROJECT:** a nonexempt highway or transit project on a facility that, regardless of its length, serves regional needs and is normally included in the regional travel simulation model;
- ☞ **EXEMPT PROJECT:** a project listed in Table 2 or 3 of the Final Conformity Guidance (Final Rule; 40 CFR 93), that primarily enhances safety or aesthetics, maintains mass transit, continues current levels of ridesharing, or builds bicycle and pedestrian facilities; and
- ☞ **NOT REGIONALLY SIGNIFICANT PROJECT/NONEXEMPT:** a highway or transit project on a facility that does not serve regional needs or is not normally included in the regional travel

simulation model and does not fit into an exempt project category in Table 2 or 3 of the Final Rule (40 CFR 93).

## Regional Emissions Analysis

### Conformity Test

The Final Rule stipulates that the emissions analysis of transportation plans and programs must model all regionally significant, nonexempt projects. Each project has an associated alphanumeric air quality code for the conformity determination and exempt eligibility identification purposes.

For an area with an implemented SIP, the motor vehicle emissions budget (MVEB) prescribed in the SIP sets a regional emissions amount that functions as a threshold against which conformity is tested. This process is commonly known as the “budget” test. The Final Rule stipulates that each SIP is sovereign and that, for a multi-state MPO such as DVRPC, conformity applies separately to individual state portions of its planning area under respective SIPs.

Beginning in March 2013, MPOs and state DOTs are required to use the Motor Vehicle Emissions Simulator (MOVES) emissions model to demonstrate transportation conformity by the US EPA. The MOVES model replaces the MOBILE 6.2 emissions model. This change of model reflects a significant shift from vehicle emission rates based on aggregate driving cycles to an operational mode that accounts for different driving patterns and emission profiles from various vehicle types. The expanded capabilities of the MOVES model result in substantially different results in emissions analysis from the MOBILE 6.2 model, particularly for NO<sub>x</sub> and Direct PM<sub>2.5</sub>.

The DVRPC region has implemented SIP budgets for the 1997 Eight-Hour Ozone Standard in Pennsylvania and New Jersey. The Final Rule requires that for regions with existing MVEBs for a standard of the same pollutant (i.e., 1997 Eight-Hour Ozone and 2008 Eight-Hour Ozone), the approved budget test is required to demonstrate conformity for the new standard. Therefore, DVRPC will utilize the 1997 Eight-Hour Ozone MVEBs in Pennsylvania and New Jersey to demonstrate conformity to the 2008 Eight-Hour Ozone Standard.

On April 30, 2012, the US EPA published guidance for implementing the 2008 Eight-Hour Ozone Standard. In that guidance (77 FR 30160), the US EPA stated that the 1997 Ozone Standard will be revoked for transportation conformity purposes beginning in July 2013. Because of the concurrence of this finding and that revocation, this finding demonstrates transportation conformity to both the 1997 and 2008 Eight-Hour Ozone NAAQS.

In December 2012, the New Jersey Department of Environment Protection (NJ DEP) submitted a Maintenance Plan SIP to demonstrate attainment for both the Annual and 24-Hour PM<sub>2.5</sub> standards. The Maintenance Plan contained MOVES emissions-model-based MVEBs to replace the MOBILE 6.2-based budgets that had previously been found adequate for conformity purposes. Due to the differing results between the two models for NO<sub>x</sub> and PM<sub>2.5</sub>, these revised budgets are necessary for the region to demonstrate transportation conformity. The MOVES-based MVEBs contained in New Jersey’s Maintenance Plan were found adequate for conformity



purposes by the US EPA in May 2013 and the final approval of that finding became effective in July 2013 (78 FR 37717).<sup>2</sup>

The US EPA published a proposal to approve Pennsylvania's PM<sub>2.5</sub> Attainment SIP for the Annual PM<sub>2.5</sub> Standard in August 2012 (77 FR 51930) and also published an adequacy finding of MOVES-based PM<sub>2.5</sub> MVEBs for the Annual PM<sub>2.5</sub> Standard in February 2013 (78 FR 11122).

