



Transportation Conformity
Demonstration: *Connections* Long-Range
Plan, FY 2009 Pennsylvania TIP, and FY
2010 New Jersey TIP

July 2009



The Delaware Valley Regional Planning Commission is dedicated to uniting the region's elected officials, planning professionals and the public with the common vision of making a great region even greater. Shaping the way we live, work and play, DVRPC builds consensus on improving transportation, promoting smart growth, protecting the environment, and enhancing the economy. We serve a diverse region of nine counties: Bucks, Chester, Delaware, Montgomery and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester and Mercer in New Jersey. DVRPC is the official Metropolitan Planning Organization for the Greater Philadelphia Region — leading the way to a better future.

Our logo is adapted from the official DVRPC seal, and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole, while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

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Glossary of Acronyms and Terms

CAA	Clean Air Act as amended	PennDOT	Pennsylvania State Department of Transportation
CFR	Code of Federal Regulations	Plan	DVRPC <i>Connections</i> Long-Range Plan
CMAQ	Congestion Mitigation/Air Quality	PM_{2.5}	Fine Particulate Matter
CO	Carbon Monoxide	ppm	parts per million
DVRPC	Delaware Valley Regional Planning Commission	SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users
FHWA	Federal Highway Administration	SEPTA	Southeastern Pennsylvania Transportation Authority
Final Rule	Current conformity guidance under CAA	SIPs	State Implementation Plans
FR	Federal Register	State DEPs	State Departments of Environmental Protection
FTA	Federal Transit Administration	State DOTs	State Departments of Transportation
I/M	Inspection and Maintenance	TAZ	Traffic Analysis Zone
Maintenance Area	Area that previously did not meet NAAQS	TCICG	Transportation Conformity Interagency Consultation Group (DVRPC)
MPO	Metropolitan Planning Organization	TIPs	DVRPC FY 2009 Transportation Improvement Programs
MVEB	Motor Vehicle Emissions Budget	U.S.C.	United States Code
NAAQS	National Ambient Air Quality Standards	US DOT	United States Department of Transportation
NJAQ-ONE	New Jersey Air Quality Off-Network Estimator	US EPA	United States Environmental Protection Agency
NJ DOT	New Jersey State Department of Transportation	VMT	Vehicle-Miles-Traveled
NJ Transit	New Jersey Transit	VOCs	Volatile Organic Compounds
Nonattainment Area	Area currently not meeting NAAQS	WILMAPCO	Wilmington Area Planning Council
NOx	Nitrogen Oxides		
PAQ-ONE	Pennsylvania Air Quality Off-Network Estimator		

Executive Summary

Overview

This summary documents the demonstration of the transportation conformity of DVRPC's *Connections – The Regional Plan for a Sustainable Future* (Plan) and the FY 2009-2012 Pennsylvania and FY 2010-2013 New Jersey Transportation Improvement Programs (TIPs) with the respective State Air Quality Implementation Plans (SIPs) and applicable National Ambient Air Quality Standards (NAAQS) requirements under the Clean Air Act (CAA). This conformity determination was conducted under the guidance of the Transportation Conformity Interagency Consultation Group (TCICG). The TCICG is comprised of representatives of local, state, and federal transportation, environmental, and planning agencies, who review the planning assumptions, model parameters, and project analyses, and oversee the conformity process to insure that the various stakeholders and regulatory agencies are communicating throughout the conformity determination.

This report documents transportation conformity for the following specific pollutants within the stated designation areas. Those pollutants are:

Volatile Organic Compounds (VOCs) meeting the eight-hour ozone NAAQS requirements in:

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

Nitrogen Oxides (NOx) meeting the eight-hour ozone NAAQS requirements in:

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

Carbon Monoxide (CO) meeting the CO NAAQS requirements in:

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

Direct Fine Particulate Matter (PM_{2.5}) meeting the PM_{2.5} NAAQS requirements in:

- ❖ the DVRPC portion of the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area; and
- ❖ the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area.

Precursor NO_x meeting the PM_{2.5} NAAQS requirements in:

- ❖ the DVRPC portion of the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area; and
- ❖ the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area.

This summary serves as an inclusive document that demonstrates the transportation conformity of the DVRPC TIPs and Long-Range Plan 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.

Analysis Approach

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

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 model.

EXEMPT PROJECT: a project listed in Table 2 or 3 of the 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.

NOT REGIONALLY SIGNIFICANT PROJECT: a highway or transit project on a facility that does not serve regional needs or is not normally included in the regional emissions model and does not fit into an exempt project category in Table 2 or 3 of the Final Rule (40 CFR 93).

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 the 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 multistate metropolitan planning organization (MPO) such as DVRPC, conformity applies separately to individual state portions of its planning area under respective SIPs.

In the absence of an implemented SIP, areas must perform what is known as the “interim” emissions test. The Final Rule dictates that only certain interim test types and methodologies are allowed in a given nonattainment area, that they must be applied uniformly throughout the area, and that the US DOT determination on transportation conformity must be made on the entire nonattainment area. The Final Rule further requires that all affected MPOs in the nonattainment area must work together to demonstrate conformity jointly until respective SIPs are implemented.

For this conformity demonstration, the mobile source ozone emissions analysis years for VOCs and NO_x are 2010 (eight-hour ozone standard attainment year and near-term year within five years of TIP adoption), 2020 (the interim year selected to keep all analysis years no more than 10 years apart), 2030 (the interim year selected to keep all analysis years no more than 10 years apart), and 2035 (the horizon year of the DVRPC Plan). VOCs and NO_x, which are heat-sensitive ozone precursors, are estimated for a July day. For these analysis years, ozone emissions analyses are performed. To demonstrate conformity, projected ozone emissions in all analysis years must not exceed the established MVEBs in prior years.

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.

In both the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area and the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area, the analysis years are 2010, 2020, 2030, and 2035. One of the requirements of the interim test is that all of the MPOs in the nonattainment area must use the same analysis years to demonstrate conformity. And since the horizon year of the Plans must also be analyzed, both WILMAPCO and DVRPC's Plan horizon years must be analyzed. To demonstrate conformity, projected PM_{2.5} emissions in all analysis years must not exceed 1) the 2002 baseline emissions results in the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area; and 2) the 2009 budgeted emissions in the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area.

Findings

The DVRPC TIPs and the Plan are found to be in conformity with the current Pennsylvania and New Jersey SIPs under the CAA. The forecasted emissions levels of VOCs, NO_x, and PM_{2.5} do not exceed the respective budgets and baseline 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 TCMs [40 CFR 93.113]; and

☞ that the Plan and the TIPs are consistent with the motor vehicle emissions budgets in the applicable implementation plans [40 CFR 93.118].

Tables E-1 through E-3 detail the emissions analysis results for transportation projects included in the Plan and TIPs for Pennsylvania and New Jersey. These emissions estimate results confirm that the transportation projects in the TIPs and Plan conform to the respective SIP and Final Rule conformity requirements.

Table E-1. VOCs Emission Analysis Results (Tons/July Day) †

		2008 SIP MVEB †	2009 SIP MVEB †	2010	2020	2030	2035
PA	Emissions from MOBILE 6.2	-	-	49.37	23.49	21.65	20.59
	Adjustments from Off-Network Calculation ‡	-	-	0.00	-0.01	-0.01	-0.01
	Estimated Total Emissions	61.09	-	49.37	23.48	21.64	20.58
NJ	Emissions from MOBILE 6.2	-	-	22.90	12.57	11.97	12.04
	Adjustments from Off-Network Calculation ‡	-	-	0.00	0.00	0.00	0.00
	Estimated Total Emissions	-	25.98	22.90	12.57	11.97	12.04

Source: DVRPC, 2009

Note: † The most recent (2008 or 2009) eight-hour ozone SIP MVEBs will apply to all future analysis years. All emissions are rounded off to the nearest hundredth.

‡ Emissions adjustments calculated using off-network methodology could become zero when rounded off.

Table E-2. NO_x Emission Analysis Results (Tons/July Day) †

		2008 SIP MVEB [†]	2009 SIP MVEB [†]	2010	2020	2030	2035
PA	Emissions from MOBILE 6.2	-	-	80.07	25.38	15.71	14.37
	Adjustments from Off-Network Calculation [‡]	-	-	-0.63	-1.00	-0.47	-0.40
	Estimated Total Emissions	108.78	-	79.44	24.38	14.34	13.97
NJ	Emissions from MOBILE 6.2	-	-	53.89	14.58	9.45	9.20
	Adjustments from Off-Network Calculation [‡]	-	-	0.00	0.00	0.00	0.00
	Estimated Total Emissions	-	63.66	53.89	14.85	9.45	9.20

Source: DVRPC, 2009

Note: † The most recent (2008 or 2009) eight-hour ozone SIP MVEBs will apply to all future analysis years. All emissions are rounded off to the nearest hundredth.
[‡] Emissions adjustments calculated using off-network methodology could become zero when rounded off.

Table E-3. Direct PM_{2.5} and NO_x Emission Analysis Results (Tons/Year) †

		2002	2009	2010	2020	2030	2035
		Baseline	SIP MVEB [»]	Estimated Emissions	Estimated Emissions	Estimated Emissions	Estimated Emissions
Direct PM _{2.5}	DVRPC – PA*	998.2	-	602.66	414.0	415.5	412.7
	DVRPC - NJ; except Mercer [‡]	486.7	-	326.0	188.5	182.6	182.8
	WILMAPCO - DE ^{§*}	208.6	-	127.6	95.4	99.6	99.2
	Mercer County, NJ [»]	-	108	93	57	56	57
PM _{2.5} Precursor (NO _x)	DVRPC – PA*	59,346.0	-	28,825.1	8,889.9	5,514.8	5,287.7
	DVRPC - NJ; except Mercer [‡]	30,499.9	-	14,587.6	3,978.9	2,615.6	2,565.1
	WILMAPCO - DE ^{§*}	11,799.1	-	6,559.8	2,021.2	1,481.9	1,444.5
	Mercer County, NJ [»]	-	5,056	4,554	1,246	816	802

Source: DVRPC, 2009; WILMAPCO, 2009

Note: † Associated 2002 Baseline or 2009 MVEBs apply to all future analysis years. All emissions are rounded off to the nearest tenth except for those in Mercer. See note on » below.
 * Off-model adjustments have been made to PA county results.
[‡] Results are for Burlington, Camden and Gloucester Counties only, which are the New Jersey portion of the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area.
[§] Results are for New Castle County in Delaware only, and are provided by WILMAPCO. It is the Delaware portion of the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area.
[♦] The New Castle County figures have been revised from those released during the public comment period. This change is due to the incorporation of the most recent fleet registration data into the emissions model.
[»] NJ SIP MVEBs and the emissions results are for Mercer County only, which is the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area. Emissions results are rounded off to the nearest integer in accordance with the SIP.

These findings demonstrate transportation conformity of:

- ☞ the DVRPC *Connections* Long-Range Plan;
- ☞ the FY 2009 Pennsylvania TIP; and
- ☞ the FY 2010 New Jersey TIP.

with the corresponding state SIPs and the Final Rule requirements under CAA, including:

- ☞ the eight-hour ozone NAAQS in the Philadelphia-Wilmington-Atlantic City Ozone Nonattainment Area;
- ☞ 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;
- ☞ the PM_{2.5} NAAQS in the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area; and
- ☞ the PM_{2.5} NAAQS in the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area.

Introduction

Overview

This report documents the demonstration of transportation conformity of the DVRPC *Connections* Long-Range Plan (Plan) and the FY 2009 Pennsylvania and FY 2010 New Jersey Transportation Improvement Programs (TIPs) with the respective State Air Quality Implementation Plans (SIPs) and applicable National Ambient Air Quality Standards (NAAQS) requirements under the Clean Air Act as amended (CAA).

This report documents transportation conformity for the following specific pollutants within the stated designation areas. Those pollutants are:

- ❧ Volatile Organic Compounds (VOCs) meeting the eight-hour ozone NAAQS requirements in:
 - ❖ the DVRPC portion of the Philadelphia-Wilmington-Atlantic City Ozone Nonattainment Area;
- ❧ Nitrogen Oxides (NO_x) meeting the eight-hour ozone NAAQS requirements in:
 - ❖ the DVRPC portion of the Philadelphia-Wilmington-Atlantic City Ozone Nonattainment Area;
- ❧ Carbon Monoxide (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;
 - ❖ the City of Trenton in Mercer County, New Jersey CO Maintenance Area;
- ❧ Direct Fine Particulate Matter (PM_{2.5}) meeting the PM_{2.5} NAAQS requirements in:
 - ❖ the DVRPC portion of the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area; and
 - ❖ the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area.
- ❧ Precursor Nitrogen Oxides (NO_x) meeting the PM_{2.5} NAAQS requirements in:
 - ❖ the DVRPC portion of the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area; and

- ❖ the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area.

This report serves as an inclusive document that demonstrates transportation conformity of the DVRPC TIPs and the Plan with all applicable SIPs and NAAQS requirements for the above pollutants within the noted areas.

Transportation Conformity

CAA section 176(c) (42 U.S.C. 7506(c)) requires that federally funded highway and transit project activities must “conform to” state air quality goals found in SIPs. The procedure that is followed to fulfill this requirement is called transportation conformity. This process ensures that transportation and air quality agencies are consulting with one another to look for strategies to relieve traffic congestion, improve air quality, and provide communities with a safe and efficient transportation system.

The transportation conformity process is required in areas that have been designated by the United States Environmental Protection Agency (US EPA) as not having met one or more of the NAAQS. These areas are called “nonattainment areas” if they currently do not meet air quality standards, or “maintenance areas” if they have previously violated air quality standards but currently meet them and have an approved CAA section 175(a) maintenance plan.¹

Transportation conformity is demonstrated when federally funded highway and transit activities are determined not to cause new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS. The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) jointly make conformity determinations within air quality nonattainment and maintenance areas to ensure that federal actions are consistent with corresponding SIPs. The United States Department of Transportation (US DOT) cannot fund, authorize, or approve federal actions to support programs or projects that are not found to conform to the CAA requirements governing the current NAAQS for transportation conformity.

This conformity demonstration is based on the current, final conformity guidance (“Final Rule”) under CAA, including 40 CFR Part 93 as revised, and applies to ozone, carbon monoxide (CO), and fine particulate matter (PM_{2.5}). The Final Rule dictates that conformity findings within the DVRPC planning area must be based on the applicable SIP budgets in all target analysis years. For those pollutants with no existing SIP budgets, specific interim testing procedures are followed. The demonstration process estimates emissions that will result from the region’s transportation system and determines that those emissions are within the limits outlined in respective SIPs and other applicable NAAQS requirements.

¹ US EPA also may designate an area as attainment/unclassifiable if: 1) it has monitored air quality and the data show that the area has not violated the governing standard over a certain period; or, 2) there is not enough information to determine the air quality in the area.

This demonstration also represents DVRPC's firm commitment to adhere to the statutory requirements for planning and environmental reviews prescribed in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users (SAFETEA-LU) of 2005²

National Ambient Air Quality Standards

The CAA, first enacted in 1963 and last amended in 1990, currently mandates US EPA to set national air quality standards for air pollutants that are considered harmful to public health and the environment. The CAA also requires the agency to periodically review the standards to ensure that they provide adequate health and environmental protection and to update those standards as necessary. These standards are set at the level required to provide an ample margin of safety to protect public health and welfare.

