2015 AMENDMENT | CLRP

Financially Constrained Long Range Transportation Plan
for the National Capital Region

PERFORMANCE ANALYSIS

of The Draft 2015 CLRP

Presentation to the Travel Forecasting Subcommittee
September 28, 2015

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National Capital Region
Transportation Planning Board

What is the Long-Range Transportation Plan (CLRP)?

The CLRP identifies regionally significant transportation projects and programs that are planned between now and 2040

- Over 500 Projects are included from simple highway landscaping projects to billion-dollar highway and transit projects (includes 7% more lane miles of roadway, and 14% more miles of transit rail)
- 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

Some specific projects in the CLRP include:

- Metro's Silver Line - Phase II (in VA)
- The Purple Line and the Corridor Cities Transitway (in MD)
- The H. St. / Benning Rd. Streetcar (in DC)
- Approx. 1,200 new lane-miles of roadway including Express Toll lanes on I-95 in VA
- 20 stand-alone improved major highway interchanges

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

What is in the 2015 Amendment to the CLRP?

Changes in the 2015 Amendment include:

- A package of 10 lane reduction projects for bicycle lanes in DC
- US 1 BRT from Huntington Metro to Woodbridge in VA
- Express Toll lanes and bus service on I-66 inside I-495 in VA
- Express Toll lanes and bus service on I-66 outside of I-495 to US 15 in VA

  **VDOT submitted 2 alternatives (Alternative A and B) for the I-66 HOT lanes projects outside of the beltway. The performance analysis only includes Alternative B.*
- *Removal of the DC Streetcar: Minnesota Ave. Spur in DC*
- *Removal of the Columbia Pike Streetcar project in VA*
- *Removal of the Crystal City Streetcar project in VA*

Key Technical Inputs to the 2015 CLRP Performance Analysis:

- Round 8.4 Cooperative Forecasts
- "Regionally Significant" Transportation Projects
- Version 2.3.57 of the Travel Demand Model
- 2014 Vehicle Registration Data (VIN)
- EPA's MOVES2014 Mobile Emissions Model (With Tier 3 and updated CAFE)

Performance Analysis Topics

- Population and Job Growth
- Mode Choice and Travel Demand
- Roadway Congestion
- Transit Congestion (Metrorail)
- Job Accessibility
- Air Quality and Greenhouse Gas Emissions
- Regional Transportation Priorities Assessment

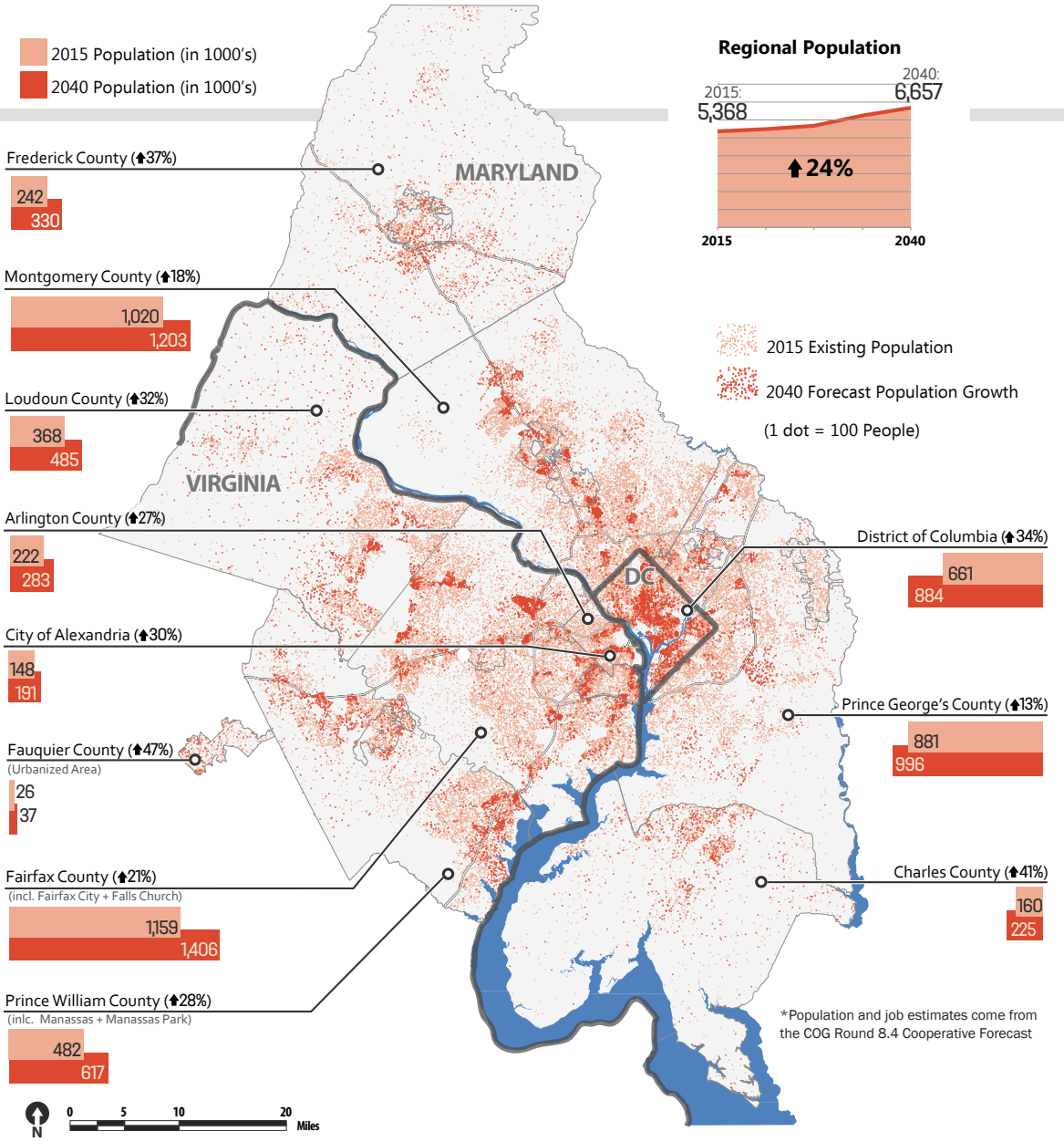
Population Growth

- By 2040, the region is expected to grow by 24% to over 6.6 million people, an increase of 1.3 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.

