

# UNFUNDED CAPITAL NEEDS

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**Part I: Inputs to All-Build Scenario**

**Part II: Analysis of All-Build Scenario**

**Lyn Erickson, Plan Development & Coordination Director**

**John Swanson, Transportation Planner**

**Long-Range Plan Task Force**

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National Capital Region  
**Transportation Planning Board**

# Briefing Overview

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- Task Force Background
- Part I: Scenarios – Inputs
- Part II: Scenarios – Analysis
- Next Steps



# Long Range Plan Task Force

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## Goal:

Improve performance outcomes of the regional long-range transportation plan

## Objective:

Identify and highlight unfunded capital needs as part of the regional long-range transportation plan

## Approach:

- ✓ Inventory locally identified unfunded projects (inputs)
- ✓ Determine potential improvement in system performance from all unfunded projects (analysis)
- ✓ Identify a limited set of unfunded priority projects for inclusion in the long-range plan (next steps)



# Inputs: Constrained vs. Unconstrained

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## Scenarios

- 2015 “Existing” transportation system and population & jobs
- 2040 “Planned Build” (PB)  
Region continues to grow (population and employment) with financially constrained increase in transportation system capacity (2015 CLRP)
- 2040 “All Build” (AB)  
Region continues to grow (same population and employment growth as “Planned Build”) with financially unconstrained increase in transportation system capacity (in addition to 2015 CLRP)

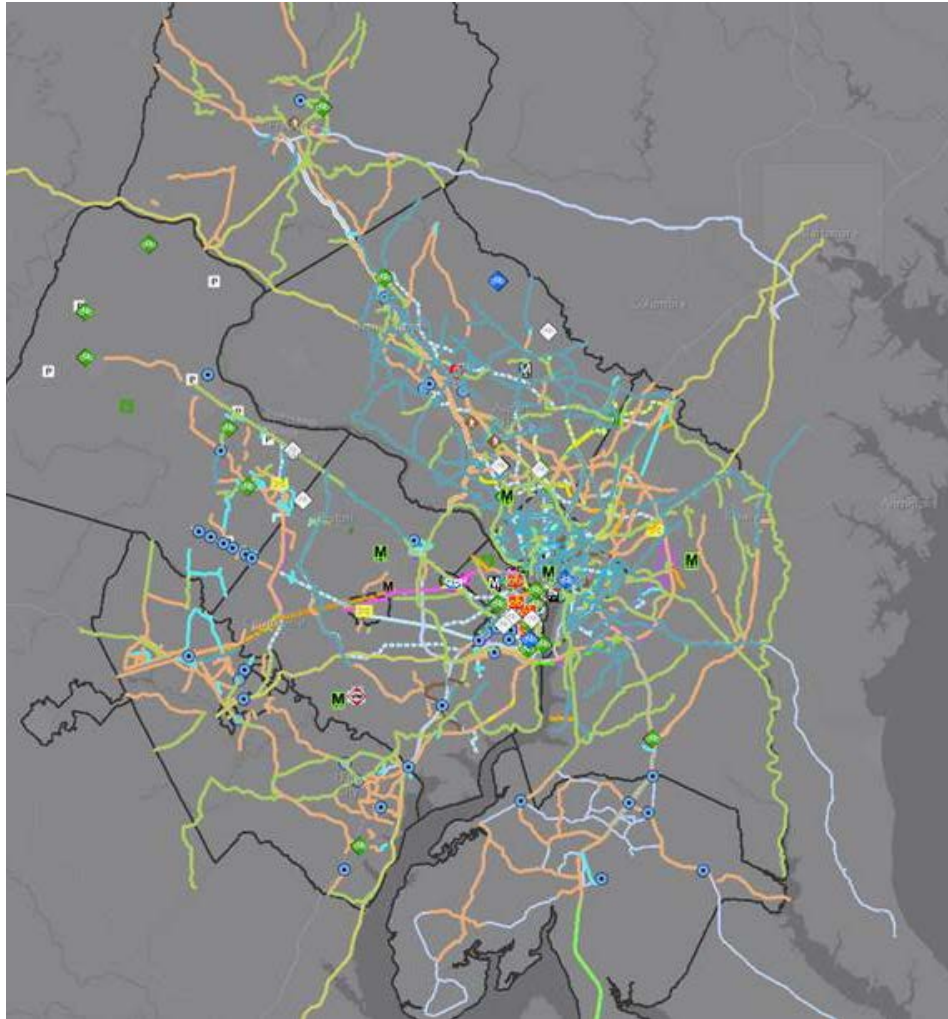


# Future scenario assumptions

2015 to 2040	Planned Build (PB)	All-Build (AB)
Population Growth <sup>1</sup>	24%	24%
Employment Growth <sup>1</sup>	36%	36%
New transportation projects <sup>2</sup>	372	550 <i>additional</i>
Capital funding for new projects <sup>2</sup>	\$42 billion - \$27 billion - highway - \$15 billion - transit	\$70-100 billion <i>additional</i> - \$25-55 billion - highway - \$45 billion - transit

1. COG Cooperative Forecast Round 8.4
2. TPB 2015 Constrained Long Range Plan (CLRP)

# All-Build Project Inventory



Approximately 550 projects that are included in state, local and regionally approved plans, but are not currently included in the CLRP.

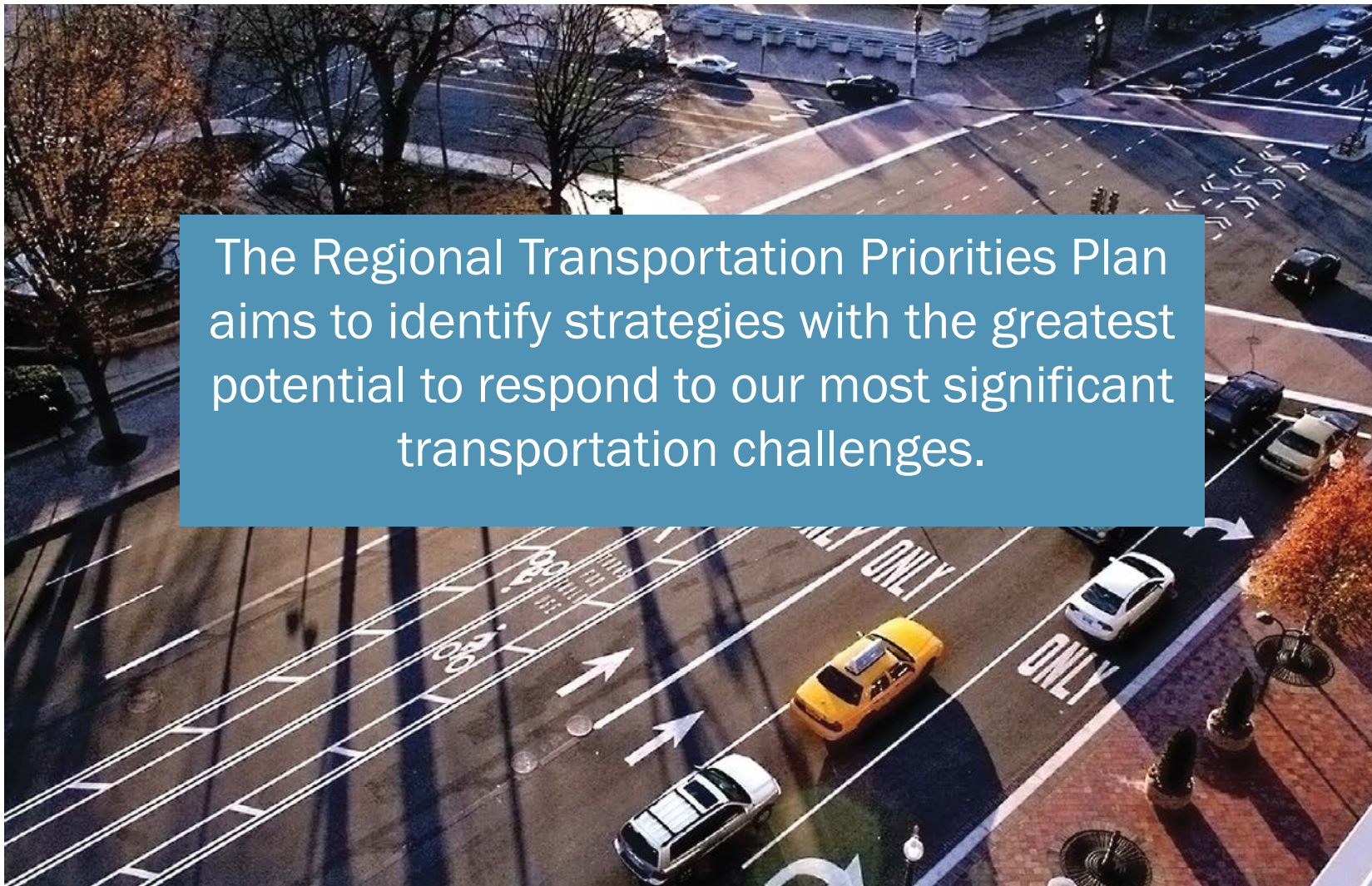
- **Master list of projects:**  
[https://www.mwcog.org/assets/1/28/09212016\\_-\\_AB\\_Project\\_List.pdf](https://www.mwcog.org/assets/1/28/09212016_-_AB_Project_List.pdf)
- **GIS map of projects:**  
<https://gis.mwcog.org/webmaps/tpb/lrptf/allbuild/>



# How do the constrained and unconstrained sets of projects advance the TPB's Regional Transportation Priorities Plan (RTPP)?



# RTPP - Purpose



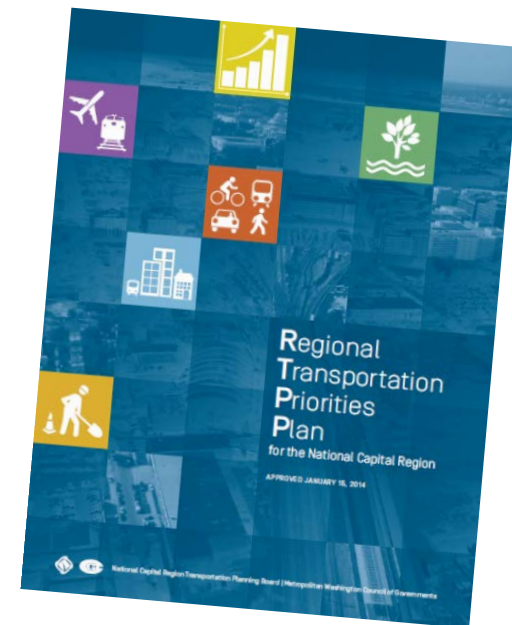
The Regional Transportation Priorities Plan aims to identify strategies with the greatest potential to respond to our most significant transportation challenges.