Current conformity guidance states that nonattainment areas with Annual PM<sub>2.5</sub> SIP budgets must use those budgets to demonstrate conformity for the 24-Hour PM<sub>2.5</sub> Standard. In practice, this means that the budget test for the Annual PM<sub>2.5</sub> Standard is a surrogate that demonstrates conformity to the 24-Hour PM<sub>2.5</sub> Standard. Therefore, DVRPC's Pennsylvania counties will use the Annual PM<sub>2.5</sub> Standard Budget Test to demonstrate conformity for both PM<sub>2.5</sub> standards. In New Jersey, the MVEBs are identical for both the Annual and 24-Hour PM<sub>2.5</sub> Standards in the SIP.

### Analysis Years

For this conformity demonstration, the mobile source ozone emissions analysis years for VOCs and NO<sub>x</sub>, in the Philadelphia–Wilmington–Atlantic City Ozone Nonattainment Area are 2015 (the attainment date for the 2008 Eight-Hour Ozone Standard), 2025 (an interim year selected to keep all analysis years no more than 10 years apart), 2035 (a second interim year selected to keep all analysis years no more than 10 years apart), and 2040 (the horizon year of the DVRPC Plan). VOCs and NO<sub>x</sub>, which are heat-sensitive ozone precursors, are estimated for a July day. To demonstrate conformity, projected ozone emissions in all analysis years must not exceed the established MVEBs in prior years.

In the New York–Northern New Jersey–Long Island, NY–NJ–CT PM<sub>2.5</sub>, and Philadelphia–Wilmington, PA–NJ–DE PM<sub>2.5</sub> Nonattainment Areas, the analysis years are 2015 (a near-term year within the four-year TIP), 2025 (a SIP budget year in New Jersey and interim year selected to keep all analysis years no more than 10 years apart), 2035 (a second interim year selected to keep all analysis years no more than 10 years apart), and 2040 (the horizon year of the DVRPC Plan).

To demonstrate conformity, projected PM<sub>2.5</sub> emissions in analysis years must not exceed the 2009 (for analysis years before 2025) and 2025 (for analysis years 2025 and later) budgeted emissions in the New Jersey portion of the Philadelphia–Wilmington, PA–NJ–DE PM<sub>2.5</sub> Nonattainment Area and Mercer County in the New York–Northern New Jersey–Long Island, NY–NJ–CT PM<sub>2.5</sub> Nonattainment Area; and the 2009 budgeted emissions in the Pennsylvania portion of the Philadelphia–Wilmington, PA–NJ–DE PM<sub>2.5</sub> Nonattainment Area.

Both New Jersey and Pennsylvania have approved limited maintenance plans for CO, and regional emissions analysis for CO is no longer required to demonstrate conformity.

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<sup>2</sup> An "Adequacy Finding" is an official action of the US EPA that confirms that MVEBs contained in SIPs are adequate for transportation conformity purposes. MVEBs can be found adequate without full approval of the Attainment or Maintenance Plan SIP.

