

VISUALIZE 2050

National Capital Region Transportation Plan

Agenda Item 4

DRAFT VISUALIZE 2050 TRANSPORTATION CONFORMITY ANALYSIS

Visualize 2050 & FY 2026-2029 TIP

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TPB Transportation Engineer

MWAQC-TAC Meeting
September 12, 2025



National Capital Region
Transportation Planning Board

Air Quality Conformity: Headline



Visualize 2050 meets the federal Air Quality Conformity requirements—mobile source VOC and NO_x emissions associated with the LRTP/TIP are below EPA-approved motor vehicle emissions budgets, regardless of whether the I-495 Southside Express Lanes (SEL) are constructed

Visualize 2050

- Washington Region's Long-Range Transportation Plan
- Federally mandated quadrennial update
- Supersedes the 2022 Update to Visualize 2045
- Updates to financial plan, demographics, modeling tools, projects/programs/policies
- Uses updated 2008 Ozone Maintenance Plan mobile emissions budgets (approved October 2024)
- Conformity Analysis completed with and without the I-495 Southside Express Lanes (SEL)

visualize2050.org

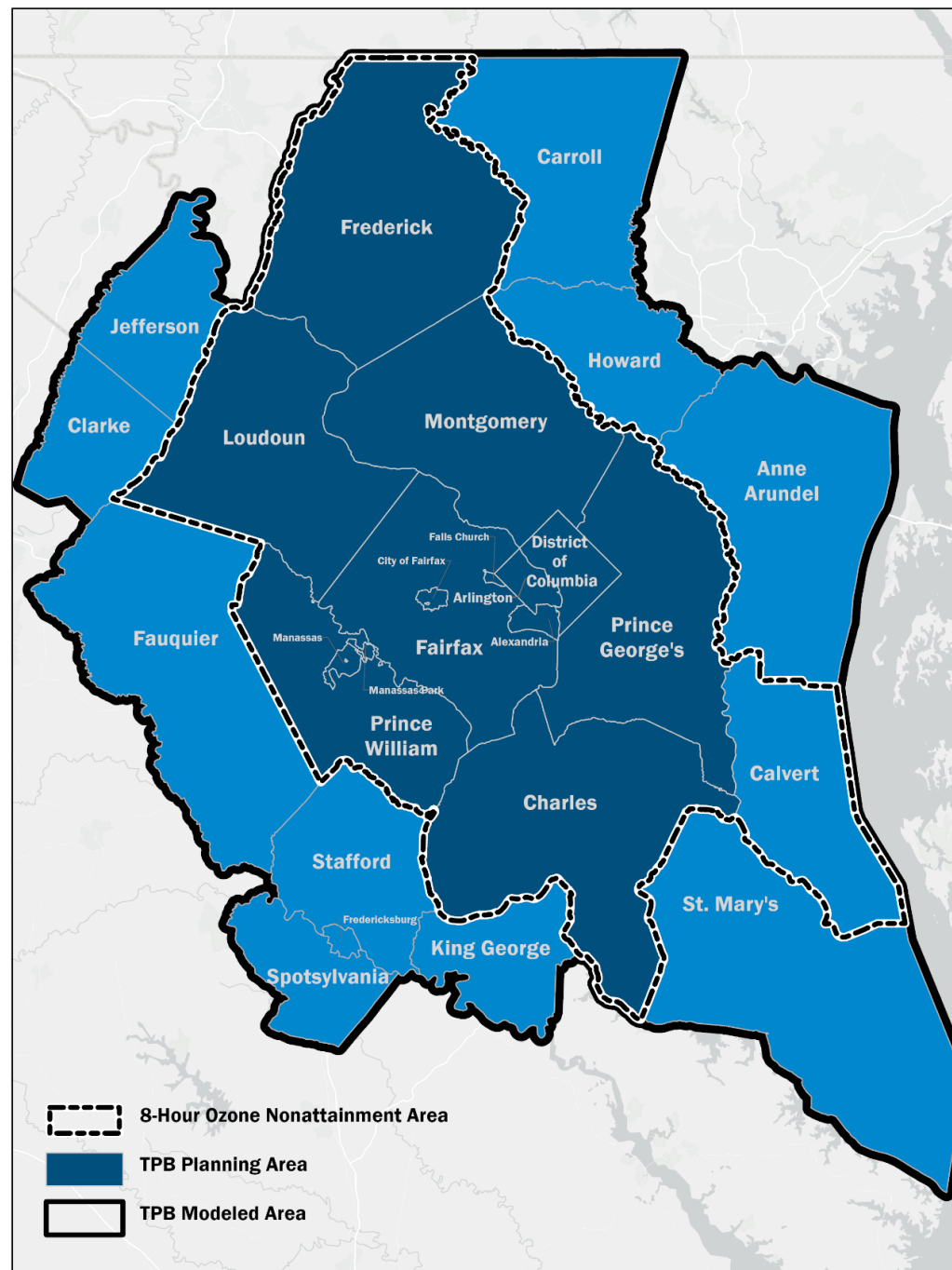
I-495 Southside Express Lanes (SEL) Project

- Included in Visualize 2045 as a study
- Submitted by VDOT for inclusion in the Visualize 2050 Air Quality Conformity Analysis
 - 2 HOT express lanes in each direction with 3+ people toll-free
 - Express transit route between the Branch Avenue Metro Station and Tysons Corner
 - Springfield Interchange to MD 210
 - Cost is \$2B, Completion year is 2031
- Public comments have been received in great numbers since the March 2024 comment period
- TPB undecided in 2024, making the decision in Fall 2025



