



MID-PERFORMANCE PERIOD PROGRESS REPORT

CONGESTION MITIGATION AND AIR QUALITY (CMAQ)



Wilmington Area Planning Council (WILMAPCO)

Philadelphia, PA—NJ—DE—MD

October 19, 2020



Introduction

Both the Moving Ahead for Progress in the 21st Century (MAP-21) and the Fixing America's Surface Transportation (FAST) Acts called for a more performance-based approach to transportation planning. Under this federal legislation, States, Metropolitan Planning Organizations (MPOs), and public transportation providers must link investment priorities to certain performance-based measures and targets. These measures and targets lie in the following areas:

- Highway safety and assets
- System performance
- Transit safety and transit asset management

As the MPO for the Wilmington, Delaware region (which includes New Castle County, Delaware and Cecil County, Maryland) the Wilmington Area Planning Council (WILMAPCO) has a long history of incorporating performance measurement into the planning process. The Regional Progress Report, produced ahead of our Regional Transportation Plan (RTP), tracks the performance of and informs the update to policy. Beyond surface trends, the Progress Report uses deep indicators that assess why certain policy actions are on course while others may not be. With mature, performance-based planning already in place, WILMAPCO is in a strong position to incorporate new federally-required performance measures and targets.

This report specifically addresses federal requirements to incorporate performance measurement into Congestion Mitigation and Air Quality (CMAQ) planning and programming. It tracks the progress of our baseline CMAQ Performance Plan, produced in 2018. The table on the following page identifies specific measures and data used. The report also provides a description of future projects which may be funded by CMAQ monies and notes how they will help to achieve the identified targets.



DATA PRESENTED IN THIS REPORT

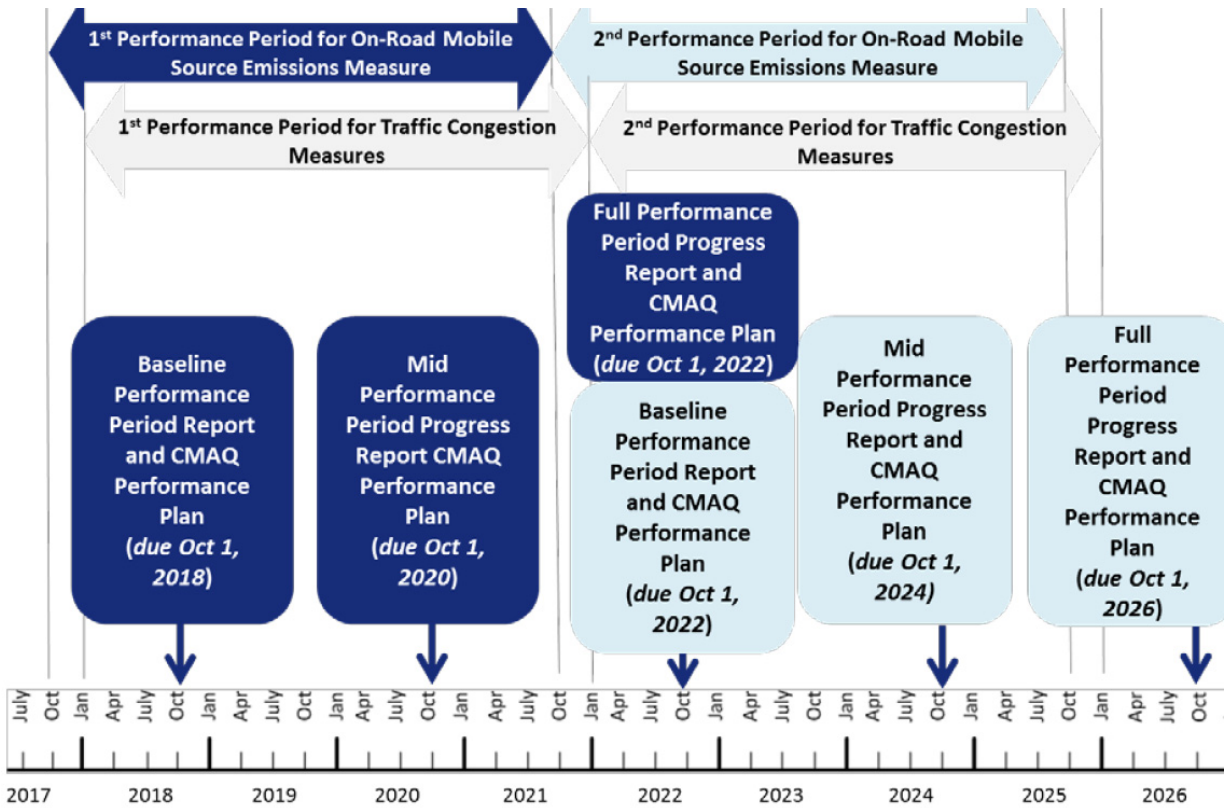
CMAQ Program	Performance Measure	Data
Traffic Congestion	Peak Hour Excessive Delay	Annual hours of peak hour excessive delay per capita
Traffic Congestion	Mode Share	Percent of non-Single Occupancy Vehicle work trips
Mobile Source Emissions	CMAQ funded project emissions	NOx, VOC and PM2.5 reductions from CMAQ projects

