2016 CLRP AMENDMENT

Performance Analysis of the 2016 CLRP Amendment

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Cooperative Forecasting and Data Subcommittee
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What is the Constrained Long-Range Plan (CLRP)?

The CLRP identifies regionally significant transportation projects and programs that are expected to be funded between now and 2040

- Over 500 projects, ranging from simple landscaping projects to billion-dollar highway and transit projects
- Full funding to keep the region's highway and transit systems in a state of good repair
- Programs that aim to make the transportation system in Metropolitan Washington better and more efficient

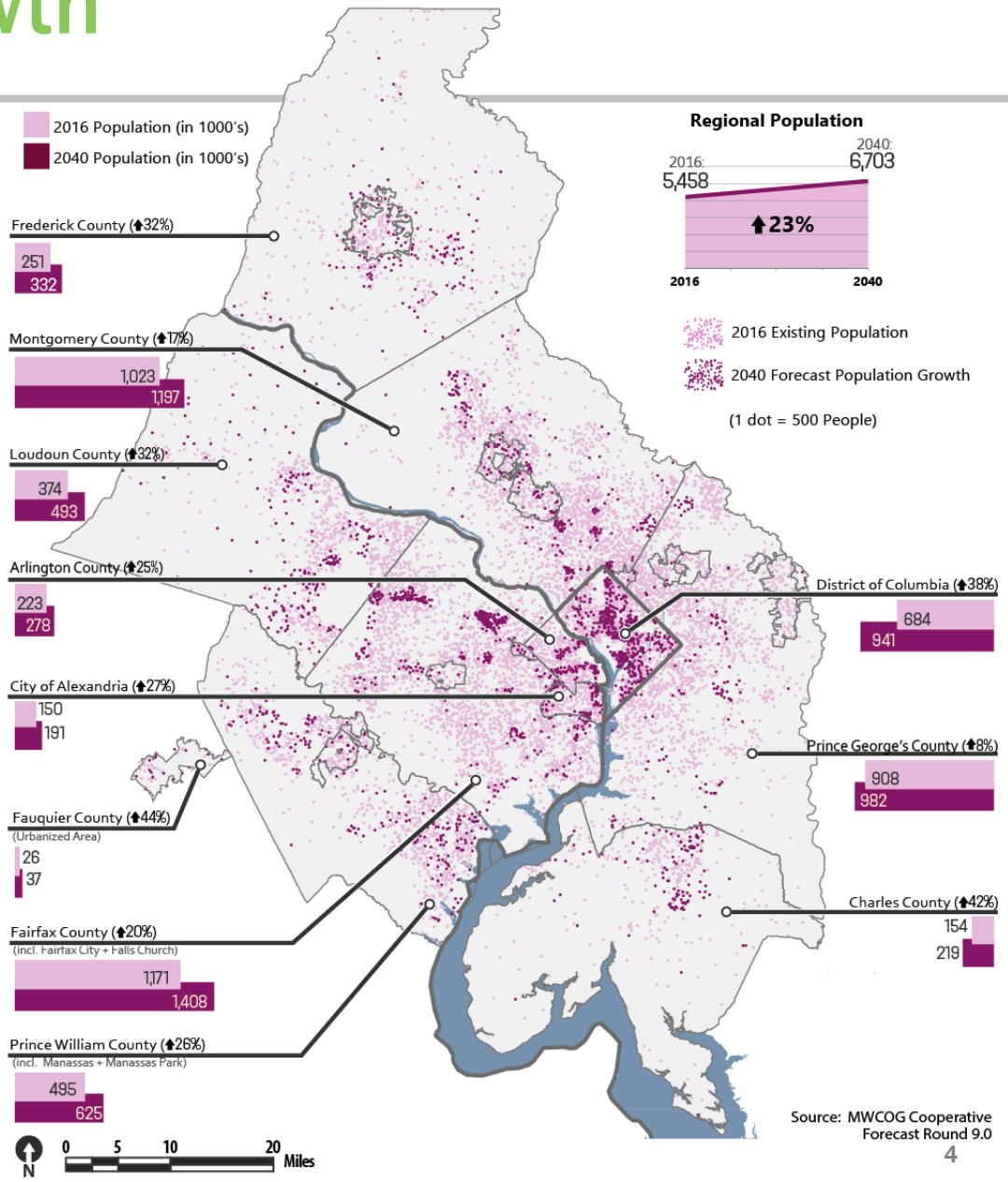
For a complete listing of projects and programs in the CLRP, visit:
http://www.mwcog.org/clrp/

Key Technical Inputs to the 2016 CLRP Performance Analysis

- Round 9.0 Cooperative Land-Use Forecasts
- "Regionally Significant" Transportation Projects – including newly added projects for the 2016 CLRP Amendment
- Version 2.3.66 of the Travel Demand Model
  - Analysis of TPB Planning Area (not Modelled Area)
  - 2014 Vehicle Registration Data (VIN)
  - HOV Policy Assumption
- EPA's MOVES2014a Mobile Emissions Model

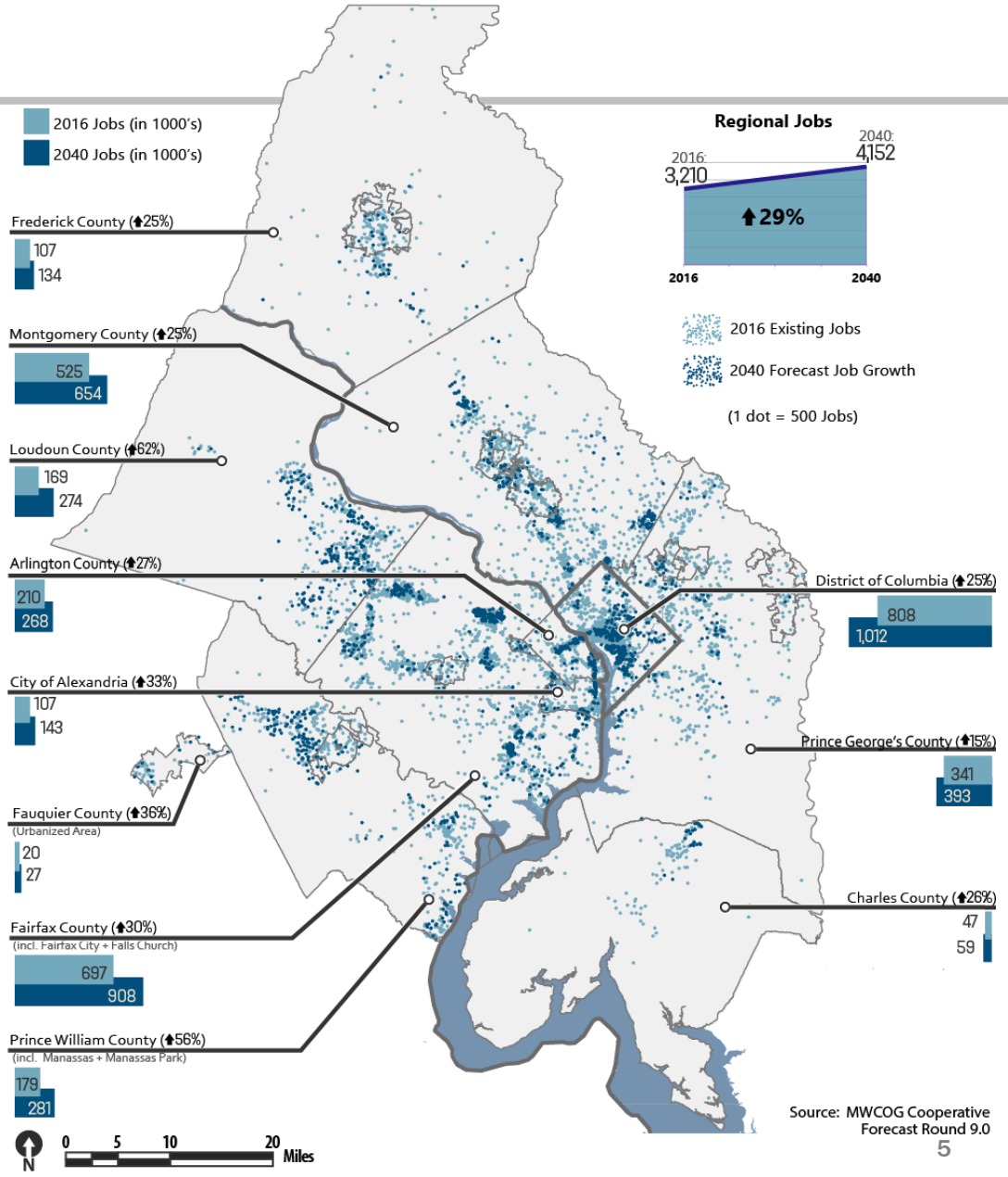
Population Growth

- By 2040, the region is expected to grow by 23% to over 6.7 million people, an increase of 1.2 million people.
- The region's outer suburban jurisdictions are expected to see the highest rates of growth, while the inner suburban jurisdictions and regional core will continue to be home to the most population.
- The majority of new residents are expected to live in denser population centers throughout the region.



Job Growth

- By 2040, the regional jobs are expected to grow by 29% to over 4.1 million jobs. This is an increase of 940,000 new jobs.
- The fastest rates of job growth are expected in the outer jurisdictions of Virginia, while the inner suburban jurisdictions and regional core will continue to be home to the greater number of jobs.
- More new jobs will locate on the western side of the region, and the majority of all new jobs are expected to be in denser population centers throughout the region.



National Capital Region
Transportation Planning Board

How does the CLRP 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 Process

REGIONAL GOALS

Based on the *TPB Vision*

CHALLENGES

Standing in the way of achieving our goals

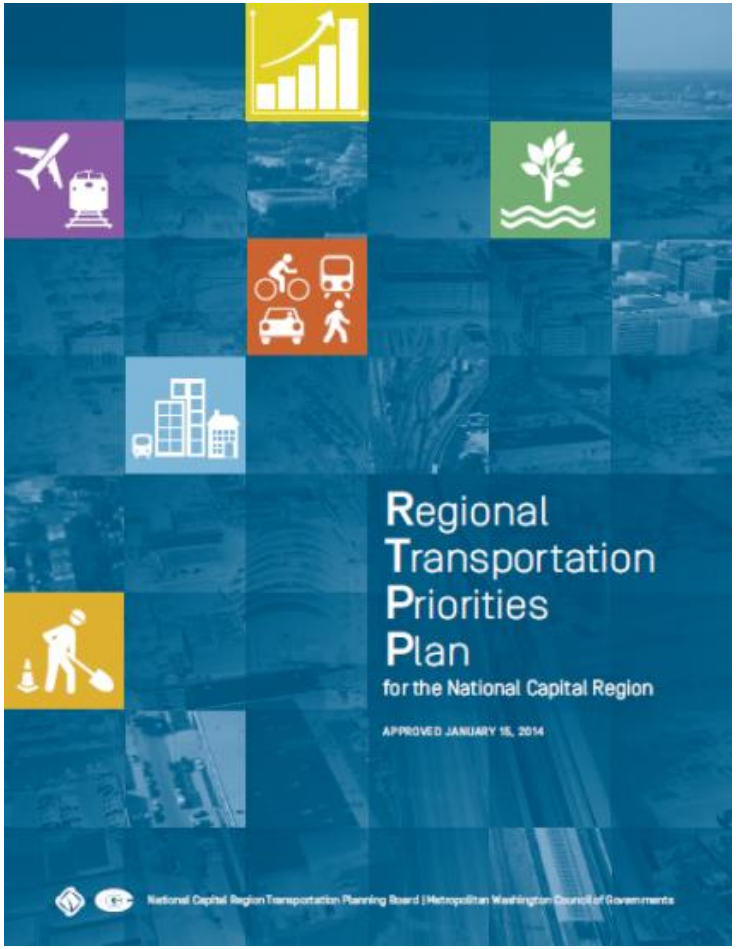
STRATEGIES

With the Greatest Potential to respond to challenges

- *Near Term Strategies*
- *On-Going Strategies*
- *Long Term Strategies*

The CLRP addresses key strategies from the RTPP

- Maintenance
- Transit Improvements
- Targeted Congestion Relief
- Activity Centers