Regional Core:
District of Columbia
Arlington Co.
Alexandria

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

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



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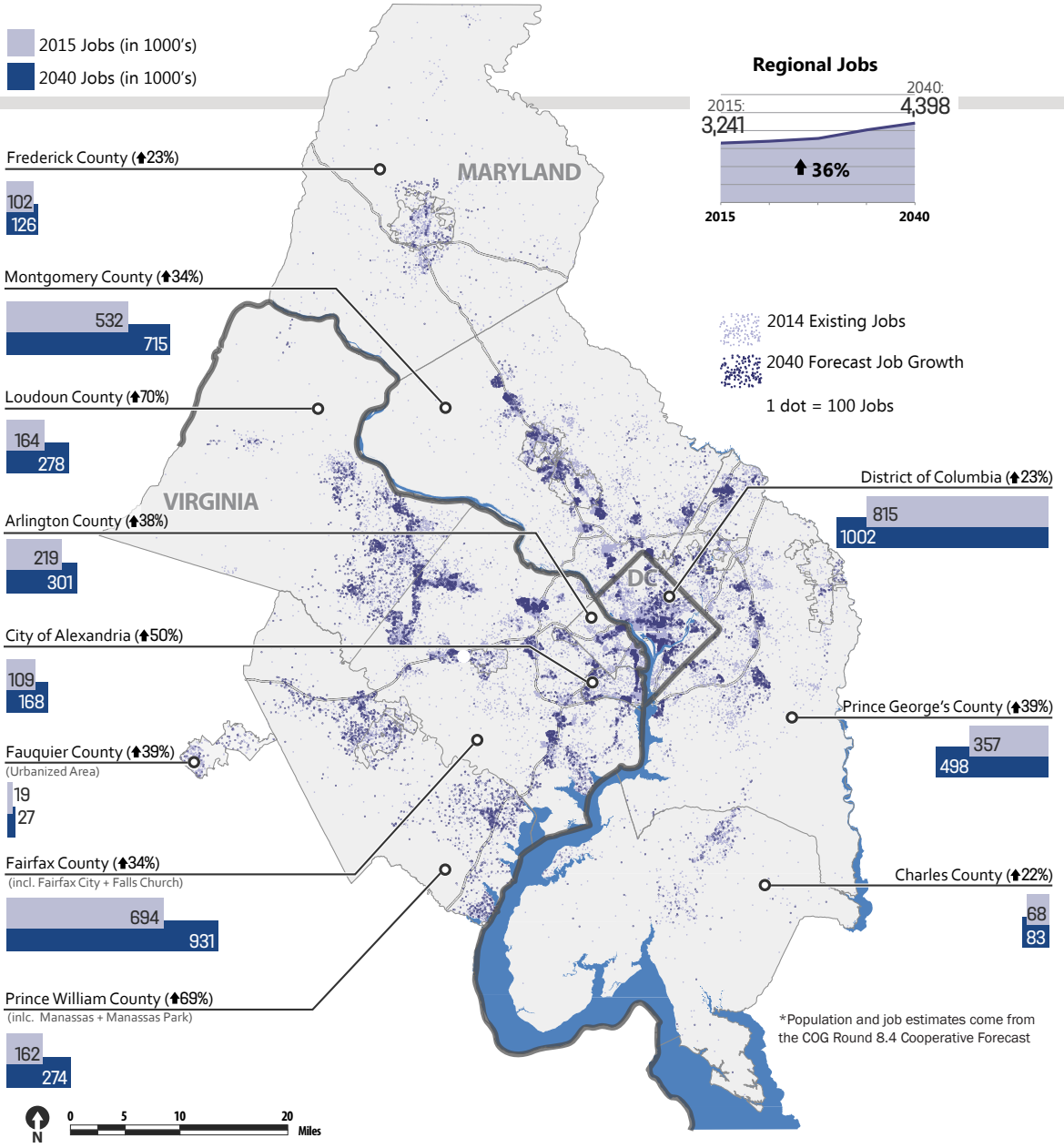
Job Growth

- By 2040, the regional jobs are expected to grow by 36% to over 4.3 million jobs. This is an increase of 1.1 million 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.



Regional Core:
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Fauquier Co.
(Urbanized Area)

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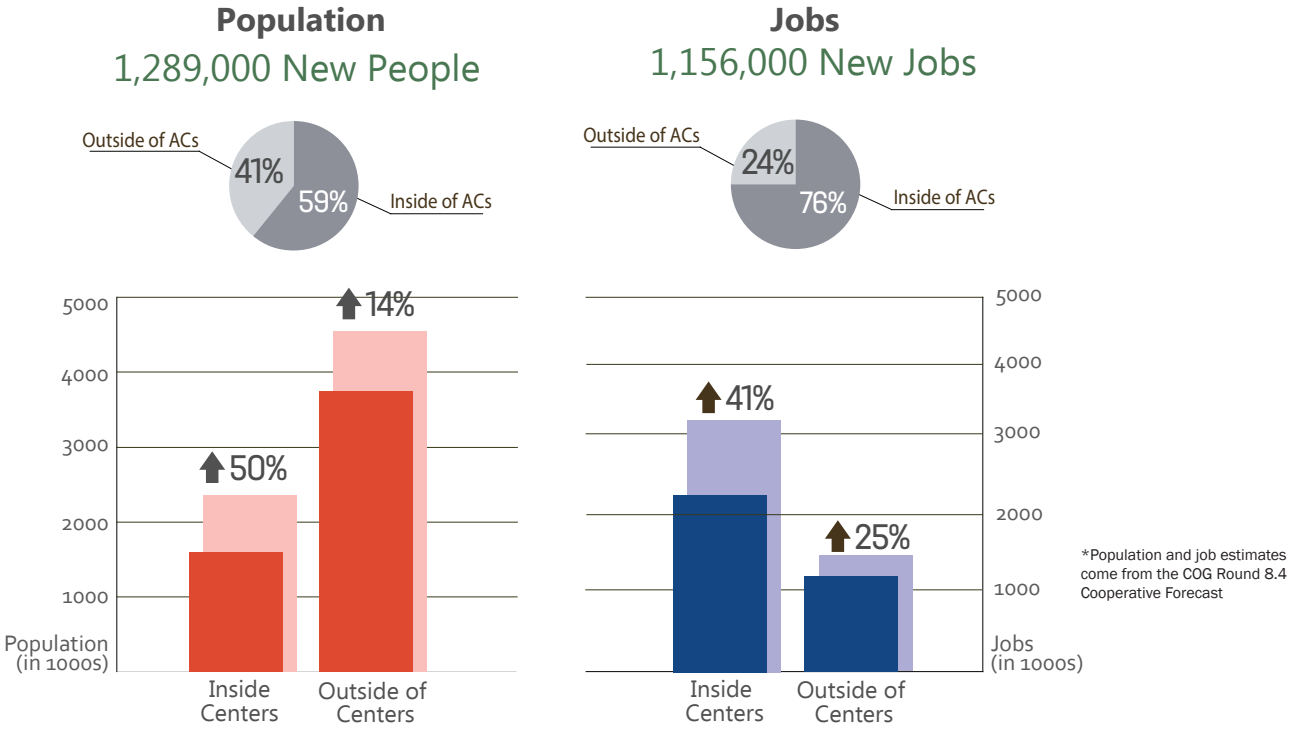
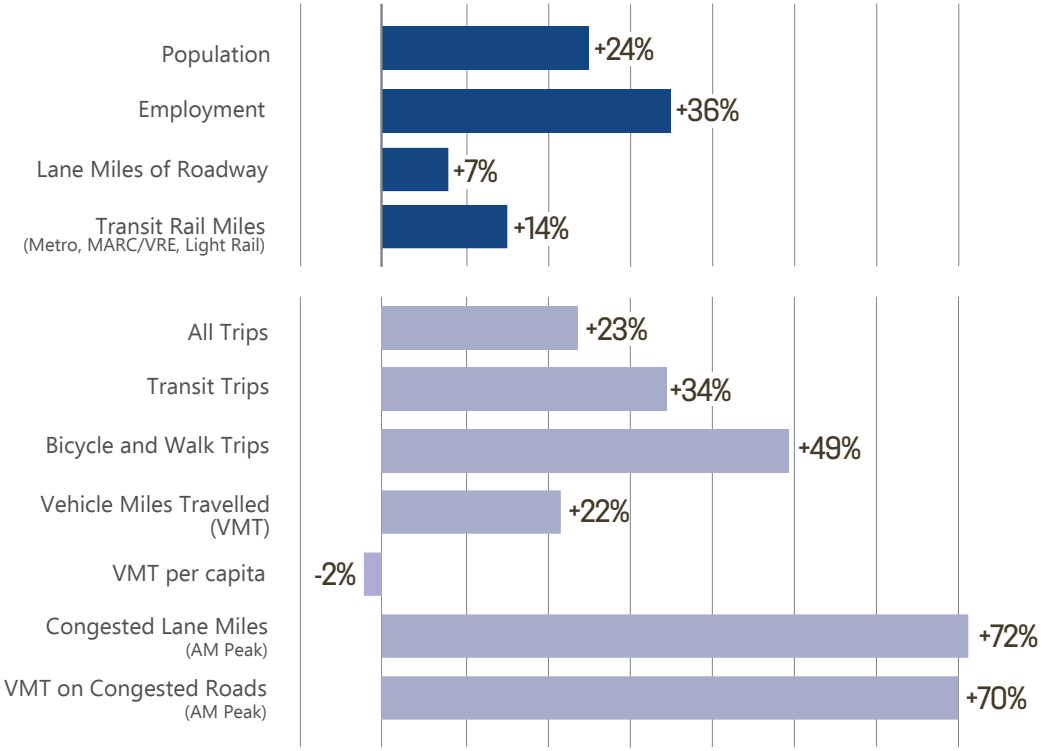
Population and Job Growth in Activity Centers



- The majority of new jobs and population are forecast to be in Regional Activity Centers.
- Though the majority of the regional population will remain outside of Activity Centers in 2040, population is forecast to increase at a faster rate inside Activity Centers over the next 25 years.
- The majority of jobs today are located in Activity Centers, and this trend will continue in the future.

