Transportation Conformity Demonstration

Connections 2045 Long-Range Plan,
FY2019 Pennsylvania TIP,
and Draft FY2020 New Jersey TIP

September 2019

DELAWARE VALLEY
dvrpc
REGIONAL
PLANNING COMMISSION

The Delaware Valley Regional Planning Commission is the federally designated Metropolitan Planning Organization for a diverse nine-county region in two states: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey.

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

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DVRPC's mission is to achieve this vision by convening the widest array of partners to inform and facilitate data-driven decision-making. We are engaged across the region, and strive to be leaders and innovators, exploring new ideas and creating best practices.

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DVRPC is funded through a variety of funding sources including federal grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), the Pennsylvania and New Jersey departments of transportation, as well as by DVRPC's state and local member governments. The authors, however, are solely responsible for the findings and conclusions herein, which may not represent the official views or policies of the funding agencies.

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Overview

Transportation conformity is the process by which metropolitan planning organizations (MPOs) or departments of transportation (DOTs) demonstrate that transportation projects included in a region's Long-Range Plan (Plan) or Transportation Improvement Program (TIP) do not cause new air quality violations, worsen existing violations, or delay timely attainment of the National Ambient Air Quality Standards (NAAQS). The transportation conformity process is required in areas that have been designated by the U.S. 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 Clean Air Act (CAA) section 175(a) maintenance plan. The transportation conformity requirements are still applicable for up to 20 years after a nonattainment area is redesignated to ensure that the region continues to meet the NAAQS.

A transportation conformity demonstration is required at least once every four years or when an MPO: (1) adopts a new Plan or TIP; or (2) amends, adds, or deletes a regionally significant, nonexempt project in a Plan or TIP. This conformity demonstration is required due to a new Fiscal Year (FY) 2020 TIP for New Jersey and the addition of regionally significant and nonexempt projects to the FY2019 TIP for Pennsylvania.

The Delaware Valley Regional Planning Commission (DVRPC) region includes a complex combination of nonattainment and maintenance areas for two of the NAAQS (ozone and fine particulate matter [$PM_{2.5}$]). The region's ozone nonattainment area encompasses the entire nine-county DVRPC region, while the $PM_{2.5}$ maintenance and nonattainment areas encompass various portions of the region. The region is required to demonstrate transportation conformity for each of these standards in each of the appropriate geographic areas covered by the nonattainment and maintenance areas.

This transportation conformity demonstration shows that the *Connections 2045* Long-Range Plan, FY2019-2022 Pennsylvania TIP, and Draft FY2020-2023 New Jersey TIP are following, or "conforming to," the State Implementation Plans (SIP) to meet the NAAQS.

This Executive Summary highlights DVRPC's conformity demonstration for:

Volatile Organic Compounds (VOCs) and Nitrogen Oxides (NO_x) meeting the 1997, 2008, and 2015 Eight-Hour Ozone NAAQS requirements in:

- the DVRPC portion of the Philadelphia–Wilmington–Atlantic City PA–NJ–MD–DE Ozone Nonattainment Area; and

Direct $PM_{2.5}$ and precursor NO_x meeting the 1997 Annual, 2006 24-Hour, and 2012 Annual $PM_{2.5}$ NAAQS requirements in:

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

- the DVRPC portion of the New York–Northern New Jersey–Long Island, NY–NJ–CT 24-Hour $PM_{2.5}$ Maintenance Area; and
- the Delaware County, PA Annual $PM_{2.5}$ Nonattainment Area.

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

Analysis Approach

Regional Emissions Analysis of Plan and TIP Projects

The federal Final Conformity Guidance (Final Rule, 40 Code of Federal Regulations [CFR] 93) stipulates that the emissions analysis of transportation plans and programs must model all regionally significant, nonexempt projects.

New Jersey and Pennsylvania have implemented SIPs that contain motor vehicle emissions budgets (MVEBs). Conformity to the SIPs is demonstrated when the modelled emissions of the projects in the Plan and TIPs are shown to be lower than the MVEBs. The federal Final Rule stipulates that each SIP is sovereign and that for a multistate MPO such as DVRPC, conformity applies separately to individual state portions of its planning area.

DVRPC uses the Motor Vehicle Emissions Simulator 2014b (MOVES 2014b) emissions model to demonstrate transportation conformity. MOVES 2014b is the latest US EPA emissions model and incorporates improvements in calculating nonroad equipment emissions from the MOVES 2014a model. MOVES 2014b does not significantly change the criteria pollutant emissions results of MOVES 2014a and therefore is not considered a new model for SIP and transportation conformity purposes.

Conformity Test

New Jersey and Pennsylvania have approved SIP MVEBs for the 1997 Eight-Hour Ozone Standard. The Final Rule requires that regions with existing MVEBs for a standard of the same pollutant (i.e., 1997 Eight-Hour Ozone and 2015 Eight-Hour Ozone) - must utilize the approved budget test to demonstrate conformity for the new standard. Therefore, DVRPC will utilize the 1997 Eight-Hour Ozone MVEBs in New Jersey and Pennsylvania to demonstrate conformity to the 1997, 2008, and 2015 Eight-Hour Ozone Standards.

The region also has approved SIP budgets for the 1997 and 2012 Annual, and 2006 24-Hour $PM_{2.5}$ standards in both states.

Analysis Years

To demonstrate conformity for ozone in the Philadelphia–Wilmington–Atlantic City Ozone Nonattainment Area, projected VOC and NO_x emissions in all analysis years must be below the SIP MVEBs for the given analysis years. VOCs and NO_x, which are heat-sensitive ozone precursors, are estimated for a typical summer week workday.

To demonstrate conformity for the $PM_{2.5}$ NAAQS, emissions are estimated for direct $PM_{2.5}$ and the $PM_{2.5}$ precursor chemical NO_x. The SIP budgets for $PM_{2.5}$ are expressed in terms of annual emissions; therefore, conformity analyses are conducted for annual $PM_{2.5}$ emissions.

In the Pennsylvania portion of the region, the analysis years are 2020, 2025, 2035, and 2045. Modelled emissions in all analysis years must not exceed the 2008 MVEB for ozone. For $PM_{2.5}$, modelled emissions must not exceed the 2017 MVEB for $PM_{2.5}$ in 2020 and the 2025 MVEB for analysis years 2025 and later. In New Jersey, all projects are tested against the 2009 MVEBs for ozone and the 2025 MVEBs for $PM_{2.5.}$ Because there are no projects in the FY2020 TIP that will be open to traffic in 2020, a 2020 analysis year is not necessary in New Jersey.

For this conformity demonstration, the mobile source emissions analysis years are identified in Table 1.

Table 1: Mobile Source Analysis Years

Year	Ozone	$PM_{2.5}$	Note
2020	√	√	2012 $PM_{2.5}$ Std. attainment date and near-term year (Pennsylvania only)
2025	√	√	$PM_{2.5}$ SIP budget year
2035	√	√	Year within 10 years of previous analysis
2045	√	√	DVRPC Plan horizon year

Source: DVRPC, 2019.

Findings

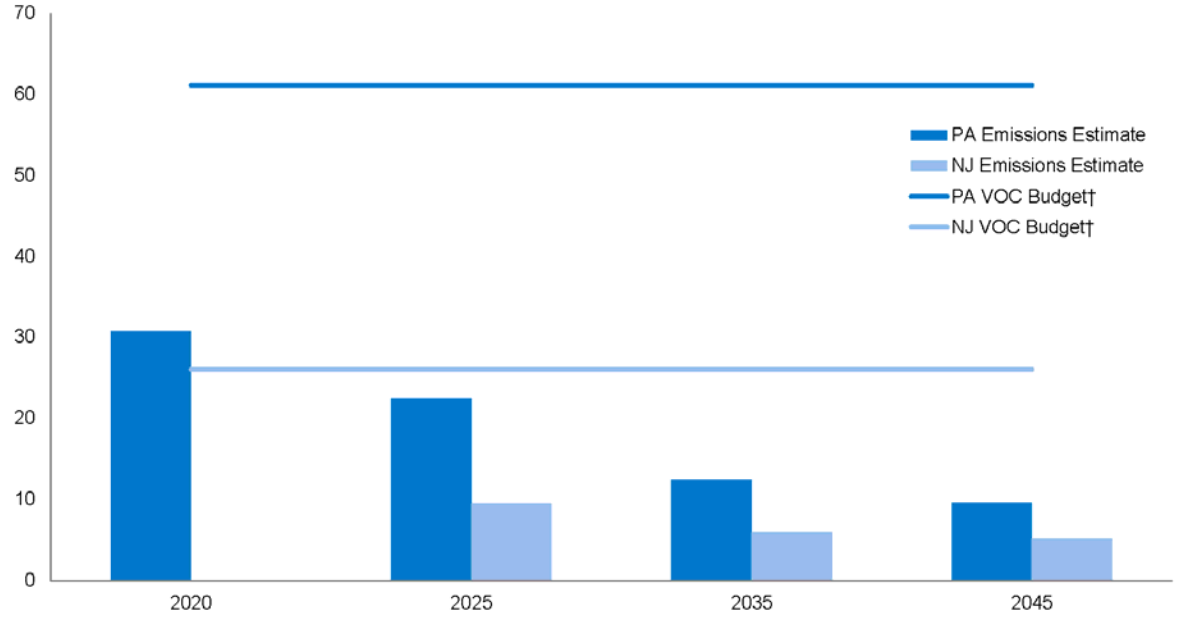
The DVRPC Plan and the TIPs are found to be in conformity with the current New Jersey and Pennsylvania SIPs under the CAA. The forecasted emissions levels of VOCs, NO_x, and $PM_{2.5}$ do not exceed the respective budgets established by the state department of environmental protection (state DEP) in accordance with the Final Rule under the current NAAQS governing applicable pollutants.

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

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

Figures 1 through 6 detail the emissions analysis results for transportation projects included in the Plan and TIPs for New Jersey and Pennsylvania. The data for these figures is detailed beginning on page 23. These estimates of emissions results confirm that the transportation projects in the Plan and TIPs conform to the respective SIP and Final Rule conformity requirements.

