

Congestion Mitigation and Air Quality Baseline Report and Performance Plan (2018–2021)



SEPTEMBER 2018





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.



DVRPC's vision for the Greater Philadelphia Region is a prosperous, innovative, equitable, resilient, and sustainable region that increases mobility choices by investing in a safe and modern transportation system; that protects and preserves our natural resources while creating healthy communities; and that fosters greater opportunities for all.

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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CHAPTER 1:

Introduction

Purpose

Both the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation Act (FAST Act) have integrated performance measures into many Federal surface transportation programs and required the United States Department of Transportation (USDOT) to establish a set of national measures on which State DOTs must submit targets and report performance or condition. The Federal Highway Administration (FHWA) finalized three performance measures for the purpose of carrying out the Congestion Mitigation and Air Quality (CMAQ) Program. There are two CMAQ Congestion measures and one CMAQ Emissions measure.

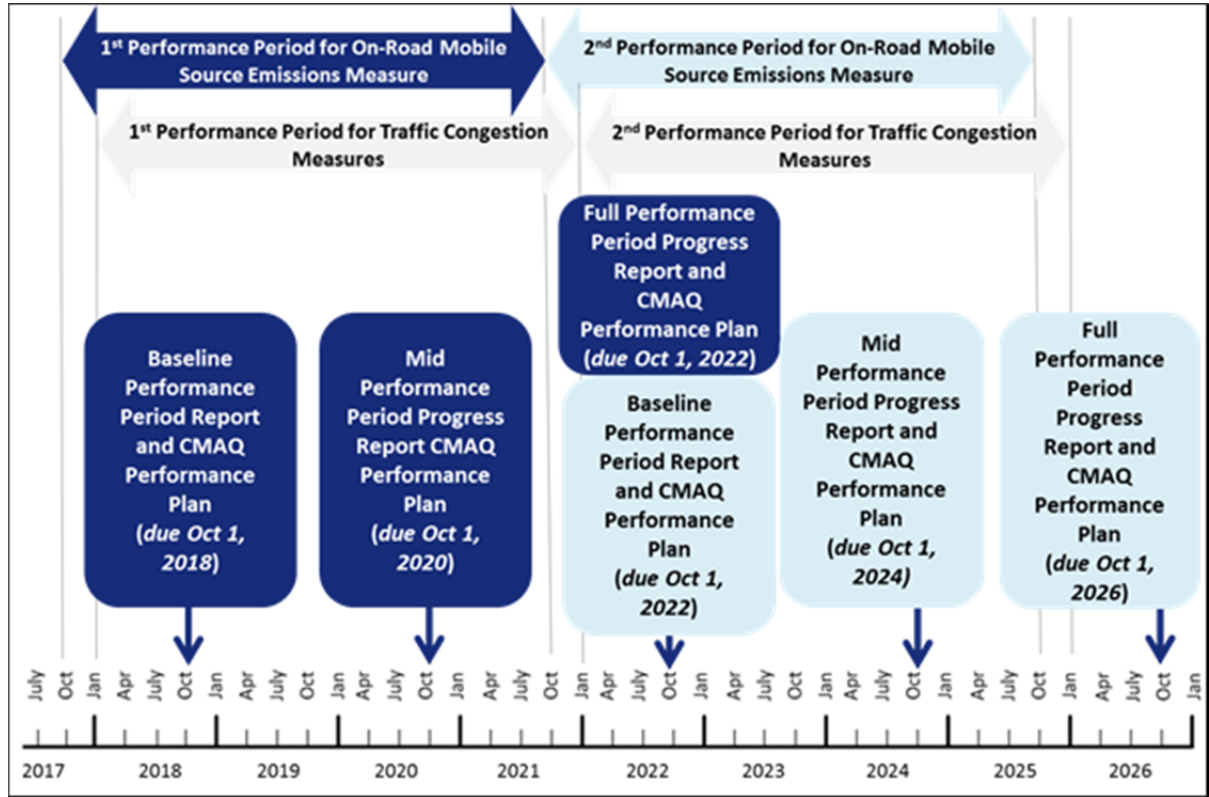
The CMAQ Congestion measures are peak-hour excessive delay (PHED) and percent of Non-SOV travel. The PHED measure is the annual hours of peak-hour excessive delay per capita that occurs with an applicable urbanized area. The percent of Non-SOV travel measure is the percentage of Non-SOV vehicles travelling with an applicable urbanized area. These measures only apply to the National Highway System (NHS) mileage in urbanized areas with a population over one million for the first performance period (2018-2021) and a population of 200,000 for the second and all other subsequent performance periods. The CMAQ Emissions measure is the two-year and four-year cumulative estimated emissions reductions for all CMAQ funded projects of each applicable criteria pollutant.

State DOTs must establish their targets for these measures no later than May 20, 2018. The target reporting deadline for all measures for the first performance period is October 1, 2018. In establishing these targets, State DOTs must coordinate with Metropolitan Planning Organizations (MPOs) to ensure consistency. MPOs have up to 180 days after the State establishes its targets to support the State's targets or establish their own.

MPOs serving a Transportation Management Area (TMA) with a population greater than one million that includes a nonattainment or maintenance area are required to develop a CMAQ Performance Plan to support the implementation of CMAQ measures. In the CMAQ Performance Plan, which is required to be updated biennially, the MPO must describe how they plan to meet the targets, detail their progress toward achieving the targets over the course of the Performance Plan, and include a description of projects identified for funding that will contribute to achieving targets.

MPOs subject to the CMAQ Performance Plan requirement must submit a plan at the beginning of a four-year performance period and subsequently update the plan biennially through the performance period; once at the midpoint and again at the end of the performance period. Figure 1 displays the performance periods for the measures and reporting timeline for the State Biennial Performance Report and the MPO CMAQ Performance Plan.

Figure 1: Performance Periods for CMAQ Measures and Reporting Timeline



Source: FHWA 2018

Applicability

The DVRPC region is part of the Philadelphia PA-NJ-DE-MD Urbanized Area (UZA) which has a population of 5,555,493 (2016 1-year ACS) and also shares a small portion of the New York-Newark NY-NJ-CT UZA in Mercer County, New Jersey. The New York-Newark UZA has a population of 18,954,313 (2016 1-year ACS). The DVRPC region includes a complex combination of nonattainment and maintenance areas for three of the National Ambient Air Quality Standards (NAAQS) (ozone, fine particulate matter [PM_{2.5}], and carbon monoxide [CO]).

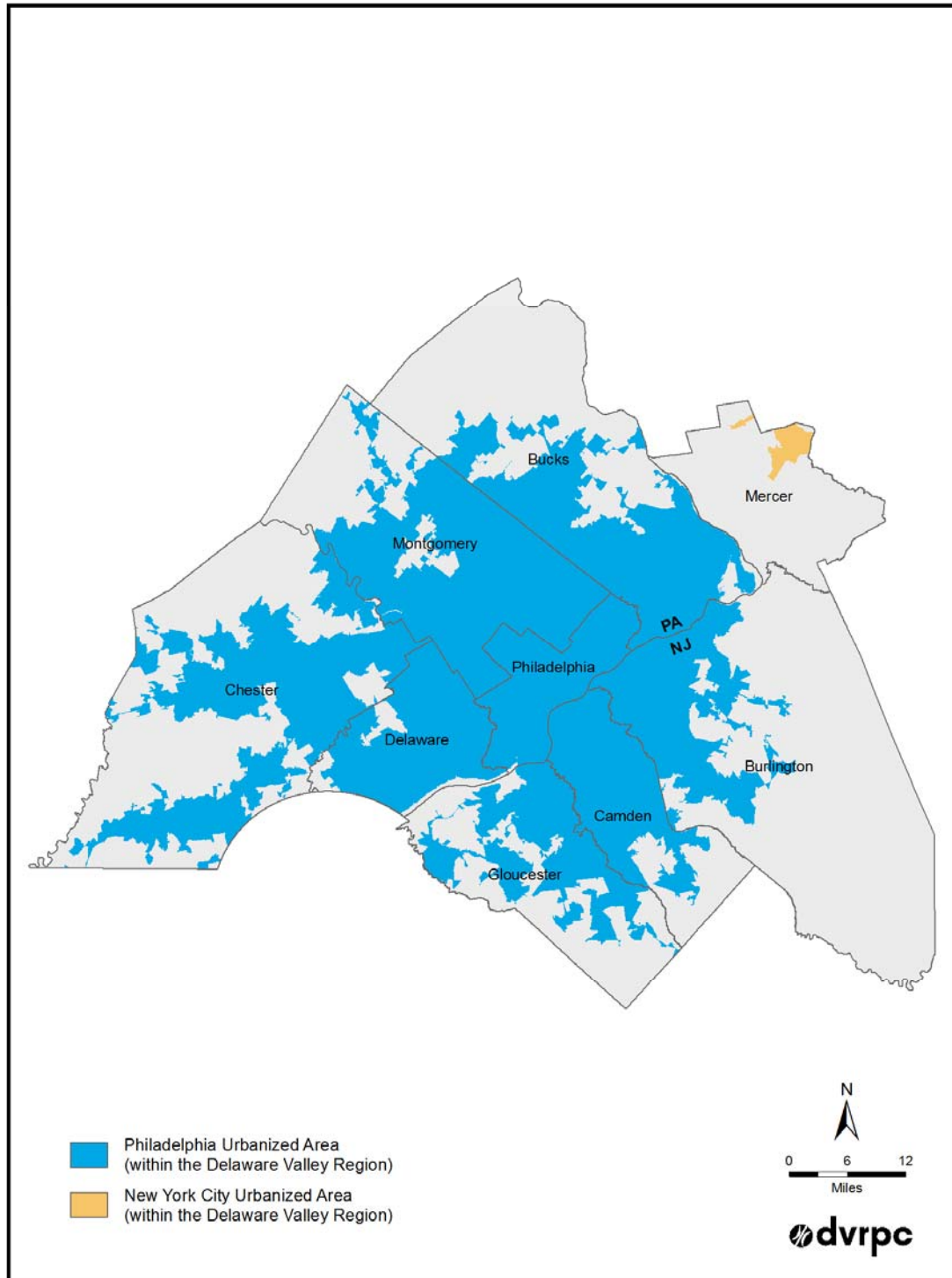
The region's ozone nonattainment area encompasses the entire nine-county DVRPC region, while the PM_{2.5} maintenance and nonattainment areas encompass various portions of the region. The region also includes former carbon monoxide (CO) maintenance areas in Pennsylvania and New Jersey and those areas have achieved their 20-year Maintenance Plans (New Jersey on July 10, 2016 and Pennsylvania on December 4, 2017) According to 23 CFR 490.809(c)(1), performance plan reporting is only required for the Philadelphia CO Maintenance Area since the Philadelphia CO Maintenance Plan was achieved less than one year before the CMAQ performance plan was due to FHWA on October 1, 2018.