As part of federal rulemaking, both the Delaware and Maryland Departments of Transportation (DeIDOT and MDOT) were required to establish performance measures and targets ahead of MPOs. MPOs have the choice to either adopt the state measures and targets or come up with their own. With our strong coordination with both DeIDOT and MDOT, as well as other regional partners, WILMAPCO has chosen to adopt all but one of the previously submitted state targets. The exception is MDOT's 2 and 4-year targets for CMAQ emissions reductions. In this case, WILMAPCO presents its own targets.

In this Mid-Period Performance Report, we also move in step with DeIDOT to revise the 4-year target for CMAQ emissions reductions in Delaware, based on better modeling analyses.

This report is the second in a series of CMAQ Performance Plans and Reports WILMAPCO will submit through the next decade. The graphic on the following page, from the Federal Highway Administration, details the performance plans and progress reports and their deadlines.

PERFORMANCE PERIODS FOR CMAQ MEASURES AND REPORTING TIMELINE



Source: "Congestion Mitigation and Air quality Improvement Program: A Guidebook for Preparing Performance Plans for Metropolitan Planning Organizations." FHWA.

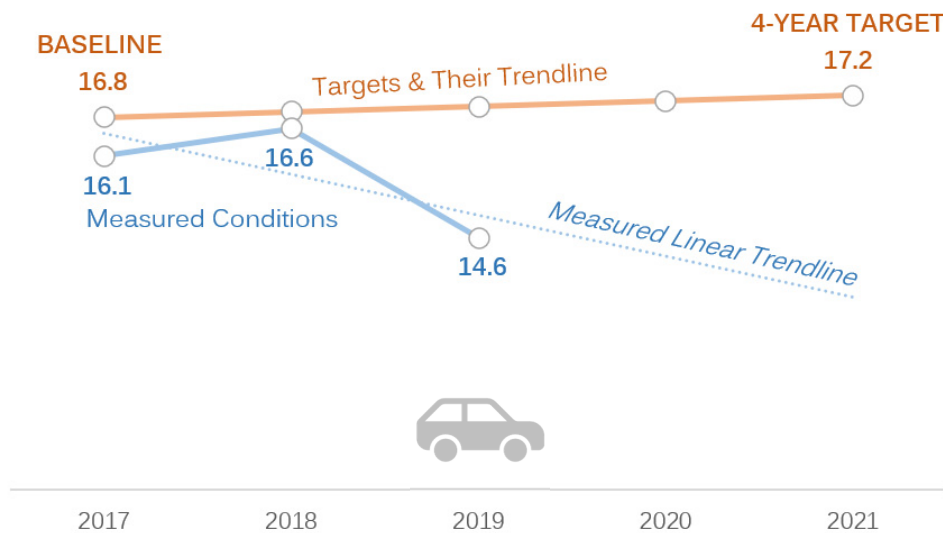
2-Year Condition/Performance

Peak Hour Excessive Delay

The graph below displays baseline conditions, a 4-year target, and actual measured conditions for Peak Hour Excessive Delay (PHED) in the WILMAPCO region (both New Castle County, and Cecil County Maryland). PHED is the extra amount of time spent in congested traffic. A joint PHED baseline and target for the Philadelphia metropolitan region were set through a multiagency coordination process that occurred among relevant state DOTs and MPOs in Pennsylvania, New Jersey, Delaware, and Maryland.