## Findings

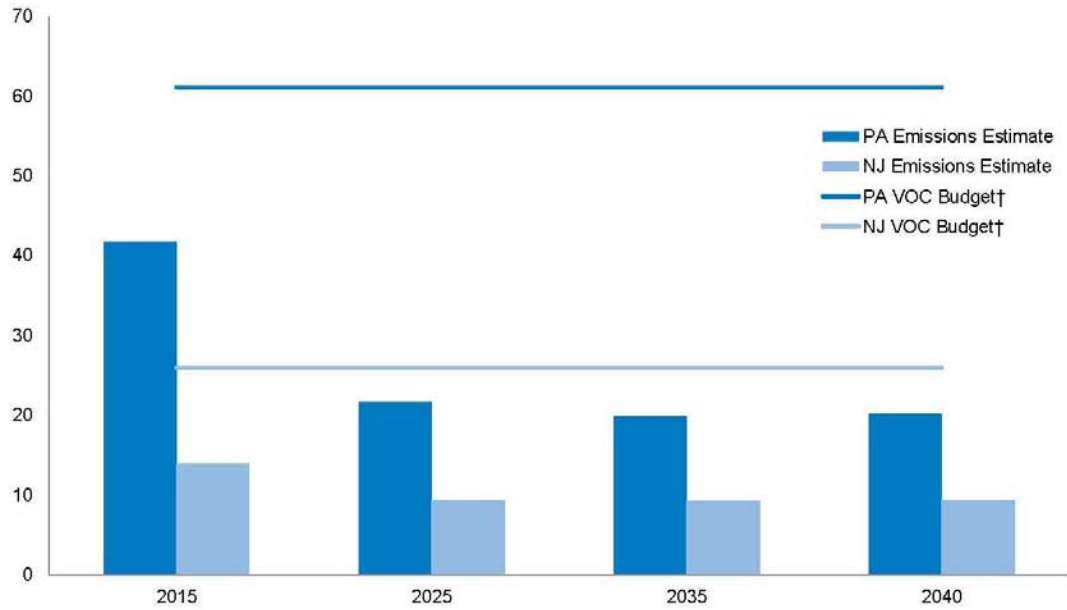
The DVRPC Plan and the TIPs are found to be in conformity with the current Pennsylvania and New Jersey SIPs under the CAA. The forecasted emissions levels of VOCs, NOx, and PM<sub>2.5</sub> do not exceed the respective budgets established by the state departments of environmental protection (state DEPs) in accordance with the Final Rule under the current NAAQS governing applicable pollutants.

**The transportation conformity analysis meets all applicable conformity criteria, including, but not limited to, the following:**

- ☞ that the Plan and the TIPs are fiscally constrained [40 CFR 93.108];
- ☞ that this determination is based on the latest planning assumptions [40 CFR 93.110];
- ☞ that this determination is based on the latest emissions estimation model available [40 CFR 93.111];
- ☞ that DVRPC has made the determination according to the applicable consultation procedures [40 CFR 93.112];
- ☞ that the Plan and the TIPs do not interfere with the timely implementation of transportation control measures (TCMs) [40 CFR 93.113]; and
- ☞ that the Plan and the TIPs are consistent with the MVEBs in the applicable implementation plans [40 CFR 93.118].

Figures 1 through 4 detail the emissions analysis results for transportation projects included in the Plan and TIPs for Pennsylvania and New Jersey. The data for these figures is detailed in Tables 6 through 8, found on pages 34 and 35. These estimates of emissions results confirm that the transportation projects in the Plan and TIPs conform to the respective SIP and Final Rule conformity requirements.

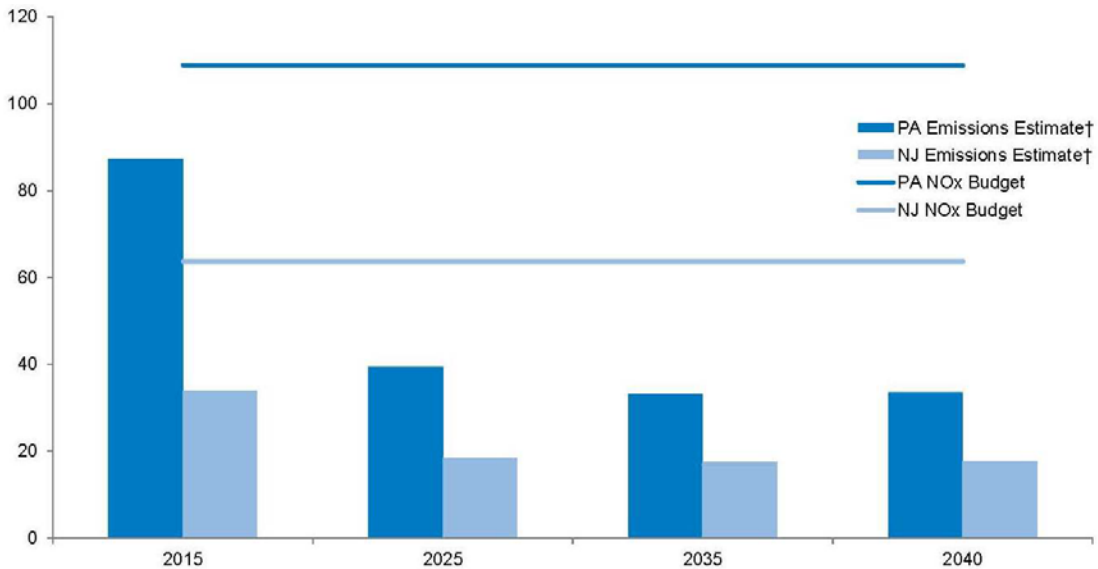
Figure 1. Volatile Organic Compounds Emissions Analysis Results (Tons/July Day)