The US EPA has set NAAQS for several principal air pollutants, which are called "criteria" pollutants. The NAAQS criteria pollutants include ozone, CO, coarse and fine particulate matters (PM₁₀ and PM_{2.5}, respectively), sulfur dioxide (SO₂), and lead (Pb).

At the state level, the SIP represents the state's roadmap to meet or "attain" air quality goals. Implemented SIPs contain a motor vehicle emissions budget (MVEB). Regional emissions estimates are compared against these budgets to determine progress towards meeting air quality goals. The Final Rule stipulates that each SIP is sovereign and that, for a multistate metropolitan planning organization (MPO) such as DVRPC, conformity applies separately to individual state portions of its planning area under respective SIPs.

In the absence of an implemented SIP, areas must perform an "interim" emissions test. The Final Rule dictates that only certain interim test types and methodologies are allowed in a given nonattainment area and that they must be applied uniformly throughout the area. The US DOT determination for transportation conformity must apply to the entire nonattainment area. The Final Rule further states that all affected MPOs in the nonattainment area must work together to demonstrate conformity jointly until respective SIPs are implemented. The CAA requires state departments of environmental protection (state DEPs) to develop and implement SIPs within three years of an area being designated as a nonattainment area.

The DVRPC region must demonstrate transportation conformity for ozone, CO, and PM_{2.5}.

Ozone is a photochemical oxidant and a major component of smog. Ozone is not emitted directly into the air, but is formed through complex chemical reactions between precursor emissions of VOCs and NO_x in the presence of sunlight. While ozone in the upper atmosphere shields and protects the earth from harmful radiation from the sun, high concentrations of ozone at ground level are a serious health and environmental concern. Even at low levels, ozone can damage lung tissue, reduce lung function, and sensitize the respiratory system to other irritants. Additionally, scientific evidence has indicated that ambient levels of ozone not only affect people with pulmonary conditions, such as asthma, but also normal, healthy adults and children as well.

² SAFETEA-LU compliance was first demonstrated in May 2007.

The entire nine-county planning area of DVRPC falls within the Philadelphia-Wilmington-Atlantic City Ozone Nonattainment Area, which includes multiple jurisdictions in four states, five MPOs, and 18 counties. For DVRPC, attainment of the eight-hour ozone NAAQS is required by June 2010.³

In March 2008, US EPA revised the NAAQS for the eight-hour ozone standard from 0.08 ppm to 0.075 ppm. The state DEPs are currently developing recommendations for the nonattainment areas in accordance with this revised standard.

Figure 1 details the current ozone nonattainment area that affects the DVRPC region.

Carbon Monoxide (CO) is a colorless, odorless, yet poisonous gas produced by incomplete burning of carbon in fuels. When CO enters the bloodstream, it reduces the delivery of oxygen to the body's organs and tissues. Health threats are most serious for those who suffer from cardiovascular disease. Exposure to elevated CO levels can cause impairment of visual perception, manual dexterity, learning ability, and performance of complex tasks.

In 1996, the DVRPC planning area met the CO standard and attained the CO NAAQS.⁴ Following the attainment status, portions of four counties in the region were designated as separate CO maintenance areas. The Philadelphia-Camden CO Maintenance Area is comprised of Camden and Philadelphia counties. Portions of Burlington (i.e., City of Burlington) and Mercer (i.e., City of Trenton) counties are also part of individual CO maintenance areas within the region. In 2006, US EPA approved revisions to the New Jersey SIP that included limited maintenance plans for CO in Burlington, Camden, and Mercer counties. In 2007, US EPA approved revisions to the Pennsylvania SIP that included a limited maintenance plan for Philadelphia. Due to EPA's approval of these CO limited maintenance plans, mobile emissions budgets and emissions analyses are no longer required by EPA to demonstrate conformity for CO in those counties.⁵

Particulate matter (PM) includes both solid particles and liquid droplets found in air. Many manmade and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. These solid and liquid particles come in a wide range of sizes. The "coarse" particles, less than 10 micrometers (μm) in diameter (PM_{10}), pose a health concern since they can be inhaled into and can accumulate in the respiratory system. The "fine" particles, less than 2.5 μm in diameter ($\text{PM}_{2.5}$), are believed to pose even greater health risks. Because of their small size, these fine particles can lodge deeply into the lungs. Individuals particularly sensitive to $\text{PM}_{2.5}$ exposure include older adults, people with heart and lung disease, and children. Health studies have shown a significant association between exposure to $\text{PM}_{2.5}$ and premature mortality.

Additionally, $\text{PM}_{2.5}$ can be emitted directly from combustion engines or chemically formed in the atmosphere when certain gases are present. Direct $\text{PM}_{2.5}$ emissions can result from particles in

³ To be in attainment for the revised ozone standard, the area must continuously carry out air quality monitoring, and the monitored ozone values measured over an eight-hour period must not exceed 0.75 parts per million (ppm) for three consecutive years.

⁴ To attain the CO NAAQS, an eight-hour nonoverlapping average of CO level for the region must not exceed nine ppm more than once a year and the region must carry out air quality monitoring during the entire time.

⁵ US EPA has approved the New Jersey and Pennsylvania SIP revisions and the limited maintenance plans for CO for Burlington, Camden, and Mercer counties in New Jersey and Philadelphia in Pennsylvania; it published the approvals in the Federal Register on July 10, 2006 (71 FR 38770) and October 5, 2007 (72 FR 56911), respectively.

exhaust fumes, from brake and tire wear, from road dust kicked up by vehicles, and from highway and transit construction. Indirect PM_{2.5} emissions can result from one or more of several exhaust components, including VOCs, NO_x, sulfur oxides (SO_x), and ammonia (NH₃).

The PM_{2.5} NAAQS include an annual standard set at 15 µg/m³, based on a three-year average of the annual mean PM_{2.5} concentrations, and a 24-hour standard of 35 µg/m³, based on a three-year average of the 98th percentile of 24-hour concentrations. Areas need to meet both standards to be considered in attainment of PM_{2.5} NAAQS.⁶

On April 5, 2005, US EPA designations under the 1997 PM_{2.5} standards became effective, under which the area consisting of Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in Pennsylvania, Burlington, Camden, and Gloucester counties in New Jersey, and New Castle County in Delaware are collectively designated as a nonattainment area. This geographic area, termed as the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area, covers three states, two MPOs, and nine counties. Mercer County is part of another nonattainment area titled the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area, which covers three states, nine MPOs and 21 counties. Largely due to the current Metropolitan Statistical Area definitions in the US Census 2000, the DVRPC planning area is split between the two nonattainment areas for PM_{2.5}, both of which are shown in Figure 2. DVRPC must demonstrate conformity for each nonattainment area separately and must attain the annual PM_{2.5} NAAQS by April 2010.

In December 2006, the US EPA revised the 24-hour daily PM_{2.5} standard from 65 µg/m³ to 35 µg/m³. The two nonattainment areas in the DVRPC region satisfied previous 24-hour standards, but portions of the area violate revised the 24-hour and annual standards. US EPA is currently in the process of designating the 24-hour daily PM_{2.5} standard nonattainment areas. The annual standard nonattainment areas are expected to meet their April 2010 attainment dates.

⁶On September 21, 2006, US EPA announced that it would tighten the 24-hour daily standards from the existing 65 µg/m³ to 35 µg/m³. The nonattainment area designations for the new standards are expected to become effective in 2010.

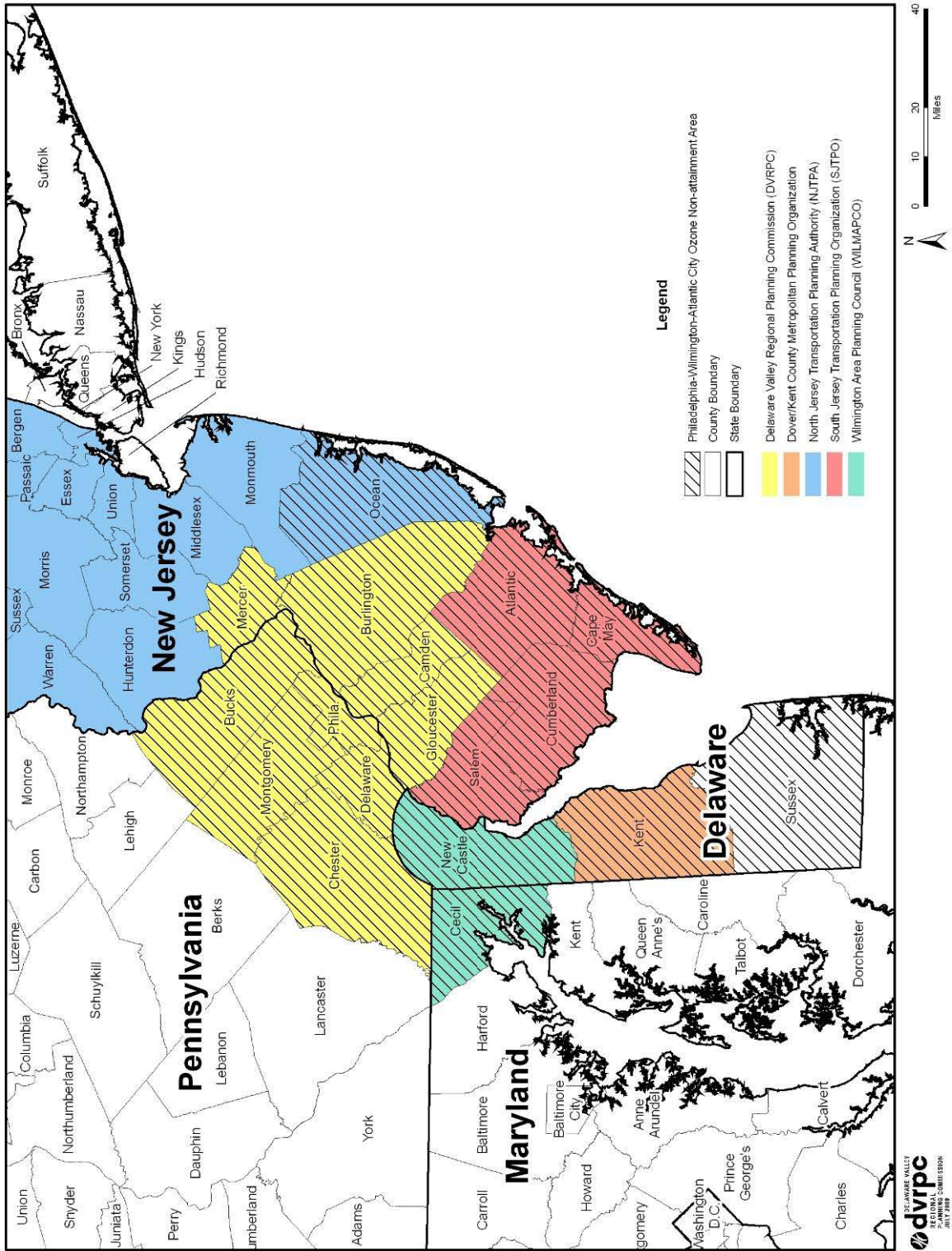


Figure 1. Philadelphia-Wilmington-Atlantic City Eight-Hour Ozone Nonattainment Area

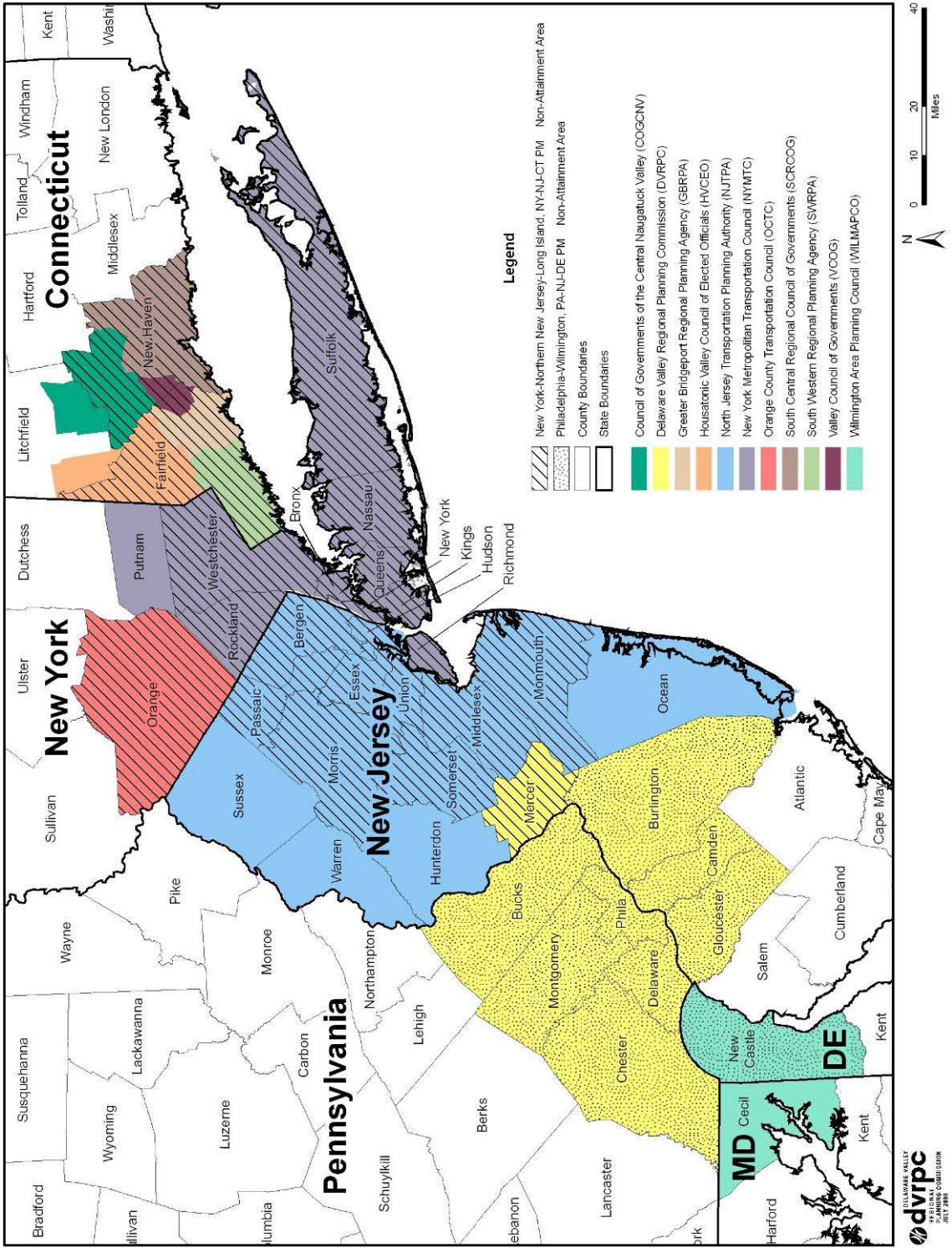


Figure 2. DvRPC PM_{2.5} Nonattainment Areas

DVRPC TIPs and the *Plan*

The DVRPC FY 2009 Pennsylvania and FY 2010 New Jersey TIPs are staged, multiyear, intermodal programs of transportation projects covering the respective five Pennsylvania and four New Jersey counties in the DVRPC planning area. The DVRPC TIPs are consistent with the Plan and are developed, pursuant to 23 CFR Part 450, to meet the federal requirement of being financially constrained to a funding level that is available to the region, as established in the financial guidance provided by the respective states. All TIP projects have been reviewed and approved by the TCICG for appropriate air quality code and analysis year.