As shown in the graph, peak-hour congestion was expected to worsen on regional highways over the near term. Measured data, however, show a 9% dip in PHED between 2017 and 2019.

PEAK HOUR EXCESSIVE DELAY: HOURS OF REGIONAL DELAY PER CAPITA¹



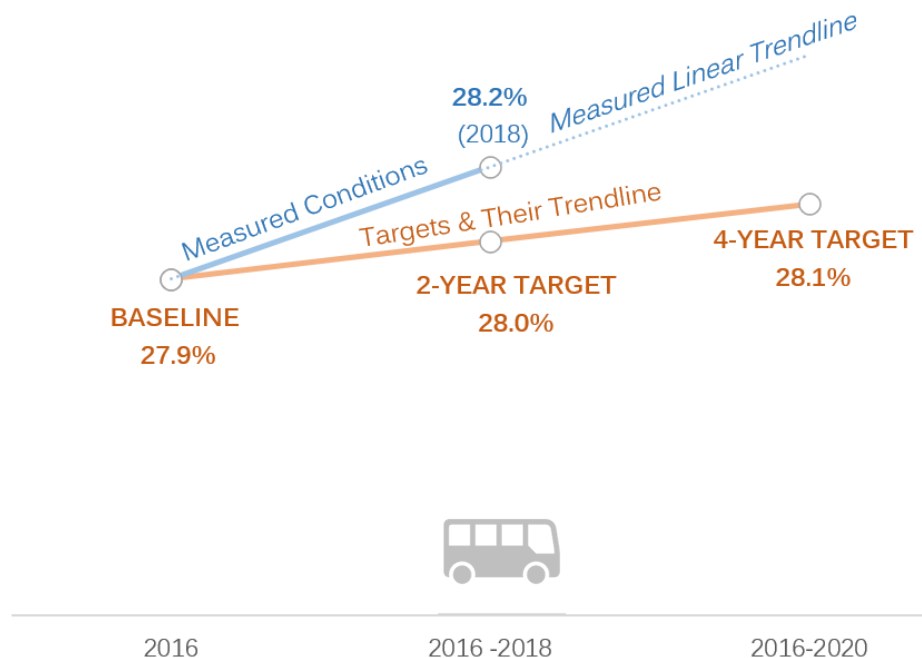
¹ Source: Transportation PM3 Measures Coordination Meeting #6. "Philadelphia PA-NJ-DE-MD Urbanized Area. CMAQ Program Performance Measures, Percent Non-SOV Travel and Annual Hours of Peak Hour Excessive Delay Per Capita." PowerPoint Presentation. June 11, 2020.

<https://wilmapco.sharefile.com/d-sac502d256c4406cb>

Percent Non-SOV Travel

The graph below displays baseline conditions, 2 and 4-year targets, and reported conditions in 2018 for the percentage of non-Single Occupancy Vehicle (non-SOV) trips in the WILMAPCO region. Data from 2019 were not available at the time of writing. These data, from the American Community Survey, are based on how people report commuting to work. Non-SOV trips include: carpooling, public transit, walking, and bicycling. Joint non-SOV baseline and targets for the Philadelphia metropolitan region were set through a multiagency coordination process that occurred among relevant state DOTs and MPOs in Pennsylvania, New Jersey, Delaware, and Maryland. As shown in the graph, non-SOV travel increased at a rate slightly higher than expected between 2016 and 2018.

PERCENT OF REGIONAL NON-SOV TRAVEL²



² Source: Transportation PM3 Measures Coordination Meeting #6. "Philadelphia PA-NJ-DE-MD Urbanized Area. CMAQ Program Performance Measures, Percent Non-SOV Travel and Annual Hours of Peak Hour Excessive Delay Per Capita." PowerPoint Presentation. June 11, 2020.

