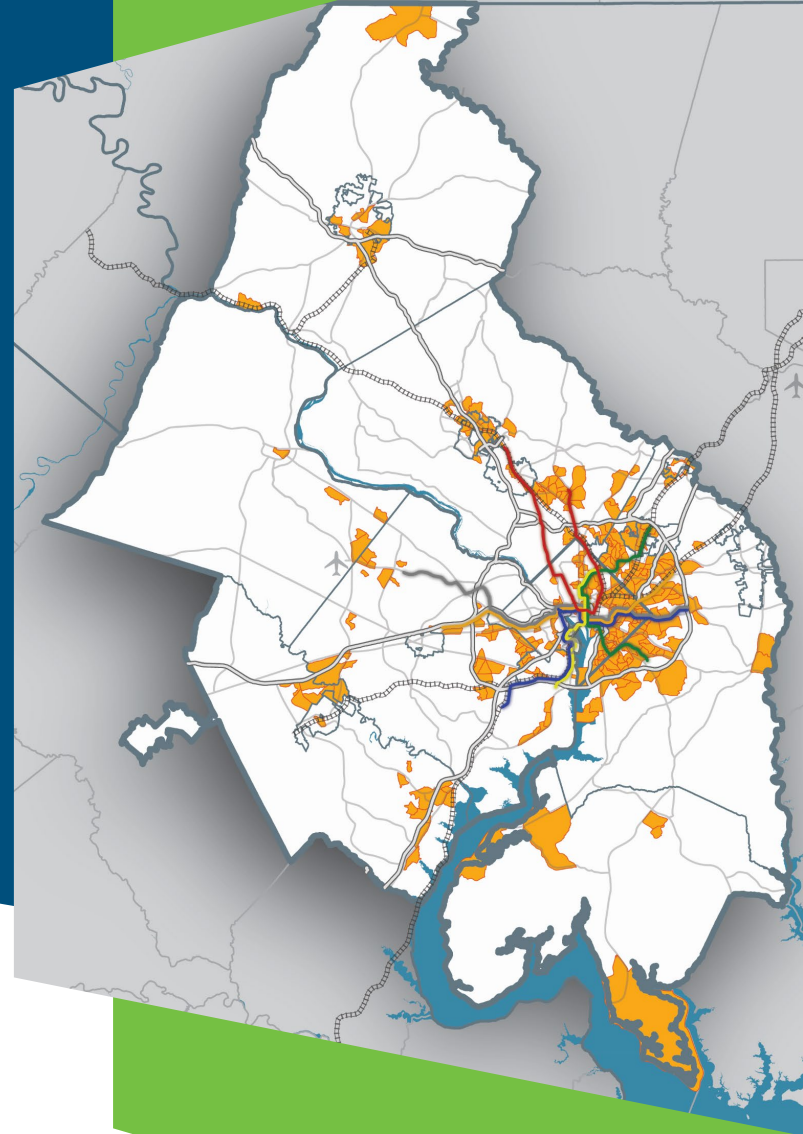


# 2022 Update to Visualize 2045, FY 2023-2026 TIP and the Air Quality Conformity Analysis

National Capital Region  
Transportation Planning Board

April 20, 2022



**visualize**  
**2045**

A long-range  
transportation plan  
for the National  
Capital Region

# Presentation Overview



1. Overview of the Visualize 2045 update and FY 2023-2026 TIP



2. Financial Plan



3. Air Quality Conformity



4. Performance Analysis - Regional Transportation System



5. Get the Word Out: Visualize 2045

# Top 3 Things to Know about the Visualize 2045 Update

## 1. It meets all federal requirements, including\*:

- ✓ Technical Inputs
- ✓ Fiscal Constraint
- ✓ Air Quality Conformity
- ✓ Implementation of TPB's Public Participation Plan
- ✓ Title VI
- ✓ Performance-Based Planning Requirements

## 2. It projects \$223.3 Billion expended for 2023-2045

- 81% must be devoted to operations and maintenance
- Modal Breakdown:
  - WMATA: 45%
  - Other public transportation: 22%
  - Highways: 32%
  - Stand-alone bike/ped: 0.4%

## 3. It forecasts progress on goals but also challenges

- Access to transit will increase
- More people, businesses and visitors will have increased travel options
- Growth will increase demand, increasing delay and congestion

\*EJ Analysis will be conducted on the approved plan

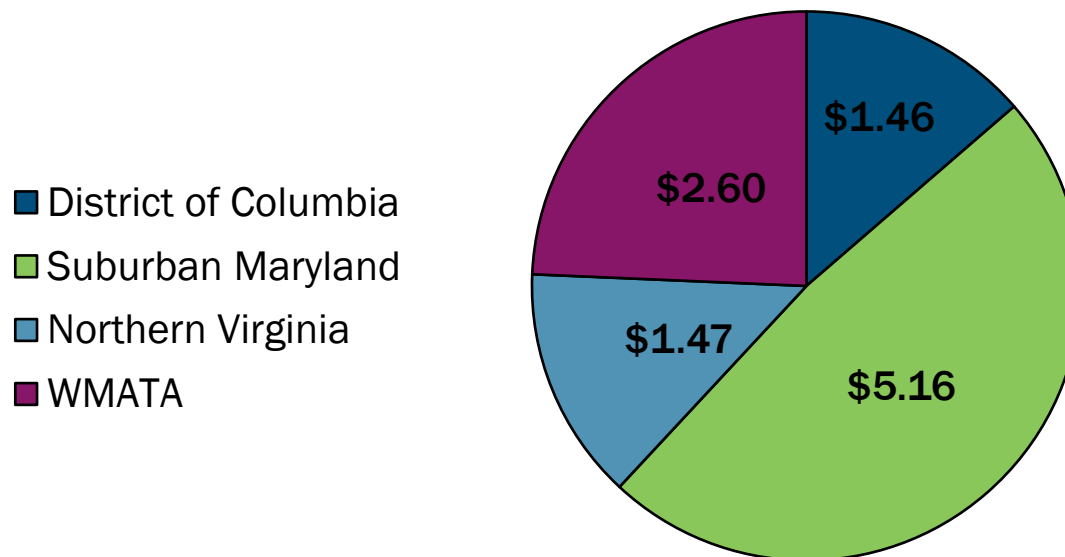
# 1. Visualize 2045 and the TIP

# Draft FY 2023-2026 Transportation Improvement Program (TIP) Summary

The TIP is the first four years of the plan + other federally funded projects.

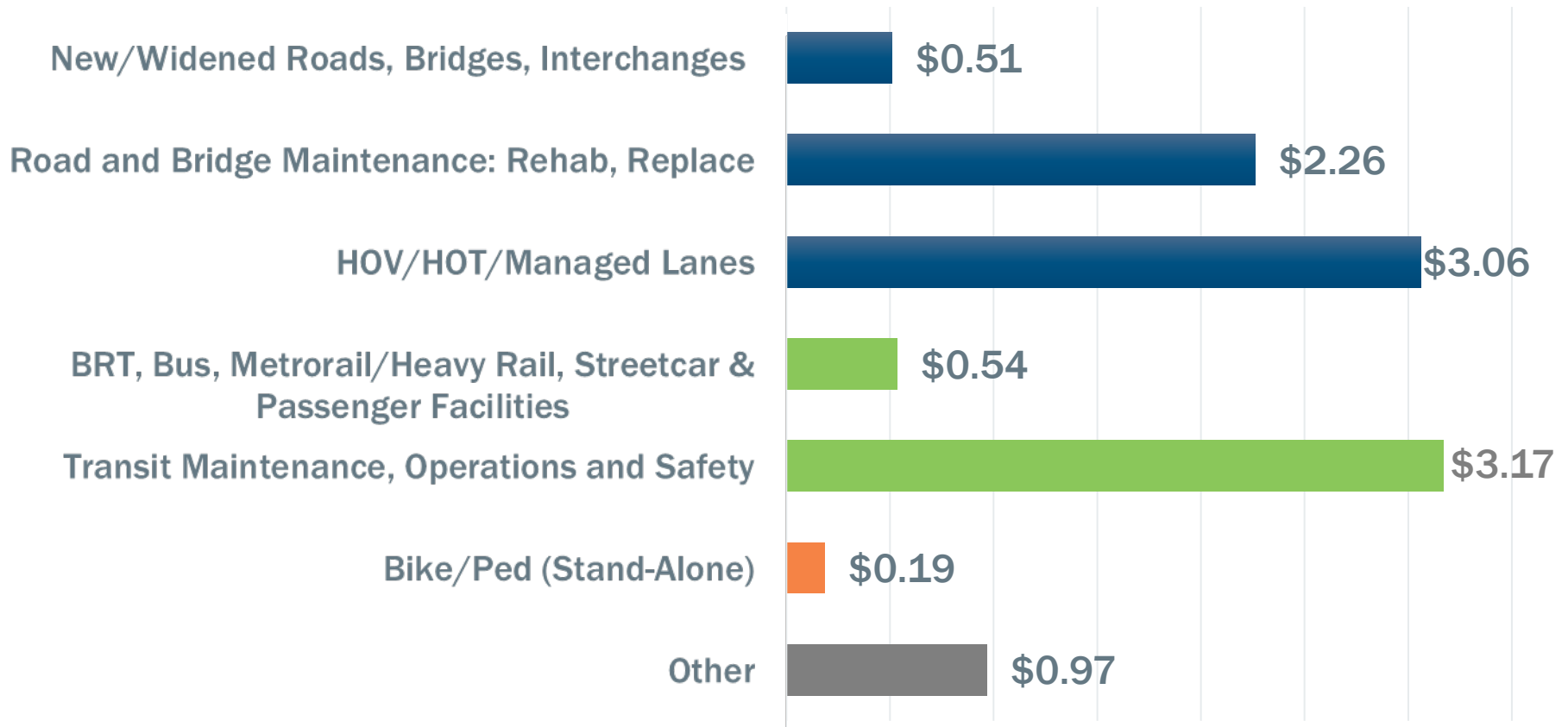
It features more than 300 funding records for projects, programs, and project groupings throughout the region.

## Funding Programmed by Jurisdiction (\$10.7 Billion)



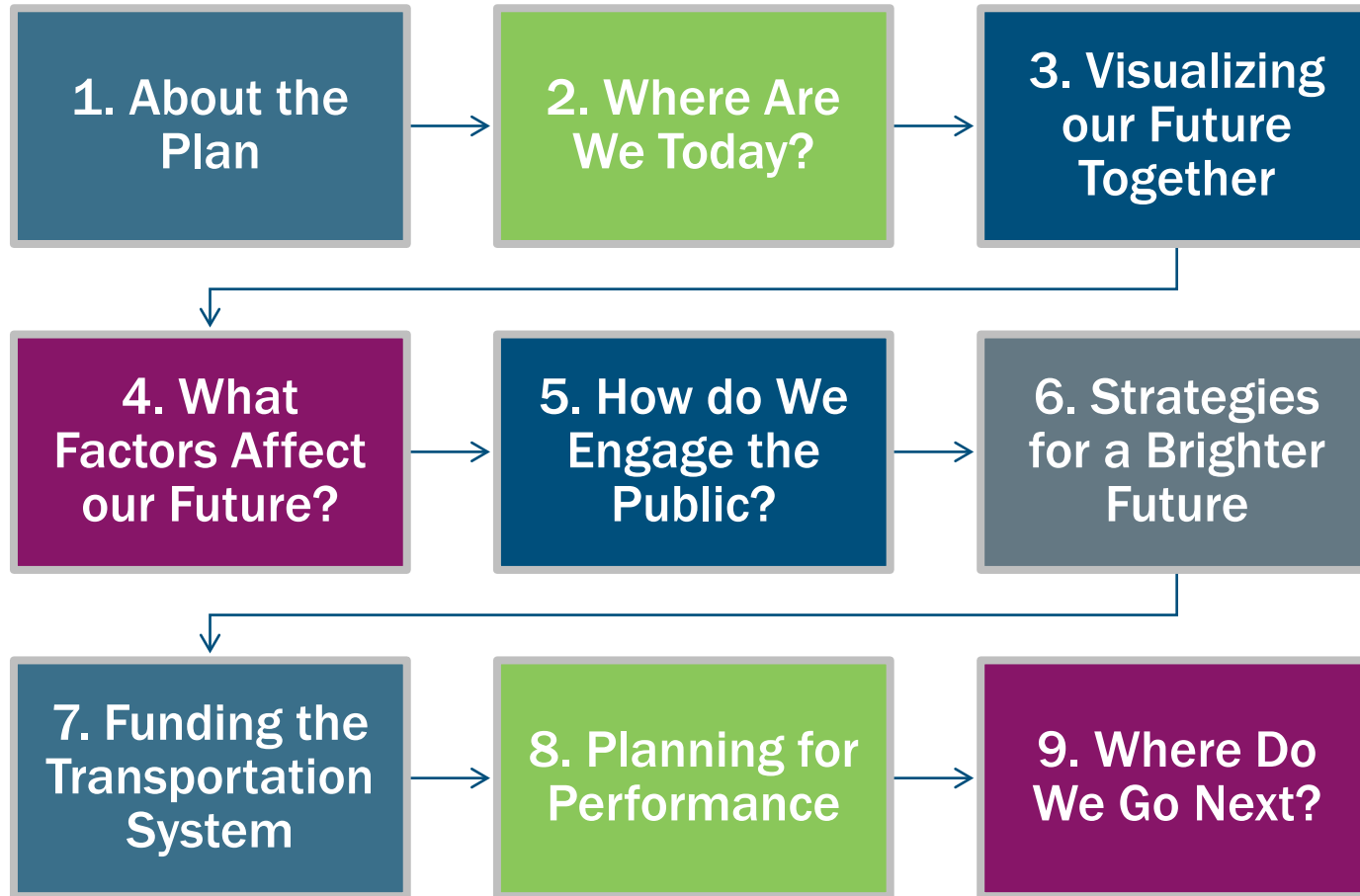
# Draft FY 2023-2026 Transportation Improvement Program (TIP) Summary

## Funding Programmed by Project Type



# Plan Organization: Nine Chapters

Includes Climate  
Change Mitigation



# Plan Appendices

A. Financial Plan	B. Summary of Projects in the Fiscally Constrained Element	C. Air Quality Conformity Analysis	D. Systems Performance Report	E. Congestion Management Process – impact on plan development
F. Safety Planning	G. Environmental Consultation and Mitigation	H. Public Participation Summary	I. Summary of Public Comments	J. Summary of Transit Plans (TDP/TSP) in Region
	K. Federal Compliance Checklist	L. TPB Resiliency Study Whitepaper	M. TPB Climate Change Mitigation Study	



# Highlights of What's New

Applies an 'equity lens' to plan content.

Process:  
More information on the planning process:  
How does regional planning work?

Public Engagement:  
Integrates Voices of the Region findings

Planning Areas:  
• Aspirational Initiatives  
• transportation modes  
• future /fed planning factors including climate (CCMS)/resiliency

Projects:  
Integrates project sponsor responses to regional policy questions.