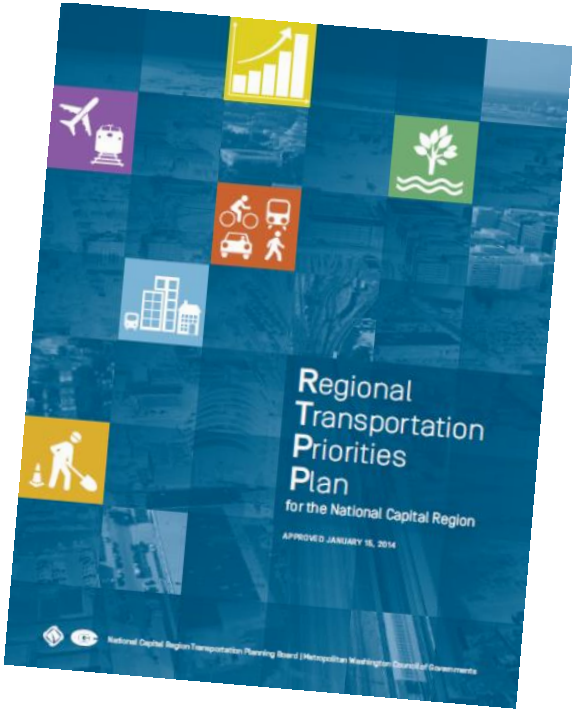


RTPP: Maintenance

The Regional Transportation Priorities Plan identified maintenance as the region's top transportation priority.

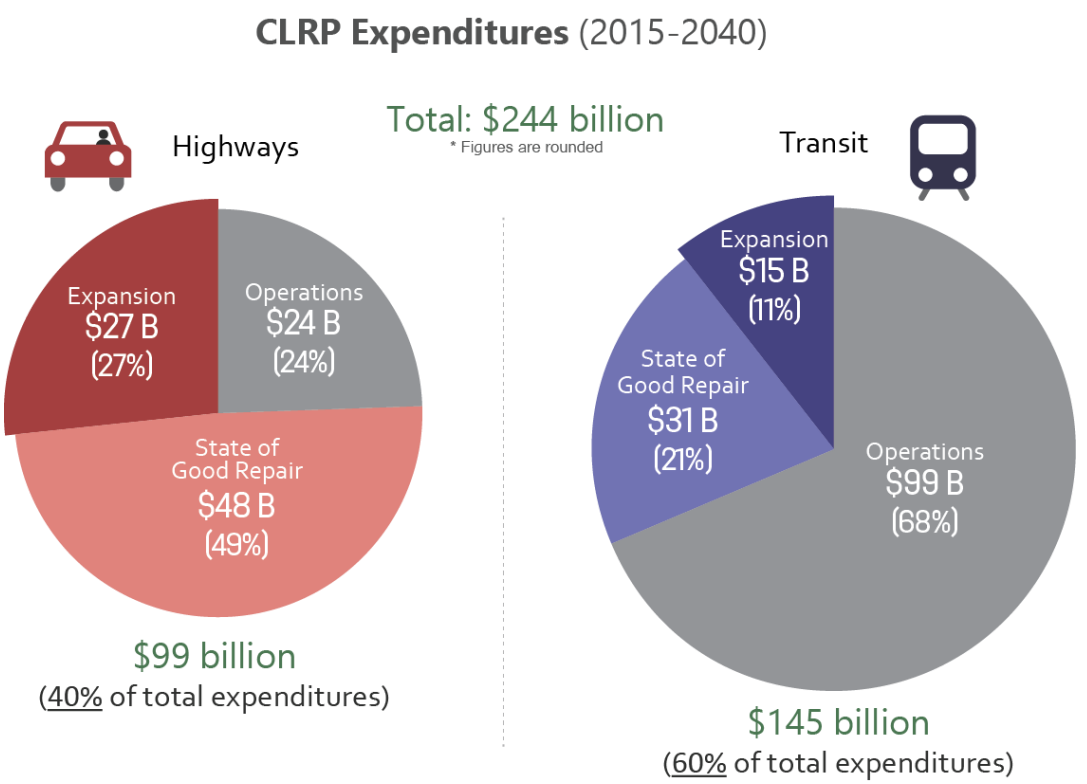
Relevant RTPP Strategies:

- *Ensure maintenance of the transit system*
- *Ensure maintenance of roads and bridges*



CLRP Commitment to Maintenance

- The 2014 CLRP financial plan included a full funding commitment for operations and state of good repair for transit and roads

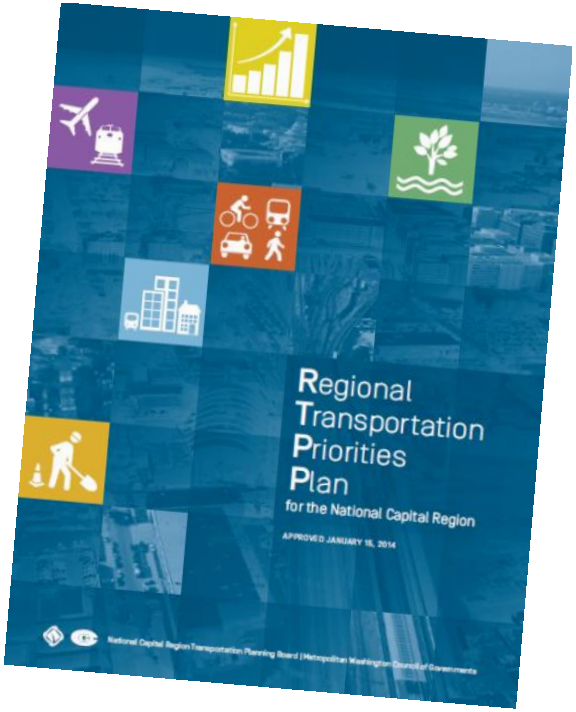


RTPP: Transit Improvements

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

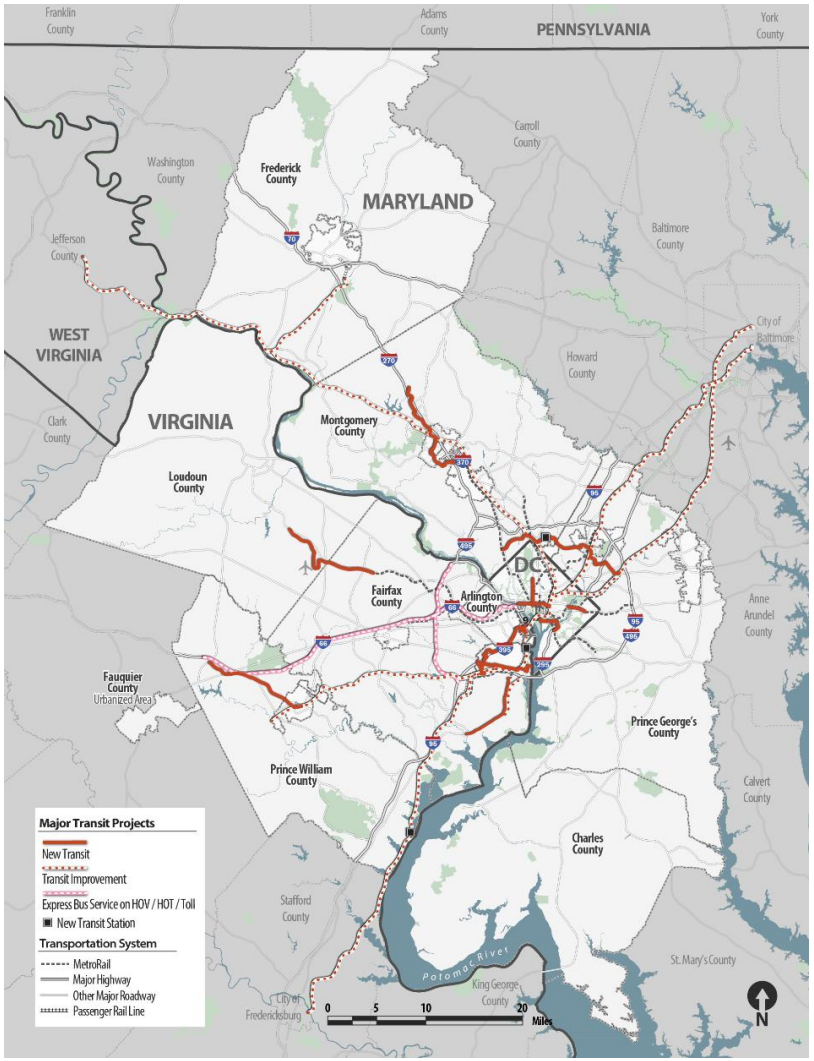
Relevant RTPP Strategies:

- *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	CLRP
Metro Rail	119 mi	+12 mi
Light Rail/ Streetcars	2 mi	+28 mi
BRT	4 mi	+25 mi
Commuter Rail	167 mi	+11 mi
TOTAL	**292 mi**	**+76 mi**



Transit: Some highlighted examples

Metrorail Expansion

- Silver Line Phase II

Light Rail

- Purple Line

Bus Rapid Transit

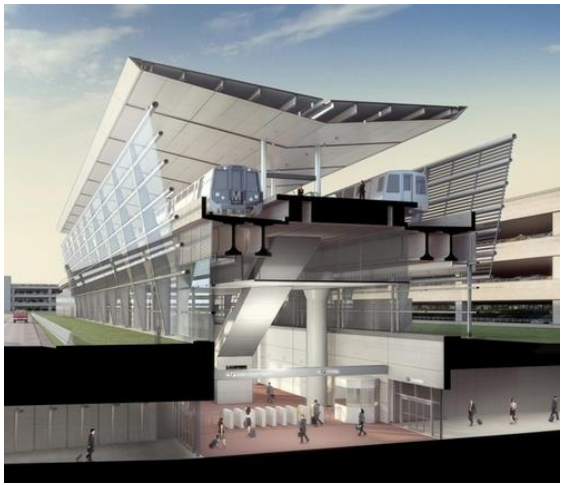
- Corridor Cities Transitway
- Route 1 BRT

Streetcars

- DC Streetcar to Georgetown

Commuter Rail

- VRE to Gainesville/ Haymarket



Mario Roberto Duran Ortiz CC

BeyondDC.com

Capacity on the existing transit system

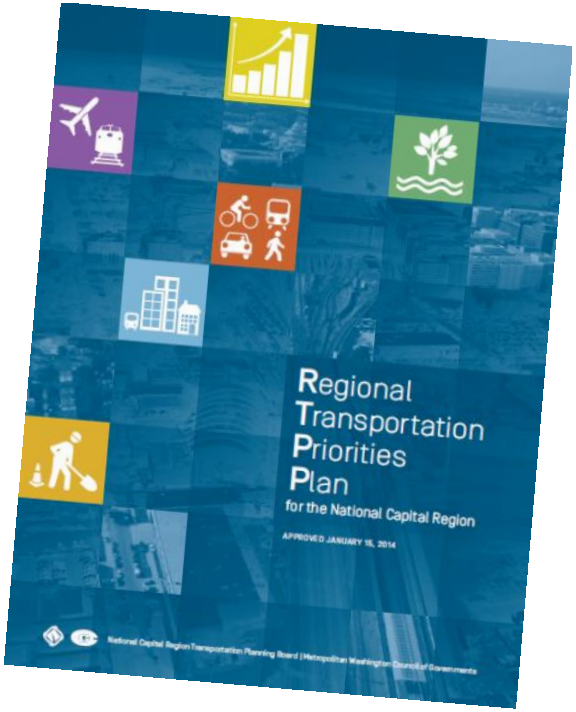
- The CLRP <u>does</u> include funding to expand existing capacity on MARC and VRE.
- The CLRP **<u>does not</u>** include full funding for Metro 2025 projects, including all 8-car trains during rush hour and core station improvements.