<https://wilmapco.sharefile.com/d-sac502d256c4406cb>



On-Road Mobile Source Emissions


The tables in this section display baseline conditions, and 2 and 4-year targets for on-road mobile source emissions stemming from CMAQ projects, and estimated emissions reductions in 2018 and 2019 as reported in the CMAQ Public Access System. Data here are broken up between Cecil County and the State of Delaware. They are presented for NO_x, VOCs, and PM_{2.5}. We do not present PM_{2.5} data for Cecil County based on guidance from the FHWA.

In Cecil County, we adopted MDOT's baseline measure³ in our 2018 CMAQ Performance Plan, but elected to set our own 2 and 4-year emissions targets. The baseline figure is based on summed emissions reductions from Cecil County's CMAQ projects from 2014 through 2017 placed in the FHWA CMAQ Public Access System. MDOT's targets were based on these previously-funded CMAQ projects, several roundabouts.

WILMAPCO's targets were based on ten cost-beneficial bicycle and pedestrian projects listed in various Cecil County and municipal priority letters. Using the Atlanta Regional Commission's CMAQ calculator, WILMAPCO determined the median emissions benefits for these projects for the years 2018 and 2020. We extrapolated benefits for the year 2022, based on those figures. The 2020 results became the 2-year target. The sum of the 2020 results and the 2022 results became the 4-year target.⁴

³ Baseline source: MDOT's "CMAQ On-Road Mobile Source Emissions" presentation to the WILMAPCO Air Quality Subcommittee. http://www.wilmapco.org/Aq/files/2018/other/WILMAPCO_CMAQBriefing_041018.pdf

⁴ More information: WILMAPCO's "Cecil County On-Road CMAQ On-Road Mobile Source Emissions" presentation to the WILMAPCO Air Quality Subcommittee. http://www.wilmapco.org/Aq/files/2018/other/CMAQ_CecilCo_8.30.18.pdf



Three roundabout projects initiated in Cecil County in 2012, 2015, and 2016 appear in the CMAQ Public Access System (PAS)⁵ as having received subsequent year funding between 2018 and 2019. Emissions benefits for the 2012 roundabout (SHA MD 273, Telegraph Road, at Appleton Road) were belatedly quantified and entered in the PAS in 2019. These benefits, along with the baseline figure and unchanged 2-year and 4-year targets are presented in the table below.

CMAQ ON-ROAD MOBILE SOURCE EMISSION REDUCTIONS IN CECIL CO. (KG/DAY)

	Baseline	2-Year Target	2-Year Reductions	4-Year Target
VOC	0.12	0.038	0.03	0.059
NOx	0.30	0.085	0.11	0.134


In New Castle County, we adopted the emissions targets set by DelDOT for the State of Delaware. These are presented below. DelDOT's methodology for developing its original targets for VOC and NOx emissions was described in their "Performance Management 3" submission to FHWA in May 2018. Afterwards, DelDOT overhauled its process for calculating CMAQ emissions. These changes were described in a pair of presentations to the WILMAPCO Air Quality Subcommittee in the summer of 2020⁶. With the change to the modeling methodology, emission reduction estimates have increased dramatically.

As shown in the table below, emissions reductions during the 2-year period (from 2018 and 2019⁷) easily met the original 2-year targets for VOCs, NOx, and PM2.5. Emissions were calculated for the Rideshare Program and the C & D Canal Recreational Trail to produce these results. Emissions benefits for other elements of the Bicycle and

⁵ These are: MD 273 (Telegraph Road) at Appleton Road – Proposed Roundabout (MD 20120009); MD 281 at Muddy Lane – Roundabout (MD 20150008); MD 273 (Telegraph Road) at Blue Bird Road – Roundabout CO (MD 20160003). Source: FHWA CMAQ Public Access System. Accessed October 19, 2020.