# RTPP strategies addressed by new All-Build projects

- Transit Improvements
- Targeted Congestion Relief
- Pedestrian and Bicycle Capacity
- Circulation in Activity Centers & Access to Transit
- Environmental Justice

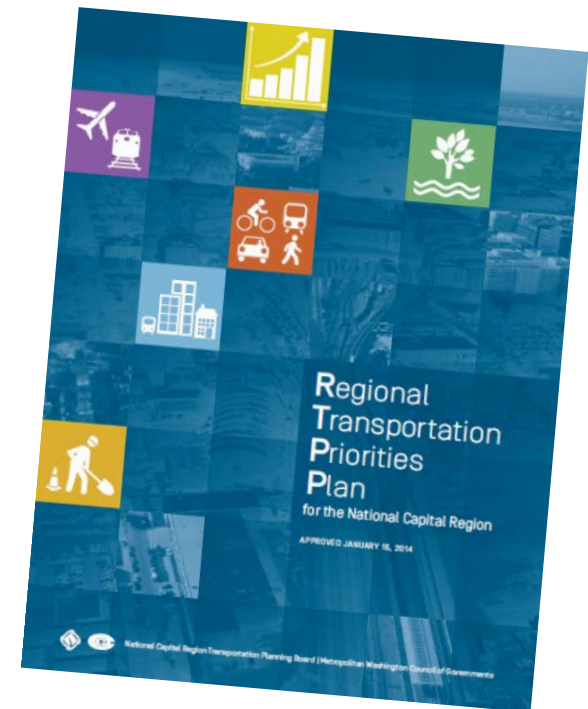


# RTPP: Transit Improvements

The Regional Transportation Priorities Plan included several strategies for expanding the region's transit system in a cost-effective manner.

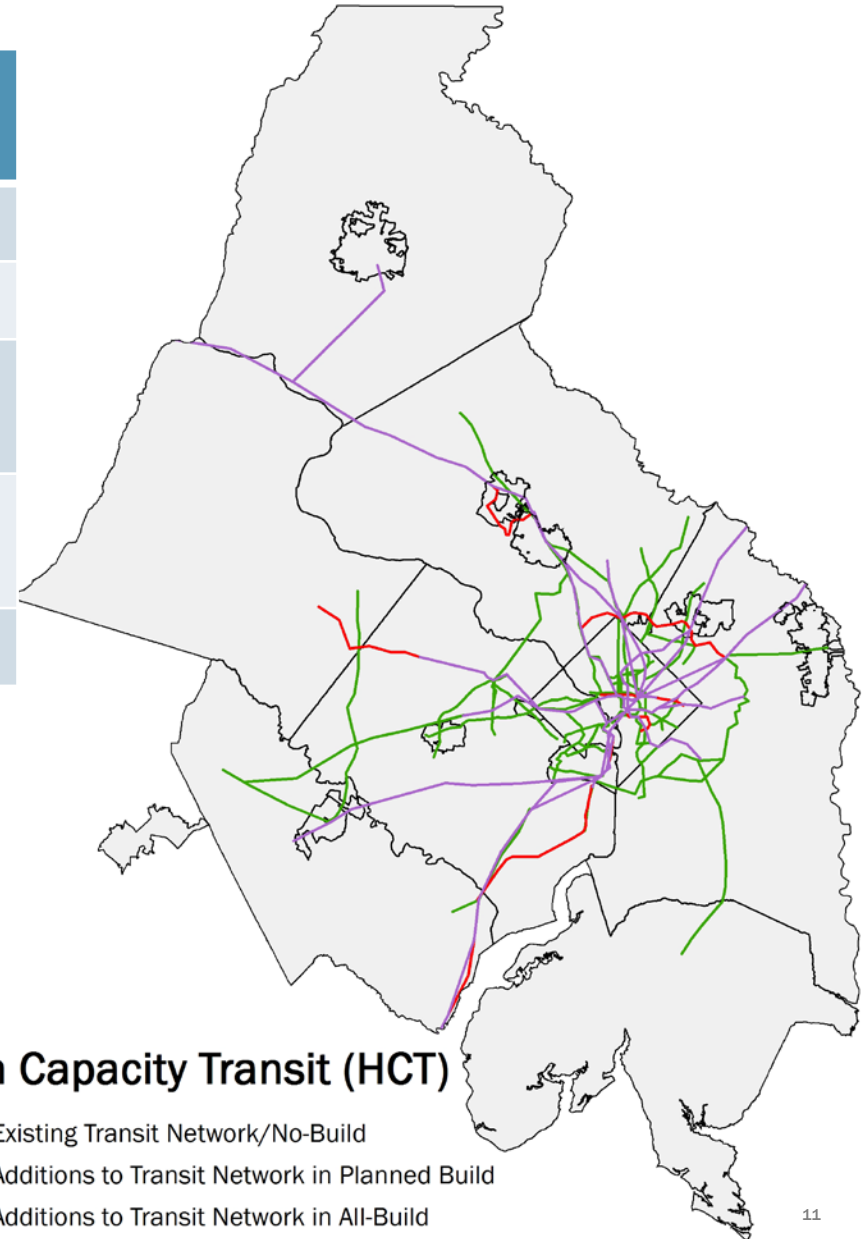
Relevant RTPP Strategies:

- *Provide additional capacity on the existing transit system*
- *Implement bus rapid transit (BRT) and other cost-effective transit alternatives*
- *Apply priority bus treatments*



# Additional High-Capacity Transit

System	Existing	Planned Build	All Build (additional)
Metro Rail	119 mi	+12 mi	+33 mi
Light Rail	0	+16 mi	+66 mi
BRT / Street Cars	5 mi	+36 mi	+259 mi
Commuter Rail	167 mi	+0	+10 mi
<b>TOTAL</b>	<b>291 mi</b>	<b>+64 mi</b>	<b>+368 mi</b>



# Additional High-Capacity Transit

## More Capacity on the Existing System

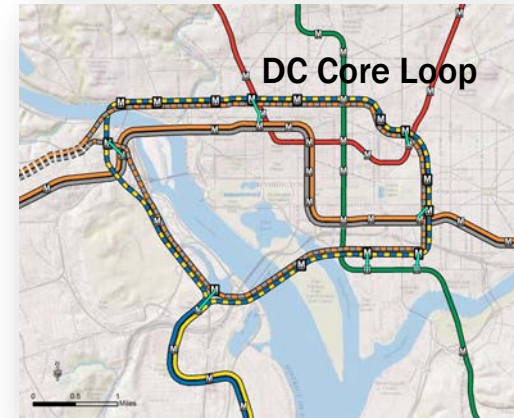
- Metro 2025 projects
  - 8-car trains on Metro
  - Metrorail core station improvements
  - 2<sup>nd</sup> Rosslyn station
  - WMATA Priority Corridor Network (for bus priority service)
- Improvements on MARC and VRE (off-peak service, more frequent service, etc.)



# Transit: Some highlighted examples

## Metrorail Expansions

- D.C. Core Loop
- Orange Line extension to Gainesville
- Yellow Line extension to Hybla Valley



## Light Rail

- Purple Line - New Carrollton to Eisenhower Avenue
- New LRT from Branch Avenue to White Plains (Charles County)
- New Rt. 28 LRT (Manassas to Dulles Town Center)



## Bus Rapid Transit / Street Cars

- Montgomery County BRT
- Arlington/Alexandria Transitways
- DC High-Capacity Transit System

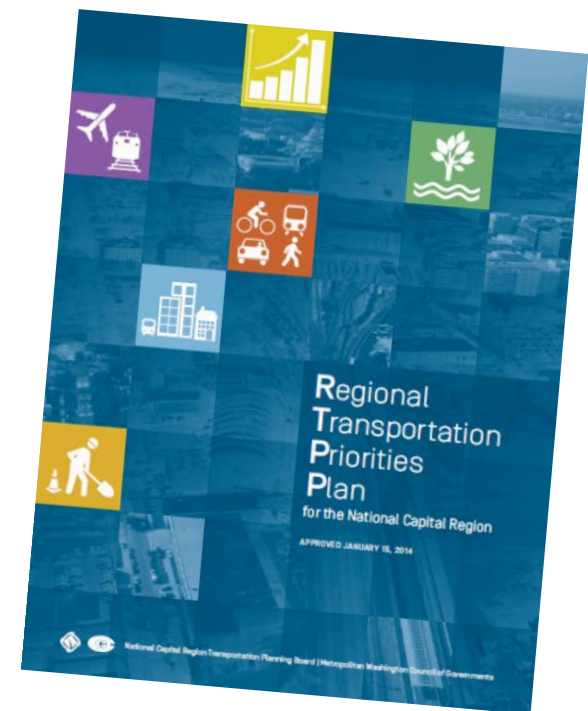


# RTPP: Targeted Congestion Relief

The Regional Transportation Priorities Plan called for targeted roadway improvements, including express toll lanes, to provide congestion relief for drivers.

Relevant RTPP Strategies:

- *Alleviate roadway bottlenecks*
- *Build/implement express toll lanes*



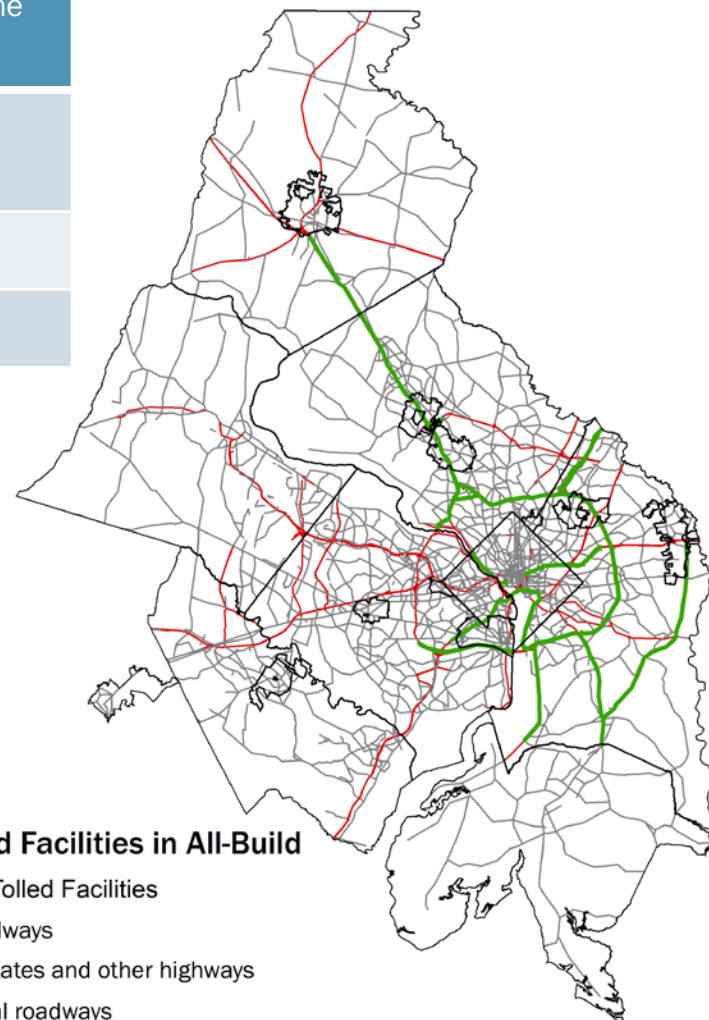
# Congestion Relief – Roadway Projects

System	Existing (lane miles)	Planned Build (additional lane miles)	All Build (additional lane miles)
Freeways / Expressways	3,549 mi	+444 mi	+453 mi
Arterials	13,396 mi	+686 mi	+722 mi
<b>TOTAL</b>	<b>16,945 mi</b>	<b>+1,130 mi</b>	<b>+1,175 mi</b>

New road projects are derived from state/local planning processes and are focused on congestion relief or to accommodate growth.

