

PERFORMANCE BASED PLANNING & PROGRAMMING

CMAQ System Performance Measures: Traffic Congestion and Emissions Reduction

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Contents of Presentation

- CMAQ Program: Traffic Congestion
 - Overview of the two Measures
 - Requirements
 - Data
 - Methodologies for forecasting targets
 - Targets
- CMAQ Program: Emissions Reduction
 - Overview of the Measure
 - Requirements
 - Data
 - Methodologies for forecasting targets
 - Targets
- Board Action adopting targets in in June



System Performance: CMAQ Program (Congestion Mitigation and Air Quality)



	Performance Measures
CMAQ Program: Traffic Congestion	(5) Peak Hour Excessive Delay (PHED) – Annual hours of peak hour excessive delay per capita
	(6) Mode Share - Percent of Non-SOV Travel on the NHS
CMAQ Program: Emissions Reduction	(7) Emissions - CMAQ-funded projects on-road mobile source total emission reductions for each applicable criteria pollutant and precursor



CMAQ Program: PHED & Mode Share (Non-SOV)

- Traffic Congestion measures (PHED, Non-SOV) apply to the urbanized area (UZA)
 - State DOTs and MPOs must coordinate on and collectively establish a single, unified 2-year and 4-year target for each applicable UZA
 - Only a 4-year target for PHED and for UZAs >1 million people are required this first four-year performance period
 - State DOTs must establish targets for both measures by May 20, 2018 and report targets by October 1, 2018
 - MPOs must establish targets within 180 days after State DOTs
- State DOTs must submit a baseline report for the first performance period (2018-2021) to FHWA by October 1, 2018, and must include 2- and 4-year targets and a description of the data collection method used



Roadmap for Setting Targets

- Step One: Background and Data Collection
- Step Two: Forecasting the Target
- Step Three: The Target
- Step Four (UZA only): Approval of Adjacent MPO Targets



PHED Step One: Background & Data

- The PHED measure
 - The cumulative hours of excessive delay (travel speed less than 20 miles per hour or 60% of the posted speed limit) experienced by all people traveling through all reporting segments during peak hours in the applicable urbanized area for the full reporting calendar year.
- Peak travel hours are defined as:
 - Weekday morning peak: 6 a.m. to 10 a.m., and;
 - Weekday afternoon peak: **EITHER** 3 p.m. to 7 p.m.* **OR** 4 p.m. to 8 p.m.
- Data was collected using NPMRDS and MAP-21 widgets created by RITIS

*TPB Staff selected the 3 p.m. to 7 p.m. peak hour timeframe.



PHED Step One: Background & Data

MAP-21

2. Select measures:

- Percent of the Person-Miles Traveled on the Interstate That Are Reliable (the Interstate Travel Time Reliability measure) (BETA)
Set target to at least 90%
- Percent of the Person-Miles Traveled on the Non-Interstate NHS That Are Reliable (the Non-Interstate NHS Travel Time Reliability measure) (BETA)
Set target to at least 90%
- Truck Travel Time Reliability Index (BETA)
Set target to less than 1.50
- Annual Hours of Peak Hour Excessive Delay Per Capita (BETA)
Set target to less than 15h
State DOTs and MPOs may choose from two different evening peak periods. Please choose one.
 3pm - 7pm
 4pm - 8pm

3. Select one or more years:

2017 + Add time period

Your selected time periods: 2017 Remove All

4. Show data as:

- Graph
- Map

5. Name MAP-21 widget(s)

- Annual Hours of Peak Hour Excessive Delay Per Capita for DC - National Capital Region Transportation Planning Board, Washington (TPB)
- Truck Travel Time Reliability Index for DC - National Capital Region Transportation Planning Board, Washington (TPB)
- Non-interstate NHS Travel Time Reliability for DC - National Capital Region Transportation Planning Board, Washington (TPB)
- Interstate Travel Time Reliability for DC - National Capital Region Transportation Planning Board, Washington (TPB)

Interstate
Non-Interstate
Truck
PHED

MAP-21 widget editor interface showing configuration options for traffic reliability metrics and a map of the Washington DC area. The map displays a blue-shaded region around the DC area, with major highways and cities like Lancaster, Germantown, and Polomac labeled. The interface includes sections for selecting measures, years, and data display options.



PHED Step One: Background & Data

	2014	2015	2016	2017
Peak Hours of Excessive Delay (PHED) for the Washington DC-MD-VA Urbanized Area	13.9	14.1	15.4	16.5

- Annual hours of peak hour excessive delay per capita for the AM Peak (6 AM – 10 AM) and PM Peak (3 PM – 7 PM) periods