2015 Performance Analysis Summary

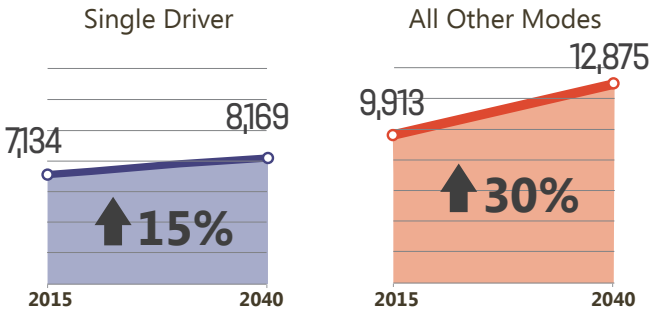


- The region is forecast to be home to 24% more residents and 36% more jobs in 2040. To accommodate growth, 7% more lane miles of roadway and 14% more transit rail miles are planned to be constructed.
- The total number of trips taken is expected to increase by 23%, while transit, walk, and bike trips together are expected to increase at a faster rate than single driver trips.
- The overall amount of driving (VMT) is expected to grow by 22%. 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.

Mode Choice: Growth in Trips by Mode (2015-2040)

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.

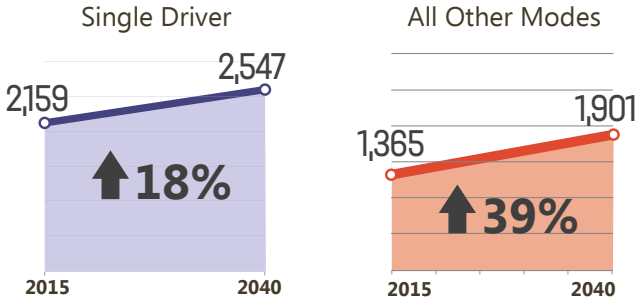
ALL TRIPS
(trips in 1000s)



New Trips - All Purposes

946,000 more trips	Walk+Bicycle	+49% From 2015
396,000 more trips	Transit	+34% From 2015
1,620,000 more trips	HOV+Carpool	+24% From 2015
1,035,000 more trips	Single Driver	+15% From 2015

WORK TRIPS
(trips in 1000s)



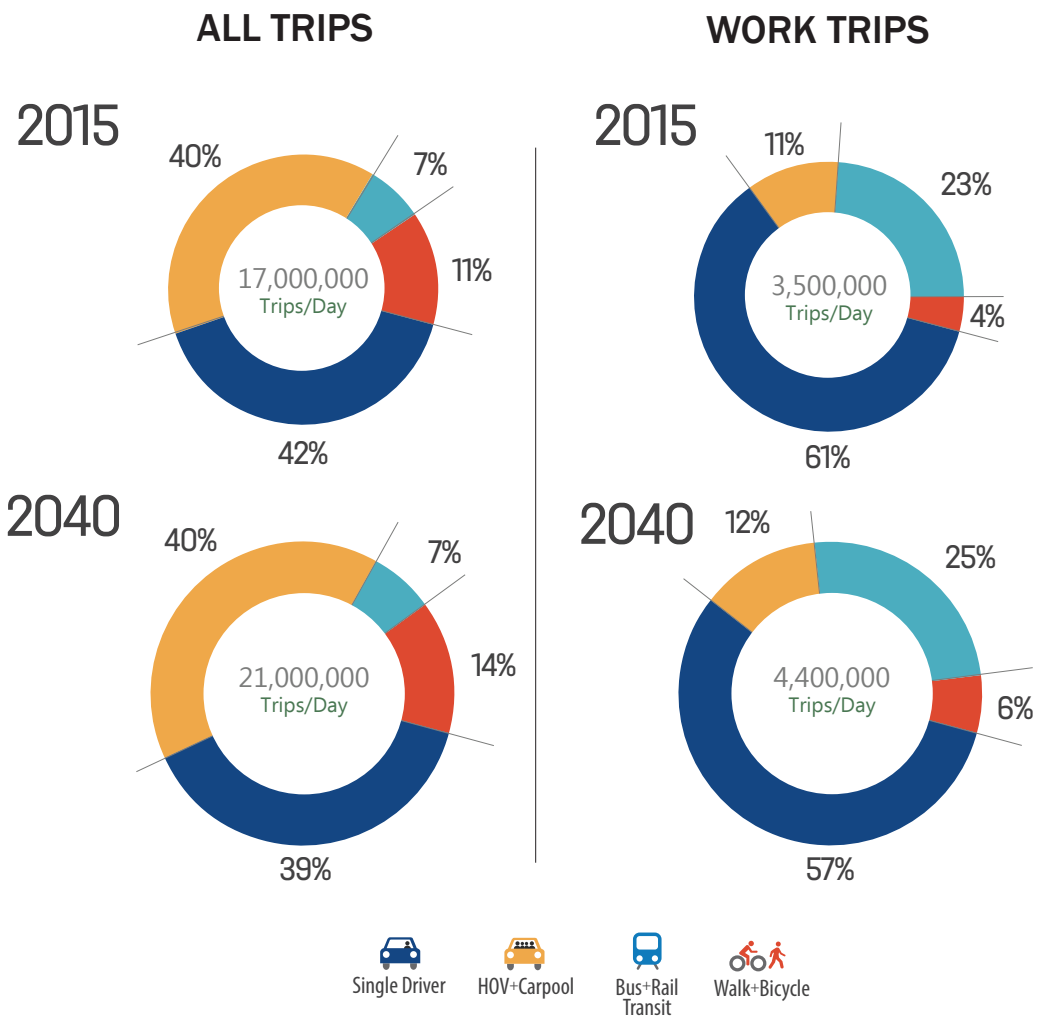
New Trips - Work

104,000 more trips	Walk+Bicycle	+72% From 2015
274,000 more trips	Transit	+33% From 2015
159,000 more trips	HOV+Carpool	+40% From 2015
389,000 more trips	Single Driver	+18% From 2015

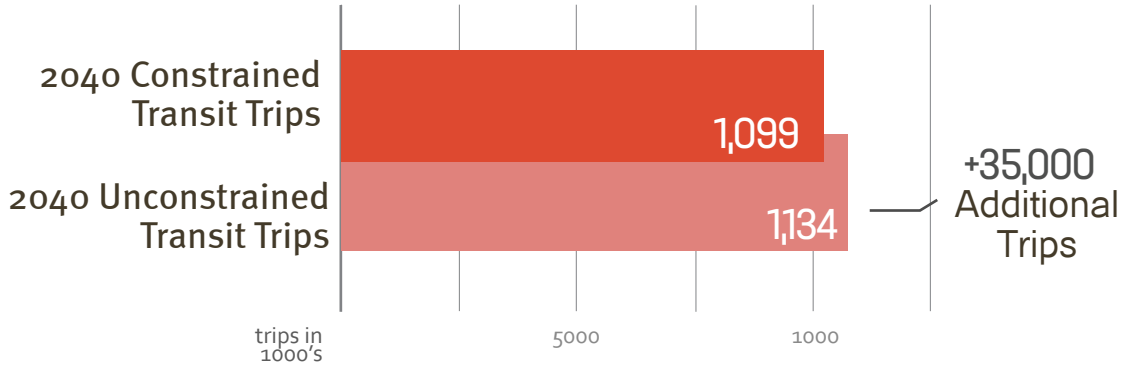
Mode Choice: Share of Trips by Mode (2015-2040)

- Despite faster growth in carpooling, transit, walking, and bicycling trips, the relative shares of all trips that each mode makes up aren't expected to change much by 2040.
- For all trips, the share of single driver trips is expected to decline in favor of walking and bicycling trips.
- For work trips, the share of single driver trips is expected to decline in favor of increases in the share of carpooling, transit, walking, and bicycling trips.