This performance report covers the following nonattainment and maintenance areas within the Philadelphia and New York-Newark UZAs within the DVRPC planning area:

- the DVRPC portion of the Philadelphia–Wilmington–Atlantic City Ozone Nonattainment Area
- the DVRPC portion of the Philadelphia–Wilmington, Pennsylvania–New Jersey–Delaware (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;
- the Delaware County, PA Annual $PM_{2.5}$ Nonattainment Area; and
- the Philadelphia–Camden CO Maintenance Area

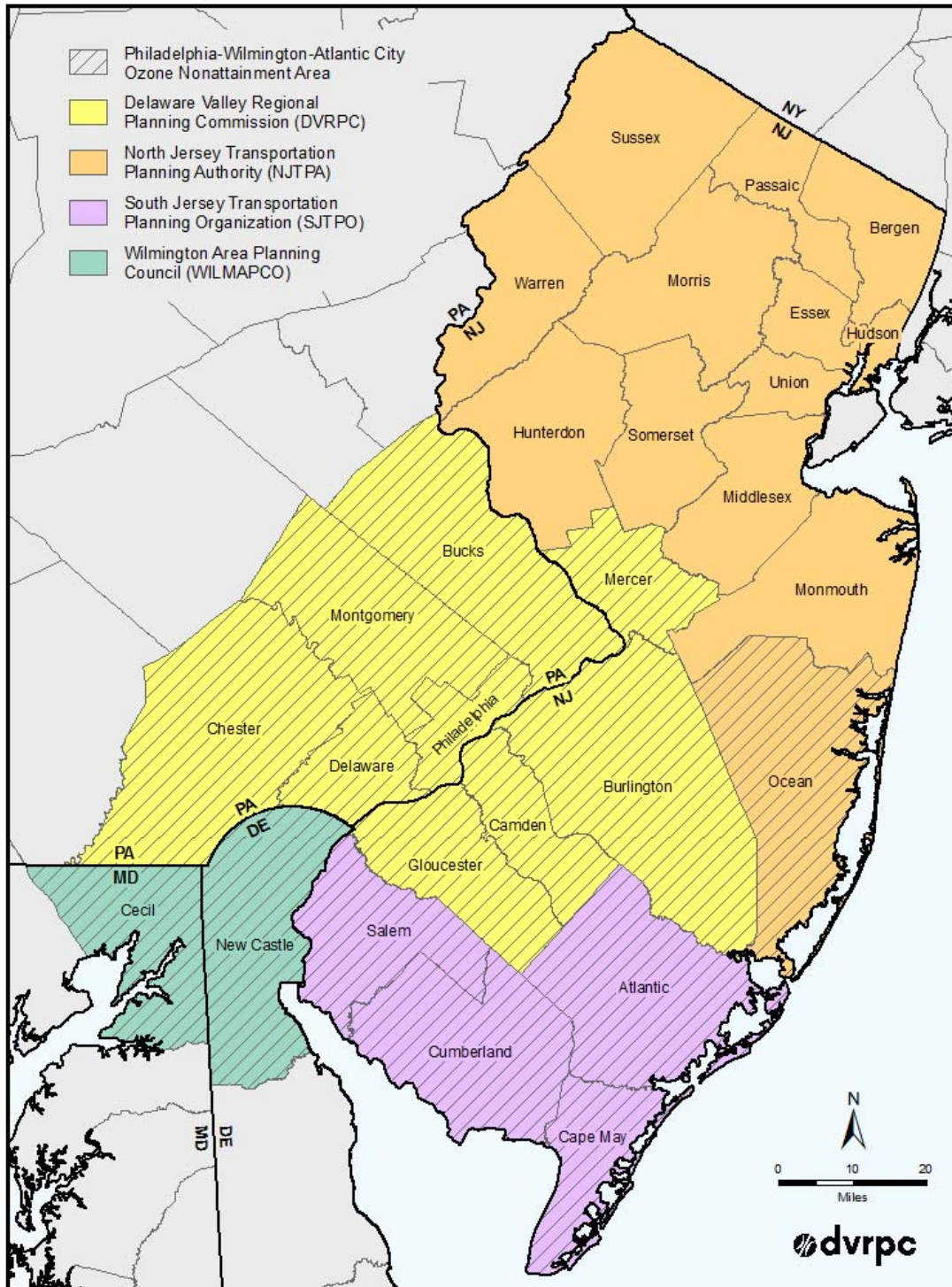
Figure 2 demonstrates the Philadelphia and New York-Newark UZA boundaries within the DVRPC planning area. Figures 3, 4, and 5 show the relevant nonattainment and maintenance areas in the region.