Federal Compliance:  
Progress discussions for the PBPP

*And the plan maintains a continued focus on demonstrating federal compliance*

## 2. Financial Plan



*The 2022 Update to Visualize 2045 meets the federal requirements for fiscal constraint.*

# Financial Plan



Federal regulations require a financial plan that demonstrates how the adopted long-range transportation plan can be implemented

Forecast year-of-expenditure (YOE) revenues must cover the estimated YOE costs of maintaining, operating, and expanding the highway and transit system

The plan demonstrates that the forecast revenues are reasonably expected to be available to implement Visualize 2045

# Financial Plan - Methodology

- For the near-term years, agencies used revenue and expenditure budgets from the approved TIP and Capital Improvement Programs (CIPs)
- For long-term years:
  - Revenues are estimated from extrapolation of past trends as well as assumptions about future increases (beyond current legislation and appropriations)
  - Expenditures are developed from project costs in the Project InfoTrack project database as well as extrapolated costs for maintenance and operations
- Estimated inflation rates are applied to convert estimates of revenues and expenditures to year of expenditure (YOE) dollars

# Financial Plan – Key Assumptions (States)

## District of Columbia

- Used 2021 budget and 2021-2026 Capital Improvement Plan
- Revenue growth rate of 2.4% after 2027
- Most revenue come from general tax revenues

## Suburban Maryland

- State growth rate of 5.3%, federal growth rate of 3.0%
- Private funding to build toll roads

## Northern Virginia

- State growth rate of 2.2%, federal growth rate of 1.7%
- Several sources of regional and local funds



# Financial Plan – Key Assumptions (WMATA)

## WMATA inputs

- Operating revenues and costs based on extrapolation of pre-pandemic trends
- Capital costs based on FY 2021 Budget and FY2021 – FY2026 Capital Improvement Program (CIP)

Assumption that PRIIA funding (\$150M/year federal, matched by DC-MD-VA) would be extended through 2045

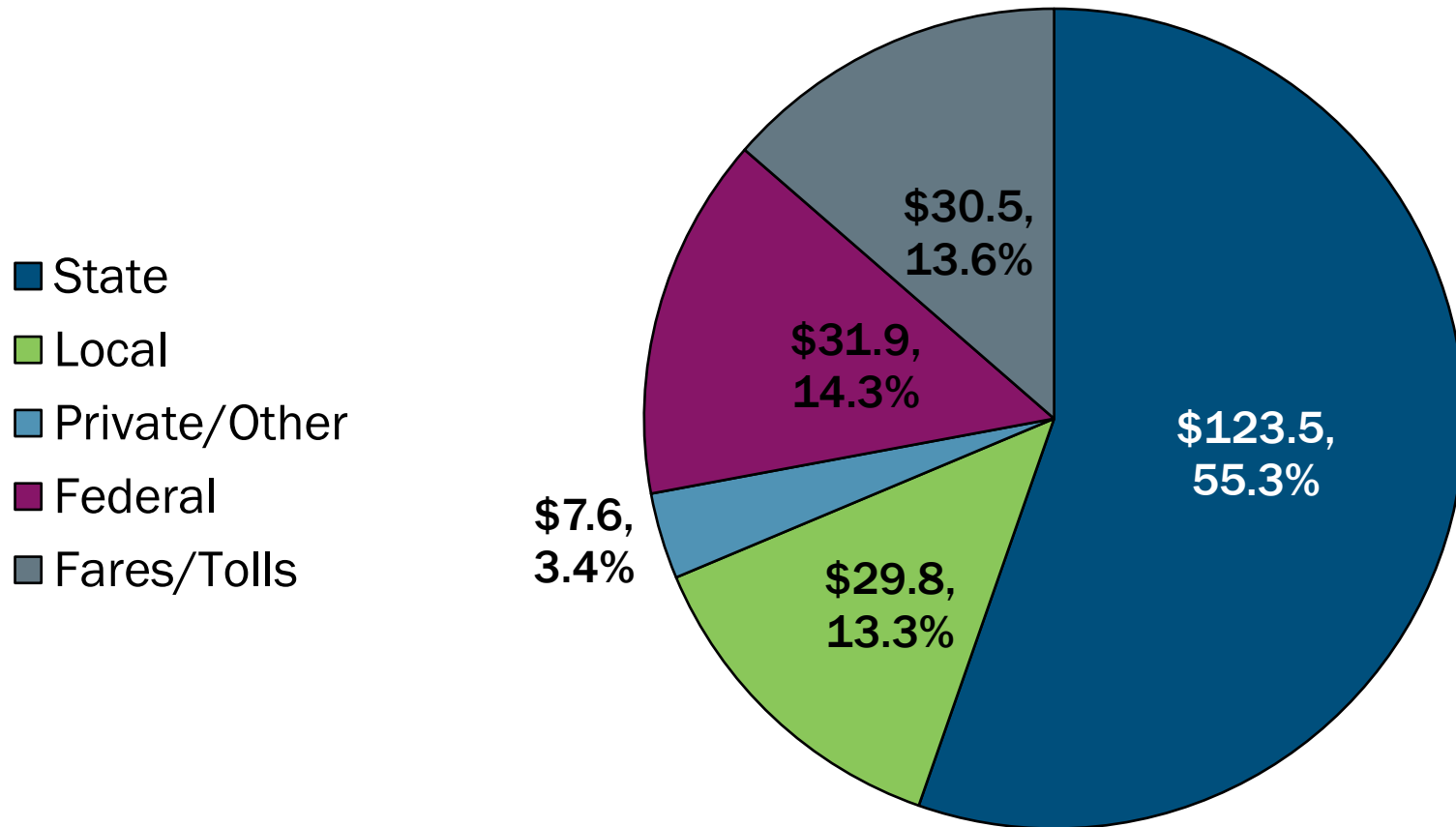
- Extended through 2030 in recent BIL/IIJA federal surface transportation act



# Regional Revenues: Visualize 2045

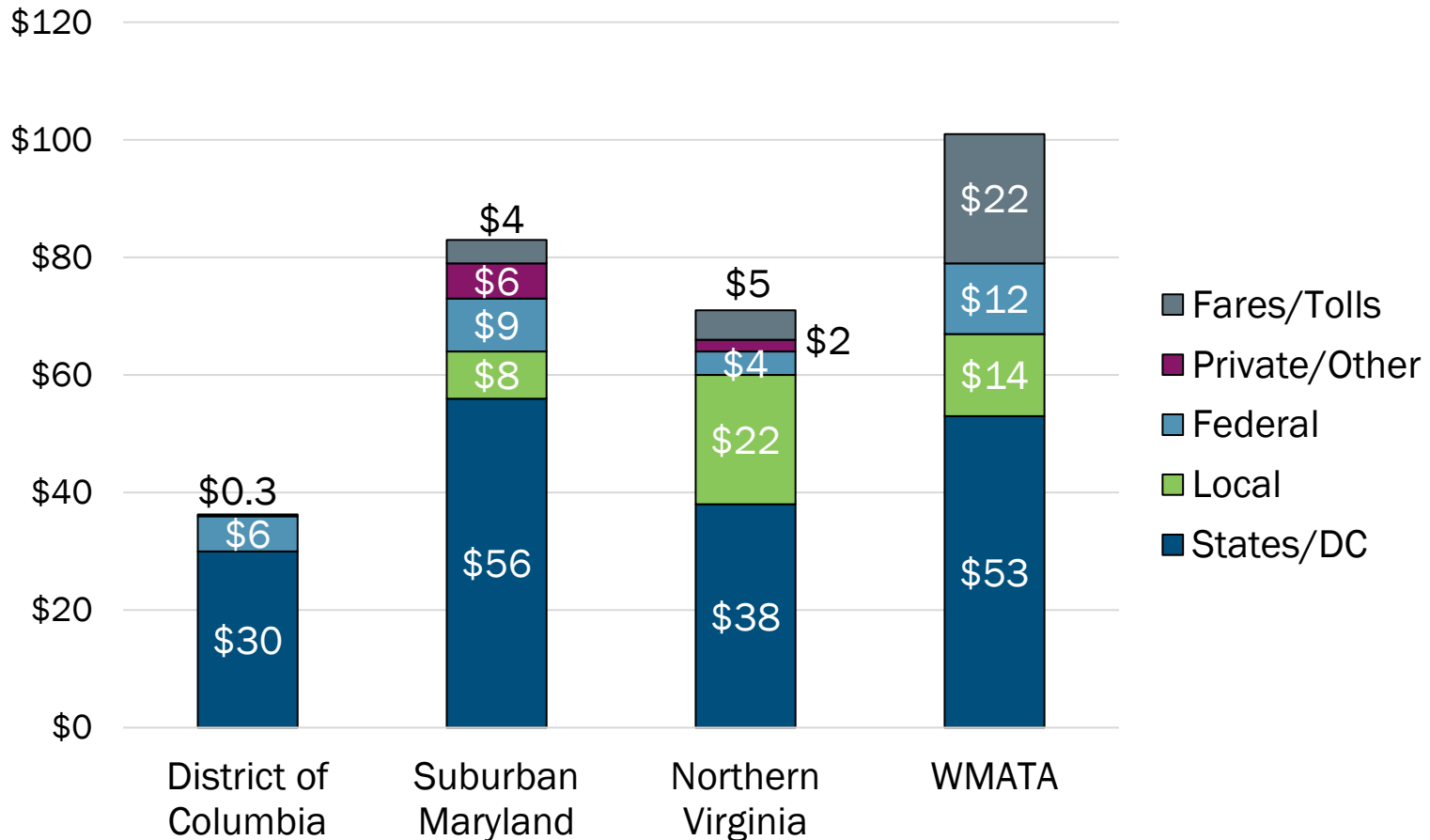
(2023-2045; Billions, in Year of Expenditure)

**Total of \$223.3 Billion**



# Regional Revenues Breakdown: Visualize 2045

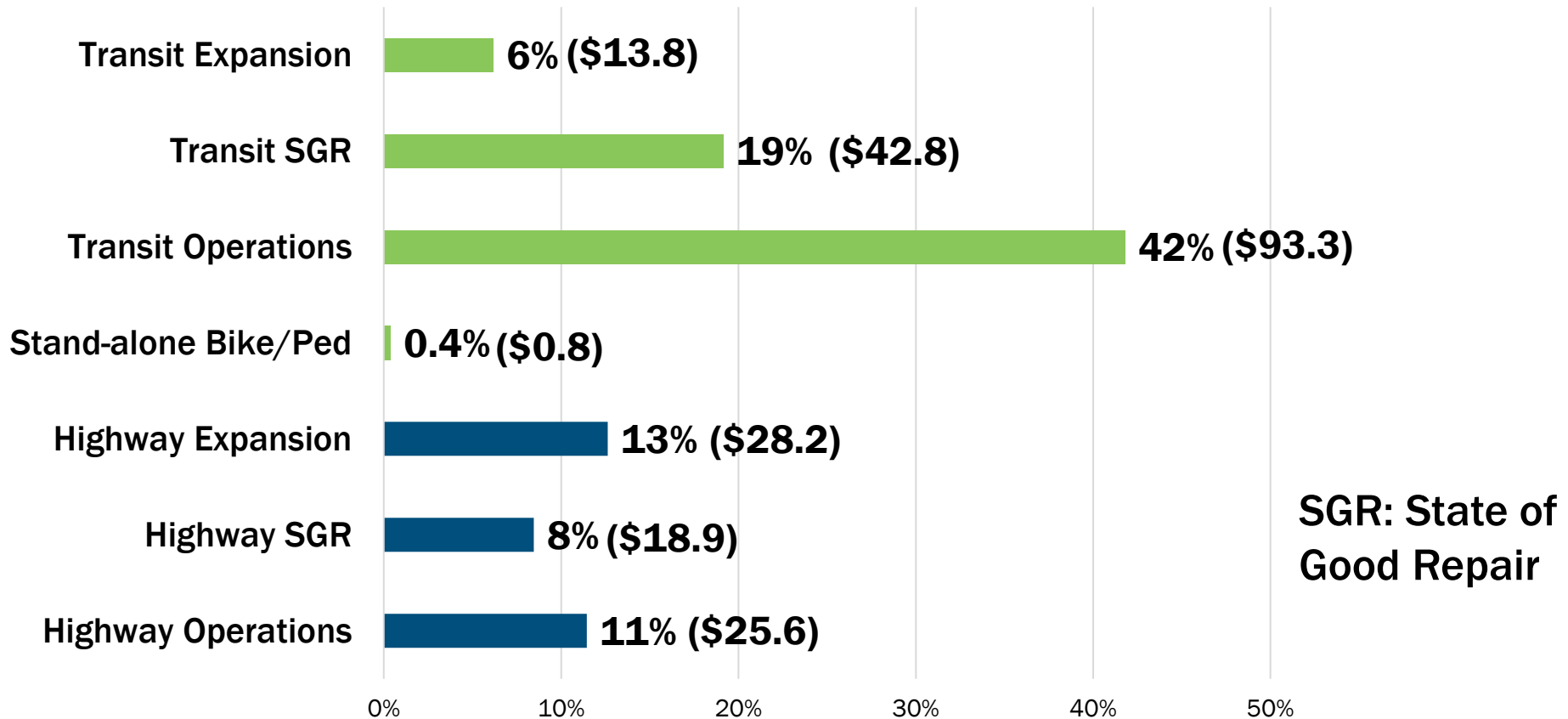
(2023-2045; Billions, in Year of Expenditure)





# Regional Expenditures: Visualize 2045

(2023-2045; Billions, in Year of Expenditure)



SGR: State of Good Repair

**Total = \$223.3 Billion**

# Does the Region Have Enough Funding for Transportation?

- Most of the **increased travel demand** will fall upon the existing highway and transit systems
- Even with **planned investments** in transportation capacity, long-term performance analyses of past plans have predicted that travel congestion will increase significantly
- Even with **technological improvements** and changes in trip demand (e.g., increased telework, home delivery, etc.), increases in travel congestion are predicted



# Financial Plan – Summary

The Financial Analysis demonstrates that the forecast revenues are reasonably expected to be available to implement Visualize 2045

- Demonstrates the region’s commitment to maintaining a State of Good Repair for highways and public transportation systems
- Provides for operations and maintenance of the existing transportation system
- Provides for capacity expansion to address forecasted growth in the region’s population and economy