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*

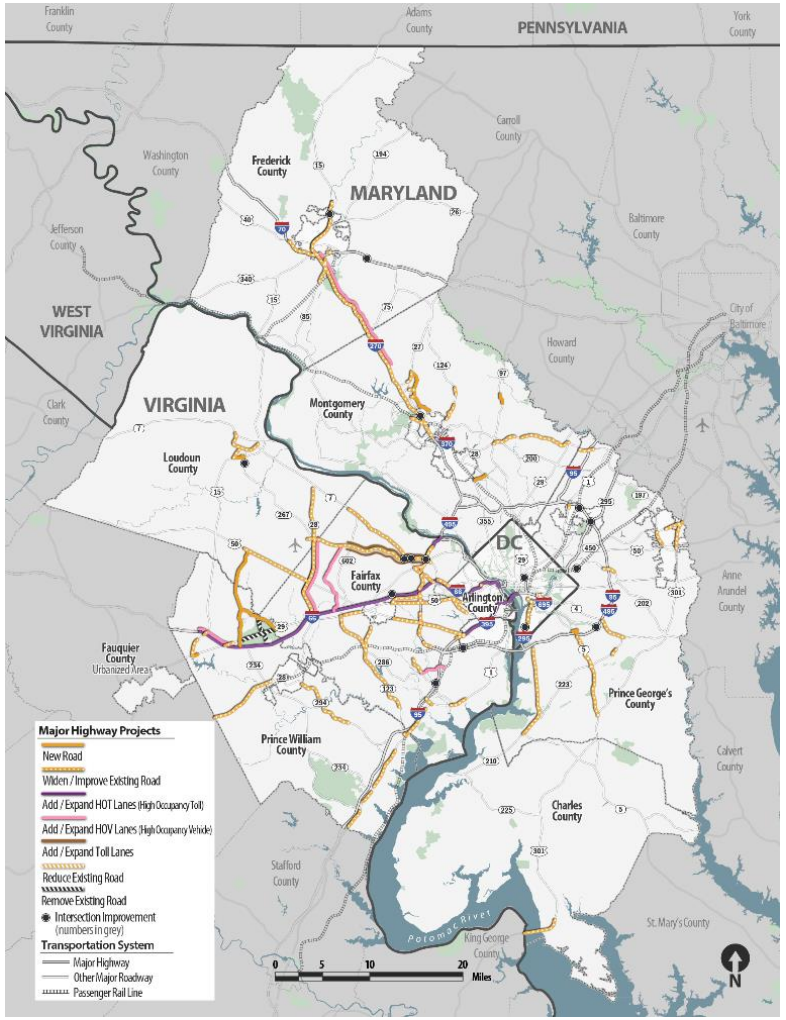


Congestion Relief – Roadway Projects

System	Existing (lane miles)	CLRP (additional lane miles)
Freeways / Expressways	3,572 mi	+467 mi
Arterials	13,362mi	+715 mi
TOTAL	16,934 mi	+1,182 mi

System	Existing (lane miles)	CLRP (additional lane miles)
Tolled Lane Miles	394 mi	+213 mi

18% of new lane miles would be tolled under the CLRP in 2040



Road projects: Some highlighted examples

New Road Capacity

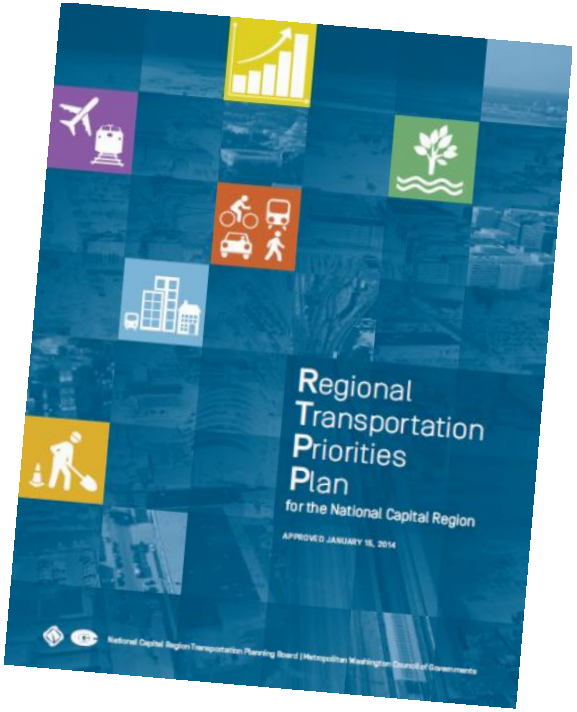
- South Capital Bridge Reconstruction
- I-270/US-15 Corridor HOV
- I-66 Express Lanes – Inside and Outside the Beltway
- I-395 Express Lanes – Inside the Beltway
- Fairfax County Parkway HOV

Jumpy, Wikimedia Commons

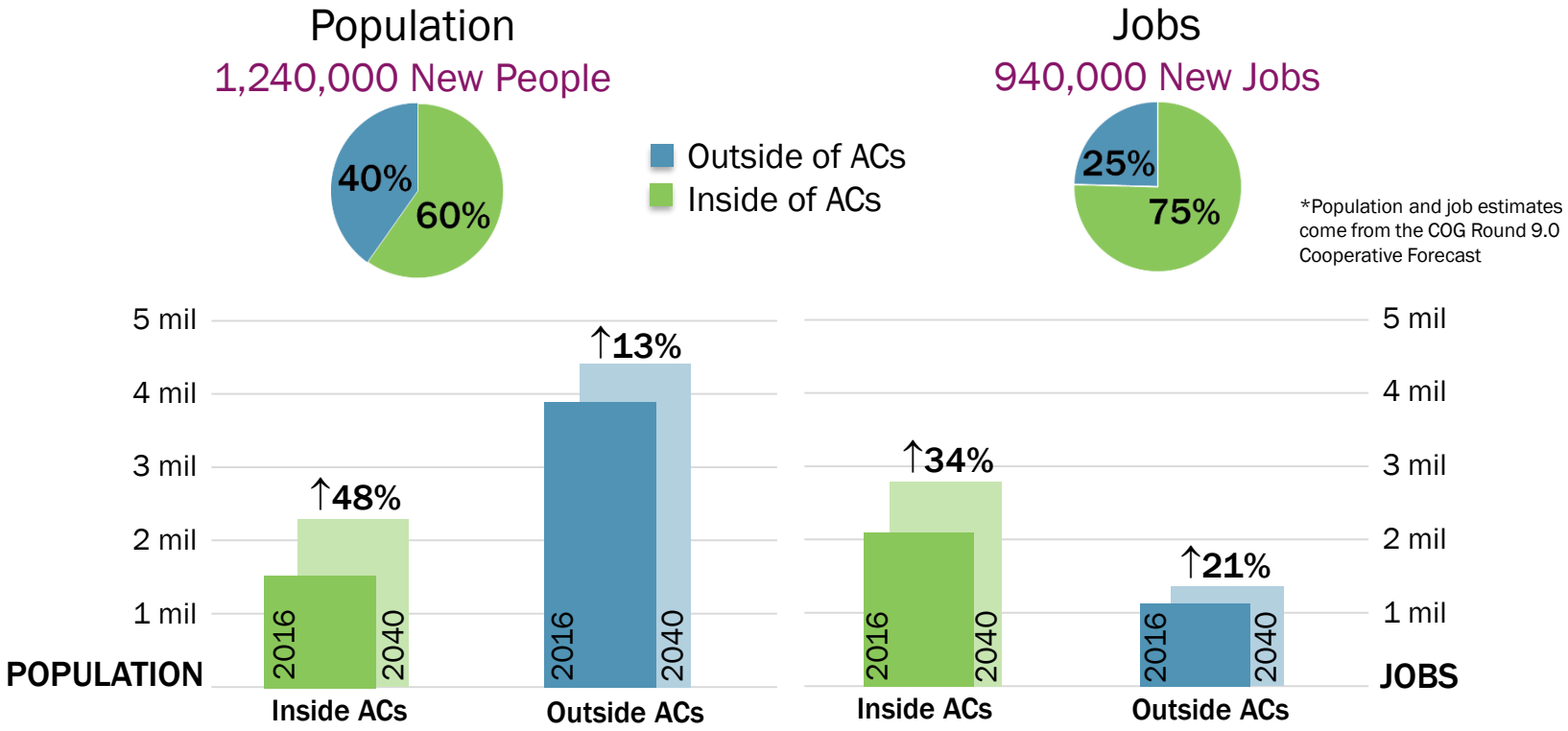
RTPP: Activity Centers

The Regional Transportation Priorities Plan focused attention on:

- Concentrated growth in Activity Centers
- Enhanced circulation within Activity Centers
- Improved multi-modal connections between Activity Centers



Most population and job growth in Activity Centers



- The majority of new jobs and population are forecast to be in Regional Activity Centers.
- The population is forecast to increase at a faster rate inside Activity Centers (48%) compared to the overall rate of growth (23%) over the next 25 years.