System	Existing (lane miles)	Planned Build (additional lane miles)	All Build (additional lane miles)
Tolled Lane Miles	394 mi	+194 mi	+419 mi
Cordon Charge *	\$0	\$0	\$6

36% of new lane miles would be tolled in All-Build



# Road projects: Some highlighted examples

## New Highway Capacity

### *Maryland*

- Frederick: US 15
- Prince George's: US 1, MD 193, MD 202, MD 223, MD 224
- Montgomery MD 27, MD 124

### *Virginia*

- Loudoun: Loudoun County Parkway, VA 7, and Dulles Greenway
- Fairfax: Fairfax County Parkway and US 1
- Prince William: Prince William Parkway and Dumfries Road



Bing Maps

**American Legion Bridge**

## Toll Lanes

*D.C.:* I-66, New York Avenue, Clara Barton Parkway, I-295, I-395, Downtown Cordon Pricing

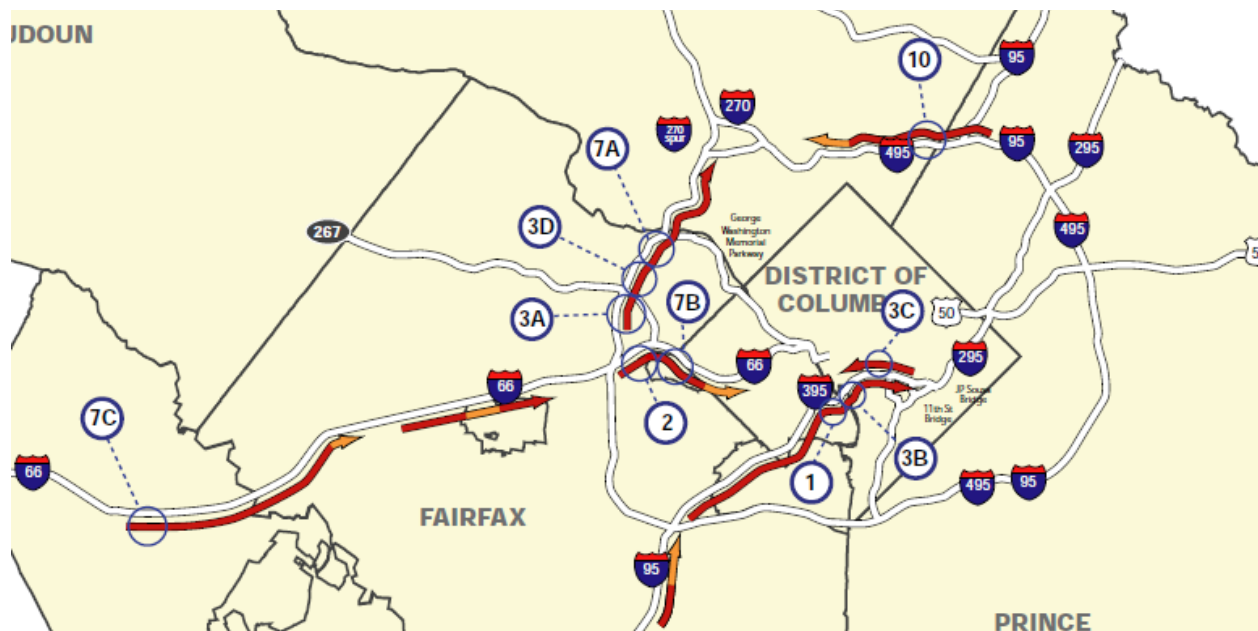
*Maryland:* Capital Beltway (including American Legion Bridge), I-270, I-95, US 301, MD 210, US 50 (inside Beltway), MD 5, I-370

*Virginia:* Capital Beltway (Springfield to Wilson Bridge), I-395 (Edsall Rd to 14<sup>th</sup> St Bridge)





# Targeting bottlenecks



- Time wasted in the Top 10 Bottlenecks during peak periods accounted for 25% of total Vehicle Hours of Delay (VHD) in the region in 2015
- Many projects in the All-Build Scenario—both road and transit—will provide relief for these bottlenecks
- Freight movement is particularly affected by bottlenecks

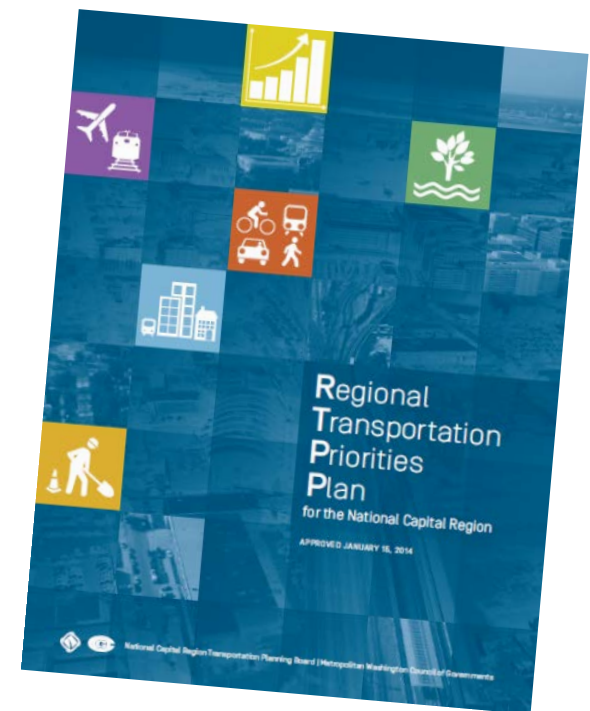


# RTPP: Pedestrian and Bicycle Capacity

The Regional Transportation Priorities Plan called for making walking and bicycling viable transportation choices for more people in more places.

Relevant RTPP Strategies:

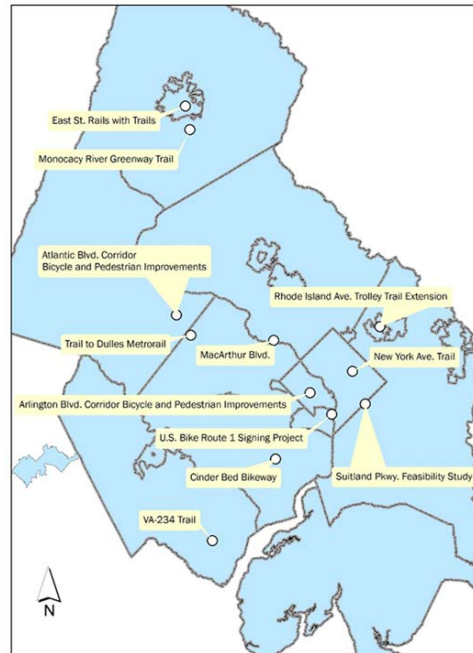
- *Expand pedestrian infrastructure*
- *Expand bicycle infrastructure*



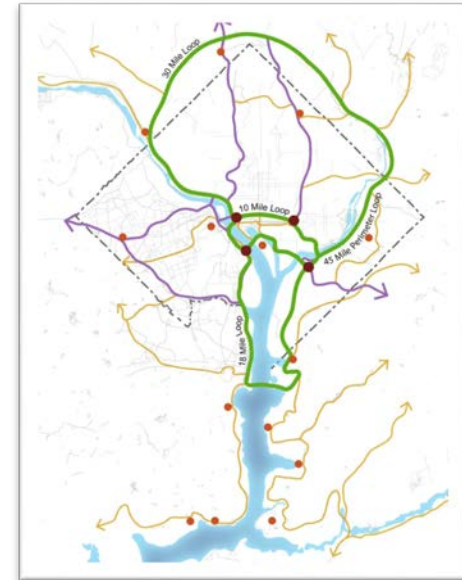
# Ped/bike inputs to All-Build

- Regional paths & other bike infrastructure\*
  - Existing: 645 miles
  - All Build: 1,340 additional miles
- Inputs from TPB's Regional Bicycle & Pedestrian Plan and other jurisdictional submissions
- Not accounted for in the travel demand model

## Highlighted Examples



TPB Bike/Ped Subcommittee Top Priority Projects



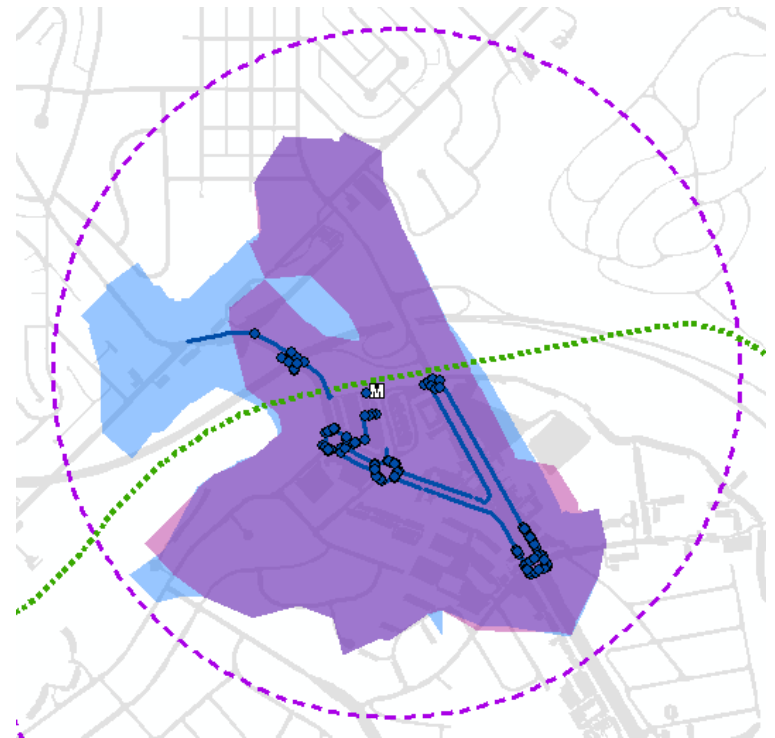
National Capital Trail (Bicycle Beltway)





# Ped/bike projects: Improving circulation and improving access to transit

- WMATA's Metrorail Station Investment Strategy provides an All-Build inventory of 900 miles of ped/bike projects
- The projects improve sidewalks, crossings and bike facilities near Metrorail stations to improve safety and expand the walkshed to reach more potential riders

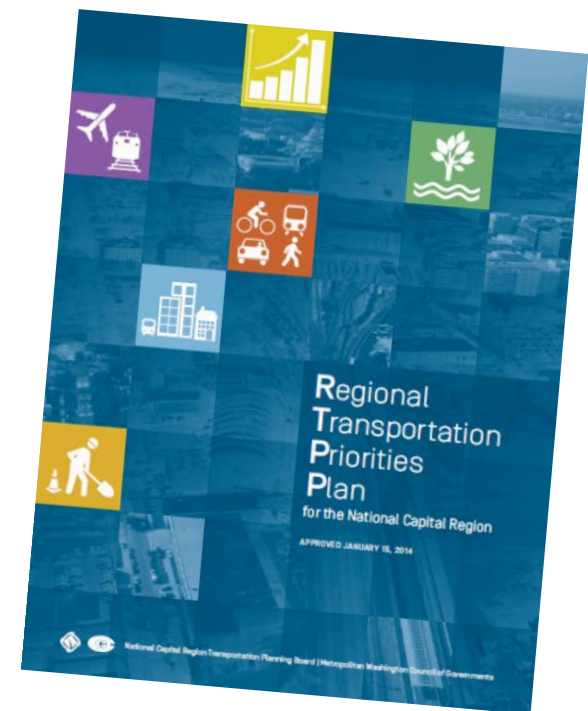


# RTPP: Environmental Justice Considerations

The Priorities Plan said the region should provide improved transportation options for traditionally disadvantaged populations.