Figure 2: Urbanized Areas Boundaries Within the DVRPC Planning Area



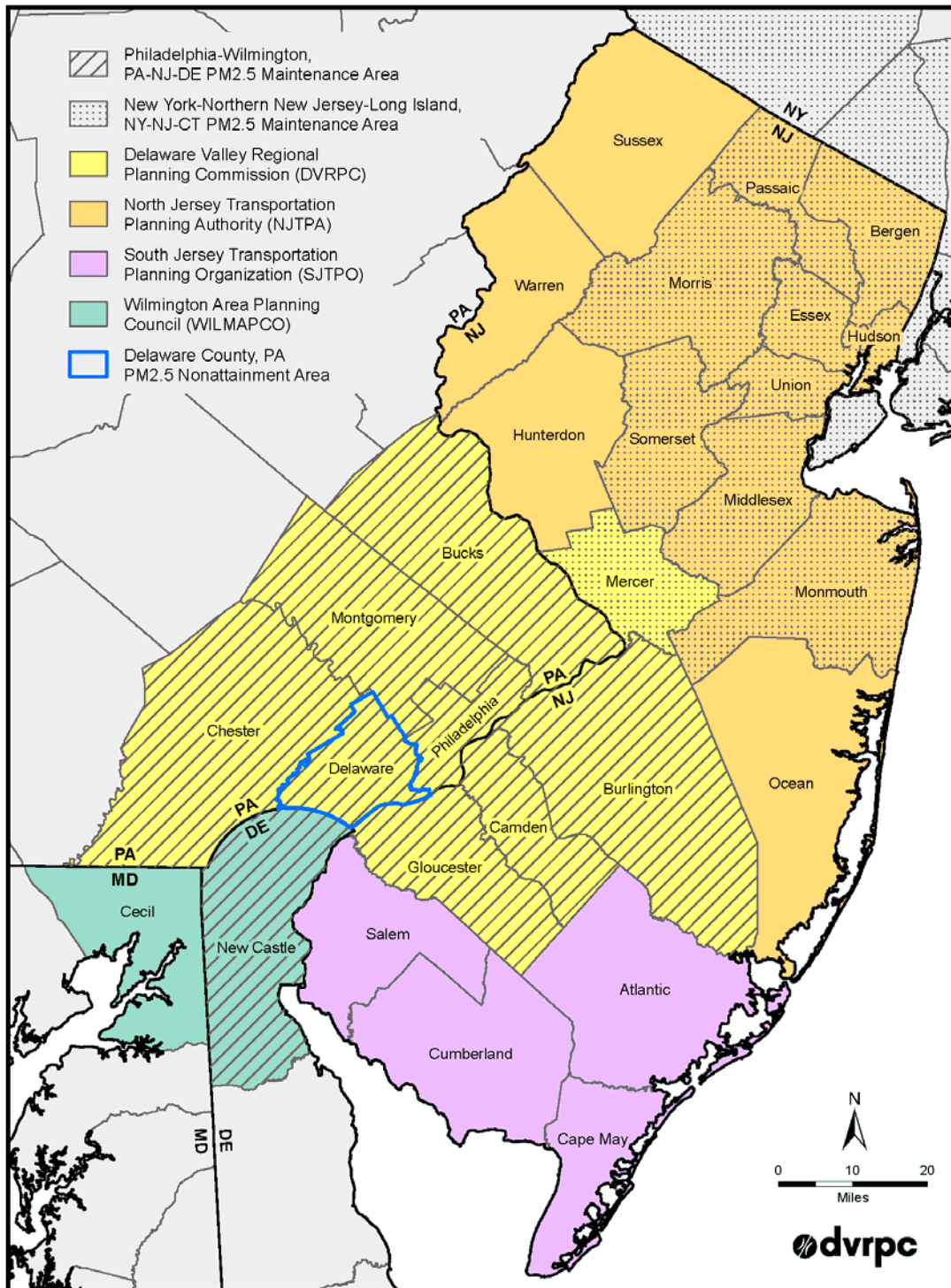
Source: US Census 2010

Figure 3: Philadelphia-Wilmington-Atlantic City 8-Hour Ozone Nonattainment Area



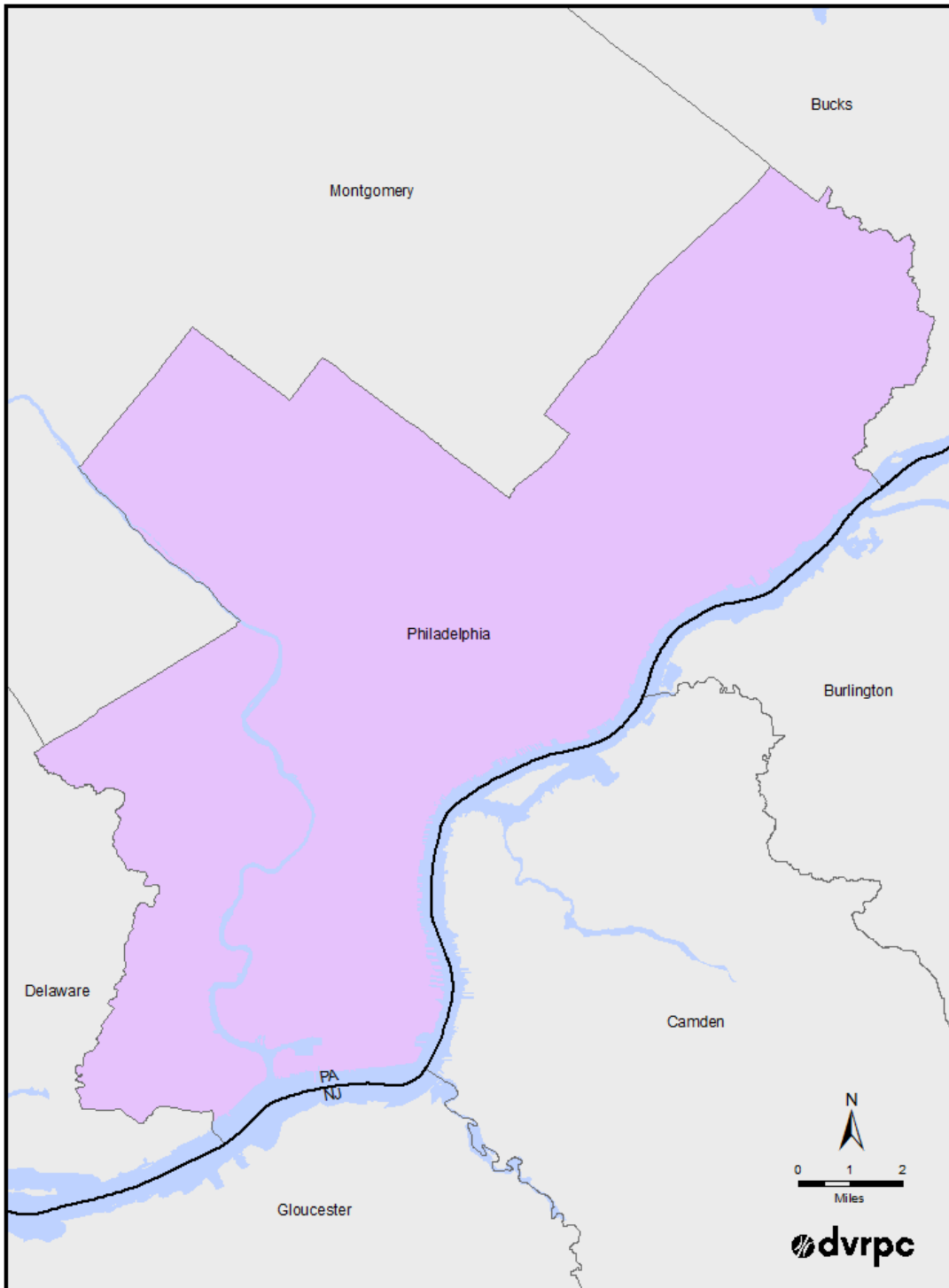
Source: DVRPC 2018

Figure 4: PM_{2.5} Nonattainment and Maintenance Areas in the DVRPC Region



Source: DVRPC 2018

Figure 5: Philadelphia CO Maintenance Area



Source: US EPA Nonattainment Areas for Criteria Pollutants (Green Book), current as of December 4, 2017

CHAPTER 2:

Baseline Conditions and Targets

Federal performance measure regulations (23 CFR 490) require that MPOs serving over one million people, and representing ozone, PM_{2.5}, or CO nonattainment or maintenance areas must develop performance plans that include baseline conditions and two-and-four year targets to address congestion and reduce emissions from on-road mobile sources.

These performance measures are divided into “Congestion Measures,” which consist of Peak-Hour Excessive Delay (PHED) per capita and Percent Non-SOV Travel (Percent Non-SOV), and “Emissions Measures,” which are the emissions benefits from CMAQ funded projects in the MPO region as recorded in the FHWA CMAQ Public Access Database (Database). Only NHS facilities are included in the PHED assessment.

For the PHED and Percent Non-SOV, the baseline measurements are for calendar year 2017. For the emissions reductions measurement, the baseline is the sum of emissions reductions from the CMAQ funded projects as recorded in the FHWA Database for projects funded during the period 2014–2017.

The congestion measures are reported for the urbanized areas. All of the MPOs and state DOTs in each urbanized area must adopt a common baseline and set of performance targets for the congestion measures.

In the case of the Philadelphia PA-NJ-DE-MD UZA, this means that DVRPC, Lancaster County Transportation Coordinating Committee, North Jersey Transportation Planning Agency (NJTPA), South Jersey Transportation Planning Organization (SJTPO), Wilmington Area Planning Council, Pennsylvania Department of Transportation (PennDOT), New Jersey Department of Transportation (NJDOT), Delaware Department of Transportation, and Maryland Department of Transportation must adopt a common congestion measure baseline and target for the Philadelphia UZA.

Since there is a portion of the New York-Newark NY-NJ-CT UZA in Mercer County, New Jersey, within the DVRPC region, DVRPC has coordinated with the NJTPA, the New York Metropolitan Transportation Council, NJDOT, the New York Department of Transportation and others to adopt a common congestion measure baseline and target for that UZA.

Federal regulations require that the On-road Mobile Source Emissions two- and four-year targets are established for the state. In MPO jurisdictions where there are nonattainment and maintenance areas, the MPOs are required to adopt targets for the MPO region. Since DVRPC is a bi-state agency, two sets of targets and baselines were developed, one for the Pennsylvania portion of the region and one for the New Jersey portion of the region. Both Pennsylvania and New Jersey DOTs used regional targets to inform the statewide targets for this measure. DVRPC will be adopting the MPO regional targets that were used to develop the state emissions targets in each state. Targets were developed in each state in coordination with the DOTs and MPOs with productive discussion surrounding the FHWA Database inputs and expected emissions profiles of future vehicle fleets and how those changing emissions profiles might impact the benefits of CMAQ funded projects.

Targets for both sets of measures were developed for the two-year period of Federal Fiscal Year 2018-2019 and the four-year period of 2018-2021. The four-year target is the cumulative value of all four federal fiscal years.

Congestion Measures – Philadelphia UZA

The consensus on common congestion performance measure baselines and targets, in the Philadelphia UZA, was accomplished through a series of four coordination meetings where the target-setting procedures, methodologies, and data sources were determined. The consensus two- and four-year congestion measure targets for the Philadelphia UZA were agreed upon by all partnering agencies and submitted to FHWA by the respective state DOTs in May 2018.

Peak-Hour Excessive Delay

The annual PHED per capita measure was calculated using the RITIS Probe Data Analytics (PDA) Suite on May 7, 2018, which was the “pencils down” date for the final calculation of measures and establishing targets. The PHED baseline year (2017) value was 16.8 annual hours per capita and the partners are agreeing on a 4-year (2021) target of 17.2 hours per capita.

Table1 presents the Performance Measure 3 Baseline and Target Values for the Annual PHED Measure

Table 1: Baseline and Target PHED Measures (Annual Hours per Capita) for the Philadelphia PA-NJ-DE-MD Urbanized Area

Measure	2017 Baseline (Annual Hours per Capita)	Two-Year Target (2019) Annual Hours per Capita)	Four-Year Target (2021) Annual Hours per Capita)
PHED	16.8	N/A	17.2

Source: DVRPC 2018

Notes:

- The UZA and associated population were from the U.S. Census.
- Reporting segments and travel times (in 15 minute intervals) were derived from the National Performance Management Research Data Set (NPMRDS)
- Hourly traffic volumes and annual vehicle classifications for buses, trucks, and cars were derived from AADT reported to the HPMS.
- Annual Vehicle Occupancy (AVO) for cars, buses, and trucks was provided by FHWA.
- A two-year target was not required for PHED.
- Travel models in the Philadelphia UZA indicate potential increases in VMT and delay.
- The combination of partner input, travel model forecasts, VMT, vehicle registration trends, and economic forecast was considered in establishing a 0.6% annual increase in delay per capita in the Philadelphia UZA.

Percent Non-Single Occupant Vehicle Travel

The Percent Non-SOV Travel measure was calculated using the U.S. Census American Community Survey five-year estimates for the urbanized area. The 2017 base line value (five-year ACS 2012-2016) was 27.9 percent and the partners are agreeing on two-year (2019) and four-year (2021) targets of 28.0 percent and 28.1 percent, respectively.

Table 2: Baseline and Target Percent Non-SOV Travel Measures for the Philadelphia PA-NJ-DE-MD Urbanized Area

Measure	2017 Baseline	Two-Year Target (2019)	Four-Year Target (2021)
Percent Non-Single Occupant Vehicle Travel	27.9%	28.0%	28.1%

Source: DVRPC 2018

Notes:

- Travel trends show slight increases in Percent Non-SOV travel from five-year ACS (2007–2011) to five-year ACS (2012–2016). A linear trend was used to establish two- and four-year targets.
- The 2017 baseline refers to five-year ACS (2012–2016) values.

Congestion Measures – New York-Newark UZA

DVRPC participated in a series of coordination meetings to determine the congestion measure performance targets for the New York-Newark UZA and adopted those statewide targets in May 2018. The PHED and Percent Non-SOV Travel targets for the New York-Newark UZA are presented in Tables 3 and 4.

Peak-Hour Excessive Delay

The PHED baseline year (2017) value was 20.0 annual hours per capita and the partners agreed on a four-year (2021) target of 22.0 hours per capita.

Table 3: Baseline and Target PHED Measures (Annual Hours per Capita) for the New York-Newark NY-NJ-CT Urbanized Area

Measure	2017 Baseline (Annual Hours per Capita)	Two-Year Target (2019) Annual Hours per Capita)	Four-Year Target (2021) Annual Hours per Capita)
PHED	20.0	N/A	22.0

Source: NJDOT 2018

Notes

- The UZA and associated population were from the U.S. Census.
- Reporting segments and travel times (in 15 minute intervals) were derived from the National Performance Management Research Data Set (NPMRDS)
- Hourly traffic volumes and annual vehicle classifications for buses, trucks, and cars were derived from AADT reported to the HPMS.
- Annual Vehicle Occupancy (AVO) for cars, buses, and trucks was provided by FHWA.
- A two-year target was not required for PHED.

Percent Non-Single Occupant Vehicle Travel

The 2017 percent Non-SOV Travel base line value (five-year ACS 2012-2016) was 51.6 percent and the partners are agreeing on two-year (2019) and four-year (2021) targets of 51.6 percent and 51.7 percent, respectively.

Table 4: Baseline and Target Percent Non-SOV Travel Measures for the New York-Newark NY-NJ-CT Urbanized Area

Measure	2017 Baseline	Two-Year Target (2019)	Four-Year Target (2021)
Percent Non-Single Occupant Vehicle Travel	51.6%	51.6%	51.7%

Source: NJDOT 2018

On-road Mobile Emissions Measures

Baseline

Each year DVRPC receives a local CMAQ allocation from both PennDOT and NJDOT to apply to projects that improve congestion and reduce on-road mobile source emissions in the region's ozone, carbon monoxide, and PM_{2.5} nonattainment area and maintenance areas.

Every year, each state DOT submits an annual report to FHWA that includes the emissions reductions from CMAQ funded projects in the state. That data from these reports is entered into the FHWA Database, where the public can view the emissions reductions attributable to CMAQ funded projects.

23 CFR 490 requires that DVRPC provide a baseline report of the emissions benefits from CMAQ funded projects during the performance period 2014–2017 and that DVRPC report the emissions reduction values that were entered into the FHWA Database.

In each state, the baseline values reported in this section were extracted from the FHWA Database. In the development of the emissions targets, adjustments have been made to those baselines to count only the “new” projects funded during those years because it was the intent of the Database to differentiate between continuing or on-going CMAQ projects and projects that are newly funded. Only newly funded projects' emissions benefits will be counted towards the performance targets moving forward. Both the raw baseline data that includes all of the emissions reductions reported in the FHWA Database for the period 2014–2017, and an adjusted baseline that only includes emissions reductions from newly funded CMAQ projects are presented in this section.

