DELAWARE VALLEY
dvrpc
REGIONAL
PLANNING COMMISSION

Transportation Conformity Demonstration: FY 2011 Pennsylvania TIP, FY 2012 New Jersey TIP, and *Connections* Long-Range Plan

July 2011

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 federally designated Metropolitan Planning Organization for the Greater Philadelphia Region — leading the way to a better future.

The symbol in 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)

CFR Code of Federal Regulations

CMAQ Congestion Mitigation/Air Quality

CO Carbon Monoxide

DVRPC Delaware Valley Regional Planning Commission

FHWA Federal Highway Administration

Final Rule Current conformity guidance under CAA

FR the Federal Register

FTA Federal Transit Administration

I/M Inspection and Maintenance

Maintenance Area Area that previously did not meet NAAQS

MPO Metropolitan Planning Organization

MVEB Motor Vehicle Emissions Budget

NAAQS National Ambient Air Quality Standards

NJAQ-ONE New Jersey Air Quality Off-Network Estimator

NJ DOT New Jersey State Department of Transportation

NJ Transit New Jersey Transit

Nonattainment Area Area currently not meeting the NAAQS

NOx Nitrogen Oxides

PAQ-ONE Pennsylvania Air Quality Off-Network Estimator

PennDOT Pennsylvania State Department of Transportation

Plan DVRPC's *Connections* Long-Range Plan

$PM_{2.5}$ Fine Particulate Matter

ppm parts per million

SAFETEA-LU Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users

SEPTA Southeastern Pennsylvania Transportation Authority

SIPs State Implementation Plans

State DEPs State Departments of Environmental Protection

State DOTs State Departments of Transportation

TAZ Traffic Analysis Zone

TCICG DVRPC's Transportation Conformity Interagency Consultation Group

TIPs DVRPC Transportation Improvement Programs

U.S.C. United States Code

US DOT United States Department of Transportation

US EPA United States Environmental Protection Agency

VMT Vehicle-Miles-Traveled

VOCs Volatile Organic Compounds

WILMAPCO Wilmington Area Planning Council

Executive Summary

Overview

Transportation conformity is the process by which Metropolitan Planning Organizations (MPOs) or Departments of Transportation demonstrate that transportation projects included in a region's Long-Range Plan (Plan) or Transportation Improvement Programs (TIP) do not cause new air quality violations, worsen existing violations, or delay timely attainment of the National Ambient Air Quality Standards (NAAQS). Transportation conformity is a requirement of the Clean Air Act (CAA) in areas that do not meet the NAAQS or have previously been in violation of the NAAQS. Areas currently not meeting the NAAQS are known as nonattainment areas, and areas that previously have not attained the NAAQS are known as maintenance areas.

A transportation conformity demonstration shows that the region's TIPs and Plan are following or "conforming to" the State Implementation Plan (SIP) to meet the NAAQS. In nonattainment areas that do not have federally approved SIPs, the current conformity guidance, known as the Final Rule, issued by the United States Environmental Protection Agency (US EPA) establishes guidelines for conducting transportation conformity demonstrations.

The Delaware Valley Regional Planning Commission (DVRPC) region is in nonattainment for two of the NAAQS (ozone and $PM_{2.5}$). Portions of the region are maintenance areas for a third NAAQS (carbon monoxide or CO).

Since ozone is not directly emitted but is formed by the combination of volatile organic compounds (VOC) and nitrogen oxides (NOx) in the presence of sunlight, conformity is demonstrated by analysis of the component pollutants. $PM_{2.5}$ is directly emitted and precursor pollutants—in this case NOx—are also analyzed to demonstrate transportation conformity.

This Executive Summary highlights DVRPC's conformity demonstration for:

- **Volatile Organic Compounds (VOCs) and Nitrogen Oxides (NOx) meeting the eight-hour ozone NAAQS requirements in:**
  - the DVRPC portion of the Philadelphia-Wilmington-Atlantic City Ozone Nonattainment Area;
- **Direct Fine Particulate Matter ($PM_{2.5}$) and Precursor NOx meeting the $PM_{2.5}$ NAAQS requirements in:**
  - the DVRPC portion of the Philadelphia-Wilmington, PA-NJ-DE Annual $PM_{2.5}$ Nonattainment Area; and

- the DVRPC portion of the Philadelphia-Wilmington, PA-NJ-DE 24-hour $PM_{2.5}$ Nonattainment Area; and
- the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT Annual $PM_{2.5}$ Nonattainment Area; and
- the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT 24-hour $PM_{2.5}$ 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.

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

TIP Projects

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

Regional Emissions Analysis

Conformity Test

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

For 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 multi-state 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 United States Department of Transportation (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.

The DVRPC region has implemented SIP budgets for the eight-hour ozone standard in Pennsylvania and New Jersey and US EPA published the adequacy finding of New Jersey's $PM_{2.5}$ SIP Budgets on June 14, 2010 (75 FR 33614). Current conformity guidance states that nonattainment areas with Annual $PM_{2.5}$ SIP budgets must use those budgets to demonstrate conformity for the 24-hour $PM_{2.5}$ standard. In practice, this means that the budget test for the Annual $PM_{2.5}$ standard is a surrogate that demonstrates conformity to the 24-hour $PM_{2.5}$ standard. Therefore, DVRPC's New Jersey Counties will use the Annual $PM_{2.5}$ standard budget test to demonstrate conformity for both $PM_{2.5}$ standards.

Pennsylvania does not have SIP budgets for $PM_{2.5}$ and DVRPC is required to use an interim conformity test to demonstrate conformity for the $PM_{2.5}$ Annual and 24-hour standards in Pennsylvania. This demonstration must be coordinated with the Wilmington Area Planning Council's (WILMAPCO) $PM_{2.5}$ conformity demonstration for New Castle County, Delaware because New Castle County is a part of the Philadelphia-Wilmington, PA-NJ-DE 24-hour $PM_{2.5}$ Nonattainment Area.