Relevant RTPP Strategies:

- *Ensure accessibility for persons with disabilities, low incomes, and limited English proficiency*



# EJ analysis under development

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- **Forthcoming EJ analysis on the CLRP (Planned Build).** Staff is developing a revised methodology to conduct an Environmental Justice analysis of the CLRP.
- **Analysis will identify the impacts of the CLRP on low-income and minority populations.** The new methodology will identify “Communities of Concern” with high concentrations of low-income and minority populations relative to regional averages. Staff analysis will examine the impacts of CLRP transportation investments on these communities compared to the rest of the region.
- **Potential application to other planning activities.** The Communities of Concern may be used to examine impacts of the All-Build Scenario on traditionally disadvantaged communities.



# RTPP strategies not directly addressed by system capacity increases

The Priorities Plan included many vital strategies that are not directly related to the new projects (the “capacity increases”) that were the focus of the All-Build Scenario. Therefore, those strategies are not reflected in the All-Build analysis. These strategies include:

- Ensure maintenance of the transit system
- Ensure maintenance of roads and bridges
- Promote system efficiency through management and operations, and the appropriate use of technology
- Increase roadway efficiency
- Concentrate growth in Activity Centers
- Update and enforce traffic laws
- Support and promote electric vehicles
- Promote commute alternatives
- Engage and communicate with the public





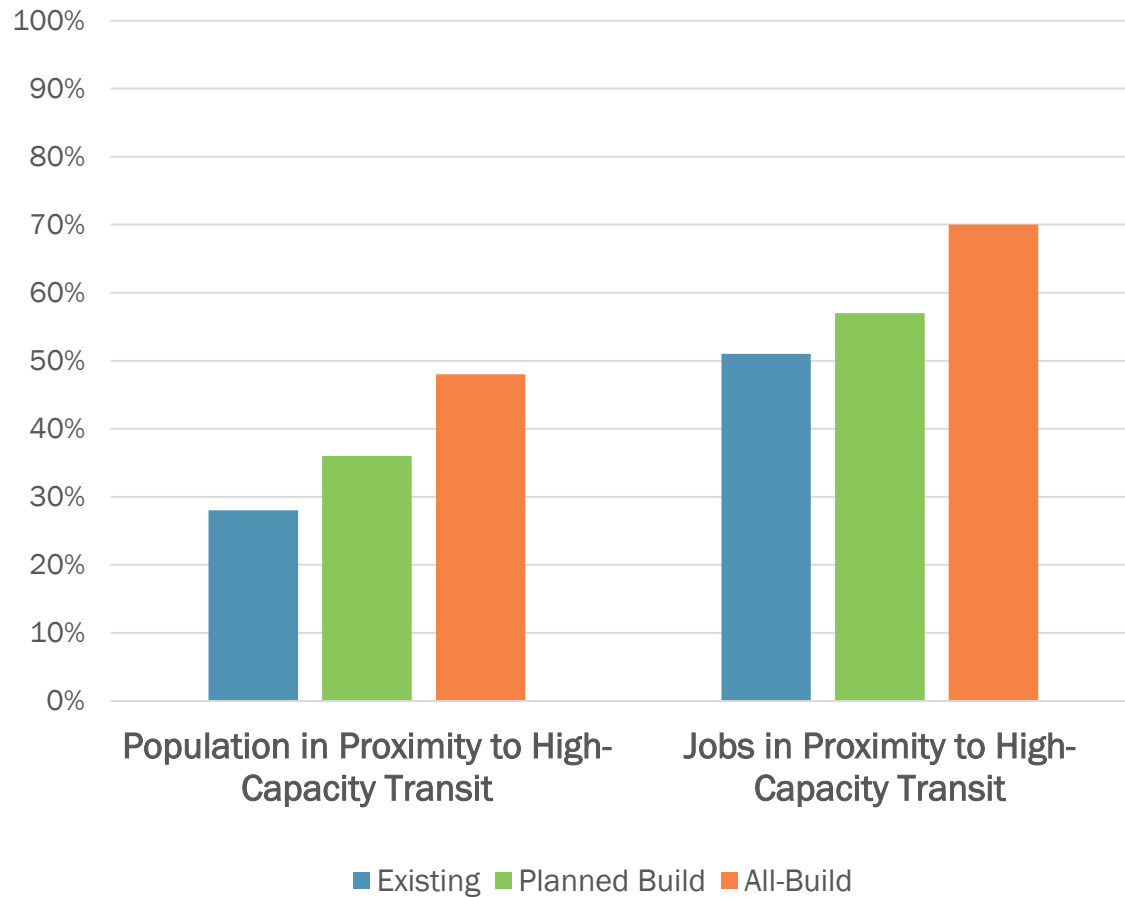
# PART II: ANALYSIS



# How would the All-Build Scenario improve transit accessibility and connectivity?



# More jobs and households close to high-capacity transit



## Proximity to High-Capacity Transit

### Existing:

- 28% of people
- 51% of jobs

### Planned Build:

- 36% of people
- 57% of jobs

### All-Build:

- 48% of people
- 70% of jobs

“Proximity” defined as within one mile of rail or within a ½ mile of BRT



# More Activity Centers connected to high-capacity transit

Percentage of Regional Activity Centers with high-capacity transit:

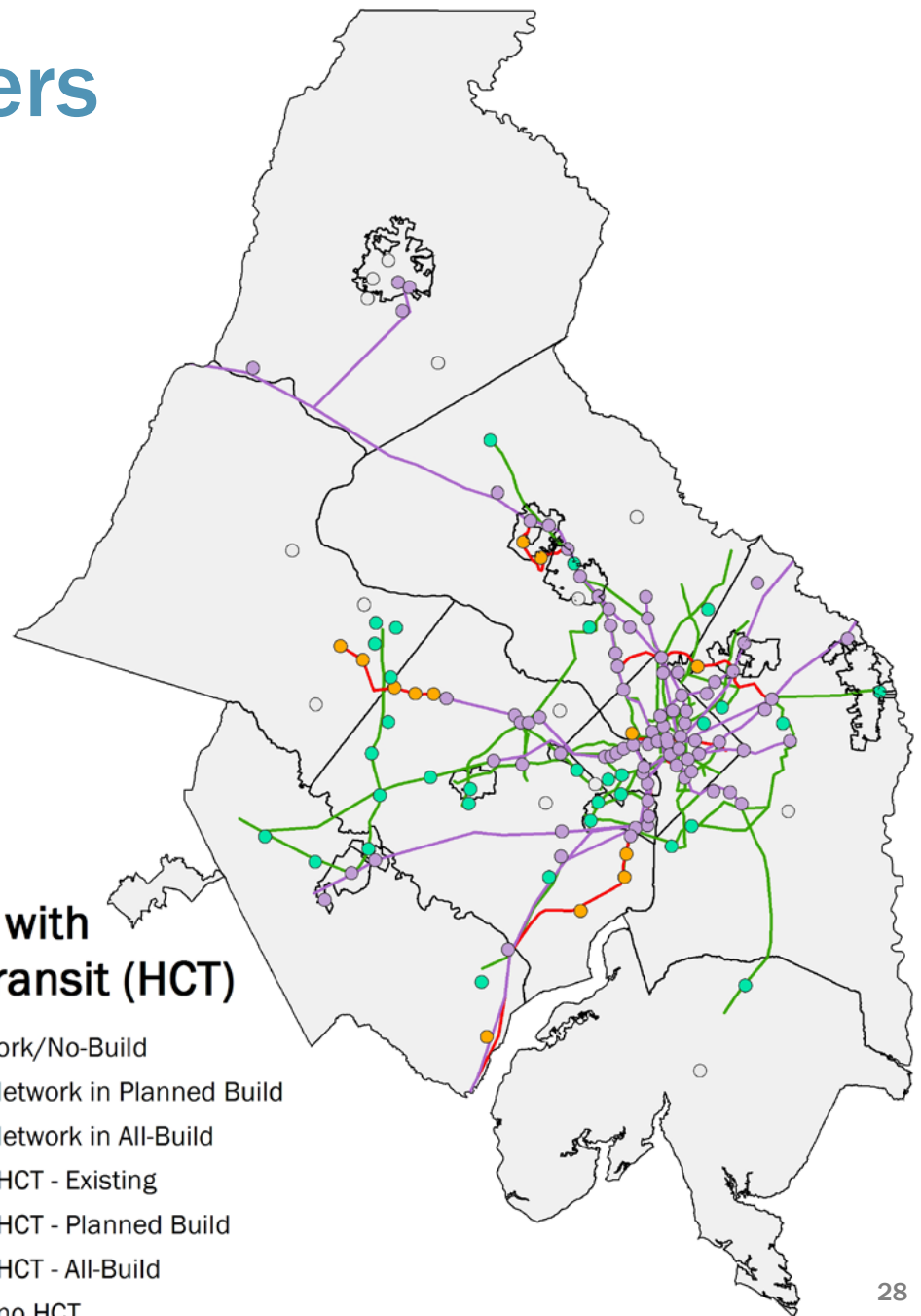
59% - Existing

68% - Planned Build

91% - All-Build

## Activity Centers with High Capacity Transit (HCT)

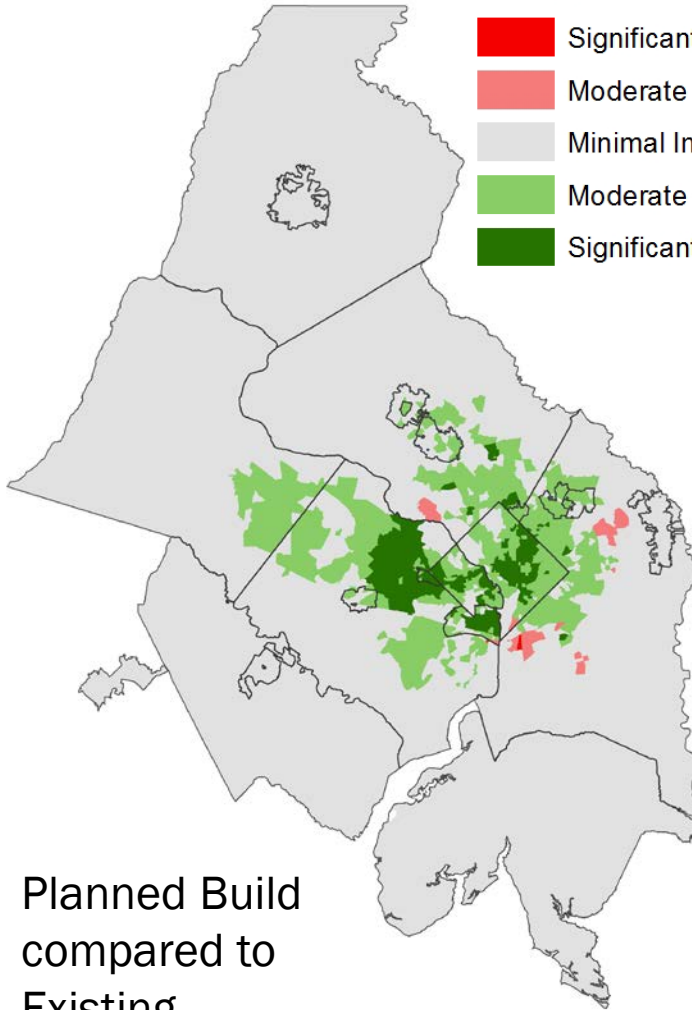
- Existing Transit Network/No-Build
- Additions to Transit Network in Planned Build
- Additions to Transit Network in All-Build
- Activity Centers with HCT - Existing
- Activity Centers with HCT - Planned Build
- Activity Centers with HCT - All-Build
- Activity Centers with no HCT



