

PERFORMANCE MEASURES AND TARGETS: ON-ROAD VOC AND NO_x EMISSIONS REDUCTIONS (FROM CMAQ FUNDED PROJECTS)

TPB Performance Measures and Targets

Robert d'Abadie
Transportation Engineer

Transportation Planning Board (TPB)
June 17, 2026



(Toni Genberg/Flickr)



National Capital Region
Transportation Planning Board

Agenda Item #9

Contents of Presentation

- Ozone and the DC-MD-VA Ozone Nonattainment Area
- TPB Goals and Performance Measures
- Overview and Requirements of On-Road Emissions
- Overview of CMAQ Program and Data
- Review of Past Performance
- Development of Future Draft Targets
- Next Steps



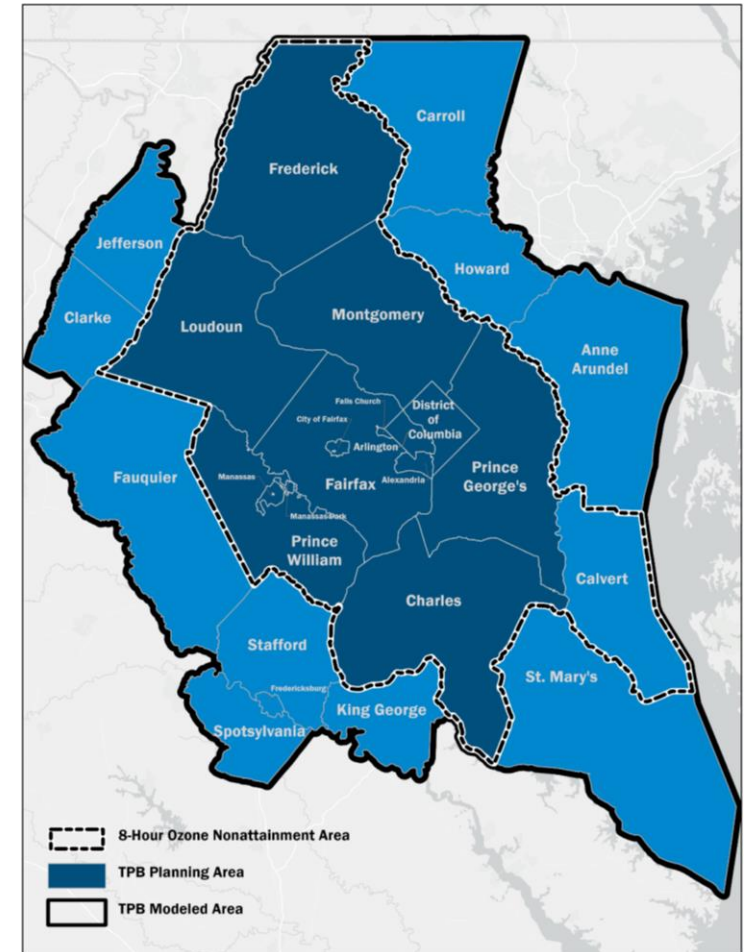
Joshua Roberts, International Monetary Fund/Flickr



Ozone and the DC-MD-VA Ozone Nonattainment Area

- There are six criteria pollutants identified in the Clean Air Act that the EPA is required to establish standards for.
- The DC-MD-VA region is in nonattainment or maintenance for one of the six pollutants - ground-level ozone.
- Ground-level Ozone is the result of Volatile Organic Compounds (VOCs) and Nitrogen Oxides (NO_x) combining in the presence of sunlight.
- Federal regulations (PBPP) require MPOs to establish data-driven targets to reduce these precursor pollutants.

Calvert County is within the nonattainment area but outside TPB planning area; hence targets are set by Calvert-St Mary's MPO.