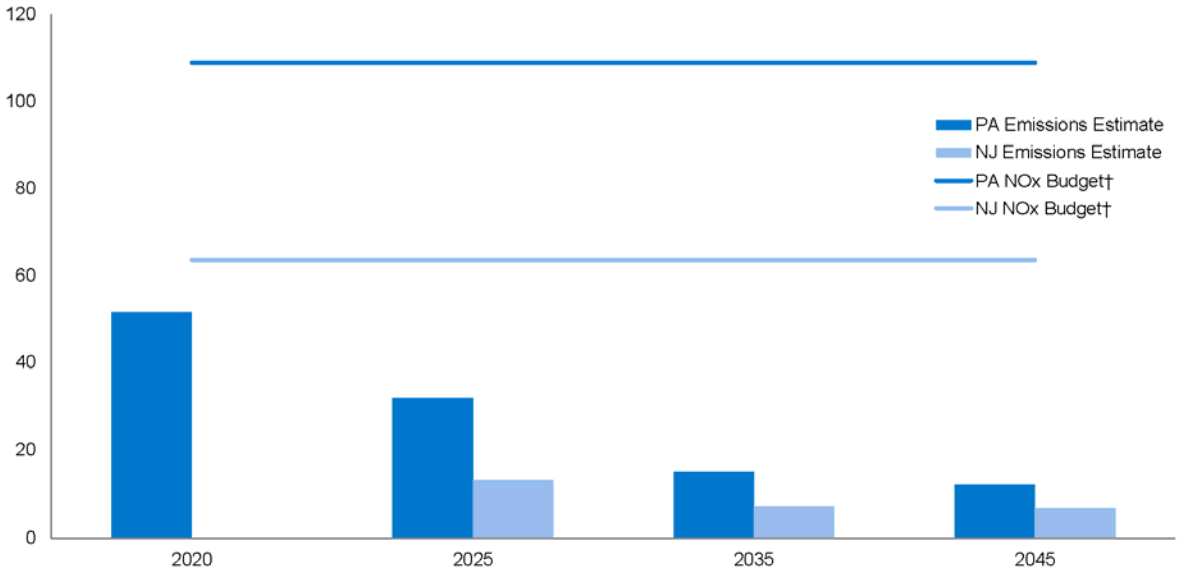
Figure 1: VOCs Emissions Analysis Results (Tons/Day)



Source: DVRPC, 2019.

†The most recent Eight-Hour Ozone SIP MVEBs (2008) will apply to all future analysis years.

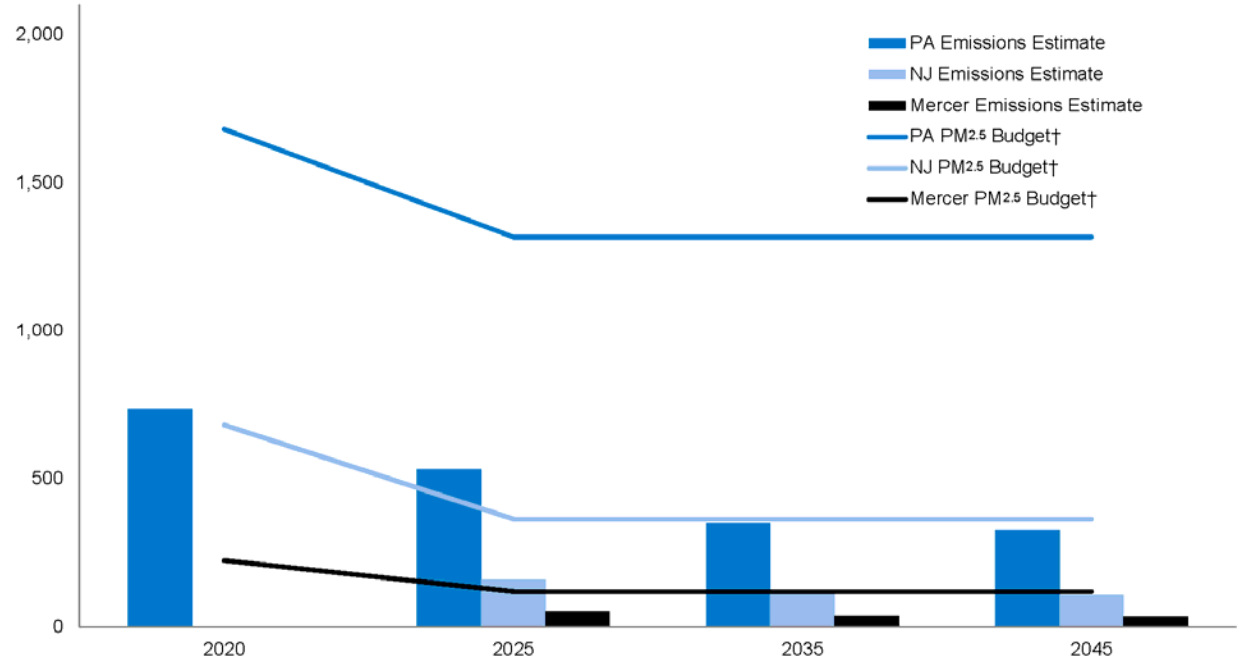
Figure 2: NO_x Emissions Analysis Results (Tons/Day)



Source: DVRPC, 2019.

†The most recent Eight-Hour Ozone SIP MVEBs (2008) will apply to all future analysis years.

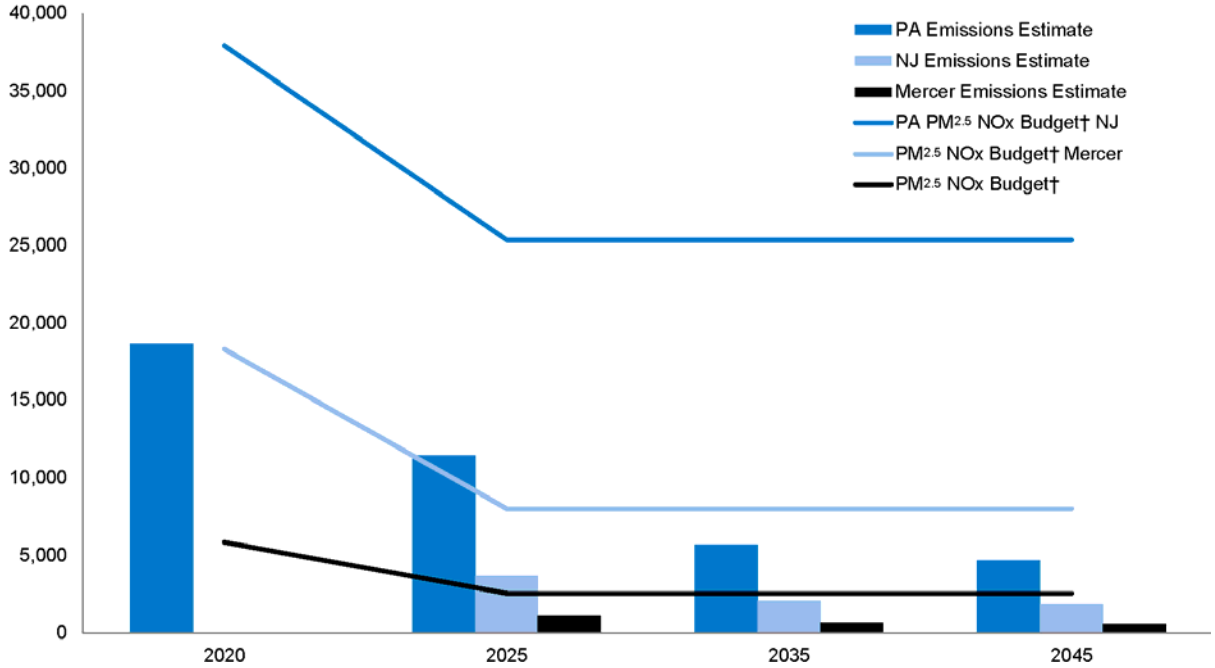
Figure 3: Annual and 24-Hour Direct $PM_{2.5}$ Emissions Analysis Results (Tons/Year)



Source: DVRPC, 2019.

†Associated MVEBs apply to all future analysis years.

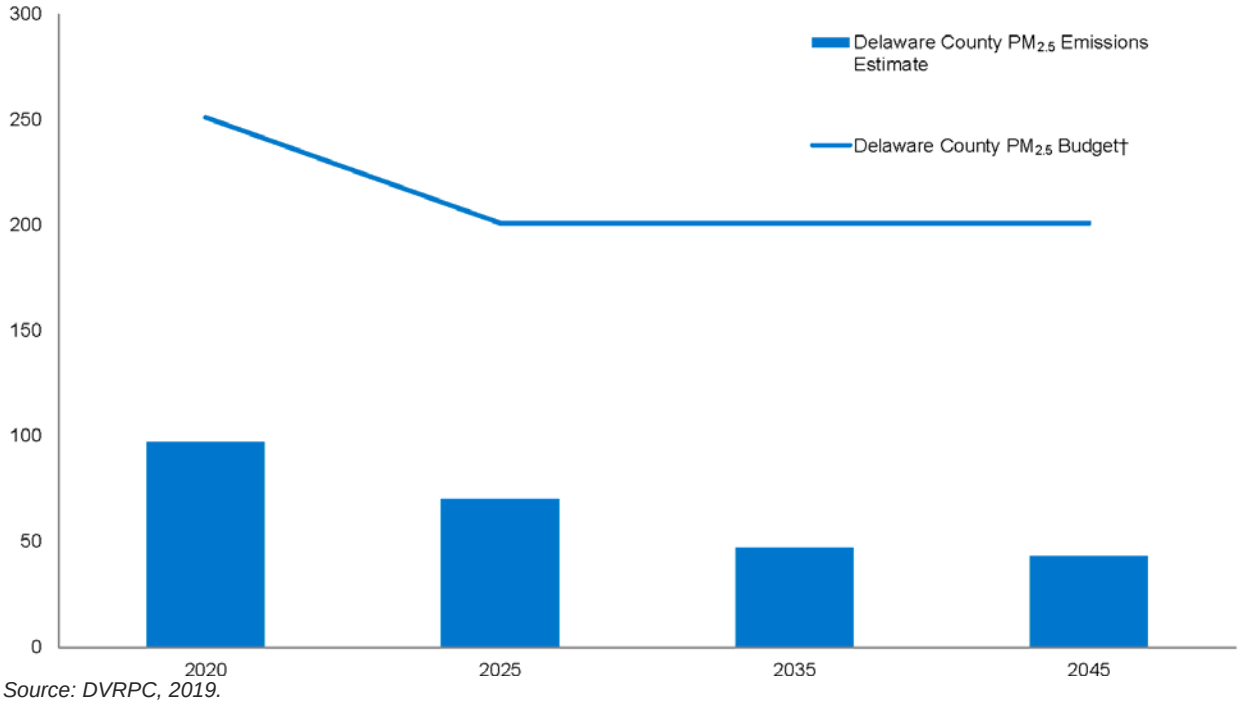
Figure 4: Annual and 24-Hour NO_x Precursor Emissions Analysis Results (Tons/Year)



Source: DVRPC, 2019.