Analysis

Transit Accessibility and Connectivity

People's Travel Mode Choice
- Regionally
- Sub-regionally

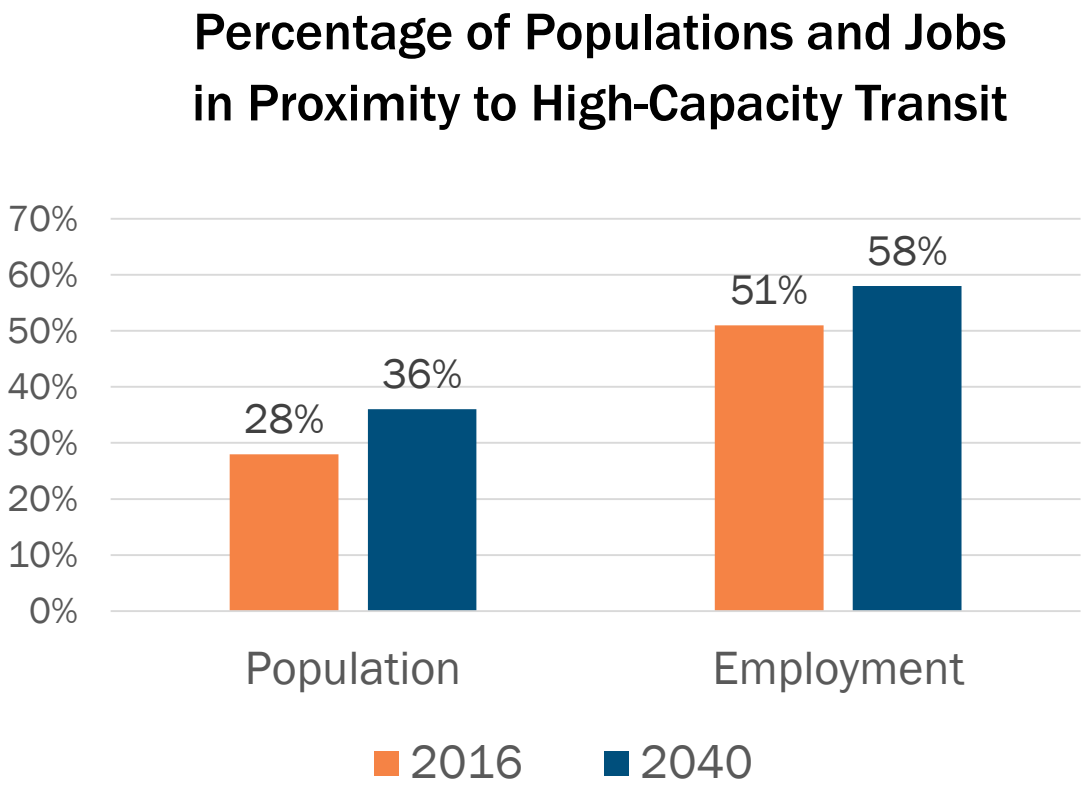
Roadway Congestion

Access to Jobs

Motor Vehicle Emissions

How will transit accessibility and connectivity change?

More jobs and households close to high-capacity transit

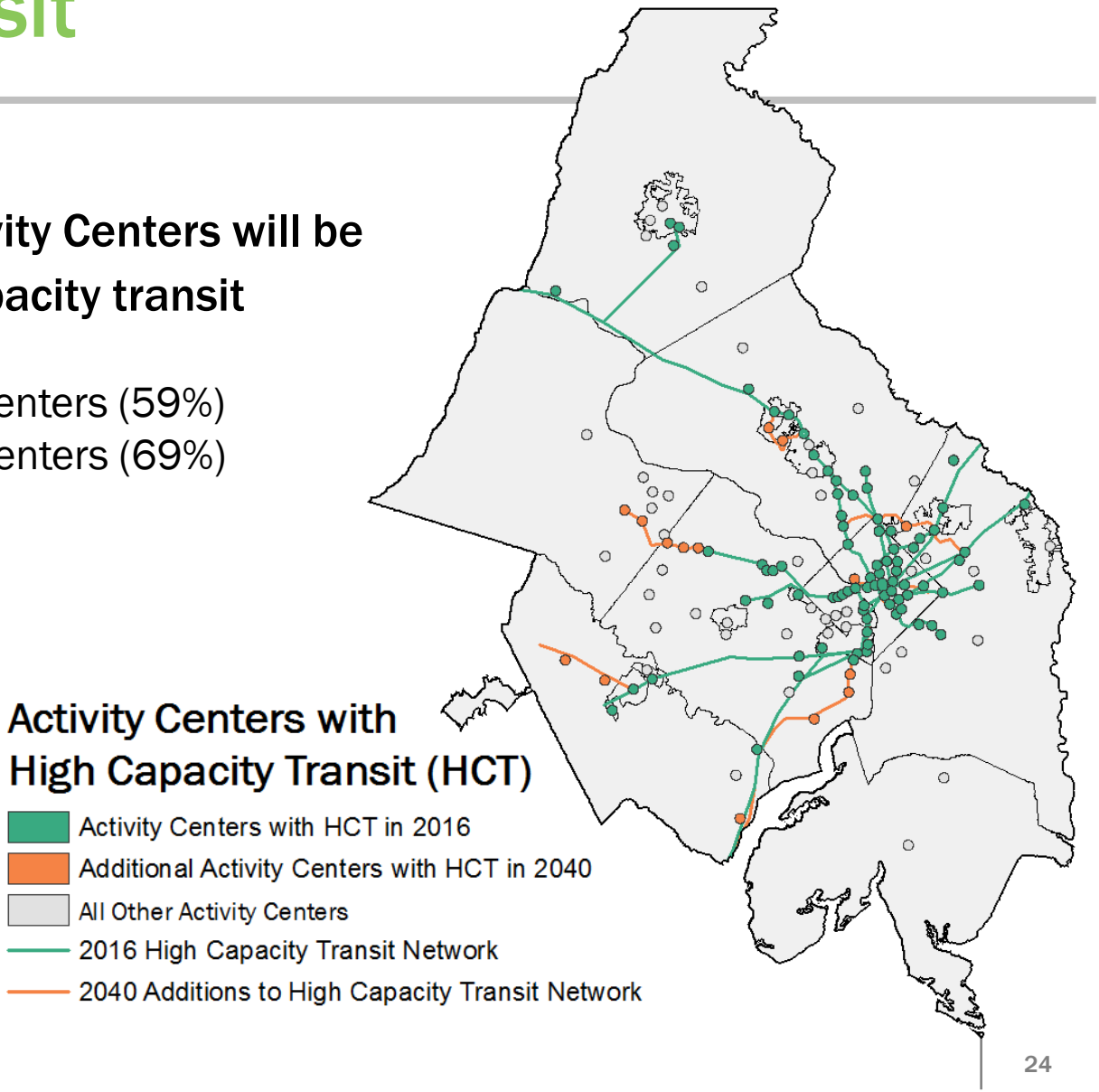


- "Proximity" defined as within one mile of rail or within a ½ mile of BRT
- "High-capacity transit" defined to include Metrorail, commuter rail, streetcar, light rail or bus rapid transit.

More Activity Centers connected to high-capacity transit

In 2040, 15 new Activity Centers will be connected to high-capacity transit

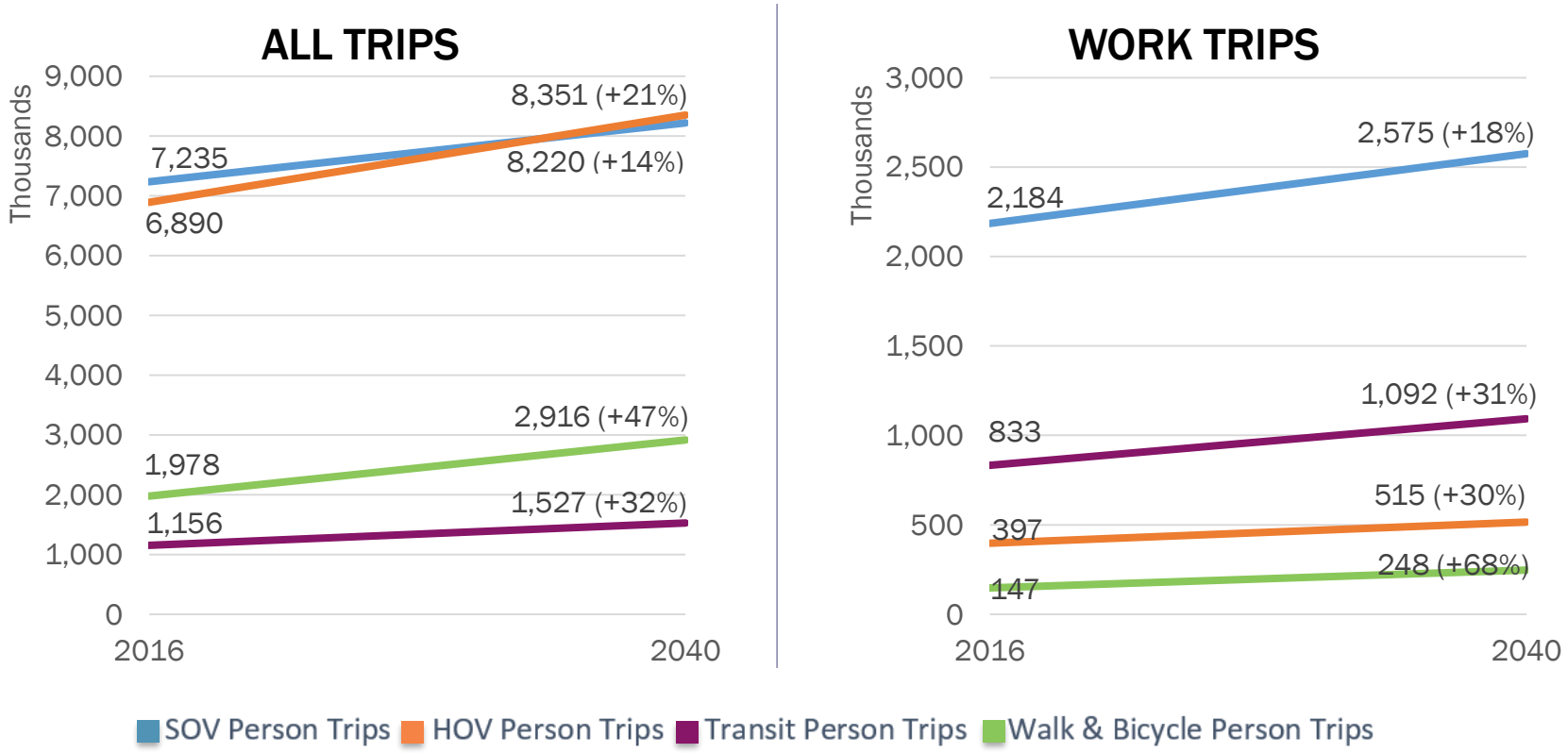
2016: 82 Activity Centers (59%)
2040: 97 Activity Centers (69%)



How will people's travel choices change?