Map of DC-MD-VA Nonattainment Area, (COG)



TPB Goals and this Performance Measure

- TPB’s Goals: Safety, Maintenance, Reliability, Affordable and Convenient, Efficient System Operations, **Environmental Protection**, Resilient Region, and Livable and Prosperous Communities.
- The federally-required performance measure will help assess progress towards this goal:
 - **Environmental Protection:**

Performance Measure	What is it?	Data Source
Volatile Organic Compounds (VOCs) Reductions	Sum of the VOC emissions reductions for projects receiving CMAQ funding	FHWA CMAQ Public Access System
Nitrogen Oxides (NO _x) Reductions	Sum of the NO _x emissions reductions for projects receiving CMAQ funding	FHWA CMAQ Public Access System



Emissions Reduction Target - Overview of Requirements

Frequency: Set/Update Two and Four-year targets *Quadrennially*

Targets: Sum of (2-year and 4-year) total emissions reductions of Volatile Organic Compounds (VOCs) and Nitrogen Oxides (NO_x) from CMAQ-funded projects.

CMAQ Performance Plan: To include following components and updated every two years:

- ① Baseline performance
- ② Targets
- ③ Description of CMAQ Funded Projects to achieve the targets
- ④ Assessment of Progress.

Consequences: *Not achieving a target may require the states to more clearly demonstrate that CMAQ-funded investments are effectively contributing to emissions reductions.*



(Joe Flood/Flickr)



Congestion Mitigation and Air Quality (CMAQ) Program

- The federal CMAQ program is a source of flexible funding to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act.
- Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards.
- The emissions reduction targets are for VOC and NO_x emissions only and uses data from projects that receive CMAQ funds.
- CMAQ funding is a small portion of the total transportation funds.
 - In 2025, CMAQ was 1.2% of overall funding in the region.
- Non CMAQ Projects and programs also reduce VOC and NO_x emissions.
 - Between 2026 and 2030, On-road VOC emissions are expected to decline 4.2 Tons/day (3,810 kg/day), NO_x 13.9 Tons/day (12,610 kg/day).



(Pierre Gaunaud, COG)



(Montgomery Parks, MNCPPC/[Flickr](#))



CMAQ Public Access System

- Source of data for previous performance is the FHWA CMAQ Public Access system (CPAS).
- States enter CMAQ project information into the CPAS annually (March 1st).
- Methods vary for estimating the emissions benefits for projects recorded in the CPAS.
 - Small project benefits may be analyzed using sketch-level methods.
 - FHWA created the (optional) CMAQ Toolkit with various spreadsheets to help in the analysis of projects.
 - Some agencies have developed their own tools.
 - Projects with larger emissions reductions may have individual analyses.
 - E.g, Commuter Connections and goDCgo.

MPO	ENTERED	REMOVED
Metropolitan Washington COG	2000	
No MPO identified/State sponsored project	2003	
National Capital Region Transportation Planning Board	2015	

FHWA CMAQ Public Access System Website:
(<https://fhwaapps.fhwa.dot.gov/cmaq2p/>)



CMAQ Public Access System (cont.)

- The region has corrections pending for the CPAS.
 - This affects reported values.
- The CPAS has some idiosyncrasies in how data is recorded.
 - Some small projects may be coded as having qualitative benefits where quantification is difficult.
 - A continuing project refers to a previously approved transportation initiative that is receiving additional funding or continuing development in a new fiscal year.
 - Emissions reductions are only shown in the first year of the project.
 - In subsequent years, no emissions reductions are recorded.



(Commuter Connections/COG)



Review of Past Performance

- The original CMAQ emissions reductions targets were based on the projects that were anticipated to occur in 2022-2025.
- Projects are subject to change and substitution over the course of the performance period.
- During the last two performance periods, substituted projects had higher impacts.
 - For the 2018-2021 period, one new signal synchronization project, part of the MD CHART program, was responsible for approximately 80% of the total emissions reductions calculated.
 - For the 2022-2025 period, MD and DC funded Commuter Connections and (in DC) goDCgo using CMAQ funding, resulting in much larger emissions reductions than originally projected.



