

ITEM 10 – Information
May 18, 2022

PBPP: CMAQ Program Draft 2022-2025 Targets

Background:

The board will be briefed on federal performance-based planning and programming (PBPP) requirements for MPOs to set targets for CMAQ Program performance measures for traffic congestion and emissions reduction for the period 2022 to 2025. A draft set of targets developed by staff in coordination with the state DOTs will be presented. In June, the board will be asked to adopt traffic congestion and emission targets for the region.



MEMORANDUM

TO: Transportation Planning Board
FROM: Eric Randall, TPB Transportation Engineer
SUBJECT: PBPP CMAQ Program – DRAFT 2022-2025 Targets
DATE: May 12, 2022

This memorandum provides an update on implementation of the federal performance-based planning and programming (PBPP) target-setting requirements for performance measures of the Congestion Mitigation and Air Quality (CMAQ) Program area. State DOTs and MPOs are required to establish CMAQ Program targets as applicable. New targets are required to be set for the period 2022 through 2025. Reports on performance vs. the 2018-2021 targets and on the new 2022-2025 targets are due to FHWA by October 1, 2022.

CMAQ PROGRAM PERFORMANCE MEASURES

There are three performance measures in the CMAQ Program area. The measures and the 2018-2021 targets are shown in the tables below:

CMAQ Program: Traffic Congestion

Performance Measure for the Washington DC-MD-VA Urbanized Area	2-year Target 2018 - 2019	4-year Target 2018 - 2021
Peak Hour Excessive Delay (PHED) – Annual hours of peak hour excessive delay per capita	n/a	26.7 Hours
Mode Share - Percent of Non-SOV Travel on the National Highway System (NHS)	36.9%	37.2%

CMAQ Program: Emissions Reduction

Total Emissions Reductions for the TPB portion of the Washington DC-MD-VA nonattainment area	2-year Target FFY 2018 - 2019	4-year Target FFY 2018 - 2021
Volatile Organic Compounds (VOCs)	1.8376 Kg/Day	2.1950 Kg/Day
Nitrogen Oxides (NOx)	4.0194 Kg/Day	4.7026 Kg/Day

The CMAQ Program Traffic Congestion performance measures are Peak Hour Excessive Delay (PHED) and Mode Share (Non-SOV Travel) in the Washington, DC-MD-VA urbanized area. For the 2018-2021 targets, TPB staff used an average of a relevant indicator for traffic conditions from the TPB Travel Demand Model and extrapolation of past performance (i.e., trendline). Use of the travel demand model considers near-term predicted changes in population, employment and other factors that increase travel demand, as well as changes in the highway and transit network while the extrapolation method captures recent trends over time.

The CMAQ Program Emissions Reduction performance measure are the on-road mobile source total emission reductions from CMAQ-funded projects for each applicable criteria pollutant and precursor. The applicable pollutants and precursors for the portion of the Washington, DC-MD-VA eight-hour zone nonattainment area within the TPB planning area boundary are Volatile Organic Compounds (VOCs) and Nitrogen Oxides (NOx). These targets are set by federal fiscal year. For the 2018-2021 targets TPB staff summed the forecast emissions reduction benefits forecast by each state for CMAQ projects planned in the region. The combined emissions reduction was then used to set the two-year and four-year targets for the two applicable pollutants.

REGIONAL CMAQ PROGRAM TARGETS – DRAFT 2022-2025

Using methodologies generally consistent with those used in 2018, TPB staff have developed a draft set of CMAQ Program targets for the 2022-2025 four-year period, per below.

Additional information is anticipated in the month of May that will likely lead to some adjustments in these targets. The goal is to finalize these targets for adoption by the TPB at its June 15 meeting.

2022-2025 Regional CMAQ Program Targets – DRAFT – as of May 12, 2022

CMAQ Program: Traffic Congestion

Performance Measure for the Washington DC-MD-VA Urbanized Area	2-year Target 2022 – 2023	4-year Target 2022 – 2025
Peak Hour Excessive Delay (PHED) – Annual hours of peak hour excessive delay per capita	22.5 Hours	22.7 Hours
Mode Share - Percent of Non-SOV Travel on the National Highway System (NHS)	37.4%	37.7%

CMAQ Program: Emissions Reduction

Total Emissions Reductions for the TPB portion of the Washington DC-MD-VA nonattainment area	2-year Target FFY 2022 – 2023	4-year Target FFY 2022 – 2025
Volatile Organic Compounds (VOCs)	0.610 Kg/Day	2.830 Kg/Day
Nitrogen Oxides (NOx)	9.408 Kg/Day	21.117 Kg/Day

PERFORMANCE BASED PLANNING & PROGRAMMING

CMAQ Program Measures: Draft Targets for 2022–2025

Eric Randall, TPB Transportation Engineer

Transportation Planning Board
May 18, 2022



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Performance Based Planning and Programming

- Federal surface transportation regulations require the implementation of performance based planning and programming (PBPP) by State DOTs, MPOs, and transit agencies

“transition to a performance-driven, outcome-based program that provides for a greater level of transparency and accountability, improved project decision-making, and more efficient investment of federal transportation funds.”