Woodrow Wilson Bridge VA to MD (Cristina Finch/COG)

TPB Planning Areas



Pollutants

- Volatile Organic Compounds (VOC)
- Nitrogen Oxides (NO_x)

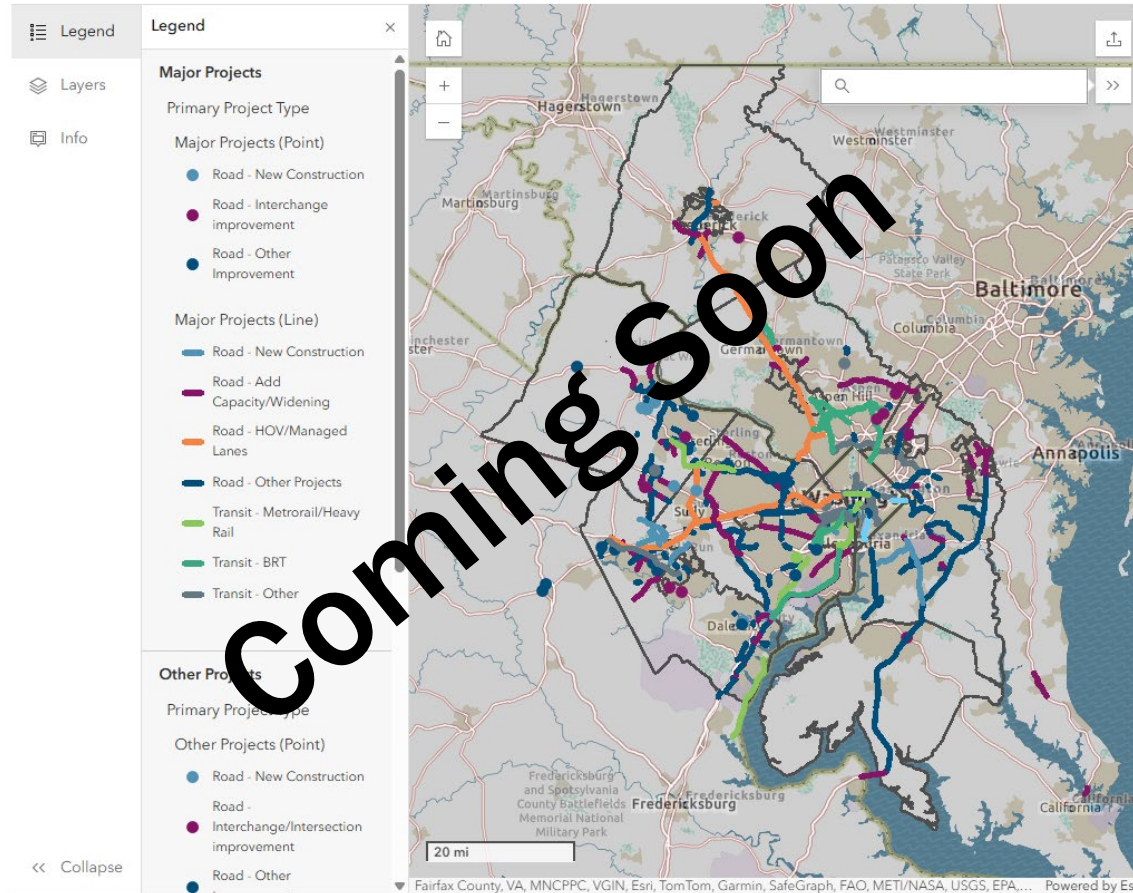
Analysis Years

2025, 2026, 2030, 2040, 2045, 2050

Key Technical Inputs and Tools

- “Regionally Significant” Transportation Projects - **NEW**
 - Zero-Based Budgeting Exercise
- Round 10.0 Cooperative Forecasts - **NEW**
- 2023 Vehicle Registration Data (VIN) - **NEW**
- Gen2/Version 2.4.6 Travel Demand Model - **NEW**
- EPA’s MOVES4.0.1 Mobile Emissions Model - **NEW**

Visualize 2050 Interactive Project Map

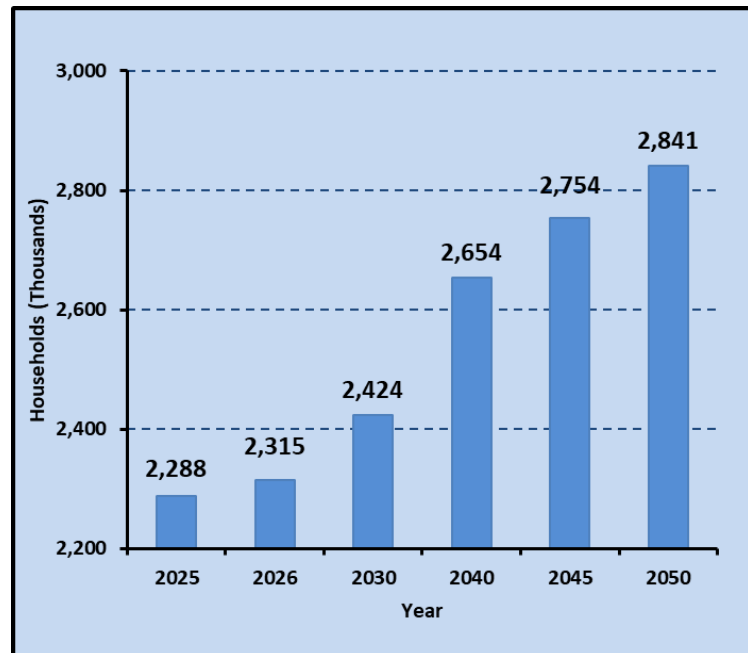


- A list of the projects included in the conformity analysis can be found in the meeting materials