Growth in other modes will outpace single-driver trips

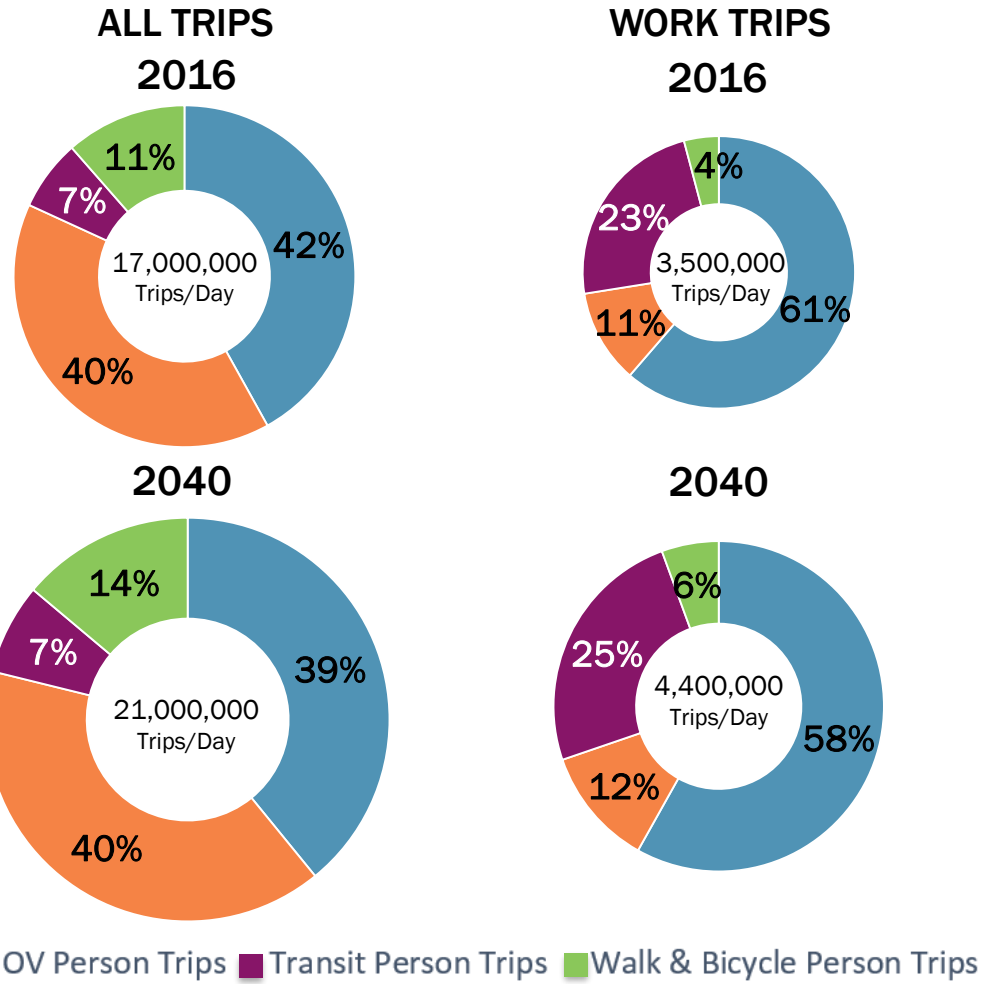
Growth in carpooling, transit, walking, and bicycling is expected to out pace growth in single occupancy driver trips, for all trips and work trips alike.



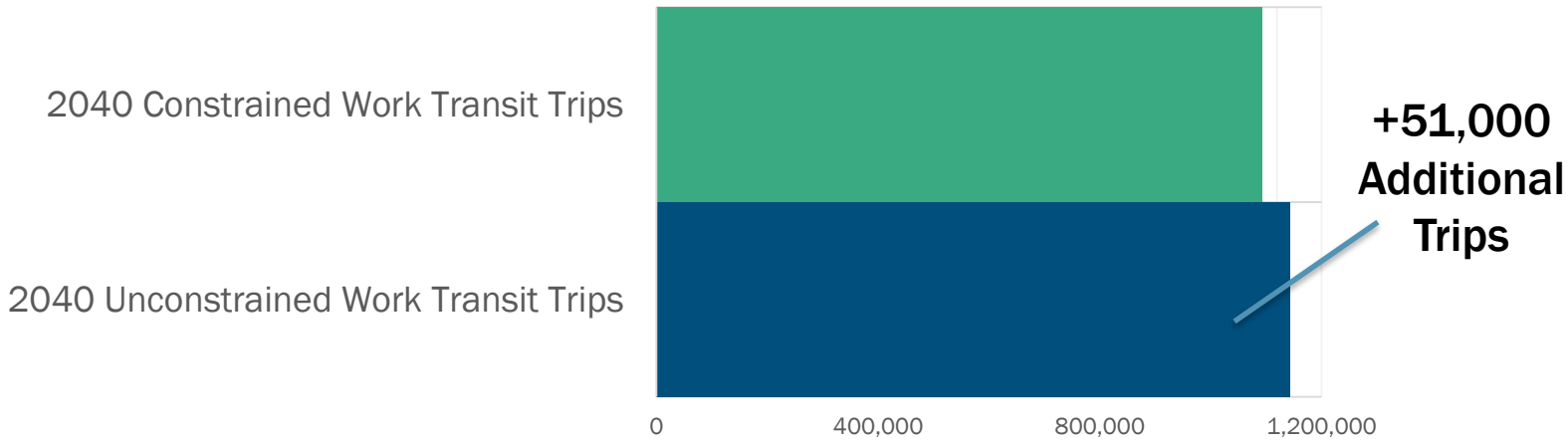
Driving will continue to be the dominant mode

- For all trips, the share of single driver trips is expected to decline while walking and bicycling trips increase.
- For work trips, the share of single driver trips is expected to decline and the share of carpooling, transit, walking, and bicycling trips will increase.

In 2016 and 2040 work trips account for 21% of all trips taken. Work trips take up a larger share of total vehicle miles traveled: 40% in 2016 and 41% in 2040.
(Note: For the purposes of these calculations VMT is for residents of TPB Planning Area only).

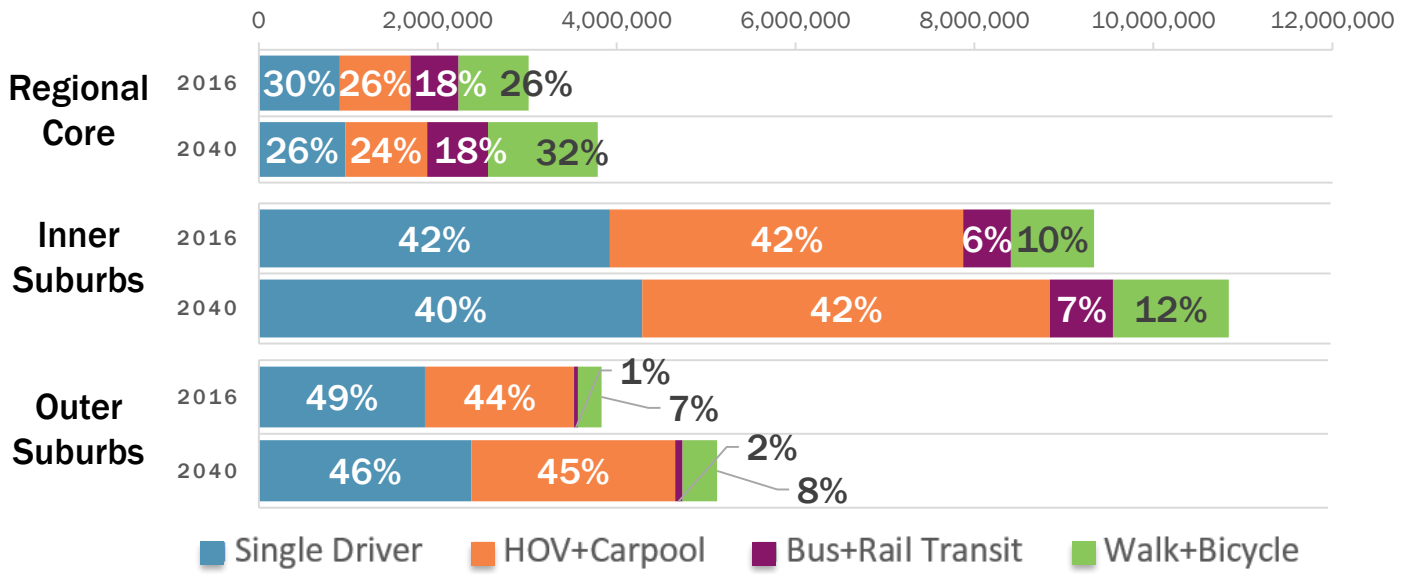


Mode Choice: Metrorail Constraint



- In the travel demand model used to analyze future trends under the 2016 CLRP, Metrorail work trips through the core of the region were capped to 2020 levels.
- If the Metrorail constraint is removed, 51,000 of the automobile work trips could be taken on transit, which would increase transit mode share by 1.2% in 2040.

All Trips: Geographic Differences



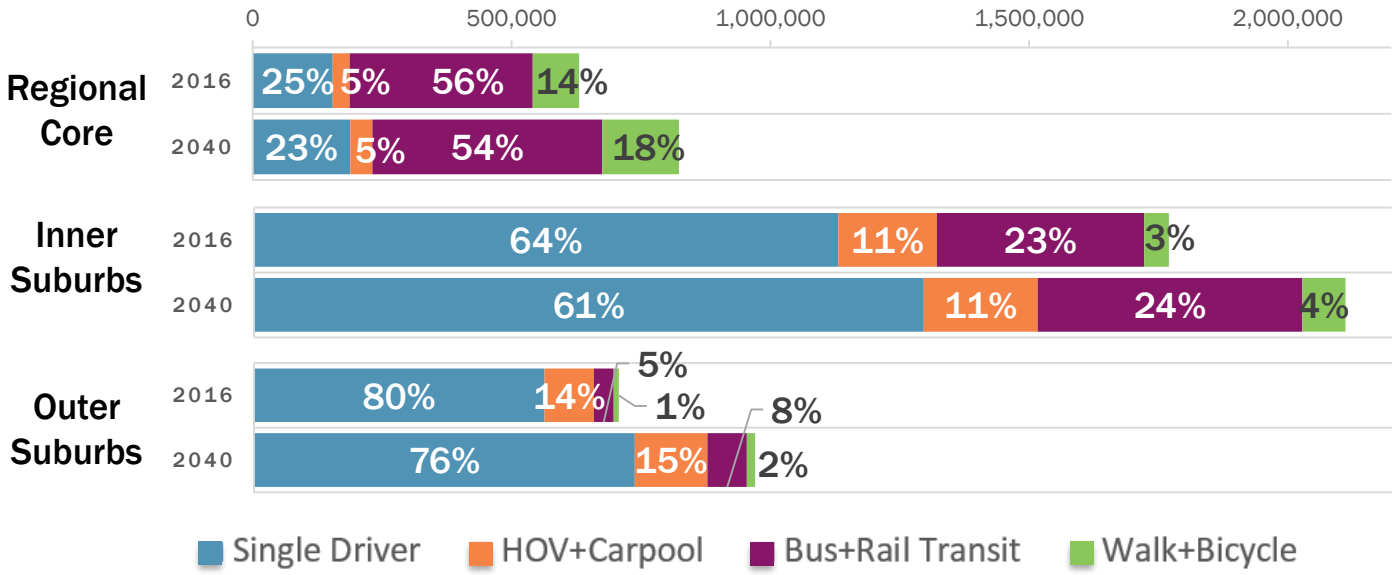
Regional Core:
District of Columbia
Arlington Co.
Alexandria

Inner Suburbs:
Montgomery Co.
Prince George's Co.
Fairfax Co.
Fairfax City
Falls Church

Outer Suburbs:
Charles Co.
Frederick Co.
Prince William Co.
Loudoun Co.
Manassas
Manassas Park
Fauquier Co. *(Urbanized Area)*

- The majority of all trips in the region will continue to be generated in the region's populous Inner Suburbs.
- Throughout all areas of the region, the share of single occupancy vehicle commute trips is expected to decline and the share of walking and bicycling trips is expected to increase.
- While the percentage of daily transit trips is forecast to double by 2040, this mode will still account for the smallest number of trips in the outer suburbs.

