

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 NO_x 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 NO_x, 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, NO_x, 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. NO_x 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	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 (NO _x)	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 PM_{2.5} 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 (NO _x)	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.