WILMAPCO has adopted a conformity demonstration for the Annual and 24-hour $PM_{2.5}$ standards in March 2011, which relied on an analysis adopted on January 13, 2011. WILMAPCO will be reaffirming that demonstration by Council resolution in July 2011 as permitted by federal regulations (40 CFR93.122(g)).

Analysis Years

For this conformity demonstration, the mobile source ozone emissions analysis years for VOCs and NOx are 2013 (a near term year within five years of TIP adoption), 2020 (an interim year selected to keep all analysis years no more than 10 years apart), 2030 (an 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. To demonstrate conformity, projected ozone emissions in all analysis years must not exceed the established MVEBs in prior years.

In the New York-Northern New Jersey-Long Island, NY-NJ-CT $PM_{2.5}$ Nonattainment Areas, the analysis years are 2013, 2020, 2030, and 2035. In the Philadelphia-Wilmington, PA-NJ-DE $PM_{2.5}$ Nonattainment Area, an additional analysis year of 2040 is required because 2040 is the horizon year of the WILMAPCO long-range plan. The Final Rule requires that, for nonattainment areas using the interim test for emission analysis, years be identical in all of the MPO regions using the interim test. In practice, this means that both MPOs, in the Philadelphia-Wilmington $PM_{2.5}$ Nonattainment Areas, must include the horizon years of each of the MPOs long-range plans.

To demonstrate conformity, projected $PM_{2.5}$ emissions in all analysis years must not exceed 1) the 2002 baseline emissions results for the Annual $PM_{2.5}$ standard and 2008 baseline emissions results for the 24-hour $PM_{2.5}$ standard in the Pennsylvania portion of the Philadelphia-Wilmington, PA-NJ-DE $PM_{2.5}$ Nonattainment Area; 2) the 2009 budgeted emissions in the New Jersey portion of the Philadelphia-Wilmington, PA-NJ-DE $PM_{2.5}$ Nonattainment Area; and 3) the 2009 budgeted emissions for Mercer County in the New York-Northern New Jersey-Long Island, NY-NJ-CT $PM_{2.5}$ Nonattainment Area.

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

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, NOx, and $PM_{2.5}$ do not exceed the respective budgets and baselines 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-4 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 †	2013	2020	2030	2035
PA	Emissions from MOBILE 6.2	-	-	37.40	22.95	20.61	20.53
	Adjustments from Off-Network Calculation‡	-	-	-0.01	-0.01	-0.01	-0.01
	Estimated Total Emissions	61.09	-	37.39	22.94	20.60	20.52
NJ	Emissions from MOBILE 6.2	-	-	17.98	12.56	11.83	11.83
	Adjustments from Off-Network Calculation‡	-	-	0.00	0.00	0.00	0.00
	Estimated Total Emissions	-	25.98	17.98	12.56	11.83	11.83

Source: DVRPC, 2011

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. NOx Emission Analysis Results (Tons/July Day) †

		2008 SIP MVEB†	2009 SIP MVEB †	2013	2020	2030	2035
PA	Emissions from MOBILE 6.2	-	-	54.44	25.06	15.12	14.24
	Adjustments from Off-Network Calculation‡	-	-	-0.01	-0.01	-0.01	-0.01
	Estimated Total Emissions	108.78	-	54.43	25.05	15.11	14.23
NJ	Emissions from MOBILE 6.2	-	-	35.89	14.91	9.35	9.03
	Adjustments from Off-Network Calculation‡	-	-	0.00	0.00	0.00	0.00
	Estimated Total Emissions	-	63.66	35.89	14.91	9.35	9.03

Source: DVRPC, 2011

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

		2002 Baseline	2009 SIP MVEB »	2013 Estimated Emissions	2020 Estimated Emissions	2030 Estimated Emissions	2035 Estimated Emissions	2040 Estimated Emissions
Direct $PM_{2.5}$	DVRPC – PA*	998.2	-	495.2	406.8	399.8	394.8	394.8
	DVRPC - NJ; except Mercer» ‡	-	341	237	187	180	179	-
	Mercer County, NJ »	-	105	75	59	58	57	-
$PM_{2.5}$ Precursor (NOx)	DVRPC – PA*	59,346.0	-	19,692.7	9,012.9	5,428.2	5,164.2	5,168.2
	DVRPC - NJ; except Mercer» ‡	-	17,319	9,666	4,026	2,580	2,500	-
	Mercer County, NJ»	-	5,323	3,054	1,290	833	808	-

Source: DVRPC, 2011

Note: † Associated 2002 Baseline or 2009 MVEBs apply to all future analysis years. PA emissions are rounded off to the nearest tenth.
* Off-model adjustments have been made.
» NJ SIP MVEBs and the emissions results are rounded off to the nearest integer in accordance with the SIP.
‡ 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. **This budget test satisfies both $PM_{2.5}$ standards according to Final Rule guidance (75 FR 14263).**
» Results are for Mercer County only, which is the DVRPC New Jersey portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT PM2.5 Nonattainment Area. **This budget test satisfies both $PM_{2.5}$ standards according to Final Rule guidance (75 FR 14263).**

Table E-4. 24-hour Direct $PM_{2.5}$ and NO_x Emission Analysis Results (Tons/Day) †

		2008	2013	2020	2030	2035	2040
		Baseline	Estimated Emissions	Estimated Emissions	Estimated Emissions	Estimated Emissions	Estimated Emissions
Direct $PM_{2.5}$	DVRPC – PA*	1.9	1.4	1.2	1.2	1.1	1.1
$PM_{2.5}$ Precursor (NOx)	DVRPC – PA*	90.7	52.2	24.0	14.5	13.7	13.7

Source: DVRPC, 2011

Note: † 2008 Baseline applies to all future analysis years. Emissions are rounded off to the nearest tenth.
* Off-model adjustments have been made.