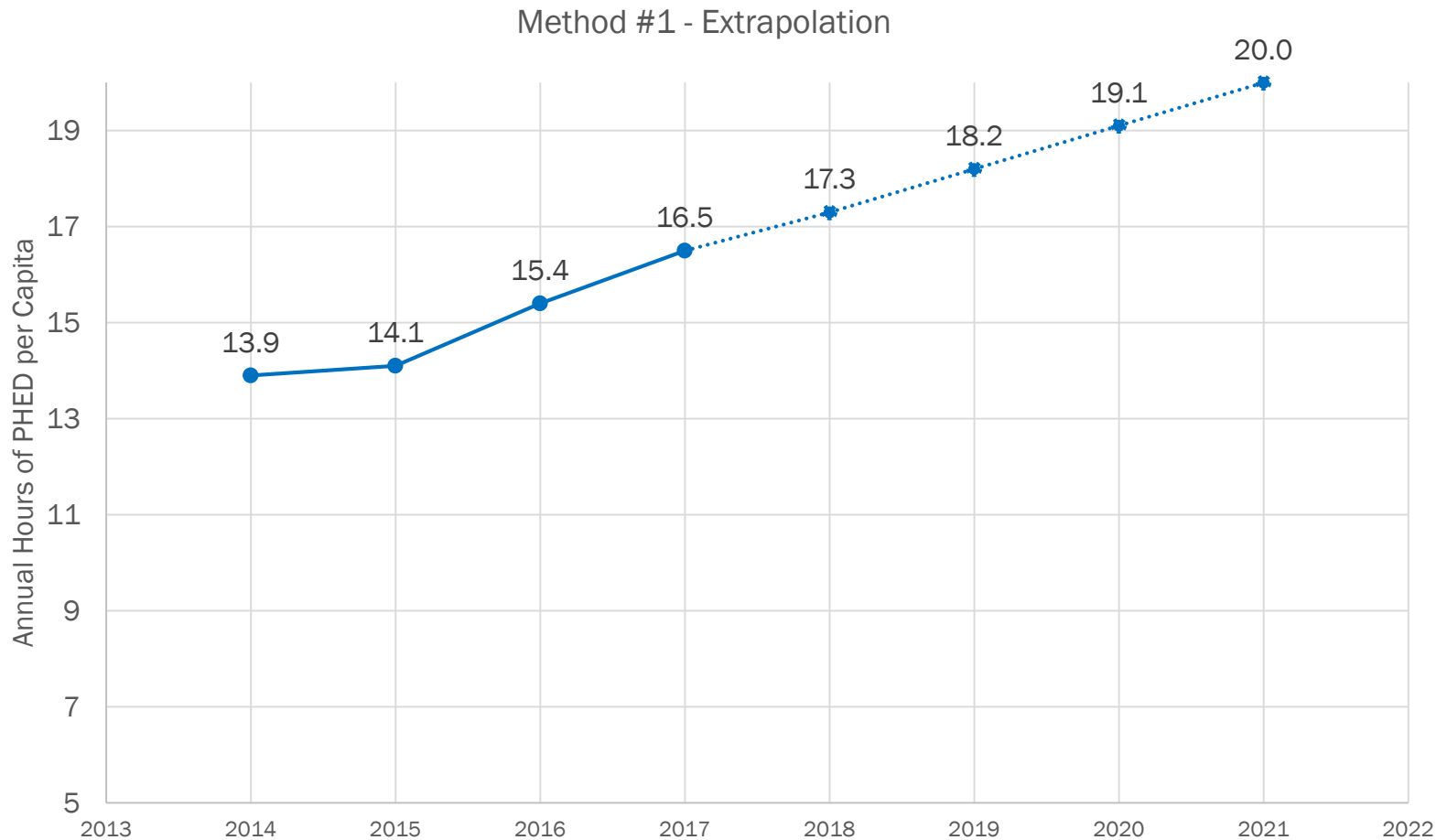


PHED Step Two: Forecasting the Target

- Staff identified two basic methods that could be used for forecasting future performance
 1. Extrapolation – Extend current data using a trend line (straight or best fit curve)
 2. TDM Output – Apply the rate of change of a relevant indicator from the TPB Travel Demand Model
- A third approach is to combine or average the two:
 3. Averaging - of Extrapolation and TDM Output Methods
- Staff recommends using **Method #3 – Averaging** to forecast performance and set targets
 - Extrapolation captures recent trends
 - Travel Demand Model captures longer-term predictions based on model factors: population growth, projects completed
 - Combining the two captures short- and long-term indicators