†Associated MVEBs apply to all future analysis years.

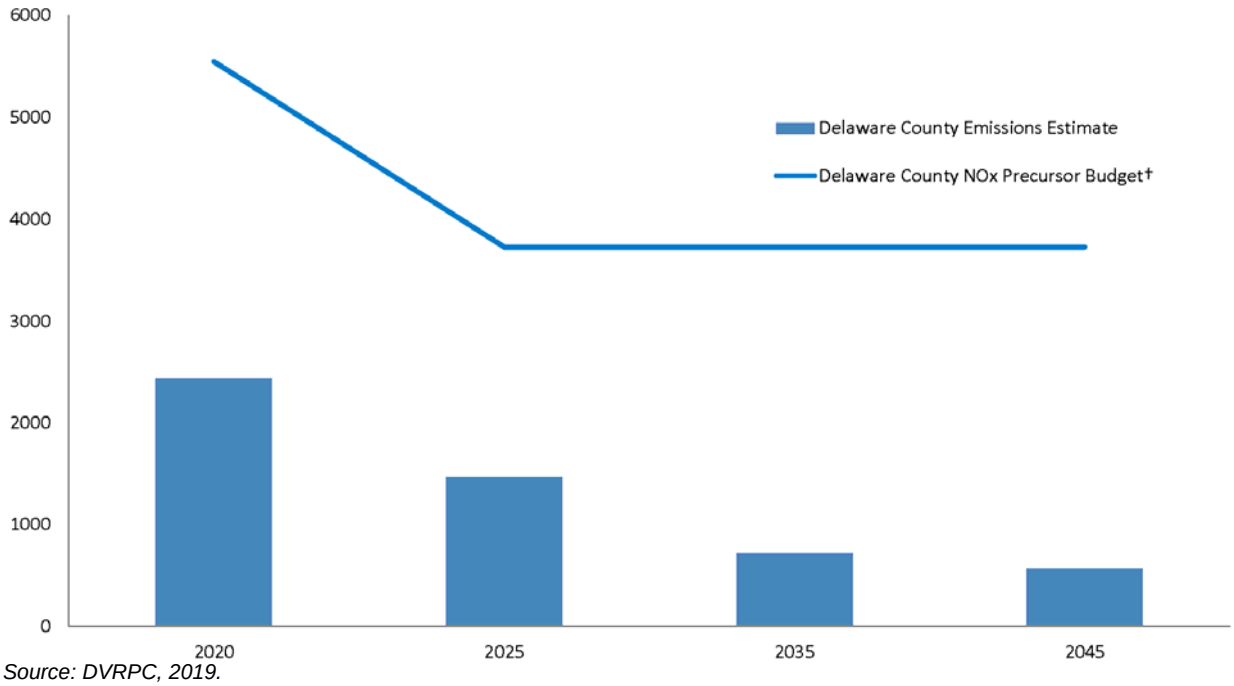
Figure 5: Delaware County Annual Direct $PM_{2.5}$ Emissions Analysis Results (Tons/Year)



Source: DVRPC, 2019.

†Associated MVEBs apply to all future analysis years.

Figure 6: Delaware County Annual NO_x Precursor Emissions Analysis Results (Tons/Year)



Source: DVRPC, 2019.

†Associated MVEBs apply to all future analysis years.

These findings demonstrate transportation conformity of the DVRPC *Connections 2045* Long-Range Plan, FY2019 Pennsylvania TIP, and Draft FY2020 New Jersey TIP, with the state SIPs and the Final Rule requirements under CAA, including:

- the 1997, 2008, and 2015 Eight-Hour Ozone NAAQS in the Philadelphia–Wilmington–Atlantic City PA–NJ–MD–DE Ozone Nonattainment Area;
- the 1997 Annual and 2006 24-Hour $PM_{2.5}$ NAAQS in the Philadelphia–Wilmington, PA–NJ–DE $PM_{2.5}$ Maintenance Area;
- the 1997 Annual and 2006 24-Hour $PM_{2.5}$ NAAQS in the DVRPC portion of the New York–Northern New Jersey–Long Island, NY–NJ–CT $PM_{2.5}$ Maintenance Area; and
- the 2012 Annual $PM_{2.5}$ Delaware County Nonattainment Area.

CHAPTER 1: Introduction

Overview

This report documents the demonstration of transportation conformity for the DVRPC *Connections 2045* Long-Range Plan, FY2019 Pennsylvania TIP, and Draft FY2020 New Jersey TIP with the respective SIPs and applicable NAAQS requirements under the CAA, as amended.

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

VOCs and NO_x meeting the 1997, 2008, and 2015 Eight-Hour Ozone NAAQS requirements in:

- the DVRPC portion of the Philadelphia–Wilmington–Atlantic City PA–NJ–MD–DE Ozone Nonattainment Area; and

Direct $PM_{2.5}$ and precursor NO_x meeting the 1997 Annual, 2006 24-Hour, and 2012 Annual $PM_{2.5}$ NAAQS requirements in:

- the DVRPC portion of the Philadelphia–Wilmington, PA–NJ–DE Annual $PM_{2.5}$ Maintenance Area;
- the DVRPC portion of the Philadelphia–Wilmington, PA–NJ–DE 24-Hour $PM_{2.5}$ Maintenance Area;
- the DVRPC portion of the New York–Northern New Jersey–Long Island, (NY–NJ–CT) Annual $PM_{2.5}$ Maintenance Area;
- the DVRPC portion of the New York–Northern New Jersey–Long Island, NY–NJ–CT 24-Hour $PM_{2.5}$ Maintenance Area; and
- the Delaware County, PA Annual $PM_{2.5}$ Nonattainment Area.

In July 2013, the US EPA revoked the 1997 Ozone Standard with the publication of the Implementation Rule for the 2008 Ozone Standard. In February 2018, the District of Columbia Court of Appeals ruled in the case of *South Coast Air Quality Management District v. EPA* that the implementation of this revocation of the standard violated the CAA. Subsequent court rulings and US EPA guidance declared that states with SIP budgets whose 1997 Ozone Nonattainment area are contained within the 2008 Ozone Nonattainment area meet the 1997 conformity requirements by demonstrating conformity to the 2008 standard.

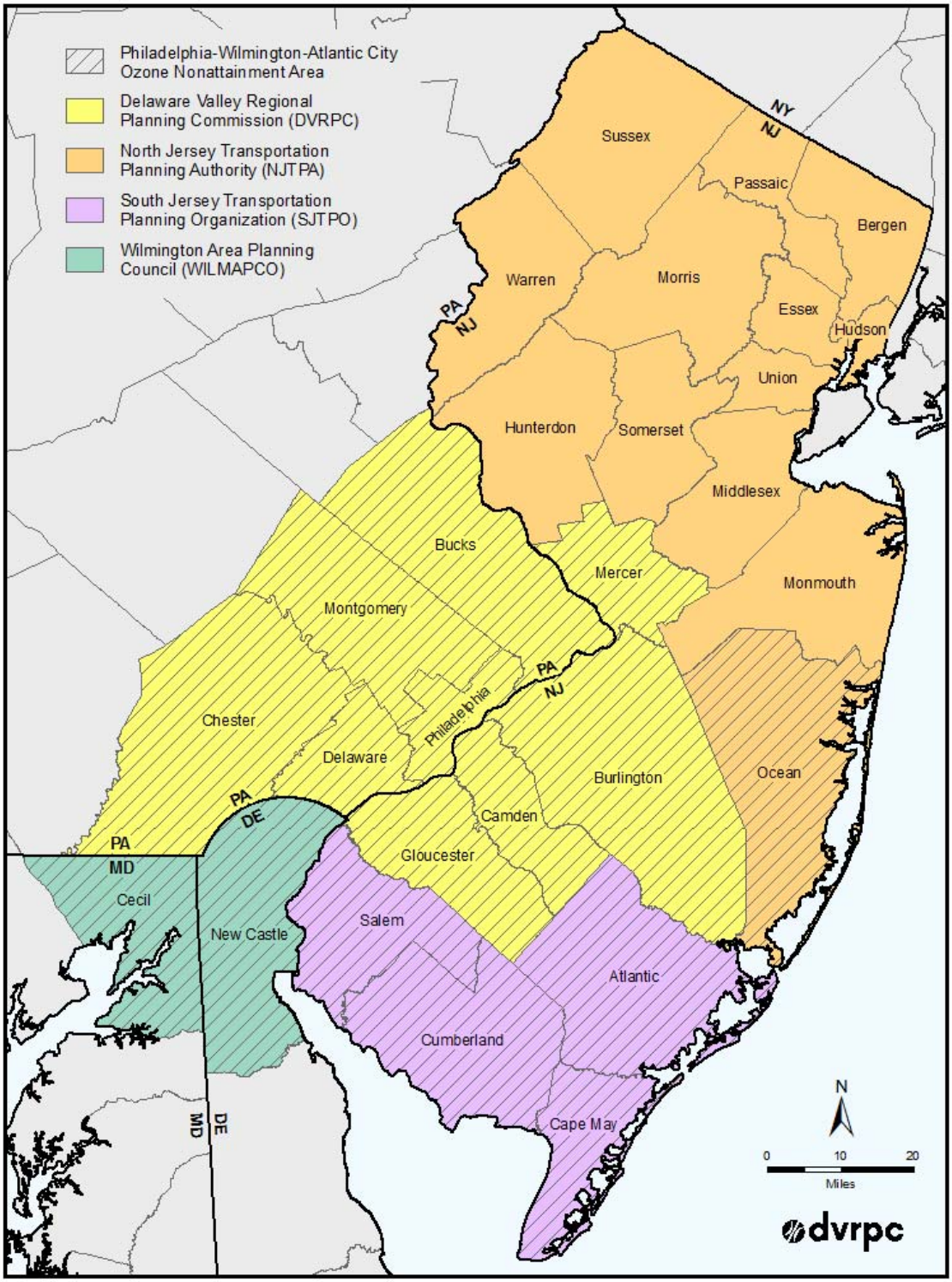
On August 24, 2016, the US EPA revoked the 1997 Annual $PM_{2.5}$ Standard. The DVRPC region was in maintenance of this standard and although DVRPC is not required to demonstrate conformity to this standard due to this action, DVRPC is affirming that this conformity finding does also demonstrate transportation conformity to the revoked 1997 $PM_{2.5}$ NAAQs, as well as to the 2006 and 2012 $PM_{2.5}$ NAAQs.