Pennsylvania

Table 3 identifies the emissions reductions from CMAQ-funded projects in the Pennsylvania portion of the DVRPC region. Both baseline scenarios (all of the projects added into the Database and the adjusted baseline with just the newly funded projects) are presented but the adjusted baseline was the value that was utilized to develop the emissions reductions targets.

Table 5: Baseline Emissions Reductions Values from CMAQ-Funded Projects in the Pennsylvania Portion of the DVRPC Region (2014–2017)

Pollutant	Emissions Reduction (Kg/day)	
	Unedited Values from FHWA CMAQ Database (includes continuing projects)	Adjusted Values from FHWA CMAQ Database (includes new funded projects only)
VOC Emissions	1,281.86	112.08
NO _x Emissions	1,498.94	72.93
PM _{2.5} Emissions	31.69	2.7
CO Emissions	8,895.29	565.47

Source: PennDOT 2018

New Jersey

Table 4 identifies the emissions reductions from CMAQ-funded projects in the New Jersey portion of the DVRPC region. Both baseline scenarios (all of the projects added into the Database and the adjusted baseline with just the newly funded projects) are presented but the adjusted baseline was the value that was utilized to develop the emissions reductions targets.

Table 6: Baseline Emissions Reductions Values from CMAQ Funded Projects in the New Jersey Portion of the DVRPC Region (2014–2017)

Pollutant	Emissions Reduction (Kg/day)	
	Unedited Values from FHWA CMAQ Database (includes continuing projects)	Adjusted Values from FHWA CMAQ Database (includes new funded projects only)
VOC Emissions	29.3	3.09
NO _x Emissions	319.85	15.084
PM _{2.5} Emissions	14.531	5.26
CO Emissions	N/A	N/A

Source: NJDOT 2018

Targets

DVRPC has coordinated emissions reduction target setting with both PennDOT and NJDOT to establish emissions reduction targets from CMAQ funded projects in the relevant portions of the DVRPC planning areas. Each state has developed state-level emissions reductions targets that account for emissions reductions at the MPO level.

DVRPC is adopting the MPO regional targets that were used to develop the statewide targets that were submitted to FHWA in May 2018. The DVRPC-supported emissions reductions targets are presented in the following sections.

Pennsylvania

DVRPC coordinated efforts to develop the On-road Mobile Source Emissions targets in with PennDOT. The coordination procedures are detailed in PennDOT's submission letter titled *State DOT Targets for the PM3 Performance Measures* submitted to FHWA in May 2018. DVRPC is supporting the PennDOT on-road mobile emissions reductions targets for CMAQ-funded projects and those targets are presented in Table 5.

Table 7: On-road Emissions Reductions Targets for the DVRPC Planning Area in Pennsylvania

Pollutant	Emissions Reduction (Kg/day)	
	FY2018 – FY2019	FY2018 – FY2021
	Two-year Target	Four-year Target
VOC Emissions	37.61	69.31
NO_x Emissions	23.42	42.50
PM_{2.5} Emissions	1.08	2.06
CO Emissions	282.74	565.47

Source: PennDOT 2018

In order to establish the performance targets, the four-year (2014–2017) historical benefits for new (non-recurring) CMAQ projects in the DVRPC region were averaged. The historical average of the CMAQ project emissions benefits were then adjusted to reflect the anticipated emissions rates of cleaner vehicles that are expected to be operational during the next performance period. This adjustment resulted in conservative emissions reductions targets for the MPO region that both PennDOT and DVRPC will revisit during the mid-point performance period review.

New Jersey

DVRPC coordinated efforts to develop the On-road Mobile Source Emissions targets with NJDOT and the other MPOs in New Jersey. The coordination procedures are detailed in NJDOT's submission of the New Jersey State DOT Targets for the PM3 Performance Measures submitted to FHWA in May 2018. DVRPC is adopting the MPO regional targets that were used to develop the NJDOT on-road mobile emissions reductions targets for CMAQ-funded projects in the DVRPC planning area in New Jersey. The emissions reductions targets are presented in Table 6.

Table 8: On-road Emissions Reductions Targets for the DVRPC Planning Area in New Jersey

Pollutant	Emissions Reduction (Kg/day)	
	FY2018 – FY2019	FY2018 – FY2021
	Two-year Target	Four-year Target
VOC Emissions	1.45	2.864
NO _x Emissions	7.453	14.861
PM _{2.5} Emissions	2.627	5.253
CO Emissions	N/A	N/A

Source: NJDOT 2018

In order to establish the performance targets, the four-year (2014–2017) historical benefits for new (non-recurring) CMAQ projects in the DVRPC region were averaged. Adjustments were made to the baseline emissions reductions to discount reported emission reductions that were reported for recurring CMAQ-funded projects. The targets were developed using an adjusted baseline that accounts only for new CMAQ-funded projects during the performance period 2014–2017.

The historical average of the CMAQ project emissions benefits were also adjusted to reflect the anticipated emissions rates of cleaner vehicles that are expected to be operational during the next performance period. These adjustments have resulted in conservative emissions reductions targets for the MPO region that both NJDOT and DVRPC will revisit during the mid-point performance period review.

CHAPTER 3:

Achieving the Targets

According to FHWA Guidance for preparing the MPO CMAQ performance report, MPOs must present a description of projects identified for funding during the performance period (Federal Fiscal Years 2018-2019, and 2018-2021). Included with the project descriptions should be a further description of how the projects will help the MPO meet the two- and four-year targets for traffic congestion and on-road mobile source emissions.

DVRPC has decided to present the CMAQ-funded projects from the relevant Transportation Improvement Programs (TIPs) for each state in a table that include the state project identification number (known as MPMS number in Pennsylvania and DB Number in New Jersey), a brief project description, and a narrative explanation on how each project will assist in meeting the on-road mobile source emissions, PHED, and percent Non-SOV goals identified in Tables 1, 2, 5 and 6, and the year the funds are programmed in the TIP. The projects are grouped by TIP program year to facilitate calculation of contributions to the established targets.

The tables of planned projects identifies on-going projects and new projects. According to FHWA guidance, only the emissions benefits from new projects count toward the established targets.

Tables 9 and 10 contain the planned CMAQ-funded projects for the Pennsylvania and New Jersey portions of the DVRPC planning area respectively. The benefits of CMAQ funds are allocated to each state based on the source of funds (PennDOT or NJDOT). These tables serve as the DVRPC performance plan for the established two- and four-year targets for PHED, Percent Non-SOV, and on-road mobile source emissions.

Table 9: CMAQ-Funded Projects in the Pennsylvania Portion of the DVRPC Region (2018–2021)

MPMS Num.	Project Title	Project Description	Project Type	Relevant Pollutant	TIP Program Year	Emissions Benefit	Traffic Congestion Benefit (PHED)	Traffic Congestion Benefit (Non-SOV) Travel
64791	PA 420, Kedron Avenue	Modernization of signals, road widening, and channelization.	Intersection Improvement	Ozone, PM _{2.5} , CO	FY 2018	This project reduces congestion and improves air quality by optimizing operations through improving intersection geometry and channelization.	This project will reduce congestion by improving traffic operations.	N/A
102274	Schuylkill River Swing Bridge (TIGER)	This project will provide a bicycle and pedestrian connection between the Kingsessing and Grays Ferry neighborhoods of Philadelphia across the Schuylkill River, allowing users to access destinations and services throughout South and Southwest Philadelphia and Center City.	Bike / Pedestrian Improvement	Ozone, PM _{2.5} , CO	FY 2018	Multi-use trail connection will help reduce emissions by providing a walking and bike link to employment and shopping centers.	This connection reduces congestion by providing alternatives to SOV travel.	This connection reduces SOV travel by providing an alternative transportation option to driving.
107644	Fayette Street Signal Improvements-Phase 2	Installation of adaptive traffic signal system along 7 intersections in Conshohocken Borough from Fayette and 11th to Elm and Oak St. This is Phase II of previously awarded CMAQ project. The system will connect with PennDOT TMS.	Signal / ITS	Ozone, PM _{2.5} , CO	FY 2018	This project reduces congestion and improves air quality by optimizing progression on signalized routes.	This project will reduce congestion by improving traffic operations.	N/A

MPMS Num.	Project Title	Project Description	Project Type	Relevant Pollutant	TIP Program Year	Emissions Benefit	Traffic Congestion Benefit (PHED)	Traffic Congestion Benefit (Non-SOV) Travel
61885	Schuylkill River Trail (Mont Clare Bridge) (Q42)	Construction of a multi-use path within the right-of-way of the SR 29 bridge between the Schuylkill Canal Tow Path in Mont Clare - Upper Providence Township, Montgomery County and Ashland Street in Phoenixville Borough, Chester County. The project will modify the Mont Clare Bridge to turn the current five foot wide sidewalk on the bridge into a ten foot wide multi-use path to be consistent with the rest of the trail.	Bike / Pedestrian Improvement	Ozone, PM _{2.5} , CO	FY 2019	Multi-use trail will help reduce emissions by providing a walking and bike link to employment and shopping centers.	Trail reduces congestion by providing alternatives to SOV travel	Trail reduces SOV travel by providing an alternative transportation option to driving.
71198	Park Road Trail (TE)	This project is for the continuation of a multi-use trail from the turnpike bridge to Marsh Creek State Park (approx. ½ mile). There currently is no sidewalk or trail and pedestrians and bicyclists must use the roadway. The existing roadway consists of two 11' lanes with no shoulders. The proposed trail will be 6' wide and be within existing ROW.	Bike / Pedestrian Improvement	Ozone, PM _{2.5} , CO	FY 2019	Multi-use trail will help reduce emissions by providing a walking and bike link to employment and shopping centers.	Trail reduces congestion by providing alternatives to SOV travel.	Trail reduces SOV travel by providing an alternative transportation option to driving.

MPMS Num.	Project Title	Project Description	Project Type	Relevant Pollutant	TIP Program Year	Emissions Benefit	Traffic Congestion Benefit (PHED)	Traffic Congestion Benefit (Non-SOV) Travel
106265	US 30 ITS	Advanced Intelligent Transportation Systems (ITS) assets will be provided for the US 30 corridor including US 30 Bypass and Business as well as surrounding arterial roads (PA 113, US 322, PA 340, Reeceville Rd., PA 82, Airport Rd., PA 10). Advanced ITS will include CCTV cameras, dynamic message signs, EZ Pass tag readers, RTMS incident detectors, fiber communications systems, and expressway service patrol.	Signal / ITS	Ozone, PM _{2.5} , CO	FY 2019	This project reduces congestion and improves air quality by optimizing operations through signal timing, incident management, and advanced ITS techniques.	This project will reduce congestion by improving traffic operations.	N/A
107630	Paoli Pike Trail Segment D-E	Construction of 8-10' wide, 0.5 mile multi-use trail along Paoli Pike in E. Goshen Township between Boot Road and N. Chester Road. Trail will connect Goshen Shopping Center, Goshen Corporate Park, municipal complex, and park and recreation facilities. Sections D and E of Paoli Pike Trail.	Bike / Pedestrian Improvement	Ozone, PM _{2.5} , CO	FY 2019	Multi-use trail will help reduce emissions by providing a walking and bike link to employment and shopping centers.	Trail reduces congestion by providing alternatives to SOV travel.	Trail reduces SOV travel by providing an alternative transportation option to driving.
107631	Navy Yard Contra Flow Loop Shuttle	Increase shuttle service between Navy Yard and NRG Station to 11 min. headways by adding second loop shuttle for service throughout the day.	Transit	Ozone, PM _{2.5} , CO	FY 2019	Improved transit service will reduce emissions by providing alternatives to SOV travel.	Improved transit service will reduce congestion by providing alternatives to SOV travel.	Improved transit service will reduce SOV travel by providing transportation options.