⁶ DelDOT's "DelDOT's Congestion Mitigation and Air Quality (CMAQ) FHWA Annual Reporting Process" presentation to the Air Quality Subcommittee on July 2, 2020: <https://wilmapco.sharefile.com/share/view/s877a9f7b01f42fcb>; and DelDOT's "DelDOT's CMAQ Emissions Targets" presentation to the Air Quality Subcommittee on August 6, 2020: <https://wilmapco.sharefile.com/d-sb4108f7b3344346b>

⁷ Source: FHWA CMAQ Public Access System. Accessed August 18, 2020.



Pedestrian Programs and Congestion Reduction and Traffic Flow Improvements were qualitatively assessed.

Given the drastic change in modeling results, we are moving concurrently with DelDOT to adjust the 4-year targets, as shown in the table below.

CMAQ ON-ROAD MOBILE SOURCE EMISSION REDUCTIONS IN DELAWARE (KG/DAY)

	Baseline	2-Year Target	2-Year Reductions	<i>Original 4-Year Target</i>	New 4-Year Target
VOC	17.544	10.521	251.03	<i>26.230</i>	251.7
NOx	6.945	7.353	127.68	<i>16.087</i>	128.5
PM2.5	1.165	0.731	3.27	<i>1.799</i>	3.3

Description of CMAQ Projects

The tables below list projects that may be funded by CMAQ over the next several years. Included are the projects' expected emission benefits, and benefits to reducing PHED and increasing non-SOV travel. The projects in Cecil County are unfunded projects that are priorities for local government.

POTENTIAL CMAQ PROJECTS IN CECIL COUNTY, MD

PROJECT	SOURCE
MD 7: East Cecil Ave. to Mechanics Valley Rd. -- Sidewalks	2017 North East Priority Letter
MD 7: North East Isles Dr. to Catherine St. -- Full Bike/Ped Enhancements	2017 North East Priority Letter
MD 7: North East Isles Dr. to Catherine St. -- Interim Bike/Ped Enhancements	2017 North East Priority Letter
US 40 Sycamore Dr. to MD 272 -- Sidewalk	2017 North East Priority Letter
US 40 at MD 272 -- Bike/Ped Improvements	2018 Cecil Co Priority Letter
MD 222: US 40 to MD 275 -- Bike/Ped Improvements	2018 Cecil Co. Priority Letter
MD 272: US 40 to I-95 -- Bike Lanes and Sidewalks	2018 Cecil Co. Priority Letter
US 40 at MD 213 -- Bike/Ped Improvements	2018 Cecil Co. Priority Letter
US 40 at MD 222 -- Bike/Ped Improvements	2018 Cecil Co. Priority Letter
MD 222: Clayton St. to St. Mark's Church Rd. -- Sidewalk	2018 Perryville Priority Letter
<i>New projects not modeled for emissions benefits</i>	
MD 7: Mechanics Valley Road to Ridgely Forest Drive - Bike/walk markings	2020 North East Priority Letter
MD 272: Jethro Street to Amtrak bridge -- Sidewalks	2020 North East Priority Letter
MD 7D: MD 281 to Creswell Avenue -- Sidewalk and Ped/Bike Bridge	2020 Elkton Priority Letter
MD 213 and US 40 -- Sidewalk Improvements from Elkton Ped Plan	2020 Elkton Priority Letter

The projects in New Castle County, meanwhile, were identified by WILMAPCO as CMAQ-eligible and tabbed by DelDOT, along with other projects in Delaware, for future CMAQ spending. In a coordinated process, we submit a ranked list of CMAQ-eligible projects in New Castle County in the Transportation Improvement Program to DelDOT each year. In turn, DelDOT works through that list to assign future CMAQ spending.

These projects reflect the current priorities for CMAQ spending. These priorities may shift, and other projects may be funded via CMAQ monies in the future. Reasons for this may include (but are not limited to): changes to a project's scope, evolving priorities for spending CMAQ monies based on a better understanding of benefits, and evolving state DOT priorities or needs.