Work trips account for 22% of all trips taken but 40% of all vehicle miles traveled, and this trend is expected to continue through 2040.



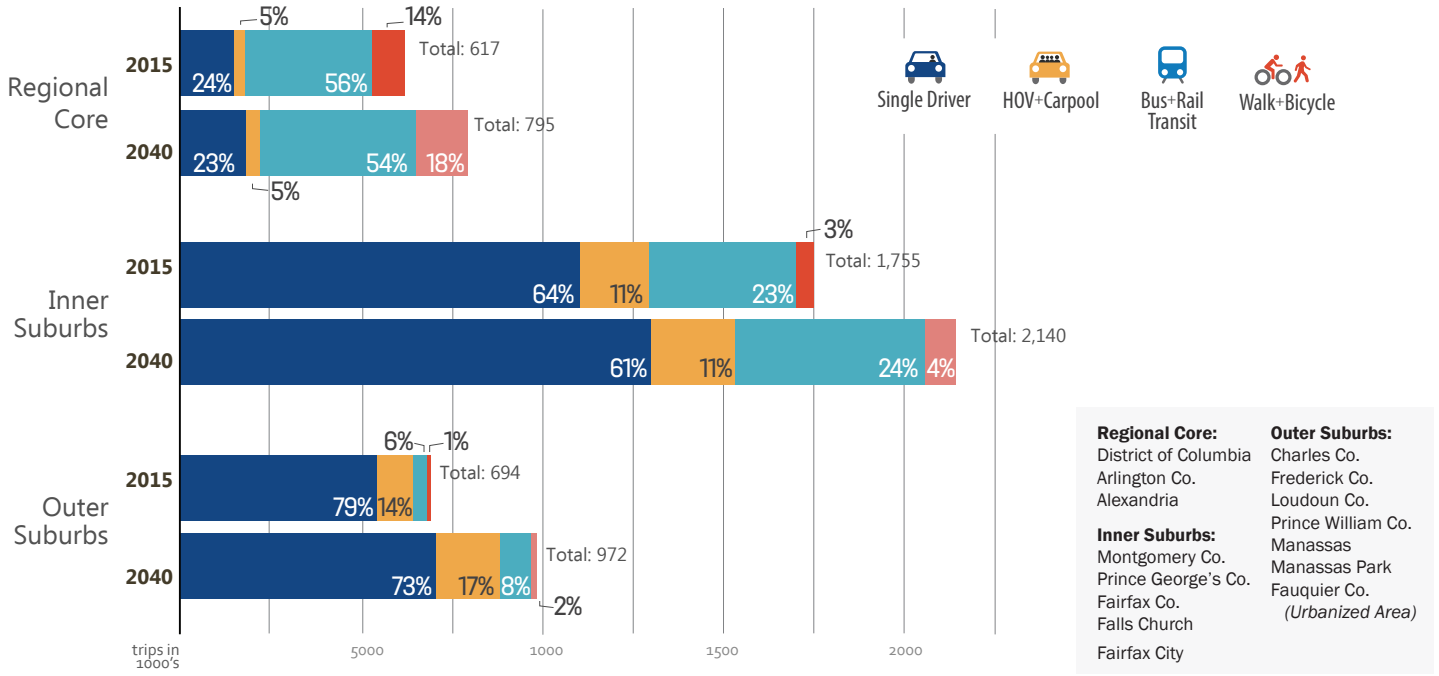
Mode Choice: ~~Transit~~ Metrorail Constraint (2015-2040)



- In the travel demand model used to analyze future trends under the 2015 CLRP, Metrorail trips through the core of the region were capped to 2020 levels. ~~Therefore, in 2040 approximately 125,000 trips that would have been expected on Metrorail have been reassigned to buses and automobiles.~~
- If the ~~transit~~ Metrorail constraint is removed, 35,000 of the automobile trips could be taken on Metrorail, which would increase transit mode share by 0.8%.

Mode Choice: Geographic Differences

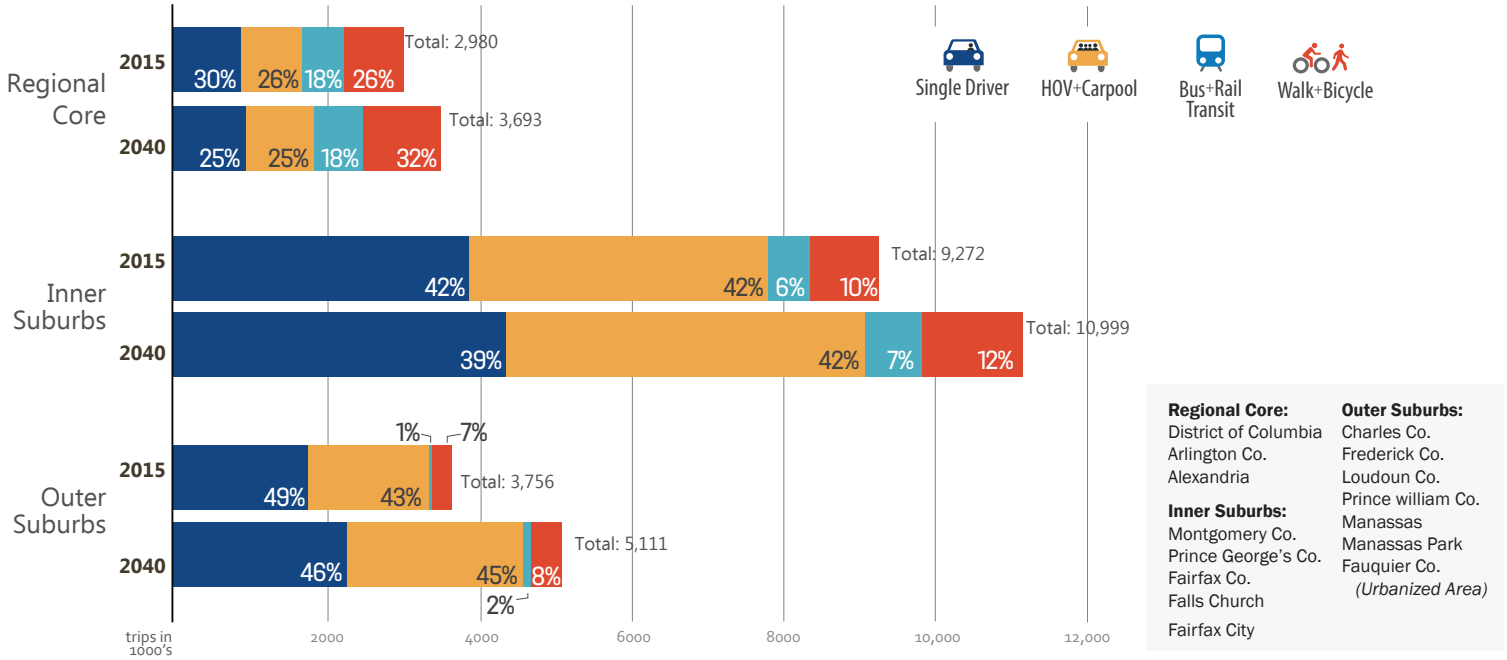
Work Trips By Regional Core, Inner Suburbs, and Outer Suburbs (2015-2040)



- 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.