Round 10.0 Cooperative Forecasts

Households

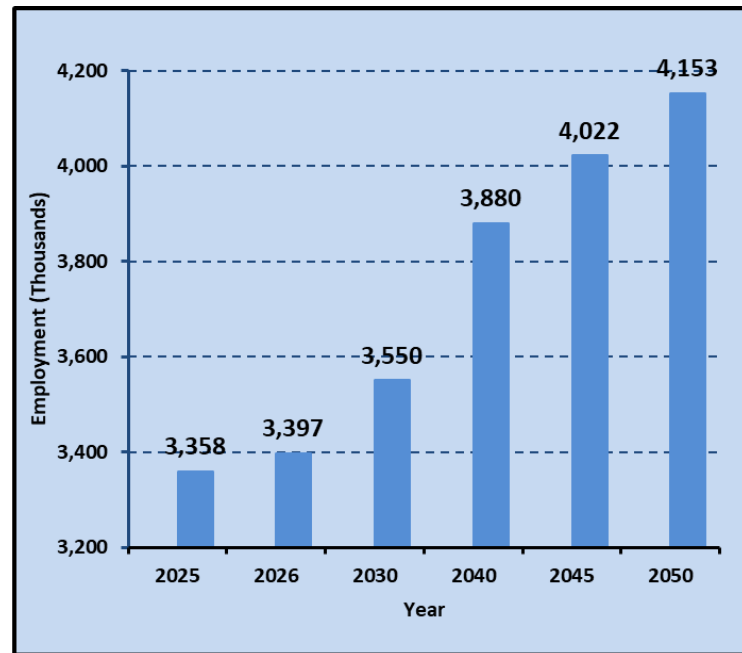
(In Thousands)



Note: Values are for the Non-Attainment Area

Employment*

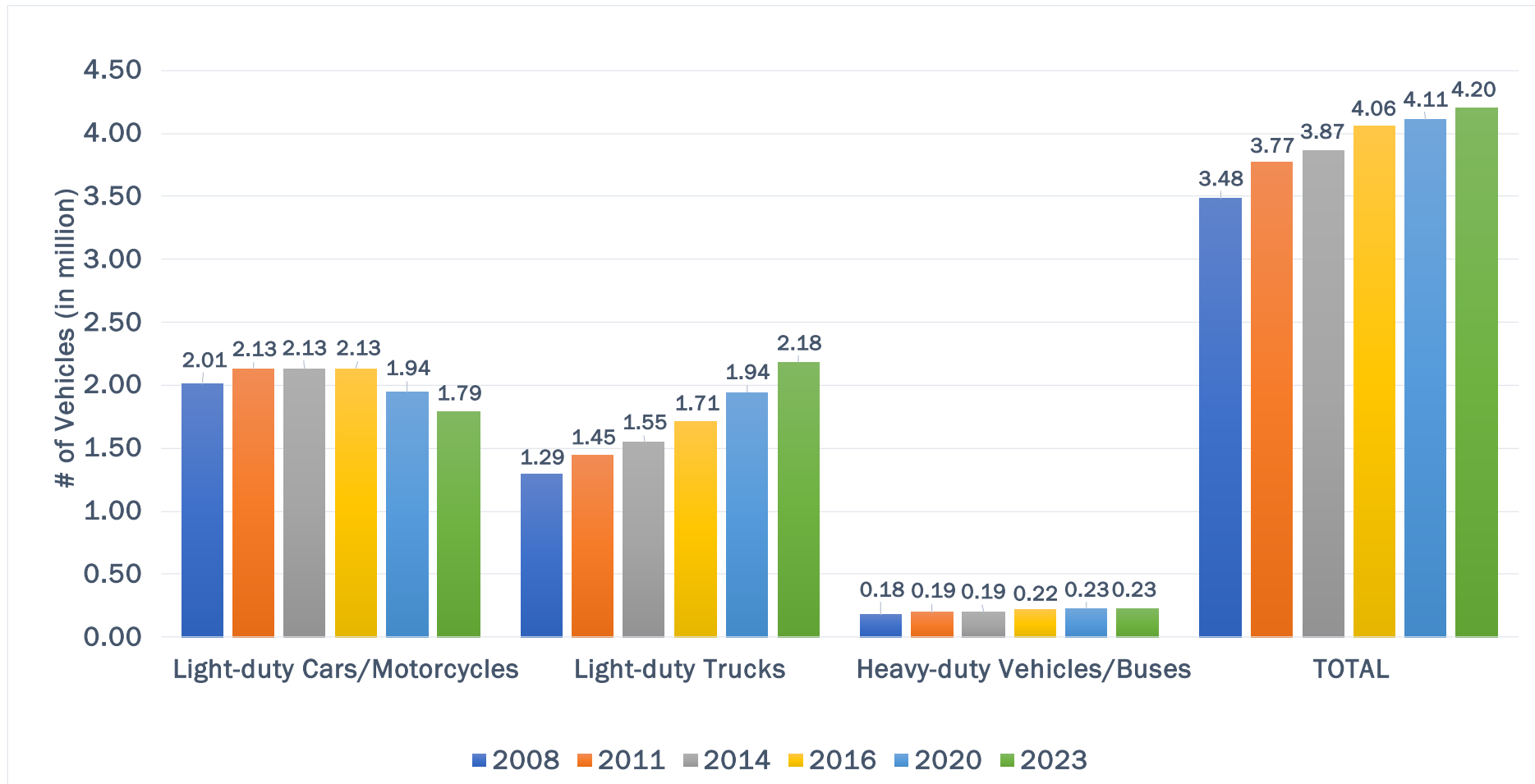
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Note: Values are for the Non-Attainment Area