The DVRPC planning area also includes former carbon monoxide (CO) maintenance areas for portions of the cities of Philadelphia, Burlington, Camden, and Trenton in New Jersey and Pennsylvania. These areas have achieved their 20-year maintenance plans (New Jersey on July 10, 2016 and Pennsylvania on December 4, 2017) and are no longer required to demonstrate conformity for CO.[1]

Figures 7 and 8 detail the current ozone and $PM_{2.5}$ nonattainment and maintenance areas that are relevant to the DVRPC region.

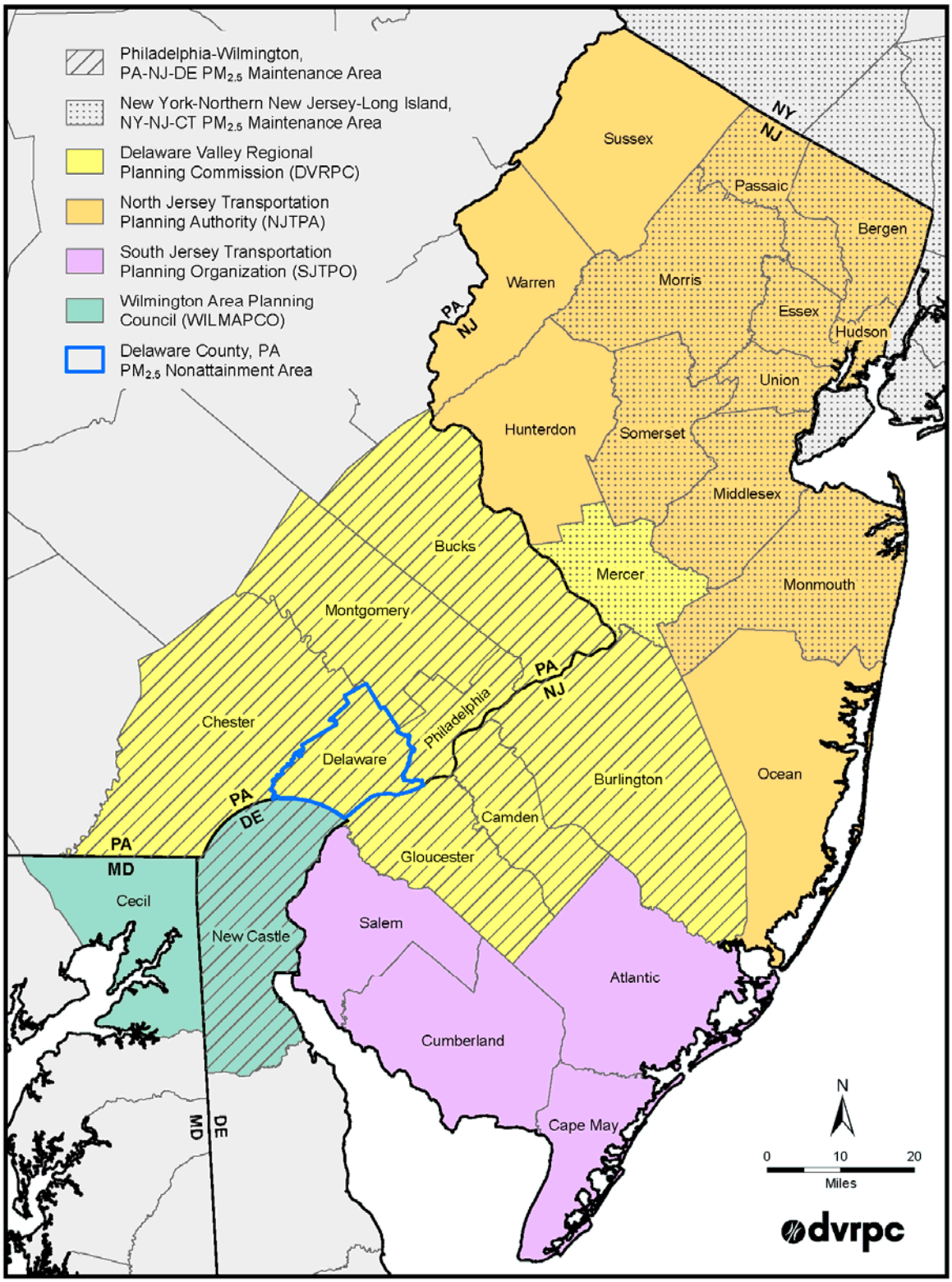
[1] *Transportation Conformity Guidance for Areas Reaching the End of the Maintenance Period* , EPA-420-B-14-093

Figure 7: Philadelphia–Wilmington–Atlantic City Eight-Hour Ozone Nonattainment Area



Source: DVRPC, 2019.

Figure 8: DVRPC Annual and 24-Hour $PM_{2.5}$ Maintenance and Nonattainment Areas



Source: DVRPC, 2019.

NAAQS, Nonattainment, and Maintenance Areas

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

The US EPA has set NAAQS for several principal air pollutants, which are called criteria pollutants. The NAAQS criteria pollutants include ozone, CO, coarse and fine particulate matter (PM_{10} and $PM_{2.5}$, respectively), sulfur dioxide, NO_x, and lead.

At the state level, the SIP represents the state's roadmap to meet or "attain" air quality standards contained in the NAAQS. Implemented SIPs contain an 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 multistate MPO such as DVRPC, conformity applies separately to individual state portions of its planning area under respective SIPs.

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

Ozone is a photochemical oxidant and a major component of smog. Ozone is not emitted directly into the air, but is formed through complex chemical reactions between precursor emissions of VOCs and NO_x in the presence of sunlight. 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.

In October 2015, the US EPA strengthened the Eight-Hour Ozone Standard to 0.070 parts per million (ppm) from 0.075 ppm (80 FR 65292). The US EPA finalized the nonattainment areas for this standard in June 2018. The entire nine-county DVRPC region has been designated as part of the Philadelphia–Wilmington–Atlantic City Ozone Nonattainment Area for the 2015 ozone NAAQS.

Particulate matter (PM) includes both solid particles and liquid droplets found in air. Many man-made 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 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 deep in 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.

$PM_{2.5}$ 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, NO_x, sulfur oxides (SO_x), and ammonia (NH_3).

The $PM_{2.5}$ NAAQS include an annual standard set at 12 µg/m^3 and a 24-hour standard of 35 µg/m^3. Areas need to meet both standards (24-hour and annual) to be considered in attainment of the $PM_{2.5}$ NAAQS.

The DVRPC region is part of a complex combination of two $PM_{2.5}$ maintenance areas and a stand-alone county nonattainment area. Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in Pennsylvania; and Burlington, Camden, and Gloucester counties in New Jersey; along with New Castle County in Delaware, are collectively designated as the Philadelphia–Wilmington, PA–NJ–DE $PM_{2.5}$ Maintenance Area, which covers three states, two MPOs, and nine counties for the 1997 Annual and 2006 24-Hour $PM_{2.5}$ standards. Mercer County is part of another nonattainment area titled the New York–Northern New Jersey–Long Island, NY–NJ–CT $PM_{2.5}$ Maintenance Area, which covers three states, nine MPOs, and 21 counties. Delaware County, Pennsylvania, was designated as a stand-alone nonattainment area in December 2014 for not attaining the 2012 Annual $PM_{2.5}$ NAAQS.

Delaware County $PM_{2.5}$ Nonattainment Area

In December 2016, the US EPA published a "clean data determination" for the Delaware County $PM_{2.5}$ Nonattainment Area (81 FR 89868). This determination indicates that Delaware County has met the 2012 $PM_{2.5}$ Standard by the 2020 Attainment Date. The Pennsylvania DEP submitted a redesignation request and maintenance plan for this nonattainment area in January 2019 and the US EPA proposed approval of these plans on July 15, 2019. When the approval of these plans is finalized, Delaware County will be re-classified as a maintenance area for $PM_{2.5.}$

The attainment status for each of the criteria pollutants can be viewed at: www.epa.gov/green-book. Detailed information on the attainment status for each region can be viewed at: www.epa.gov/air-quality-implementation-plans/approved-air-quality-implementation-plans.

Transportation Conformity

The CAA section 176(c) (42 US Code [U.S.C.] 7506(c)) requires that federally funded highway and transit project activities "conform to" state air quality goals found in SIPs. This process ensures that transportation and air quality agencies are consulting 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 US EPA as nonattainment or maintenance areas. A transportation conformity demonstration is required at least once every four years; or when an MPO adopts a new Plan or TIP; or amends, adds, or deletes a regionally significant, nonexempt project in a Plan or TIP.

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 U.S. Department of Transportation 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 Rule under the CAA, including 40 CFR Part 93, as revised, and applies to ozone and $PM_{2.5}$. 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. 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.

CHAPTER 2: Conformity Demonstration Overview

DVRPC Plan and TIPs

The New Jersey and Pennsylvania TIPs are staged, multiyear, intermodal programs of transportation projects covering the nine 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 Plan and TIP project descriptions have been reviewed and approved by DVRPC's Transportation Conformity Interagency Consultation Group (TCICG) for appropriate Air Quality (AQ) code and analysis year.