Work Trips: Geographic Differences



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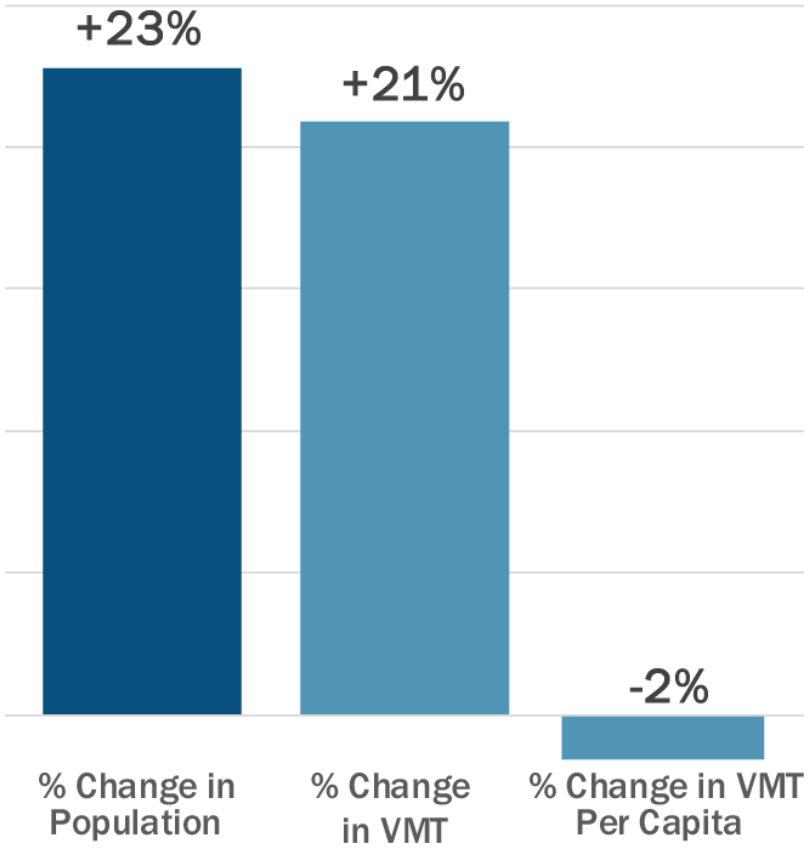
Fauquier Co. *(Urbanized Area)*

- Throughout all areas of the region, the share of single occupancy vehicle commute trips is expected to decline between now and 2040.
- For commuters living in the Regional Core, walking and biking are forecast to become more popular.
- The greatest number of trips will continue to be made by those living in the region's populous Inner Suburbs.
- In the Outer Suburbs, carpool and transit trips will increase due to the presence of new facilities and services.

Average driving per person decreases



Travel Demand: Vehicle Miles Travelled (2016-2040)

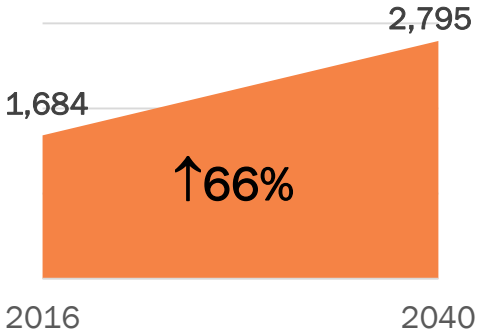
- The total amount of driving in the region, measured in vehicle-miles travel (VMT), is expected to grow over the next 24 years, but at a slightly lower rate than population. This means that the average amount of driving per person will be less in 2040 than it is today.
- Though the drop in VMT per capita is slight, it is noteworthy because it signals the reversal of a decades-long trend of ever-increasing per-capita driving in this region.

How will roadway congestion change?

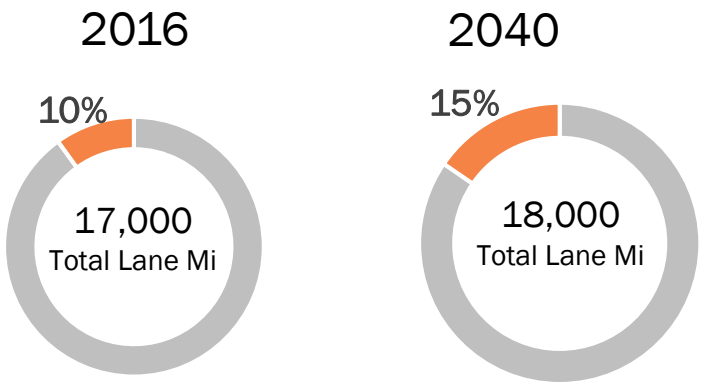
System-wide congestion increases

More lane miles will be congested in 2040 during the AM peak compared to today, and the share of congested lane miles will also increase.

Congested Lane Miles in the Region (AM Peak)



Share of Lane Miles Congested (AM Peak)

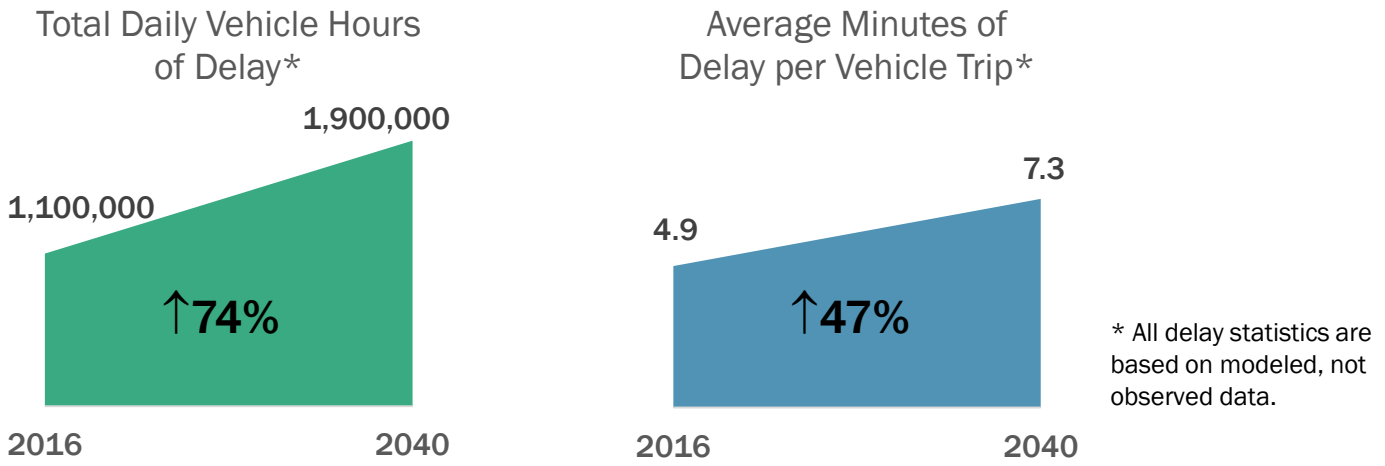


* Lane mile measure includes all facilities except local roads.
* Roads are congested if Volume/Capacity>1.00

- The number and share of lane-miles that are congested during peak periods is expected to increase substantially between now and 2040.
- Congested lanes will continue to make up a small, but growing, portion of the region's roadways.

Time wasted in traffic also increases

Total daily vehicle hours of delay (VHD) will grow, and more trips will experience higher delays.



* All delay statistics are based on modeled, not observed data.

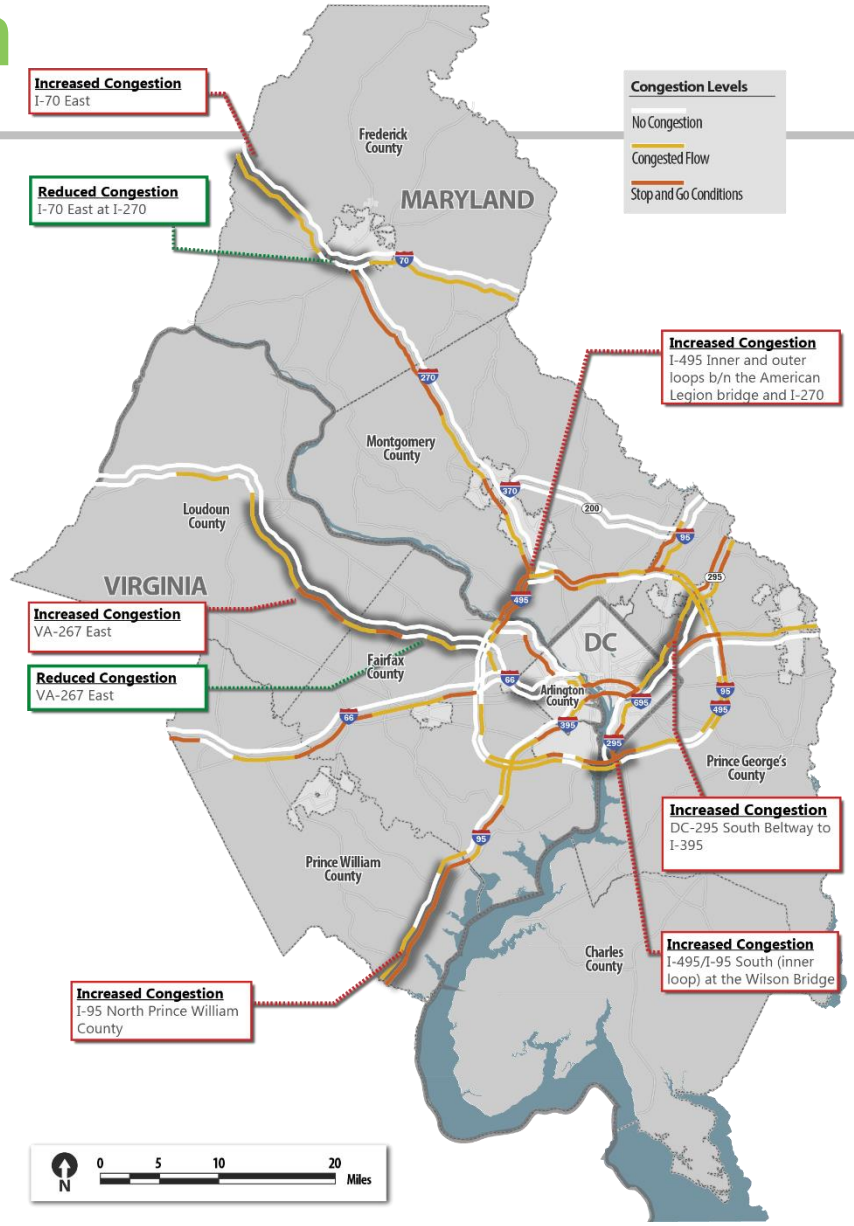
- The total vehicle hours of delay will grow significantly by 74%.
- More people will experience a higher delay in 2040 compared to today, as the average delay per trip increases from 4.9 to 7.3 minutes. This is an increase of 47%, which reflects the increased congestion and increased number of overall trips.