Source: Delaware Valley Regional Planning Commission, 2013.

Note : † The most recent Eight-Hour Ozone SIP MVEBs (2008 in Pennsylvania or 2009 in New Jersey) will apply to all future analysis years.

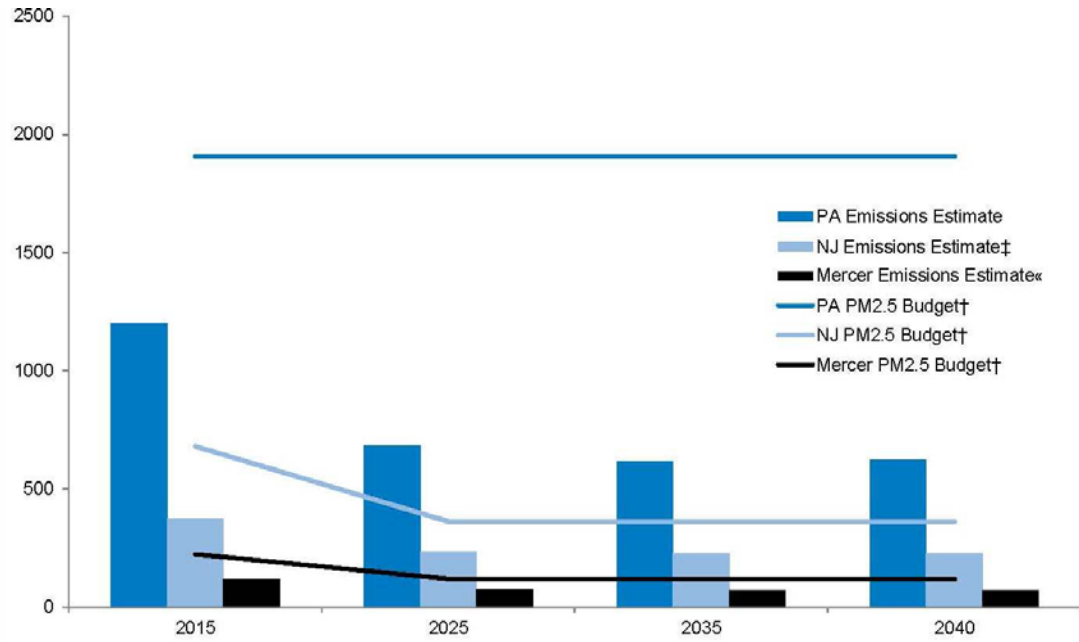
Figure 2. Nitrogen Oxides Emissions Analysis Results (Tons/July Day)



Source: Delaware Valley Regional Planning Commission, 2013.

Note : † The most recent Eight-Hour Ozone SIP MVEBs (2008 in Pennsylvania or 2009 in New Jersey) will apply to all future analysis years.