(Adam Fagen/Flickr)



(Commuter Connections/COG)



Review of Past Performance (cont.)

- Travel Demand Management (TDM) projects, specifically Commuter Connections and goDCgo, have greater emissions reductions compared to other CMAQ Projects.



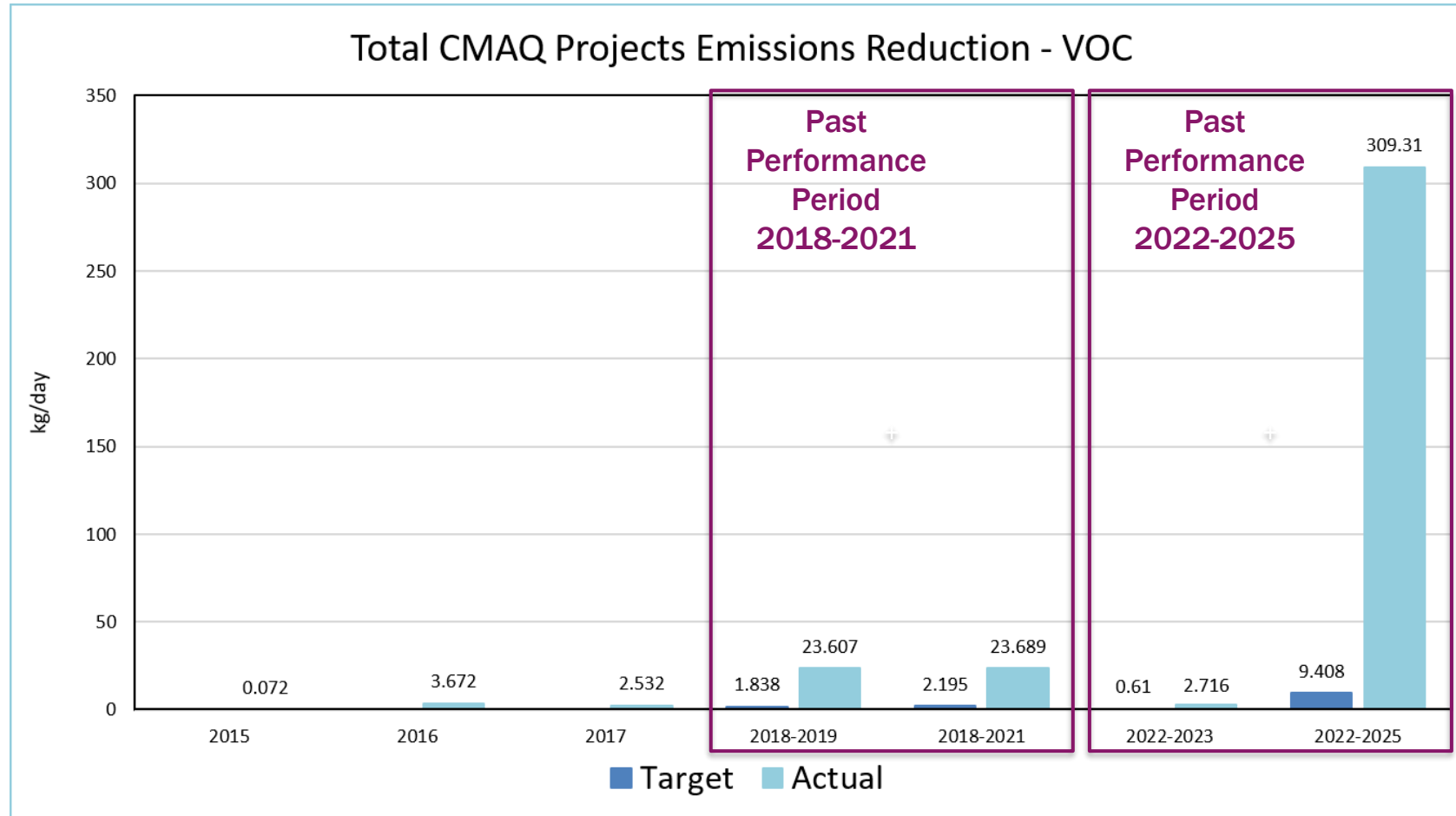
State	Year	Project Title	VOC kg/day	NO _x kg/day
MD	2025	Commuter Connection Program FY25	158.9	197.2
DC	2024	Commuter Connections	34.01	41.48
DC	2024	District TDM (goDCgo)	106	133
Total			299.0	371.7