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

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

Exempt Project: a project listed in Table 2 or Table 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; and

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

The *Connections 2045* Long-Range Plan, adopted in October 2017, 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 2045* Plan includes over $65 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 it also includes new major regional transportation projects to achieve its goals and objectives. The Plan 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 federal 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.[2]

The CAA requires that, in nonattainment or maintenance areas, all regionally significant and nonexempt projects included in a Plan or TIP on principal arterials and higher classifications—that is, those that can impact regional air quality—meet the conformity requirements established in the Final Rule. DVRPC must identify these projects in the Plan and TIPs and conduct an emissions analysis on those projects in order to demonstrate that the projects included in the Plan and TIPs do not worsen air quality or inhibit the region's progress toward meeting the NAAQS.

The project set includes all those projects in the Plan, those in the current TIP, and those that have been introduced in previous TIPs

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

but are not yet completed. Each project is classified by the first year that the project is included in the regional emissions analysis, also known as the 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 year.

DVRPC AQ Code

For all Plan and TIP projects, an 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 a five-character alphanumeric AQ code that begins with a four-digit analysis year followed by the letter “M” to indicate that it was included in the Travel Demand Model (TDM). For instance, a Plan or TIP project may have an AQ code of 2025M, in which case the project is identified as a regionally significant, nonexempt project, the emissions estimates of which are (1) included in the 2025 and all subsequent future analysis years, and (2) performed using the TDM 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 2 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 AQ code for each project is shown in the respective Plan and TIP documents.

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 assigned AQ codes in the Plan and the TIPs.

Table 2: AQ Codes for Projects in the Plan and TIPs

	Exempt Project Category†	AQ Code
Safety Projects	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
Mass Transit Projects	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, fare boxes, 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
Air Quality Projects	Continuation of ridesharing and vanpooling promotion activities at current levels	A1
	Bicycle and pedestrian facilities	A2
Other Projects	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
No Regional Emissions Analysis Required	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	Projects determined to be "Not Regionally Significant" and do not fit into an exempt category	NRS
Study and Development (New Jersey Only)	Project in the Study and Development Program expected to result in an exempt project	SDX
	Project in the Study and Development Program expected to result in a nonexempt project	SDN

Source: DVRPC, 2019.

†40 CFR 93 Sections 126 and 127.

Analysis Year

Required analysis years include SIP budget years, designated NAAQS attainment dates, and plan horizon years. All other analysis years must be no more than 10 years apart.

The year 2020 is a required analysis year in the region because it is the attainment date of the 2015 Ozone NAAQs and the 2012 Annual $PM_{2.5}$ NAAQS. Since the first year that the project is open to traffic determines the project's analysis year and 2020 is the first year of the Draft FY2020 TIP for New Jersey, no new projects included in that TIP will be open to traffic by 2020, which makes that analysis year unnecessary for the New Jersey TIP. Since the FY2019 TIP for Pennsylvania contains projects that are scheduled to open to traffic by 2020, that analysis year is included in this determination for the Pennsylvania portion of the region. The years 2025 ($PM_{2.5}$ SIP budget years in both states) and 2045 (the Plan horizon year) are required analysis years in both states. Projects that were completed under previous TIPs are already incorporated into the TDM. The mobile source emissions analysis years are identified in Table 3.

Table 3: Mobile Source Analysis Years

Year	Ozone	$PM_{2.5}$	Note
2020 (PA only)	√	√	2012 $PM_{2.5}$ Std. and 2015 Ozone attainment date
2025	√	√	$PM_{2.5}$ SIP budget year
2035	√	√	Year within 10 years of previous analysis
2045	√	√	DVRPC Plan horizon year

Source: DVRPC, 2019.

Table 4 describes the project sets that are considered in each future-year analysis. All analysis years, projects, and activities identified in Table 4 have been reviewed and approved by the TCICG for the conformity demonstration.

Table 4: Projects Included in the Regional Emissions Analysis

Analysis Year	Project Set
2020 (Attainment date for the 2012 $PM_{2.5}$ and 2015 Ozone Standard) for PA only	All regionally significant highway and transit facilities, services, and activities currently in place and All regionally significant highway and transit projects that are scheduled to open in 2019.
2025 ($PM_{2.5}$ budget years and interim year)	All regionally significant highway and transit projects in the 2020 model network and Additional highway and transit projects that are scheduled to open from 2020 to 2024.
2035 (Interim year)	All regionally significant highway and transit projects in the 2025 model network and Additional highway and transit projects that are scheduled to open from 2025 to 2034.
2045 (DVRPC Plan horizon year)	All regionally significant highway and transit projects in the 2035 model network and Additional highway and transit projects that are scheduled to open from 2035 to 2044.

Source: DVRPC, 2019.

Emissions Analysis

Once the regionally significant and nonexempt projects in the Plan and TIPs are identified and analysis years are assigned, 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.

Plan and TIP projects are coded into the DVRPC TDM (TIM 2.0). The TDM represents the regional transportation network and uses inputs such as population, employment, and land use data to develop estimates for trip length, vehicle miles traveled (VMT), and traffic volumes on the transportation network. The model includes the base transportation network of roads and transit projects that have been constructed, and new networks are built to include projects from the Plan and TIPs according to the projects' analysis years.

Outputs of the TDM are then processed and entered into the emissions estimation model, MOVES 2014b. The MOVES model will then take the TDM outputs, information on meteorology, fuel information, data on vehicle types and vehicle populations, and other critical inputs to develop a projected emissions estimate for a given analysis year and pollutant, which is then compared against SIP MVEBs to demonstrate conformity.

Latest Planning Assumptions

The Final Rule requires that the most current available planning assumptions be used in determining transportation conformity. In addition to the Plan and TIP projects that are included in the conformity analysis, planning assumptions, such as population and employment estimates, transit and toll road policies, and land use assumptions are critical inputs to the TDM. Planning assumptions, as well as the list of Plan and TIP projects, are reviewed and approved by the TCICG before DVRPC begins the regional emissions analysis.

The planning assumptions and project lists used in this demonstration are the latest and most current assumptions available as of May 23, 2019. This date functions as the "start of analysis" dates for the conformity determination in both states.

Population and Employment Estimates

The population and employment estimates used in this conformity determination are the latest available at the traffic analysis zone (TAZ) level. Population forecasts were adopted by the DVRPC Board in July 2016, and employment forecasts were adopted in October 2016. These estimates include forecasts for the Plan horizon year of 2045 and can be reviewed in *Regional, County, and Municipal Population Forecasts, 2015–2045* (August 2016, DVRPC publication number ADR022) and *Regional, County, and Municipal Employment Forecasts, 2015–2045* (October 2016, DVRPC publication number ADR023).

Transit and Toll Road Policies

As part of the latest planning assumptions, current transit operations policies and road toll structures are considered. The transit person trips produced by the modal split component of the DVRPC TDM 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 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; 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 2015 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 Plan and TIPs. Table 5 details all transit operators included in the transit network and their operational assumptions.

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

Table 5: 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 year 2015 dollars	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 Area Rapid Transit		
Krapf's Coaches		

Source: DVRPC, 2019.

Note: SEPTA = Southeastern Pennsylvania Transportation Authority; NJ Transit = New Jersey Transit; DRPA =Delaware River Port Authority; PATCO = Port Authority Transit Corporation.

Travel Demand Simulation

TIM 2.0 has been validated following FHWA guidance and features an expanded geography to improve travel simulation within, through, and across the region. The previous DVRPC TDM only included data on the nine-county DVRPC region. The current model includes detailed transportation network data on the DVRPC region, plus less detailed information on the transportation network in the 16 counties surrounding the DVRPC region. The current DVRPC TDM meets the federal transportation authorization and planning requirements, as well as requirements included in the CAA and the Final Rule.

DVRPC's TDM is a four-step process that ultimately assigns travel patterns among and within TAZs and modes of transportation using the built transportation networks, along with the planned highway and transit networks described by the Plan and the TIPs. Travel patterns and modal splits are then run through a postprocessor in preparation for emissions analysis by MOVES 2014b.The TCICG has reviewed and approved DVRPC's travel demand modeling process.

Emissions Model

The CAA requires the US EPA to regularly update emissions models. In 2009, the US EPA required that the MOVES model become the official emissions estimation model used for SIP development and transportation conformity determinations. The MOVES family of models estimates on-road mobile emissions based on an operational mode that accounts for different driving patterns and emissions profiles from various vehicle types. Beginning in October 2016, MPOs and state DOTs were required to use the MOVES 2014 emissions model to demonstrate transportation conformity; MOVES 2014 has subsequently been updated to the MOVES 2014b emissions model that is used for this conformity determination. For a detailed description of the MOVES model, please visit: www.epa.gov/otaq/models/moves/index.htm.

Conformity Tests

The DVRPC region must demonstrate transportation conformity for ozone and $PM_{2.5}$, and governing SIPs are in place for these pollutants in New Jersey and Pennsylvania. DVRPC utilizes the budget test to demonstrate conformity using applicable SIP budgets.

The DVRPC region was designated as a marginal nonattainment area for the 2015 Ozone Standard on June 4, 2018. Implementation guidance for this standard was released by the US EPA in December 2018 and this conformity determination was conducted following the 2015 Eight-Hour Ozone NAAQS implementation guidance (83 FR 62988).

DVRPC is using the 2008 Ozone SIP Budget in Pennsylvania and 2009 Ozone SIP Budget in New Jersey. These budgets were approved by the US EPA for conformity purposes in February 2011 and May 2009, respectively. All ozone budgets have been established by the state DEPs using MOBILE 6.2. The regional emissions analysis for ozone was conducted using the MOVES model (version 2014b). Analysis is conducted for ozone emissions for a typical summer work weekday.

The US EPA has approved maintenance plans for both the 1997 Annual and 2006 24-Hour $PM_{2.5}$ standards in the New Jersey and Pennsylvania counties in the DVRPC region (approved by the US EPA in September 2013 and April 2015, respectively). Both of these state SIPs contain MVEBs for direct $PM_{2.5}$ and precursor NO_x to be used to demonstrate transportation conformity. The county-level $PM_{2.5}$ budget contained in the appendix of the Pennsylvania maintenance plan has been approved to serve as the MVEB for the Delaware County $PM_{2.5}$ Nonattainment Area. All $PM_{2.5}$ MVEBs are expressed in tons of emissions per year for both the annual and 24-hour standards.