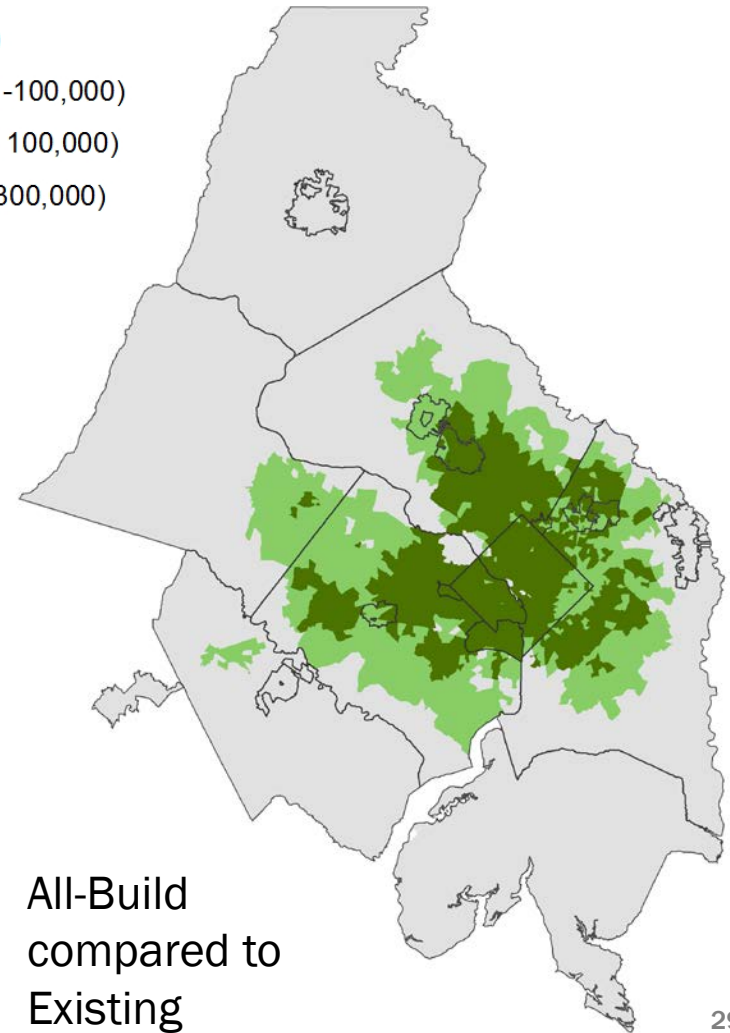
# Significant gains in jobs accessible by transit

## Change in # of Jobs within 45 Minutes

- Significant Loss (<-300,000)
- Moderate Loss (-300,000 to -100,000)
- Minimal Impact (-100,000 to 100,000)
- Moderate Gain (100,000 to 300,000)
- Significant Gain (>300,000)



Planned Build compared to Existing



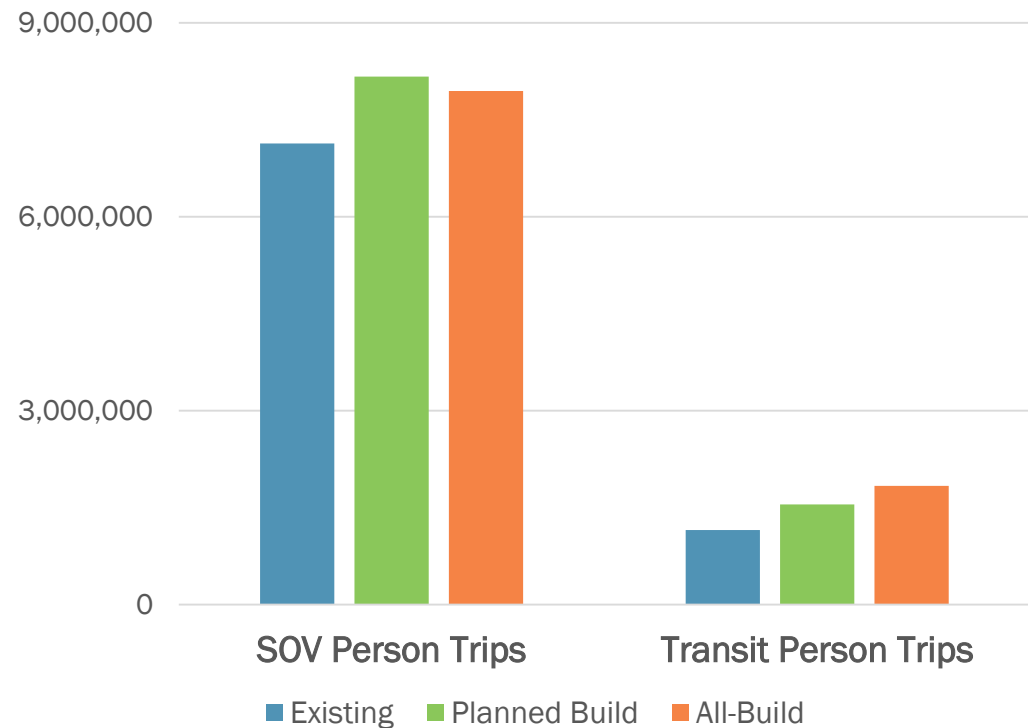
All-Build compared to Existing

# How would the All-Build Scenario change transit usage, driving and other modes?



# Big increase in transit; relative decline in daily SOV trips

## All Trips

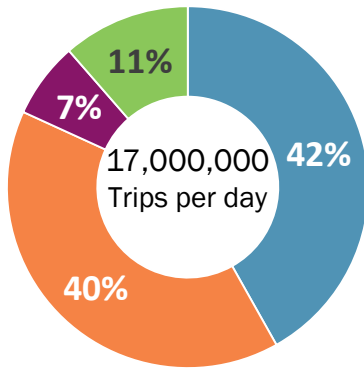


### Relative to 2015:

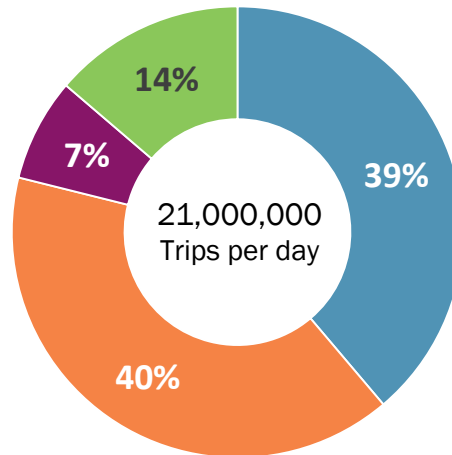
- Transit Trip increases
  - Planned Build: 34%
  - All-Build: 59%
- SOV Trip increases
  - Planned Build: 15%
  - All-Build: 11%

# Driving will continue to be the dominant mode

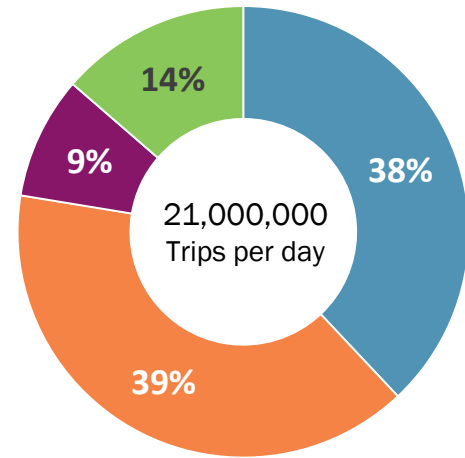
## All Trips



Existing



Planned Build



All-Build



- SOV driving and carpooling under all scenarios will comprise the vast number of all trips
- The share of SOV driving will decrease under the Planned Build and All-Build scenarios

*NOTE: Bike/ped paths presented later in this presentation are not incorporated into travel demand modeling and its results – changes in walk and bike trips here are due to changes in land use.*





# Commuting: Same trends as “all trips” but transit starting from a larger base

## Work Trips



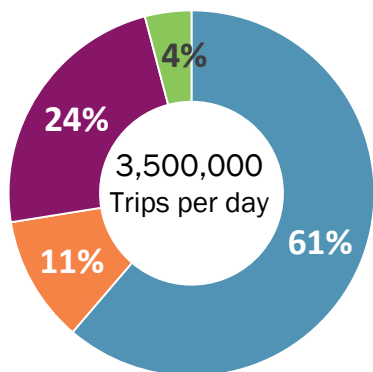
Relative to 2015:

- Transit trip increases
  - Planned Build: 33%
  - All-Build: 47%
- SOV trip increases
  - Planned Build: 18%
  - All-Build: 14%