* Includes Employment Definition Adjustment to Ensure Consistent Definition of Employment used Throughout Modeled Area

Vehicle Fleet: Historical Growth



Vehicle Fleet: Average Age by Year

Year	Light-duty Cars/Motorcycles	Light-duty Trucks	Heavy-duty Vehicles/Buses	All Vehicle Types
2008	8.51	7.53	9.21	8.18
2011	9.25	8.55	10.56	9.05
2014	9.62	9.09	11.3	9.49
2016	9.32	8.68	11.29	9.16
2020	10.05	8.74	11.51	9.51
2023	11.04	8.87	12.07	9.97

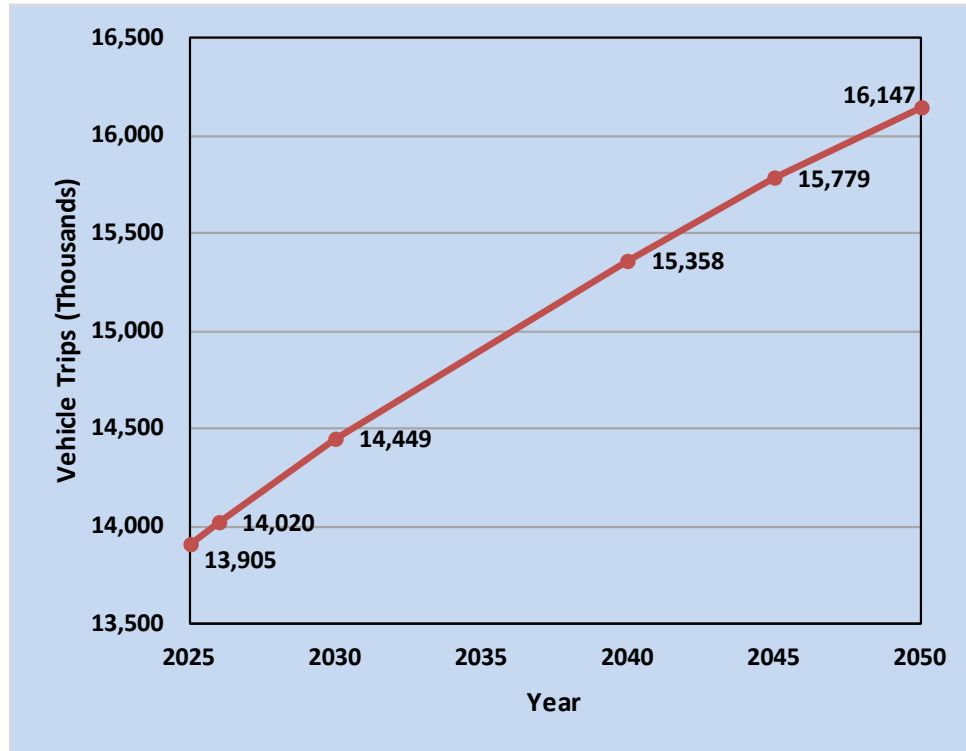
Travel Demand Model Assumptions

- Validated to 2018 conditions
- Highway tolls in the travel model are current to July 2024
- Vehicle fleet data are current to December 2023
- Transit
 - The base transit reflects December 2023 schedules with transit service projects built upon it
 - Transit fares are current to May 2024