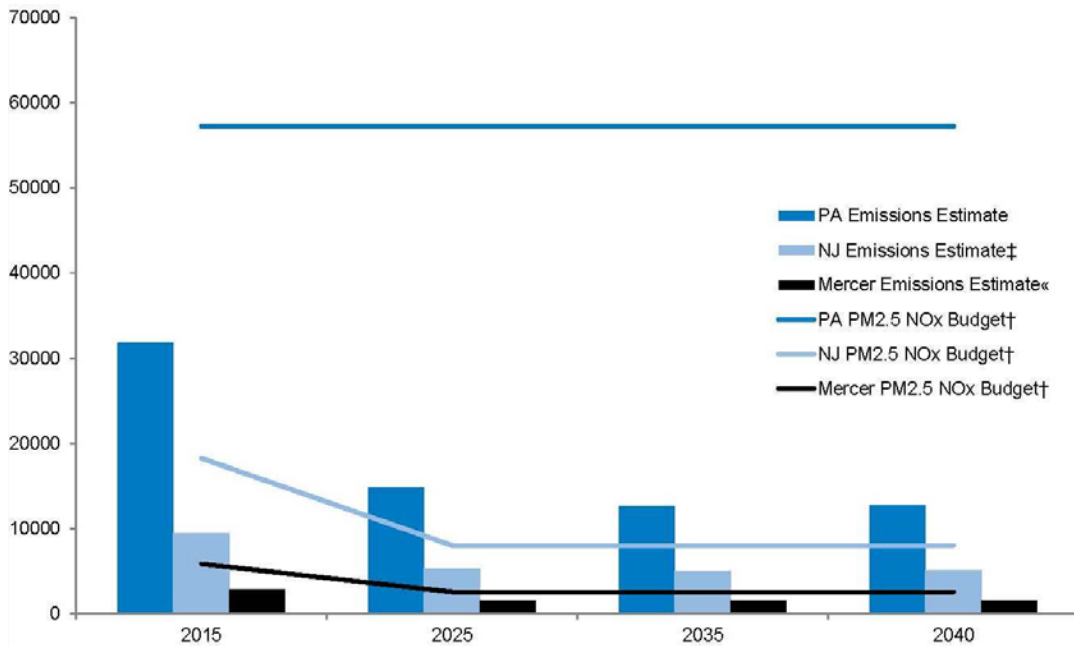
Figure 3. Annual and 24-Hour Direct Fine Particulate Matter Emissions Analysis Results (Tons/Year)



Source: Delaware Valley Regional Planning Commission, 2013.

Note: † Associated 2009 and 2025 (in New Jersey only) MVEBs apply to all future analysis years.  
 ‡ Results are only for Burlington, Camden, and Gloucester counties, which are the New Jersey portion of the Philadelphia–Wilmington, PA–NJ–DE PM<sub>2.5</sub> Nonattainment Area  
 ‹ Results are only for Mercer County, which is the DVRPC New Jersey portion of the New York–Northern New Jersey–Long Island, NY–NJ–CT PM<sub>2.5</sub> Nonattainment Area.

Figure 4. Annual and 24-Hour NOx Precursor Emissions Analysis Results (Tons/Year)



Source: Delaware Valley Regional Planning Commission, 2013.

Note: † Associated 2009 and 2025 (in New Jersey only) MVEBs apply to all future analysis years.

‡ Results are only for Burlington, Camden, and Gloucester counties, which are the New Jersey portion of the Philadelphia–Wilmington, PA–NJ–DE PM<sub>2.5</sub> Nonattainment Area  
« Results are only for Mercer County, which is the DVRPC New Jersey portion of the New York–Northern New Jersey–Long Island, NY–NJ–CT PM<sub>2.5</sub> Nonattainment Area.

These findings demonstrate transportation conformity of the FY 2013 Pennsylvania TIP, the FY 2014 New Jersey TIP, and the DVRPC *Connections 2040* Long-Range Plan with the corresponding state SIPs and the Final Rule requirements under CAA, including:

- ❧ the 1997 and 2008 Eight-Hour Ozone NAAQS in the Philadelphia–Wilmington–Atlantic City Ozone Nonattainment Area;
- ❧ the Annual and 24-Hour PM<sub>2.5</sub> NAAQS in the Philadelphia–Wilmington, PA–NJ–DE PM<sub>2.5</sub> Nonattainment Area;
- ❧ the Annual and 24-Hour PM<sub>2.5</sub> NAAQS in the DVRPC portion of the New York–Northern New Jersey–Long Island, NY–NJ–CT PM<sub>2.5</sub> Nonattainment Area; and
- ❧ the Eight-Hour CO NAAQS in the Philadelphia–Camden CO Maintenance Area; in the City of Burlington in Burlington County, New Jersey; and in the City of Trenton in Mercer County, New Jersey.