MPMS Num.	Project Title	Project Description	Project Type	Relevant Pollutant	TIP Program Year	Emissions Benefit	Traffic Congestion Benefit (PHED)	Traffic Congestion Benefit (Non-SOV) Travel
107637	Ramping up to Rapid Transit on Roosevelt Blvd.	Construction of ten bus stations on Roosevelt Blvd. to support enhanced express bus service between Frankford Transportation Center and Neshaminy Mall. Stations are the first step in introducing enhanced express service on Roosevelt Blvd. There are no bus shelters in 8 of the 10 proposed locations.	Transit	Ozone, PM _{2.5} , CO	FY 2019	Improved transit service will reduce emissions by providing alternatives to SOV travel.	Improved transit service will reduce congestion by providing alternatives to SOV travel.	Improved transit service will reduce SOV travel by providing transportation options.
107639	Installation of Adaptive Signal Control Along Route 3	Installation of adaptive signal system along West Chester Pike for 1.5 miles in Haverford Township between Glen Gary Dr. and Commercial Dr. beyond Gilmore Rd. Project will provide tie-in to adaptive systems in Haverford Township	Signal / ITS	Ozone, PM _{2.5} , CO	FY 2019	This project reduces congestion and improves air quality by optimizing progression on signalized routes.	This project will reduce congestion by improving traffic operations.	N/A
107640	Route 463 Traffic Signal System Project	Automated signal system at 11 intersections on PA Route 463 in Hatfield Township from Clemens Road to Cowpath Road and Broad Street to Line Street. The system will connect with PennDOT TMS at PA 63.	Signal / ITS	Ozone, PM _{2.5} , CO	FY 2019	This project reduces congestion and improves air quality by optimizing progression on signalized routes.	This project will reduce congestion by improving traffic operations.	N/A

MPMS Num.	Project Title	Project Description	Project Type	Relevant Pollutant	TIP Program Year	Emissions Benefit	Traffic Congestion Benefit (PHED)	Traffic Congestion Benefit (Non-SOV) Travel
107642	Smithbridge Road Corridor Improvement	Construction of 8 ft. multi-use trail along Smithbridge Rd. connecting residential neighborhoods and Garnet Valley School District campuses. Project includes intersection improvements at district campuses.	Bike / Pedestrian Improvement	Ozone, PM _{2.5} , CO	FY 2019	Multi-use trail will help reduce emissions by providing a walking and bike link to employment and schools.	Trail reduces congestion by providing alternatives to SOV travel.	Trail reduces SOV travel by providing an alternative transportation option to driving.
107646	West Main Street Traffic Signal Improvements	Upgrade 5 signaled intersections along Main St., Norristown Borough, to allow for actuated signal timing from Forrest to Haws. Ave.	Signal / ITS	Ozone, PM _{2.5} , CO	FY 2019	This project reduces congestion and improves air quality by optimizing progression on signalized routes.	This project will reduce congestion by improving traffic operations.	N/A
107650	Easton Road Traffic Signal System Project	Upgrade of 9 signalized intersections (coordinated) along Easton Rd. in Abington Township from Hamilton Ave. to Mt. Carmel Ave. in Abington Township	Signal / ITS	Ozone, PM _{2.5} , CO	FY 2019	This project reduces congestion and improves air quality by optimizing progression on signalized routes.	This project will reduce congestion by improving traffic operations.	N/A
107654	Advancing CNG in Philadelphia	Purchase 25 CNG waste haulers.	Diesel Replacement	Ozone, PM _{2.5} , CO	FY 2019	Emissions will be reduced by replacing pre-MY 2007 diesel trash trucks with CNG vehicles	N/A	N/A
111005	Conshohocken Garage (I-76 ICM)	This project will provide flex funds to be transferred to SEPTA for a new "smart" parking garage at SEPTA's Conshohocken Station which will increase parking availability by approximately 500 spaces.	Transit	Ozone, PM _{2.5} , CO	FY 2019	This project will improve air quality by encouraging transit use by increasing parking and parking management at a popular regional rail station.	This project will reduce congestion by encouraging transit use by increasing parking and parking management at a popular regional rail station.	This project will reduce SOV use by encouraging transit use by increasing parking and parking management at a popular regional rail station.

MPMS Num.	Project Title	Project Description	Project Type	Relevant Pollutant	TIP Program Year	Emissions Benefit	Traffic Congestion Benefit (PHED)	Traffic Congestion Benefit (Non-SOV) Travel
59434	Schuylkill River Trail (Q20)	Construction of a 9.8 mile trail from Township Line Rd. in East Pikeland Township to US 422 over the Schuylkill River in North Coventry Township. The trail will be located within existing railroad and PECO Energy corridors, railroad and utility rights-of-way, existing bridges, canal towpaths, and public and private open space. This project will connect several parks and open space preserves and will provide a safe route for bicyclists and pedestrians traveling along the US 422 and Schuylkill River corridor.	Bike / Pedestrian Improvement	Ozone, PM _{2.5} , CO	FY 2020	Multi-use trail will help reduce emissions by providing a walking and bike link to employment and shopping centers.	Trail reduces congestion by providing alternatives to SOV travel.	Trail reduces SOV travel by providing an alternative transportation option to driving.
107634	Pedestrian Enhancements for Media Borough	Complete gaps in sidewalk network throughout the borough.	Bike / Pedestrian Improvement	Ozone, PM _{2.5} , CO	FY 2020	Improved sidewalk connections will help reduce emissions by providing walking and bike links to employment and shopping centers.	Complete sidewalks reduce congestion by providing an alternative transportation option to driving.	Complete sidewalks reduce SOV travel by providing an alternative transportation option to driving.
107636	Neshaminy Greenway Trail	10 ft., 1.5 mile multi-use trail in Doylestown Township (Central Park to Neshaminy Manor). Connects into existing Neshaminy Greenway and SEPTA Rt. 55 bus service.	Bike / Pedestrian Improvement	Ozone, PM _{2.5} , CO	FY 2020	Multi-use trail will help reduce emissions by providing a walking and bike link to transit and government service buildings.	Trail reduces congestion by providing alternatives to SOV travel.	Trail reduces SOV travel by providing an alternative transportation option to driving.

MPMS Num.	Project Title	Project Description	Project Type	Relevant Pollutant	TIP Program Year	Emissions Benefit	Traffic Congestion Benefit (PHED)	Traffic Congestion Benefit (Non-SOV) Travel
107649	Connecting Wallingford to Mass Transit	Sidewalk for 850 ft. from N. Providence Rd. along E. Possum Rd. to Wallingford Train Station.	Bike / Pedestrian Improvement	Ozone, PM _{2.5} , CO	FY 2020	Sidewalk connection will help reduce emissions by providing a walking and bike link to transit.	The sidewalk reduces congestion by providing alternatives to SOV travel.	The sidewalk reduces SOV travel by providing an alternative transportation option to driving.
107632	Fox Chase Lorimer Trail	0.5 mile multi-use trail system connecting Fox Chase SEPTA station and 16 mile trail system in Montgomery county and Philadelphia along old rail ROW.	Bike / Pedestrian Improvement	Ozone, PM _{2.5} , CO	FY 2021	Multi-use trail will help reduce emissions by providing a walking and bike link to employment and shopping centers.	Trail reduces congestion by providing alternatives to SOV travel.	Trail reduces SOV travel by providing an alternative transportation option to driving.
107648	Reformatting North 5th Street as a Complete Street	Signal upgrades, fiber interconnection, and traffic calming for a 0.4 mile corridor along N. 5th St. from Luzerne to Cayuga St. in Philadelphia.	Traffic Operations	Ozone, PM _{2.5} , CO	FY 2021	This project reduces congestion and improves air quality by optimizing progression on signalized routes.	This project will reduce congestion by improving traffic operations.	N/A
110494	RTMC General Contract	Regional Traffic Management Center (RTMC) planning, designing, and building/commissioning of a facility to optimize the performance of the surface transportation network by expanding the current function of the freeway management systems to include active traffic management of dynamic junction control, flex lanes, part time shoulder use, ramp metering, multimodal coordination, and proactive management of traffic signals along major regional arterial corridors.	Signal / ITS	Ozone, PM _{2.5} , CO	FY 2021	This project reduces congestion and improves air quality by optimizing operations through signal timing, incident management, and advanced ITS techniques.	This project will reduce congestion by improving traffic operations.	N/A

MPMS Num.	Project Title	Project Description	Project Type	Relevant Pollutant	TIP Program Year	Emissions Benefit	Traffic Congestion Benefit (PHED)	Traffic Congestion Benefit (Non-SOV) Travel
17928	Air Quality Partnership	This project funds education and outreach activities and materials to encourage the reduction of emissions from transportation sources that contribute to ozone and PM _{2.5} pollution. This project will promote dissemination of air quality forecasts and educate about steps the public can take to reduce transportation related emissions and improve air quality.	Education / Outreach	Ozone, PM _{2.5} , CO	Continuing	Emissions are reduced by encouraging alternative commuting patterns and increased transit use resulting in a reduction in SOV travel during episodic air pollution events.	Congestion is reduced by encouraging alternative commuting patterns and increased transit use resulting in a reduction in SOV travel during episodic air pollution events.	SOV travel is reduced by encouraging alternative commuting patterns and increased transit use during episodic air pollution events.
63406	Retrofit for Bike Lanes and Shoulders	The purpose of this project is to maintain existing and future bicycle facilities, including installation, maintenance, and replacement of striping and damaged and missing signs.	Bike / Pedestrian Improvement	Ozone, PM _{2.5} , CO	Continuing	Maintaining safe bike linkages will help reduce emissions by promoting bike travel to employment and shopping centers.	Maintaining safe bike linkages will help reduce congestion by promoting bike travel to employment and shopping centers.	Maintaining safe bike linkages will help reduce SOV travel by promoting bike travel to employment and shopping centers.
72738	Intelligent Transportation Systems (ITS)	DVRPC's Intelligent Transportation System (ITS) program encompasses a wide range of activities including the ITS Technical Task Force, incident management programs, ITS architecture development, training programs for ITS operators and emergency response personnel, and technical assistance to agencies.	Signal / ITS	Ozone, PM _{2.5} , CO	Continuing	This project reduces congestion and improves air quality by coordinating regional ITS efforts.	This project reduces congestion and improves air quality by coordinating regional ITS efforts.	N/A