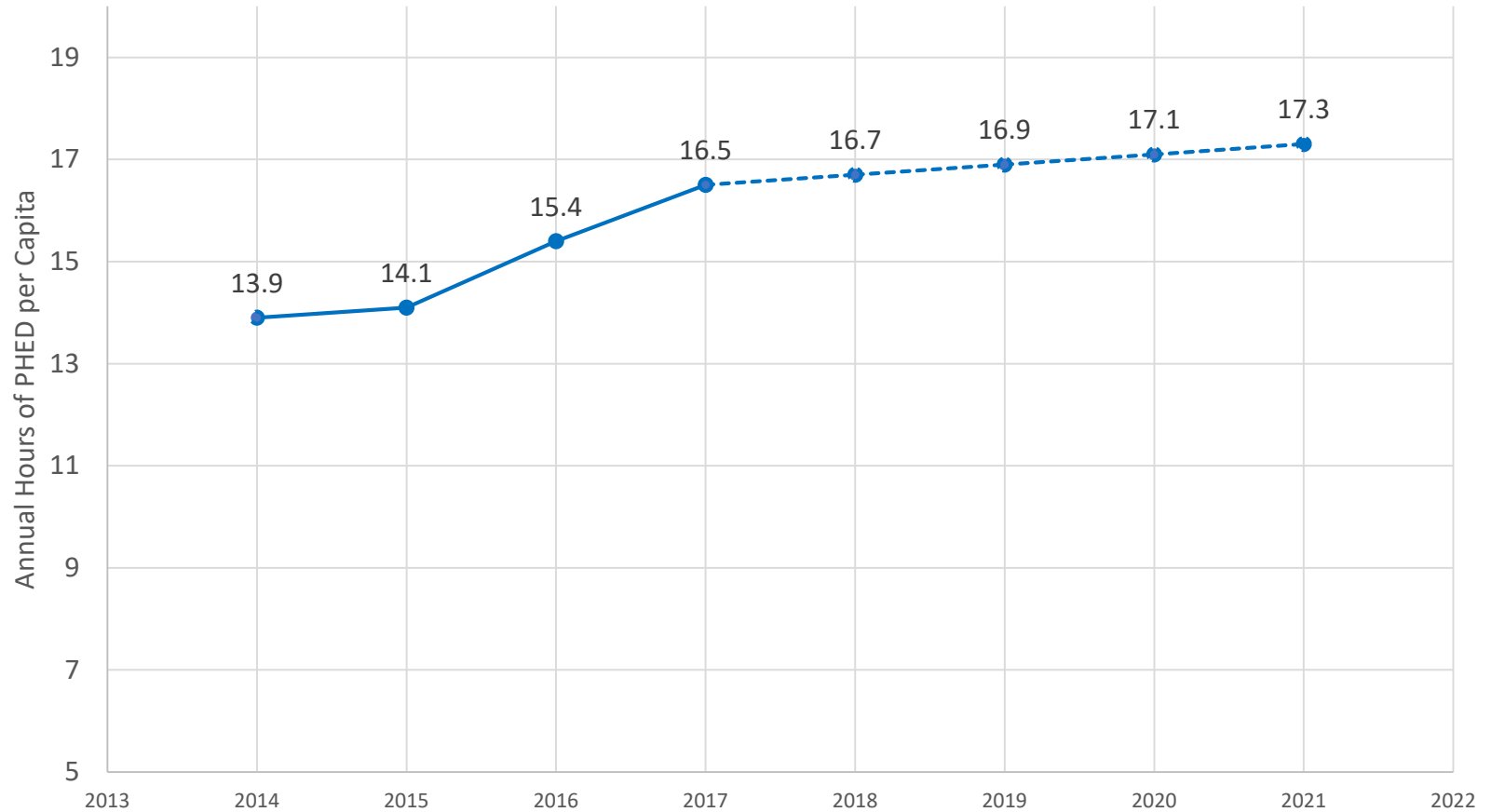


PHED Step Two: Forecasting the Target

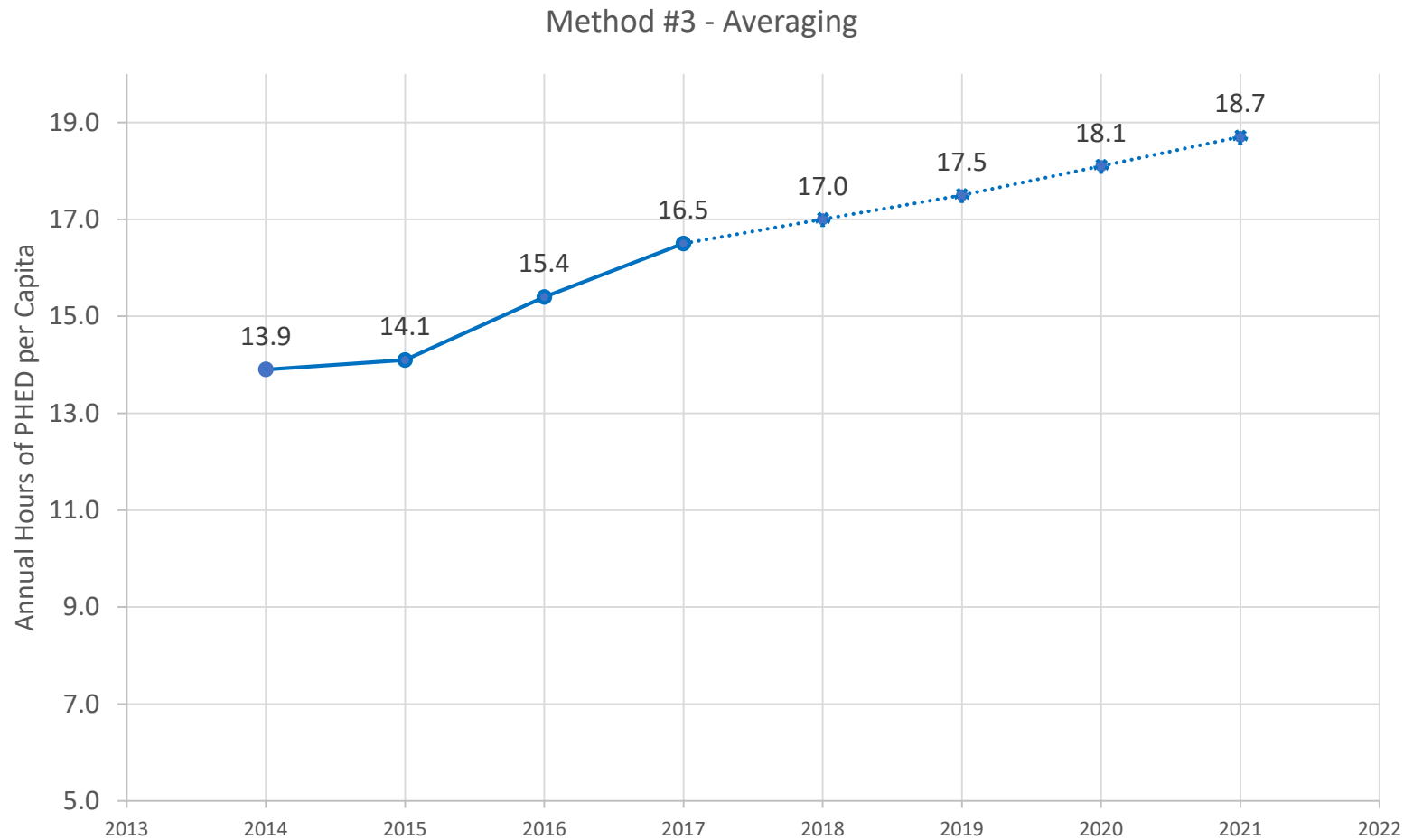


PHED Step Two: Forecasting the Target

Method #2 - Travel Demand Model