Travel Model Results

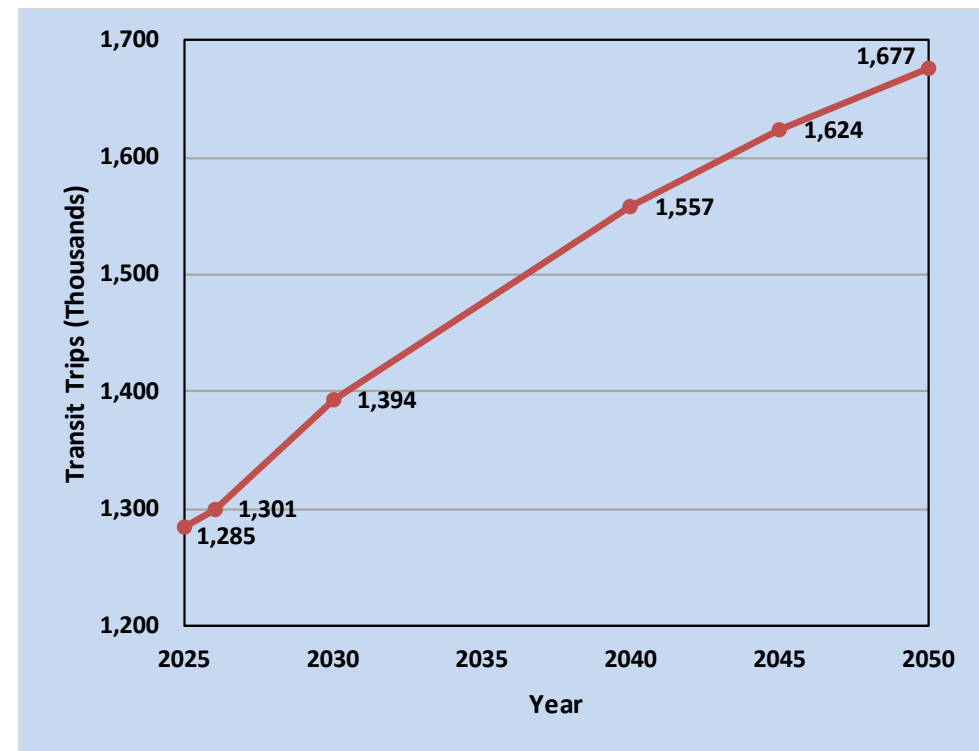
Vehicle Trips

(In Thousands)



Transit Trips

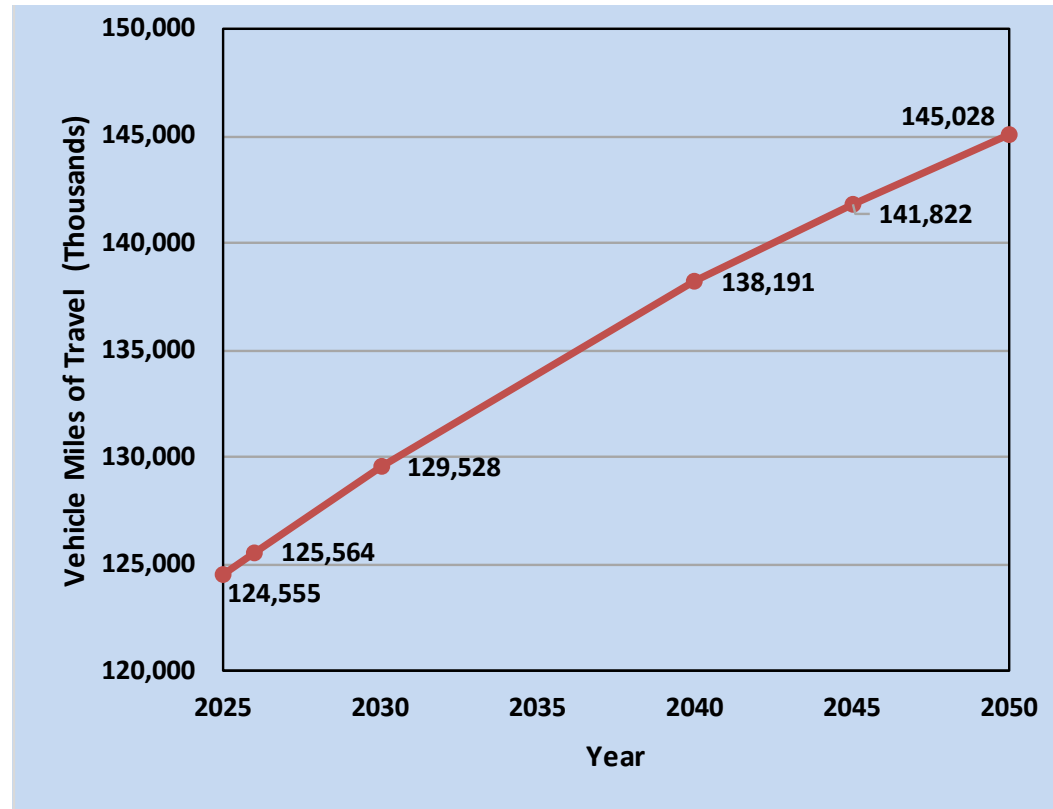
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Travel Model Results