The *Connections* Long-Range Plan, scheduled to be adopted in July 2009, provides a broad planning framework for the region. The transportation component of the Plan articulates a vision and a comprehensive long-range transportation blueprint for the DVRPC planning area. The *Connections* Plan includes over \$64.8 billion from traditional sources for regional transportation improvements. The Plan is fiscally constrained and focuses transportation funding on rebuilding the region's transportation infrastructure, but also includes over 50 new major regional transportation projects to achieve the Plan's goals and objectives. It also advances and supports the region's land use plans and policies and proposes strategies to carry out those policies.

The Plan's financial component reflects actual SAFETEA-LU authorization levels. Projected costs for future Plan projects have been adjusted to account for inflation and to reflect the year of expenditure as required by the FHWA/FTA Final Rule on Statewide and Metropolitan Transportation Planning and Programming.⁷ All Plan projects have also been reviewed and approved by the TCICG for appropriate air quality code and analysis year.

⁷ See 23 CFR 450.216(1), 23CFR 450.322(f) (10) (iv) and 23 CFR 450.23(h).

Conformity Determination Process

Project Category

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

- 1) regionally significant projects;
- 2) projects exempted from the conformity analysis; and
- 3) projects that do not fit into a nonexempt category but are not regionally significant.

These terms are defined as follows:

Regionally Significant Project: a nonexempt highway or transit project on a facility which, regardless of its length, serves regional needs and is normally included in the regional model.

Exempt Project: a project listed in Table 2 or 3 of the 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.

Not Regionally Significant Project/Nonexempt: a nonexempt highway or transit project on a facility that does not serve regional needs or is not normally included in the regional emissions model.

The Final Rule provides that the regional emissions analysis conducted to demonstrate conformity of the Plan and the TIP includes all “regionally significant, nonexempt” projects on principal arterials and higher classifications—that is, those that can impact regional air quality. The project set includes all those in the Plan, those in the current TIPs, and those that have been introduced in previous TIPs but are not yet completed. The Final Rule stipulates that the emissions analysis of transportation plans and programs must model all regionally significant and nonexempt projects. Each categorized project is classified by the first year that it is included in the analysis, commonly referred to as the “analysis year” in this document.

Certain projects that cannot be analyzed within the travel demand model are categorized as “off-network” and are evaluated using trip estimate techniques outside the DVRPC travel demand model. The Pennsylvania Air Quality Off-Network Estimator (PAQ-ONE) and the New Jersey Air Quality Off-Network Estimator (NJAQ-ONE) are set of travel impact and emissions analysis methodologies developed for the Pennsylvania and New Jersey state departments of transportation (state DOTs) used for off-network analyses in their respective states.

Emissions Test

Within the DVRPC region, the NAAQS requirements for ozone, CO, and PM_{2.5} must be met. In the nine-county DVRPC planning area, governing SIPs are in place for ozone and CO in Pennsylvania and New Jersey. For ozone, DVRPC utilizes the budget test to demonstrate conformity using applicable SIP budgets.

For this conformity determination, DVRPC is using the 2008 Ozone SIP budget in Pennsylvania and the 2009 Ozone SIP budget in New Jersey for VOCs and NO_x.⁸ These budgets were found adequate for conformity purposes in December 2008 and July 2008, respectively. All ozone budgets have been established in cooperation with the state DEPs using MOBILE 6.2.

In New Jersey and Pennsylvania, US EPA has approved limited maintenance plans for CO in Burlington, Mercer, Camden, and Philadelphia counties, and no further emissions analyses are required for the conformity determination.

Neither New Jersey (except for selected areas) nor Pennsylvania have approved SIPs for PM_{2.5}, and thus PM_{2.5} SIP budgets are not available for use in this conformity determination. Until governing SIPs are in place, the Final Rule dictates that MPOs in nonattainment areas utilize one of the two interim emissions testing methods prescribed by US EPA. The first, the “build/no-build” interim test, requires that, for each future analysis year, emissions from the “build” scenario must be no greater than emissions from the “no-build” scenario. The second, the “no-greater-than-2002-baseline” interim test, requires that emissions projected for each future analysis year be no greater than emissions in 2002 (i.e., the “baseline” year). US EPA states that the employed interim emissions test must be applied uniformly over the entire nonattainment area regardless of MPO boundaries.

Exhaust and brake/tire wear must be included in the regional analysis of direct PM_{2.5} emissions. US EPA has further ruled that regional emissions analyses for direct PM_{2.5} should include road dust if road dust is found to be a significant contributor to PM_{2.5} by either the US EPA Regional Administrator or the state DEPs. US EPA has also required that regional direct PM_{2.5} analyses include fugitive dust from the construction of transportation projects if a governing PM_{2.5} SIP identifies these emissions as significant contributors to the regional PM_{2.5} problem. Road dust has not been found to be a significant PM_{2.5} contributor in either of the DVRPC PM_{2.5} nonattainment areas, and in the absence of PM_{2.5} SIPs, no construction-related dust will be considered in the direct PM_{2.5} emission analysis. Thus, the only components of direct PM_{2.5} emissions in this DVRPC conformity iteration are tailpipe exhaust and brake/tire wear.

For the indirect PM_{2.5} emissions (also called PM_{2.5} precursors), US EPA has identified four potential transportation-related PM_{2.5} precursors: VOCs, NO_x, SO_x, and NH₃. Once an SIP is implemented, any precursors identified in the SIP will be required in the analysis of indirect PM_{2.5} emissions. Until an SIP is established, US EPA has ruled that indirect PM_{2.5} emissions must be analyzed for NO_x, unless US EPA and the state determine that NO_x is insignificant. US EPA

⁸ US EPA has approved the New Jersey and Pennsylvania eight-hour ozone SIP MVEBs for transportation conformity purposes in New Jersey and Pennsylvania and has published the approvals in the Federal Register on July 17, 2008 (73 FR 41068) and December 19, 2008 (73 FR 77682), respectively.

also stated that VOCs, SO_x, and NH₃ must be analyzed as well if the US EPA or the state DEPs determines that one or more of these precursors are significant contributors. There have been no findings of significance for any of the precursors (also, no findings of insignificance for NO_x). Thus, the only indirect PM_{2.5} component considered in this conformity iteration is NO_x.

PM_{2.5} NAAQS have both annual and daily standards, while MOBILE 6.2 emissions results are daily estimates. US EPA has provided guidance to estimate annual emissions from the MOBILE 6.2 daily emissions results termed the “annual inventory method.” There are four methods allowed for developing an annual inventory: single run; two-season runs; four-season runs; and 12 monthly runs. For the areas using the interim test, all MPOs must use the same annual inventory method. For the areas with MVEBs, the emissions analysis must be performed using the same annual inventory method used to develop the governing SIP.

In 2006, New Jersey implemented a PM_{2.5} SIP for selected portions of the state, including Mercer County. Therefore, in Mercer County, the budget test is employed to demonstrate PM_{2.5} conformity. It should be noted that the implemented NJ PM_{2.5} SIP was developed using the 12-month annual inventory method and that DVRPC’s emissions analysis for Mercer will be based on the same. The PM_{2.5} SIP budget for Mercer County was revised in 2008, and that revised budget will be used for this conformity demonstration.⁹

Otherwise, for the DVRPC portion within the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area, DVRPC continues to coordinate its conformity efforts with WILMAPCO, and the two MPOs demonstrate conformity collectively for the entire nonattainment area.

For this iteration of the conformity demonstration, DVRPC and WILMAPCO have jointly decided to use the “no-greater-than-2002-baseline” interim test. Also, DVRPC and WILMAPCO have jointly decided to use the four-season annual inventory method. This annual inventory method is applied to all PM_{2.5} emissions analyses in the DVRPC and WILMAPCO planning areas, except Mercer County in New Jersey.

Table 1 shows governing MVEBs and other applicable NAAQS requirements to be utilized in this iteration of conformity demonstration.

⁹ EPA notice to approve the NJ SIP revision was published in the Federal Register on May 6, 2008 (73 FR 24868). The effective date of this approval is June 5, 2008.

Table 1. Emissions Budgets (Tons/Day) and Baseline (Tons/Year) †

Pollutant	Budget/Baseline	Pennsylvania Subregion	New Jersey Subregion	
VOCs	2008 Budget	61.09 (all counties)	-	
	2009 Budget	-	25.98 (all counties)	
NOx	2008 Budget	108.78 (all counties)	-	
	2009 Budget	-	63.66 (all counties)	
Direct PM _{2.5}	2002 Baseline/ 2009 Budget ‡	998.2 (all counties)	486.7 (Burlington, Camden, and Gloucester)	108 (Mercer)
NOx		59,346.0 (all counties)	30,499.9 (Burlington, Camden, and Gloucester)	5,056 (Mercer)

Source: DVRPC, 2009

Note: † All MVEBs are rounded off to the nearest hundredth ton/day, except PM_{2.5} budgets in Mercer, which are rounded off to the nearest integer in accordance with the respective SIP. The interim emissions test baseline is rounded off to the nearest tenth ton/year.

‡ The 2009 budget applies only to Mercer County. The 2002 baseline applies to the DVRPC portion of the Philadelphia-Wilmington, PA-NJ PM_{2.5} Nonattainment Area. The WILMAPCO portion of the nonattainment area includes New Castle County in Delaware, and its 2002 baselines for Direct PM_{2.5} and NOx are 208.6 tons/day and 11,799.1 tons/day, respectively.

Analysis Year

For this conformity demonstration, the mobile source ozone emissions analysis years for VOCs and NOx are 2010 (eight-hour ozone standard attainment year and near-term year within five years of TIP adoption), 2020 (the interim year selected to keep all analysis years no more than 10 years apart), 2030 (the interim year selected to keep all analysis years no more than 10 years apart), and 2035 (the horizon year of the DVRPC Plan). VOCs and NOx, which are heat-sensitive ozone precursors, are estimated for a July day. For these analysis years, ozone emissions analyses are performed. To demonstrate conformity, projected ozone emissions in all analysis years must not exceed the established MVEBs in prior years.

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

In both the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area and New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area, the analysis years are 2010, 2020, 2030, and 2035. One of the requirements of the interim test is that all of the MPOs in the nonattainment area must use the same analysis years to demonstrate conformity. And since the horizon year of the Plans must also be analyzed, both WILMAPCO and DVRPC's Plan horizon years must be analyzed. To demonstrate conformity, projected PM_{2.5} emissions in all analysis years must not exceed 1) the 2002 baseline emissions results in the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area; and 2) the 2009 budgeted emissions in the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area.

Table 2 describes the project sets that are considered in each future-year analysis. All analysis years, projects, and activities identified in Table 2 have been reviewed and approved by TCICG for the conformity demonstration.

Table 2. Projects and Activities Included in the Regional Emissions Analysis

Analysis Year	Project Set
2002 (PM _{2.5} baseline)	All regionally significant highway and transit facilities, services, and activities in place by 2002; for PM _{2.5} analysis only.
2008 PA only (eight-hour Ozone SIP Budget)	Eight-hour Ozone RFP budget year included to compare against future emissions analysis (PA portion of the region).
2009 NJ only (eight-hour Ozone SIP Budget)	Eight-hour Ozone Attainment SIP budget year included to compare against future emissions analysis (NJ portion of the region).
2009 (PM _{2.5} budget)	PM _{2.5} SIP budget year included to compare against future emissions analysis (Mercer County only).
2010 (PM _{2.5} and eight-hour ozone attainment year)	<ol style="list-style-type: none"> 1. All regionally significant highway and transit facilities, services, and activities currently in place. + 2. All regionally significant highway and transit projects that are scheduled to open by 2010.
2020 (Interim year)	<p style="text-align: center;">1.+2.+</p> <ol style="list-style-type: none"> 3. Additional highway and transit projects that are scheduled to open between 2010 and 2020.
2030 (WIMAPCO Plan horizon)	<p style="text-align: center;">1.+2.+3.+</p> <ol style="list-style-type: none"> 4. Additional highway and transit projects that are scheduled to open between 2020 and 2030.
2035 (DVRPC Plan horizon)	<p style="text-align: center;">1.+2.+3.+4.</p> <ol style="list-style-type: none"> 5. Additional highway and transit projects that are scheduled to open between 2030 and 2035.

Source: DVRPC, 2009

DVRPC Air Quality Code

For all Plan and TIP projects, an alphanumeric air quality (AQ) coding scheme has been developed and is applied by DVRPC for the conformity determination and exempt eligibility identification purposes.

All regionally significant, nonexempt projects are assigned five-character alphanumeric AQ codes that begin with a four-digit analysis year followed by either the letter “M” (model) or “O” (off-network). For instance, a Plan or TIP project may have an AQ code of 2010O, in which case the project is identified as a regionally significant, nonexempt project, the emissions estimates of which are 1) included in the 2010 and all subsequent future analysis years and 2) performed using an off-network analysis technique.

DVRPC has also developed an internal coding scheme to identify each exempt project type based on those defined in the Final Rule. Table 3 shows the exempt project categories in the Final Rule and their corresponding DVRPC AQ codes. In cases where multiple codes can apply to a project, the most representative code is assigned. The air quality code for each project is shown in the respective Lange-Range Plan and TIP documents.

Projects under the Study and Development category are those that are still in the conceptual phase and are not yet part of the current TIPs. However, if they are likely to be included in future TIPs, then DVRPC assigns AQ codes that begin with “SD.” These projects will be further scrutinized when they advance to be included in TIPs.

Projects that have been determined not to be regionally significant as defined in the Final Rule and do not fit into an exempt category are labeled as “NRS.”

The TCICG has reviewed all projects and concurred on all associated AQ codes in the Plan and the TIP.