The Financial Plan is Appendix A of the Visualize 2045 plan

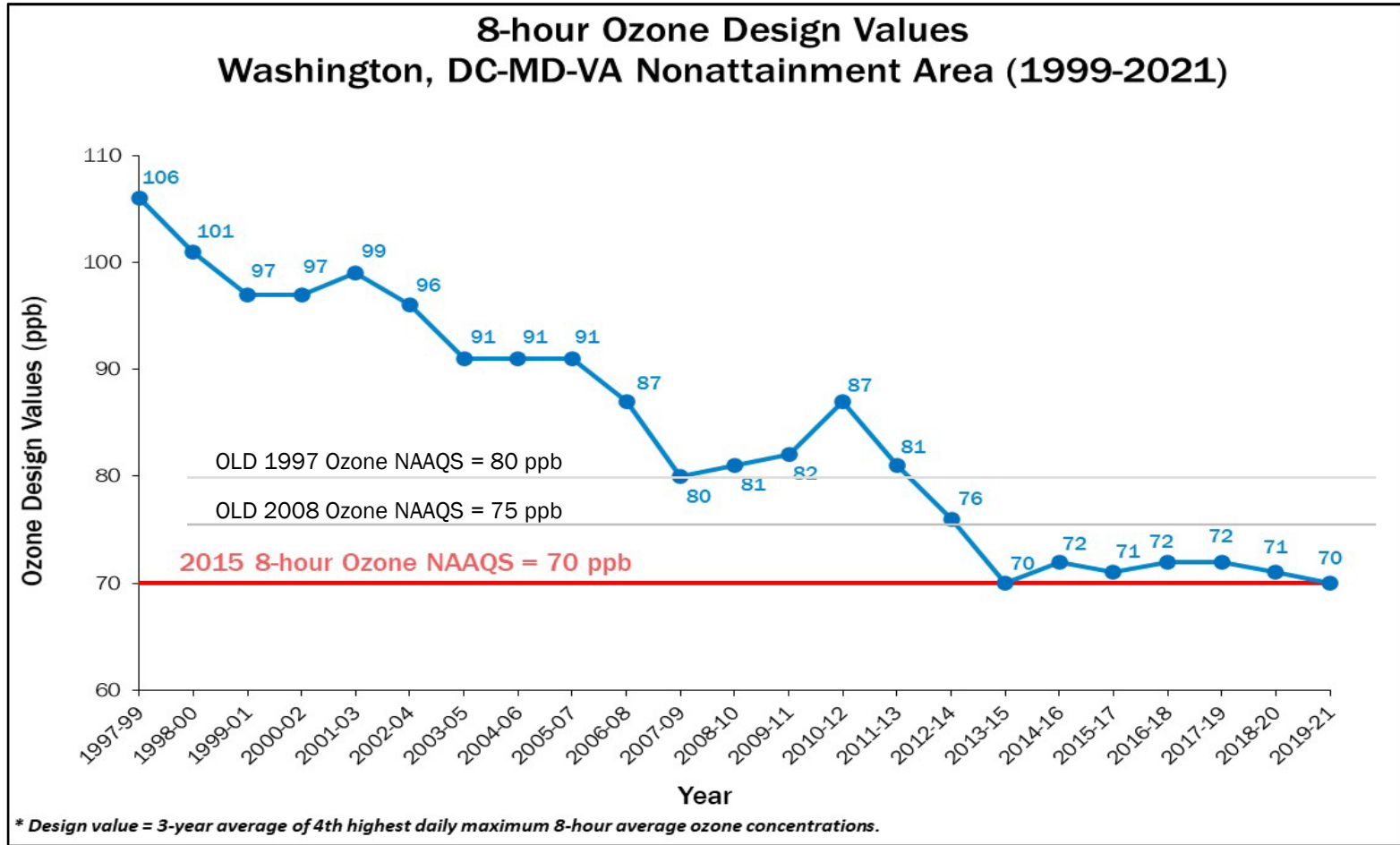
### 3. Air Quality Conformity



*The 2022 Update to Visualize 2045 meets the federal Air Quality Conformity requirements—mobile source VOC and NOx emissions associated with the plan/TIP are below EPA approved motor vehicle emissions budgets.*

# Air Quality Trend 1999-2021

Data from monitors throughout the region



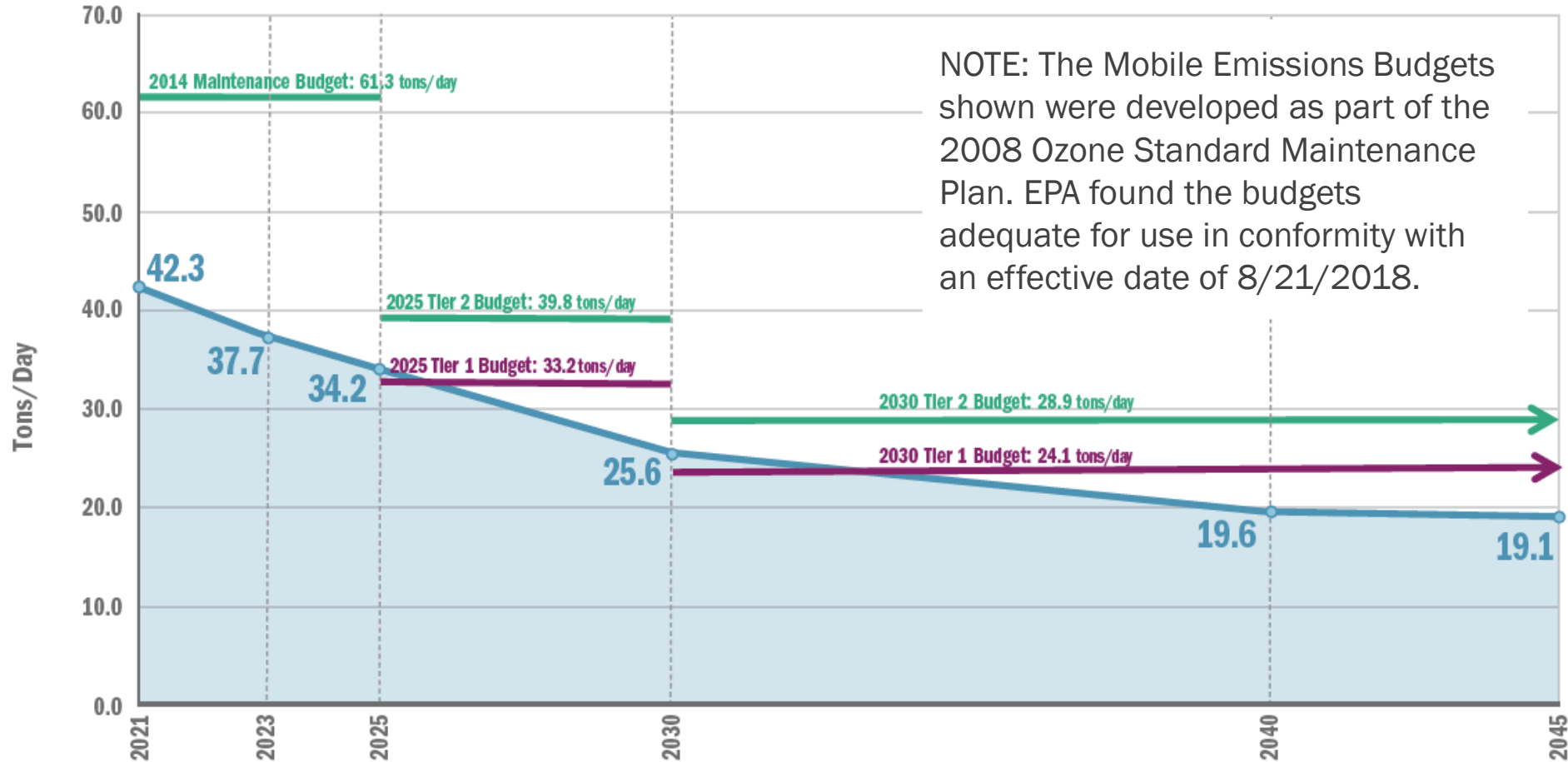
Source: MWAQC Staff



# Air Quality Conformity

Forecast  
Data

## 2022 Update to Visualize 2045 Air Quality Conformity Mobile Source Emissions and Mobile Emissions Budgets Ozone Season: Volatile Organic Compounds (VOCs)

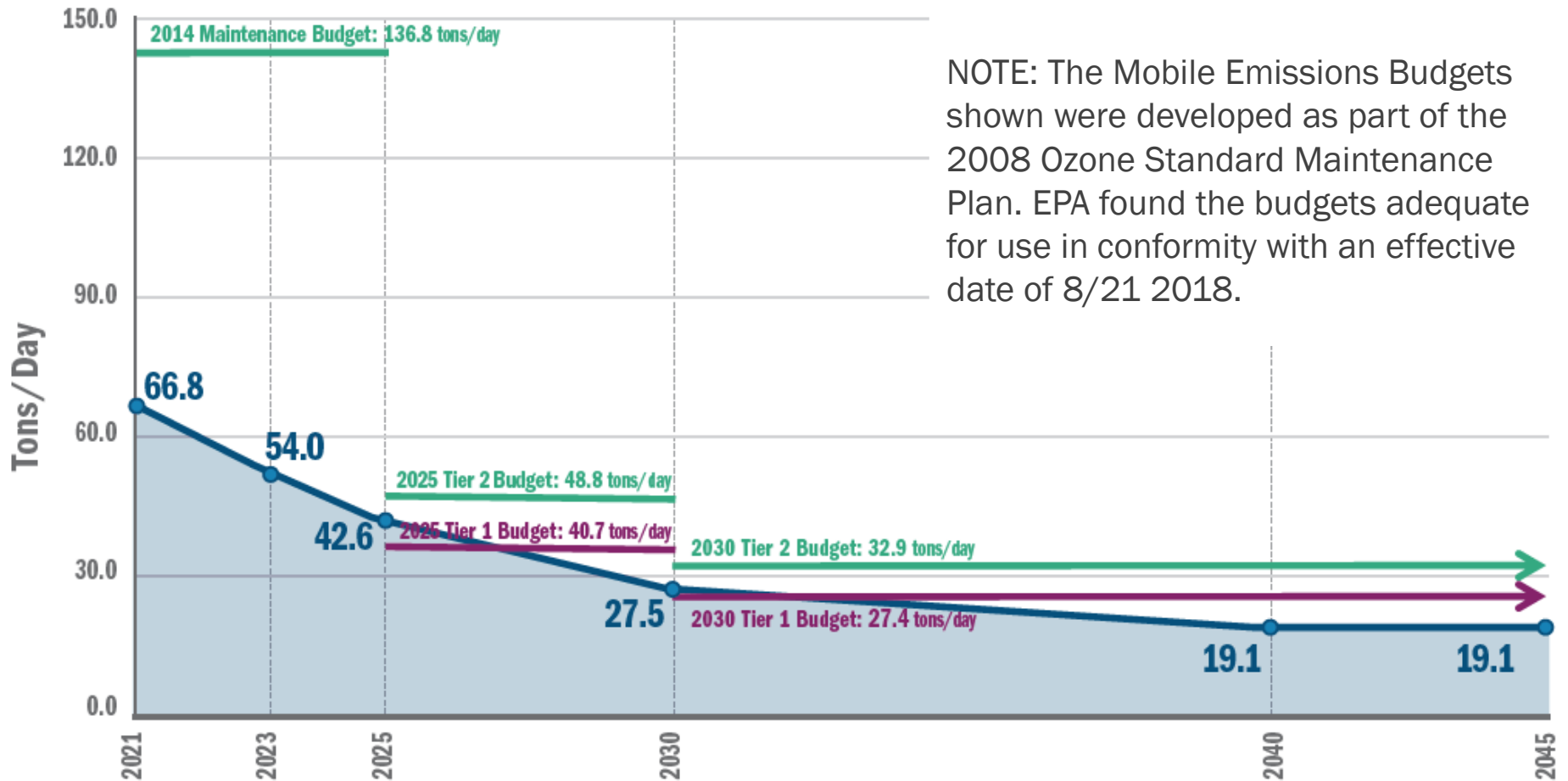




# Air Quality Conformity

Forecast  
Data

## 2022 Update to Visualize 2045 Air Quality Conformity Mobile Source Emissions and Mobile Emissions Budgets Ozone Season Nitrogen Oxides (NOx)



NOTE: The Mobile Emissions Budgets shown were developed as part of the 2008 Ozone Standard Maintenance Plan. EPA found the budgets adequate for use in conformity with an effective date of 8/21 2018.

# Air Quality Conformity

	Maintenance SIP Mobile Budgets	2022 Update to Visualize 2045 Conformity Emissions
Cooperative Forecasts	Round 9.0	Round 9.2
Vehicle Fleet	2014 VIN	2020 VIN
Travel Demand Model	Version 2.3.66	Version 2.4
Project Inputs	2016 CLRP	2022 Update to Visualize 2045
Metrorail Constraint	yes	no



## 4. Performance Analysis - Regional Transportation System

# Performance Results and the TPB Policy Framework

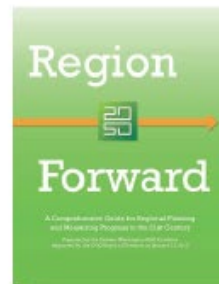
The TPB measures performance as one way of tracking progress on the goals and priorities presented in the TPB Policy Framework

## The Evolution of the TPB Policy Framework

1998



2010



2014



2018



# Planning Policy Focus Area Universe



# LRTP System Performance Measures

EJ Analysis and other EEA Insights	GHG	NOX, VOC	VMT Per Capita
Mode Share and Geographic Variance	Trips on “Reliability-Enhanced” Modes	Number of People Living Near HCT	Multimodal Accessibility
Daily Hours of Vehicle Delay	Average Delay per Trip	Congested Lane Miles	Population Density, Location of Growth
Traffic Proximity	Job Access by Driving	Transit Ridership	Job Access by Transit

# The TPB Uses Performance Measures (PMs) for Many Planning Activities

- Regional Air Quality Conformity Analysis  
(2 PMs)
- Environmental Justice Analysis  
(10 PMs)
- Performance-Based Planning and Programming  
(26 PMs)
- Long-Range Plan Task Force  
(18 PMs)
- LRTP Performance Analysis  
(>20 PMs)
- And...more

# Key Takeaways

- Access to transit will continue to grow, providing an important alternative.
- The region is forecast to make progress towards many of its goals—despite demand from growth, and limited funds for transportation enhancements.
- More people, businesses, and visitors will have more travel options which is reflected in forecast mode share.



# Key Takeaways (cont.)

- Expected growth will likely increase demand, increasing delay and congestion and reducing job access by auto for some parts of the region.
- Financial obligations to maintain and operate the existing system limits expansions and enhancements.
- Future uncertainties will impact the region between now and 2045.



Photo by DDOT



(AimeeCustis/Flickr)

# Regional Growth and Policy Context



# The Region Will Continue To Grow...

About 80% of 2045 land-use is already in place. Activity Centers will contain 67% of jobs (up from 66%) and 35% of the population (up from 29%), Bringing Jobs and Housing Closer Together.