- State DOTs, MPOs, and providers of public transportation must link investment priorities to the achievement of performance targets in the TIP and the long-range transportation plan



Federal PBPP Performance Areas

- Federal PBPP process requires State DOTs, MPOs and providers of public transportation to set targets (annually or every two/four years) for 26 performance measures
 - Highway Safety – *annual*
 - Highway Assets (Pavement and Bridge Condition) – *2/4-year*
 - Highway System Performance (Reliability, Freight, CMAQ Program) – *2/4-year*
 - Transit Assets – *annual / with TIP*
 - Transit Safety – *annual*



4-Year Target reporting and setting in 2022

- Next round of 4-year targets for the two areas of Highway Assets and Highway Systems Performance for the period 2022-2025 must be set by State DOTs by **October 1, 2022**
 - MPOs have up to 180 days afterwards to set targets
- The Visualize 2045 long range transportation plan must include an overall system performance report (Appendix D)
- The FY 2023-2026 TIP must discuss the impact of projects on performance



CMAQ Program Performance Measures

The three CMAQ Program targets are set regionally:

- ❖ Peak Hours of Excessive Delay (PHED)
 - ❖ Mode Share (Non-SOV)
 - ❖ Emissions Reductions: VOCs and NO_x
- } set for the Washington DC-MD-VA urban area
- } set for the non-attainment area

- Due to the regional nature of the CMAQ Program targets, the TPB previously took the lead in developing the targets for these three measures and is doing so again this year
- TPB staff are coordinating with the State DOTs in developing the 2022-2025 CMAQ Program targets
 - Must be identical targets adopted by the three State DOTs
 - Due to urban area overlap, adjoining MPOs FAMPO and BRTB must also adopt identical targets for this region



CMAQ Program: Traffic Congestion

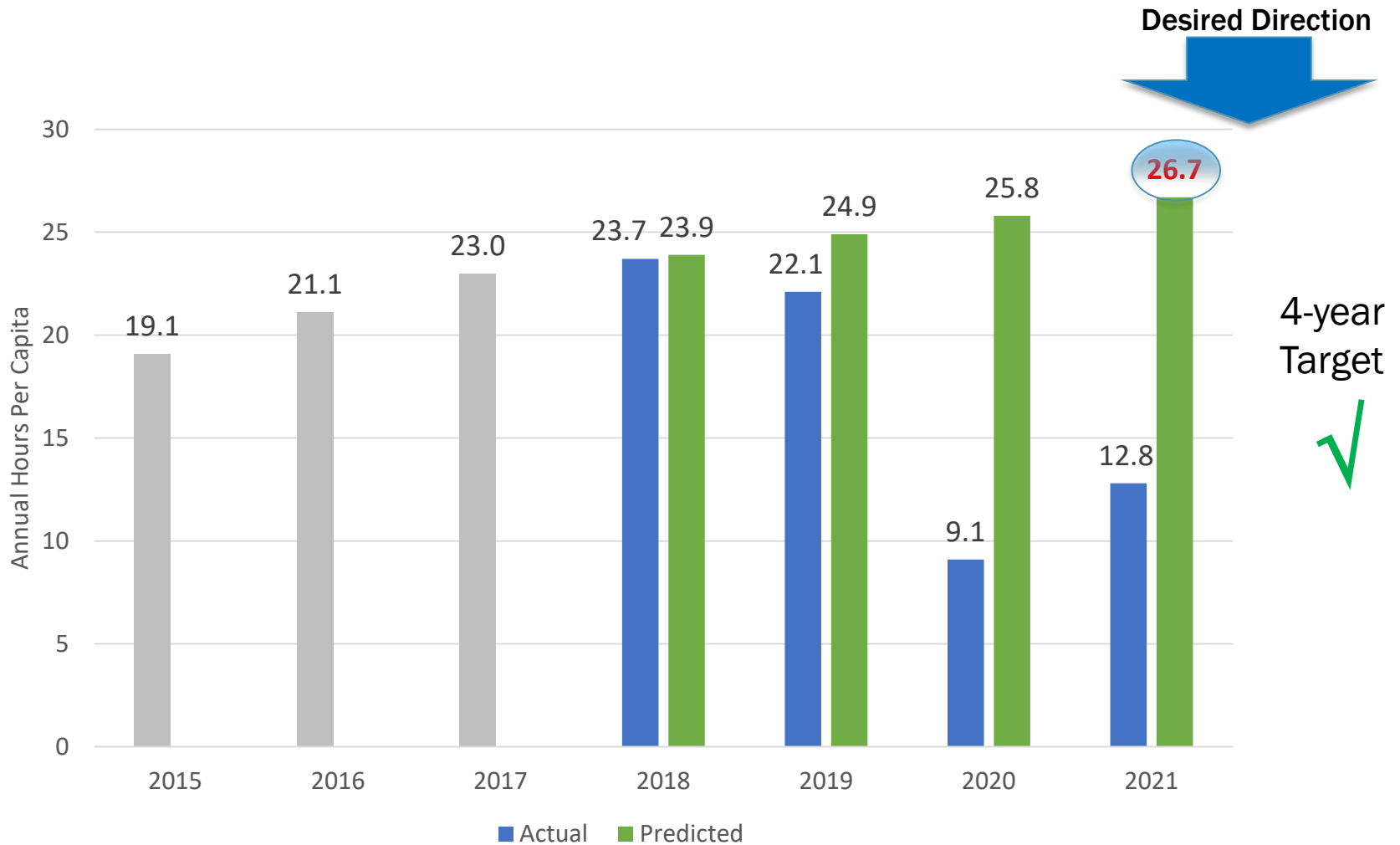
	Performance Measures
CMAQ Program: Traffic Congestion	Peak Hour Excessive Delay (PHED) – Annual hours of peak hour excessive delay per capita
	Mode Share - Percent of Non-SOV Travel on the National Highway System (NHS)