Table 3. AQ Codes for Projects in the TIPs and the Plan

Exempt Project Category † – Safety Projects	DVRPC AQ Code
Railroad/highway crossing	S1
Hazard elimination program	S2
Safer non-federal-aid system roads	S3
Shoulder improvements	S4
Increasing sight distance	S5
Safety improvement program	S6
Traffic control device and operating assistance other than signalization projects	S7
Railroad/highway crossing warning devices	S8
Guardrails, median barriers, crash cushions	S9
Pavement resurfacing and/or rehabilitation	S10
Pavement marking demonstration	S11
Emergency relief (23 U.S.C. 125)	S12
Fencing	S13
Skid treatments	S14
Safety roadside rest areas	S15
Adding medians	S16
Truck climbing lanes outside the urbanized area	S17
Lighting improvements	S18
Widening narrow pavements or reconstructing bridges (no additional travel lanes)	S19
Emergency truck pullovers	S20

Exempt Project Category † – Air Quality Projects	DVRPC AQ Code
Continuation of ride-sharing and van-pooling promotion activities at current levels	A1
Bicycle and pedestrian facilities	A2

Exempt Project Category † – Mass Transit Projects	DVRPCAQ Code
Operating assistance to transit agencies	M1
Purchase of support vehicles	M2
Rehabilitation of transit vehicles [†]	M3
Purchase of office, shop, and operating equipment for existing facilities	M4
Purchase of operating equipment for vehicles (e.g., radios, fareboxes, lifts, etc.)	M5
Construction or renovation of power, signal, and communications systems	M6
Construction of small passenger shelters and information kiosks	M7
Reconstruction or renovation of transit buildings and structures	M8
Rehabilitation or reconstruction of track structures, track, and trackbed in existing rights-of-way	M9
Purchase of new buses and rail cars to replace existing vehicles or for minor expansions of the fleet	M10
Construction of new bus or rail storage/maintenance facilities categorically excluded in 23 CFR part 771	M11

Exempt Project Category † – Study and Development Projects	DVRPC AQ Code
Resulting project that is likely to be an exempt kind	SDX
Resulting project that is likely to be a nonexempt kind	SDN

Source: DVRPC, 2009

<<continued>>

Exempt Project Category [†] – Other Projects	DVRPC AQ Code
Specific activities that do not involve or lead directly to construction, such as: planning and technical studies	X1
Grants for training and research programs	X2
Planning activities conducted pursuant to title 23 and 49 U.S.C.	X3
Federal aid systems revisions	X4
Engineering to assess social, economic, and environmental effects of the proposed action or alternatives to that action	X5
Noise attenuation	X6
Advance land acquisitions (23 CFR 712 or 23 CFR 771)	X7
Acquisition of scenic easements	X8
Plantings, landscaping, etc.	X9
Sign removal	X10
Directional and informational signs	X11
Transportation enhancement activities (except rehabilitation and operation of historic transportation buildings, structures, or facilities)	X12
Repair of damage caused by natural disasters, civil unrest, or terrorist acts, except projects involving substantial functional, locational, or capacity changes	X13

Exempt Project Category [†] No Regional Emissions Analysis Required	DVRPC AQ Code
Intersection channelization projects	R1
Intersection signalization projects at individual intersections	R2
Interchange reconfiguration projects	R3
Changes in vertical and horizontal alignment	R4
Truck size and weight inspection stations	R5
Bus terminals and transfer points	R6

Not Regionally Significant Project Category [§]	DVRPC AQ Code
Projects determined to be "Not Regionally Significant" and do not fit into an exempt category	NRS

Source: DVRPC, 2009

Note: † 40 CFR 93 Sections 126 and 127
‡ In PM₁₀ nonattainment or maintenance areas, such projects are exempt only if they are in compliance with control measures in the applicable implementation plan.
§ 40 CFR 93.101 as amended by 62 FR 43780, 438303

Regional Emissions Analysis Procedure

Overview

Regional emissions estimates are developed through a series of models that simulate travel demand in the region and then convert those travel characteristics into estimates of emissions of the pollutants of concern. The travel demand model utilizes planning assumptions to produce estimates of vehicle miles traveled and travel characteristics of the people in the region. The travel demand model results are then processed and input into the proscribed emissions estimate model, in this case MOBILE 6.2.

The Final Rule establishes guidelines and minimum requirements to control the quality of the inputs to the transportation demand and emissions estimate models. These guidelines require that the latest planning assumptions and best available data inputs for the travel demand and emissions estimate models are being used to develop the regional emissions estimates. These estimates are ultimately compared against the SIP budgets or interim emissions tests described in the previous chapter to support the conformity determination. The TCICG reviews and approves the planning assumptions and model inputs prior to the beginning of conformity analysis.

Chapter XIII of the DVRPC publication *2000 and 2005 Validation of DVRPC Regional Simulation Models* (July 2008) details the emissions estimation and modeling process as well as the inputs into those models.

Latest Planning Assumptions

The Final Rule requires that the most current available planning assumptions be used in determining transportation conformity. Planning assumptions such as population and employment estimates, transit and toll road policies, and land-use assumptions are critical inputs to the travel demand model. TIP and Plan projects are also reviewed and coded according to the expected date that the projects will be opened to traffic. These codes identify which projects will be analyzed in the regional emissions model. Planning assumptions, as well as the list of TIP and Plan projects, are reviewed and approved by the TCICG before DVRPC begins the regional emissions analysis. The planning assumptions used in this demonstration are the latest and most current assumptions available as of April 22, 2009, the start date of this conformity analysis.

Population and Employment Estimates

The population and employment estimates used in this conformity determination are the latest available and were adopted by the DVRPC Board in July 2007. These estimates include forecasts for the new Plan horizon year of 2035 and can be reviewed in DVRPC publication ADR 14 *Regional, County, and Municipal Population and Employment Forecasts, 2005-2035* (August 2007).

Transit and Toll Road Policies

As part of the latest planning assumptions, current transit operations policies and other road toll structures are considered. The transit person trips produced by the modal split component of the DVRPC travel demand model are considered “linked” in the sense that they do not include any transfers that may have occurred either between transit trips or between auto approaches and transit lines. Therefore, the transit assignment procedure accomplishes two major tasks. First, the transit trips are “unlinked” to include transfers, and second, these “unlinked” transit trips are associated with specific transit facilities to produce link, line, and station volumes. These tasks are performed simultaneously within the transit assignment model, which assigns the transit trip matrix to minimum impedance paths built through the transit network, which is not capacity constrained.

All fares entering the transit network are “blended” by operating entity. For each operator, different existing fare types (e.g., cash, token, transfer charge, and daily, weekly, and monthly passes) are blended into a single fare policy based on the percentage of each fare type and use in the 2000 fare structure. Then the future fare for each operator is held constant in current dollars. All current operating plans, ridership, and service levels of transit systems are built into the transit network and are incorporated into the future-year networks as well. Future-year transit networks are also augmented with any new services identified in the corresponding DVRPC TIPs and the Plan. Table 4 details all transit operators included in the transit network and their operational assumptions.

Other transportation-related costs, such as automobile operating costs, gasoline costs, parking costs, and road/bridge tolls, are also based on current and available data and are held constant in current dollars into the future analysis years.

Table 4. Transit Operation Assumptions

Transit Companies	Fares	Operating Plan/Service Level
SEPTA City Transit Division	Specified in the transit network by operator and by analysis year; held constant in current dollars using an inflation rate.	Specified in the transit networks by operator and by analysis year.
SEPTA Suburban Victory Division		
SEPTA Suburban Frontier Division		
SEPTA Regional Rail Division		
NJ Transit Mercer Division		
NJ Transit Southern Division		
NJ Transit Railroad Division		
PATCO High-speed Line (DRPA)		
Pottstown Urban Transit		
Krapf's Coaches		

Source: DVRPC, 2009

Travel Demand Simulation

The current DVRPC travel demand model meets the requirements of SAFETEA-LU, CAA, and the *Final Rule*.

DVRPC's travel demand model is a four-step process that ultimately assigns travel patterns among and within travel analysis zones (TAZ) and modes of transportation, using the built transportation networks along with the planned highway and transit networks described by the TIPs and Plan. Travel patterns and modal splits are then run through a post processor in preparation for emissions analysis by MOBILE 6.2.

The TCICG has reviewed and approved DVRPC's travel demand modeling process, including the use of off-network methodology to analyze regionally significant, nonexempt projects, such as park-and-ride facilities, that cannot be properly evaluated by the aforementioned network travel demand model.

Projects Analyzed Using Off-Network Methodology

The TCICG has approved the use of two off-network travel impact and emissions analysis methodologies developed for the state DOTs: PAQ-ONE and NJAQ-ONE. The methodologies are used to analyze projects that are usually of such a scale that they cannot be properly analyzed by the network model. Table 5 identifies the projects in the Pennsylvania and New Jersey TIPs that were analyzed using off-network methodologies. Emissions from these analyses were added to the results from the network model.

Table 5. Nonexempt, Off-Network Projects in the TIPs and the Plan

MPMS #	County/ Agency	Project/Facility	First Year of Analysis
706	SEPTA	Penllyn Station Parking Expansion	2020
707	SEPTA	Philmont Station Parking Expansion	2020
60286	SEPTA	SEPTA Bus Purchase Program	2020
60540	SEPTA	Forest Hills, Glenside, and Holmesburg Junction Parking Expansion	2020
60574	SEPTA	Paoli Transportation Center	2020
60629	SEPTA	Job Access and Reverse Commute	2010
60655	SEPTA	Intermodal Facility Improvement (B)	2020
73214	SEPTA	Ardmore Transit Center	2020
73920	SEPTA	Exton Station Parking Expansion	2020
74799	Delaware	Upper Darby Parking Facility	2020
74823	Philadelphia	Philadelphia Zoo Intermodal Center	2020
84640	SEPTA	Gwynedd Valley Station Parking Expansion	2020
84642	SEPTA	Jenkintown Parking Garage	2020
84643	SEPTA	Malvern Station and Pedestrian Improvements	2020
T199	NJ Transit	Job Access and Reverse Commute	2010
G (Plan)	SEPTA	Rt 23/Rt 56 Light Rail Vehicle Purchase	2020

Source: DVRPC, 2009

TIP and Plan Amendments

A new iteration of conformity is triggered by amendments to the FY 2009 to 2012 Pennsylvania TIP and updated FY 2010 to 2013 New Jersey TIP, as well as a new *Connections* Long-Range Plan. The Final Rule requires MPOs to demonstrate conformity when any nonexempt, regionally significant projects in the TIPs or the Plan are altered substantially to change regional travel patterns. This conformity iteration reflects all such changes proposed to the TIPs and the Plan since their last demonstration.

The results of the travel demand model are prepared for the emissions analysis model through a “post-processor” routine. The Final Rule requires that the latest version of the MOBILE emissions model be used for this analysis. MOBILE 6.2 is the latest version of the family of MOBILE mobile-source emissions estimate models developed by US EPA, and it was used in this conformity determination.

Inputs into the MOBILE emissions model include vehicle fleet age and types, regulated controls on vehicle emissions, state inspection and maintenance programs, detailed vehicle activity information from the travel demand model, fuel program information, and base emissions rates. Since climate and weather conditions exert an impact on ozone and PM_{2.5} formation, MOBILE 6.2

inputs also include such factors as humidity, prevailing temperatures, altitude, and sunrise and sunset times, among other environmental factors.

Methodologies for estimating emissions for ozone and PM_{2.5} vary slightly. The Final Rule requires that the emissions analysis use the methodology that was used to develop the SIP budgets, or in the absence of SIP budgets, the MPOs in the nonattainment area must use a common, agreed upon methodology to demonstrate conformity.

For ozone, MOBILE 6.2 uses daily prevailing temperature and humidity settings in compliance with the methodology used to develop the eight-hour ozone SIPs in Pennsylvania and New Jersey. Similarly, for PM_{2.5} in the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area, MOBILE 6.2 must be configured to produce a monthly run because the governing PM_{2.5} SIP is developed using a 12-month inventory methodology. Therefore, the input settings for factors such as temperature and humidity data are adjusted for each month. The sum of these monthly inventories is then tested against the SIP budget in Mercer County to determine conformity.

For the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area, the conformity determination is based on the four-season annual inventory methodology, requiring four sets of seasonal input conditions, one for each of the four seasons. This methodology was agreed upon with consultation with WILMAPCO, the other MPO in the nonattainment area.

All emissions analyses comply with the current US EPA guidance on developing annual inventories for transportation conformity purposes.

The TCICG has reviewed and approved the latest MOBILE 6.2 inputs used in this conformity determination.

For a complete description of the DVRPC Travel Demand and Emissions Estimation Modeling procedures, please see Chapter XIII of the DVRPC publication number 08095: *2000 and 2005 Validation of the DVRPC Regional Simulation Models* (July 2008).

Off-Network Analysis

Both PAQ-ONE and NJAQ-ONE contain independent MOBILE 6.2 modules to determine emissions estimates. Final off-network emissions estimate outputs show the changes in VOCs, NO_x, and PM_{2.5} in kilograms or tons per July day for ozone, as well as kilograms or tons per year for PM_{2.5}, for the project sets included in the TIPs and the Plan.

Conformity Determination

Travel Simulation Results

Travel simulation work began on April 22, 2009, and other relevant quantitative analyses for this iteration of transportation conformity determination subsequently ensued. All planning assumptions utilized in this demonstration are the latest and most current as of that date. Tables 6 through 8 present selected VMT results from these simulations. Table 6 shows the estimates utilized in PM_{2.5} analysis for the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area. Table 7 shows the monthly estimates for Mercer County in accordance with the SIP for the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area. Table 8 includes the VMT estimates that are used in the ozone analysis.

Table 6. Simulated Daily Travel Impacts (For PM_{2.5} Analysis for Philadelphia – Wilmington NAA)

Analysis Year	State	Avg. Winter Daily VMT [†]	Avg. Spring Daily VMT [†]	Avg. Summer Daily VMT [†]	Avg. Fall Daily VMT [†]
2002 (Baseline)	PA	62,773,700	67,306,500	69,734,700	67,638,600
	NJ‡	28,879,000	30,817,100	32,129,500	31,146,200
2010	PA	70,569,700	75,360,700	78,400,200	76,037,000
	NJ‡	30,557,300	32,611,100	34,002,500	32,965,500
2020	PA	74,753,900	79,824,600	83,047,800	80,541,800
	NJ‡	32,446,800	34,626,900	36,106,500	35,005,700
2030	PA	80,146,500	85,583,800	89,043,500	86,354,200
	NJ‡	34,163,000	36,460,100	38,019,200	36,862,400
2035	PA	80,598,000	86,066,800	89,546,500	86,841,400
	NJ‡	34,406,800	36,720,800	38,292,000	37,127,700

Source DVRPC, 2009

Note: † VMT shown are seasonal averages and may not represent a single month. For more information, contact DVRPC.

‡ Burlington, Camden, and Gloucester counties only.

Table 7. Simulated Daily Travel Impacts (For PM_{2.5} Analysis for Mercer County)

Analysis Year	Avg. Monthly Daily VMT					
	Dec	Jan	Feb	Mar	Apr	May
2010	9,093,900	9,505,300	9,836,600	10,151,800	10,432,100	10,532,700
2020	10,195,900	9,416,100	9,845,700	10,188,800	10,512,200	10,803,900
2030	10,823,700	9,995,000	10,452,800	10,817,000	11,159,200	11,469,600
2035	10,970,800	10,131,100	10,594,500	10,963,600	11,310,900	11,625,300
	Jun	Jul	Aug	Sep	Oct	Nov
2010	10,604,100	10,577,900	10,437,400	10,197,300	10,020,200	9,845,400
2020	10,906,700	10,980,800	10,953,200	10,808,800	10,560,900	10,378,100
2030	11,578,100	11,656,800	11,627,400	11,474,400	11,211,400	11,017,600
2035	11,735,500	11,815,300	11,785,500	11,630,300	11,363,600	11,167,100

Source: DVRPC, 2009

Table 8. Simulated Daily Travel Impacts (For Ozone Analyses)

Analysis Year	DVRPC Area	Summer Condition (July Day)	
		Avg VMT	Avg Travel Speed (mph)
2010	Entire PA Subregion	82,637,400	30.1
	Entire NJ Subregion	46,937,900	33.2
2020	Entire PA Subregion	87,545,700	30.2
	Entire NJ Subregion	49,549,100	33.2
2030	Entire PA Subregion	93,863,600	29.9
	Entire NJ Subregion	52,269,000	32.9
2035	Entire PA Subregion	93,392,600	30.0
	Entire NJ Subregion	52,720,800	32.9

Source: DVRPC, 2009

Emissions Estimate Results

Mobile source emissions estimates are obtained by using MOBILE 6.2 emission factors to convert link-level VMT and speed from the simulation assignments. The regional emissions analysis must meet all conformity tests in the Final Rule. Specifically, emissions of VOCs, NO_x, and PM_{2.5} must be less than the MVEBs established by the states. Having no budgets, PM_{2.5} emissions levels in the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area must meet the “no-greater-than-the-2002-baseline” interim test.