- The average benefit of non-TDM projects recorded in the CPAS for the region in the last four years is 0.234 kg/day VOC and 0.651 kg/day NO_x reduced.



Past Performance: VOC



2018-2021



Target Met

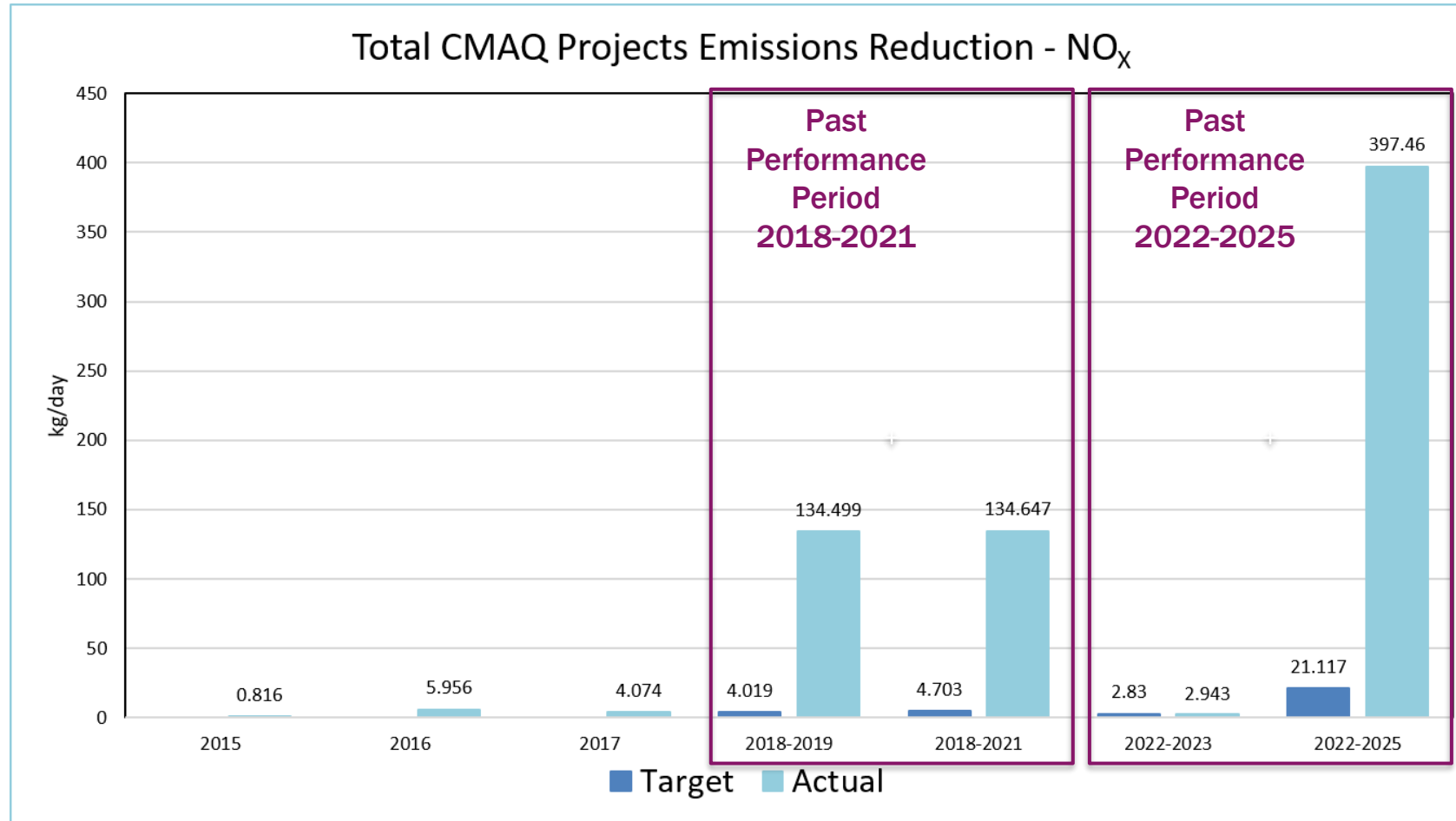
2022-2025



Target Met



Past Performance: NO_x



2018-2021



Target Met

2022-2025



Target Met



Development of Future **Draft** Targets 2026-2029

- Target emissions reductions are estimates based on projects anticipated to receive CMAQ funds.
- As in the past performance period, MD and VA have provided a list of anticipated CMAQ projects with calculated emissions reductions.
- Since DC programs its CMAQ funding annually, estimates of future project benefits are not available.
 - Targets are instead based on past performance.
- TPB targets reflect the anticipated cumulative emissions reduction to be reported by MDOT, VDOT, and DDOT for the region.



(Pierre Gaunard/COG)



Development of Future **Draft** Targets (Continued)

- DC has proposed that their targets would be the same as the previous period's reported performance (and include Commuter Connections and goDCgo).
- New MD projects include the Commuter Connections Program, a local ridesharing program, and some sidewalk improvements/shared-use facilities (multiple projects).
- For the MD share of the Commuter Connections Program, to account for potential changes in program participation as well as the increasing efficiency of personal vehicles, emissions benefits were reduced by 31% from the previous reporting period.
- VA anticipates using CMAQ funds for projects with smaller cumulative benefits, along with a number of continuing/ subsequent projects where emissions reductions are not recorded.