Performance Measures for the Washington DC-MD-VA urbanized area	CY 2018 – 2019 Two Year Target	CY 2018 – 2021 Four Year Target
Peak Hour Excessive Delay (PHED)	Not Required	26.7 Hours
Mode Share (Non-SOV)	36.9%	37.2%

Targets set by the TPB on June 20, 2018



Traffic Congestion: PHED Performance vs. Target

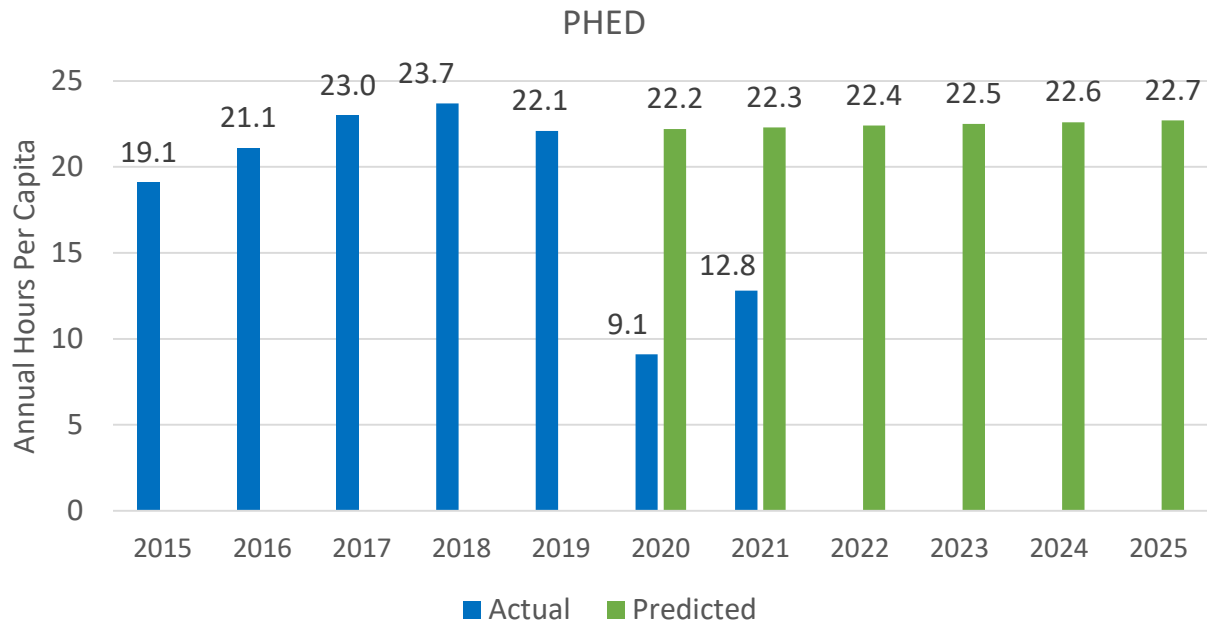


2022-2025 Draft PHED Target Methodology

- Use same general methodology as used in 2018
 - Average of observed trends and short-term predictions of TPB travel demand model
 - Observed trends captures recent influences