For ozone precursors, the conformity demonstration was performed using the 2008 eight-hour Ozone SIP MVEB for Pennsylvania and the 2009 MVEB for New Jersey. US EPA published adequacy findings of these budgets in the Federal Register in December 2008 and July 2008, respectively.

Tables 9 and 10 present the results of these calculations for the transportation conformity simulation for the critical ozone precursors of VOCs and NOx. Analysis years for ozone are 2010, 2020, 2030, and 2035. These results are compared with the budgets to demonstrate conformity. The emissions analysis indicate that the DVRPC region will meet all of the current and proposed SIP MVEBs

In addition, the region must maintain the CO standard. EPA has approved limited maintenance plans for both the Pennsylvania and New Jersey portions of the region and has ruled that no emissions analyses are required to demonstrate conformity in the region for CO.

Furthermore, DVRPC must make conformity determinations for PM_{2.5} in two different nonattainment areas with two different emissions tests. Table 11 provides the PM_{2.5} emissions estimate results.

In the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area, a governing SIP MVEB exists and PM_{2.5} conformity is demonstrated against this budget, which is established for 2009. All applicable direct PM_{2.5} sources and precursors (NOx) are tested for the 2010, 2020, 2030, and 2035 PM_{2.5} emissions estimates.

In the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area, there are no PM_{2.5} SIPs, and DVRPC and WILMAPCO have opted to utilize the “no-greater-than-2002-baseline” interim emissions test. All analysis results are considered against the 2002 baseline for the interim test.

Collectively, these tables show that the estimated emissions of VOCs, NOx, and PM_{2.5} do not exceed the respective MVEBs included in the SIPs established by the corresponding states or the appropriate baseline established for the interim emissions test.

Table 9. VOCs Emission Analysis Results (Tons/July Day) †

		2008 SIP MVEB [†]	2009 SIP MVEB [†]	2010	2020	2030	2035
PA	Emissions from MOBILE 6.2	-	-	49.37	23.49	21.65	20.59
	Adjustments from Off-Network Calculation [‡]	-	-	0.00	-0.01	-0.01	-0.01
	Estimated Total Emissions	61.09	-	49.37	23.48	21.64	20.58
NJ	Emissions from MOBILE 6.2	-	-	22.90	12.57	11.97	12.04
	Adjustments from Off-Network Calculation [‡]	-	-	0.00	0.00	0.00	0.00
	Estimated Total Emissions	-	25.98	22.90	12.57	11.97	12.04

Source: DVRPC, 2009

Note: † The most recent (2008 or 2009) eight-hour ozone SIP MVEBs will apply to all future analysis years. All emissions are rounded off to the nearest hundredth.
‡ Emissions adjustments calculated using off-network methodology could become zero when rounded off.

Table 10. NO_x Emission Analysis Results (Tons/July Day) †

		2008 SIP MVEB [†]	2009 SIP MVEB [†]	2010	2020	2030	2035
PA	Emissions from MOBILE 6.2	-	-	80.07	25.38	15.71	14.37
	Adjustments from Off-Network Calculation [‡]	-	-	-0.63	-1.00	-0.47	-0.40
	Estimated Total Emissions	108.78	-	79.44	24.38	14.34	13.97
NJ	Emissions from MOBILE 6.2	-	-	53.89	14.58	9.45	9.20
	Adjustments from Off-Network Calculation [‡]	-	-	0.00	0.00	0.00	0.00
	Estimated Total Emissions	-	63.66	53.89	14.85	9.45	9.20

Source: DVRPC, 2009

Note: † The most recent (2008 or 2009) eight-hour ozone SIP MVEBs will apply to all future analysis years. All emissions are rounded off to the nearest hundredth.
‡ Emissions adjustments calculated using off-network methodology could become zero when rounded off.

Table 11. Direct PM_{2.5} and NO_x Emission Analysis Results (Tons/Year) †

		2002	2009	2010	2020	2030	2035
		Baseline	SIP MVEB [»]	Estimated Emissions	Estimated Emissions	Estimated Emissions	Estimated Emissions
Direct PM _{2.5}	DVRPC – PA*	998.2	-	602.66	414.0	415.5	412.7
	DVRPC - NJ; except Mercer [‡]	486.7	-	326.0	188.5	182.6	182.8
	WILMAPCO - DE ^{§*}	208.6	-	127.6	95.4	99.6	99.2
	Mercer County, NJ [»]	-	108	93	57	56	57
PM _{2.5} Precursor (NO _x)	DVRPC – PA*	59,346.0	-	28,825.1	8,889.9	5,514.8	5,287.7
	DVRPC - NJ; except Mercer [‡]	30,499.9	-	14,587.6	3,978.9	2,615.6	2,565.1
	WILMAPCO - DE ^{§*}	11,799.1	-	6,559.8	2,021.2	1,481.9	1,444.5
	Mercer County, NJ [»]	-	5,056	4,554	1,246	816	802

Source: DVRPC, 2009; WILMAPCO, 2009

Note: † Associated 2002 Baseline or 2009 MVEBs apply to all future analysis years. All emissions are rounded off to the nearest tenth except for those in Mercer. See note on » below.
* Off-model adjustments have been made to PA county results.
‡ Results are for Burlington, Camden and Gloucester Counties only, which are the New Jersey portion of the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area.
§ Results are for New Castle County in Delaware only, and are provided by WILMAPCO. It is the Delaware portion of the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area.
♦ The New Castle County figures have been revised from those released during the public comment period. This change is due to the incorporation of the most recent fleet registration data into the emissions model.

» NJ SIP MVEBs and the emissions results are for Mercer County only, which is the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area. Emissions results are rounded off to the nearest integer in accordance with the SIP.

Meeting the Conformity Criteria

Tables 9 through 11 cumulatively demonstrate that the Plan and the TIPs conform to the SIPs with respect to the motor vehicle emissions budgets in the corresponding implementation year. The Plan and the TIPs meet all requirements under the governing ozone and PM_{2.5} regulations for all analysis years tested. The Plan and the TIPs are shown to meet the prescribed interim emissions test for all years analyzed.

In addition, the transportation conformity process must also meet all the applicable criteria that are consistent with the requirements for nonattainment areas and maintenance areas under the CAA. Specifically, the finding must be shown, among other items, to:

- ☞ be on fiscally constrained TIPs and the Plan [40 CFR 93.108];
- ☞ be based on the latest planning assumptions [40 CFR 93.110];
- ☞ be based on the latest emissions estimation model available [40 CFR 93.111];
- ☞ include consultation procedures consistent with those described in the Final Rule [40 CFR 93.112];
- ☞ not interfere with the timely implementation of TCMs [40 CFR 93.113]; and
- ☞ be consistent with the motor vehicle emissions budgets in the applicable implementation plans [40 CFR 93.118].

All identified conformity evaluation criteria in the Final Rule and subsequent responses from DVRPC are detailed in Table 12.

Table 12. Evaluation of the Conformity Determination Criteria

Corresponding 40 CFR Part 93 Section(s)	Evaluation Criteria	DVRPC's Response
§93.106(a) (1)	Are the transportation plan horizon years correct?	Yes. The analysis years of 2010, 2020, 2030, and 2035 correspond to the eight-hour ozone attainment and near-term year, interim years within a 10-year frame, and the current Plan horizon years of WILMAPCO and DVRPC.
§93.106(a) (2)(i)	Does the plan quantify and document the demographic and employment factors influencing transportation demand?	Yes. The <i>Connections</i> Long-Range Plan does quantify and document demographic and employment factors influencing transportation demand.
§93.106(a) (2)(ii)	Is the highway and transit system adequately described in terms of regionally significant additions or modifications to the existing transportation network that the transportation plan envisions to be operational in horizon years?	Yes. The regionally significant additions and modifications to the network utilized in this conformity analysis are listed and described. Detailed information regarding each project can be found in the respective Plan and TIP documents.
§93.108	Are the transportation improvement program and the transportation plan fiscally constrained?	Yes. The Plan and the TIPs are constrained to reasonably anticipated financial resources, projected in year of expenditure, as required by SAFETEA-LU.
§93.109(a)	Has the MPO demonstrated that all applicable criteria and procedures for conformity are complied with and satisfied?	Yes. As part of the response, this table itemizing criteria and responses is presented.
§93.109(e) §93.109(f)	Are all budget tests for VOCs, NO _x , and CO satisfied as required by §93.118 and §93.119 for conformity determination?	Yes. MOBILE 6.2 VOCs and NO _x MVEBs for both Pennsylvania and New Jersey have been approved by US EPA. DVRPC performs budget tests to demonstrate the ozone conformity of the Plan and the TIP. US EPA has approved limited maintenance plans for the CO Maintenance Areas within the region and no emissions analyses are required. PM _{2.5} is tested using area-appropriate budget and interim tests.

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Corresponding 40 CFR Part 93 Section(s)	Evaluation Criteria	DVRPC's Response
§93.110	Are the conformity determinations based upon the latest planning assumptions?	Yes.
	Is the conformity determination, with respect to all other applicable criteria in §93.111-§93.119, based upon the most recent planning assumptions in force at the time that the conformity determination began?	Yes. This conformity determination utilizes the most recent planning assumptions as of the start date of this conformity determination process, April 22, 2009.
	Are the assumptions derived from the estimates of current and future population, employment, travel, and congestion most recently developed by the MPO or other designated agency? Is the conformity determination based upon the latest assumptions about current and future background concentrations?	Yes. This conformity determination utilizes the most recent demographic and employment data, which was adopted by the DVRPC Board in July 2007. Also, planning assumptions and other travel data from as recently as 2008 are utilized. These assumptions are derived from the most current information available to DVRPC.
	Are any changes in the transit operating policies (including fares and service levels) and assumed transit ridership discussed in the determination?	Yes. Applicable transit operating policies and transit ridership are discussed in this document.
	The conformity determination must include reasonable assumptions about transit service and increases in transit fares and road and bridge tolls over time.	Key transit and toll assumptions are outlined in this document.
	The conformity determination must use the latest existing information regarding the effectiveness of the transportation control measures [TCMs] and other implementation plan measures that have already been implemented.	Currently, there are no adopted TCMs in the corresponding SIPs.
	Key assumptions must be specified and included in the draft documents and supporting materials used for the interagency and public consultation, as required by §93.105.	Key assumptions are specified and other supporting documents are included in this conformity determination document, which is available to the public and TCICG.

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Corresponding 40 CFR Part 93 Section(s)	Evaluation Criteria	DVRPC's Response
§93.111	Is the conformity determination based upon the latest emissions model?	Yes. The transportation conformity determination for the Plan and the TIP is based on MOBILE 6.2.
§93.112	Did the MPO make the conformity determination according to the consultation procedures of the Final Rule or the state's conformity SIP?	Yes. Three interagency consultation meetings have been held according to the consultation procedures consistent with the requirements of all applicable regulations, including §93.105 (a) and (e), to consider input assumptions and to review findings regarding transportation conformity. In compliance with 23 CFR 450, two public meetings were held to receive comments regarding the transportation conformity of the Plan and the TIPs under all governing NAAQS.
§93.113(b) §93.113(c)	Are TCMs being implemented in a timely manner?	There are currently no adopted transportation control measures in the SIPs.
§93.114	Are there a currently conforming transportation plan and a currently conforming TIP at the time of project approval?	Yes. The TIPs supplant the FY 2009 Pennsylvania and New Jersey TIPs, which are currently conforming TIPs. This conformity demonstration reflects new FY 2010 New Jersey and updated FY 2009 Pennsylvania TIPs. The Destination 2030 Plan is currently a conforming plan and is being replaced with the <i>Connections Plan</i> .
§93.115	Are the projects from a conforming Plan and TIP?	Yes. The projects are from conforming TIPs and Plan. The TIPs are consistent with the Plan.
§93.118	For areas with SIP Budgets: is the Transportation Plan, TIP, or Project consistent with the established motor vehicle emissions budget(s) in the applicable SIP?	Yes. TIPs and the Plan result in fewer emissions than the established budgets for all applicable pollutants in each analysis year.
§93.119	For areas without SIP Budgets: does the Transportation Plan, TIP, or Project satisfy the prescribed interim emissions test?	Yes. For the Philadelphia-Wilmington, PA-NJ-DE PM _{2.5} Nonattainment Area, the TIPs and the Plan result in less emissions than the 2002 baseline result for PM _{2.5} in each analysis year.

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Corresponding 40 CFR Part 93 Section(s)	Evaluation Criteria	DVRPC's Response
§93.122(a) (1)	Does the conformity analysis include all regionally significant projects?	Yes. The project sets for TIPs and the Plan include all regionally significant projects.
§93.122(a) (6) §93.122(a) (7)	Are reasonable methods and factors used for the regional emissions analysis consistent with those used to establish the emissions budget in the applicable implementation plan?	Yes. The ambient temperatures and other factors used in the analysis, including the methods for off-network VMT and speed, have been reviewed by the TCICG and deemed reasonable.
§93.122(b)	Is there a network-based travel model of reasonable methods to estimate traffic speed and delays for the purpose of transportation-related emissions estimates?	Yes. DVRPC uses a network-based model that runs iteratively using the Evans algorithm to obtain convergence on input/output highway and transit travel speed. It is sensitive to travel time, costs, and other factors affecting travel choices.

Source: DVRPC, 2009

Stakeholder Participation

Transportation Interagency Consultation Group Meetings

DVRPC hosted a series of TCICG meetings and correspondence for this iteration of the transportation conformity demonstration of the Plan and the TIP amendments. Three TCICG meetings were held. The first meeting was held on April 1, 2009, to assess the transportation conformity process, to advise on the timeline, and to determine the latest planning assumptions utilized. The second conference call meeting was held on April 22, 2009, to review draft TIP and Plan project sets and associated AQ codes. The third conference call meeting was held on May 15, 2009, to review the draft conformity document before it was released for public comment.

Represented federal, state, and local partners on the TCICG included US EPA Region II and III Offices, NJ DOT, NJ Transit, NJ DEP, PA DEP, PennDOT, and the Air Management Services of the City of Philadelphia. The consultant firm of Michael Baker Jr., Inc., also participated in the TCICG process because of its extensive involvement and expertise in the transportation conformity processes in both Pennsylvania and New Jersey. For the PM_{2.5} demonstration, DVRPC also consulted with the WILMAPCO.

Public Participation

DVRPC opened a mandated public comment period on May 22, 2009, to receive comment on the draft conformity findings. The announcement for the public comment period for the conformity determination of the Plan and the TIPs appeared in five major newspapers throughout the region on May 22, 2009. Additionally, a media release was sent to local television, radio, and print media.

The draft conformity document was distributed to various libraries throughout the region and made available online at www.dvrpc.org. Written comments were received by fax at (215) 592-9125 and online at TIP-plan-comments@dvrpc.org. Two public meetings/information sessions are scheduled: one on June 4, 2009, at the DVRPC offices and one on June 11, 2009, in Cherry Hill, New Jersey. The comment period closed on June 22, 2009, at 5 pm.

No public comments were submitted regarding the conformity determination during the public comment period. The DVRPC Regional Citizens Committee submitted one comment regarding the conformity determination after the comment period closed and that comment is addressed in Appendix B of this report.