	Today	2045	
People	5.7 M	7.0 M	↑23%
Jobs	3.4 M	4.3 M	↑25%

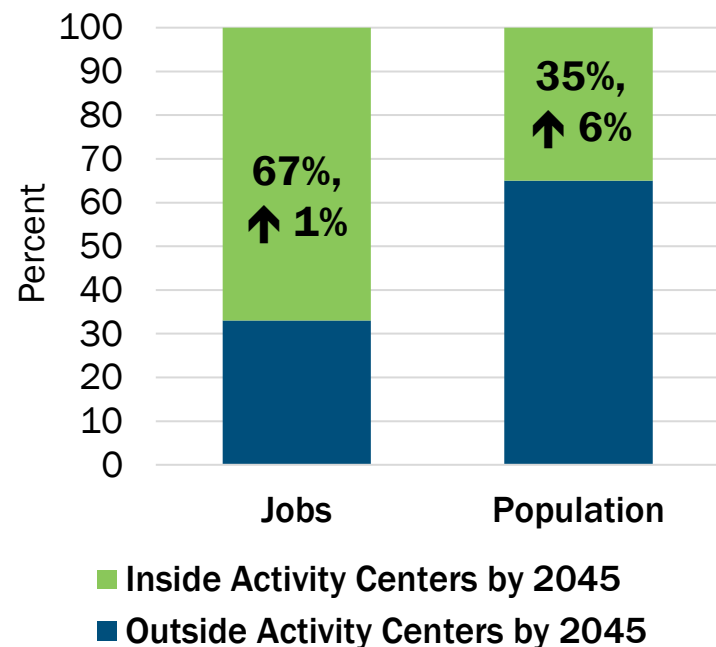
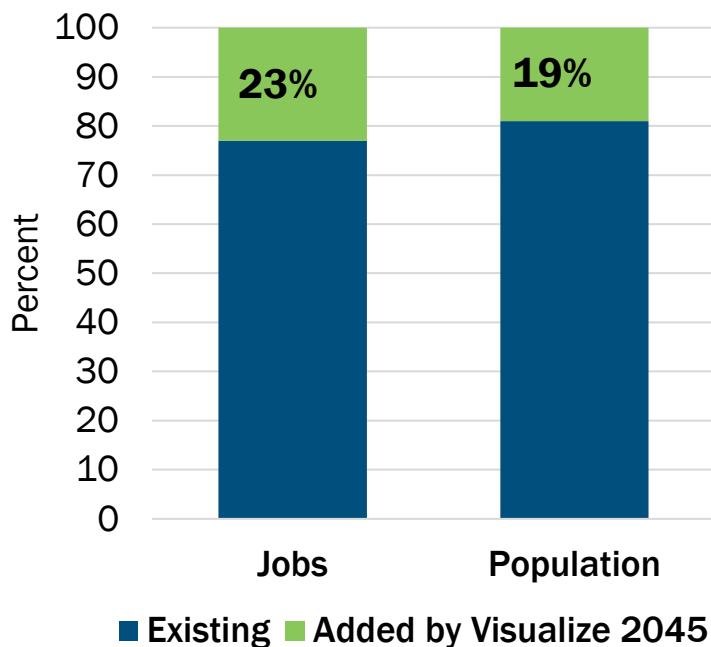


(Ron Cogswell/Flickr)

# The Region Will Continue To Grow...

About 80% of 2045 land-use is already in place.

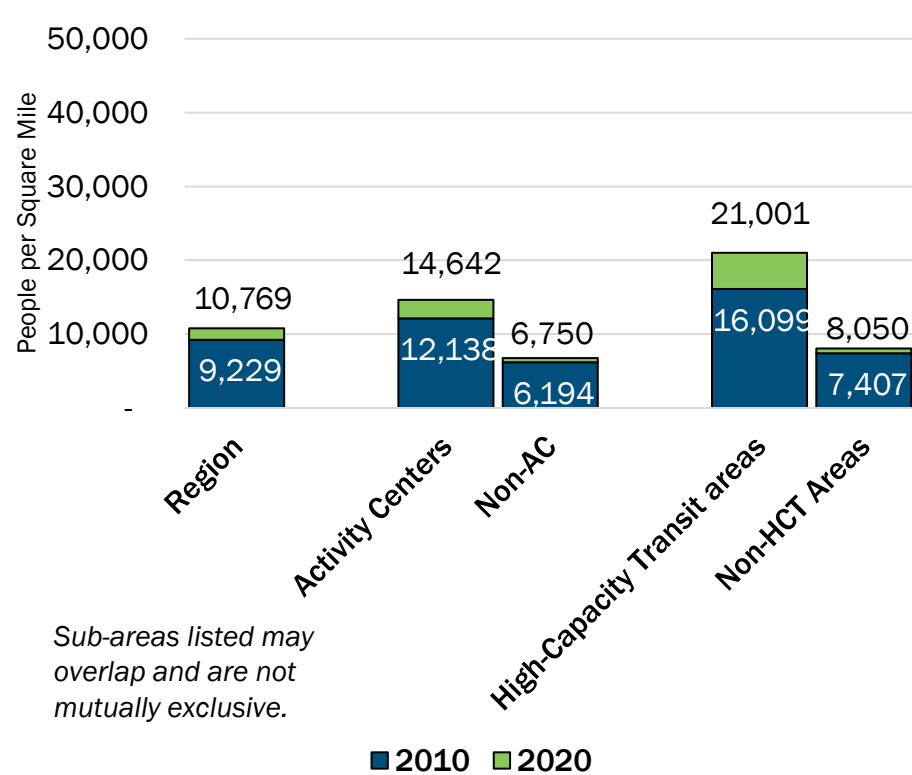
With more people and jobs, the transportation systems will need to continue handling its current and forecasted demand. Activity Centers will contain 67% of jobs (up from 66%) and 35% of the population (up from 29%)



Note: Staff analysis of U.S. Decennial Census Block Groups

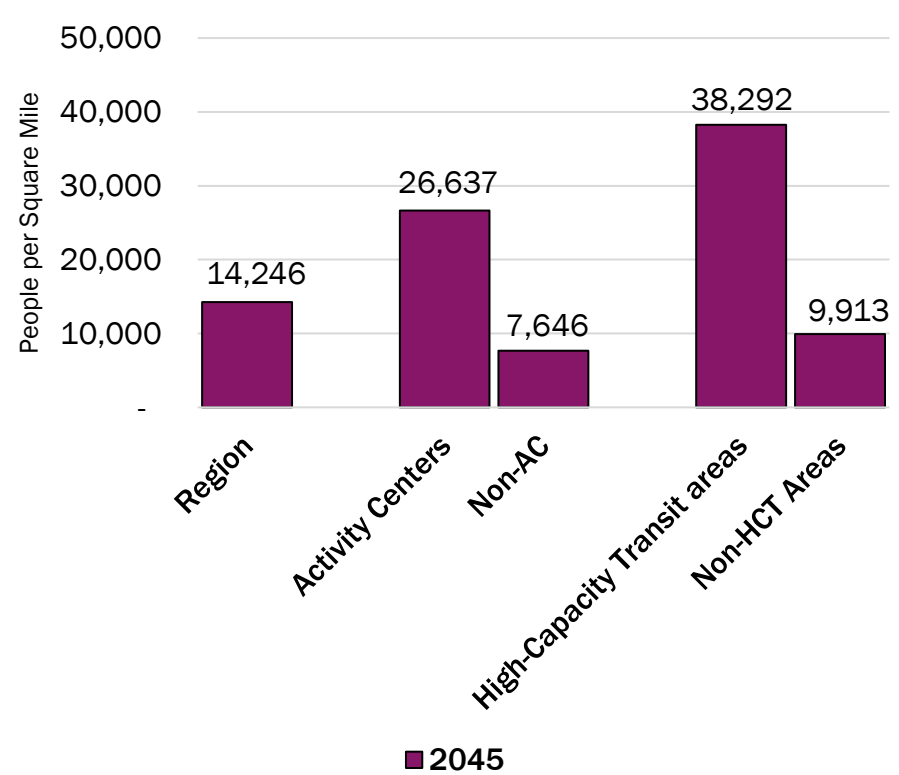
# ...and Increase in Density

Evidence suggests the region is making progress towards goal to concentrate land-use in the right areas, like Activity Centers and High-Capacity Transit areas.



Sub-areas listed may overlap and are not mutually exclusive.

Note: Staff analysis of U.S. Decennial Census Block Groups



Note: Staff analysis of COG Cooperative Forecast Transportation Analysis Zones

# By 2045, More than 1/4 of People and 1/2 of Jobs will be Close to High-Capacity Transit

## % of Population and Jobs in Proximity to High-Capacity Transit

	Today	2045	
People	18%	27%	↑26%
Jobs	41%	49%	↑25%

### Proximity:

0.5-mile radius from High-Capacity Transit

### High-Capacity Transit:

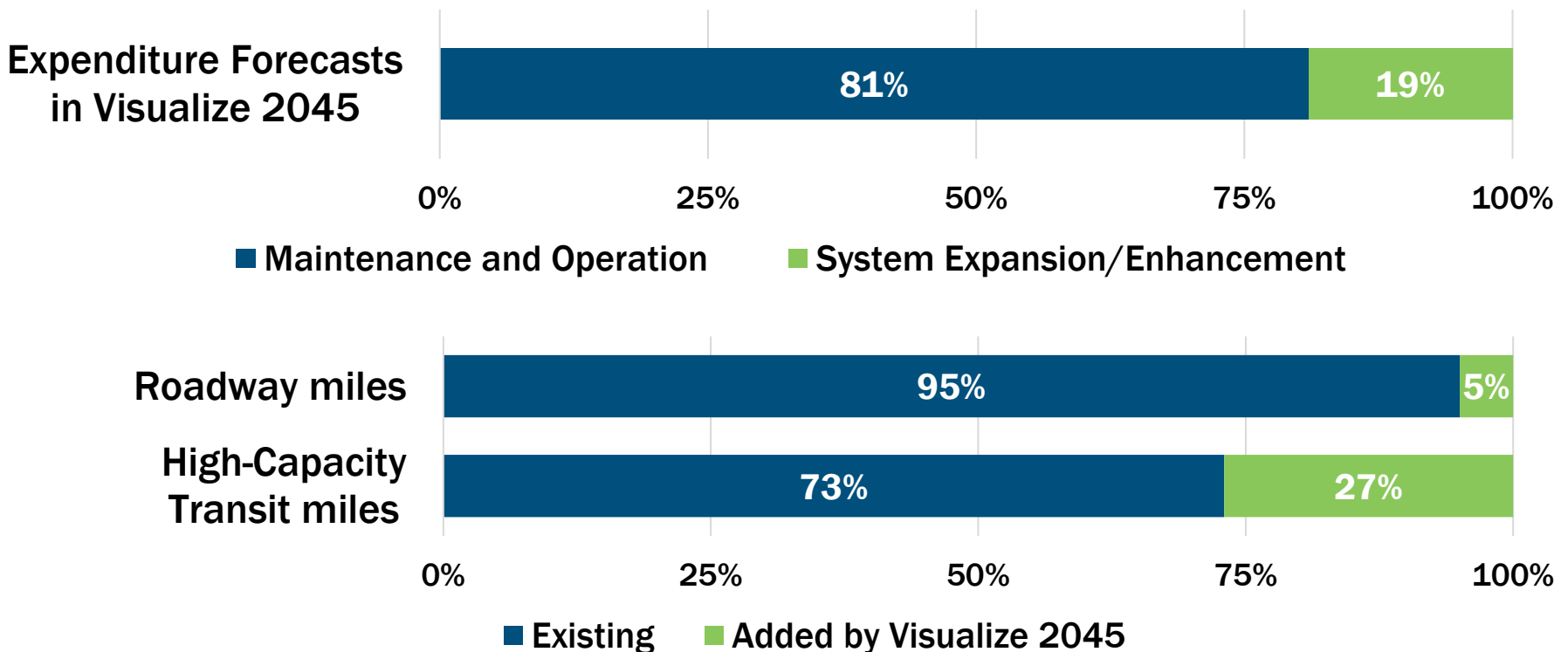
- Metrorail
- Commuter Rail
- Streetcar
- Light Rail
- Bus Rapid Transit



# Funding for Expansion is Limited

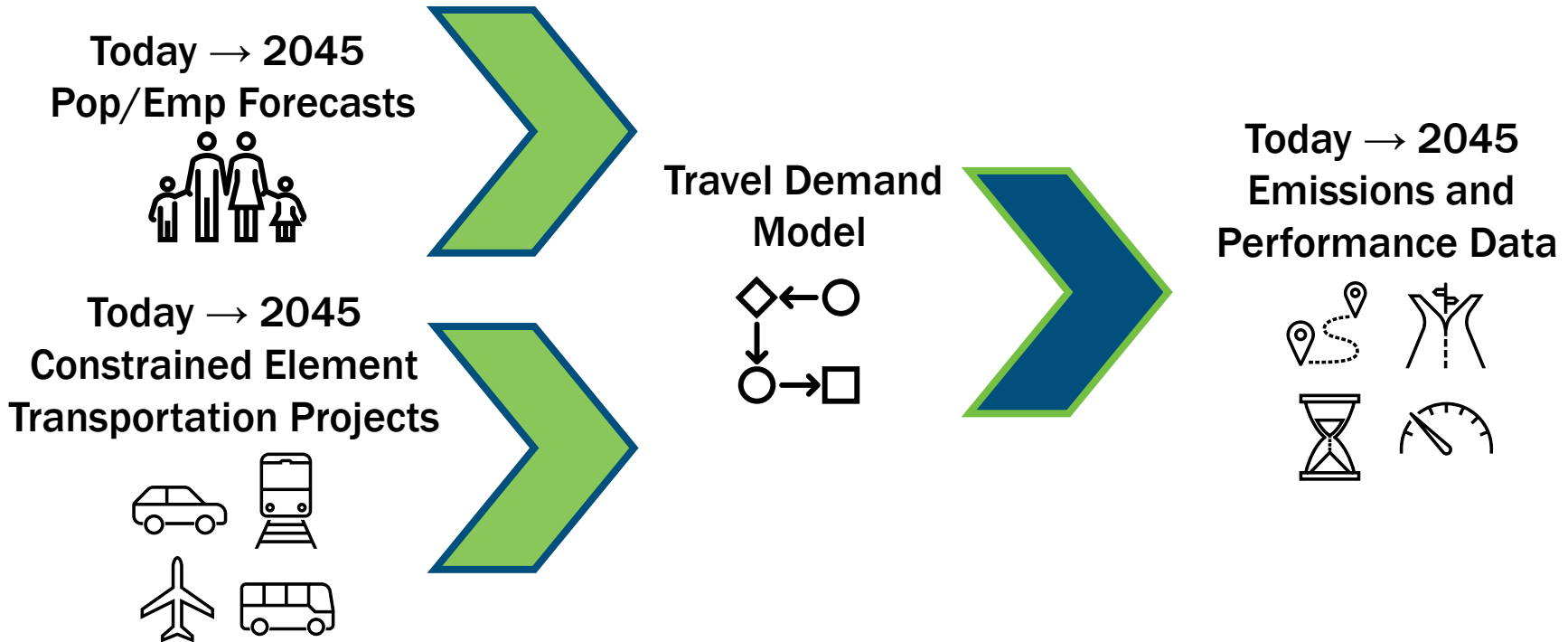
Of the \$223.3 Billion Year of Expenditure dollars in Visualize 2045, only 19% is available for the type of system expansion and enhancement projects that advance our shared goals.