These findings demonstrate transportation conformity of the FY 2011 Pennsylvania TIP, the FY 2012 New Jersey TIP, and the DVRPC *Connections* Long-Range Plan 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 Annual and 24-hour $PM_{2.5}$ NAAQS in the Philadelphia-Wilmington, PA-NJ-DE $PM_{2.5}$ Nonattainment Area; and
- the Annual and 24-hour $PM_{2.5}$ NAAQS in the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT $PM_{2.5}$ Nonattainment Area; and
- the eight-hour CO NAAQS in the Philadelphia-Camden CO Maintenance Area; in the City of Burlington in Burlington County, New Jersey; and in the City of Trenton in Mercer County, New Jersey.

CHAPTER 1

Introduction

Overview

This report documents the demonstration of transportation conformity of the DVRPC FY 2011 Pennsylvania, FY 2012 New Jersey Transportation Improvement Programs (TIPs), and *Connections* Long-Range Plan (Plan) 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) and Nitrogen Oxides (NOx) meeting the eight-hour ozone NAAQS requirements in:**
  - the DVRPC portion of the Philadelphia-Wilmington-Atlantic City Ozone Nonattainment Area;
- **Direct Fine Particulate Matter ($PM_{2.5}$) and Precursor NOx meeting the $PM_{2.5}$ NAAQS requirements in:**
  - the DVRPC portion of the Philadelphia-Wilmington, PA-NJ-DE Annual $PM_{2.5}$ Nonattainment Area; and
  - the DVRPC portion of the Philadelphia-Wilmington, PA-NJ-DE 24-hour $PM_{2.5}$ Nonattainment Area; and
  - the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT Annual $PM_{2.5}$ Nonattainment Area; and
  - the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT 24-hour $PM_{2.5}$ 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.

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 whether those emissions are within the limits outlined in respective SIPs and other applicable NAAQS requirements.

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 2005.[2]

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

[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.

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

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.

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 (PM_{10} and $PM_{2.5}$, respectively), sulfur dioxide (SO_2), 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 toward meeting air quality goals. The Final Rule stipulates that each SIP is sovereign and that, for a multi-state 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, $PM_{2.5}$, and CO.

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 NOx in the presence of sunlight. Although 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.

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 eighteen counties. For the DVRPC region, attainment of the eight-hour ozone NAAQS was required by June 2010.[3] In December 2010, US EPA granted the nonattainment area an extension, until June 2011, to demonstrate attainment of the standard.

[3] PA and NJ have submitted Attainment SIPs in 2007. Neither of these SIPs has been approved by US EPA.

In March 2008, US EPA revised the NAAQS for the eight-hour ozone standard from 0.08 ppm to 0.075 ppm. This standard revision is currently being re-evaluated by US EPA. US EPA expects to announce its findings regarding the 2008 ozone standard in August of 2011.

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

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 ($PM_{2.5}$), 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 $PM_{2.5}$ exposure include older adults, people with heart and lung disease, and children. Health studies have shown a significant association between exposure to $PM_{2.5}$ and premature mortality.

Additionally, $PM_{2.5}$ can be emitted directly from combustion engines or chemically formed in the atmosphere when certain gases are present. 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. Indirect $PM_{2.5}$ emissions can result from one or more of several exhaust components, including VOCs, NOx, sulfur oxides (SOx), and ammonia (NH_3).

The $PM_{2.5}$ NAAQS include an annual standard set at 15 $\mu g/m^3$, based on a three-year average of the annual mean $PM_{2.5}$ concentrations, and a 24-hour standard of 35 $\mu g/m^3$, 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.

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. US EPA is currently reviewing both the New Jersey and Pennsylvania annual $PM_{2.5}$ Attainment SIPs.

In December 2006, US EPA revised the 24-hour daily $PM_{2.5}$ standard from 65 $\mu g/m^3$ to 35 $\mu g/m^3$. The two nonattainment areas in the DVRPC region satisfied previous 24-hour standards, but the DVRPC region violates the revised 24-hour standard. In December 2009, US EPA designated the 24-hour daily $PM_{2.5}$ standard nonattainment areas. In the DVRPC region, the designated 24-hour $PM_{2.5}$ nonattainment areas are geographically identical to the Annual $PM_{2.5}$ standard nonattainment areas. DVRPC must attain the standard by 2013.

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. Following the attainment status, portions of four counties in the region were designated as separate CO maintenance areas. The Philadelphia-Camden CO Maintenance Area comprises Camden and Philadelphia cities. Portions of Burlington (City of Burlington) and Mercer (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.