 - Model captures the impacts of increased population and travel demand vs. road and transit changes
 - The impact of the pandemic on the PHED performance measure is evident but has uncertain implications for trends going forward
 - Exclude data from pandemic years (2020, 2021)
 - Use trend data for 2016-2019 (four years) and extrapolate from 2019



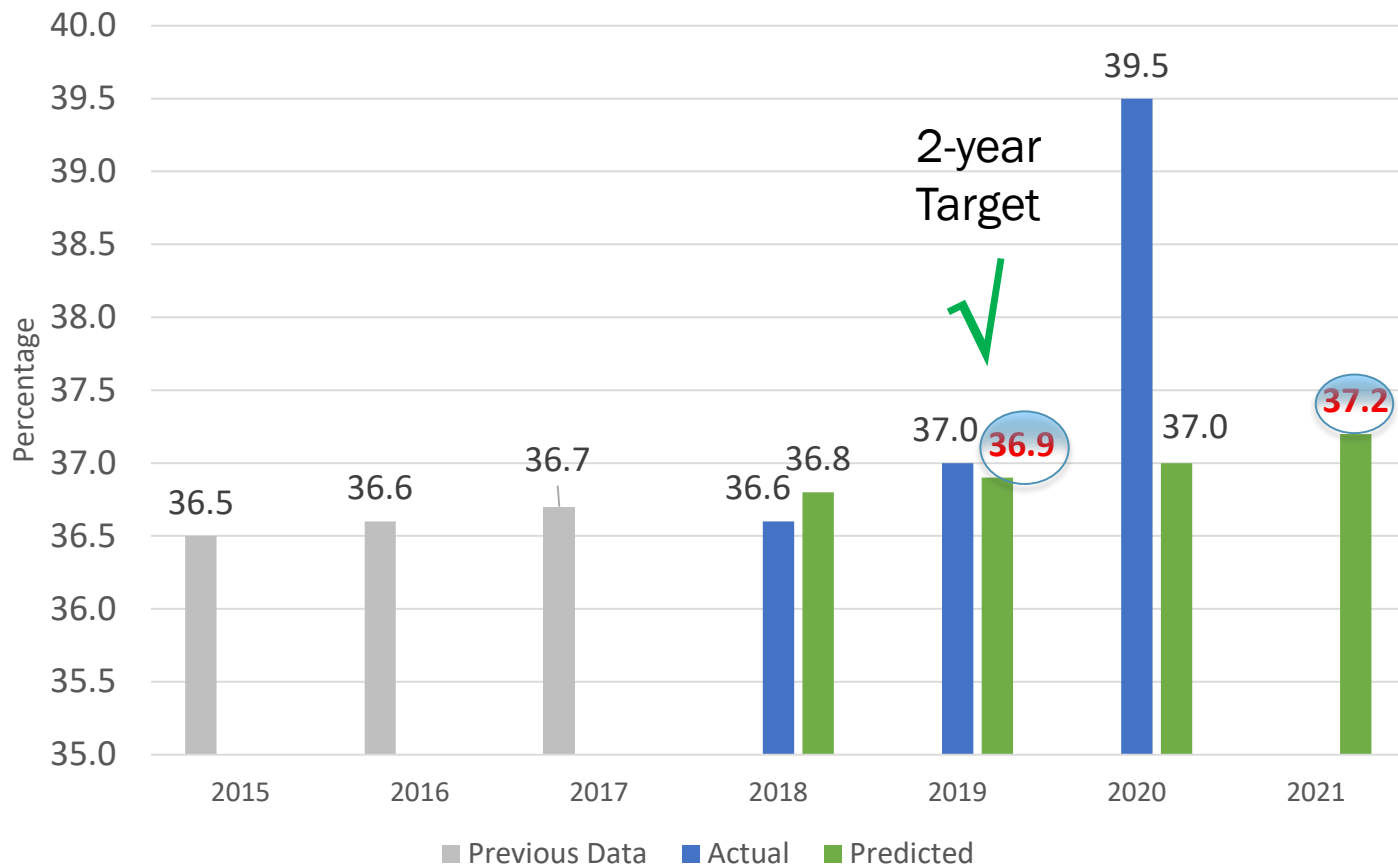
2022-2025 Draft PHED Graph and Target



DRAFT	CY 2022 – 2023 Two Year Target	CY 2022 – 2025 Four Year Target
Peak Hour Excessive Delay (PHED)	22.5 Hours	22.7 Hours