Microsoft stock image



Future **Draft** Targets – Being Considered by States

Two-Year Targets

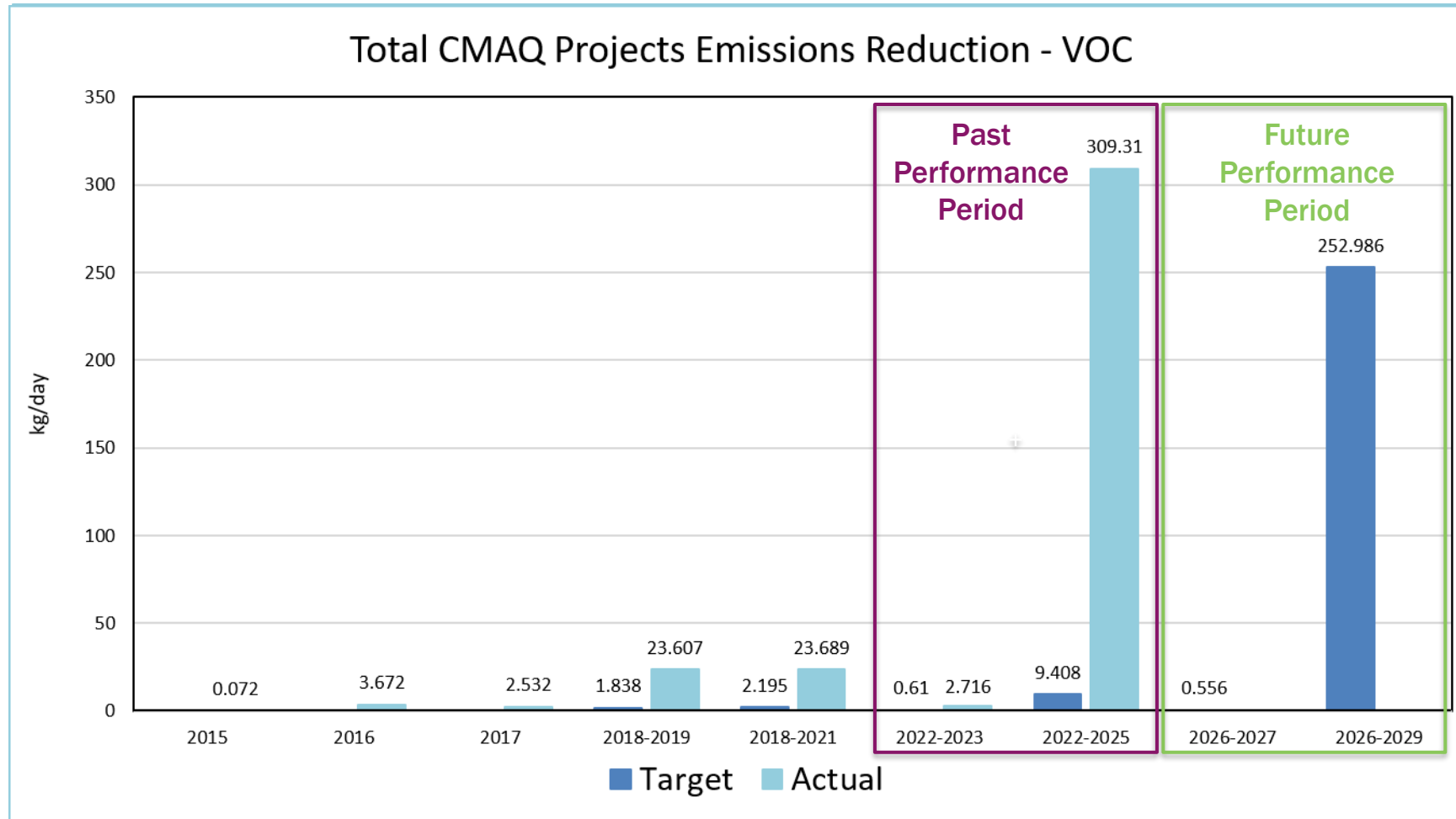
State	VOC kg/day	NO _x kg/day
DC	0.094	0.128
MD	0.080	0.080
VA	0.382	3.425
Total	0.556	3.633

Four-Year Targets

State	VOC kg/day	NO _x kg/day
DC	140.104	174.608
MD	112.440	138.870
VA	0.442	3.495
Total	252.986	316.973