PHED Step Two: Forecasting the Target

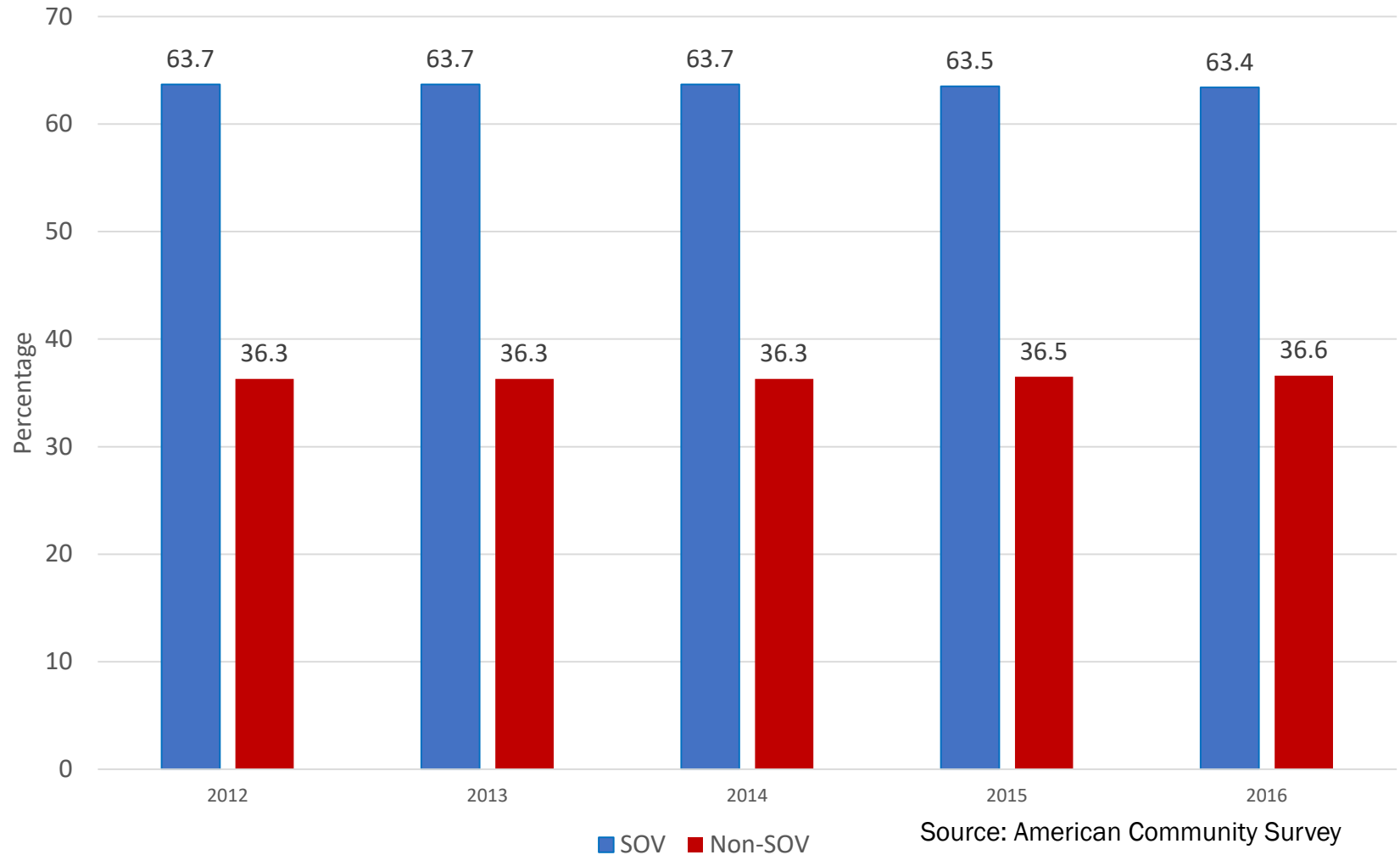


Mode Share Step One: Background & Data

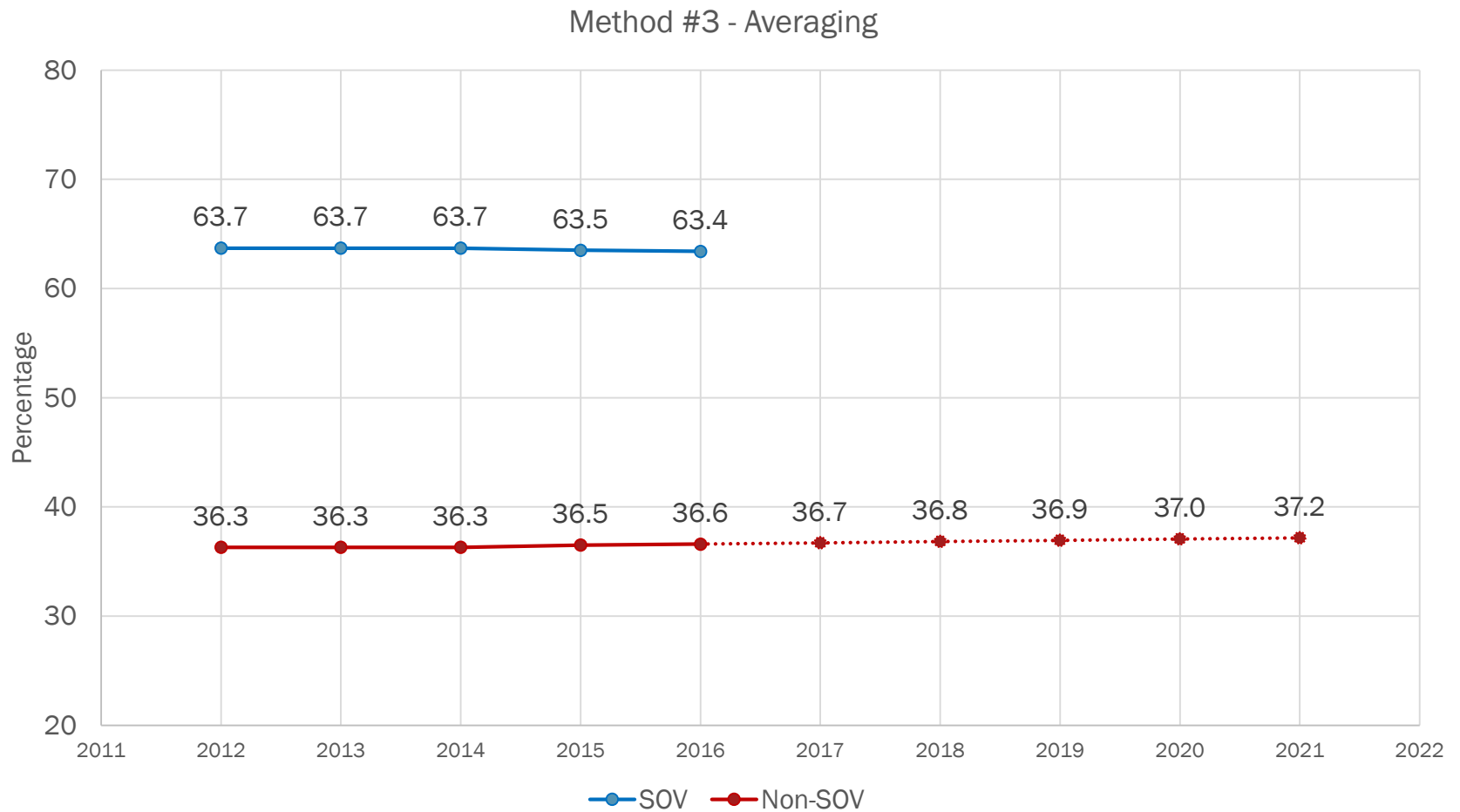
- Measurement of Non-SOV (Non-Single Occupied Vehicle) travel in specific urbanized areas
- Non-SOV travel includes carpooling, using public transit, walking, biking, and teleworking
- Source of data collection:
 - The American Community Survey (ACS)