Resulting in an additional 5% of roadways and 27% of High-Capacity Transit.



Conducting the  
performance  
analysis of  
**Visualize 2045**

# Travel Demand Model Forecasts the Impact of Changes to Land-use and Transportation



- Round 9.2 Cooperative Forecasts
- Gen2/Version 2.4 Travel Demand Model
- Analysis of TPB Planning Area
- 2020 Vehicle Registration Data
- EPA's MOVES 2014b Mobile Emissions Model
- Other source noted on corresponding slide

# Assumptions in the Travel Demand Model

- Validated and reflective of pre-COVID conditions
- Transit
  - The base transit reflects December 2019 schedules with transit service projects built upon it
  - WMATA Transit fares are current to June 2021
- Highway tolls in the travel model are current to January 2021
- Vehicle fleet data are current to December 2020



# Three Scenarios

Scenarios enable us to isolate for the impact of the new set of transportation projects, programs, and policies.

## Today (2023)

Today's households and jobs

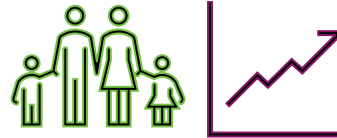
Transportation projects on the ground in 2023



## 2045 No Build

Forecast growth for 2045 households and jobs

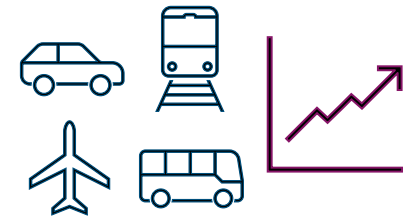
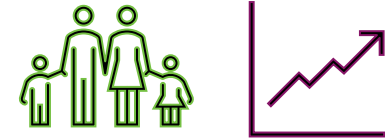
No new transportation projects beyond 2023



## 2045 Planned Build

Forecast growth for 2045 households and jobs

All transportation projects built by 2045

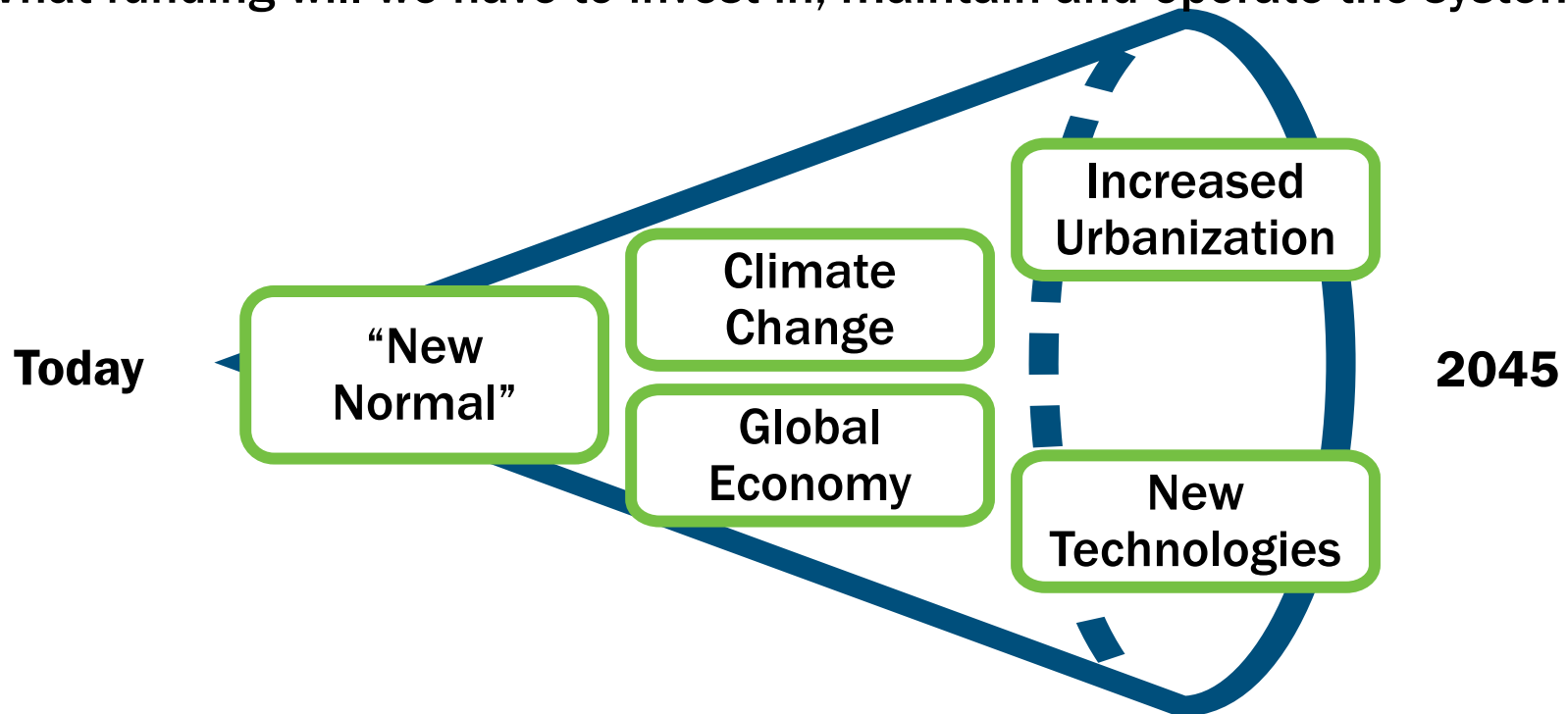


# Planning Uncertainties that Will Likely Impact the Future of Travel

Where will the people and jobs be?

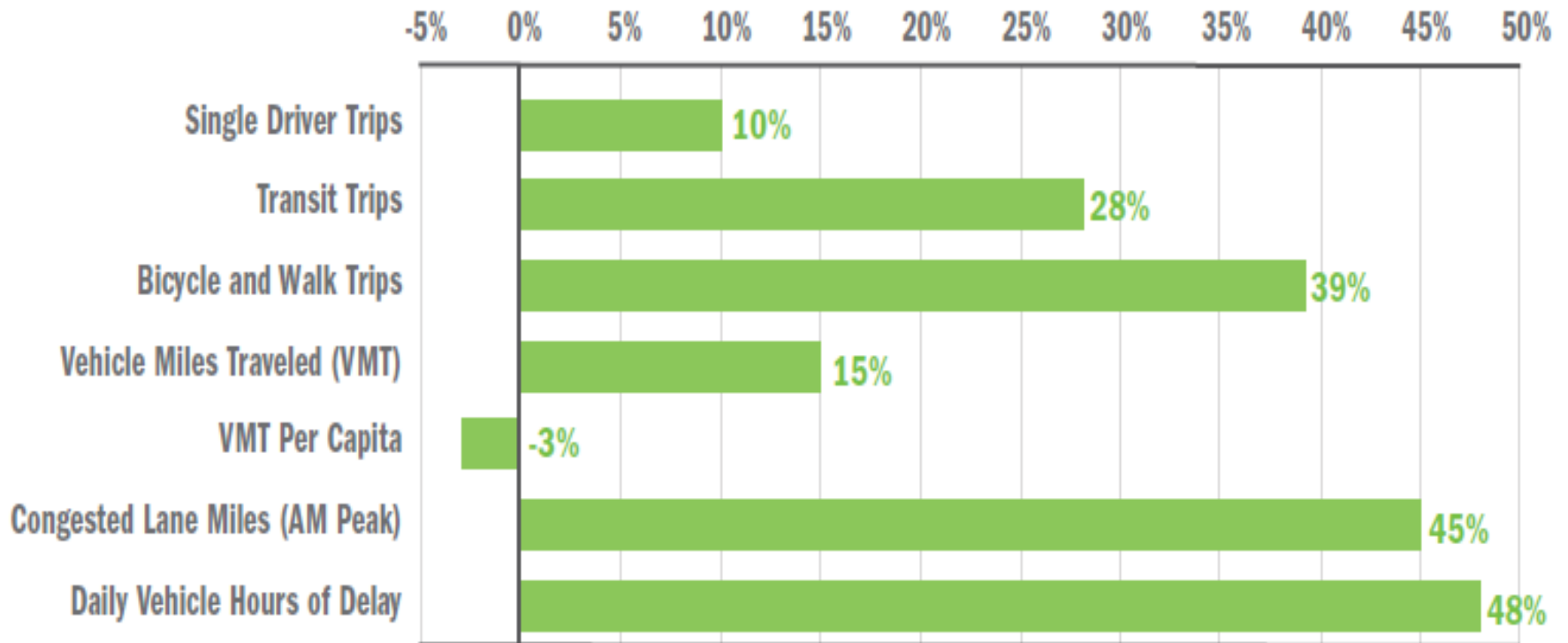
How will people travel?

What funding will we have to invest in, maintain and operate the system?



# Performance Overview

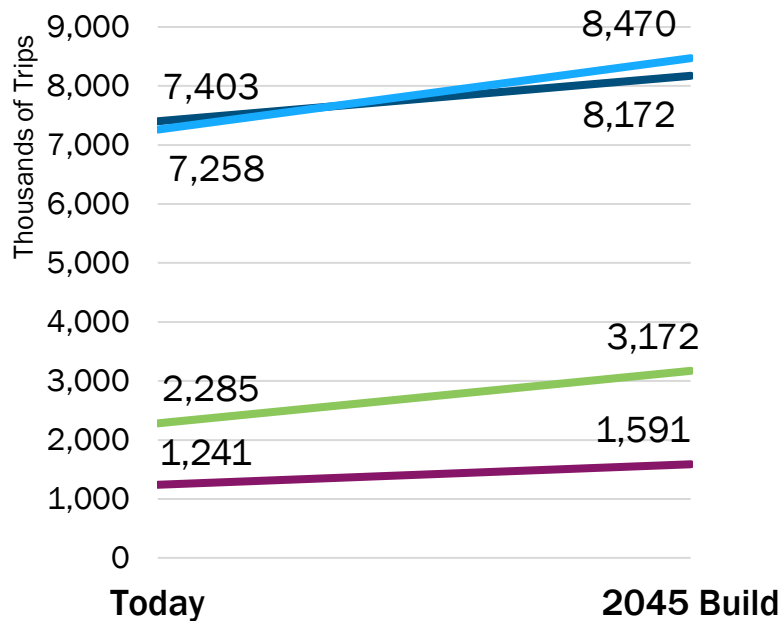
## *Percent Change 2023-2045*



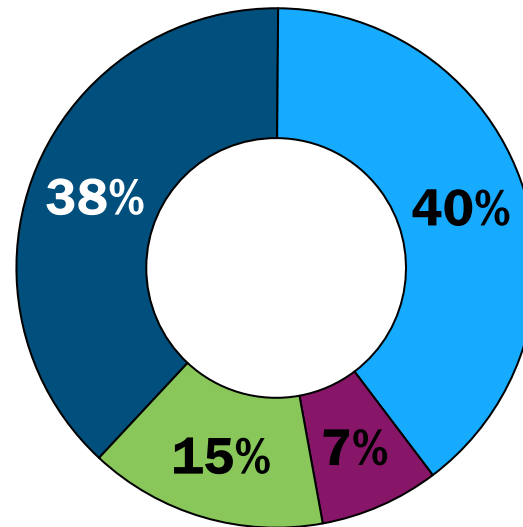
How is travel  
expected to change  
in the region over  
time?

# Region Continues to be Auto Dependent

Looking at All Trips, **HOV and carpool** expected to be more common than **driving alone**.  
**Percent increase in Walk and Bicycle** is greater than any other Mode.



Mode Share, 2045 Build



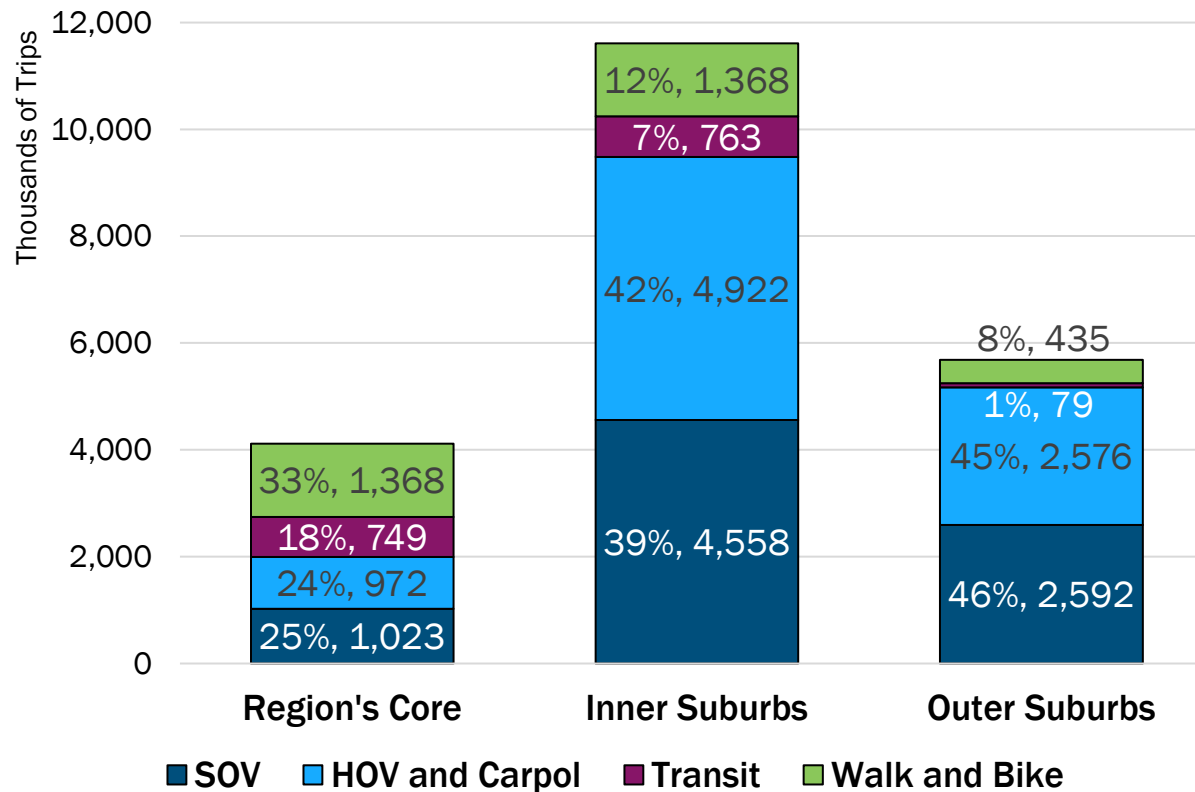
SOV  
 HOV and Carpool  
 Transit  
 Walk and Bike

Single Occupancy Vehicle - SOV  
 High Occupancy Vehicle- HOV

# Geographic Differences, All Trips (2045)

HOV and carpool will be as common as driving alone.