Emissions Reductions **Draft** Targets: VOC

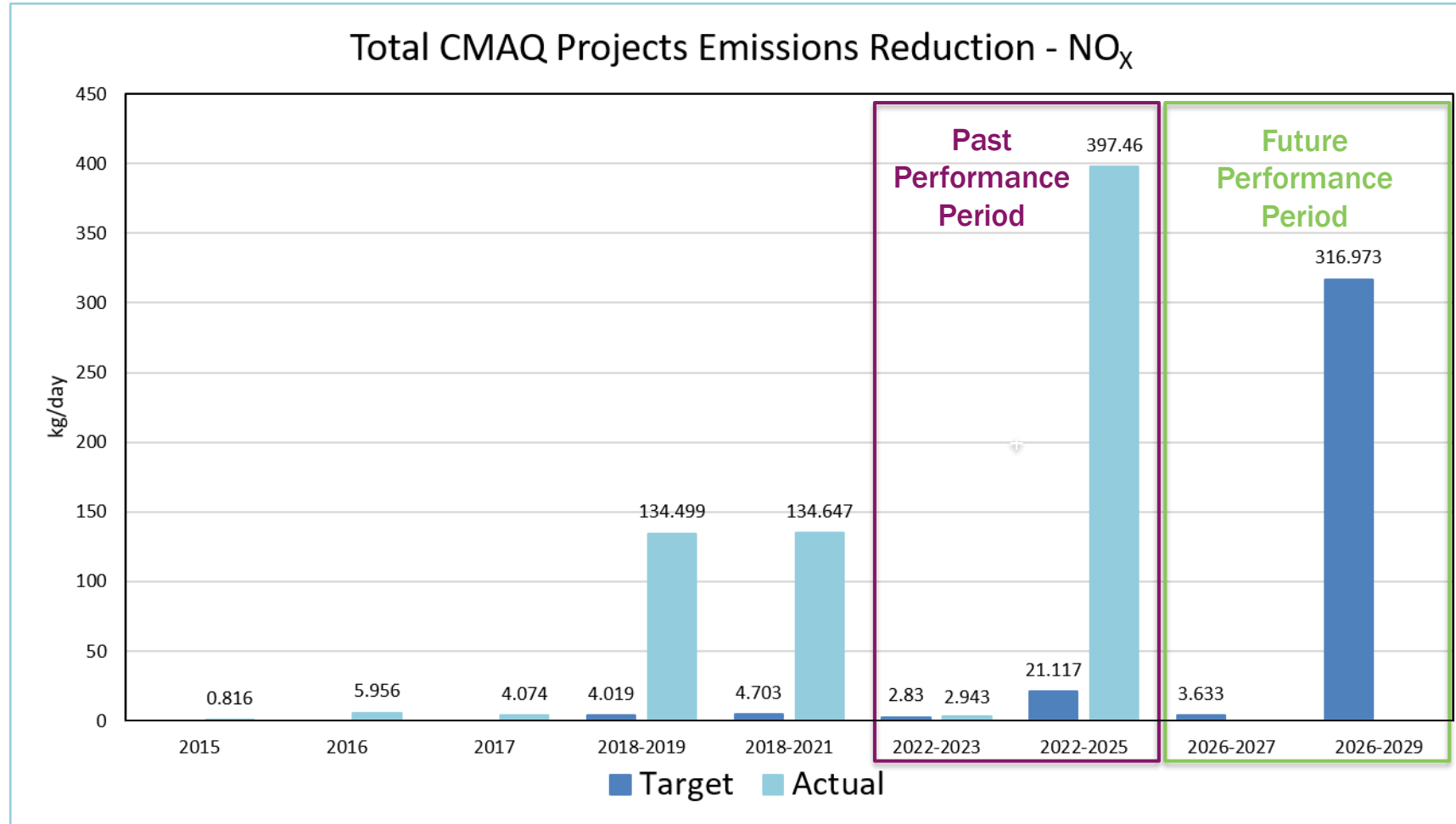


↑
Desired Trend

↓
Expected Trend



Emissions Reductions **Draft** Targets: NO_x



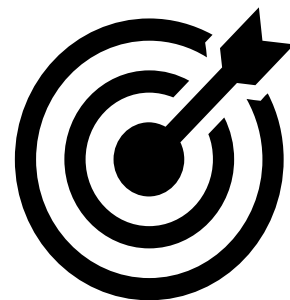
↑
Desired Trend

↓
Expected Trend



Future MPO **Draft** Targets for TPB Approval

Performance Measure	DRAFT Two-Year Targets 2026–2027	DRAFT Four-Year Targets 2026–2029
Emissions Reduction for CMAQ-Funded Projects – VOC	0.556 kg/day	252.986 kg/day
Emissions Reduction for CMAQ-Funded Projects – NO _x	3.633 kg/day	316.973 kg/day



Next Steps

- June 2026: TPB staff present draft measures and new targets to Technical Committee and TPB.
- July 2026: TPB staff present final measures and targets to the TPB and Technical Committee. **TPB approves new targets.**
- July - September 2026: Three states to adopt targets no later than September. TPB finalizes the region's 2022-2025 and 2026-2029 MPO CMAQ Performance Reports for inclusion in the state Performance Management Forms (PMFs). All three states notify TPB that the PMF is complete.



Robert d'Abadie

Transportation Engineer
202-962-3337
rdabadie@mwkog.org

mwkog.org/tpb

Metropolitan Washington Council of Governments
777 North Capitol Street NE, Suite 300
Washington, DC 20002