The US EPA has ruled that exhaust and brake/tire wear must be included in the regional analysis of direct $PM_{2.5}$ emissions but has ruled that fugitive road dust does not need be included in this analysis in the DVRPC region. 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), the US EPA has identified four potential transportation-related $PM_{2.5}$ precursors: VOCs, NO_x, SO_x, and NH_3. NO_x must be included in the $PM_{2.5}$ precursor analysis unless it has been determined that NO_x emissions are not significantly contributing to regional $PM_{2.5}$ formation. Neither the New Jersey nor Pennsylvania $PM_{2.5}$ SIPs demonstrate that any of the identified precursors, aside from NO_x, are contributing to regional $PM_{2.5}$ formation. Thus, the only indirect $PM_{2.5}$ component analyzed in this conformity iteration is NO_x.

Tables 6–8 show governing MVEBs to be utilized in this iteration of conformity demonstration.

Table 6: Ozone Emissions Budgets (Tons/Day)

Pollutant	Budget	Pennsylvania Subregion (tons/day)	New Jersey Subregion (tons/day)
VOCs	2008 Budget (tons per day)	61.09 (all counties)	-
	2009 Budget (tons per day)	-	25.98 (all counties)
NO_x	2008 Budget (tons per day)	108.78 (all counties)	-
	2009 Budget (tons per day)	-	63.66 (all counties)

Source: DVRPC, 2019.

Table 7: New Jersey $PM_{2.5}$ Emissions Budgets (Tons/Year) †

Pollutant	Budget	Burlington, Camden, and Gloucester counties (tons/year)	Mercer County (tons/year)
Annual and 24-Hour Direct $PM_{2.5}$♦	2025 Budget (tons per year)	363	119
Annual and 24-Hour Precursor NO_x♦		8,003	2,551

Source: DVRPC, 2019.

Table 8: Pennsylvania $PM_{2.5}$ Emissions Budgets (Tons/Year) †

Pollutant	Budget	Pennsylvania Subregion (tons/year)	Delaware County (tons/year)
Annual and 24-Hour Direct $PM_{2.5}$♦	2017 Budget (tons per year)	1,679	251
Annual and 24-Hour Precursor NO_x♦		37,922	5,544
Annual and 24-Hour Direct $PM_{2.5}$♦	2025 Budget (tons per year)	1,316	201
Annual and 24-Hour Precursor NO_x♦		25,361	3,730

Source: DVRPC, 2019.

†$PM_{2.5}$ budgets are rounded off to the nearest integer in accordance with the SIP.
♦Both state SIP budgets for Annual and 24-Hour $PM_{2.5}$ are the same value expressed in tons/year.

CHAPTER 3: Regional Emissions Analysis

Travel Demand Simulation Results

Quantitative analyses for this iteration of transportation conformity determination for the DVRPC region began on May 23, 2019. All planning assumptions utilized in this demonstration are the latest and most current as of that date. The TDM analysis includes all regionally significant and nonexempt projects from the *Connections 2045* Long-Range Plan, the amended FY2019 TIP for Pennsylvania, and the Draft FY2020 TIP for New Jersey segregated into networks according to the anticipated date that the facilities will be open to traffic.

Results from the TDM, including speed distribution, VMT by vehicle type, road-type distribution, ramp fraction, VMT by day and month, and VMT by hour, were input into the MOVES 2014b emissions analysis model. These input files are provided to the US EPA for review and are available upon request.

For ozone analysis, a second speed distribution is performed before being analyzed by the MOVES 2014b model. The postprocessor applies a factor to the assigned volumes from the TDM that increases the annual average weekday volume to an average July weekday volume (these factors vary by county and functional class). This speed distribution is then organized into a MOVES-formatted input file, and the daily speed distribution is used for ozone emissions analysis to determine VOC and NO_x emissions estimates for a typical summer work weekday.

Emissions Estimate Results

Mobile source emissions estimates are outputs of the MOVES 2014b model. The regional emissions analysis must meet all conformity tests in the Final Rule. Specifically, emissions of VOCs, NO_x, and $PM_{2.5}$ must be less than the MVEBs established by the states.

Tables 9 and 10 present the results of these calculations for the transportation conformity simulation for the critical ozone precursors of VOCs and NO_x. The Final Rule requires that until MVEBs are established for the 2008 or 2015 Eight-Hour Ozone NAAQS, the approved SIP MVEBs for the 1997 Ozone Standard are to be used to demonstrate conformity.

Table 9: VOCs Emissions Analysis Results (Tons/Day)

		2008 SIP MVEB†	2009 SIP MVEB†	2020 Emissions	2025 Emissions	2035 Emissions	2045 Emissions
Pennsylvania	Emissions from MOVES 2014b	61.09	-	30.68	22.41	12.46	9.62
New Jersey	Emissions from MOVES 2014b	-	25.98	-	9.53	5.92	5.17

Source: DVRPC, 2019.

†The most recent Eight-Hour Ozone SIP MVEBs will apply to all future analysis years. All emissions are rounded off to the nearest hundredth of a ton per day.

Table 10: NO_x Emissions Analysis Results (Tons/Day)

		2008 SIP MVEB†	2009 SIP MVEB†	2020 Emissions	2025 Emissions	2035 Emissions	2045 Emissions
Pennsylvania	Emissions from MOVES 2014b	108.78	-	51.38	31.86	15.11	12.07
New Jersey	Emissions from MOVES 2014b	-	63.66	-	13.21	7.20	6.70

Source: DVRPC, 2019.

†The most recent Eight-Hour Ozone SIP MVEBs will apply to all future analysis years. All emissions are rounded off to the nearest hundredth of a ton per day.

Tables 11 and 12 provide the emissions estimate results for the $PM_{2.5}$ maintenance areas in each state, and Table 13 provides the emissions estimates and MVEB for the Delaware County 2012 Annual $PM_{2.5}$ Nonattainment Area.

In New Jersey, governing SIP MVEBs for the years 2009 and 2025 were approved for both the Annual and 24-Hour $PM_{2.5}$ standards in September 2013. In Pennsylvania, governing SIP MVEBs for the years 2017 and 2025 were approved for both the Annual and 24-Hour $PM_{2.5}$ standards in April 2015.

Since the $PM_{2.5}$ SIPs in each state provide MVEBs expressed in annual values (tons/year), conformity is demonstrated by comparing emissions estimates against these budgets in those terms.

Table 11: Annual and 24-Hour Direct $PM_{2.5}$ and NO_x Emissions Analysis Results (Tons/Year) for New Jersey

		2025 SIP MVEB†	2025 Emissions	2035 Emissions	2045 Emissions
Direct $PM_{2.5}$	Burlington, Camden, and Gloucester Counties*	363	183	125	113
	Mercer County«	119	58	40	36
PM2.5 Precursor (NO_x)	Burlington, Camden, and Gloucester Counties*	8,003	3,660	2,083	1,897
	Mercer County«	2,551	1,115	651	594

Source: DVRPC, 2019.

† Associated 2025 MVEBs apply to all future analysis years.
**Results are only for Burlington, Camden, and Gloucester counties, which are the New Jersey portion of the Philadelphia–Wilmington, PA–NJ–DE $PM_{2.5}$ Maintenance Area.*
«Results are only for Mercer County, which is the DVRPC New Jersey portion of the New York–Northern New Jersey–Long Island, NY–NJ–CT $PM_{2.5}$ Maintenance Area.

Table 12: Annual and 24-Hour Direct $PM_{2.5}$ and NO_x Emissions Analysis Results (Tons/Year) for Pennsylvania

		2017 SIP MVEB†	2020 Emissions	2025 SIP MVEB †	2025 Emissions	2035 Emissions	2045 Emissions
Direct $PM_{2.5}$	DVRPC—PA	1,679	735	1,316	528	351	327
$PM_{2.5}$ Precursor (NOx)	DVRPC—PA	37,922	18,599	25,361	11,428	5,702	4,673

Source: DVRPC, 2019.

†Associated 2017 and 2025 MVEBs apply to all future analysis years.

Table 13: 2012 Annual Direct $PM_{2.5}$ and NO_x Emissions Analysis Results (Tons/Year) for Delaware County

		2017 SIP MVEB†	2020 Emissions	2025 SIP MVEB†	2025 Emissions	2035 Emissions	2045 Emissions
Direct $PM_{2.5}$	Delaware County	251	97	201	70	47	43
$PM_{2.5}$ Precursor (NO_x)	Delaware County	5,544	2,435	3,730	1,472	716	569

Source: DVRPC, 2019.

† Associated 2017 and 2025 MVEBs apply to all future analysis years.

Meeting the Conformity Criteria

Collectively, these tables show that the estimated emissions of VOCs, NO_x, and $PM_{2.5}$ do not exceed the respective MVEBs included in approved SIPs discussed in the previous sections of this conformity demonstration. Tables 9 through 13 cumulatively demonstrate that the Plan and the TIPs conform to the SIPs with respect to the MVEBs in the corresponding analysis year. The Plan and the TIPs meet all requirements under the governing ozone and $PM_{2.5}$ regulations for all analysis years tested. The DVRPC region has satisfied the 20-year maintenance plan requirements for CO, and the region is no longer required to demonstrate conformity for this pollutant.

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 and federal planning regulations. Specifically, the finding must show, among other items:

- 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 MVEBs in the applicable SIPs [40 CFR 93.118].

All identified conformity evaluation criteria in the Final Rule and subsequent responses from DVRPC are detailed in Table 14.