Where Transit is available, Transit and Walk and Bike trips are more common.



- Regional Core:**
  - District of Columbia
  - Arlington Co.
  - City of Alexandria
- Inner Suburbs:**
  - Montgomery Co.
  - Prince George's Co.
  - Fairfax Co.
  - City of Fairfax
  - City of Falls Church
- Outer Suburbs:**
  - Charles Co.
  - Frederick Co.
  - City of Frederick
  - Prince William Co.
  - Loudoun Co.
  - City of Manassas
  - City of Manassas Park
  - Fauquier Co. (Urbanized Area)

# Avoiding Congestion and Delay: More Travel on Reliable Modes

Travel in the region on reliable modes that are represented by the Aspirational Initiatives will increase from **11% to 15%**. These options are less impacted by congestion and delay.



## “Reliable modes:”

- Metrorail, Commuter Rail, Light Rail, Streetcar
- Express toll lanes with dynamic toll rates
- HOV lanes
- Inter-County Connector
- Dulles Airport Access Road
- Bus Rapid Transit
- Long-haul express buses
- Bike/Ped travel

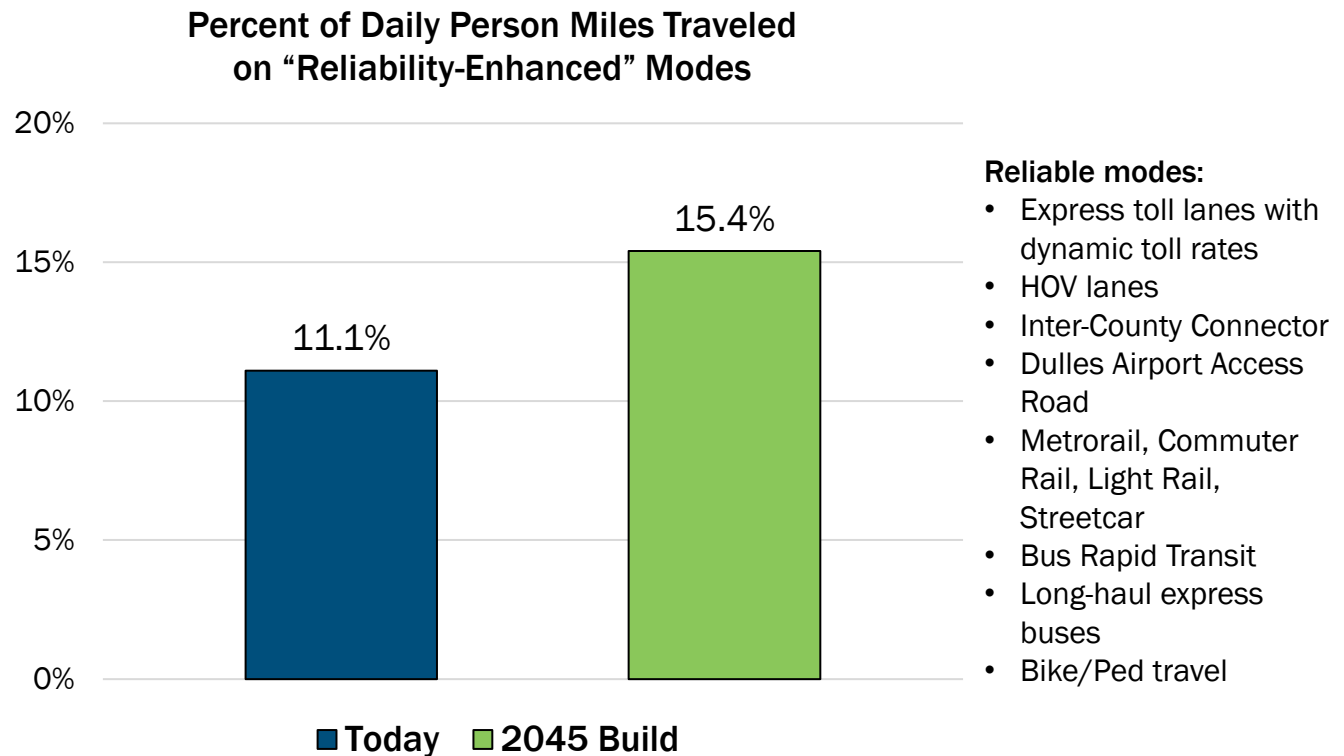


(BeyondDC/Flickr)



# Avoiding Congestion and Delay: More Travel on Reliable Modes

A greater percent of travel in the region will be taken on reliable highway, transit, and walk/bike facilities/modes that are less impacted by congestion and delay.





# Driving in the Region to Decline Per Capita

↑ **18.9%** • While **population** is forecast to grow in this region

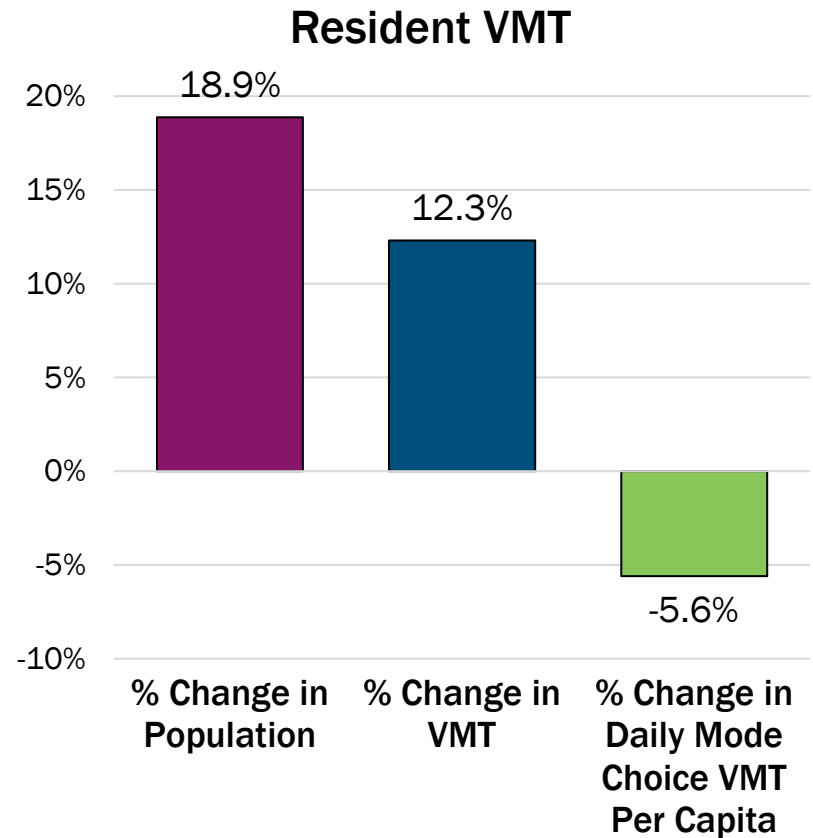
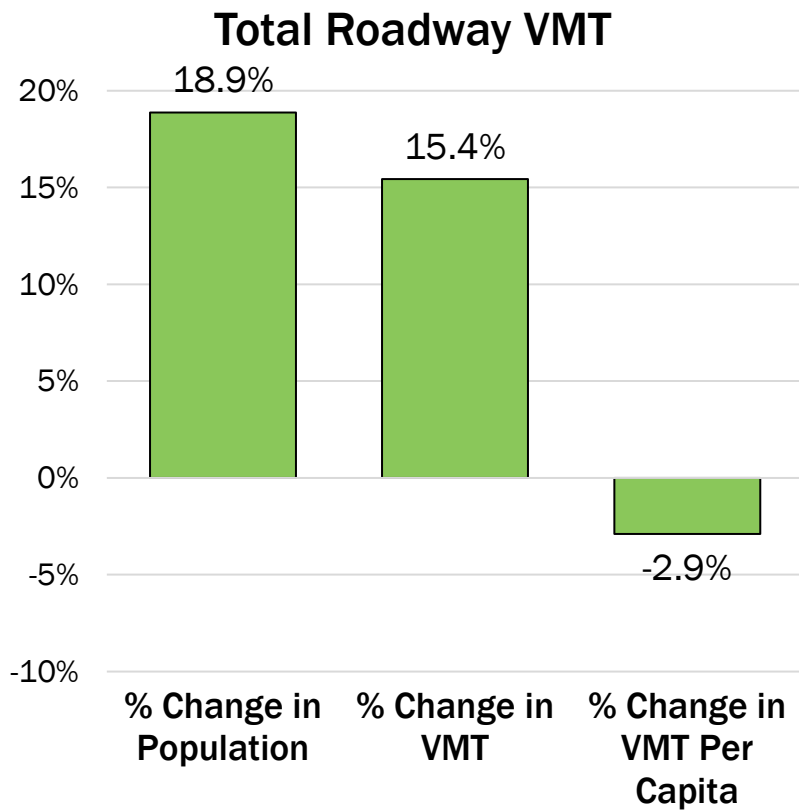
↑ **15.4%** • The **Vehicle Miles Traveled (VMT)** increase at a lower rate

↓ **-5.6%** • As a result, **VMT per capita** of region residents declines by more than 5%. Residential vehicle use has the most potential for change compared to other uses, such as commercial.



# Driving in the Region to Decline Per Capita

VMT per capita of region residents declines by more than 5%. Residential vehicle use has the most potential for change compared to other uses, such as commercial.



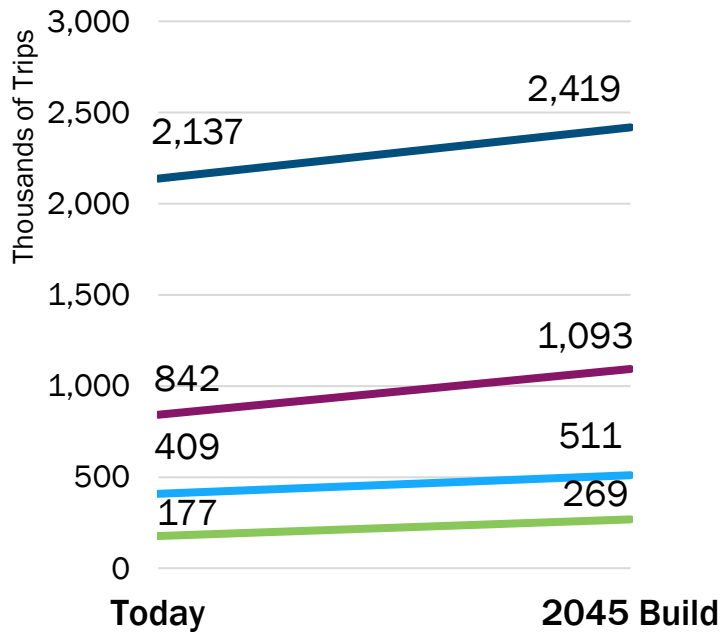
How does the plan  
support traveling to  
work?

# Most of Work Trips will be Driving Alone, 1/4 of Work Trips on Transit

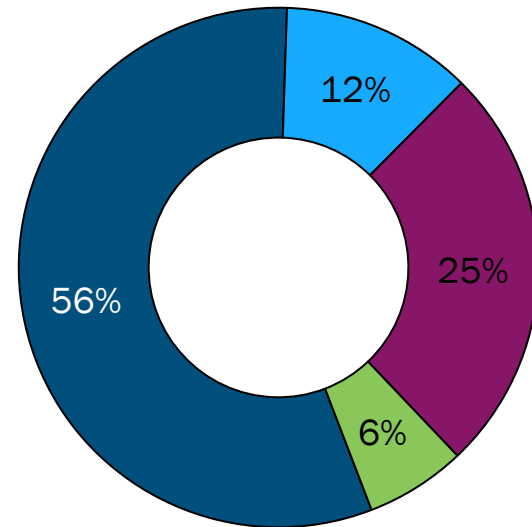
Mode Share, 2045 Build



# Most of Work Trips will be Driving Alone, 1/4 of Work Trips on Transit



Mode Share, 2045 Build



— SOV  
— Transit  
— HOV and Carpool  
— Walk and Bike



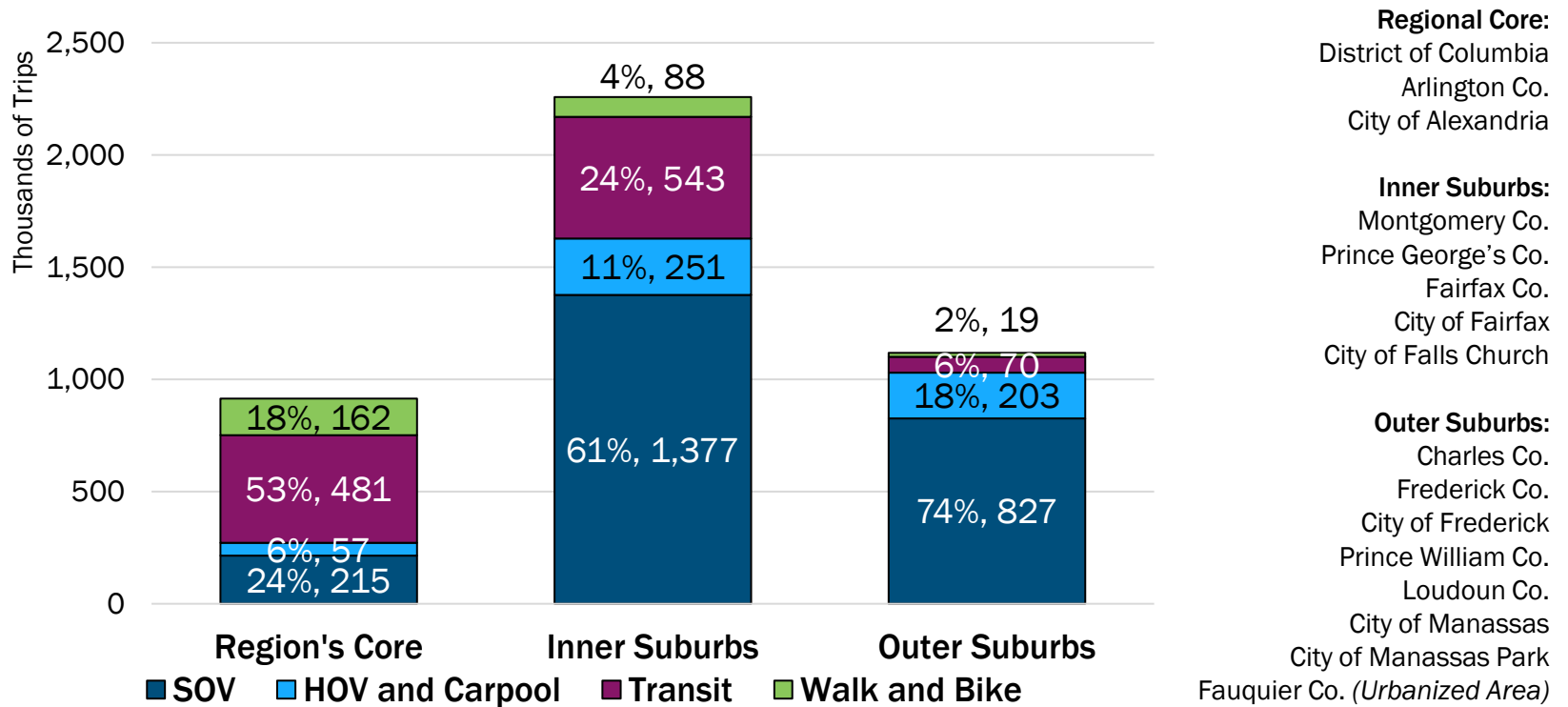
# Taking Transit to Work Increases When Readily Available & Serving Density