Mode Share Step One: Background & Data



Mode Share Step Two: Forecasting the Target

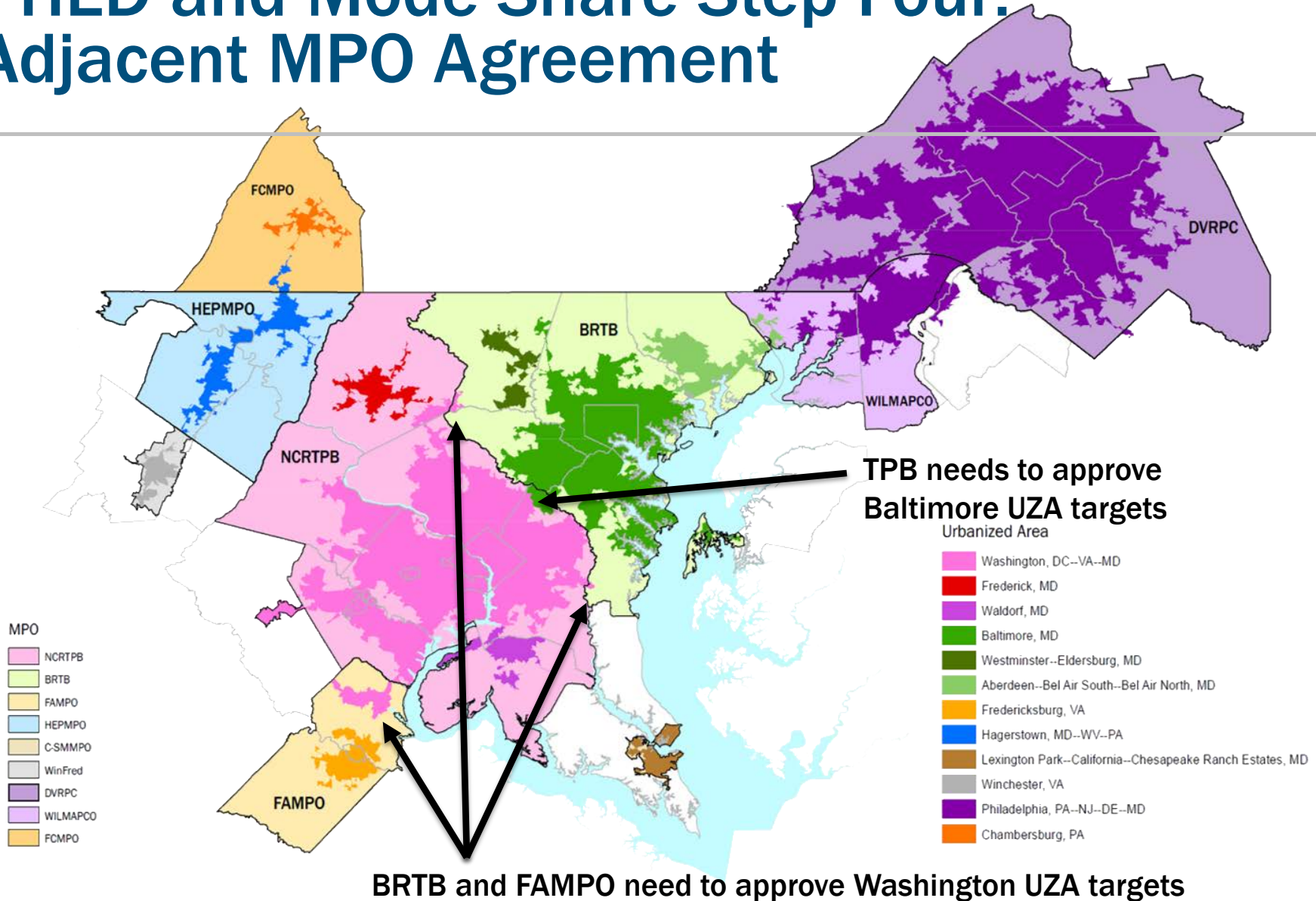


PHED and Mode Share Step Three: Targets

Performance Measure	CY 2018 - 2019 Two Year Target	CY 2018 - 2021 Four Year Target
Peak Hour Excessive Delay (PHED)	Not Required	18.7 hours
Mode Share (Non-SOV)	36.9 %	37.2 %



PHED and Mode Share Step Four: Adjacent MPO Agreement



System Performance: CMAQ Program (Congestion Mitigation and Air Quality)

	Performance Measures
CMAQ Program: Traffic Congestion	(5) Peak Hour Excessive Delay – Annual hours of peak hour excessive delay per capita
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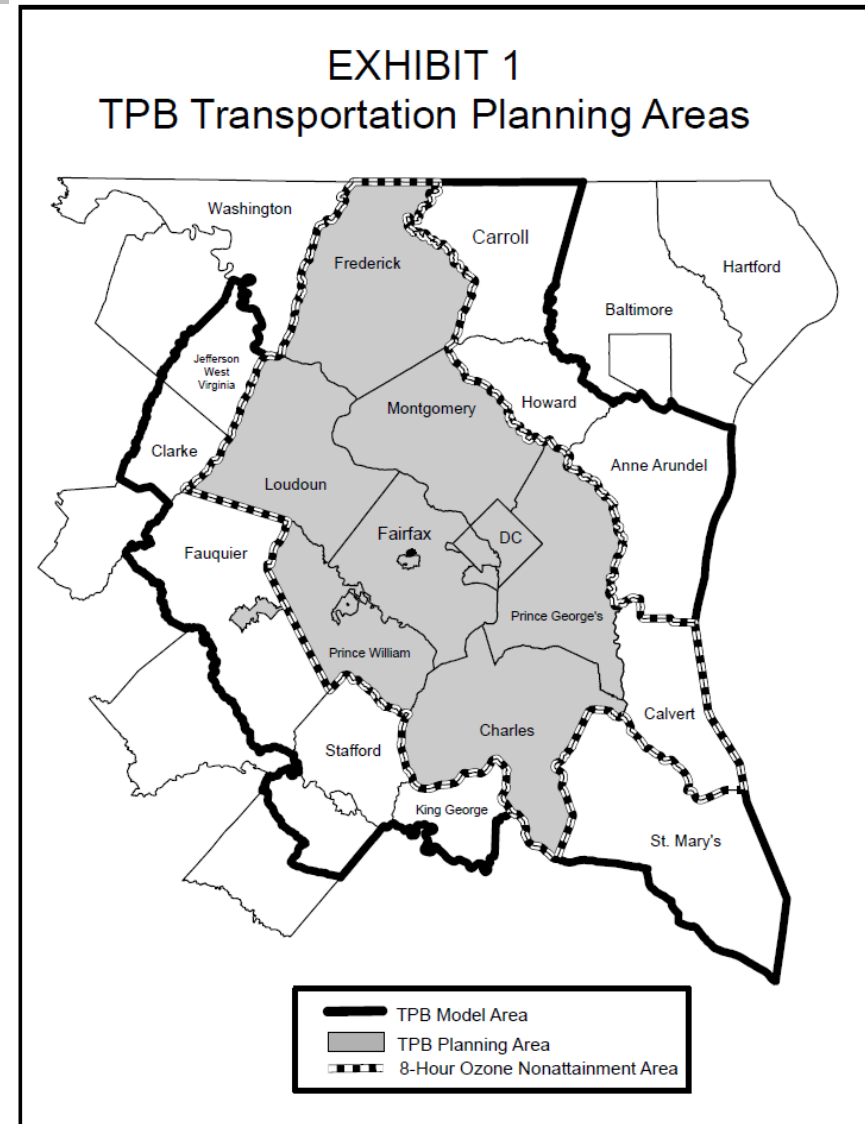
Emissions Reduction Step One: Background & Data