POTENTIAL CMAQ PROJECT DESCRIPTIONS

<i>Cecil County, MD</i>						
PROJECT	DESCRIPTION	YEAR(S) OF CMAQ FUNDING	VOC REDUCTION (kg/day, year 2020)	NOx REDUCTION (kg/day, year 2020)	PHED BENEFIT	NON-SOV BENEFIT
Transportation Management Improvements	SW signal modification, installation, reconstruction (statewide project w/2% of funding allocated to Cecil Co.)	2019	n/a	n/a	Yes - better traffic flow	No
Bicycle and Pedestrian Improvements (grouped)	Construction of new sidewalks, trails and pathways	2020-2022	0.038	0.085	Yes - fewer vehicle trips	Yes - improved pedestrian and bicycle network

<i>Delaware</i>							
PROJECT	DESCRIPTION	YEAR(S) OF CMAQ FUNDING	VOC REDUCTION (kg/day)	NOx REDUCTION (kg/day)	PM2.5 REDUCTION (kg/day)	PHED BENEFIT	NON-SOV BENEFIT
Transportation Management Improvements (grouped)	Signal timing and traffic and weather monitoring enhancements; mobile app and radio development; dynamic messaging signs.	2018 – 2021	<i>qualitative</i>			Yes - better traffic flow	No
Bicycle and Pedestrian Improvements (grouped; sum of all planned projects)	Construction of new sidewalks, trails, and pathways	2018 – 2021	2.208	1.860	0.059	Yes - fewer vehicle trips	Yes - improved pedestrian and bicycle network
Rideshare Program/Trip Mitigation (benefit of FY 2016-18 program)	Support for carpooling program.	2018 – 2021	250.120	127.400	3.260	Yes - fewer vehicle trips	Yes - fewer vehicle trips



Assessment of Progress

This report shows that, after two years, the WILMAPCO region is well on course to meeting established (and, in the case of Delaware's mobile source emissions, re-established) 4-year targets.


Measured PHED conditions in 2018 and 2019 were better than expected. 14.6 hours were spent in delayed traffic in 2019, below the 16 hours measured in the previous two years and below the four-year target of 17.2. The contraction of traffic during the ongoing COVID-19 pandemic and associated lockdowns will likely produce even better figures for 2020.

Non-SOV travel also slightly outperformed expectations. 28.2% of workers utilized non-SOV modes in 2018, edging out both the 2-year target (28.0%) and the 4-year target (28.1%). The contraction of traffic and rise of telework, walking, and biking with the pandemic may produce even better figures for 2020.

CMAQ mobile source emission reductions are on track to meet the revised 4-year target in Delaware. Indeed, they have just about done so. Reported emissions exceeded the 2-year target and are within a single kg of hitting the 4-year target. 2-year reductions of VOCs stood at 251.03 kg/day vs. a 4-year target of 251.7 kg/day. 2-year reductions of NO_x rested at 127.68 kg/day vs. a 4-year target of 128.5 kg/day. 2-year reductions of PM_{2.5} were estimated at 3.27 kg/day vs. a 4-year target of 3.3 kg/day.

Projects identified for future CMAQ funding in Delaware remain of the same type as previously identified – transportation management improvements, a variety of bicycle and pedestrian projects, and funding for the state's rideshare program. Together, these projects would help reduce emissions, support a reduction of PHED, and support an increase in non-SOV travel.

In Cecil County, emissions reductions reported for the 2-year period nearly met the 2-year target for VOCs and exceeded the target for NO_x. The modest 4-year targets of 0.059 kg/day for VOCs and 0.134 kg/day for NO_x, should be easily attained with the CMAQ projects in the queue and those that could be funded with CMAQ-monies.



MDOT reports that a previously unidentified transportation management improvement project, “SW signal modification, installation, reconstruction”, will receive CMAQ funding in FY 2020. This project will support emission reductions and benefit PHED. The numerous potential bicycle and pedestrian projects WILMAPCO proposed for CMAQ funding in the 2018 Performance Plan have not moved forward.

WILMAPCO will report on the status of these projects in October 2022, when the Full Period Performance Report is due. That same month, WILMAPCO will develop another CMAQ Performance Plan associated with the second performance period for on-road mobile source emission measures and traffic congestion measures.