By 2045, in the Region's Core, majority of work trips will be on transit (53%) and nearly a quarter in the Inner Suburbs, compared to 6% in Outer Suburbs



# Taking Transit to Work Increases When Readily Available

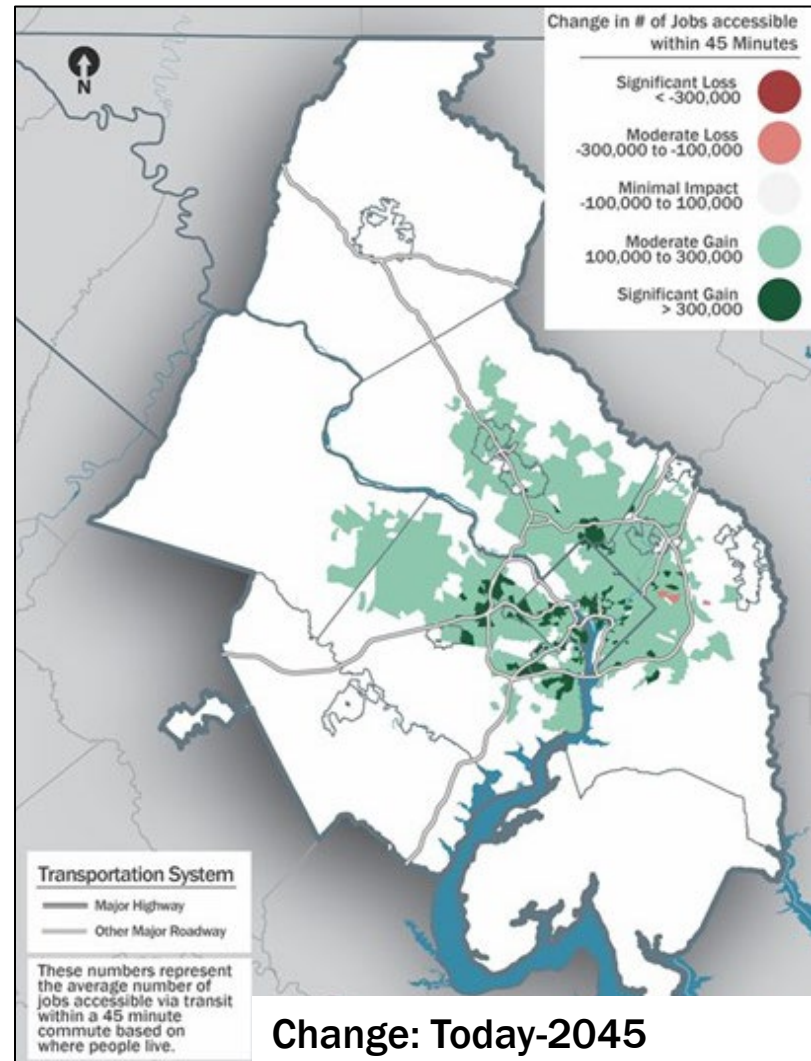
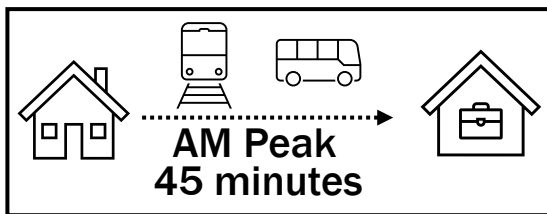
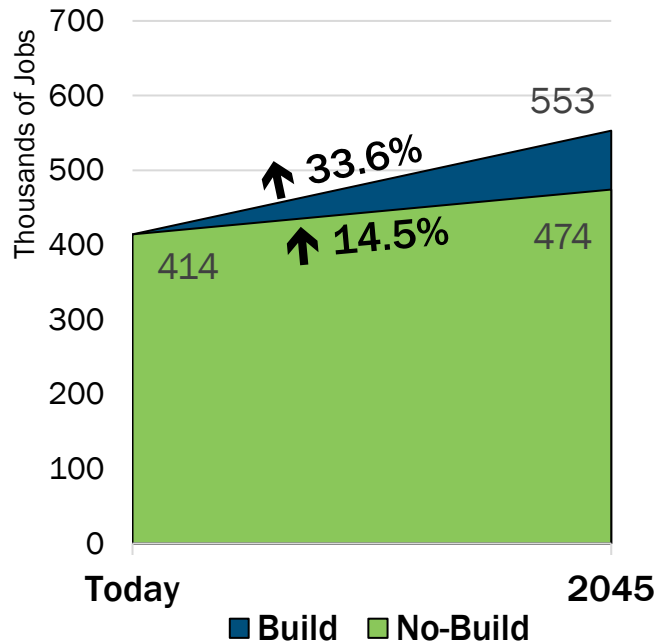
By 2045, in the Region's Core, majority of work trips will be on transit and nearly a quarter in the Inner Suburban jurisdictions.



**How are new transit projects forecast to impact the region?**



# Change in Access to Jobs, Transit

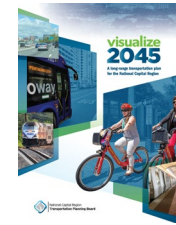


Change: Today-2045

How will the  
highway network  
serve the region?

# Delay and Congestion Continue Impacting the Region

New roadway projects will make a difference, but delay and congestion will continue to be a part of life in this region.

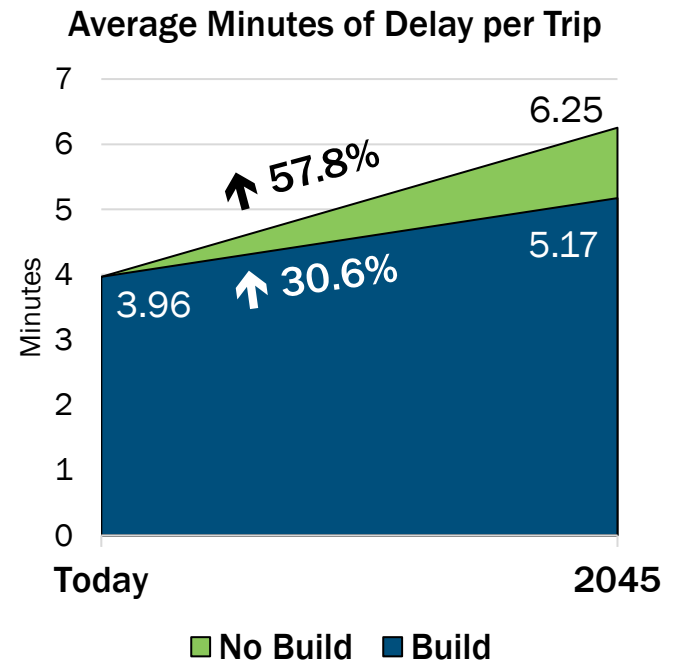
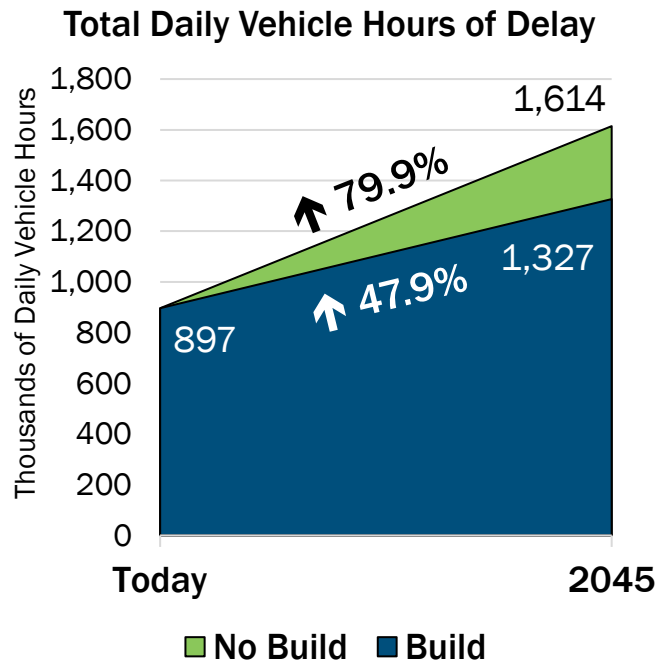


- Major increases without implementing the Plan:
  - Delay: **↑80%**
  - Congestion: **↑58%**

- Still increases but less so by implementing the Plan:
  - Delay: **↑48%**
  - Congestion: **↑31%**

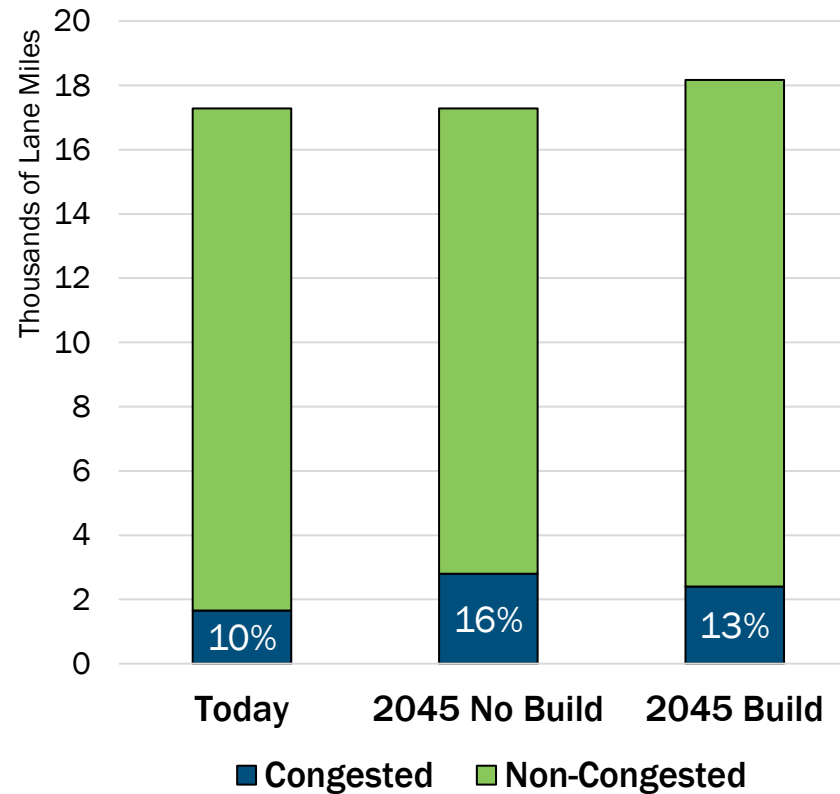
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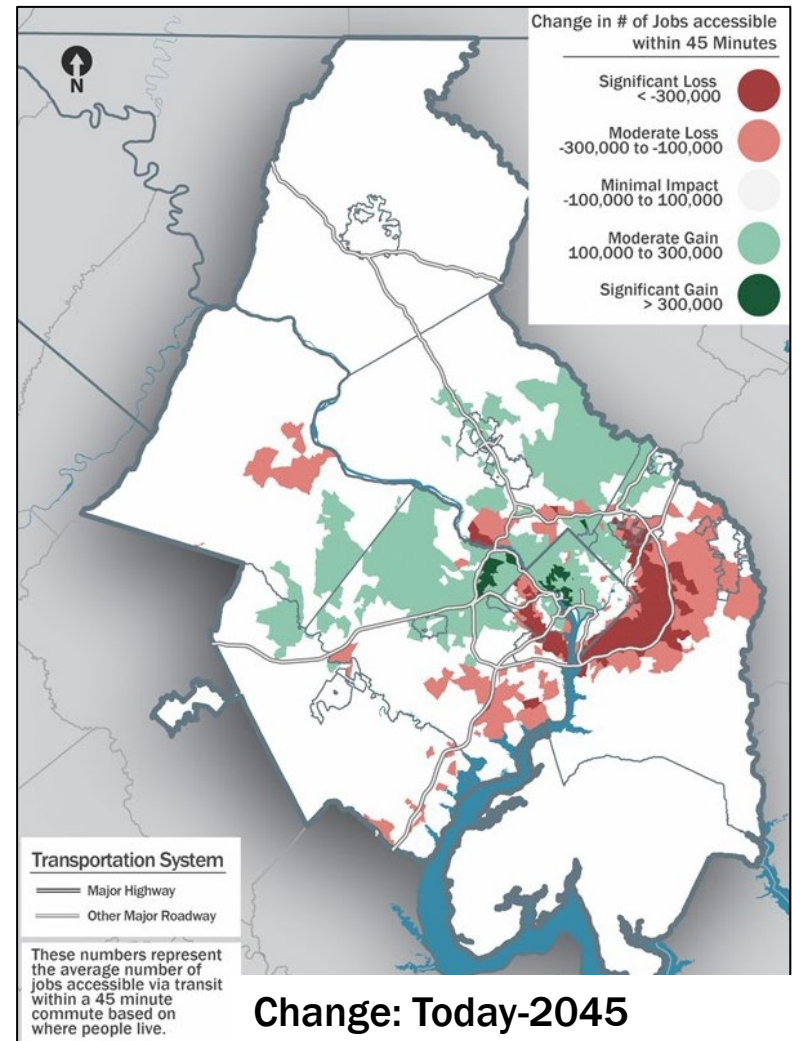
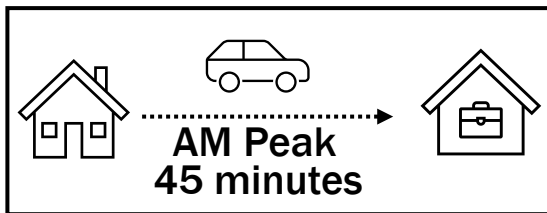
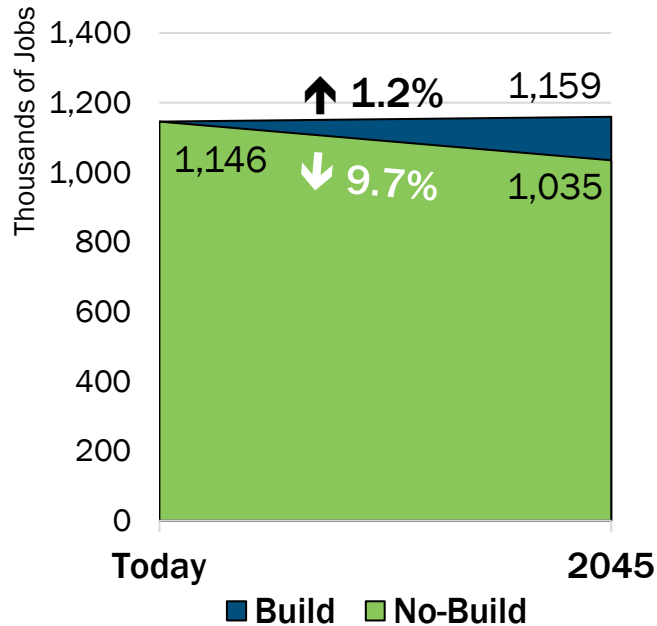


# Congested Lane Miles, AM Peak

New roadway projects will make a difference, but delay and congestion will continue to be a part of life in this region.