Table 14: Evaluation of the Conformity Determination Criteria

Corresponding 40 CFR Part 93 Section(s)	Evaluation Criteria	DVRPC Response
§93.106(a)(1)	Are the transportation plan horizon years correct?	Yes. The analysis years of 2020 (Pennsylvania only), 2025, 2035, and 2045 correspond to the 2012 Annual $PM_{2.5}$ attainment date (Delaware County) and 2015 Ozone attainment date, SIP budget years in both states, interim years within a 10-year time frame, and the current DVRPC Plan horizon year.
§93.106(a)(2)(i)	Does the plan quantify and document the demographic and employment factors influencing transportation demand?	Yes. The *Connections 2045* Long-Range Plan does quantify and document demographic and employment factors influencing transportation demand. Future population and employment forecasts were developed with member counties and adopted by the DVRPC Board.
§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 Plan and TIPs fiscally constrained?	Yes. The Plan and the TIPs are constrained to reasonably anticipated financial resources, as required by federal regulations, and are based on year-of-expenditure costs.
§93.109(c)	Are the regional conformity tests requirements met for all nonattainment and maintenance areas?	Yes. $PM_{2.5}$, VOCs, and NO_x MVEBs have been approved by the US EPA. DVRPC performs budget tests to demonstrate the $PM_{2.5}$ and ozone conformity of the Plan and the TIPs. The region has satisfied CO maintenance plan requirements, and no conformity demonstration for CO is required.

<*continued*>

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 23, 2019, the respective start of analysis dates for this conformity determination for the Plan and TIPs.
	Are the assumptions derived from the estimates of current and future population, employment, travel, and congestion the 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 were adopted by the DVRPC Board in July and October 2016, respectively. Also, other planning assumptions and travel data 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 and were verified through the consultation process. (Chapter 2, pp. 19-20).
	Does the conformity determination include reasonable assumptions about transit service and increases in transit fares and road and bridge tolls over time?	Key transit and toll assumptions outlined in this document were verified through the consultation process. (Chapter 2, pp. 19-20).
	Does the conformity determination use the latest existing information regarding the effectiveness of the TCMs and other implementation plan measures that have already been implemented?	Currently, there are no adopted TCMs in the corresponding SIPs.
	Are key assumptions 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 TCICG and the public.

<*continued*>

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 TIPs is based on MOVES 2014b, the latest available emissions model.
§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. Formal interagency consultation meetings with EPA, FHWA, FTA, and state environmental and transportation agencies were 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, a 30-day public comment period and public meetings in the respective states were held to receive comments regarding the transportation conformity of the Plan and the TIPs under all governing NAAQS.
§93.113(b) §93.113(c)	Are TCMs being implemented in a timely manner?	There are currently no adopted TCMs in the SIPs.
§93.118	For areas with SIP Budgets: is the Plan, TIPs, or project consistent with the established MVEB(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.
§93.122(a)(1)	Does the conformity analysis include all regionally significant projects?	Yes. The project sets for the Plan and the TIPs 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 SIP?	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, 2019.

CHAPTER 4: Stakeholder Participation

Interagency Consultation Group Meetings

DVRPC participated in a series of TCICG meetings and correspondence for this iteration of the transportation conformity demonstration of the Plan and the TIPs, although the process is different in each state.

In Pennsylvania, consultation takes place at quarterly Air Quality Working Group (AQWG) meetings and through a Pennsylvania Department of Transportation (PennDOT) hosted Sharepoint website. Planning assumptions and model inputs were discussed and approved for the FY2019 TIP for Pennsylvania at the AQWG meeting on January 25, 2018. These are the same model inputs and planning assumptions that are being utilized for this conformity determination. DVRPC provided these planning assumptions, MOVES inputs, and the conformity timeline to the Pennsylvania TCICG via email on May 20, 2019 as a kick-off for the conformity determination for the amended FY2019 Pennsylvania TIP.

The list of projects being amended to the FY2019 Pennsylvania TIP and the proposed AQ codes and analysis years were posted on the PennDOT SharePoint site for review by the Pennsylvania TCICG.

Interagency consultation for the New Jersey portion of the region was conducted via conference call on May 23, 2019. At that meeting the conformity timeline, planning assumptions, model inputs, projects lists, and AQ codes for this conformity determination were reviewed and approved by the New Jersey TCICG.

Additional consultation occurred regularly via email and phone correspondence between TCICG members throughout the conformity determination process. Final decisions on items of discussion were summarized and shared with the TCICG.

Represented federal, state, and local partners on the TCICG included US EPA Region II and III offices, FHWA NJ Division Office, FHWA PA Division Office, New Jersey Department of Transportation (NJDOT), New Jersey Transit, New Jersey DEP, Pennsylvania DEP, PennDOT, SEPTA, and DRPA/PATCO. 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.

Public Participation

DVRPC opened a mandated 30-day public comment period on July 23, 2019, 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 during the week of July 15, 2019. Additionally, a media release was sent to local television, radio, and print media.

This draft conformity document was distributed to various libraries throughout the region (in both states) and made available online at www.dvrpc.org/airquality/conformity. Two public meeting/information sessions were held on July 29, 2019, at the Mercer County Administration Center, 175 S. Broad Street, Trenton, New Jersey, and July 30, 2019, at the DVRPC offices at 190 N. Independence Mall West, in Philadelphia. The comment period closed on August 23, 2019, at 5:00 PM.

DVRPC accepted public comments on the draft conformity document online at www.dvrpc.org/airquality/conformity, by email at airconformity@dvrpc.org; by fax at (215) 592-9125; by mail at the address at the end of this document, Attention: TIP/Plan/Conformity Comments; and by submission of a

written copy of oral comments made at the public meetings. The DVRPC Board adopted the conformity findings on September 26, 2019.

There were no comments on the Draft Conformity determination submitted by the public.

CHAPTER 5: Conclusion

The DVRPC Plan and TIPs 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 established by the states in accordance with the Final Rule under the current NAAQS governing applicable pollutants. DVRPC confirms that 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 MVEBs in the applicable SIPs [40 CFR 93.118].

These findings demonstrate transportation conformity of the DVRPC *Connections 2045* Long-Range Plan, FY2019 TIP for Pennsylvania, and Draft FY2020 TIP for New Jersey with the corresponding state SIPs and the Final Rule requirements under the CAA, including:

- the 1997, 2008, and 2015 Eight-Hour Ozone NAAQS in the Philadelphia-Wilmington-Atlantic City PA–NJ–MD–DE Ozone Nonattainment Area;
- the 1997 Annual and 2006 24-Hour $PM_{2.5}$ NAAQS in the Philadelphia–Wilmington, PA–NJ–DE $PM_{2.5}$ Maintenance Area;
- the 1997 Annual and 2006 24-Hour $PM_{2.5}$ NAAQS in the DVRPC portion of the New York–Northern New Jersey–Long Island, NY–NJ–CT $PM_{2.5}$ Maintenance Area;
- the 2012 Annual $PM_{2.5}$ NAAQS in the Delaware County, Pennsylvania, $PM_{2.5}$ Nonattainment Area.

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Appendix A

Appendix A: Regionally Significant and Nonexempt Projects in the Connections 2045 Long-Range Plan, FY2019 TIP for Pennsylvania, and FY2020 Draft TIP for New Jersey

Pennsylvania Long-Range Plan Projects

MRP ID	Project Name	Air Quality Code
Highway		
20	I-95 and I-476 Ramps	2035M
32	I-476 (PA Turnpike Northeast Extension) Widening	2035M
34	County Line Road	2035M
35	I-95 at PA Turnpike Interconnection	2025M
36	I-95 at Scudders Falls Bridge Widening	2025M
37	US 1 Widening	2045M
40	I-76 (PA Turnpike) Widening	2045M
44	US 1, Baltimore Pike	2025M
48	US 30/Co Widening Coatesville-Downingtown Bypass	2035M
50	US 322	2035M
52	I-476 (PA Turnpike Northeast Extension)	2020M
54	Henderson Road and South Gulph Road	2035M
55	Lafayette Street Extension	2025M
56	US 202 (Section 600) Widening	2025M
57	PA 309 Connector Road	2035M
65	I-95 North Reconstruction	2035M
66	North Delaware Avenue Extension	2025M
68	Adams Avenue Connector	2025M
96	US 422 Bridge and PA 23 Interchange (River Crossing)	2025M
98	US 422 Mainline Widening (River Crossing)	2045M
101	Bryn Mawr Avenue Extension	2045M
113	I-276 and Lafayette Street/Ridge Avenue Ramp Modifications	2035M
115	I-95/US 322/Highland Avenue Interchange Ramp Modifications	2045M
116	PA 113	2045M
117	Bridgewater Road Extension	2035M
119	Bristol Road Extension	2035M
120	Belmont Ave at I-76 Interchange	2035M
123	US 202 and US 1 Loop Road	2025M
125	Guthriesville Loop Road	2045M
126	G.O. Carlson Boulevard Extension	2045M
130	I-476 Active Traffic Management	2045M
132	I-76 Integrated Corridor Management	2035M
137	US 30/Coatesville-Downingtown Bypass (Eastern)	2035M
158	PA Turnpike	2035M
160	Second Collegeville Bridge Crossing	2035M
161	PA 23 and Trout Creek Road Bridge	2035M
163	Ridge Pike	2035M
Transit		
E	Paoli Station	2035M
P	Media-Elwyn Line Rail Extension	2025M
Q	Norristown High Speed Line	2045M
AF	Amtrak Keystone Corridor Stations	2035M
AG	Exton Station	2035M
AH	Ardmore Station	2045M

MRP ID	Project Name	Air Quality Code
AI	Fern Rock Station	2045M
AJ	Levittown Station	2025M
AL	69th Street Transportation Center	2035M
AO	Roosevelt Boulevard Enhanced Bus A	2035M
BS	Regional Rail Parking Expansion	2035M
CB	Noble Station	2035M
CF	Franklin Square Station	2025M

Source: DVRPC, 2019.

Note: AQ Codes for Long-Range Plan projects indicate when the project is expected to be complete. Phases of these projects are often programmed in the TIP as breakout projects. These phases are analyzed for conformity when the breakout project is expected to open to traffic.