MPMS Num.	Project Title	Project Description	Project Type	Relevant Pollutant	TIP Program Year	Emissions Benefit	Traffic Congestion Benefit (PHED)	Traffic Congestion Benefit (Non-SOV) Travel
80093	I-76, Regional Travel Information	This project will implement a Variable Speed Limit System and a Queue Detection System along I-76 from I-276 to US 1.	Signal / ITS	Ozone, PM _{2.5} , CO	Continuing	This project reduces congestion and improves air quality through incident management and ITS techniques.	This project reduces congestion and improves air quality through incident management and ITS techniques.	N/A
84457	Signal Retiming Program	This signal re-timing program provides for the evaluation of existing signals along an identified corridor, with the goal of improving traffic operations along said corridor through revised signal timing plans.	Signal / ITS	Ozone, PM _{2.5} , CO	Continuing	This project reduces congestion and improves air quality by optimizing progression on signalized routes.	This project will reduce congestion by improving traffic operations.	N/A
96223	Philadelphia Signal Retiming	This project is a congestion reduction and traffic flow improvement program.	Signal / ITS	Ozone, PM _{2.5} , CO	Continuing	This project reduces congestion and improves air quality by optimizing progression on signalized routes.	This project will reduce congestion by improving traffic operations.	N/A
110429	Mobility Alternatives Program (MAP)/Share a Ride Program	Geared to employers, MAP is an outreach and education program overseen by DVRPC to provide information to employers and commuters about options to the single occupant auto for commuting to work.	Education / Outreach	Ozone, PM _{2.5} , CO	Continuing	This program improves air quality by encouraging employers to utilize alternative commute programs and reduce SOV travel by their employees.	This program reduces congestion by encouraging employers to utilize alternative commute programs and reduce SOV travel by their employees.	This program reduces SOV travel by educating employers about alternative commute programs for their employees.

MPMS Num.	Project Title	Project Description	Project Type	Relevant Pollutant	TIP Program Year	Emissions Benefit	Traffic Congestion Benefit (PHED)	Traffic Congestion Benefit (Non-SOV) Travel
110460	Commuter Services	This project is a work program project that allows for staff to coordinate alternative commute education and outreach programs among MAP and TMA contractors.	Education / Outreach	Ozone, PM _{2.5} , CO	Continuing	Commuter Services helps to reduce emissions through a variety of activities including promoting alternative commute options and assisting with outreach to promote non-SOV travel.	Commuter Services helps to reduce congestion through a variety of activities including promoting alternative commute options and assisting with outreach to promote non-SOV travel.	Commuter Services helps to reduce SOV travel through a variety of activities including promoting alternative commute options and assisting with outreach to promote non-SOV travel.
111424	Transportation Management Associations (TMA)	Transportation Management Associations (TMA's) help address demand for the region's transportation system. They are public-private partnerships that provide a forum to resolve transportation issues in their service areas. Services include a range of transportation improvement options, including task forces, employer and construction project shuttles, advocacy, and congestion reduction assistance to employers along corridors and in municipalities.	Education / Outreach	Ozone, PM _{2.5} , CO	Continuing	TMA's help to reduce emissions through a variety of activities including promoting alternative commute options, sponsoring last mile shuttles, and assisting with outreach to promote non-SOV travel.	TMA's help to reduce congestion through a variety of activities including promoting alternative commute options, sponsoring last mile shuttles, and assisting with outreach to promote non-SOV travel.	TMA's help to reduce SOV travel through a variety of activities including promoting alternative commute options, sponsoring last mile shuttles, and assisting with outreach to promote non-SOV travel.

Source: DVRPC 2018

Table 10: CMAQ-Funded Projects in the New Jersey Portion of the DVRPC Region (2018–2021)

DB Num.	Project Title	Project Description	Project Type	Relevant Pollutant	TIP Program Year	Emissions Benefit	Traffic Congestion Benefit (PHED)	Traffic Congestion Benefit (Non-SOV) Travel
D1601	New Jersey Signal Timing Initiative	Optimize progression of signaled County 500 and 600 Routes in the DVRPC region.	Signal / ITS	Ozone, PM _{2.5}	FY 2018	This project reduces congestion and improves air quality by optimizing progression on signalized routes.	This project will reduce congestion by improving traffic operations.	N/A
D1703	Princeton Bicycle Infrastructure	Develop bike rack and bike parking infrastructure at key transit and public locations in Princeton, Mercer County	Bike / Pedestrian improvement	Ozone	FY 2018	Expanding bike share in Princeton will reduce emissions from SOV travel.	This project will reduce congestion by providing alternatives to SOV travel.	This project will provide an alternative to SOV travel for short trips.
T701	River Line Tier 4 Engine Retrofit	Repower River Line Light Rail locomotives to Tier 4 Engines	Diesel Repower / Transit	Ozone, PM _{2.5}	FY 2018	Emissions will be reduced by repowering Tier 1 light rail diesel locomotives with Tier 4 engines.	Maintaining transit vehicles and supporting transit operations reduces congestion and SOV travel.	Maintaining transit vehicles and supporting transit operations reduces congestion and SOV travel.
D0406	RideEco Mass Marketing	This program expands outreach to the general public about the benefits of using transit and the RideECO Program.	Education / Outreach	Ozone	Continuing Project	Emissions are reduced by encouraging increased transit use resulting in a reduction in SOV travel.	This project reduces congestion by encouraging transit use through tax incentives provided by the RideEco program.	This project reduces SOV travel by encouraging transit use through tax incentives provided by the RideEco program.

DB Num.	Project Title	Project Description	Project Type	Relevant Pollutant	TIP Program Year	Emissions Benefit	Traffic Congestion Benefit (PHED)	Traffic Congestion Benefit (Non-SOV) Travel
D0407	Ozone Action Program in New Jersey	Ozone Action strives to improve the region's air quality by warning individuals in advance of "Air Quality Action Days and encouraging the use of mobility alternatives that will reduce congestion and air pollution.	Education / Outreach	Ozone	Continuing Project	Emissions are reduced by encouraging alternative commuting patterns and increased transit use resulting in a reduction in SOV travel during episodic air pollution events.	Congestion is reduced by encouraging alternative commuting patterns and increased transit use resulting in a reduction in SOV travel during episodic air pollution events.	SOV travel is reduced by encouraging alternative commuting patterns and increased transit use during episodic air pollution events.
D0601	Camden County Bus Purchase	Purchase of new transit vehicles for combination of fixed route, subscription, and demand responsive transit services provided in Camden County	Transit	Ozone, PM _{2.5}	Continuing Project	New transit vehicles will reduce emissions of PM _{2.5} and Ozone precursors through better fuel economy. Transit service reduces emissions from SOV travel.	Maintaining transit vehicles and supporting transit operations reduces congestion and SOV travel.	Maintaining transit vehicles and supporting transit operations reduces congestion and SOV travel.
D9807	Gloucester County Bus Purchase	Purchase of new transit vehicles for combination of fixed route, subscription, and demand responsive transit services provided in Gloucester County	Transit	Ozone, PM _{2.5}	Continuing Project	New transit vehicles will reduce emissions of PM _{2.5} and Ozone precursors through better fuel economy. Transit service reduces emissions from SOV travel.	Maintaining transit vehicles and supporting transit operations reduces congestion and SOV travel.	Maintaining transit vehicles and supporting transit operations reduces congestion and SOV travel.

DB Num.	Project Title	Project Description	Project Type	Relevant Pollutant	TIP Program Year	Emissions Benefit	Traffic Congestion Benefit (PHED)	Traffic Congestion Benefit (Non-SOV) Travel
D1101	Mercer County Bus Purchase	Purchase of new transit vehicles for combination of fixed route, subscription, and demand responsive transit services provided in Mercer County	Transit	Ozone, PM _{2.5}	Continuing Project	New transit vehicles will reduce emissions of PM _{2.5} and Ozone precursors through better fuel economy. Transit service reduces emissions from SOV travel.	Maintaining transit vehicles and supporting transit operations reduces congestion and SOV travel.	Maintaining transit vehicles and supporting transit operations reduces congestion and SOV travel.
T112	Rail Rolling Stock Procurement	Funds for replacing rail rolling stock	Transit	Ozone, PM _{2.5}	Continuing Project	Supporting rail transit operations reduces emission by reducing SOV travel.	Maintaining transit vehicles and supporting transit operations reduces congestion and SOV travel.	Maintaining transit vehicles and supporting transit operations reduces congestion and SOV travel.
T120	Small /Special Services Program	Funds efforts which initiate or promote transit solutions to reduce congestion, manage transportation demand, and improve air quality	Transit	Ozone	Continuing Project	Supporting transit operations reduces emissions by reducing SOV travel.	Maintaining transit vehicles and supporting transit operations reduces congestion and SOV travel.	Maintaining transit vehicles and supporting transit operations reduces congestion and SOV travel.

Source: DVRPC 2018



Appendix A

Appendix A: Pennsylvania State PM3 Performance Measures



National Performance Management Measures to Assess System Performance, Freight Movement, and the CMAQ Improvement Program

**SUBJECT: Establishment of State DOT Targets for PM-3 Performance Measures
[23 CFR 490.105]**

DESCRIPTION:

The Federal Highway Administration (FHWA) final rule for the *National Performance Management Measures; Assessing Performance of the National Highway System, Freight Movement on the Interstate System, and Congestion Mitigation and Air Quality Improvement Program* was published in the Federal Register (82 FR 5970) on January 18, 2017 and became effective on May 20, 2017.

This final rule is the third in a series of three related rulemakings that together establishes a set of performance measures for State Departments of Transportation (State DOTs) and Metropolitan Planning Organizations (MPOs) to use as required by the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation (FAST) Act. The measures in this third final rule will be used by State DOTs and MPOs to assess the performance of the Interstate and non-Interstate National Highway System (NHS) for the purpose of carrying out the National Highway Performance Program (NHPP); to assess freight movement on the Interstate System; and to assess traffic congestion and on-road mobile source emissions for the purpose of carrying out the Congestion Mitigation and Air Quality Improvement (CMAQ) Program. These system performance measures are collectively referred to as the PM-3 measures.

State DOTs are required to establish targets in coordination with MPOs for all the measures in this rule by May 20, 2018. MPOs will have an additional 180 days beyond that date to either set their own targets or agree to the State DOT targets. In addition, State DOTs will need to report on performance at regular intervals. The first State DOT baseline performance period report is due October 1, 2018, for all measures in this rule.