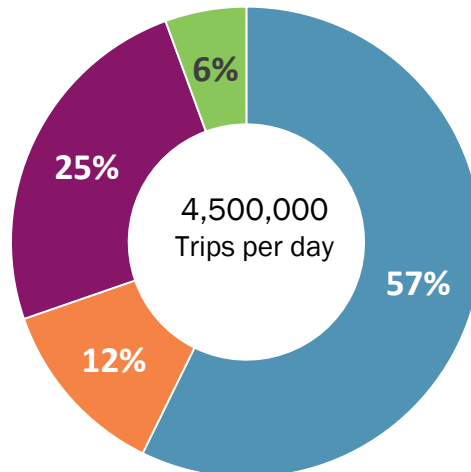


# Steady growth in transit's share of commute trips

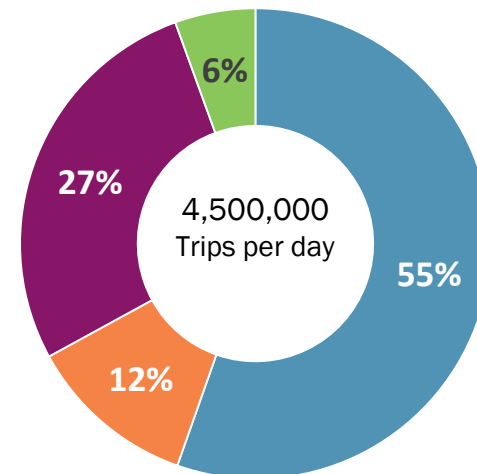
## Work Trips



Existing



Planned Build



All-Build



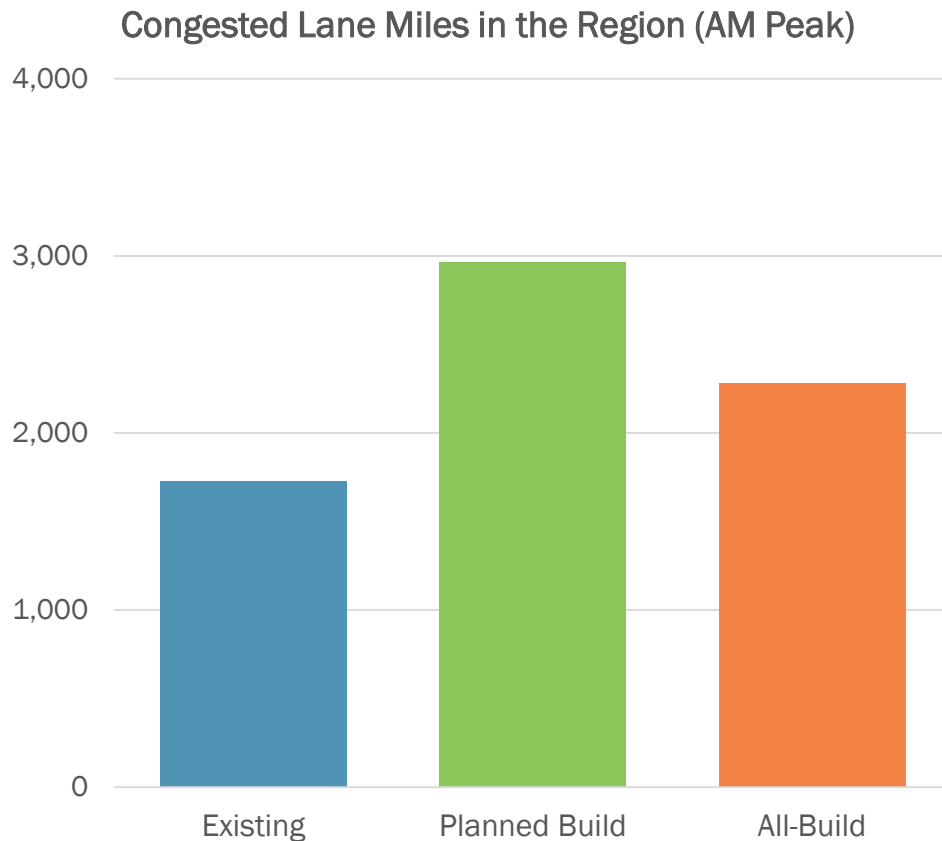
- Transit's share of work trips is already almost a quarter of commute trips and will steadily grow under the Planned Build and All-Build scenarios
- Transit and HOV commutes helps reduce road congestion



# How would the All-Build Scenario affect roadway congestion?



# System-wide congestion still increases, but at much slower rate



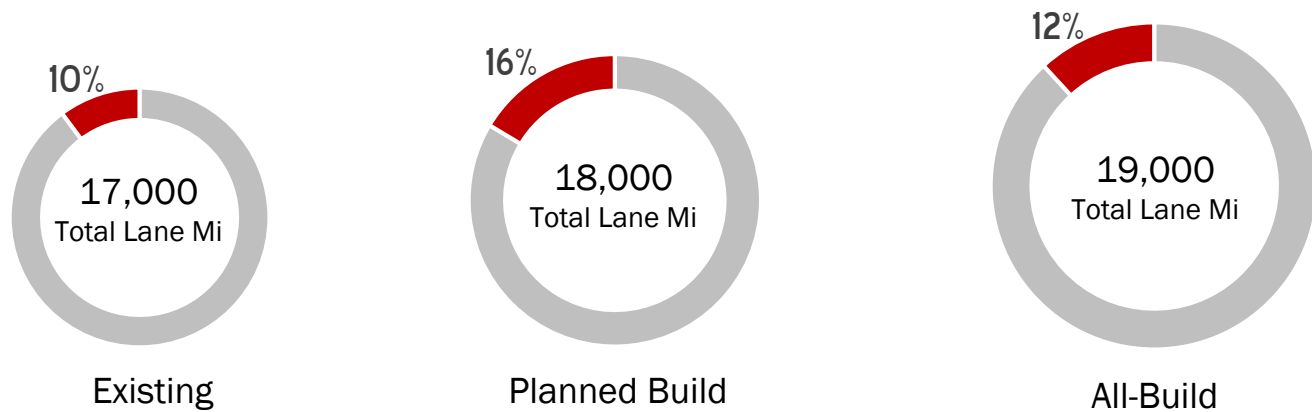
Both scenarios forecast an increase in the number of congested lane miles in the region from 2015 to 2040:

- Planned Build: 72% increase
- All-Build: 32% increase



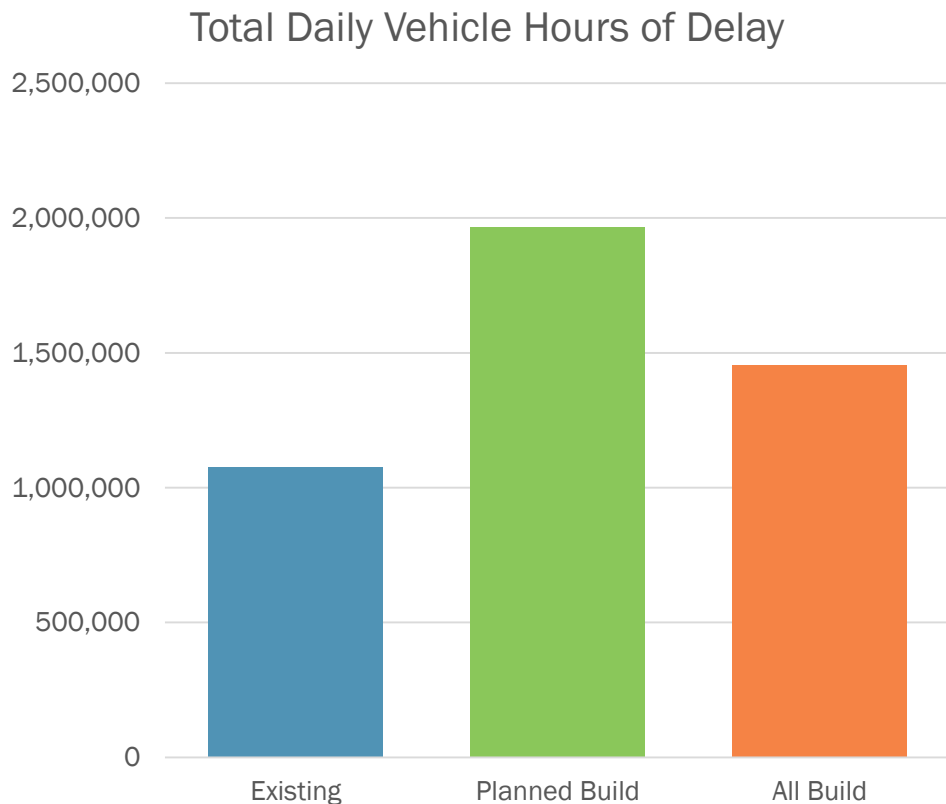
# More roads, but a smaller percentage is congested relative to CLRP

## Share of Lane Miles Congested (AM Peak)



- The All-Build road network is approximately 1,000 miles larger than the Planned Build, but the number of congested lane miles is smaller.
- Additionally, the percentage of congested miles in the All-Build road network is smaller than in the Planned Build.

# Time wasted in traffic still grows, but at a much slower rate



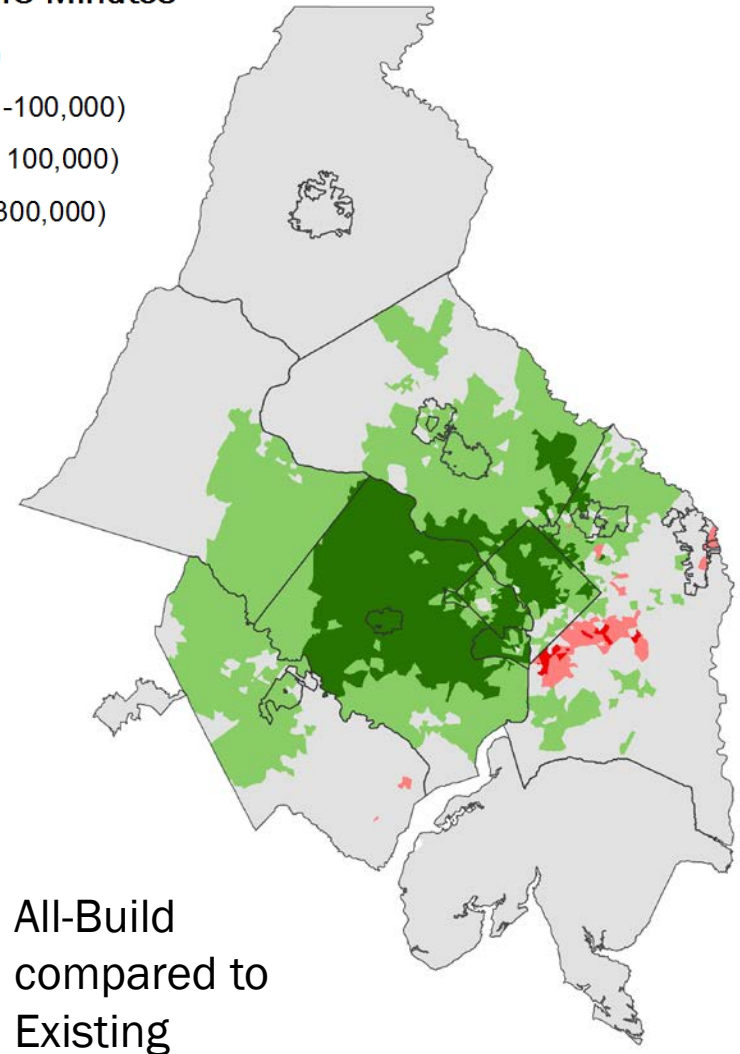
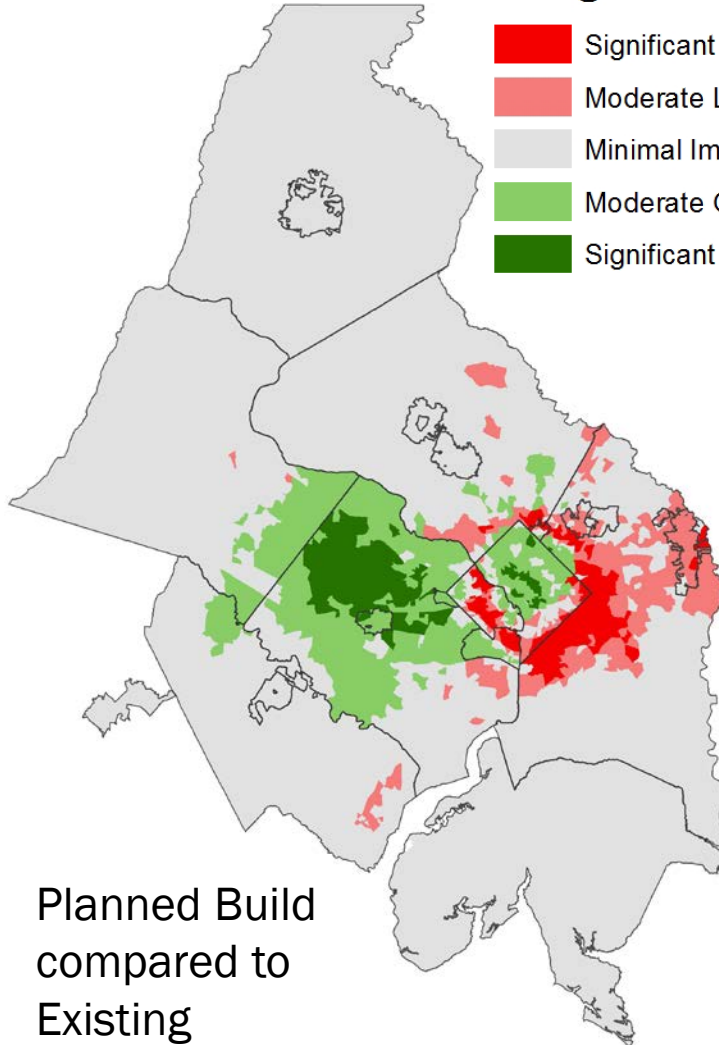
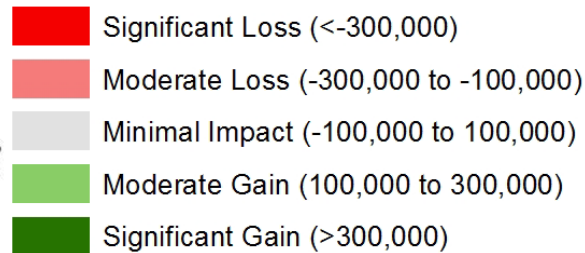
Increase in forecast vehicle hours of delay from 2015 to 2040:

- Planned Build: 82% increase
- All-Build: 35% increase



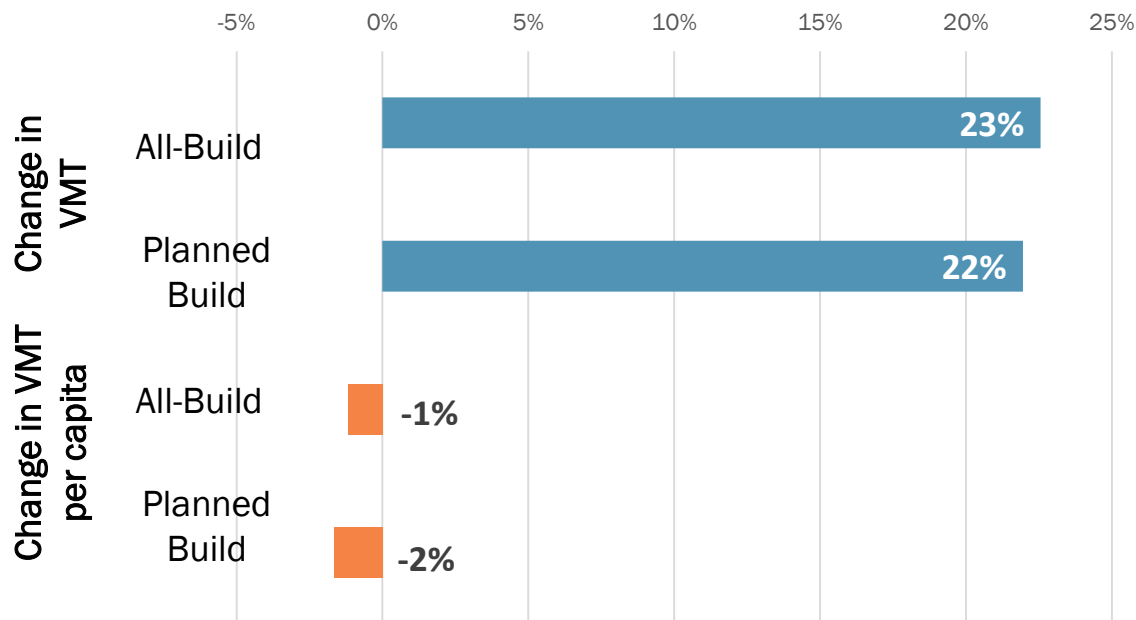
# Significant increase in auto access to jobs including in eastern parts of the region

## Change in # of Jobs within 45 Minutes



# No significant effect on the amount of driving on the region's roads

Change in VMT and VMT per capita relative to Existing



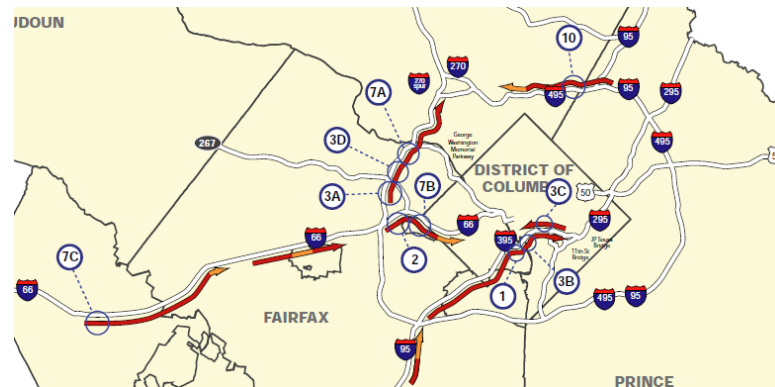
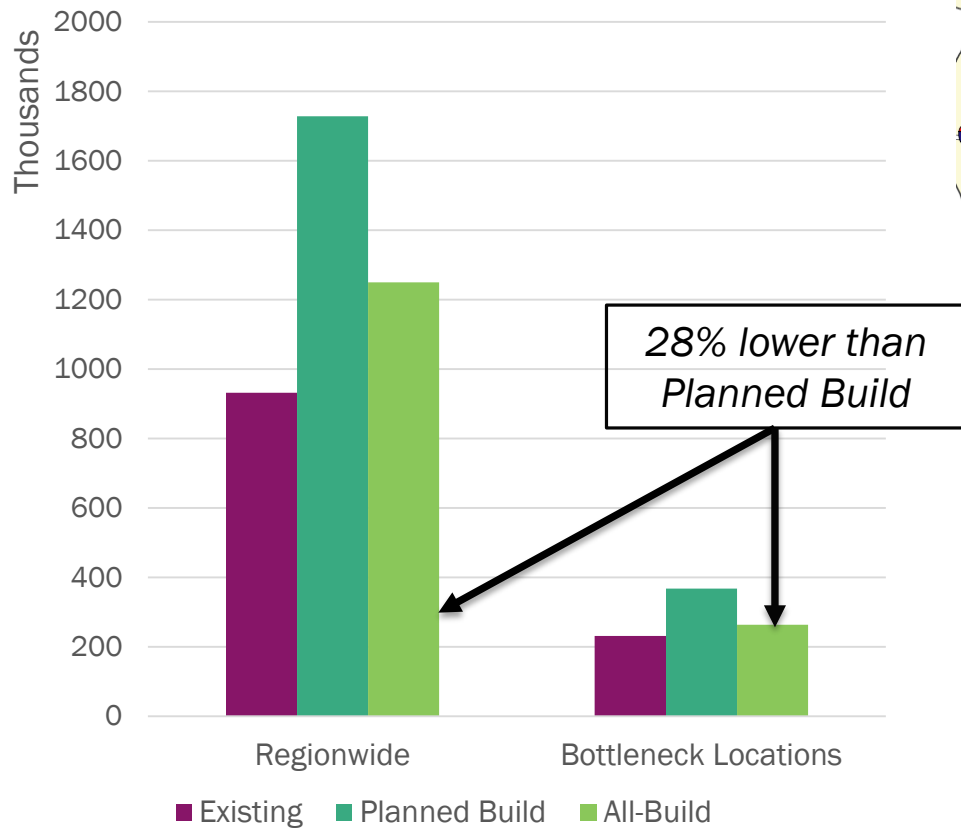
- Under both scenarios, the amount of driving in the region (vehicle miles of travel or VMT) will increase at a rate slightly slower than population growth. Therefore VMT per capita will decrease slightly.
- The All-Build scenario would increase VMT at a rate slightly greater than the Planned Build.
- NO<sub>x</sub>, VOC, and GHG emissions difference between the scenarios is less than  $\pm 0.5\%$ .





# Relief for Top 10 bottlenecks

### Vehicle Hours of Delay (Peak Period)



Compared to the Planned Build, peak-period vehicle hours of delay under the All-Build scenario would decrease:

- 478,000 hours (28%) across the region
- 105,000 hours (28%) in bottleneck locations



# How would the All-Build Scenario provide new opportunities for walking and biking?

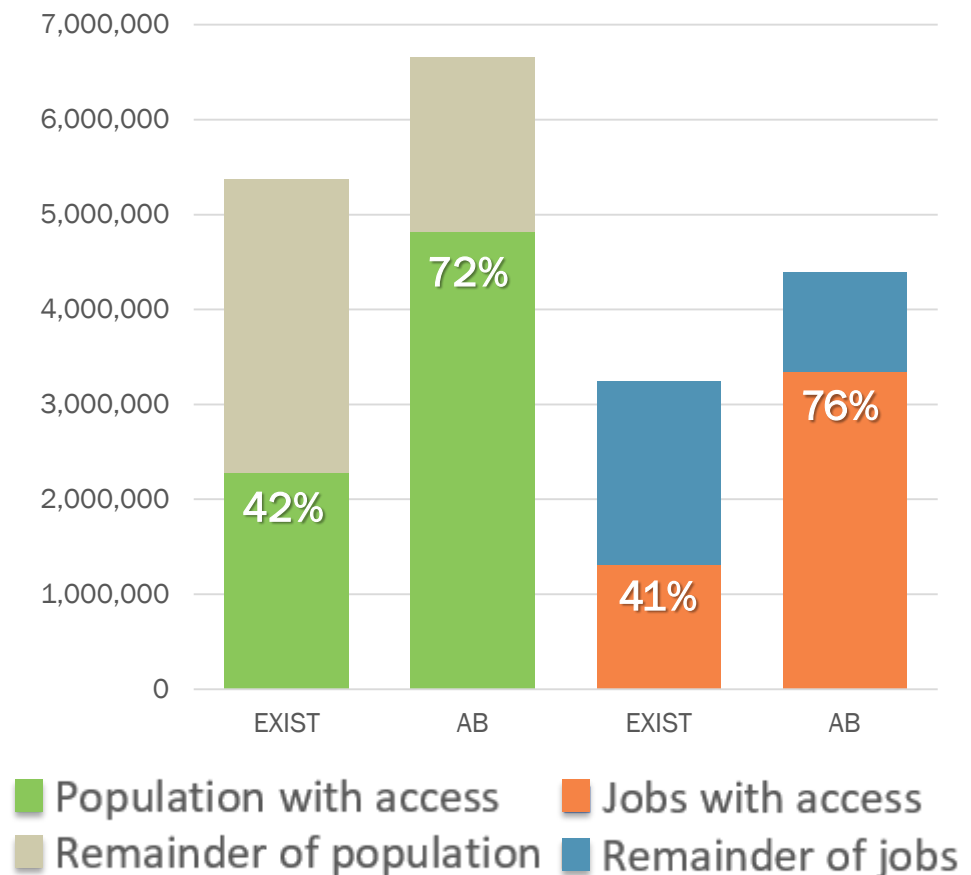


# Dramatic increase in access to bicycle/pedestrian paths

If we build all the projects in the Bike-Ped All-Build, 72% of people and 76% of jobs will be connected to paths in 2040.