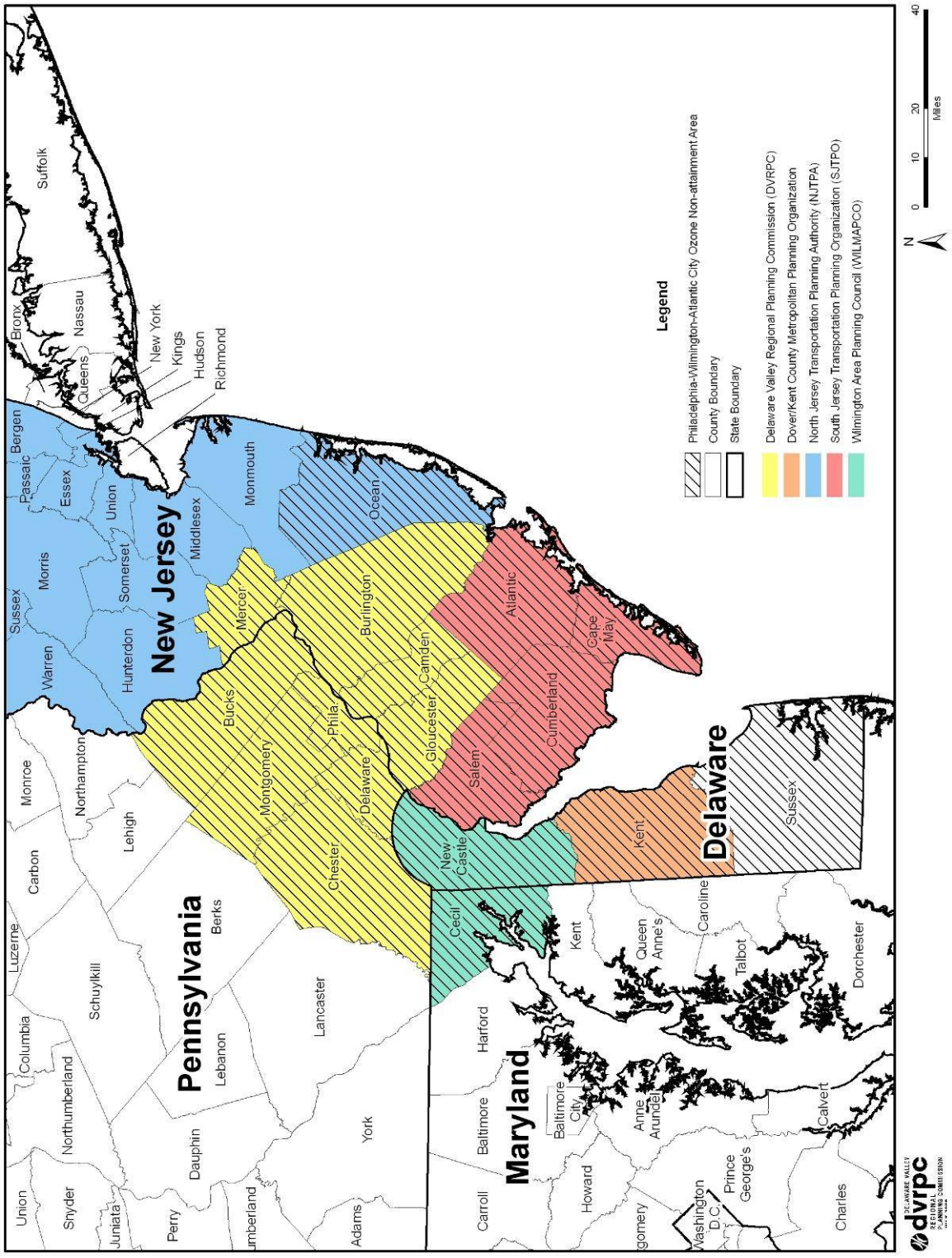

Figure 1. Philadelphia-Wilmington-Atlantic City Eight-Hour Ozone Nonattainment Area

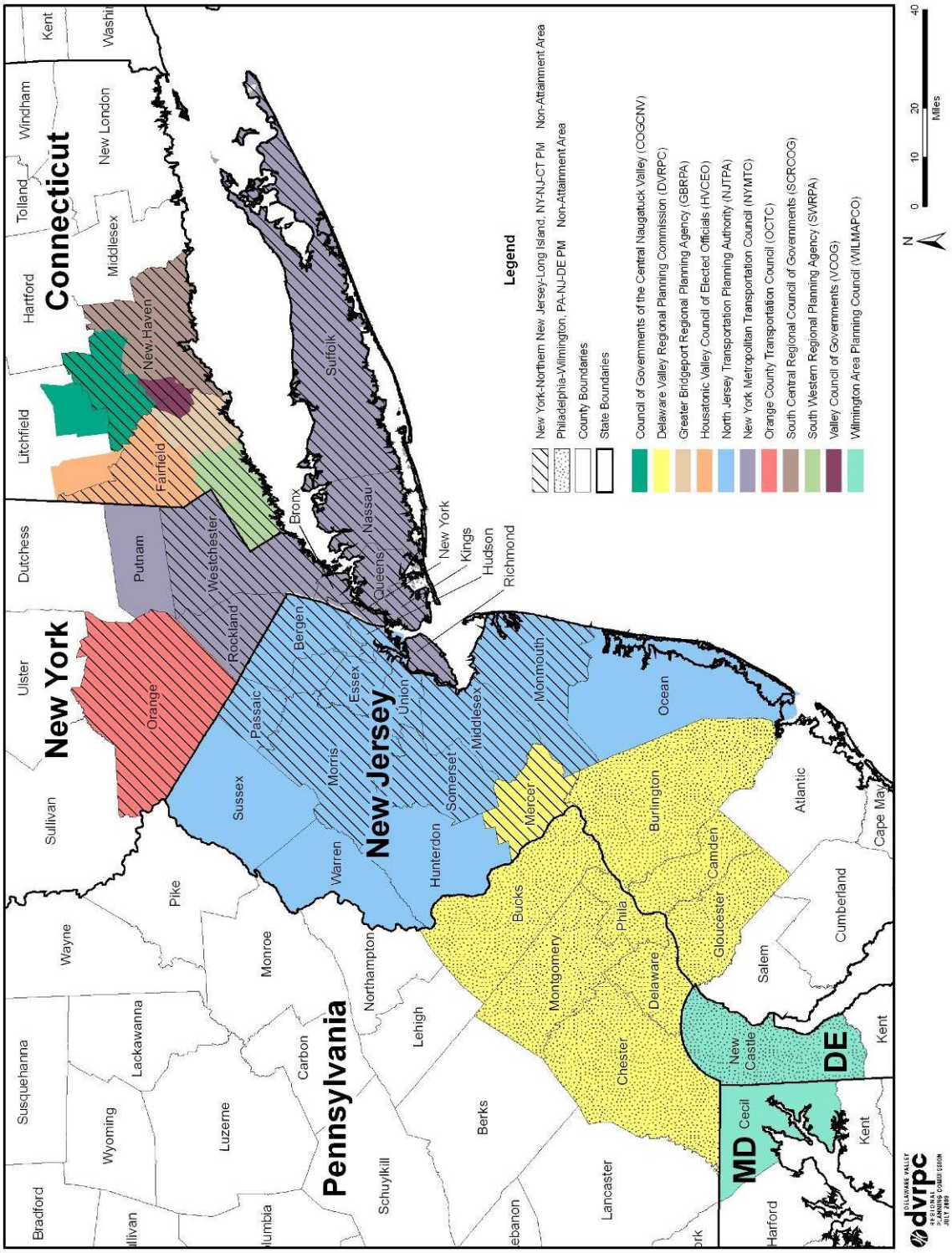

Figure 2. DVRPC Annual and 24-hour $PM_{2.5}$ Nonattainment Areas

DVRPC TIPs and the Plan

The DVRPC FY 2011 Pennsylvania and FY 2012 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, 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.[4] All Plan projects have also been reviewed and approved by the TCICG for appropriate air quality code and analysis year.