Roadway Congestion

2040 Major Highway Congestion (AM Peak)

Though congestion on many segments of the region's major highway system is expected to get worse over this period of time, some segments of highway will see slight relief in congestion thanks to capacity expansions or changes in travel behavior. Major highways seeing improvements in congestion include portions of I-66 East, I-70 East, and VA-267 East.

Analysis of non-HOT facilities only.

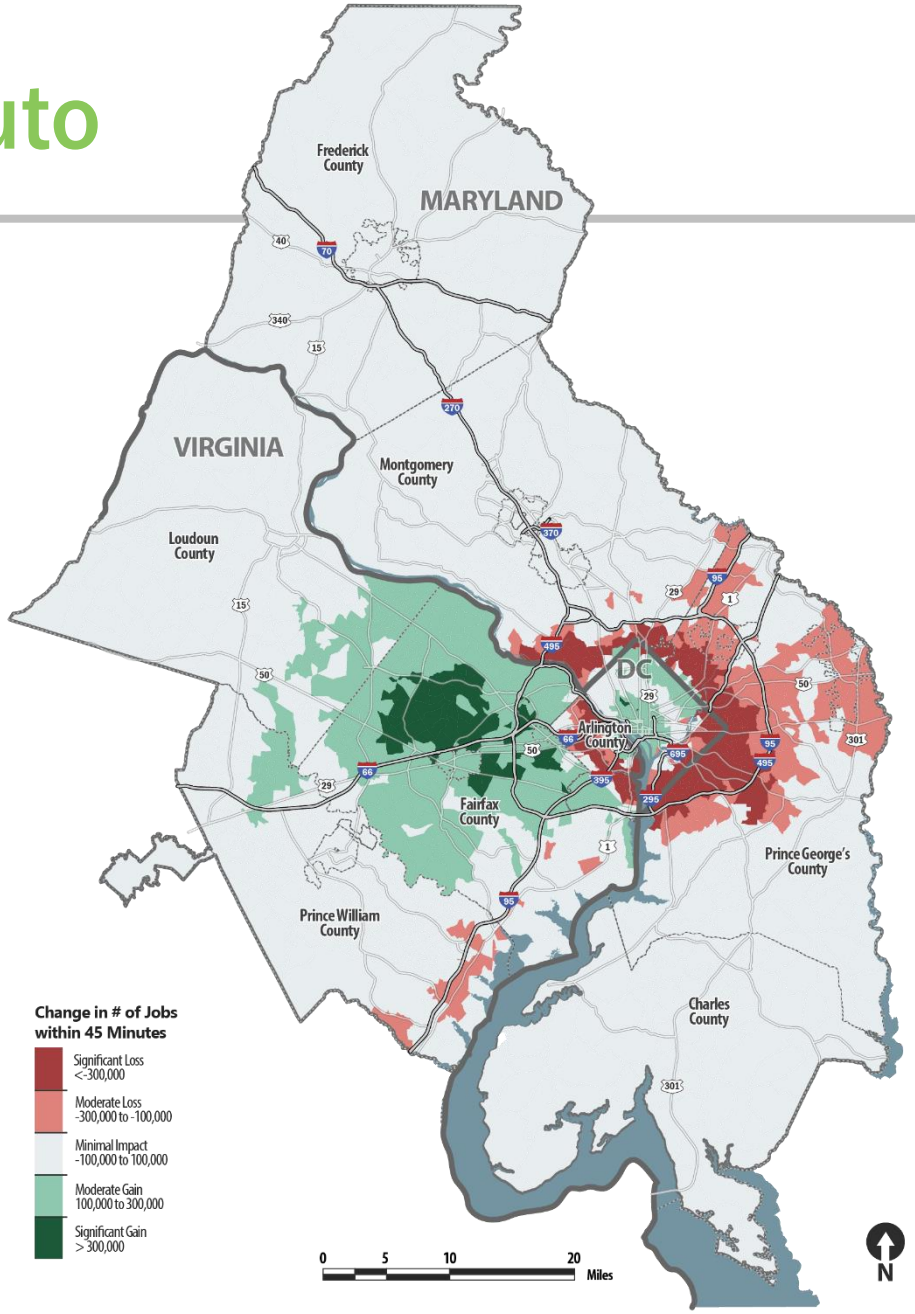


How will access to jobs change?

Access to Jobs by Auto

Change in Access to Jobs by Automobile (2016-2040)

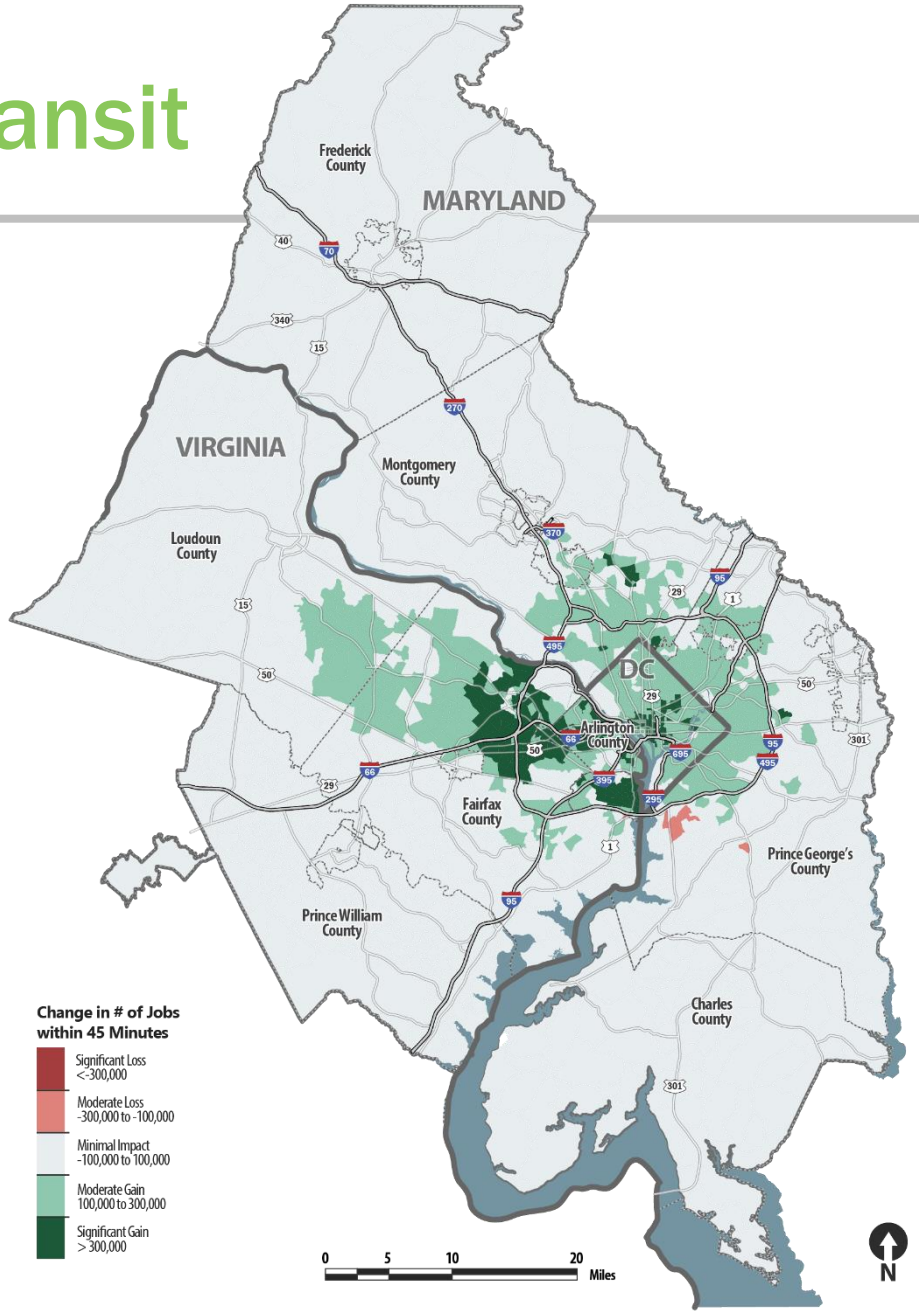
- Many areas, mainly on the eastern side of the region and the inner suburbs, will see declines in accessibility within a 45 minute commute.
- These declines are the result of two important factors:
    1. Anticipated increases in roadway congestion, which make it more difficult to reach other parts of the region by car within 45 minutes.
    2. More of the new jobs anticipated between now and 2040 are forecast to be located on the western side of the region, more than 45 minutes from those living on the eastern side.



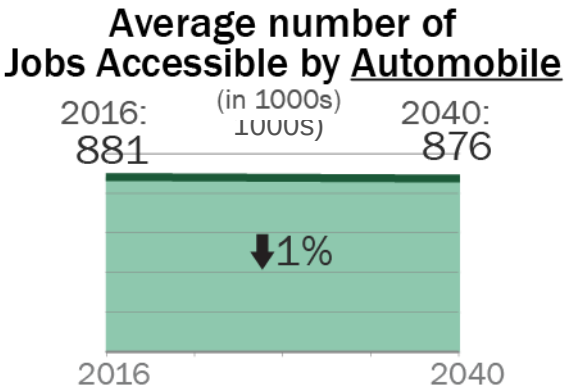
Access to Jobs by Transit

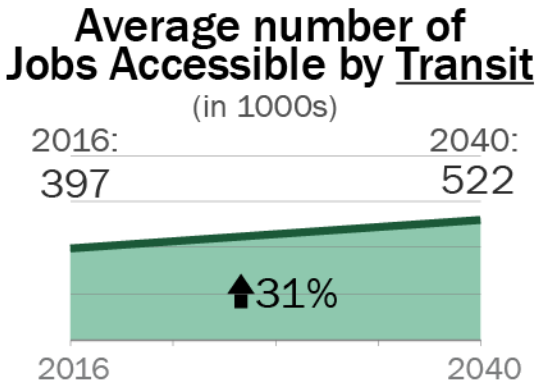
Change in Access to Jobs by Transit (2016-2040)

- Most places with access to transit, will experience increases in the number of jobs that are accessible within a 45 minute commute.
- However, in 2040 transit will still not be a viable commute options for many people in the region due to lack of access to transit facilities and potentially long travel times.