DISCUSSION:

1. PM-3 System Performance Measures include:
 - Percent of Person-miles Traveled on the Interstate System that are Reliable
 - Percent of Person-miles Traveled on the Non-Interstate NHS that are Reliable
 - Interstate System Truck Travel Time Reliability Index
 - Annual Hours of Peak-Hour Excessive Delay (PHED) per Capita
 - Percent Non-Single Occupant Vehicle (SOV) Travel
 - On-Road Mobile Source Emissions Reduction for CMAQ-funded Projects
2. State DOT 2- and 4-year targets are due May 20, 2018 and will also be reported to FHWA in the 2017 baseline report due October 2018. To satisfy coordination requirements [23 CFR

490.105(e)(2)], PennDOT has coordinated with Planning Partners in the development of the measures and selection of targets to ensure consistency, to the maximum extent practicable.

3. For the three reliability measures, PennDOT has set statewide targets (sub-state targets are optional). MPO baseline reliability measures have been provided for information purposes only. For the first performance period, the annual peak hour excessive delay and non-SOV travel measures must be developed for the Pittsburgh and Philadelphia urbanized areas only. PennDOT has worked closely with SPC and DVRPC to develop these targets and to include the necessary multi-state coordination partners in the target-setting process. The mobile source emission measure targets are produced statewide and for each MPO that is in nonattainment or maintenance of the National Ambient Air Quality Standards.
4. PennDOT has worked to identify and evaluate the data and tools used to produce the baseline performance measures. The University of Maryland CATT Lab RITIS software platform is used to generate all the travel time based measures. Data from the American Community Survey (ACS) and FHWA's CMAQ annual reporting system are used for the non-SOV travel and mobile source emissions measures, respectively. Future revisions and modifications to these tools may impact the reported performance measures and established targets.
5. Due to potential tool enhancements, limited historic information, and the need for additional research understanding the variances and factors influencing each of the performance measures, PennDOT has established conservative targets. In some respects, these may be more appropriately referred to as benchmarks. PennDOT will track the measures over the next two years. States are permitted to adjust their 4-year targets at the midterm of the performance period, representing data through 2019 in a report due to FHWA by October 1, 2020. PennDOT will coordinate any updates to the performance measures with the Planning Partners. DVRPC and SPC will also track the annual PHED and Non-SOV travel measures and revisit the estimated established 4-year targets at the mid-term period.

COORDINATION MEETINGS:

1. A workshop was conducted on January 11th with PennDOT and FHWA Pennsylvania Division staff to identify future steps and requirements related to the Transportation Performance Management (TPM) rulemaking.
2. PennDOT conducted a performance measure workshop on February 26-27th with the Pittsburgh, Philadelphia and York MPO planning staff to evaluate baseline performance measure trends and methodologies for target setting.
3. PennDOT provided status updates on the development of performance measure data, tools and methodologies to the Planning Partners. On October 18, 2017, PennDOT provided an overview of the performance measures and general approaches for target setting at the Planning Partners fall conference in State College. On a March 20, 2018 conference call, PennDOT provided a status update on the development of baseline measures and targets.
4. PennDOT conducted a May 9th webinar to review the State DOT targets with the Planning Partners.

5. There were four Transportation Performance Measure meetings held for the Philadelphia PA-NJ-DE-MD urbanized area to coordinate, discuss and establish target setting for the PHED and Non-SOV travel measures. The meetings occurred on February 16th, March 19th, April 9th and April 30th 2018. Agency representation included PennDOT, NJDOT, DelDOT, MDOT, FHWA, DVRPC, NJTPA, SJTPO, WILMAPCO, LVPC, Berks and Lancaster County MPOs.
6. PennDOT has worked to develop the *Pennsylvania Department of Transportation MAP-21 and FAST Act Performance Management Road Map* to provide Planning Partners a resource on the performance measure requirements and calculations.

ESTABLISHMENT OF STATE DOT TARGETS:

Specific targets and informational resources are attached as follows:

Attachment 1 Targets	Baseline and target values for the travel time reliability and annual peak hour excessive delay measures
Attachment 2 Targets	Baseline and target values for the non-SOV travel measures
Attachment 3 Targets	Target values for the CMAQ emissions measures
Attachment 4	MPO baseline reliability measures <u>for informational purposes only</u>

ESTABLISHMENT OF MPO TARGETS:

1. The MPOs must establish targets no later than 180 days after the respective State DOT(s) establishes (or amends in future) their targets (by November 16, 2018). The MPOs must establish targets by either:
 - Agreeing to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT target for that performance measure; or
 - Committing to a quantifiable target for that performance measure for their metropolitan planning area.
2. PennDOT will be formally contacting each MPO (similar to the safety measures) regarding the above MPO target setting options. If the MPOs establish their own performance measure targets, they should coordinate with PennDOT on the selection of the targets in accordance with 23 U.S.C. 134(h)(2)(B)(i)(II) to ensure consistency, to the maximum extent practicable.
3. The MPOs must report baseline condition/performance and progress toward the achievement of their targets in the system performance report in the metropolitan transportation plan.

Attachment 1: PM-3 Baseline and Target Values for Travel Time and Annual Peak Hour Excessive Delay Measures
(Estimated using RITIS Data Extract from May 8, 2018)

Measure	2017 Baseline	2019 2-year Target	2021 4-year Target
Interstate Reliability (Statewide)	89.8 %	89.8 %	89.8 %
Non-Interstate Reliability (Statewide)	87.4 %	N/A	87.4 %
Truck Reliability Index (Statewide)	1.34	1.34	1.34
Annual Peak Hour Excessive Delay Hours Per Capita (Urbanized Area)	DVRPC 16.8	N/A	17.3
	SPC 11.1	N/A	11.8

Attachment 2: PM-3 Baseline and Target Values for Non-SOV Travel Measure

Measure	2017 Baseline	2019 2-year Target	2021 4-year Target
Percent Non-Single Occupant Vehicle Travel (Urbanized Area)	DVRPC 27.9 %	28.0 %	28.1 %
	SPC 24.8 %	24.6 %	24.4 %

Target Setting Notes:

Reliability Measures:

- Targets set equivalent to 2017 baseline values
- Limited historic data to understand trends of reliability measures.
- More research and data monitoring required to identify trends and project impacts on measure.
- Reassessment at mid-term period.

Delay Measure:

- Historical Vehicle Miles Travel (VMT) and INRIX GPS data suggest increasing delay trends.
- MPO travel models in each region indicate potential increases to VMT and delay.
- Combination of MPO staff input, travel model forecasts, VMT and vehicle registration trends, and forecast economy information used to establish higher delay targets at this time.
- DVRPC estimates 0.6% annual increase in delay/capita.
- SPC estimates 1.5% annual increase in delay/capita.
- Reassessment at mid-term period.

Non-SOV Travel Measure:

- Non-SOV Travel trends based on ACS survey data are relatively constant over the last 5 years.
- DVRPC trend indicates slightly increasing Non-SOV percentage.
- SPC trend indicates slightly decreasing Non-SOV percentage.
- Reassessment at midterm.

Attachment 3: PM-3 Baseline and Target Values for CMAQ Emission Measures

Applicable MPOs and Pollutants Determined from:

https://www.fhwa.dot.gov/environment/air_quality/cmaq/measures/cmaq_applicability/page03.cfm#toc494364458

Measure	MPO	Emissions (kg/day)	
		2019 2-year Target*	2021 4-year Target
VOC Emissions	Statewide	109.460	201.730
	DVRPC (PA only)	37.610	69.310
	SPC	58.060	107.000
	Lehigh Valley	11.690	21.540
	Lancaster	1.950	3.600
	Reading	0.150	0.270
	NEPA	0.000	0.000
NOx Emissions	Statewide	337.700	612.820
	DVRPC (PA only)	23.420	42.500
	SPC	256.110	464.770
	Lehigh Valley	57.550	104.440
	Lancaster	0.570	1.030
	Reading	0.040	0.080
	NEPA	0.000	0.000
PM _{2.5} Emissions	Statewide	10.760	20.490
	DVRPC (PA only)	1.080	2.060
	SPC	7.010	13.350
	Lehigh Valley	2.320	4.410
	York	0.060	0.110
	Harrisburg	0.050	0.100
	Lancaster	0.020	0.040
	Lebanon	0.050	0.090
	Johnstown	0.170	0.320
PM ₁₀ Emissions	Statewide	9.540	17.470
	SPC	9.540	17.470
CO Emissions	Statewide	567.700	1135.400
	DVRPC (PA only)	282.740	565.470
	SPC	284.970	569.930

* 2-year emission targets are only applicable for SPC, DVRPC and Statewide targets (bold above). MPOs with populations <1 million are not required to report 2-year emission targets. The values were used to establish statewide 2-year targets.

Target Setting Notes:

Emission Measures:

- Targets based on reported emissions in FHWA's CMAQ annual database.
- Targets are very difficult to anticipate as CMAQ-funded projects can produce a wide range of benefits.
- 4-year (2014-2017) historical benefits for new CMAQ projects averaged to support target setting.
- Many projects are expected to provide less emissions benefit in the future due to fleet turnover.
- Historical average CMAQ benefits by MPO adjusted to reflect cleaner fleet in future years.

**Attachment 4: Supplemental Information for MPO Distribution
PM-3 Baseline Reliability Measure Values by MPO
(Extracted from RITIS on May 8, 2018)**

MPO*	2017 Baseline Travel Time Values		
	Interstate Reliability	Non-Interstate Reliability	Truck Reliability
Statewide	89.8%	87.4%	1.34
Adams	N/A	87.9%	N/A
Altoona	100.0%	83.5%	1.20
Johnstown	N/A	95.1%	N/A
Centre	100.0%	92.6%	1.14
DVRPC**	74.4%	84.1%	1.83
Erie	100.0%	83.9%	1.25
Franklin	100.0%	94.0%	1.09
Harrisburg	90.9%	91.9%	1.37
Scranton-Wilkes-Barre	98.1%	87.5%	1.40
Lancaster	100.0%	94.1%	1.08
Lebanon	100.0%	93.0%	1.11
Lehigh Valley	100.0%	87.1%	1.34
NEPA	100.0%	92.1%	1.22
Reading	100.0%	93.4%	1.12
Shenango Valley	99.4%	94.9%	1.18
SPC	92.3%	87.0%	1.44
SEDA-COG	100.0%	95.5%	1.10
Williamsport	100.0%	98.3%	1.16
York	100.0%	89.5%	1.22

* The RITIS analysis platform currently does not directly produce MAP-21 measures for RPO areas
 ** DVRPC MPO values currently include areas outside of Pennsylvania that are within MPO boundaries



Appendix B

Appendix B: New Jersey State PM3 Performance Measures



State of New Jersey

DEPARTMENT OF TRANSPORTATION
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PHILIP D. MURPHY
Governor

DIANE GUTIERREZ-SCACCETTI
Acting Commissioner

SHEILA Y. OLIVER
Lt. Governor

May 16, 2018

Robert Clark, Division Administrator
Federal Highway Administration, New Jersey Division
840 Bear Tavern Road, Suite 202
West Trenton, NJ 08628

Dear Mr. Clark:

As you know, the New Jersey Department of Transportation (NJDOT) is required to provide Safety (PM1), Infrastructure (PM2) and System Performance (PM3) targets to FHWA. In my April 27, 2018 letter to you, I provided the Safety targets. In a companion letter to this one, I will provide the Infrastructure targets. With this letter, I am pleased to provide New Jersey's 2018 System Performance Targets. The NJDOT intends to include these targets in New Jersey's Initial Performance Report due by October 1, 2018.