Traffic Congestion: Mode Share (Non-SOV) Performance vs Target

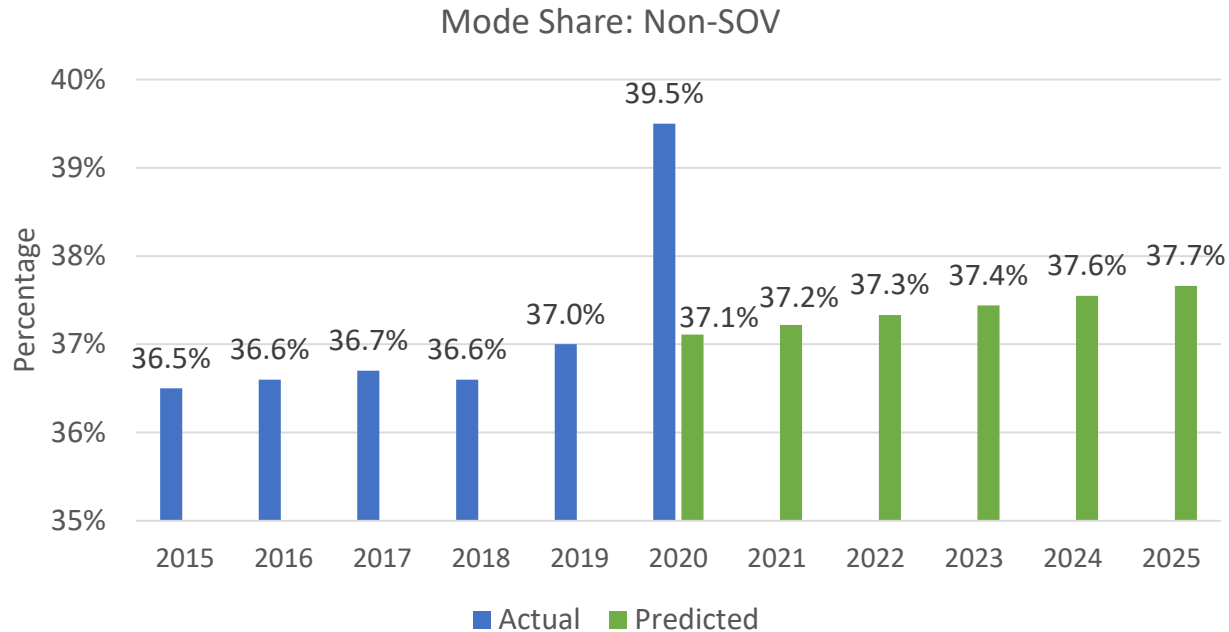


2022-2025 Draft Mode Share Target Methodology

- Recommended methodology:
 - Use only observed trend
 - Uncertainty over impacts of telework and other factors affecting transportation mode choice
- The impacts of the pandemic on the Mode Share performance measure is evident
 - Exclude data from pandemic year (2020)
 - Note 2021 data not available until early CY 2023
 - Use trend data for 2016-2019 (four years) and extrapolate from 2019



2022-2025 Draft Mode Share Graph and Target



DRAFT	CY 2022 – 2023 Two Year Target	CY 2022 – 2025 Four Year Target
Mode Share (Non-SOV)	37.4%	37.7%