FY2019 Pennsylvania TIP Projects

MPMS Number	Project Title	AQ Analysis Code
Bucks County		
12923	Bristol Road Extension	2035M
13549	US 1 (Bridges) Design (Section 03S) SR:0001	2025M
93444	Route 1 Improvement-South (Section RC1)	2025M
93445	Route 1 Improvement-North (Section RC2)	2035M
110309	I-95/US 13/PA 132 Slip Ramp Operation Improvement	2035M
Chester County		
14541	US 1, Baltimore Pike Widening	2025M
87781	US 30, Coatesville Downingtown Bypass (CER-Eastern Section)	2035M
93586	Downingtown Train Station Rehabilitation	2025M
102708	PA 41 at PA 841 Improvements	2025M
102709	PA 41 & SR 926 Improvements	2025M
107553	SR30 & Airport Rd Interchange Improvement	2035M
110949	Roundabout Installation at Manor Road and Cedar Knoll/Reeceville Road	2025M
Delaware County		
15477	I-95/322/Conchester Highway. Interchange/Improvements.	2035M
57927	Lansdowne Avenue Corridor Safety Improvements	2025M
69817	US 322, Featherbed Lane to I-95 (Section 102)	2035M
79329	Bridgewater Road Extension	2035M
95429	US 202 and US 1 Loop Road	2025M
104821	I-476 Travel Management	2035M
107652	US 202/US 1 ITS Corridor	2020M
110951	Road Diet Macdade Boulevard Corridor from Fairview to Ashland	2025M
110965	Marshall Road Corridor Safety Improvements	2025M
111021	District-Wide Roundabout Program–Bethal Road at Mill Road	2025M
Montgomery County		
16334	PA 73, Church Road Intersection and Signal Improvements	2025M
16577	Ridge Pike, Butler Pike to Crescent Avenue Reconstruction and Signal Upgrade	2025M
48172	PA 23 Moore to Allendale and Trout Creek Road Bridge	2035M

MPMS Number	Project Title	AQ Analysis Code
48174	PA 63, Welsh Rd. SR:0063	2035M
48175	Ridge Pike, PA Turnpike to Butler Pike	2025M
48186	Pottstown Area Signal System Upgrade	2020M
48187	Henderson/Gulph Road Widen near I-76 Ramps	2035M
57858	Lafayette Street Extension (MG1)	2035M
63486	US 202, Johnson Highway to Township Line Road (61S)	2035M
63490	US 202, Township Line Road to Morris Road (61N)	2025M
63491	US 202, Morris Road to Swedesford Road (65S)	2035M
64795	Belmont Rd/Rock Hill Rd Widening: I-76 Ramps to Rock Hill Road	2035M
74816	Whitemarsh Street Improvements	2020M
77211	PA 309 Connector: Allentown Road to Souderton Pike (HT2)	2035M
79864	Lafayette Street, Barbados Street to Ford Street Widening (MGN)	2025M
102273	Second Collegeville Bridge Crossing	2035M
104280	First Avenue Road Diet (TAP)	2020M
105803	PA 309 Connector: Souderton Pike to PA 309 (HT3)	2035M
110315	Philmont Avenue/Tomlinson Road/Pine Road Improvements–6 Point Intersection	2035M
110961	District-Wide Roundabout Program–Old Skippack Road at Schwenksville Road	2025M
111005	Conshohocken Garage (I-76 ICM)	2035M
Philadelphia County		
17697	Island Avenue Signals	2025M
17821	I-95, Shackamaxon Street to Ann Street (GIR)	2035M
47811	Bridge Street Design (Section BSR) (IMP) SR:0095	2035M
47812	I-95: Betsy Ross Interchange (BRI)–Design (IMP)	2035M
47813	I-95: Ann Street to Wheatsheaf Lane (AFC)	2035M
57927	Castor Avenue Corridor Safety Improvements	2025M
57927	University Avenue and I-76 Off-Ramp Intersection Safety Improvements	2025M
79685	I-95: Cottman-Princeton Main Line and Ramps (CP2)	2020M
79686	I-95, Columbia Avenue to Ann Street (GR1)	2025M
79826	I-95 Northbound: Columbia–Ann Street N (GR3)	2025M
79827	I-95 Southbound: Columbia–Ann Street N (GR4)	2035M
79828	I-95: Race-Shackamaxon (GR5)	2035M
79903	I-95: Betsy Ross Bridge Ramps Construction (BR0)	2025M
79905	I-95: Betsy Ross Mainline (BR3)	2035M
79910	I-95: Margaret to Kennedy (Section BS2)	2035M
79911	I-95: Allegheny Avenue Interchange Advance Contract (AFI)	2025M
79912	I-95: Allegheny Avenue and Castor Avenue Interchanges Connection (AF2)	2035M
80014	I-95: Utility Relocation & Surface Streets (CP3)	2025M
103555	I-95: Corridor ITS (GR8)	2035M
103557	I-95: Ann Street–Wheatsheaf Lane (AF3)	2035M
103559	I-95: Betsy Ross Mainline Southbound (BR4)	2035M
103562	I-95: Betsy Ross/Adams Ave. Connector (BS4)	2025M
103563	I-95: Bridge Street Ramps (Section BS5)	2035M
105290	Ben Franklin Bridge Eastbound Operational Improvements	2035M
106991	Fifth Street Signal Improvements	2020M
106992	Second Street Signal Improvements	2020M
106993	Frankford Avenue Signal Improvements	2020M
106994	Rising Sun Avenue Signal Improvements	2020M
106995	Castor Avenue Signal Improvements	2020M

MPMS Number	Project Title	AQ Analysis Code
107198	Safe Spaces for Cyclists: Building a Protected Bicycle Network	2020M
Transit		
60540	Parking Improvements	2035M
60574	Paoli Transportation Center	2035M
60636	Elwyn to Wawa Rail Restoration	2025M
60655	Levittown Station in Bucks County	2025M
73214	Ardmore Transportation Center	2035M
93586	Downingtown Train Station Rehabilitation	2025M
93588	Exton Station	2035M

Source: DVRPC, 2019.

Projects Amended to the Pennsylvania FY2019 TIP

MPMS Number	Project Title	AQ Analysis Code
Bucks County		
111173	PA 663 and Portzer Road Widening	2025M
111688	Bensalem Adaptive Traffic System	2025M
Chester County		
85949	PA 896 Safety Improvement (Roundabout)	2025M
111175	Ashburn Road Extension	2025M
111695	Schuylkill Township Signal Interconnection	2025M
111697	Willistown Signal Interconnection	2025M
Delaware County		
111762	PA 3: Ellis Street to St. Albans Street Widening	2025M
Montgomery County		
107640	PA 463 Traffic Signal System Project	2020M
107646	West Main Street Traffic Signal Improvements	2025M
111170	Blair Mill Road Safety Project	2025M
112213	Horsham Road Widening	2025M
112715	Forty-Foot Roadway Improvement Project	2025M
111701	Horsham Township Signal Modernization	2025M
111702	Lower Merion Township Adaptive Signals	2025M
111705	Trappe Borough Coordinated Signals	2025M
Philadelphia County		
106993	Frankford Avenue Signal improvements	2025M
112203	Market Street Vision Zero (Road Diet)	2025M
111710	Philadelphia Citywide Wireless Communications (Signal Interconnections)	2035M

Source: DVRPC, 2019.

New Jersey Long-Range Plan Projects

MPR ID	Project Title	AQ Analysis Code
Highway		
33	Vaughn Drive Connector	2045M
72	I-295 at NJ 38	2035M
75	I-295/NJ 42 (Missing Moves)	2025M
77	I-295 (Direct Connect)	2035M
79	US 322	2045M
83	West Trenton Bypass	2045M
84	US 1, Alexander Road to Mapleton Road/Plainsboro-Cranbury Road	2035M
99	Quakerbridge Road (CR 533)	2045M
103	Atlantic City Expressway	2035M
127	Sylvia Avenue Extension	2035M
159	US 130 Corridor Improvements	2045M
168	Atlantic City Expressway	2035M
209	Route 73 and CR 544 (Evesham Rd/Marlton Parkway)	2035M
210	Route 73 and Church Road	2035M
Transit		
T	Glassboro-Camden Line	2045M
X	South Jersey BRT	2045M
CF	Franklin Square Station	2025M

Source: DVRPC, 2019.

Note: AQ Codes for Long-Range Plan projects indicate when the project is expected to be complete. Phases of these projects are often programmed in the TIP as breakout projects. These phases are analyzed for conformity when the breakout project is expected to open to traffic.

Draft FY2020 New Jersey TIP Projects

DB Number	Project Title	AQ Analysis Code
Highway		
Burlington County		
12307	Route 38, South Church Street (CR 607) to Fellowship Road (CR 673), Operational and Safety Improvements	2035M
12380	Route 73, Church Road (CR 616) and Fellowship Road (CR 673) Intersections	2035M
13319	Route 73, CR 544 (Evesham Rd/Marlton Parkway)	2035M
Camden County		
355A	Route 295/42, Missing Moves, Bellmawr	2025M
355E	Route 295/42/I-76, Direct Connection, Contract 4	2035M
Mercer County		
D1910	Parkway Avenue (CR 634), Scotch Road (CR 611) to Route 31 (Pennington Road)	2035M
D0702	Mercer County Signal Project, CR 533	2020M
17419	Route 1, Alexander Road to Mapleton Road/Plainsboro-Cranbury Road	2035M
Transit		
D1801	Reopening of Franklin Square	2025M

Source: DVRPC, 2019.

Transportation Conformity Demonstration

Connections 2045 Long-Range Plan, FY2019 Pennsylvania TIP, and DRAFT FY2020 New Jersey TIP

Publication Number: TR20004

Date Published: September 2019

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.

Key Words:

Transportation Conformity, Air Quality, National Ambient Air Quality Standards, Ozone, Volatile Organic Compounds (VOCs), Nitrogen Oxides Nonattainment Area, Multijurisdictional Nonattainment Area, *Connections 2045* Long-Range Plan, Transportation Improvement Program (TIP), State Implementation Plan (SIP)

Abstract:

The Delaware Valley Regional Planning Commission (DVRPC) demonstrates transportation conformity of its *Connections 2045* Long-Range Plan, Fiscal Year (FY) 2019 Pennsylvania Transportation Improvement Program (TIP), and Draft FY2020 New Jersey TIP. A transportation conformity demonstration is required at least once every four years or when an MPO: (1) adopts a new Plan or TIP; or (2) amends, adds, or deletes a regionally significant, nonexempt project in a Plan or TIP. This conformity finding of the DVRPC Plan and TIPs shows that they meet the National Ambient Air Quality Standards requirements governing ozone and fine particulate matter. This conformity finding reflects all amendments to the Plan and TIPs through May 2019.

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