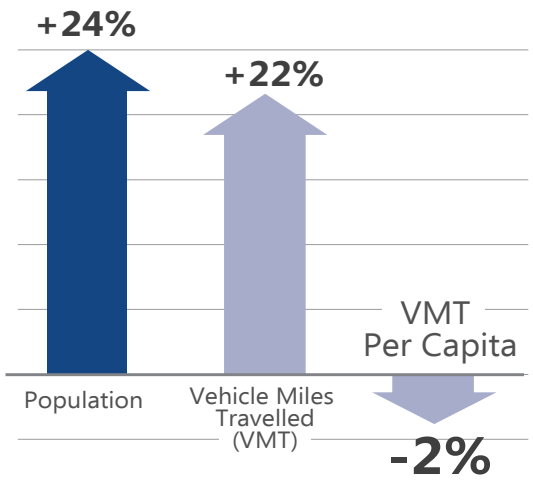
Mode Choice: Geographic Differences

All Trips By Regional Core, Inner Suburbs, and Outer Suburbs (2015-2040)



- 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.
- Compared to work trips, the share of carpool trips will continue to be substantially higher in all areas.
- 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.

Travel Demand: Vehicle Miles Travelled (2015-2040)

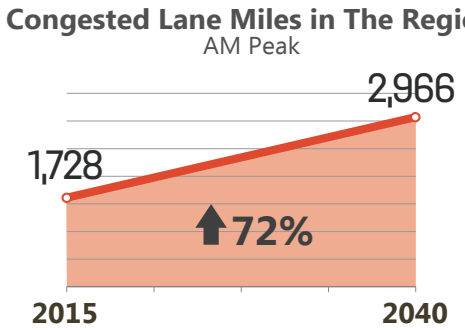


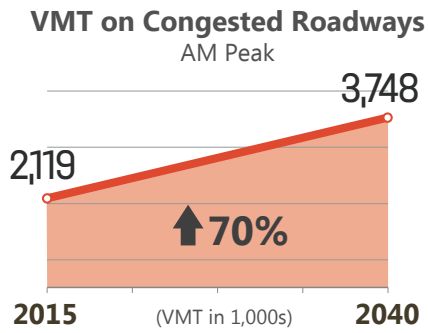
The average amount of driving per person will be less in 2040 than it is today.

- The total amount of driving in the region, measured in vehicle-miles travel (VMT), is expected to grow over the next 25 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, which is consistent with the TPB Vision.
- 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.

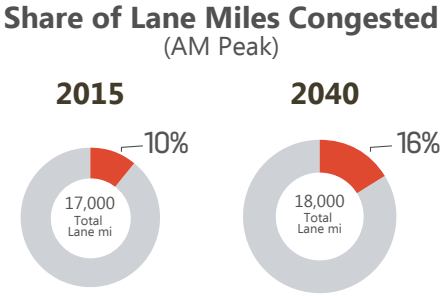
Roadway Congestion

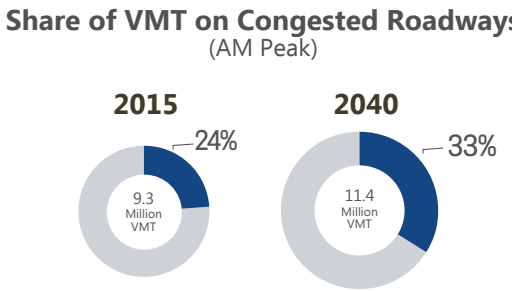
Congestion will continue to be concentrated in a few key segments of our region's roadways, but impact a greater share of travelers and trips.





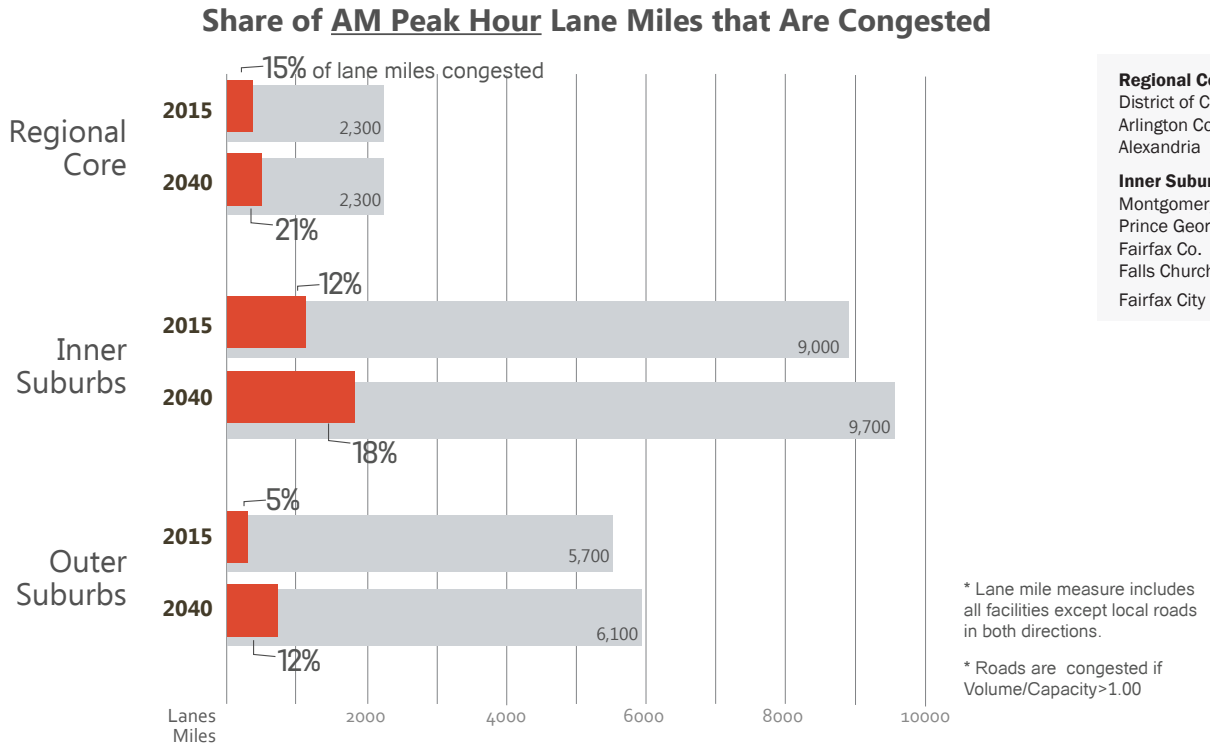
* Lane mile measure includes all facilities except local roads.
* Roads are congested if Volume/Capacity>1.00