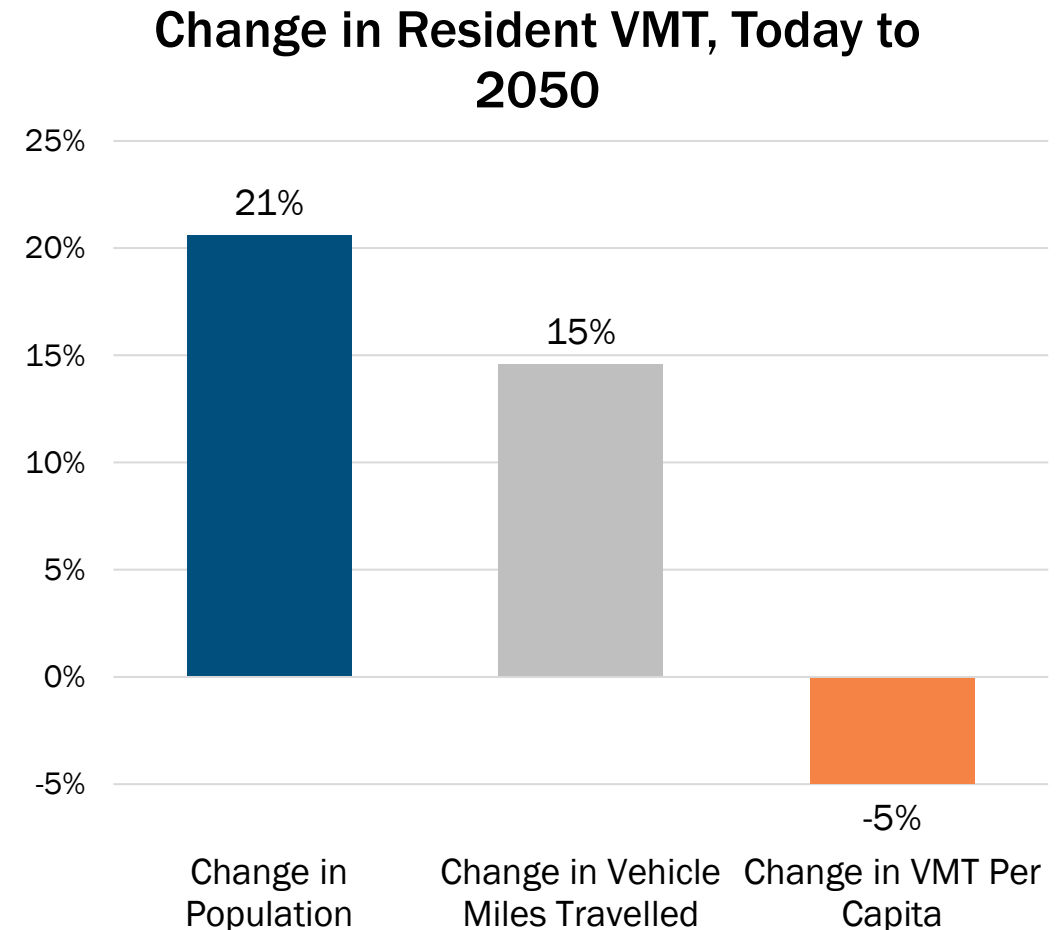
Daily Vehicle Miles of Travel

(In Thousands)



Driving in the Region to Decline Per Capita

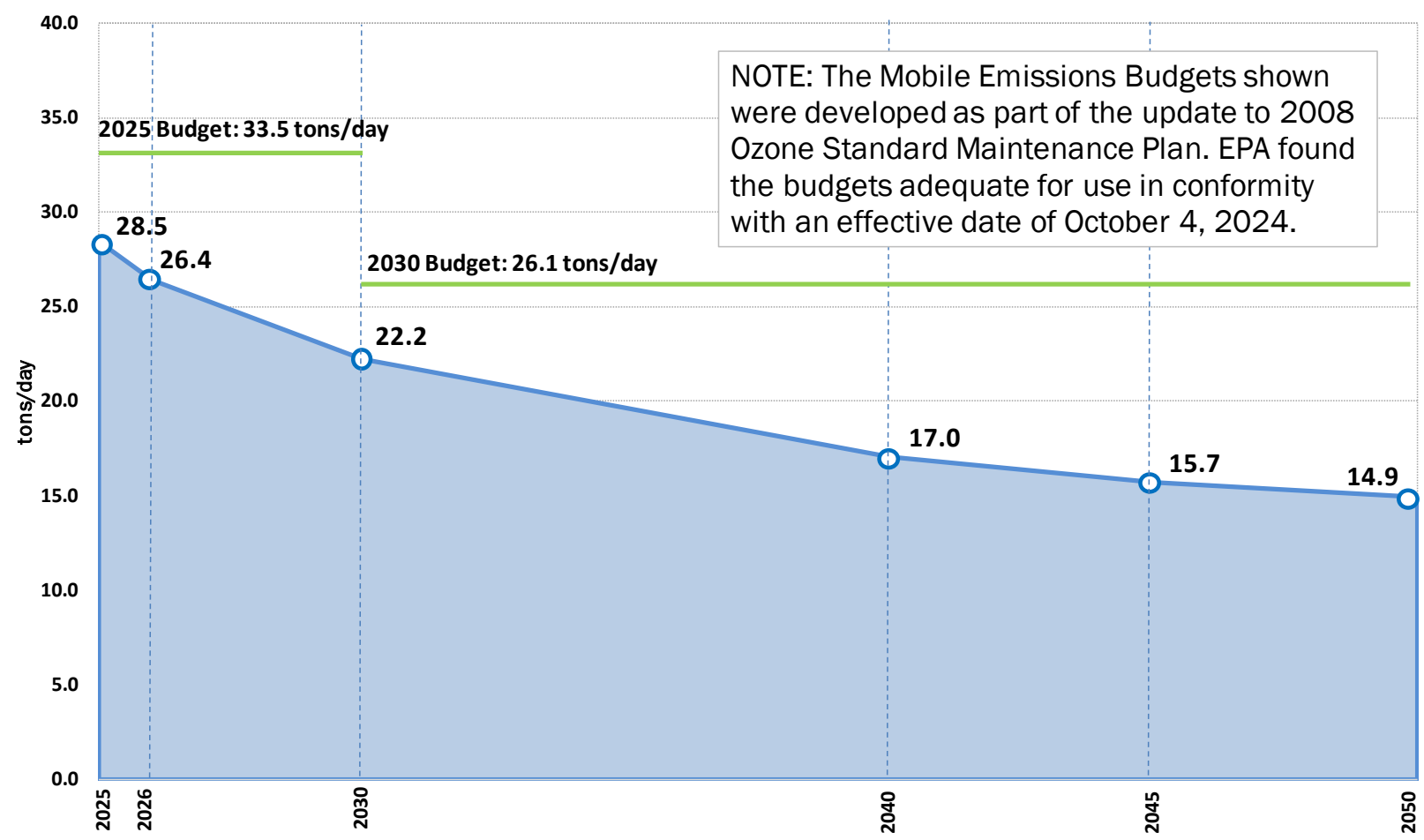
By 2050, the average resident in this region is predicted to travel 5% less by automobile than today (measured as miles traveled per capita)