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

CHAPTER 2

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 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/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 project is classified by the first year that the project is included in the regional emissions analysis or analysis year. The emissions estimates for a particular analysis year include all of the projects that are expected to be open to traffic by that analysis year.

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 sets 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, $PM_{2.5}$, and CO must be met. In the nine-county DVRPC planning area, governing SIPs are in place for ozone and CO in Pennsylvania and New Jersey. New Jersey also has adequate SIP budgets for $PM_{2.5}$.[5] 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 NOx.[6] 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.

Pennsylvania does not have an approved SIP 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-baseline" interim test, requires that emissions projected for each future analysis year be no greater than emissions in the "baseline" year established in the Final Rule. The baseline year for the annual $PM_{2.5}$ standard conformity test is 2002. The baseline year for the 24-hour $PM_{2.5}$ standard conformity test is 2008. 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, NOx, SOx, and NH_3. Once a SIP is implemented, 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 NOx, unless US EPA and the state determine that NOx is insignificant. US EPA also stated that VOCs, SOx, and NH_3 must be analyzed as well if US EPA or the state DEPs

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[5] US EPA has found the New Jersey Annual $PM_{2.5}$ Attainment SIP budgets adequate for transportation conformity purposes in New Jersey. The adequacy finding was published in the Federal Register on June 14, 2010.

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

determines that one or more of these precursors are significant contributors. There have been no findings of significance for any of the precursors (and also, no findings of insignificance for NOx). Thus, the only indirect $PM_{2.5}$ component considered in this conformity iteration is NOx.

$PM_{2.5}$ NAAQS have both annual and daily standards, whereas 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. On June 14, 2010, US EPA published the adequacy finding of $PM_{2.5}$ SIP budgets for the remaining New Jersey counties (75 FR 33614). The Final Rule states that 24-hour $PM_{2.5}$ nonattainment areas with approved Annual $PM_{2.5}$ SIP budgets must use those budgets to demonstrate transportation conformity for the 24-hour standard.[7] Therefore, in New Jersey, the Annual $PM_{2.5}$ standard budget test is employed to demonstrate $PM_{2.5}$ conformity for both the Annual and 24-hour standards. 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 New Jersey will be based on the same.

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

For this iteration of the conformity demonstration, DVRPC and WILMAPCO have jointly decided to use the appropriate "no-greater-than-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 the DVRPC Pennsylvania $PM_{2.5}$ emissions analyses and WILMAPCO planning areas.

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.

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

[7] US EPA published amendments to the Final Rule in the Federal Register (75 FR 14263) on March 24, 2010.

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)	
Annual Direct $PM_{2.5}$	2002 Baseline/ 2009 Budget ‡	998.2 (all counties)	341 (Burlington, Camden, and Gloucester)	105 (Mercer)
Annual Precursor NOx		59,346.0 (all counties)	17,319 (Burlington, Camden, and Gloucester)	5,323 (Mercer)
24-hour Direct PM2.5♦	2008 Baseline$^{\Omega}$/ 2009 Budget ‡	1.9 (all counties)	341 (Burlington, Camden, and Gloucester)	105 (Mercer)
24-hour Precursor NOx♦		90.7 (all counties)	17,319 (Burlington, Camden, and Gloucester)	5,323 (Mercer)

Source: DVRPC, 2011

Note: † $PM_{2.5}$ budgets in NJ 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 New Jersey Counties. The 2002 and 2008 baselines apply to the PA portions of the Philadelphia-Wilmington, PA-NJ $PM_{2.5}$ Nonattainment Areas. Baseline in PA is in Tons/July day.
♦ Final Rule guidance for 24-hour $PM_{2.5}$ Conformity (75 FR 56) requires that the Annual $PM_{2.5}$ budget test be used to demonstrate conformity for the 24-hour standard in nonattainment areas with Annual $PM_{2.5}$ budgets. 2008 24-hour $PM_{2.5}$

Analysis Year

For this conformity demonstration, the mobile source ozone emissions analysis years for VOCs and NOx are 2013 (near term year within five years of TIP adoption), 2020 (the interim year selected to keep all analysis years no more than ten years apart), 2030 (the second interim year selected to keep all analysis years no more than ten 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. To demonstrate conformity, projected ozone emissions in all analysis years must not exceed the established MVEBs in prior years.

In the New York-Northern New Jersey-Long Island, NY-NJ-CT $PM_{2.5}$ Nonattainment Area, the analysis years are 2013, 2020, 2030, and 2035. In the Philadelphia-Wilmington, PA-NJ-DE $PM_{2.5}$ Nonattainment Area, an additional year of 2040 is analyzed. 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. Since the horizon year of the Plans must also be analyzed, both WILMAPCO (2040) and DVRPC's (2035) 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 for the Annual $PM_{2.5}$ standard and 2008 baseline emissions results for the 24-hour $PM_{2.5}$ standard in the Pennsylvania portion of the Philadelphia-Wilmington, PA-NJ-DE $PM_{2.5}$

Nonattainment Area; 2) the 2009 budgeted emissions in the New Jersey portion of the Philadelphia-Wilmington, PA-NJ-DE $PM_{2.5}$ Nonattainment Area; and 3) the 2009 budgeted emissions for Mercer County in the New York-Northern New Jersey-Long Island, NY-NJ-CT $PM_{2.5}$ Nonattainment Area.

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.

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 the TCICG for the conformity demonstration.