- CMAQ Emissions Reduction measure applies to non-attainment or maintenance areas.
 - Applicable State DOTs and MPOs (serving a TMA with a population over 1 million) must coordinate on and collectively establish a methodology for developing 2-year and 4-year targets for each applicable pollutant and precursor for all non-attainment or maintenance areas
 - State DOTs must develop targets with the coordination from MPOs by May 20, 2018
 - MPOs must establish targets within 180 days after State DOTs
- A baseline report from the DOTs for the first performance period (2018-2021) is due October 1, 2018, and must include baseline data for CMAQ projects from FY2014-2017, 2- and 4-year targets, and a description of the data collection method used



Emissions Reduction Step One: Background & Data

- Ozone precursors Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx) are the only pollutants for which the region needs to report on CMAQ Program Emissions Reduction
- Calvert County is inside the Washington DC-MD-VA nonattainment area, but outside TPB's planning area
 - Responsibility handled by Calvert-St Mary's MPO (C-SMMPO) and MDOT



Emissions Reduction Step One: Background & Data

- Measure: Total Emissions Reduction
 - Total emissions reduction is calculated by summing 2-and 4-year totals of emissions reductions of applicable criteria pollutant and precursor, in kilograms per day, for all projects funded with CMAQ funds.
 - Volatile Organic Compounds (VOCs) and Nitrogen Oxide (NOx).
- Calculation: Cumulative emissions reduction for CMAQ funded projects in federal fiscal years FY 2018-2019 (2-year) and FY 2018-2021 (4-year)
- Targets will reflect the anticipated cumulative emissions reduction to be reported in the CMAQ Public Access System (PAS).



Emissions Reduction Step One: Background & Data

- CMAQ PAS is a national database containing CMAQ projects emissions reduction benefits
- State DOTs are required to provide FY data by the following March 1
- Data can be summarized by State or MPO area

- Projects are not required to have a quantitative benefit analysis
- Projects with quantitative analysis list the project's benefits in the first year only
- No required nor consistent method for conducting quantitative analyses

U.S. Department of Transportation
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Air Quality CMAQ Public Access System

All 50 states and the District of Columbia submit annual reports of their CMAQ project obligations in March of every year. The FHWA uses these yearly submissions to maintain an active database of CMAQ investments, air quality benefits, Project trends within the program, and other anecdotal information focusing on the program's performance.

This database of CMAQ Project information had been reserved for internal planning purposes by authorized FHWA personnel, for Congressional reporting and made available to state DOTs and MPOs on an individual request basis.

The release of the CMAQ Public Access System was the first opportunity that the general public could have full access to FHWA approved CMAQ Project data submitted through the annual reporting process. The CMAQ Public Access System makes available searchable, read only, project information from 1992 to present in various reporting formats.

CMAQ system support and guidance information are available through the FHWA, [Air Quality, CMAQ](http://www.fhwa.dot.gov/environment/air_quality/cmaq/) (http://www.fhwa.dot.gov/environment/air_quality/cmaq/) website.

Disclaimer **Note to User:** Data present in the CMAQ Public Access System (PAS) is composed solely of projects from state DOT annual reports submitted and approved by FHWA, HQ Staff. Availability of project data for the previous fiscal year and subsequent years will be lagged and will be complete on September 30 of the succeeding calendar year.