Conclusion

The DVRPC TIPs and the Plan are found to be in conformity with the current Pennsylvania and New Jersey SIPs under the CAA. The forecasted emissions levels of VOCs, NO_x, and PM_{2.5} do not exceed the respective budgets and baseline established by the states 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 TIP 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 TIP do not interfere with the timely implementation of TCMs [40 CFR 93.113]; and
- ☞ that the Plan and the TIP are consistent with the motor vehicle emissions budgets and interim tests in the applicable implementation plans [40 CFR 93.118].

These findings demonstrate transportation conformity of:

- ☞ the DVRPC *Connections* Long-Range Plan;
- ☞ the FY 2009 Pennsylvania TIP; and
- ☞ the FY 2010 New Jersey TIP

with the corresponding state SIPs and the Final Rule requirements under CAA, including:

- ☞ the eight-hour ozone NAAQS in the Philadelphia-Wilmington-Atlantic City Ozone Nonattainment Area;
- ☞ the eight-hour CO NAAQS in the Philadelphia CO Maintenance Area, in the City of Burlington in Burlington County, New Jersey, and in the City of Trenton in Mercer County, New Jersey;
- ☞ the PM_{2.5} NAAQS in the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area; and
- ☞ the PM_{2.5} NAAQS in the New York-Northern New Jersey-Long Island, NY-NJ-CT PM_{2.5} Nonattainment Area.

Transportation Conformity Demonstration for PM_{2.5} in the Philadelphia – Wilmington Nonattainment Area

By submitting this appendix, DVRPC and WILMAPCO jointly demonstrate their collective PM_{2.5} conformity in the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area. This common document is for both DVRPC and WILMAPCO and is a required part of the nonattainment area-wide conformity demonstration. For DVRPC, this document is formatted as a self-contained, supplementary section of its conformity finding.



Overview

Transportation conformity is a process to ensure that federal funding and approval goes to those transportation activities that are consistent with air quality goals. Transportation conformity applies to long-range transportation plans (Plans), transportation improvement programs (TIPs), and other projects funded or approved by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) in areas that do not meet or previously have not met air quality standards for identified pollutants, such as ozone, carbon monoxide, particulate matter, and sulfur dioxides. These areas are known as "nonattainment areas" or "maintenance areas," respectively. FHWA and FTA jointly make conformity determinations within air quality nonattainment and maintenance areas to ensure that federal actions conform to the purpose of the corresponding state implementation plans. The United States Department of Transportation (US DOT) cannot fund, authorize, or approve federal actions to support programs or projects that are not found to conform to the Clean Air Act requirements governing the current National Ambient Air Quality Standards (NAAQS).

In January 2005, the United States Environmental Protection Agency (US EPA) finalized fine particulate matter (PM_{2.5}) designations under the NAAQS. Under this designation, the area consisting of Burlington, Camden, and Gloucester counties in New Jersey, Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in Pennsylvania, and New Castle County in Delaware were designated as nonattainment areas for PM_{2.5}. This geographic area is termed as the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area.

The two Metropolitan Planning Organizations (MPOs) within the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area—Delaware Valley Regional Planning Commission (DVRPC) and Wilmington Area Planning Council (WILMAPCO)—have determined that their respective Plans and TIPs conform to the transportation conformity rules for PM_{2.5}. The MPOs have passed the required interim emissions test for PM_{2.5}, both individually and collectively.

This PM_{2.5} conformity determination has been required due to a change in the TIPs for DVRPC (amendment to Pennsylvania FY 2009-2012 TIPs) and new FY 2010-2012 New Jersey TIP and the *Connections* Long-Range Plan. The Final Rule mandates that, during the interim emissions testing period, all MPOs within a nonattainment area must redemonstrate conformity any time that any of the MPOs make changes to their Plans and/or TIPs. The emissions results for DVRPC and WILMAPCO are included in this document.

Since the Final Rule also requires that, in the absence of SIP budgets, each MPO in the nonattainment area must use the same analysis years for the interim emissions test, and that the analysis years must include the horizon years of all of the MPOs plans, WILMAPCO performed emissions analysis for the required analysis years including the year 2035, which is the horizon year of the new DVRPC Plan. WILMAPCO's test is against its FY 2010-2013 TIP and 2030 Regional Transportation Plan.

PM_{2.5} National Ambient Air Quality Standards and Nonattainment

In July 1997, US EPA issued NAAQS for PM_{2.5}, designed to protect the public from exposure to PM_{2.5} at levels that may cause health problems. The standards include an annual level set at 15 µg/m³, based on a three-year average of the annual mean PM_{2.5} concentrations, and a 24-hour standard of 65 µg/m³, based on a three-year average of the 98th percentile of 24-hour concentrations. Areas need to meet both standards to be considered in attainment of PM_{2.5} NAAQS. This standard was revised in September 2006. The US EPA revised the 24-hour daily standard from 65 µg/m³ to 35 µg/m³.

On April 5, 2005, US EPA designations under the PM_{2.5} NAAQS became effective. Designated areas have had or have contributed to PM_{2.5} levels higher than allowed under the two PM_{2.5} standards. Those areas not meeting either standard are called PM_{2.5} nonattainment areas (NAAs). All PM_{2.5} NAAs must demonstrate transportation conformity of the PM_{2.5} requirements under the final transportation conformity rule (Final Rule). Upon meeting the transportation conformity requirements, the NAAs are mandated to meet the PM_{2.5} NAAQS (“reach attainment”) as soon as possible, but no later than 2010. US EPA may grant attainment date extensions of up to five years in areas with more severe PM_{2.5} problems, and where emissions control measures are not available or feasible.

The nonattainment designations based on the new daily standard are expected to be finalized in 2009. Until those designations become effective, the NAAs are required to continue to show progress at meeting the 1997 PM_{2.5} Standard.

The Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} Nonattainment Area

The Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} NAA is designated by US EPA as a nonattainment area because the region fails to meet the annual PM_{2.5} NAAQS. No portions of the NAA were found to violate the 1997 daily PM_{2.5} NAAQS. (Portions of the NAA are expected to be found in nonattainment for the 2006 daily PM_{2.5} NAAQS).

This NAA includes the following counties:

- 🏠 Delaware: New Castle
- 🏠 New Jersey: Burlington, Camden, and Gloucester
- 🏠 Pennsylvania: Bucks, Chester, Delaware, Montgomery, and Philadelphia

Transportation conformity must be demonstrated for the entire NAA as a whole.

Multistate Interagency Consultation

As required by the federal transportation conformity rule, the conformity process includes a significant level of cooperative interaction among the many regional, state, and federal agencies. For PM_{2.5} conformity determinations, this interagency consultation process occurs at both the entire NAA level and at individual state and MPO levels. This process is called the Multistate Interagency Consultation Process, which is referred to as TCICG/AQS herein.¹

For the purposes of conformity demonstration, TCICG/AQS consists of, but is not limited to, representatives from the following agencies:

- ✎ US DOT, FHWA - PA, NJ, and DE Division Offices
- ✎ US DOT, FTA - Region II and Region III Offices
- ✎ US EPA - Region II and Region III Offices
- ✎ Delaware Department of Transportation (DelDOT)
- ✎ Delaware Department of Natural Resources & Environmental Control (DNREC)
- ✎ Delaware Transit Corporation (DART)
- ✎ Delaware River Port Authority (DRPA)
- ✎ Maryland Department of Environment (MDE)
- ✎ Maryland Department of Transportation (MDOT)
- ✎ New Castle County, Delaware
- ✎ New Jersey Department of Transportation (NJ DOT)
- ✎ New Jersey Department of Environmental Protection (NJ DEP)
- ✎ New Jersey Turnpike Authority
- ✎ New Jersey Transit (NJ Transit)
- ✎ Pennsylvania Department of Transportation (Penn DOT)
- ✎ Pennsylvania Department of Environmental Protection (PA DEP)
- ✎ Pennsylvania Turnpike Commission
- ✎ Southeastern Pennsylvania Transportation Authority (SEPTA)
- ✎ Transportation Management Association of Delaware (TMA-DE)
- ✎ City of Philadelphia, Air Management Services (AMS)

¹ DVRPC has an existing conformity interagency group named the Transportation Conformity Interagency Consultation Group, or TCICG. WILMAPCO has its own, The Air Quality Subcommittee (AQS). The two groups form the multistate interagency group.

☞ Delaware Valley Regional Planning Commission (DVRPC)

☞ Wilmington Area Planning Council (WILMAPCO)

TCICG/AQS is consulted several times throughout the conformity determination process to review, discuss, and approve planning assumptions, and to provide guidance on other related conformity issues.

Annual Inventories for PM_{2.5}

A four-season approach was chosen to develop the annual emissions estimates for the NAA.

Because this NAA does not meet the annual PM_{2.5} standard, the emissions analysis for PM_{2.5} must consider annual emissions. However, the emissions model that US EPA requires for conformity analysis, MOBILE 6.2, is only designed to produce daily emissions. The technique used to estimate annual emissions from the daily MOBILE 6.2 emissions is termed an “annual inventory method.” Guidance from US EPA presents four possible options for developing an annual inventory before a SIP is developed: using a single MOBILE 6.2 output to represent daily emissions for the entire year; running MOBILE 6.2 to represent two seasons; running MOBILE 6.2 to represent four seasons; or running MOBILE 6.2 to represent 12 individual months.² However, various sensitivity analyses show that there are not enough differences among the two-season, four-season, and 12-month approaches, so TCICG/AQS decided to use the four-season annual inventory method. The same annual inventory method is used for all emissions analyses conducted within the NAA.

PM_{2.5} Regional Emissions Tests

The “no-greater-than-2002” baseline test was chosen for the NAA.

As previously stated, for NAAs without approved SIP budgets, EPA requires that one of two interim emission tests be used to demonstrate PM_{2.5} conformity: either the baseline-year test or the build/no-build test. The baseline year test requires that emissions projected for each future analysis year be no greater than emissions in 2002 (the baseline year). The build/no-build test requires that, for each future analysis year, emissions from the “build” scenario be no greater than emissions from the “no-build” scenario. The selected interim emission test must be used for the entire nonattainment area. Within the Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} NAA, the baseline-year test has been selected as the interim emissions test. This has been selected through the interagency consultation process.

² Guidance for Creating Annual On-road Mobile Source Emission Inventories for PM_{2.5} Nonattainment Areas for Use in SIPs and Conformity. US EPA: Office of Transportation and Air Quality. EPA420-B-05-008. August 2005.

Analysis Years

The following four analysis years were chosen for the NAA:

- ☞ 2002 (baseline year for the interim test);
- ☞ 2010 (attainment year of standard);
- ☞ 2020 (interim year to keep analysis years less than 10 years apart);
- ☞ 2030 (WILMAPCO Plan horizon year); and
- ☞ 2035 (DVRPC Plan horizon year)

US EPA regulations require that the emissions analysis be conducted for specific analysis years. Section 93.119(g) of the Final Rule states that these analysis years must include a near-term year no more than five years beyond the year in which conformity was demonstrated, the last year of the long-range plan, and an intermediate year or years such that analysis years are no more than 10 years apart.

For this NAA, the attainment date for the annual PM_{2.5} NAAQS is 2010. This is also the near-term year of analysis. Furthermore, because there are multiple MPOs, the last year of all of the MPOs' Plans must be included as analysis years (2030 and 2035). An intermediate year of 2020 has also been selected so that no two analysis years are more than 10 years apart.

Components of PM_{2.5} Regional Emissions Analyses

The following PM_{2.5} pollutants and precursors were tested:

- ☞ Direct PM_{2.5} source: tailpipe exhaust, brake, and tire wear;
- ☞ PM_{2.5} Precursor: NO_x.

PM_{2.5} can result from both direct and indirect sources. Gasoline and diesel on-road vehicles emit both direct PM_{2.5} and other gases that react in the air to form PM_{2.5}. Transportation-related direct PM_{2.5} emissions can result from particles in exhaust fumes, from brake and tire wear, from road dust kicked up by vehicles, and from highway and transit construction. Transportation-related indirect PM_{2.5} emissions can result from one or more of several exhaust components, including NO_x, VOCs, sulfur oxides (SO_x), and ammonia (NH₃).

For the regional analysis of direct PM_{2.5} emissions, US EPA has ruled that both exhaust and brake/tire wear must be included. However, US EPA has ruled that regional emissions analyses for direct PM_{2.5} should include road dust only if road dust is found to be a significant contributor to PM_{2.5} by either the US EPA Regional Administrator or a state air agency. For this NAA, neither the US EPA Regional Administrators nor any of the three state air agencies have found that road dust is a significant PM_{2.5} contributor. US EPA has also ruled that regional direct PM_{2.5} analyses only need to include fugitive dust from construction of transportation projects if the SIP identifies these emissions as significant contributors to the regional PM_{2.5} problem. Because no PM_{2.5} SIP has been established, construction-related dust does not need to be considered. Thus, the only

components of direct PM_{2.5} emissions to be considered in the NAA are tailpipe exhaust and brake/tire wear.

For the regional analysis of indirect PM_{2.5} emissions (also called PM_{2.5} precursors), US EPA has identified four potential transportation-related PM_{2.5} precursors: NO_x, VOCs, SO_x, and NH₃. Once a SIP is established, any precursors identified in the SIP will be required in the analysis of indirect PM_{2.5} emissions. Until a SIP is established, US EPA has ruled that indirect PM_{2.5} emissions must be analyzed for NO_x unless US EPA and the state determine that NO_x is insignificant, and they must be analyzed for VOCs, SO_x, and NH₃ only if the US EPA or the state determines that one or more of these precursors are significant. There have been no findings of significance (or insignificance in the case of NO_x). Thus, the only indirect PM_{2.5} component that needs to be considered in the NAA is NO_x.

Analysis Results

Emissions analyses for the NAA began on April 22, 2009. (The results are presented in Tables A-1 and A-2). Presented in the tables are individual emissions analysis results from the MPOs. Both MPOs met applicable requirements individually and the NAA passed the interim emissions test collectively.

Table A-1. Simulated Daily Travel Impacts (For PM_{2.5} Analysis for Philadelphia – Wilmington NAA)

Analysis Year	State	Avg. Winter Daily VMT ^c	Avg. Spring Daily VMT ^c	Avg. Summer Daily VMT ^c	Avg. Fall Daily VMT ^c
2002 (Baseline)	PA	62,773,700	67,306,500	69,734,700	67,638,600
	NJ‡	28,879,000	30,817,100	32,129,500	31,146,200
	WILMAPCO-NCC†	12,802,303	14,733,170	16,400,328	14,522,097
2010	PA	70,569,700	75,360,700	78,400,200	76,037,000
	NJ‡	30,557,300	32,611,100	34,002,500	32,965,500
	WILMAPCO-NCC†	15,077,315	16,641,520	17,297,826	16,301,975
2020	PA	74,753,900	79,824,600	83,047,800	80,541,800
	NJ‡	32,446,800	34,626,900	36,106,500	35,005,700
	WILMAPCO-NCC†	16,546,252	18,259,103	18,981,978	17,889,998
2030	PA	80,146,500	85,583,800	89,043,500	86,354,200
	NJ‡	34,163,000	36,460,100	38,019,200	36,862,400
	WILMAPCO-NCC†	18,039,287	19,915,519	20,731,896	19,521,694
2035	PA	80,598,000	86,066,800	89,546,500	86,841,400
	NJ‡	34,406,800	36,720,800	38,292,000	37,127,700
	WILMAPCO-NCC†	18,094,788	19,968,840	20,770,825	19,575,856

Sources: DVRPC, 2009; WILMAPCO, 2009

Note: ^cVMT shown are seasonal averages and may not represent a single month. For more information, contact DVRPC.
[‡] Burlington, Camden, and Gloucester counties only.
[†]NCC denotes New Castle County.