Table 2. Projects Included in the Regional Emissions Analysis

Analysis Year	Project Set
2002 PA only (Annual $PM_{2.5}$ baseline)	All regionally significant highway and transit facilities, services, and activities in place by 2002; for $PM_{2.5}$ analysis only.
2008 PA only (24-hour $PM_{2.5}$ baseline)	All regionally significant highway and transit facilities, services, and activities in place by 2008; for $PM_{2.5}$ analysis.
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 NJ only ($PM_{2.5}$ budget)	$PM_{2.5}$ SIP budget year included to compare against future emissions analysis.
2013 (year within 5 years of TIP adoption)	**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 2013.
2020 (Interim year)	1.+2.+ **3.** Additional highway and transit projects that are scheduled to open between 2013 and 2020.
2030 (Interim year)	1.+2.+3.+ **4.** Additional highway and transit projects that are scheduled to open between 2020 and 2030.
2035 (DVRPC Plan horizon)	1.+2.+3.+4. **5.** Additional highway and transit projects that are scheduled to open between 2030 and 2035.
2040 (WILMAPCO Plan horizon, $PM_{2.5}$ in PA only)	**6.** Extrapolation of VMT between 2035 and 2040.

Source: DVRPC, 2011

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 2013O, in which case the project is identified as a regionally significant, nonexempt project, the emissions estimates of which are 1) included in the 2013 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 in which 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 Long-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. Air Quality 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	DVRPC AQ 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 tracked 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, 2011

<<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, 2011

Note: † 40 CFR 93 Sections 126 and 127.

CHAPTER 3

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 May 25, 2011, 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 2005 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 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.

In the spring of 2011, the Delaware River Joint Toll Bridge Commission (DRBJTC) announced plans to initiate a toll on the I-95 Scudders Falls Bridge. The DRJBC also announced a plan to raise tolls on all of their bridges in the region from $0.75 to $1.00 beginning on July 1, 2011. Both of these changes have been incorporated into this transportation conformity demonstration.

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, 2011

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 the 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 methodologies 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
60574	SEPTA	Paoli Transportation Center	2013
60629	SEPTA	Job Access and Reverse Commute	2013
74823	Philadelphia	Philadelphia Zoo Intermodal Center	2013
84642	SEPTA	Jenkintown Parking Garage	2020
87176	SEPTA	69th Street Intermodal Parking Garage	2013
T199	NJ Transit	Job Access and Reverse Commute	2013
G (Plan)	SEPTA	Rt 23/Rt 56 Light Rail Vehicle Purchase	2020

Source: DVRPC, 2010

TIP and Plan Amendments

A new iteration of conformity is triggered by an update to the FY 2012 to 2015 New Jersey TIP and a change to a regionally significant, nonexempt project in the FY 2011 to 2014 Pennsylvania TIP. 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. In this case, the New Jersey TIP is being updated and the DRJTBC is planning to add a toll to the previously untolled I-95 Scudders Falls Bridge, which is a substantial change to a nonexempt project in the Pennsylvania TIP. 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.

For both the Annual and 24-hour $PM_{2.5}$ standards in the New Jersey portions of the Philadelphia-Wilmington, PA-NJ-DE $PM_{2.5}$ Nonattainment Areas and New York-Northern New Jersey-Long Island, NY-NJ-CT $PM_{2.5}$ Nonattainment Areas, 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. Annual $PM_{2.5}$ emissions are determined by summing the monthly inventories. This sum is then tested against the Annual SIP budget to determine conformity.

Until 24-hour $PM_{2.5}$ SIP budgets are approved, conformity to the 24-hour $PM_{2.5}$ standard is demonstrated by meeting the Annual $PM_{2.5}$ SIP budget test. New Jersey DEP has determined that highest $PM_{2.5}$ emissions occur in the month of July, so when 24-hour $PM_{2.5}$ budgets are developed, conformity analysis for the 24-hour $PM_{2.5}$ standard will utilize daily VMT from a July day.

For the Pennsylvania portion of the Philadelphia-Wilmington, PA-NJ-DE $PM_{2.5}$ Nonattainment Areas, 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. Pennsylvania DEP has also determined that highest $PM_{2.5}$ emissions occur in the month of July, so conformity analysis for the 24-hour $PM_{2.5}$ standard uses daily VMT from a summer day.

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, NOx, 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.

CHAPTER 4

Conformity Determination

Travel Simulation Results

Travel simulation work began on May 25, 2011, 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 Pennsylvania portion of the Philadelphia-Wilmington, PA-NJ-DE $PM_{2.5}$ Nonattainment Area. Table 7 shows the monthly estimates for the New Jersey counties in accordance with the SIP for 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. New Jersey counties are divided into Mercer (New York-Northern New Jersey-Long Island Nonattainment Area) and Burlington, Camden, and Gloucester (aggregated into the Philadelphia-Wilmington Nonattainment Area). Table 8 includes the VMT estimates that are used in the ozone analysis.

For Pennsylvania, Annual $PM_{2.5}$ emissions are calculated using the average seasonal daily VMT values, and 24-hour $PM_{2.5}$ emissions are calculated using the average July daily VMT, as determined by TCICG consultation.

As previously mentioned, DVRPC must provide emissions analyses for the Pennsylvania counties in the region for the year 2040, in order to make the analysis years in the two MPO regions the same. Since DVRPC currently does not have board-approved population and employment projections for the region for the year 2040, DVRPC has performed an Interagency Consultation Group approved extrapolation of Vehicle Miles Traveled (VMT) for the region from the year 2035 to the year 2040. Those extrapolated VMT results were then processed and input into the proscribed MOBILE 6.2 air quality emissions model.