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Emissions Reduction Step One: Background & Data

CMAQ Emissions Reduction from the Public Access System for the TPB portion of the Washington DC-MD-VA Ozone nonattainment area

FISCAL YEAR	VOC (kg/day)	NOx (kg/day)
2014	8.087	11.688
2015	0.072	0.816
2016	3.672	5.956
2017	2.532	4.074



Emissions Reduction Step Two: Forecasting the Target

MDOT: Combined approach of historic trends and anticipated CMAQ projects programmed over the next four years

VDOT: Anticipated CMAQ projects programmed over the next four years

DDOT: Anticipated CMAQ projects programmed over the next four years

TPB staff recommendation:

Summation of MDOT, VDOT, and DDOT targets



Emissions Reduction Step Three: Targets

		FFY 2018 - 2019 Two Year Target	FFY 2018 - 2021 Four Year Target
Total Emissions Reductions for the TPB portion of the Washington DC-MD-VA nonattainment area	Volatile Organic Compounds (VOCs)	.1166 Kg/Day	.2100 Kg/Day
	Nitrogen Oxides (NOx)	.2754 Kg/Day	.4726 Kg/Day

VDOT data still pending



MPO CMAQ Performance Plan



§ 490.107 CMAQ Performance Plan

- CMAQ performance plan includes CMAQ congestion and total emissions measures:
 - Baseline Performance Period Report includes:
 - Baseline condition/performance
 - Targets (2-year and 4-year Targets)
 - Description of projects for funding and the projects will contribute to achieving targets

Awaiting FHWA guidance for developing CMAQ Performance Plans



Next Steps

- Get final State DOT data and concurrence on targets
- Brief TPB on draft targets at May 16 meeting
- TPB adopts targets at June 20 meeting
- Work with BRTB and FAMPO with the approval of their UZA targets
- Approve BRTB and FAMPO UZA targets at Steering Committee
- TPB staff completes MPO CMAQ Performance Plan with MPO targets and transmits to State DOTs in September
- State DOTs submit State targets and MPO Performance Plan to Feds by October 1, 2018.



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Metropolitan Washington Council of Governments

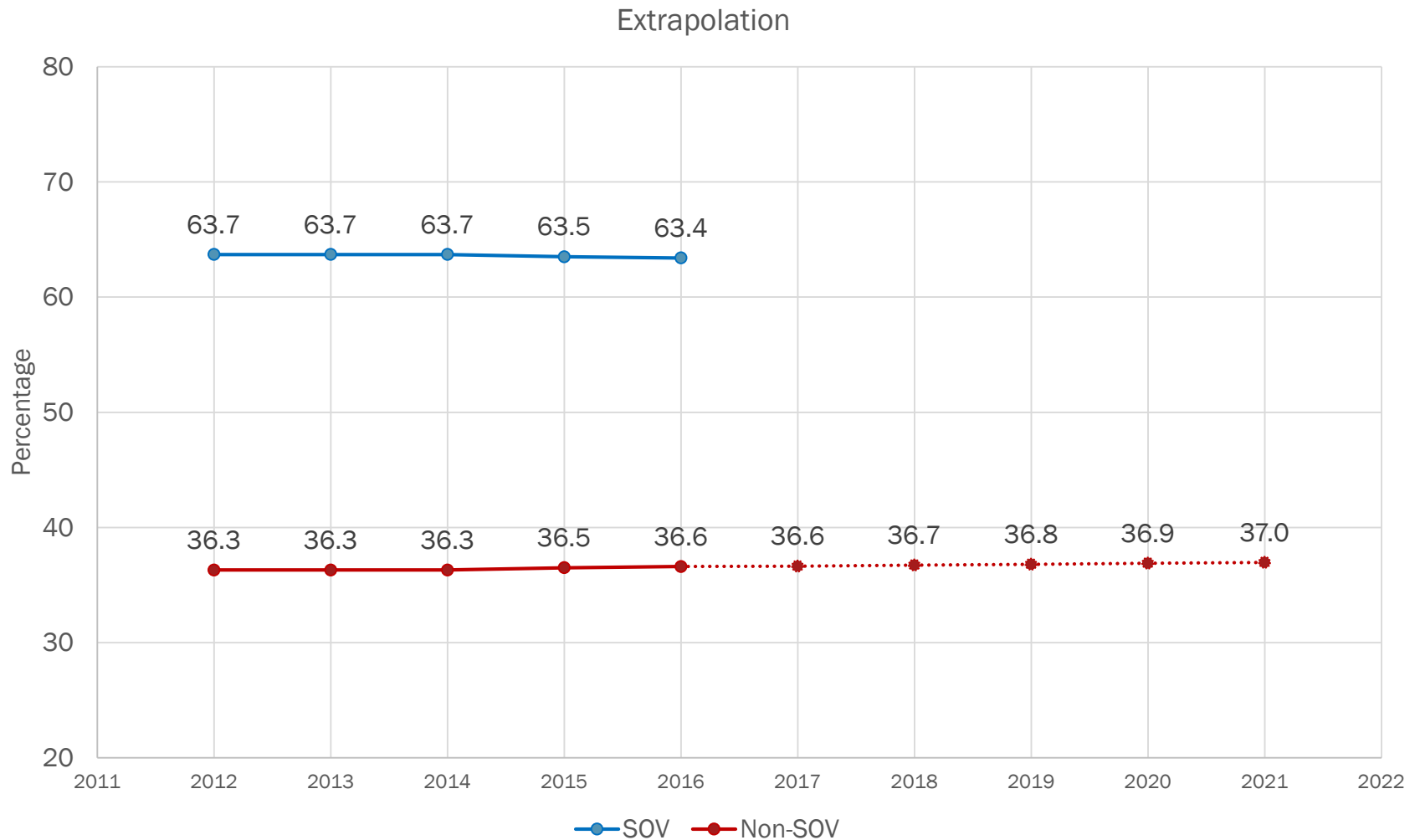
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Mode Share Step Two: Forecasting the Target



Mode Share Step Two: Forecasting the Target