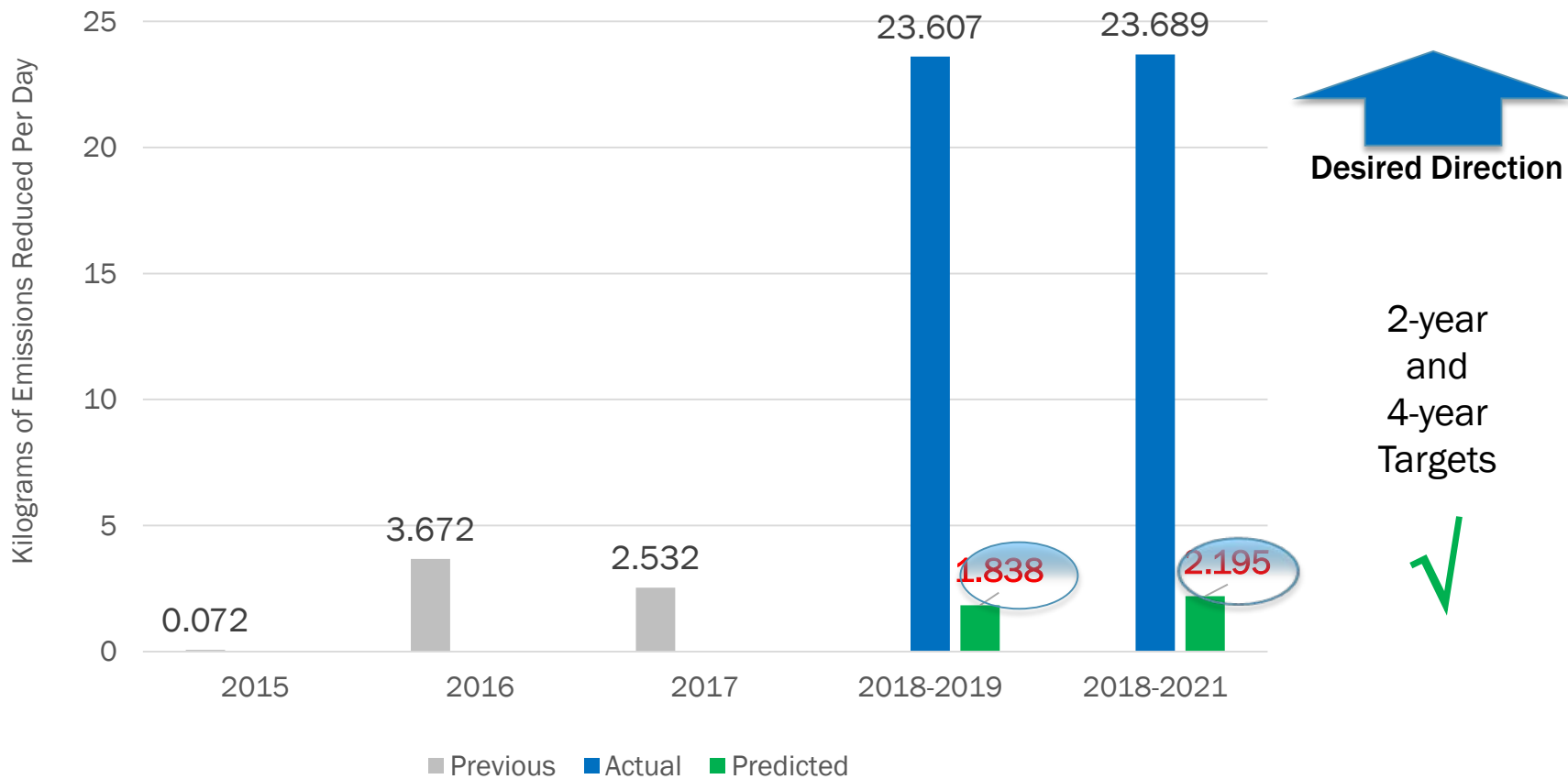
CMAQ Program: Emissions Reductions

Total Emissions Reductions for the TPB portion of the Washington DC-MD-VA nonattainment area		FFY 2018 - 2019 Two Year Target	FFY 2018 - 2021 Four Year Target
	Volatile Organic Compounds (VOCs)	1.8376 Kg/Day	2.1950 Kg/Day
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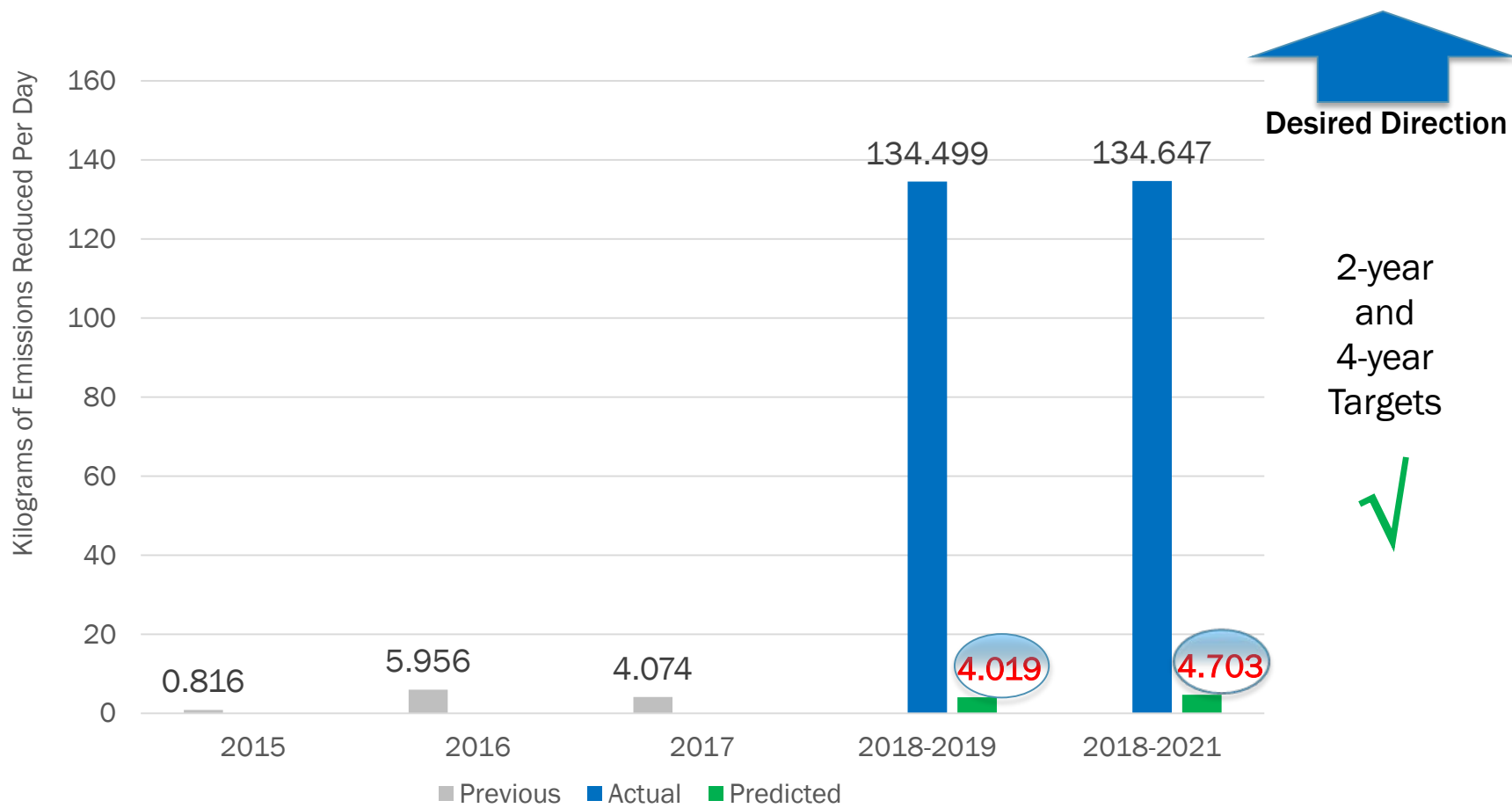
Targets set by the TPB on June 20, 2018



Emissions Reduction (VOC): Performance vs. Targets



Emissions Reduction (NOx): Performance vs. Targets



Observations on CMAQ: Emissions Reduction Performance

- Forecasting / target development based on past trends of CMAQ projects and their quantitatively estimated emissions reductions
- The impact of project selection with emissions reductions quantitative calculations a consideration is evident. Targets were vastly exceeded:
 - A single project in MD (SHA Adaptive "Smart" Signal Systemization) accounted for 80% of the reduced emissions



2022-2025 **Draft** Emissions Reduction Targets

Factors in 2022-2025 CMAQ Emission Reduction forecasting and target-setting

- Maryland and Virginia CMAQ Projects already selected through 2026, though not all have quantitative emissions calculated
- DC's CMAQ projects are still in development
- Draft targets based on forecast reductions or average of past annual reductions

DRAFT	FFY 2022 - 2023 Two Year Target	FFY 2022 - 2025 Four Year Target
Volatile Organic Compounds (VOCs)	0.610 Kg/Day	2.830 Kg/Day
Nitrogen Oxides (NOx)	9.408 Kg/Day	21.117 Kg/Day



Next Steps

- Take comments on the draft CMAQ targets through May
- TPB is scheduled to adopt the CMAQ traffic congestion and emissions reductions targets at the June 15 meeting
- TPB staff will complete the MPO CMAQ Performance Plans and submit to State DOTs by September
 - State DOTs submit targets and MPO Performance Plans to FHWA by October 1, 2022
- Develop regional targets for Highway Assets and other Highway System Performance targets
 - Anticipate TPB briefing and approval in September-November timeframe