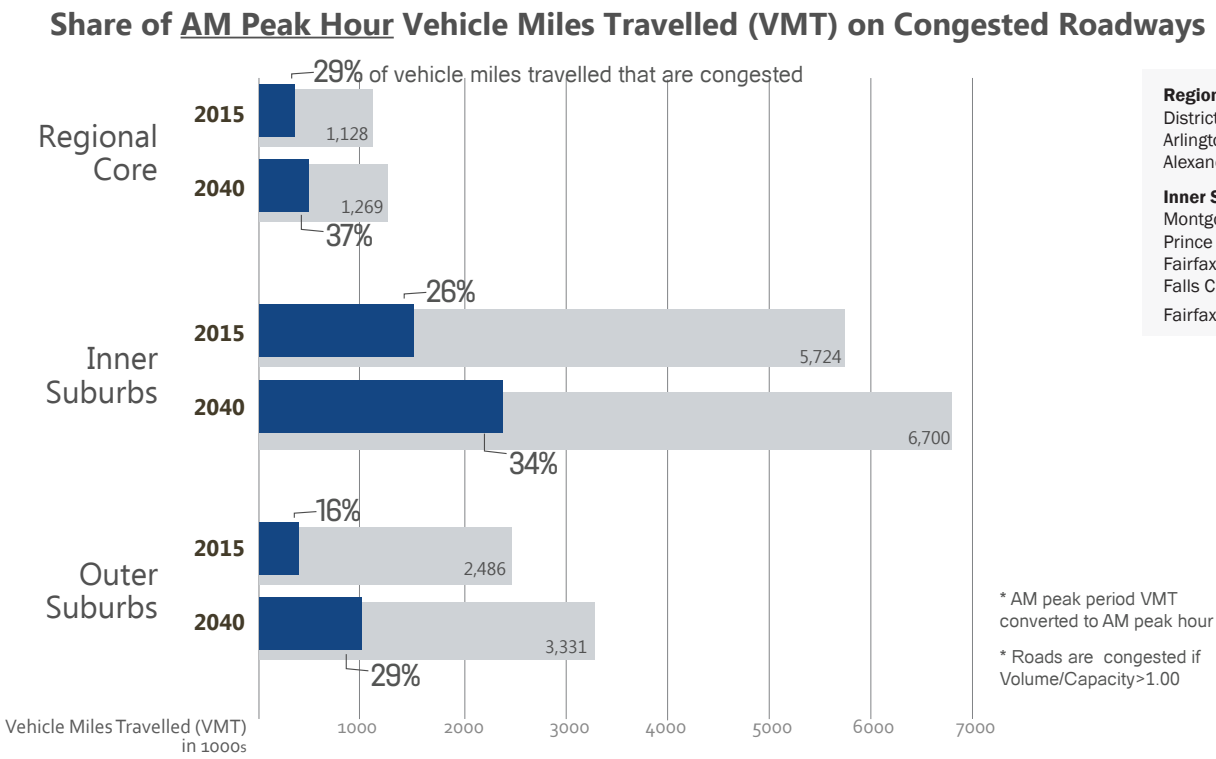
- Although the number of lane-miles of roadway in the region that are congested during peak periods is expected to increase substantially between now and 2040, congested lanes make up a small portion of the roadways in the region.
- Congestion on this small portion of roadways will affect a greater share of vehicle-miles traveled (VMT) as more and more trips are added to these highly traveled routes.

Roadway Congestion: Geographic Differences



- Congested lane miles will make up a relatively small proportion of the total lane miles in all areas of the region both today and in 2040.
- The total number of congested lane miles is forecast to go up in all 3 sub-areas with the greatest expected increase in the inner suburbs.
- The share of lane miles that are congested is also expected to increase in all sub-areas, but the highest rate of increase is expected in the outer suburbs.

Roadway Congestion: Geographic Differences

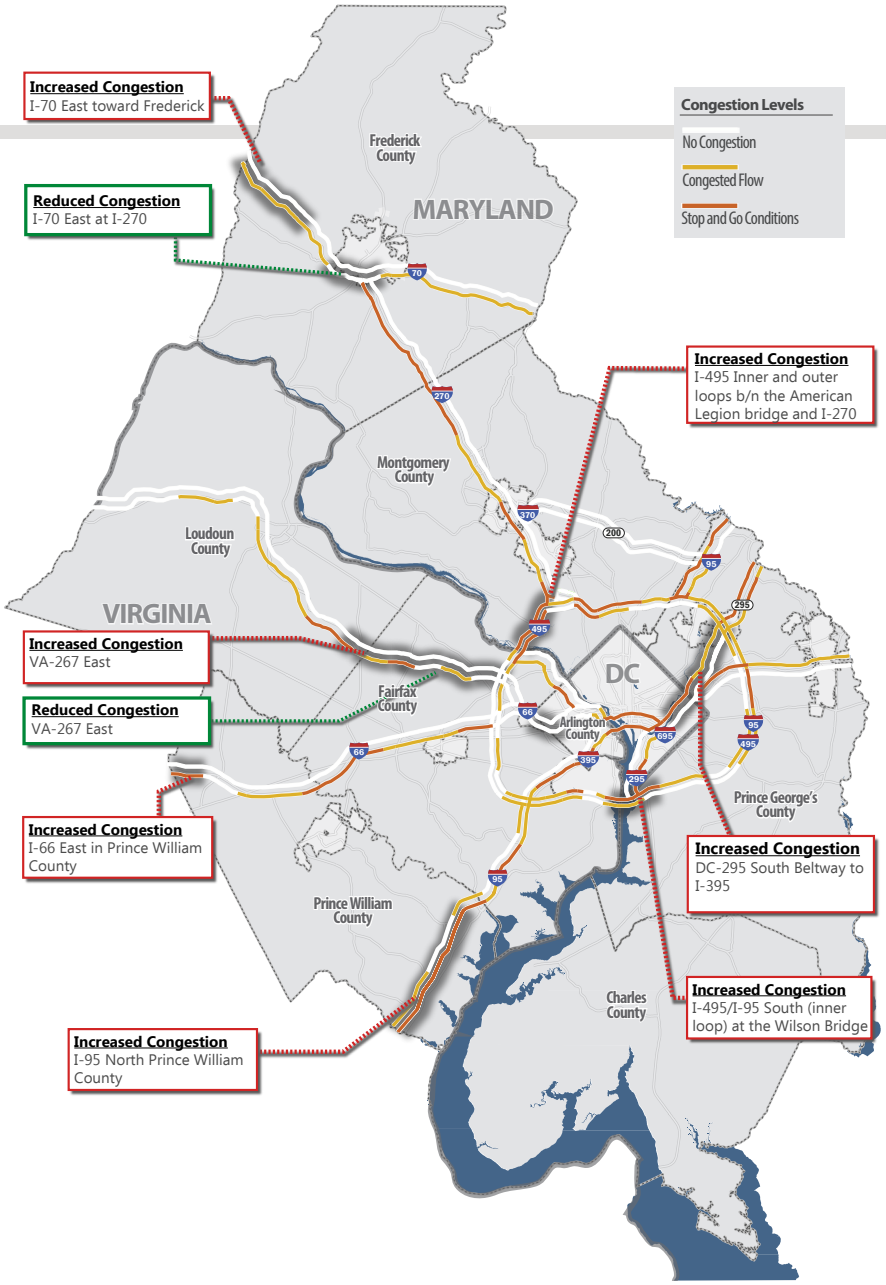


- Though a relatively small share of lane miles will continue to be congested, a higher share of Vehicle Miles Traveled (VMT) will be on congested roadways in all areas of the region.
- In 2040, VMT on congested roadways will increase the most in the outer suburbs, followed by the regional core, and the least in the inner suburbs.

Roadway Congestion:

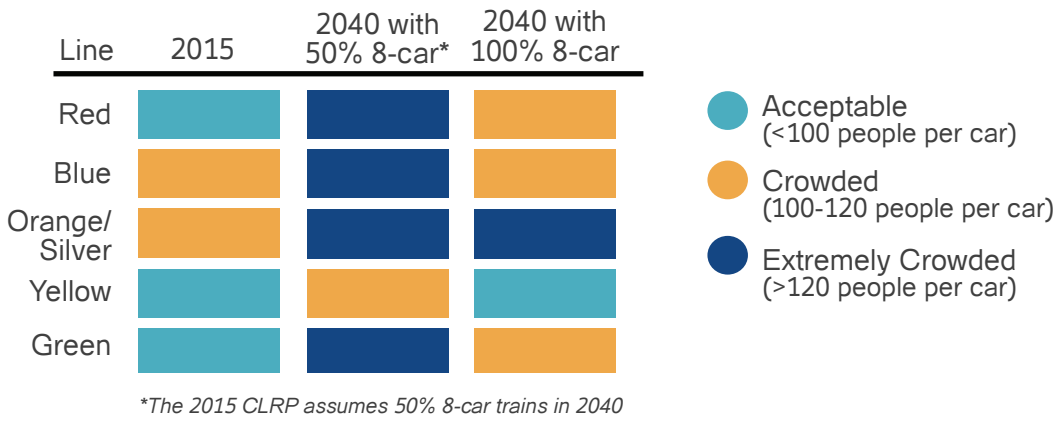
2040 Major Highway Congestion (AM Peak)

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.