Table 6. Simulated Daily Travel Impacts for $PM_{2.5}$ Analysis for PA Portion of Philadelphia-Wilmington NAA

Analysis Year	State	Avg. Winter Daily VMT†	Avg. Spring Daily VMT†	Avg. Summer Daily VMT†	Avg. Fall Daily VMT†	Avg. July Daily VMT
2002 (Annual Baseline)	PA	62,773,700	67,036,500	69,734,700	67,638,600	-
2008 (24-hour Baseline)	PA	-	-	-	-	74,334,500
2013	PA	70,191,400	74,942,600	77,951,600	75,595,000	78,210,500
2020	PA	73,530,000	78,505,100	81,659,800	79,187,900	82,930,200
2030	PA	76,866,100	82,067,300	85,371,400	83,783,200	85,653,800
2035	PA	76,939,300	82,145,700	85,453,100	83,862,500	85,753,600
2040	PA	77,012,500	82,224,100	85,534,800	82,941,800	85,817,400

Source DVRPC, 2011

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

Annual and 24-hour $PM_{2.5}$ emissions for New Jersey are calculated using the average monthly daily VMT values in Table 7.

Table 7. Simulated Daily Travel Impacts for $PM_{2.5}$ Analysis for New Jersey Counties

Analysis Year	Counties	Avg. Monthly Daily VMT					
		Dec	Jan	Feb	Mar	Apr	May
2013	Mercer	10,169,200	9,396,200	9,815,600	10,158,200	10,486,300	10,773,700
	Burlington, Camden, Gloucester	32,242,700	29,670,600	30,986,000	32,079,700	33,064,100	33,981,400
2020	Mercer	10,514,700	9,715,600	10,148,800	10,503,100	10,842,700	11,139,700
	Burlington, Camden, Gloucester	33,375,600	30,709,800	32,072,300	33,204,300	34,223,100	35,173,500
2030	Mercer	11,084,500	10,241,200	10,699,900	11,073,300	11,429,800	11,743,700
	Burlington, Camden, Gloucester	34,872,700	32,074,300	33,502,900	34,686,800	35,751,400	36,746,400
2035	Mercer	11,088,500	10,244,900	10,703,700	11,077,300	11,433,900	11,747,900
	Burlington, Camden, Gloucester	34,889,600	32,090,000	33,519,100	34,703,600	35,768,900	36,764,200
		Jun	Jul	Aug	Sep	Oct	Nov
2013	Mercer	10,879,100	10,953,300	10,926,200	10,780,700	10,532,400	10,349,000
	Burlington, Camden, Gloucester	34,291,700	34,574,500	34,470,900	34,040,000	33,334,400	32,783,900
2020	Mercer	11,248,900	11,325,200	11,297,600	11,147,000	10,890,100	10,700,400
	Burlington, Camden, Gloucester	35,494,800	35,788,900	35,681,200	35,235,800	34,505,400	33,936,300
2030	Mercer	11,858,000	11,938,600	11,909,200	11,751,000	11,780,600	11,280,900
	Burlington, Camden, Gloucester	37,082,000	37,391,900	37,279,500	36,813,800	36,052,100	35,459,600
2035	Mercer	11,862,300	11,942,900	11,913,500	11,755,200	11,484,700	11,285,000
	Burlington, Camden, Gloucester	37,100,100	37,410,000	37,297,600	36,831,700	36,069,600	35,476,900

Source: DVRPC, 2011

Table 8. Simulated Daily Travel Impacts for Ozone Analyses

Analysis Year	DVRPC Area	Summer Condition (July Day)	
		Avg. VMT	Avg. Travel Speed (mph)
2013	Entire PA Subregion	82,213,000	30.3
	Entire NJ Subregion	47,784,800	33.7
2020	Entire PA Subregion	86,130,800	30.4
	Entire NJ Subregion	49,448,200	33.8
2030	Entire PA Subregion	90,042,600	30.5
	Entire NJ Subregion	51,769,100	33.6
2035	Entire PA Subregion	90,128,100	30.5
	Entire NJ Subregion	51,792,700	33.6

Source: DVRPC, 2011

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, NOx, and $PM_{2.5}$ must be less than the MVEBs established by the states. Having no budgets, $PM_{2.5}$ emissions levels in the Pennsylvania portion of the Philadelphia-Wilmington, PA-NJ-DE $PM_{2.5}$ Nonattainment Area must meet the appropriate "no-greater-than-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 2013, 2020, 2030, and 2035. These results are compared with the budgets to demonstrate conformity. The emissions analysis indicates that the DVRPC region will meet all of the current and proposed SIP MVEBs.

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 New Jersey, a governing SIP MVEB was found adequate for conformity purposes for $PM_{2.5}$ in June 2010 and 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 2013, 2020, 2030, and 2035 $PM_{2.5}$ emissions estimates.

In the Pennsylvania portion of 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 appropriate "no-greater-than-baseline" interim emissions test. Annual $PM_{2.5}$ emissions analyses are considered against the 2002 baseline for the interim test. Twenty-four hour $PM_{2.5}$ emissions analyses are considered against the 2008 baseline for the interim test. All applicable direct $PM_{2.5}$ sources and precursors (NOx) are tested for the 2013, 2020, 2030, 2035, and 2040 $PM_{2.5}$ emissions estimates.

WILMAPCO has adopted a conformity demonstration for the Annual and 24-hour $PM_{2.5}$ standards in March 2011, which relied on an analysis adopted on January 13, 2011. WILMAPCO will be reaffirming that demonstration by Council resolution in July 2011 as permitted by federal regulations (40 CFR93.122(g)).

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.

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.