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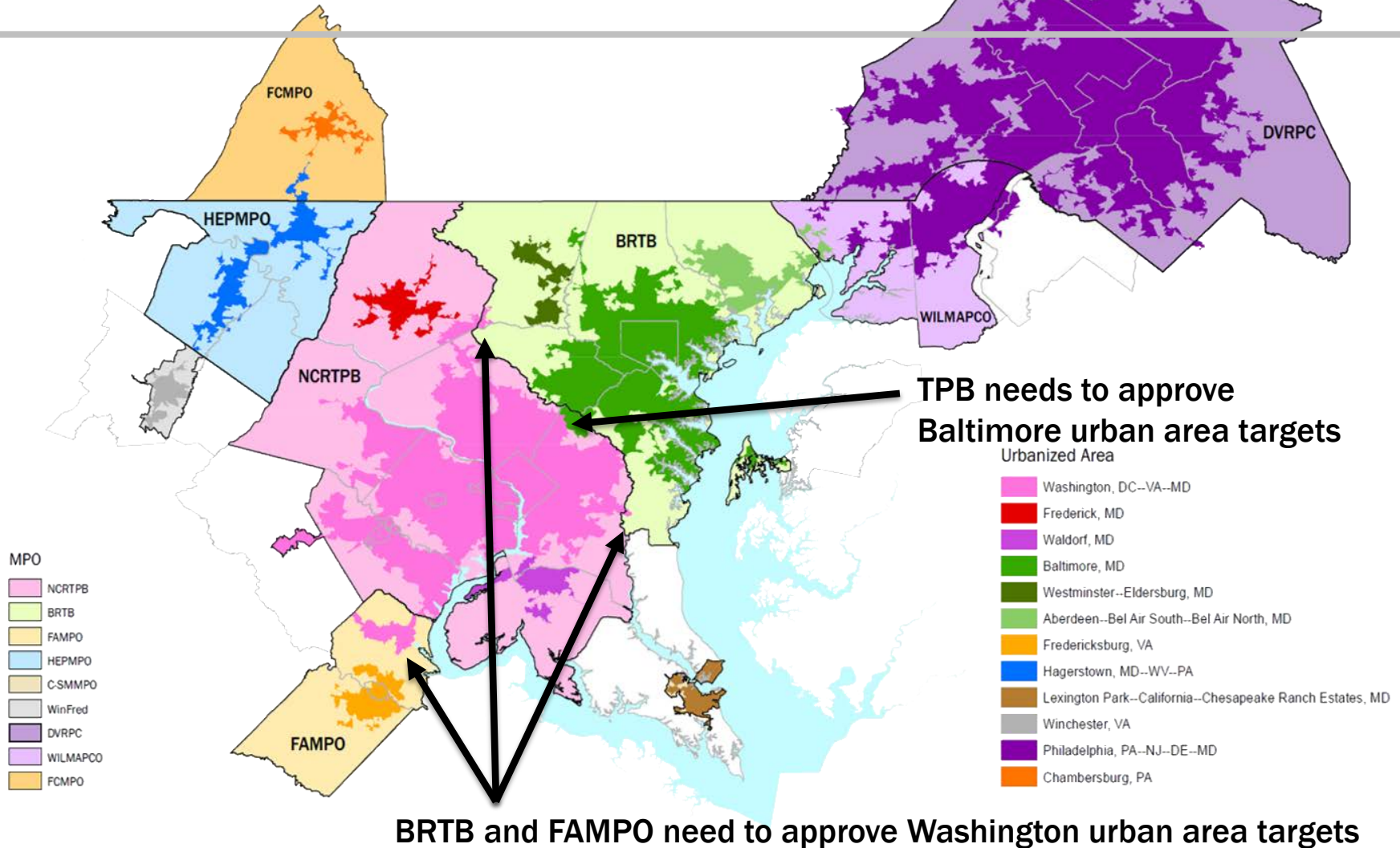
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National Capital Region
Transportation Planning Board

PHED and Mode Share: Adjacent MPO Overlap



CMAQ Emissions Reduction - Overview

- Applies to criteria pollutants in non-attainment or maintenance areas*
- Emissions reductions data are estimates from projects that have received CMAQ funds
- **Forecast emissions reductions are estimates based on projects anticipated to receive CMAQ funds**
- TPB targets reflect the anticipated cumulative emissions reduction to be reported by MDOT, VDOT, and DDOT for the region

* Targets for Calvert County set by Calvert-St Mary's MPO (outside TPB planning area) .