Table A-2. Direct PM_{2.5} Interim Emissions Test Results (Tons/Year)

State	2002	2010	2020	2030	2035
DVRPC-PA*	998.2	602.6	414.0	415.0	412.7
DVRPC-NJ	486.7	326.0	188.5	182.6	182.8
WILMAPCO-NCC† ♦	208.6	127.6	95.4	99.6	99.2
NAA Total:	1,693.5	1,056.2	697.9	697.2	694.7
Conclusion	Baseline	Pass	Pass	Pass	Pass

Sources: DVRPC, 2009; WILMAPCO, 2009

Note: *Off-model adjustments have been made to the PA County Results
 †NCC denotes New Castle County.
 ♦The New Castle County figures have been revised from those released during the public comment period. This change is due to the incorporation of the most recent fleet registration data into the emissions model.

Table A-3. PM_{2.5} Precursor (NO_x) Interim Emissions Test Results (Tons/Year)

State	2002	2010	2020	2030	2035
DVRPC-PA*	59,346.0	28,825.1	8,889.9	5,514.8	5287.7
DVRPC-NJ	30,499.9	14,587.6	3,978.9	2,615.6	2,565.1
WILMAPCO-NCC† ♦	11,799.1	6,559.8	2,021.2	1,481.9	1,444.5
NAA Total:	101,645.0	49,972.5	14,890.0	9,612.3	9,297.3
Conclusion	Baseline	Pass	Pass	Pass	Pass

Sources: DVRPC, 2009; WILMAPCO, 2009

Note: *Off-model adjustments have been made to the PA County Results
 †NCC denotes New Castle County.
 ♦The New Castle County figures have been revised from those released during the public comment period. This change is due to the incorporation of the most recent fleet registration data into the emissions model.

Meeting the Conformity Criteria

DVRPC demonstrated its compliance with the federal conformity criteria in Table 12. Table A-4 details WILMAPCO's evaluation of the conformity determination criteria.

Table A-4 Evaluation of the Conformity Determination Criteria (WILMAPCO)

Section of 40 CFR Part 93	Criteria	Yes / No	Comments
93.11	Are the conformity determinations based upon the latest planning assumptions ?	Yes	The conformity determination uses the most recent available information including recent demographics and vehicle registration.
	(a) Is the conformity determination, with respect to all other applicable criteria in §§93.111 - 93.119, based upon the most recent planning assumptions in force at the time of the conformity determination?	Yes	Population, housing and land use data inputs for the Travel Demand Model were updated in November 2008 to reflect results from the 2000 US Census. Data for 2035 were generated via straight line projections per EPA guidance. Vehicle fleet data from 2008 was utilized in the conformity determination.
	(b) Are the assumptions derived from the estimates of current and future population, employment, travel, and congestion most recently developed by the MPO or other designated agency? Is the conformity determination based upon the latest assumptions about current and future background concentrations?	Yes	Transportation demand end emissions modeling assumptions are developed by the DE Dept of Transportation in conjunction with the WILMAPCO and other local, state and federal representatives as part of the consultation process. Standard procedures for projecting future demographics are outlined in the Plan.
	(c) Are any changes in the transit operating policies (including fares and service levels) and assumed transit ridership discussed in the determination? (d) The conformity determination must include reasonable assumptions about transit service and increases in transit fares and road and bridge tolls over time.	Yes	Reasonable assumptions have been made with regard to transit fares and operating policies (fare and service levels). No changes to transit fare policy are anticipated for the duration of the Plan. Changes to service levels for fixed route service in New Castle County are not anticipated for the duration of the plan. It is reasonable to assume they will remain constant. Road and bridge tolls are not expected to increase over the life of the Plan.
	(e) The conformity determination must use the latest existing information regarding the effectiveness of the TCMs and other implementation plan measures which have already been implemented.	N/A	There are currently no TCM's active in the WILMAPCO region.
	(f) Key assumptions shall be specified and included in the draft documents and supporting materials used for the interagency and public consultation required by §93.105.	Yes	Key planning assumptions are included and explained in the conformity determination document and agreed upon by all participating parties through the interagency consultation process. The conformity document has been made available for public review for the required 30 day period.

<< Continued >>

Section of 40 CFR Part 93	Criteria	Yes / No	Comments
93.111	Is the conformity determination based upon the latest emissions model?	Yes	Emissions factors for the Conformity Determination were calculated using MOBILE 6.2. This is the latest version of the current emissions model.
	Did the MPO make the conformity determination according to the consultation procedures of the conformity rule or the state's conformity SIP?	Yes	WILMAPCO conducted the conformity determination in accordance with the consultation procedures of the conformity rule.
93.106(a) (1)	Are the Horizon Years correct?	Yes	Analysis horizon years included 2010, 2020, 2030 and 2035. These represent the appropriate horizon years for the conformity determination and correspond to the eight-hour ozone attainment and near-term year, interim year, interim years within a ten-year frame, and the current Plan horizon years of WILMAPCO and DVRPC.
93.106(a) (2)(i)	Does the plan quantify and document the demographic and employment factors influencing transportation demand?	Yes	Socioeconomic data including population, retail and non retail employment and number of households are included in the body of the conformity document.
93.106(a) (2)(ii)	Is the highway and transit system adequately described in terms of the regionally significant additions or modifications to the existing transportation network which the transportation plan envisions to be operational in the horizon years?	Yes	The regional modifications to the highway and transit systems are documented within the conformity determination report and included in the emissions analysis.
93.108	Is the Transportation Plan Fiscally Constrained?	Yes	The transportation plan is in complete agreement with the State's 2009 – 2014 Capital Improvement Plan.
93.113(b)	Are TCM's being implemented in a timely manner?	N/A	There are no TCM's included in the Plan.
93.118	For Areas with SIP Budgets: Is the Transportation Plan, TIP or Project consistent with the motor vehicle emissions budget(s) in the applicable SIP?	Yes	Emission totals calculated for each analysis years were tested against the 2002 Base Year budget for PM 2.5.

Source: WILMAPCO 2009

Public Involvement Process

WILMAPCO and DVRPC opened a minimum 30-day public comment period to receive comments on the draft conformity findings for the entire NAA. The comment period opened on May 22, 2009, and ended on June 22, 2009. Both DVRPC and WILMAPCO made this conformity determination available on their websites and for review in their respective offices. Public notices were published in seven major newspapers in the NAA including the Delaware News Journal, Cecil Whig, Philadelphia Inquirer, Philadelphia Tribune, Trentonian, Camden Courier Post and Al Dia Spanish language newspaper.

Two public meetings were held in the NAA. The public meetings took place on:

Thursday, June 4, 2009 (hosted by DVRPC) at DVRPC Offices; from 4:00 pm to 6:00 pm

Thursday, June 11, 2009 (hosted by DVRPC) at Cherry Hill Library; from 4:00 pm to 6:00 pm

No public comments were submitted regarding the conformity determination during the public comment period. The DVRPC Regional Citizens Committee submitted one comment regarding the conformity determination after the comment period closed and that comment is addressed in Appendix B of this report. Appendix B also includes a letter from the Delaware DNREC affirming WILMAPCO's conformity determination for PM_{2.5} in the Philadelphia –Wilmington PM_{2.5} NAA.

Conclusion

The respective TIPs and the Plans of DVRPC and WILMAPCO are found to be in conformity with all current regulations and requirements under the Clean Air Act as amended. The forecasted emissions levels of PM_{2.5} in the NAA do not exceed the corresponding baselines established in accordance with the Final Rule.

The Philadelphia-Wilmington, PA-NJ-DE PM_{2.5} NAA has hereby demonstrated transportation conformity with the PM_{2.5} standards in the Final Rule. Because there are no current SIPS for PM_{2.5} in this NAA, this demonstration has utilized the baseline (i.e., “no-greater-than-2002”) interim emissions test under the Final Rule.

The region is steadily working toward improving air quality and fully attaining all applicable NAAQS. This conformity finding reflects positively carrying forward the vision of the various partners in the NAA and their broad regional goals for improved natural and built environments, a growing economy, and an effective, interconnected, safe, and reliable transportation system coordinated with land use.

For Additional Information:

DVRPC: Delaware Valley Regional Planning Commission

190 North Independence Mall West, 8th Floor
Philadelphia, PA 19106
(215) 592-1800 (voice)
(215) 592-9125 (fax)
www.dvrpc.org

WILMAPCO: Wilmington Area Planning Council

850 Library Avenue, Suite 100
Newark, DE 19711
(302) 737-6205 (voice)
(302) 737-9584 (fax)
www.wilmapco.org

Letters and Public Comment

DNREC Conformity Letter



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF AIR & WASTE MANAGEMENT
156 S. STATE STREET
DOVER, DELAWARE 19901

AIR QUALITY MANAGEMENT
SECTION

TELEPHONE: (302) 739 - 9402
FAX NO.: (302) 739 - 3106

June 18, 2009

Ms. Tigist Zegeye
Executive Director
Wilmington Area Planning Council
850 Library Avenue, Suite 100
Newark, Delaware 19711

Dear Ms. Zegeye:

This letter is to inform you that we have completed our review of the PM 2.5 conformity analysis, using the Mobile 6 model, of the 2030 WILMAPCO Regional Transportation Plan and the 2010-2013 Transportation Improvement Program (TIP).

Relative to the pollutant fine particulate matter (PM_{2.5}) a budget has not yet been deemed adequate by EPA, so a 2002 baseline of 208.6 tons per year and 11,799.10 tons per year for fine particulate matter and NO_x, respectively, are used as budgets for transportation conformity purposes.

However, in April 2008 the Secretary of DNREC issued an order which finalized new budgets as part of Delaware's PM_{2.5} State Implementation Plans (SIPs). These budgets were identified as being necessary for Delaware to attain compliance with the PM_{2.5} ambient air quality standards by the Clean Air Act deadline of 2010. The new budgets for New Castle County are 86.9 and 4904 tons per year for PM_{2.5} and NO_x respectively. These budgets are significantly lower than the budgets of record identified above, and have been submitted to the EPA for approval.

The DNREC Air Quality Management Section has worked with DelDOT on determining the emissions associated with the 2030 WILMAPCO Regional Transportation Plan and the 2009-2012 TIP. DNREC and DelDOT agree that the methods and data used are acceptable, and the results indicate:

- Conformity with both the 2002 baseline and Delaware's 2008 fine particulate matter Attainment Demonstration SIP for 2010 and 2020.

Delaware's Good Nature Depends on You!

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Ms. Tigist Zegeye
June 18, 1009
Page Two

- Conformity with the PM 2.5 2002 baseline but not in conformance for 2030 and 2035, with Delaware's 2008 fine particulate matter Attainment Demonstration SIP for 2010.

The fine particulate matter emissions in 2030 are projected to exceed Delaware's attainment demonstration budget by about 0.8 tons per year and 0.9 tons per year in 2035. This amount is relatively small, and DNREC and DelDOT have committed to work together to identify measures which DelDOT has committed to implement such as the I-95 and Smyrna Rest Area truck stop electrification projects which should be operational by mid-year 2010 and will help mitigate PM 2.5 emissions at issue in 2030 and 2035. Accordingly, DNREC does concur that the 2030 WILMAPCO Regional Transportation Plan and the 2010-2013 TIP do conform to Delaware's SIP.

Thank you for your cooperation.

Sincerely yours,



Ronald A. Amirikian
Planning Branch Manager

cc: Ali Mirzakhali, P.E., DNREC
Philip Wheeler, DNREC
Michael Duross, DelDOT
Martin Kotsch, EPA Region 3
Kwami Arhin, FHWA

DVRPC Public Comment

Submitted by Warren Strumpfer, Chair, DVRPC Regional Citizen Committee.

Conformity Comments

Monday, June 29, 2009

Introduction

The conformity plan presented by DVRPC is a good piece of work on a very difficult topic to understand and measure. Data in and out of the report shows that significant progress has been made over the past decade.

However, information published by DVRPC and outside sources shows that the populace in our MPO still face serious health threats from exposure to airborne pollution. (See [Health and Air Quality](#) information articles reprinted below). Most of the supporting information below is from DVRPC's "Alert" publications. Some is from outside sources.

Supporting Articles

HEALTH AND AIR QUALITY

Long Term Exposure to High Levels of Air Pollution Reduces Lung Function and Growth in Children

According to a recent study published in the American Journal of Respiratory and Critical Care Medicine, long term exposure to high levels of air pollution caused reduced lung function and growth in 3,170 Mexico City eight year-olds. The authors also indicated that these early deficits in lung function growth may increase the risk of developing chronic obstructive lung disease later in life.

The researchers measured the children's lung function and compared it to the children's exposure to ozone, nitrogen dioxide and particulate matter. Lung function was measured every three months from 1996 to 1999. The children attended 39 different elementary schools located near ten air quality monitors. The study results indicated that at the beginning of the study and at each stage of follow up the children who were exposed to lower levels of ozone and particle pollution had better lung function values than children exposed to higher concentrations of the pollutants.

For more information on this study see: American Journal of Respiratory and Critical Care Medicine Vol 176. pp. 377-384, (2007).

"Increased Heart Risk Linked to Air Pollution"

Study of 58,600 Women finds danger grows in cities with higher Soot levels from Autos and Power Plants. Keith Winstein, 1 Feb 2007

Breathing common urban air pollution is much more deadly than previously thought, according to a major study published in today's New England Journal of Medicine.

Breathing air heavily polluted by soot from automobiles and power plants may raise the risk of death for older women at nearly the same rate as smoking cigarettes. The study focused on the most deadly kind of soot; know as fine particular matter, which comes from burning fossil fuels like gasoline, diesel fuel and coal.

Each increase of fine soot levels by 10 micrograms a cubic meter is associated with an increase of cardiovascular death of about 76%. For example, on average, women in Nashville, Tenn., where the 2005 level was 15 micrograms, would have as approximately 76% greater chance of dying from cardiovascular causes than women in Honolulu, where the 2005 level was 5 micrograms.

The article also shows that Philadelphia, PA-NJ had an average annual level of outdoor fine particulate matter of 16.5 micrograms in 2005.

September 2007

Long Term Exposure to High Levels of Air Pollution Reduces Lung Function and Growth in Children

According to a recent study published in the American Journal of Respiratory and Critical Care Medicine, long term exposure to high levels of air pollution caused reduced lung function and growth in 3,170 Mexico City eight year-olds. The authors also indicated that these early deficits in lung function growth may increase the risk of developing chronic obstructive lung disease later in life.

The researchers measured the children's lung function and compared it to the children's exposure to ozone, nitrogen dioxide and particulate matter. Lung function was measured every three months from 1996 to 1999. The children attended 39 different elementary schools located near ten air quality monitors. The study results indicated that at the beginning of the study and at each stage of follow up the children who were exposed to lower levels of ozone and particle pollution had better lung function values than children exposed to higher concentrations of the pollutants.

For more information on this study see: American Journal of Respiratory and Critical Care Medicine Vol 176. pp. 377-384, (2007).