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

		2008 SIP MVEB†	2009 SIP MVEB†	2013	2020	2030	2035
PA	Emissions from MOBILE 6.2	-	-	37.40	22.95	20.61	20.53
	Adjustments from Off-Network Calculation‡	-	-	-0.01	-0.01	-0.01	-0.01
	Estimated Total Emissions	61.09	-	37.39	22.94	20.60	20.52
NJ	Emissions from MOBILE 6.2	-	-	17.98	12.56	11.83	11.83
	Adjustments from Off-Network Calculation‡	-	-	0.00	0.00	0.00	0.00
	Estimated Total Emissions	-	25.98	17.98	12.56	11.83	11.83

Source: DVRPC, 2011

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. NOx Emission Analysis Results (Tons/July Day) †

		2008 SIP MVEB†	2009 SIP MVEB†	2013	2020	2030	2035
PA	Emissions from MOBILE 6.2	-	-	54.44	25.06	15.12	14.24
	Adjustments from Off-Network Calculation‡	-	-	-0.01	-0.01	-0.01	-0.01
	Estimated Total Emissions	108.78	-	54.43	25.05	15.11	14.23
NJ	Emissions from MOBILE 6.2	-	-	35.89	14.91	9.35	9.03
	Adjustments from Off-Network Calculation‡	-	-	0.00	0.00	0.00	0.00
	Estimated Total Emissions	-	63.66	35.89	14.91	9.35	9.03

Source: DVRPC, 2011

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	2013	2020	2030	2035	2040
		Baseline	SIP MVEB »	Estimated Emissions	Estimated Emissions	Estimated Emissions	Estimated Emissions	Estimated Emissions
Direct $PM_{2.5}$	DVRPC - PA*	998.2	-	495.2	406.8	399.8	394.8	394.8
	DVRPC - NJ; except Mercer» ‡	-	341	237	187	180	179	-
	Mercer County, NJ»	-	105	75	59	58	57	-
$PM_{2.5}$ Precursor (NOx)	DVRPC – PA*	59,346.0	-	19,692.7	9,012.9	5,428.2	5,164.2	5,168.2
	DVRPC - NJ; except Mercer» ‡	-	17,319	9,666	4,026	2,580	2,500	-
	Mercer County, NJ»	-	5,323	3,054	1,290	833	808	-

Source: DVRPC, 2011

Note: † Associated 2002 Baseline or 2009 MVEBs apply to all future analysis years. PA emissions are rounded off to the nearest tenth.
* Off-model adjustments have been made.
» NJ SIP MVEBs and the emissions results are rounded off to the nearest integer in accordance with the SIP.
‡ 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. **This budget test satisfies both $PM_{2.5}$ standards according to Final Rule guidance (75 FR 14263).**
» Results are for Mercer County only, which is the DVRPC New Jersey portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT PM2.5 Nonattainment Area. **This budget test satisfies both $PM_{2.5}$ standards according to Final Rule guidance (75 FR 14263).**

Table 12. 24-hour Direct $PM_{2.5}$ and NO_x Emission Analysis Results (Tons/Day) †

		2008	2013	2020	2030	2035	2040
		Baseline	Estimated Emissions	Estimated Emissions	Estimated Emissions	Estimated Emissions	Estimated Emissions
Direct $PM_{2.5}$	DVRPC – PA*	1.9	1.4	1.2	1.2	1.1	1.1
$PM_{2.5}$ Precursor (NOx)	DVRPC – PA*	90.7	52.2	24.0	14.5	13.7	13.7

Source: DVRPC, 2011

Note: † 2008 Baseline applies to all future analysis years. Emissions are rounded off to the nearest tenth.
* Off-model adjustments have been made.

Meeting the Conformity Criteria

Tables 9 through 12 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 13.

Table 13. 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 2013, 2020, 2030, 2035, and 2040 correspond to the near-term year within 5 years of TIP adoption, interim years within a 10-year frame, and the current Plan horizon years of DVRPC and WILMAPCO.
§93.106(a) (2)(i)	Does the plan quantify and document the demographic and employment factors influencing transportation demand?	Yes. The *Connections* 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, NOx, and CO satisfied as required by §93.118 and §93.119 for conformity determination?	Yes. MOBILE 6.2 VOCs and NOx 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 May 25, 2011, the start date of this conformity determination process.
	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 2011 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 (Chapter 3, Pages 18–19).
	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 (Chapter 3, Pages 18–19).
	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 the 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, one public meeting was 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 FY 2012 NJ TIP supplants the FY 2010 TIP The FY 2011 Pennsylvania TIP is a conforming TIP. The *Connections* Plan is the currently conforming plan.
§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. Projects contained in the 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 projects contained in the TIPs and the Plan result in less emissions than the applicable 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, 2011

CHAPTER 5

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 May 11, 2011, to assess the transportation conformity process, to advise on the timeline, and to determine the latest planning assumptions utilized. The second meeting was held on May 25, 2011, to review draft TIP project sets and associated AQ codes. The third meeting was held on June 20, 2011, 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, FHWA-NJ, NJDOT, NJ Transit, NJ DEP, PA DEP, PennDOT, and 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 WILMAPCO.

Public Participation

DVRPC opened a mandated public comment period on June 21, 2011, to receive comments 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 June 3, 2011. 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 accepted by fax at (215) 592-9125 and online at TIP-plan-comments@dvrpc.org. One public meeting/information session is scheduled for June 29, 2011, at the Cherry Hill, New Jersey, Public Library. The comment period closed on July 20, 2011, at 5 p.m. There were no comments submitted during the public comment period.

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, NOx, and $PM_{2.5}$ do not exceed the respective budgets and baselines 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 FY 2011 Pennsylvania TIP, the FY 2012 New Jersey TIP, and the DVRPC *Connections* Long-Range Plan 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 Annual and 24-hour $PM_{2.5}$ NAAQS in the Philadelphia-Wilmington, PA-NJ-DE $PM_{2.5}$ Nonattainment Area; and
- the Annual and 24-hour $PM_{2.5}$ NAAQS in the DVRPC portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT $PM_{2.5}$ Nonattainment Area; and
- the eight-hour CO NAAQS in the Philadelphia-Camden CO Maintenance Area; in the City of Burlington in Burlington County, New Jersey; and in the City of Trenton in Mercer County, New Jersey.

Abstract Page

Title: Transportation Conformity Demonstration: FY 2011 Pennsylvania TIP, FY 2012 New Jersey TIP, and *Connections* Long-Range Plan

Publication Number:	11050
Date Published:	July 2011
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 Plan, Transportation Improvement Program (TIP), State Implementation Plan (SIP), Wilmington Area Planning Council (WILMAPCO).
Abstract:	DVRPC demonstration of transportation conformity of its FY 2011 PA TIP, FY 2012 NJ TIP, and *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 through June 2011.

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