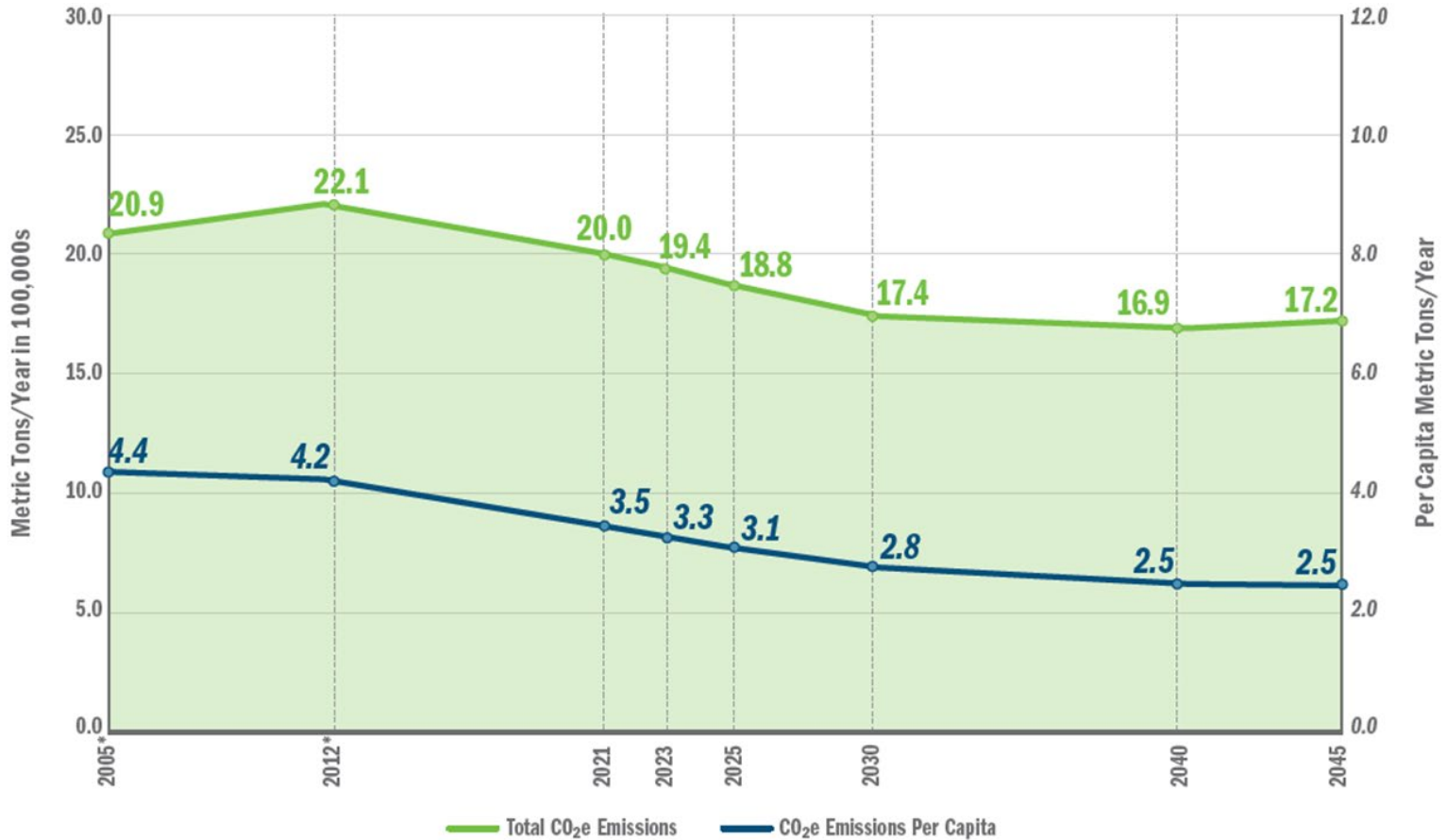


# Change in Access to Jobs, Auto



# Forecast Greenhouse Gases

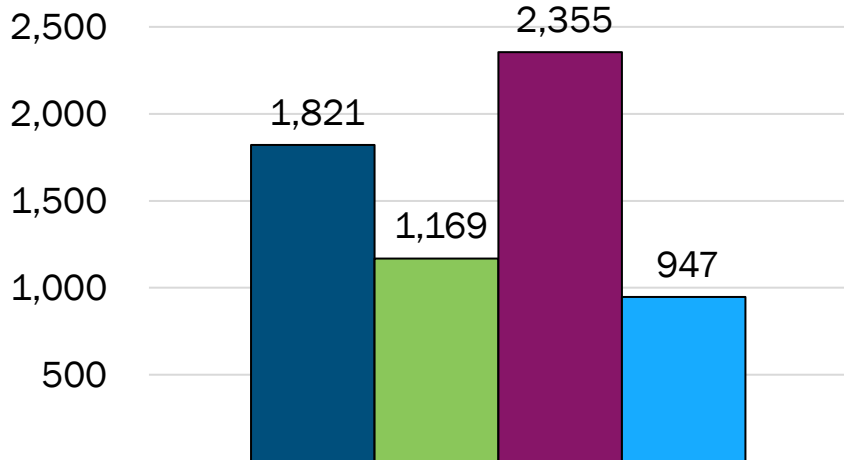
## Greenhouse Gas Mobile Source Emissions CO<sub>2</sub>e and CO<sub>2</sub>e Per Capita



\*NOTE: 2005 and 2012 are historic estimates.

# Proximity to Traffic, Today

## Average Traffic Proximity and Volume

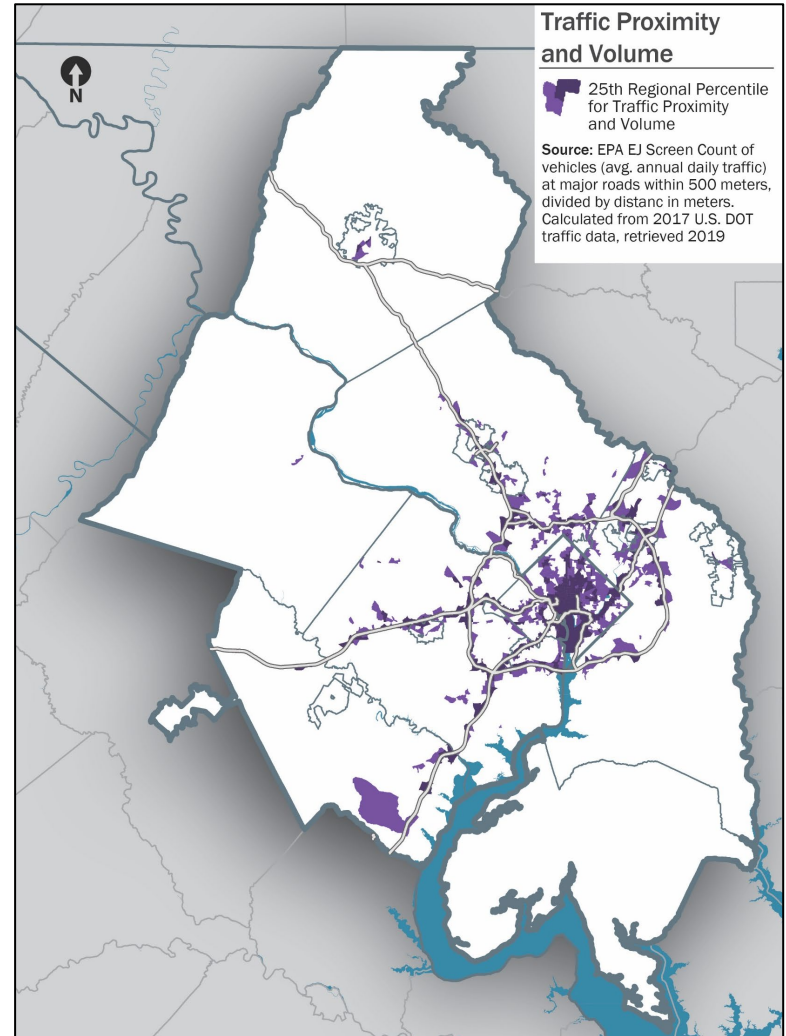


Count of vehicles per day at major roads within 500 meters divided by distance

- Equity Emphasis Areas
- Non-Equity Emphasis Areas
- Activity Centers
- Non-Activity Centers

Note: Sub-areas listed may overlap and are not mutually exclusive.

Source: EPA EJ Screen





# Proximity to Traffic, Today

- Proximity to congested roadways and high levels of vehicle volume in the National Capital Region are not felt equally.
- Communities closer to the region's core, interstates, or major highways experience greater exposure than in outer suburban or rural parts.
- In Activity Centers, proximity and level of traffic is 150 percent higher than in non-Activity Centers. This is likely reflective of high traffic counts on highways and major roads near Activity Centers.
- From an equity perspective, EEAs in the region experience 57 percent greater traffic volume than non-EEAs. The proximity of many EEAs near the region's core and along major roadways leads to the uneven experience.

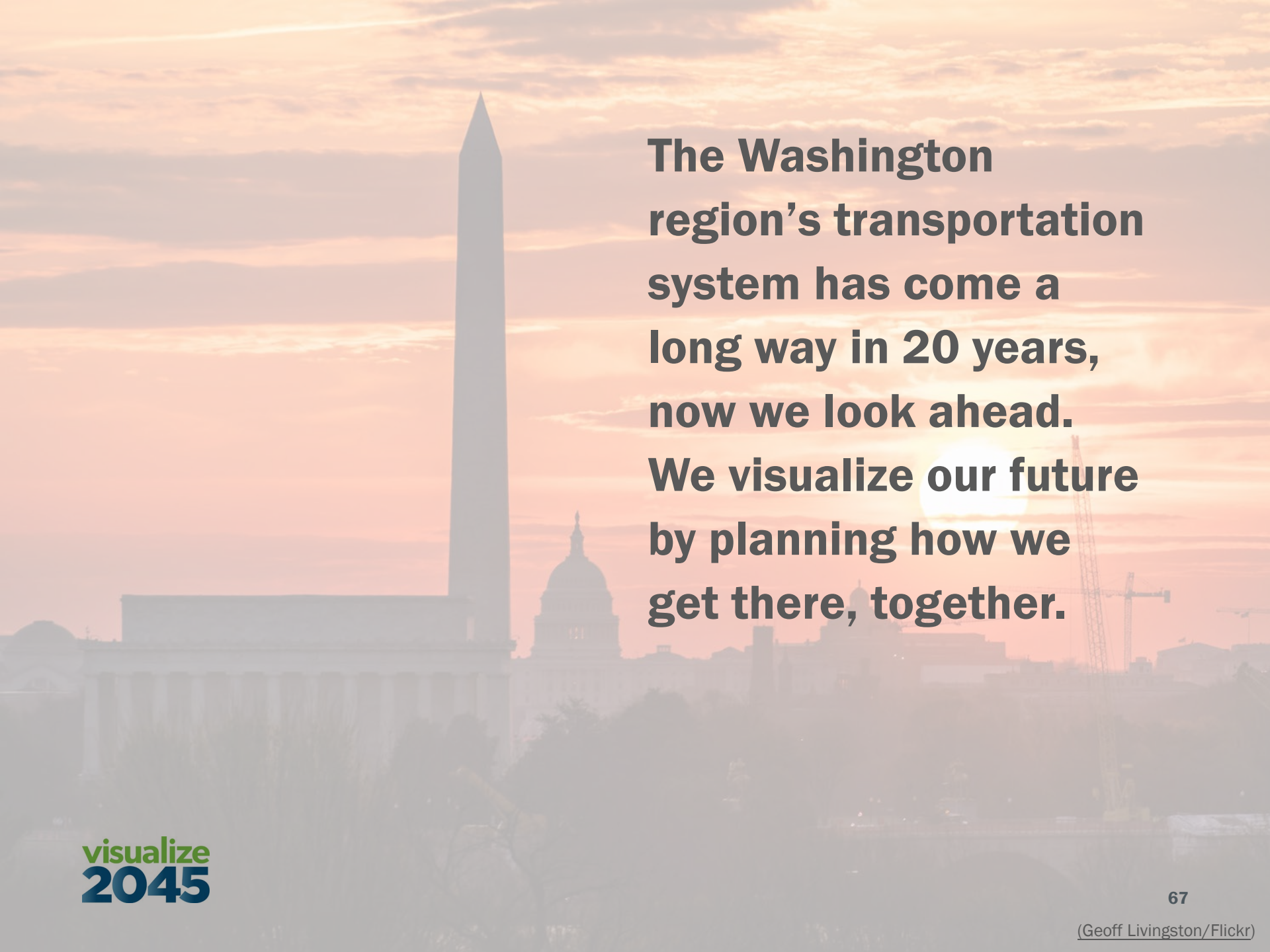
Note: Sub-areas listed may overlap and are not mutually exclusive.

Source: EPA EJ Screen

## 5. Getting the Word Out

### Materials to View and Share:

- [visualize2045.org](https://www.visualize2045.org)
- The Voices of the Region Story Map
  - <https://www.mwcog.org/maps/map-listing/voices-of-the-region/>
- The Visualize 2045 Interactive Project Map
  - <https://www.mwcog.org/maps/map-listing/visualize-2045-project-map/>
- **Ambassador Kit includes:**
  - talking points
  - sample email/web posts
  - sample social media posts
- **Fact Sheet:** Board members have also received a fact sheet with key information about the plan



**The Washington region's transportation system has come a long way in 20 years, now we look ahead. We visualize our future by planning how we get there, together.**

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