- Regionwide population increases by 24% but population access to bike/ped paths increases at a higher rate of 112%
- Regionwide employment increases by 36% but job access to bike/ped paths increases at a higher rate of 155%

Population and Jobs with Access to Bicycle/Pedestrian Paths

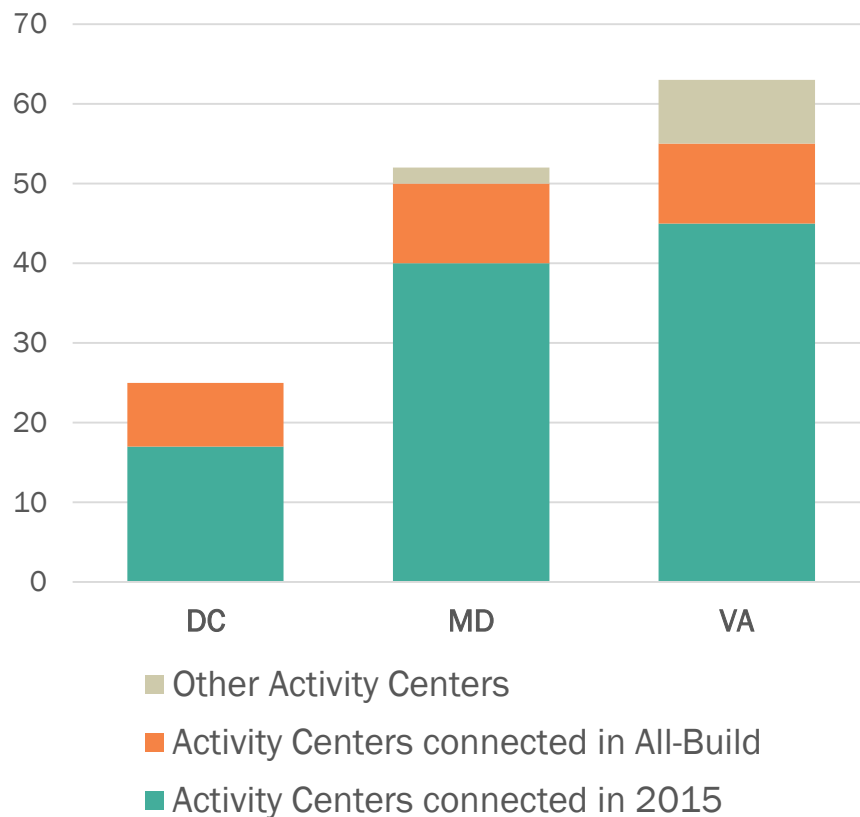


# How would the All-Build Scenario enhance circulation within Activity Centers and access to transit stations?



# Dramatic increase in Activity Center connection to high quality paths

Activity Centers Connected to Regional Bike/Ped Paths



If we build all the projects in the TPB's Regional Bicycle & Pedestrian Plan (All-Build), 92% of the region's Activity Centers will be connected to regionally significant bike-pedestrian paths.

Bike-ped connections to Activity Centers provide access to transit stations as well as increase circulation within Activity Centers themselves.



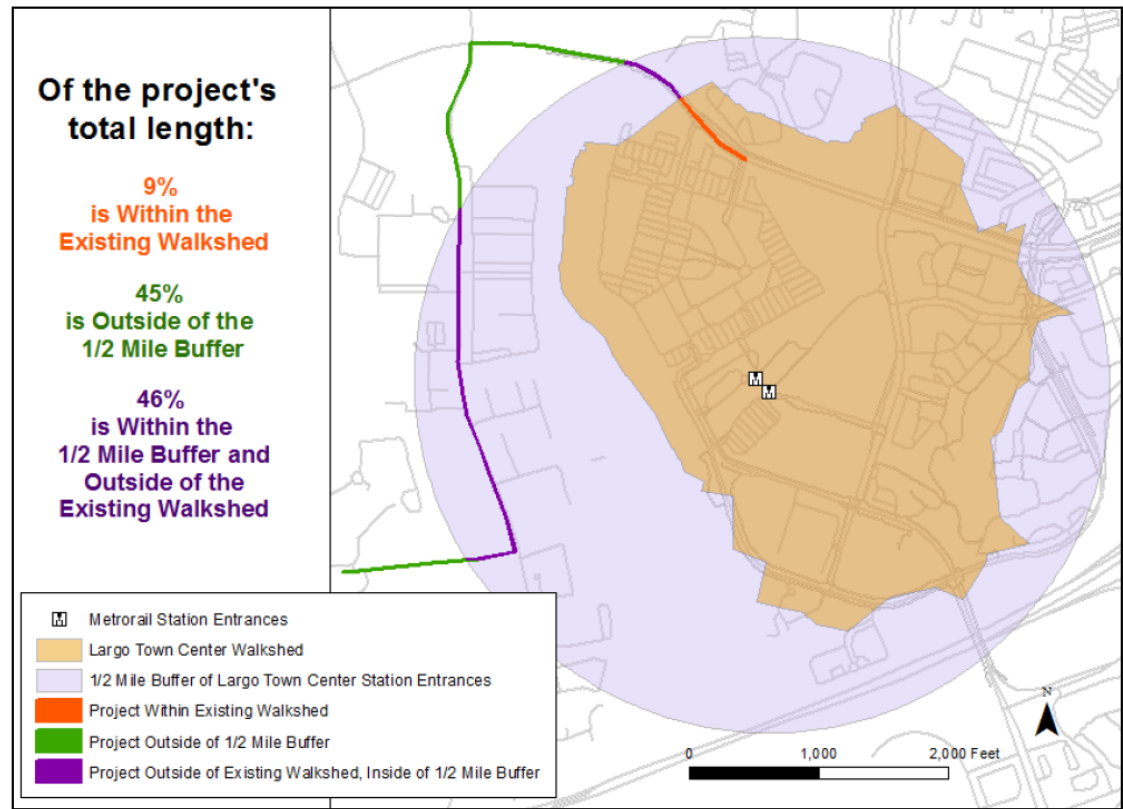
# Opportunity for expanding walksheds around Metrorail stations

Region's unfunded projects inventory includes **122 additional miles** of walk or bike pathways that are within a half mile of a Metrorail station.

Jurisdictions with the most potential for walkshed expansion :

- Prince George's County (45 mi)
- Washington, DC (24 mi)
- Fairfax County (22 mi)

Percentage of Project in the 1/2 Mile Buffer and out of the Walkshed at Largo Town Center



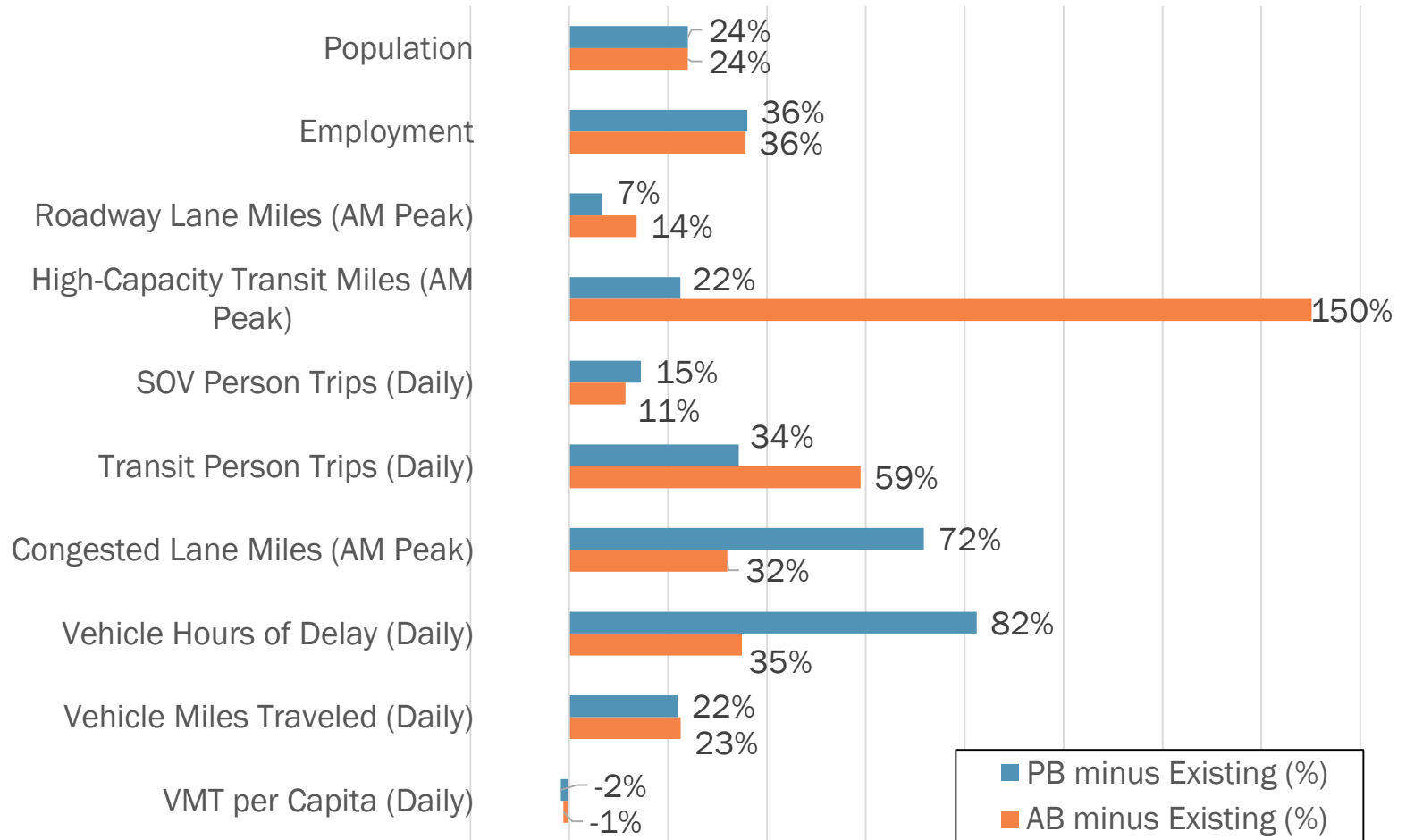
Source: WMATA's Metrorail Station Investment Strategy

# Summary: How does the All-Build Scenario address regional priorities?



# Impacts of the All-Build Scenario

## Performance Analysis: 2040 Futures versus Existing





# Findings: Impacts of the All-Build Scenario



## Looking at relevant RTPP strategies:

### *Transit Improvements*

- Transit would be more widely available
- Transit would be much more extensively used
- The percentage of single driver trips will be reduced

### *Targeted Congestion Relief*

- Congestion would still increase, but at a slower rate
- Bottlenecks would also be relieved (relative to “Planned Build”)
- Accessibility on the eastern side of the region will improve
- Toll roads designed to manage congestion would be widely available throughout the region





# Looking at relevant RTPP strategies (continued)

The All-Build Scenario would have the following impacts

## ***Pedestrian and Bicycle Capacity***

- Access to ped/bike facilities would be expanded throughout the region

## ***Circulation in Activity Centers & Access to Transit***

- Walksheds could be increased with small capital improvements

## ***Environmental Justice***

- Analysis still forthcoming



# Next Steps

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- Develop a report on Phase I activities of the Long-Range Plan Task Force, which will feature a baseline analysis comparing the CLRP (Planned Build) with the All-Build and the No-Build scenarios.
- Determine how this analysis can be used to inform the development of a limited set of regionally significant priority projects.