Transit Congestion: Metrorail Crowding (2012-2040)

Without additional capacity, four out of five Metrorail lines passing through the region's core will be congested or highly congested by 2040.

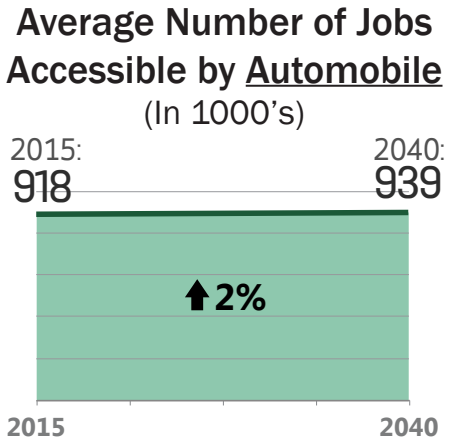


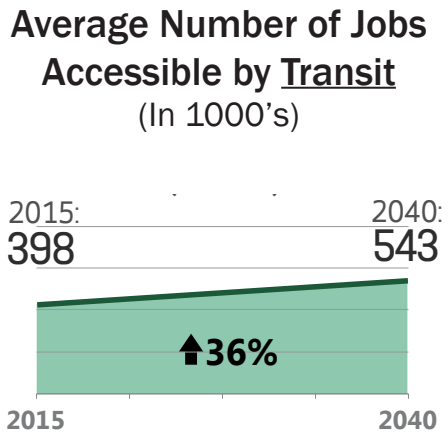
**The 2015 CLRP assumes 50% 8-car trains in 2040*

- Analysis completed by WMATA shows that four out of five lines entering the downtown core are expected to become congested or highly congested by 2040.
- Without additional capacity, WMATA estimates that the Metrorail system will reach capacity by 2040 on trips to and through the core.

Access to Jobs: Average Number of Jobs Accessible (2015-2040)

The average number of jobs accessible within 45 minutes by automobile and transit is expected to increase between now and 2040.





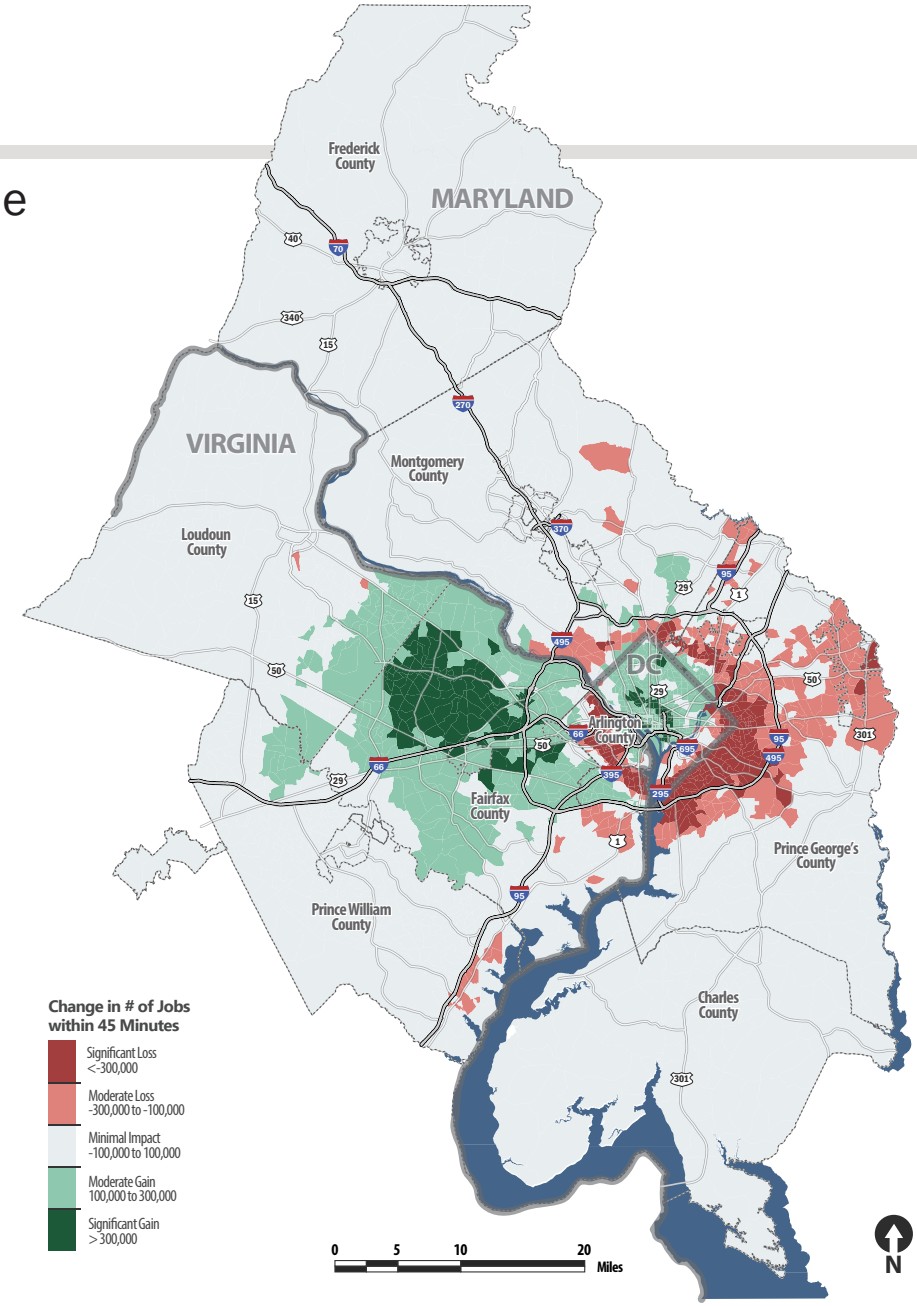
- Though the average number of trips accessible by both automobile and transit is expected to increase, the average number of jobs accessible by transit will increase more significantly.
- The total number of jobs that are accessible by transit, however, will remain less than those accessible by automobile, because transit will continue to not reach all parts of the region.

Access to Jobs:

Change in Access to Jobs by Automobile (2015-2040)

Significant declines in job accessibility by automobile are expected on the eastern side of the region.