Access to Jobs: Transit access increases; Auto access slightly decreases



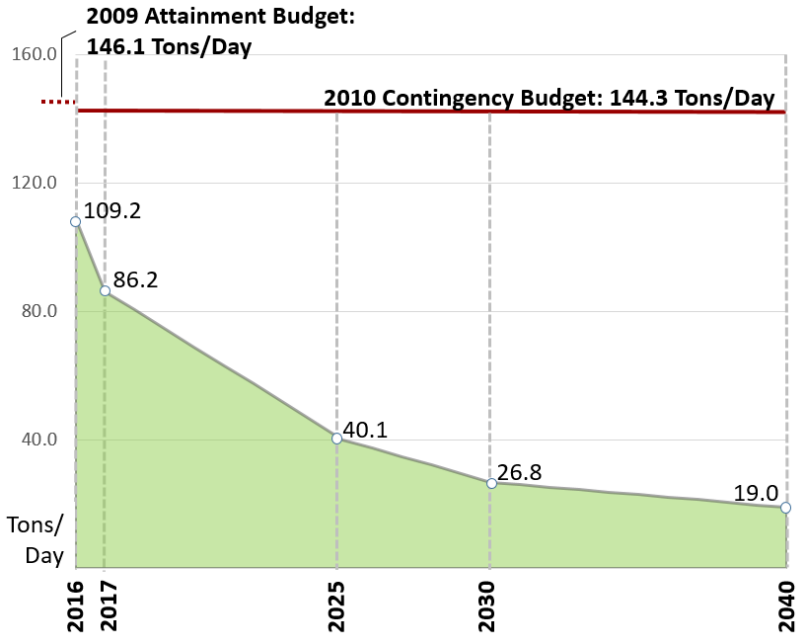


- The average number of jobs accessible by auto will decrease.
- The average number of jobs accessible by transit will increase by 31 percent.
- The total number of jobs that are accessible by transit, however, will remain less than those accessible by automobile, because transit will continue to not reach all parts of the region.

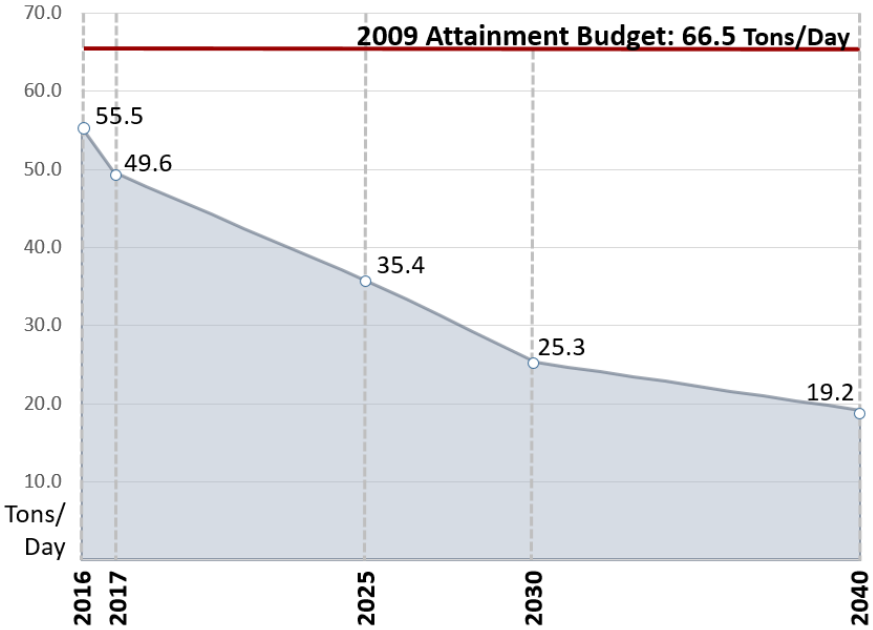
How will the CLRP affect emissions?

Mobile Source Emissions

Precursor Nitrogen Oxide (NOx) Emissions



Volatile Organic Compounds (VOC) Emissions

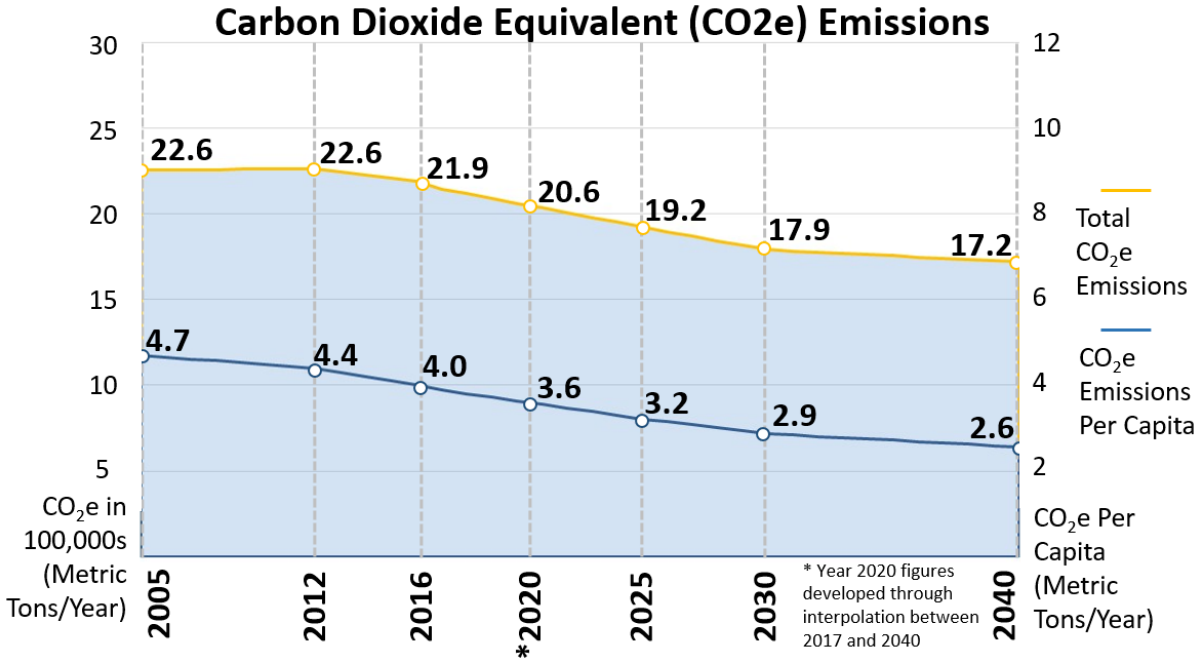


Emissions of all criteria pollutants are expected to drop steadily between now and 2040.

- Emissions reductions are expected due to tougher federal fuel and vehicle efficiency standards.
- Changes in development patterns, investments in transit and other travel options, and improved operational efficiency of area roadways will also contribute to reductions in vehicle related emissions.

Mobile Source Greenhouse Gas Emissions

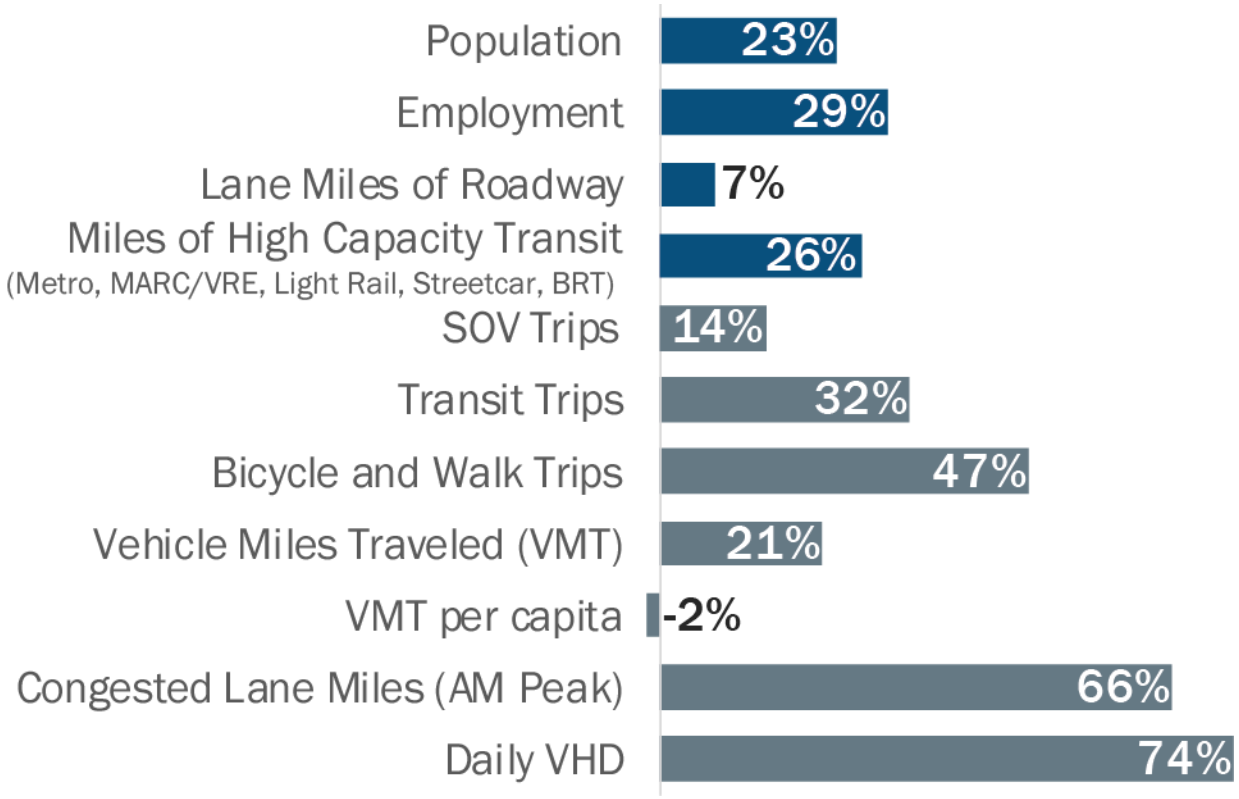
Total and per capita CO_2e emissions are forecast to drop 24% and 45%, respectively, by 2040



- A significant amount of the greenhouse gas reductions are due to new tougher federal fuel efficiency standards. In addition changes in development patterns and investments in transit and other travel options will contribute to reductions.
- Currently no federal standards exist for greenhouse gas emissions. These emissions are not a required part of the transportation Air Quality Conformity Analysis.

Findings

2016 Performance Analysis Summary



- There will be 23% more residents and 29% more jobs in 2040. To accommodate growth, 7% more lane miles of roadway and 18% more transit rail miles are planned.
- Total trips is expected to increase by 22%, while transit, walk, and bike trips are expected to increase at a faster rate than single driver trips.
- The overall amount of driving (VMT) is expected to grow by 21%. This is slightly less than forecast population growth, which means that VMT per capita is expected to drop by 2%.
- The increase in demand on the roadways is forecast to out-pace the increase in supply, leading to a significant increase in congestion.

Findings: Impacts of the CLRP

Looking at relevant RTPP strategies:

Maintenance

- The region's commitment to maintenance is solid

Transit Improvements

- Transit would be more widely available
  - 26% increase in new miles of high-capacity transit
- Transit would be much more extensively used
  - Transit ridership will increase by 32%
- Job accessibility by transit will increase
  - Regionwide the average number of jobs accessible by transit will increase 31%
- The mode share for single driver trips will be reduced
  - SOV mode share (all trips) will decrease from 42% to 39%
- Additional capacity on the existing system:
  - Funded for commuter rail, but not for Metro 2025 projects

Findings: Impacts of the CLRP (continued)

Looking at relevant RTPP strategies:

Targeted Congestion Relief

- Congestion and delay will increase
  - Congested lane miles increase 66%
  - Vehicle hours of delay will increase 74%
- Toll lanes will provide alternatives to congested roads
  - Toll roads will increase by 213 miles (18% of all new lane miles will be tolled)

Activity Centers

- Most new growth will be in Activity Centers
  - 3 out of 4 new jobs will be in Activity Centers
- Most Activity Centers will have multimodal connections
  - 69% of Activity Centers will be connected by high-capacity transit

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