March 2007

Study Finds That Fine Particle Pollution Significantly Raises Heart Disease Risk in Older Women

An article in the February 1, 2007 edition of the New England Journal of Medicine presented the results of a study linking elevated risk of heart disease in post-menopausal women and prolonged exposure to fine particle pollution. The study was conducted by researchers at the University of Washington and included over 65,000 women between the ages of 50 and 79. The study notes that the women's annual average exposure to fine particle pollution or PM2.5 was 13 parts per million per cubic meter of air (ppm/m³), which is below the annual PM2.5 air quality standard of 15 ppm/m³.

The 65,893 study subjects were drawn from 36 U.S. metropolitan areas from 1994 to 1998 and lived within 30 miles of an air quality monitor that measured particle pollution. The women had no previous record of cardiovascular disease and results were adjusted for age, race or ethnicity, smoking status, educational level, diabetes and other relevant factors. The results of the study indicated that each increase of 10 ppm/m³ of average annual PM2.5 was associated with a 24% increase in the risk of a cardiovascular event and 76% increase in the risk of death from cardiovascular disease. Researchers did acknowledge that while the degree to which ambient air pollution monitors represent the exposure of specific study subjects is imperfect, this factor is unlikely to have introduced a bias that would have influenced the studied findings. Researchers stressed that continued efforts to limit long-term exposure to PM2.5 are warranted.

The entire article "Long Term Exposure to Air Pollution and Incidence of Cardiovascular Events in Women" can be read at: <http://content.nejm.org>

"Philadelphia Listed as Second Worst Place in Nation to Live With Asthma"

The annual Asthma Capitals report released by the Asthma and Allergy Foundation of America, once again listed Philadelphia in its top-one hundred list of most challenging places in the nation to live with asthma. The list is based on several factors including asthma prevalence, ambient air quality, poverty levels and use of emergency medications. Philadelphia ranked as average or below average in all twelve of the measured categories when compared to the other 99 U.S. cities in the report, resulting in a rank of second most challenging city in which to live with asthma. With a motto of "Don't Move, Improve", the purpose of the report is to raise awareness of asthma and breathing issues and encourage people to work with their doctors to improve asthma management. The report also encourages communities to improve air quality and public policies, such as public smoking laws and access to medication at school, that diminish the challenges of living with asthma.

To view the entire Asthma Capitals report, please visit: <http://www.asthmacapitals.com>

June 2007

DVRPC Region Listed in Top 25 Most Ozone and PM2.5 Polluted Regions in the Country in the American Lung Association's 2007 State of the Air Report.

The Philadelphia-Camden-Vineland PA-NJ-DE-MD metropolitan region¹ once again was ranked

in the top 25 most polluted regions for ozone and fine particles by the American Lung Association (ALA) in their State of the Air report released in May 2007. The region was ranked as the 12th worst region for ozone pollution and 22nd and 24th worst, respectively, for short term (24-hour average) and long term (annual average) PM2.5. The ALA used quality assured data from the period 2003 to 2005 to develop the 2007 report card on ozone and particle pollution for the nation's cities and counties.

The report also ranks individual counties based on the number of days that air quality reaches unhealthy levels (code orange) on the Air Quality Index. Of the eight counties in the DVRPC region that were graded, every county received an "F" grade for ozone pollution, four counties received passing grades for short term PM2.5 pollution and five counties received passing grades for the annual PM2.5 pollution. The ALA used the new PM2.5 daily standard of 35µg/m³, adopted in September 2006, to determine the code orange range for short-term particle pollution. According to the ALA, ozone pollution has been declining nationwide from peak levels observed in 2002, with the number of counties receiving an "A" grade jumping from 82 in 2000 to 145 in 2007. Particle pollution shows a different trend in the eastern United States, with "F" grades nearly doubling east of the Mississippi in just one year. Particle pollution levels in the western states are declining. Locally, the Philadelphia region did make gains in improving ozone ambient air quality. The region improved from 10th worst in the nation for ozone pollution in 2006 to 12th worst in 2007.

Camden County, the only county in the region in the top 25 worst counties for ozone, moved from 16th to 22nd worst. The region did, however, follow the trend for the eastern U.S. by reappearing on the 25 worst lists for both short term and annual particle pollution after being removed from the list in 2006.

The ALA report attributes the dichotomy of particle pollution trends across the nation to stricter state and local, particle pollution regulations in states west of the Mississippi River and an increase in electricity generated by heavy polluting power plants in the mid-west and eastern states.

To view the entire 2007 State of the Air Report, including grading methodology and Statistical analysis, please visit the American Lung Association at <http://lungaction.org/reports/stateoftheair2007.html>,

Study Shows Particle Pollution Exhibits Long Term Impacts on Childhood Lung Development

A study published in the July 6 edition of the New England Journal of Medicine shows that continued exposure to even moderate levels of particle pollution diminish lung function and may have long term impacts on lung development in children. The study noted that higher levels of exposure to particle pollution are associated with lower levels of lung function and hypothesized that particle pollution restricts lung growth in children.

The study was conducted on 114 children in Leicester, England. Air Quality in Leicester meets the UK's air quality standards. Researchers measured the lung function (how hard and fast the children could exhale) and carbon particle content in the children's lungs. Research indicated that as carbon content in the lungs increased, lung capacity decreased, even after control factors such as body mass, gender and exposure to second hand smoke were factored into the analysis. Researchers concluded that while moderate particle pollution exerts a small negative effect on lung growth, long-term exposure can result in cumulative effects that ultimately reduce lung function in children. Fine particle pollution can penetrate deep into the lungs and imbed into lung tissue, making them less likely to be exhaled.

The study's findings reinforce the importance of limiting children's exposure to particle pollution by reducing pollution from school buses and limiting strenuous activity on Air Quality Action Days when particle pollution is forecast to reach unhealthy levels.

March 2006

Philadelphia Region Cited as One of the Worst Places in Country for Asthma Sufferers

A recent report released by the Asthma and Allergy Foundation of America (AAFA) ranked the Philadelphia region as the third worst place in the country to be an asthma sufferer. Rankings were based on analysis of twelve weighted factors from three broad categories including asthma prevalence, risk and medical factors. The Philadelphia region was ranked as below average for nine of the twelve factors when compared to the country's 100 most populated metropolitan areas.

Specific factors analyzed ranged from ambient air quality (such as ozone and pollen levels) and economic factors (poverty levels and rate of uninsured residents) to public policy (public smoking bans and school inhaler access laws) among others. Air quality factors were weighted heavily in this analysis and was one of the categories in which the Philadelphia region scored low compared to other regions.

According to the AAFA, asthma is the leading cause of school absenteeism, is responsible for 5,000 deaths annually and costs Americans approximately \$14 billion dollars per year in medical and indirect costs. The AAFA releases the "Asthma Capitals" report each year to raise awareness about asthma and asthma prevention.

The complete list of metropolitan region rankings and details about the analysis factors can be viewed at the AAFA website at www.asthmacapitals.com.

March 2005

Study Links Mothers' Exposure to Air Pollution to Babies Chromosome Damage

A new study of 60 newborns in New York City reveals that exposure of expectant mothers to combustion-related urban air pollution may alter the structure of babies' chromosomes while in the womb. The air pollutants considered in the study include emissions from cars, trucks, bus engines, residential heating, power generation and tobacco smoking. These pollutants can cross the placenta and reach the fetus. The National Institute of Environmental Health Sciences, part of the National Institutes of Health, the U.S. Environmental Protection Agency, and other private foundations funded the study. Scientists from the Columbia University Center conducted the research for Children's Environmental Health.

Researchers monitored exposure to airborne pollutants, known as polycyclic aromatic hydrocarbons (PAHs), among non-smoking African-American and Dominican mothers residing in three low-income neighborhoods of New York City -- Harlem, Washington Heights and the South Bronx. .

The study is part of a broader, multi-year research project, "The Mothers & Children Study in New York City," started in 1998, which examines the health effects of exposure of pregnant women and babies to air pollutants from vehicle exhaust, the commercial burning of fuels, and tobacco smoking, as well as from residential use of pesticides and allergens.

April 2009

AIR POLLUTION and HEALTH

US Proposes to Cut Harmful Ship Emissions Along the Nation's Coastline

The United States became the first country in the world to request that the International Maritime Organization create an emissions control area (ECA) around the nation's coastline. According to the US Environmental Protection Agency (EPA) data, the creation of an ECA would save up to 8,300 American and Canadian lives each year by 2020 by reducing air pollution from oil tankers and other large ocean going vessels.

The United States is proposing a 230-mile buffer around the nation's coastline to improve air quality for the tens of millions of Americans that live and work in coastal communities. According to an EPA press release, air quality benefits of the proposed buffer zone are expected to reach as far inland as Kansas.

Under this program, large ships that operate within the ECA boundary would face stricter emissions standards designed to reduce threats to human health and the environment. These proposed standards would cut sulfur in fuel by 98 percent, particle pollution by 85 percent and nitrogen oxide emissions by 80 percent from current global requirements.

The proposal is part of an on-going effort to improve air quality around the nation's ports, 40 of which are in metropolitan areas that fail to meet federal air quality standards. The International Maritime Organization will begin reviewing this proposal in July and could approve the proposal as soon as next year.

April 2004

New Study says U.S. Seaports are largest Urban Polluters

A new report released by Natural Resources Defense Council (NRDC) and the Coalition for Clean Air says U.S. seaports are the largest and most poorly regulated sources of urban pollution in the country. The report grades the ten biggest seaports for their impact on air and water quality, land use, and nearby communities.

The report, *Harboring Pollution: The Dirty Truth about U.S. Ports*, finds that despite the availability of technology to cut pollution, major seaports are emitting ever-larger amounts of toxic diesel exhaust and other contaminants that damage public health, disrupt local communities and harm marine habitats. Without swift action by port operators and policy-makers to implement cleaner practices, this scenario is expected to worsen as cargo volumes at some ports are projected to triple in the next twenty years.

The overall port grades are given with New York/New Jersey scoring "C+" grade. On the grading scale, an "A" designates a model port, whereas an "F" indicates a port that has demonstrated reckless lack of concern for public health and the environment. The report emphasizes the need for improvements in environmental practices at all ten ports highlighted, including Oakland, which scored the highest, yet must still address major environmental problems.

The report makes technical recommendations for all container ports to clean up their operations, including: dock-side power for all ships, cleaner fuels for all modes of transport, pollution controls for dirty diesel engines, and stricter storm water management. It also makes policy recommendations for federal, state and local regulators that would significantly reduce negative environmental effects on local communities and the environment.

October 2007

The U.S. Environmental Protection Agency Reports Significant Reductions in NOx Emissions in Eastern United States

The U.S. Environmental Protection Agency (EPA) recently released the 2006 NOx Budget Trading Program Annual Report for the twenty states participating in the program. The NOx Budget Trading Program (NBTP) is an emissions cap and trade program developed by the EPA to assist states to meet a 1998 rule regulating NOx emissions, known as the NOx SIP Call. The NOx SIP Call requires states, whose NOx emissions contribute to ozone non-attainment in other states, to reduce those emissions during the ozone season. The Rule does not specify what sources must reduce emissions but rather sets state emission budgets and gives states flexibility to set control strategies to meet those budgets.

Twenty states participate in the NBTP, nine of which (CT, DE, MD, MA, NJ, NY, PA, RI and DC) met the rule requirements in May 2003. The additional eleven states (AL, IL, IN, KY, MI, NC, OH, SC, TN, VA and WV) met the rule's requirements in May 2004. The report indicates that NOx emissions have been reduced by 74% from 1990 levels (before the Clean Air Act Amendments), by 60% from 2000 levels (before implementation of the NOx SIP Call), and 7% from 2005. The report goes on to credit these NOx reductions with a corresponding 5-8% decrease in ground level ozone concentrations in the NBTP region. NOx is a necessary component in the formation of ground level ozone. Furthermore, the report states that there is a strong association in the data between areas with the greatest NOx emission reductions and nearby downwind states exhibiting the greatest improvements in ground level ozone air quality. NOx emissions in the NBTP region have dropped from 593,000 tons in the 2004 ozone season (May through September) to 491,000 tons in the 2006 ozone season. These reductions are credited with helping 83 non-attainment areas to meet the federal ozone standard.

The entire 2006 NOx Budget Report is available online at:

<http://epa.gov/airmarkets/progress/nbp06.html>

"Concern Grows over Pollution from Jets"

Gary Stoller, USA Today 12/19/2008

Aviation and the environment are on a collision course. The number of airline flights worldwide is growing and expected to skyrocket over the coming decades. Aircraft emissions pollute the air and threaten by 2050 to become one of the largest contributors to global warming, British scientists have concluded.

Besides carbon dioxide, jet engines emit many pollutants into the atmosphere, including nitrogen oxides, sulfur oxides, soot and even water vapor. Nitrogen oxides emitted from aircraft engines react with other gases in the air to form another heat-trapping gas, ozone. The EPA has failed "to put stringent controls on aircraft emissions," says William Becker, the group's executive director.

Conclusion

If data can be collected to publish the above articles, why can't similar health statistics be used to measure and support real improvement of the conformity plan? Would not these be the best and

most meaningful performance measures for the plan? Can any performance measures be more important or indicative of real success? Improving health statistics would be a measure of progress the public could relate to and understand. Hopefully, statistical health performance goals would prove to be a motivating factor to accelerate conformity progress and result in the improved health of all citizens.

Don't we have the responsibility to our children and grandchildren to leave the best possible environmental legacy?

DVRPC Reply

Transportation Conformity is a federal requirement of the Clean Air Act. The Clean Air Act and Final Conformity Rule dictate the process and procedures for determining Transportation Conformity of TIPs and Plans. The very specific requirements of this procedure insure consistency, across the nation, in demonstrating that TIPs and Plans in air quality non-attainment areas are not worsening air quality.

Health statistics are an important component and consideration when developing the federal health based air quality standards, however data from health studies is not always readily available or regionally focused. Epidemiological studies are not among the federally approved measures to demonstrate Transportation Conformity.

Abstract Page

Title: Transportation Conformity Demonstration: *Connections* Long-Range Plan , FY 2009 Pennsylvania TIP, and FY 2010 New Jersey TIP

Publication Number: 09046

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Geographic Area Covered: The nine-county DVRPC Planning Area, which covers the counties of Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey. Per PM_{2.5}, it also addresses New Castle County in Delaware

Key Words: Transportation Conformity, Air Quality, National Ambient Air Quality Standards, Ozone, Volatile Organic Compounds (VOCs), Nitrogen Oxides (NO_x), Carbon Monoxide (CO), Fine Particulate Matter (PM_{2.5}), Nonattainment Area, Maintenance Area, Multi-jurisdictional Nonattainment Area, *Connections* Long-Range Transportation Plan, Transportation Improvement Program (*TIP*), State Implementation Plan (*SIP*), Wilmington Area Planning Council (WILMAPCO).

Abstract: DVRPC demonstrates transportation conformity of its FY 2009 PA TIP, FY 2010 NJ TIP, and the *Connections* Long-Range Plan. This conformity finding of the DVRPC Transportation Improvement Programs and the long-range plan shows that they meet the National Ambient Air Quality Standards (NAAQS) requirements governing ozone, carbon monoxide, and fine particulate matter. This conformity finding reflects all amendments to the *TIPs* and the long-range plan adopted through April 2009.

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