MAP-21, followed by the FAST Act, requires State DOTs and MPOs to implement a performance management process. For each performance area noted below (Subparts E, F, G and H), FHWA sets forth one or more performance measures. Each state must develop targets for each performance measure, and each MPO must either adopt the state target or their own regional target. All performance areas require single statewide targets, except for the two in Subpart G, where the requirements currently apply to urbanized areas with a population over 1 million. For those, there is a single target for each urbanized area, and all State DOTs and MPOs in that area must collaborate to develop and agree on a single target.

For performance areas in Subparts E, F, and G, the performance period is from January 1, 2018 to December 31, 2021. For this 4-year performance period, 2-year targets reflect the anticipated condition or performance level at the midpoint of the performance period (12/31/2019), and 4-year targets reflecting the anticipated condition or performance level at the end of the performance period (12/31/2021). For the On-Road Mobile Source Emissions Measure (Subpart H), the performance period is October 1, 2017 to September 30, 2021, based on the federal fiscal year. We will have the opportunity to adjust all 4-year targets at the mid-point of the performance period.

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The following narrative describes the basic requirements and proposed targets for each performance area.

Travel Time Reliability (Subpart E)

Travel time reliability does not mean eliminating traffic congestion, but reducing its extremes to keep it within reasonable limits. The Department is using the National Performance Management Research Data Set (NPMRDS) data from 2016 and 2017 as a basis to determine travel time reliability targets. With support from the CATT Lab of the University of Maryland, travel time data has been analyzed to determine which roadway segments are reliable, and which are unreliable. Then segment length, traffic volume and vehicle occupancy data are used to calculate total person-miles of travel for the reliable and unreliable categories. The statewide reliability targets below describe the percentage of overall travel on the NHS that we expect to be reliable. At this stage, we have no definitive basis to change the baseline values for the 2- and 4-year targets, but will use the mid-year performance report as an opportunity to adjust the 4-year target as needed.

Performance Measure	Units	Baseline	2-year Target	4-year Target
Travel Time Reliability, Interstate NHS	Percentage of person-miles traveled that are reliable	82.0%	82.0%	82.0%
Travel Time Reliability, Non-Interstate NHS	Percentage of person-miles traveled that are reliable	84.1%	Not required	84.1%

Freight Reliability (Subpart F)

The Freight Reliability target is based on the same NPMRDS data source. Truck travel reliability is calculated through the Truck Travel Time Reliability (TTTR) index, which compares congested truck travel time (95th percentile) to average truck travel time (50th percentile). The highest TTTR values for segments are combined and weighted by segment length, and the sum of all length-weighted segments are divided by the total length of Interstate roadways in the state. There is no threshold, and the target is required only for interstate highways on the NHS.

The Baseline value is the average of the most recent calendar year of data (2017), which is 1.81. Data trends show a very modest increase in TTR over the calendar years of 2016 and 2017. Therefore, the Department and the MPOs agreed on a 2-year target of 1.9. However, it is anticipated that over 4 years, the target would be slightly higher, so it is set to 1.95.

Performance Measure	Units	Baseline	2-year Target	4-year Target
Truck Travel Time Reliability (TTTR)	TTTR Index, Interstate NHS	1.81	1.9	1.95

Peak Hour Excessive Delay (PHED) (Subpart G) – Urbanized Area Target

The Peak Hour Excessive Delay (PHED) measure indicates the extra time spent traveling due to extreme congestion, expressed as the number of hours per year on a per capita basis. This target is required for urbanized areas of greater than 1 million population. For NJ, the applicable

urbanized areas are New York City and Philadelphia, and a single target is required for each multi-state urbanized area.

For the New York urbanized area, partner agencies agreed that the effects of expected economic growth, especially in New York City, would exceed the impacts of investments to reduce traffic congestion. The 2 percent per year increase was the result.

For the Philadelphia urbanized area, the PHED value was 16.8 for 2017. The Vehicle Miles of Travel (VMT) forecasts for the DVRPC region for 2015–2020, based on the travel demand model, indicated a growth of 0.7% per year. On that basis, the 0.6% per year value was deemed appropriate.

Performance Measure	Units	Urbanized Area	Baseline	2-year Target	4-year Target
Peak Hour Excessive Delay (PHED)	Annual Hours of PHED per capita on the NHS	New York City (NY-NJ-CT)	20.0	Not Required	22.0 (+2%/yr.)
Peak Hour Excessive Delay (PHED)	Annual Hours of PHED per capita on the NHS	Philadelphia (PA-NJ-DE-MD)	16.8	Not Required	17.2 (+0.6%/ yr.)

Non-SOV Travel (Subpart G) – Urbanized Area Target

The Non-SOV Travel measure indicates the amount of travel not by single occupant vehicle (SOV), including modes such as walk, bus, carpool, train, bicycle, taxi, rideshare, and work at home. As with the PHED measure, the Non-SOV measure applies to the New York and Philadelphia urbanized areas. Both areas used U.S. Census American Community Survey (ACS) data as a basis for the targets. Specifically, ACS 5-year (2012-2016) estimates for journey to work trips for residents within the urbanized area.

The New York-Newark, NY-NJ-CT urbanized area’s 5-year average percentage was 51.6%. This reflects a 61.8% non-SOV value for residents within the New York portion of urbanized area, and a 31.7% value for residents of the New Jersey portion of urbanized area. Given the large volume of existing transit ridership in the region where transit facilities are at capacity, the lack of any major transit projects being completed in the 4-year period, and the overall difficulty of “moving the needle” for this measure, the group decided to propose no increase for the 2-year target, and a conservative 0.1% increase for the 4-year target.

The Philadelphia area partner agencies faced similar considerations, but saw slightly more opportunities for growth in alternative modes of travel. Therefore, 0.1% increases were proposed for each 2-year increment.

Performance Measure	Units	Urbanized Area	Baseline	2-year Target	4-year Target
Non-SOV Travel	Percent of Non-SOV Travel in urbanized area	New York City (NY-NJ-CT)	51.6%	51.6%	51.7%
Non-SOV Travel	Percent of Non-SOV Travel in urbanized area	Philadelphia (PA-NJ-DE-MD)	27.9%	28.0%	28.1%

On Road Mobile Source Emissions (Subpart H)

The On Road Mobile Source Emissions measure covers expected emission benefits by pollutant from all investments made through the federal Congestion Mitigation and Air Quality (CMAQ) program. Target values are based on emissions benefits recorded in the FHWA CMAQ Public Access Database for fiscal years 2014-2017. Targets are only required for areas that are in nonattainment or maintenance status for the pollutant.

In developing the targets in consultation with the MPOs and NJDEP, consideration was given to the fact that the vehicle fleet, on average, is becoming cleaner over time. For example, the emissions benefit obtained from driving 20 fewer miles in an average model year 2014 vehicle will be greater than that obtained from driving 20 fewer miles in an average model year 2021 vehicle.

It is important to note that these 2- and 4-year targets are cumulative. The 2-year target reflects expected emissions benefits based on projects authorized in federal fiscal years 2018 and 2019, and the 4-year target reflects federal fiscal years 2018 through 2021.

As noted above, by rule this target is required to include all investments made through the federal Congestion Mitigation and Air Quality (CMAQ) program, regardless of the implementer. The target values below reflect benefits from NJDOT projects, those resulting from MPO local CMAQ programs, and NJ TRANSIT projects.

Statewide CMAQ Emissions Targets (Sum of MPO Targets)				
Year	Total Emissions Benefits Projections (kg/day)			
	Volatile Organic Compounds (VOC)	Carbon Monoxide (CO)	Oxides of Nitrogen (NOx)	Fine Particulate Matter (PM _{2.5})
2018	10.058	16.085	59.919	2.154
2019	7.624	15.842	54.482	2.137
2020	9.442	15.631	58.946	2.122
2021	9.200	15.452	58.504	2.108
Cumulative 2-yr Target ('18-19)	17.682	31.927	114.401	4.290
Cumulative 4-yr Target ('18-21)	36.324	63.010	231.850	8.520

Coordination

For each of the System Performance targets described above, the Department has engaged in a robust coordination process through the nationally recognized interagency Complete Team. Representatives from each of the three MPOs, along with NJ TRANSIT, the Port Authority of New York and New Jersey, CATT Lab of the University of Maryland, and TRANSCOM have worked closely with the Department to ensure that the target development process met technical requirements and adequately considered policy issues. In addition, for the two urbanized area measures, Department staff have participated in regular meetings & conference calls for the NY-NJ-CT and greater Philadelphia regions, led by NJTPA and the New York Metropolitan Transportation Council (NYMTC) for the former, and DVRPC for the latter. For the New York-New Jersey Urbanized area, NJDOT has worked closely with the New York State Department of Transportation, NJTPA, the (NYMTC), and other entities to coordinate identical targets for the two urbanized area measures. Similarly, NJDOT has worked closely with DVRPC, PennDOT, DelDOT, Maryland DOT, and other entities to coordinate identical targets in the greater Philadelphia urbanized area. In so doing, both regions have ensured that all key agencies have participated in and agreed upon the required targets.

If you have any questions, please contact my office.

Sincerely,



Diane Gutierrez-Scaccetti
Acting Commissioner

bc M. Ameen, Acting Executive Director, NJTPA
B. Seymour, Executive Director, DVRPC
J. Marandino, Executive Director, SJTPO

Congestion Mitigation and Air Quality Baseline Report and Performance Plan (2018–2021)

Publication Number: TM19003

Date Published: September 2018

Geographic Area Covered:

Portions of the Philadelphia and New York–Newark Urbanized Area that comprise 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 counties in New Jersey.

Key Words:

Congestion Mitigation and Air Quality, CMAQ, Performance Measures, Transportation Performance Management, Congestion, On-road Mobile Emissions, PM₃, State Performance Measure Targets, Nonattainment Area, Maintenance Area, Volatile Organic Compounds (VOCs), Nitrogen Oxides (NO_x), Fine Particulate Matter (PM_{2.5})

Abstract:

Metropolitan Planning Organizations are required to adopt CMAQ Emissions targets and develop a baseline performance plan as part of the federally mandated Transportation Performance Management process. This technical memo serves as the baseline performance report to FHWA for the period 2018–2021 for the congestion and on-road mobile emissions performance measures for the Philadelphia Urbanized Area and New York-Newark Urbanized Area and on-road mobile emissions performance measures in the DVRPC Planning Area.

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