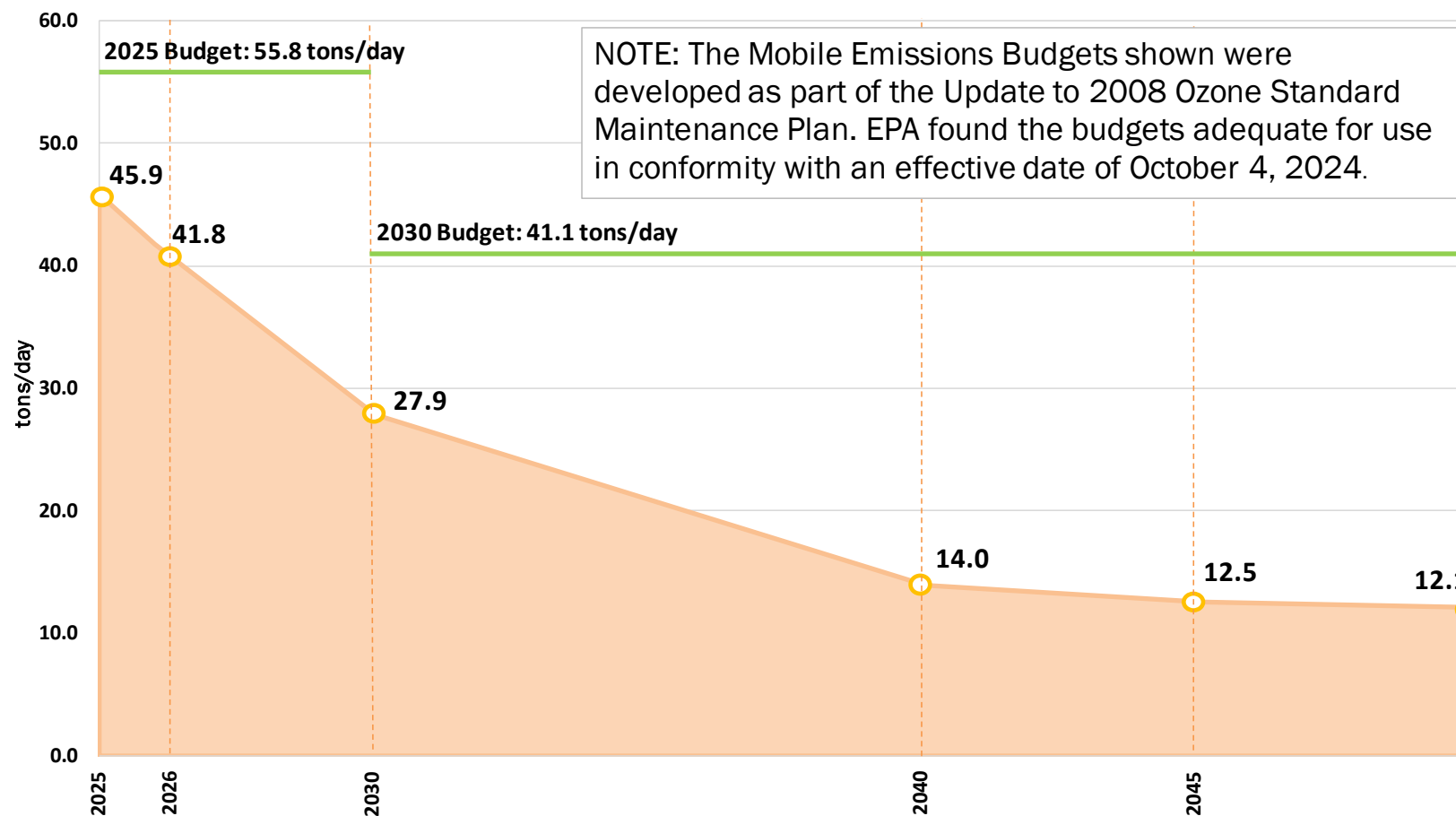
Air Quality Conformity

- The air quality conformity analysis was conducted twice, with and without the I-495 Southside Express Lanes (SEL)
 - In both instances, the Visualize 2050 plan meets the federal air quality conformity requirements
 - Mobile source VOC and NO_x emissions associated with the plan/TIP are below EPA-approved motor vehicle emissions budgets
 - The total emissions estimates with and without the I-495 SEL are identical*
- * To the first decimal place or within a tenth of a ton/day*

Visualize 2050 Air Quality Conformity Mobile Source Emissions and Mobile Emissions Budgets Ozone Season: Volatile Organic Compounds (VOC)



Visualize 2050 Air Quality Conformity Mobile Source Emissions and Mobile Emissions Budgets Ozone Season: Nitrogen Oxides (NO_x)



Air Quality Conformity: Findings

- ✓ Ozone Season VOC Within Mobile Budget
- ✓ Ozone Season NO_x Within Mobile Budget

Technical Tools and Assumptions

Pollutants	Ozone Season Volatile Organic Compounds (VOC) and Nitrogen Oxides (NO _x)
Emissions Model	MOVES4.0.1
Conformity Test	<u>Budget Test</u> : Using EPA approved mobile emissions budgets from the updated 2008 Ozone NAAQS Maintenance Plan
Vehicle Fleet Data	December 2023 vehicle registration data
Geography	8-hour ozone non-attainment area
Network Inputs	Regionally significant projects
Land Activity	Cooperative Forecasts Round 10.0
HOV/HOT	<u>VA</u> : I-66, I-95, I-395, and I-495 are all HOT3+; all HOV facilities will be HOV2+ through 2050 <u>MD</u> : HOV facility on US 50 will remain HOV2+ through 2050; HOV facility on I-270 will convert from HOV2+ to HOT3+ when additional lanes are added;
Roadway Restrictions	Roadway restrictions, such as truck prohibitions, are reflected in the travel model network using information supplied by the Departments of Transportation
Analysis Years	2025, 2026, 2030, 2040, 2045, and 2050
Modeled Area	6,800 square mile area with 3,722 Transportation Analysis Zones (TAZs)*
Travel Demand Model	Gen2/Version 2.4.6

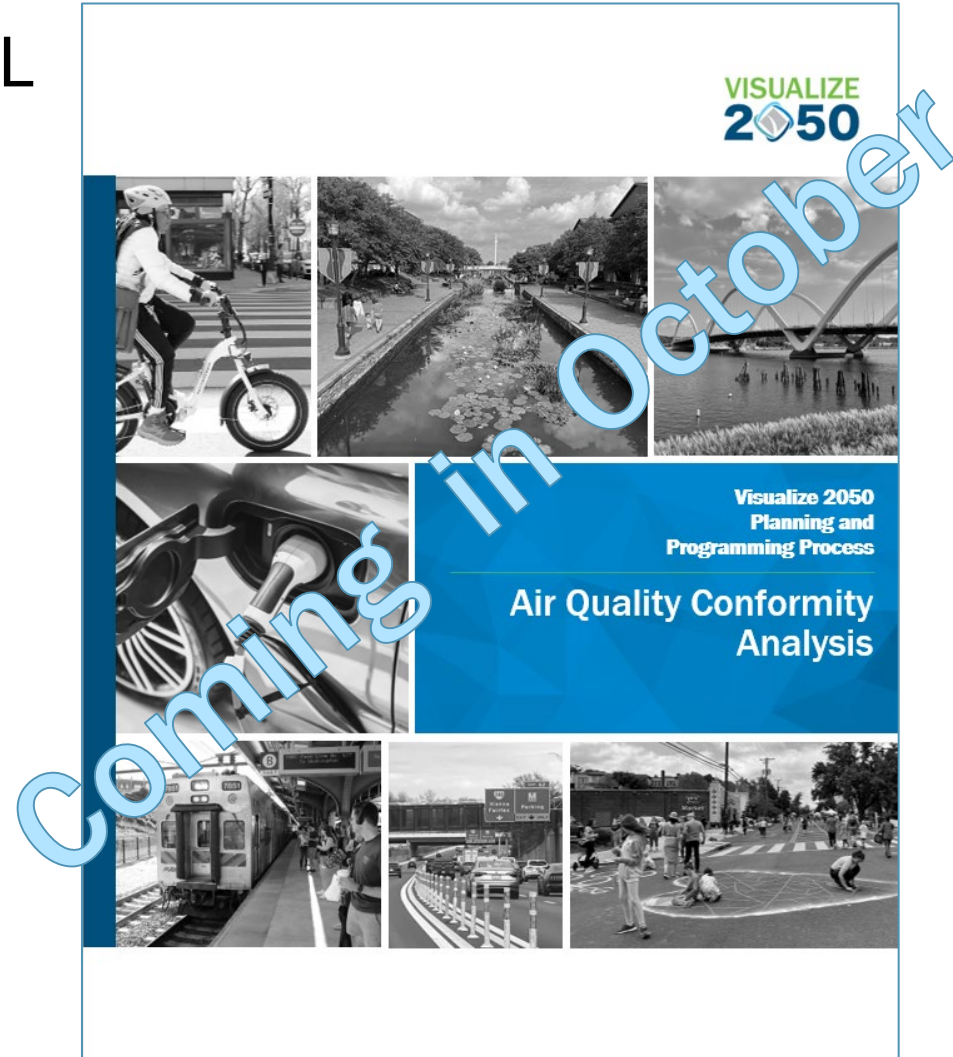
* Analysis reported for the smaller 8-hour ozone non-attainment area

Next Steps

- **September 24, 2025** - Presentation to MWAQC
- **October 15, 2025** - TPB Board votes to move forward with or without the I-495 SEL
- **October 23, 2025** – Public Comment Period opens
- **November 19, 2025** – Presentation to TPB, including comments with responses, to date
- **November 21, 2025** – Public Comment Period closes
- **December 17, 2025** –TPB updated on any additional comments and responses, asked to approve the Conformity Analysis, the Visualize 2050 Transportation Plan, and the FY2026-2029 TIP

Final Report

- Waiting on TPB Decision on the I-495 SEL project to finalize the report



QUESTIONS?

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