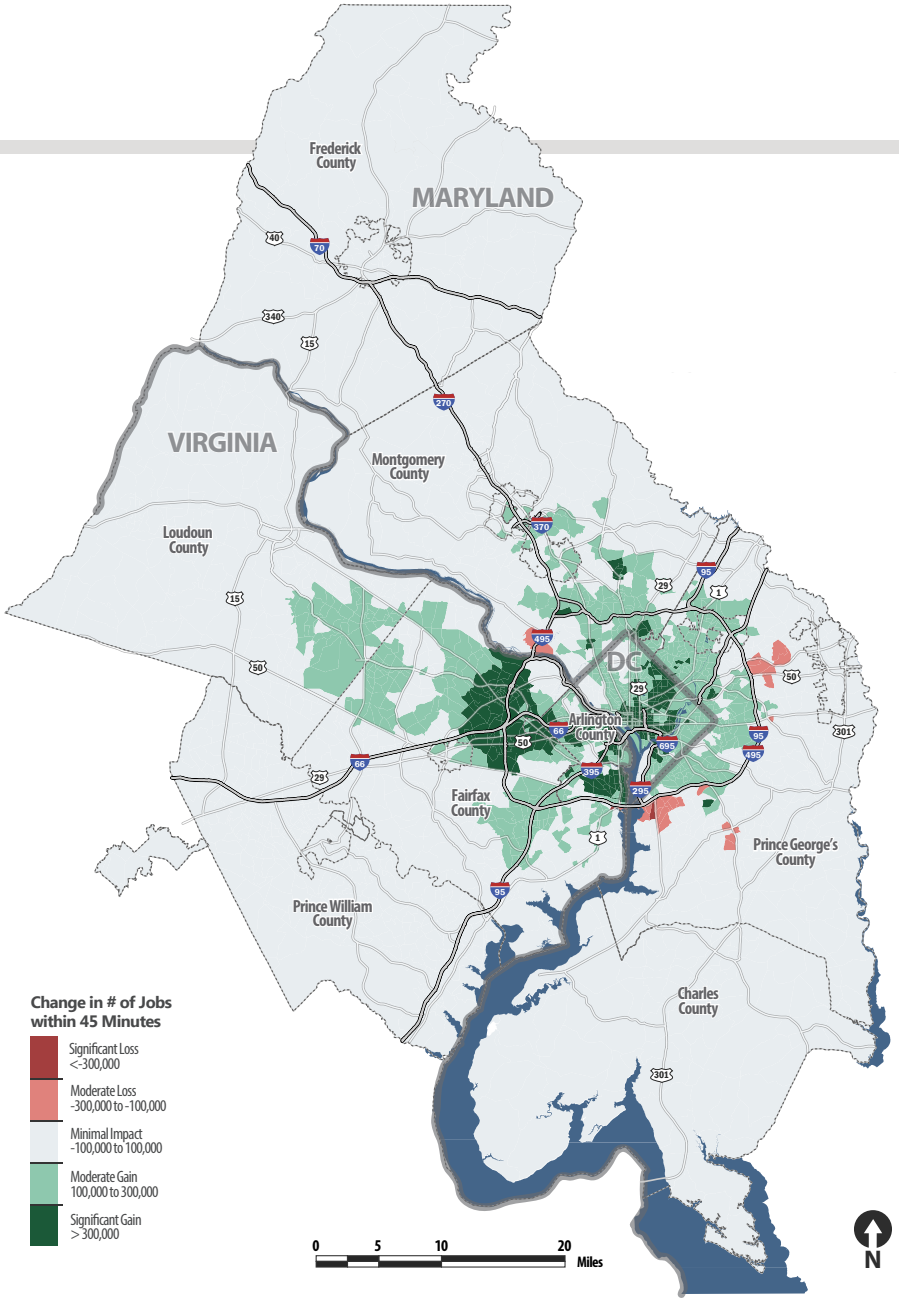
- Many areas, mainly on the eastern side of the region, will see declines in accessibility.
- These declines are the result of two important factors: one, anticipated increases in roadway congestion, which make it more difficult to reach other parts of the region by car within 45 minutes, and, two, the fact that 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.



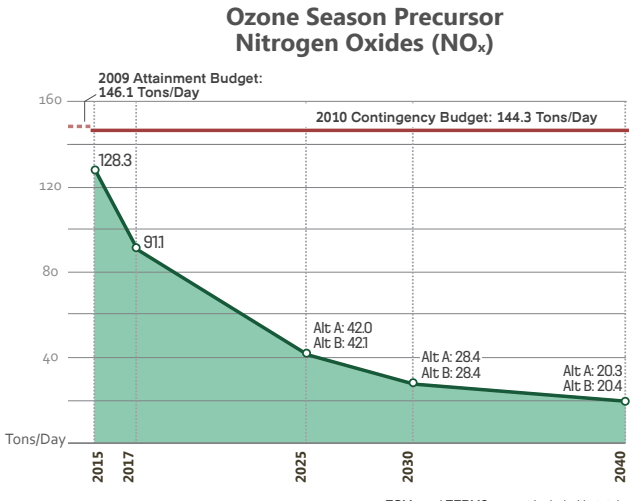
Access to Jobs:

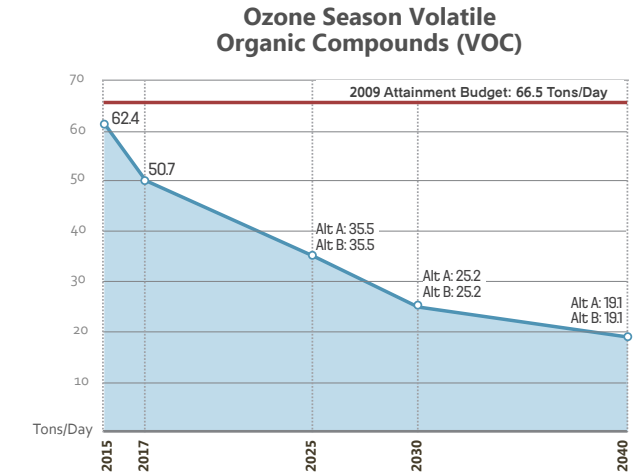
Change in Access to Jobs by Transit (2015-2040)

- 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.



Air Quality: Mobile Source Emissions (2015-2040)

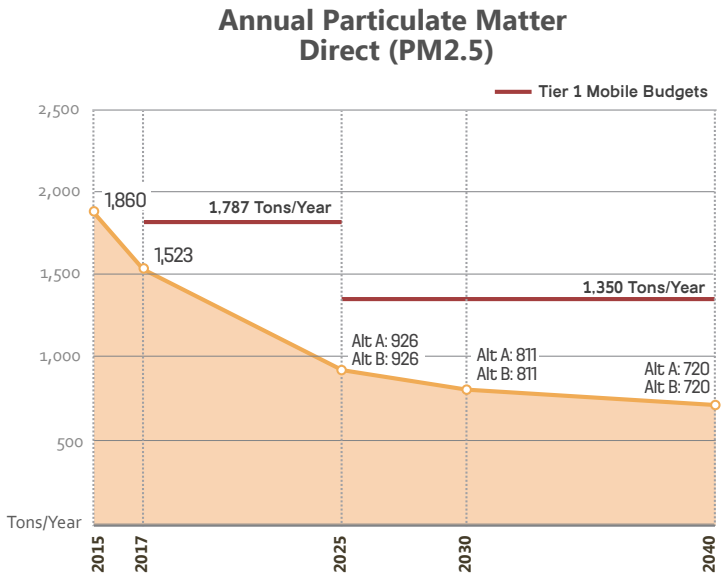


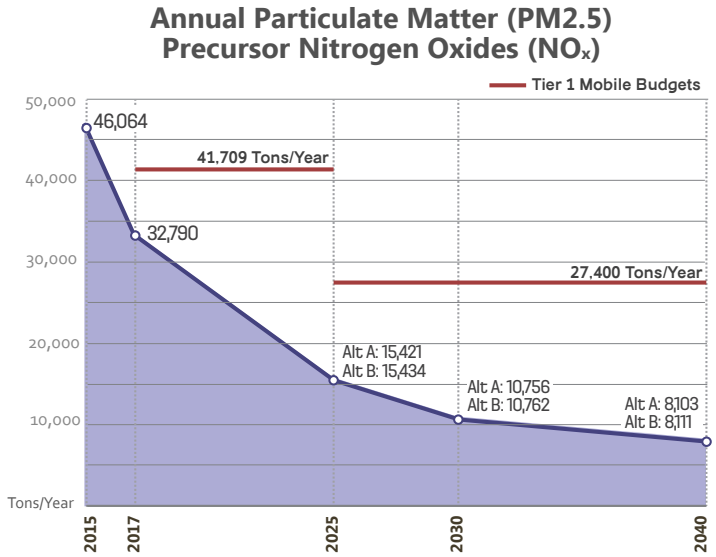


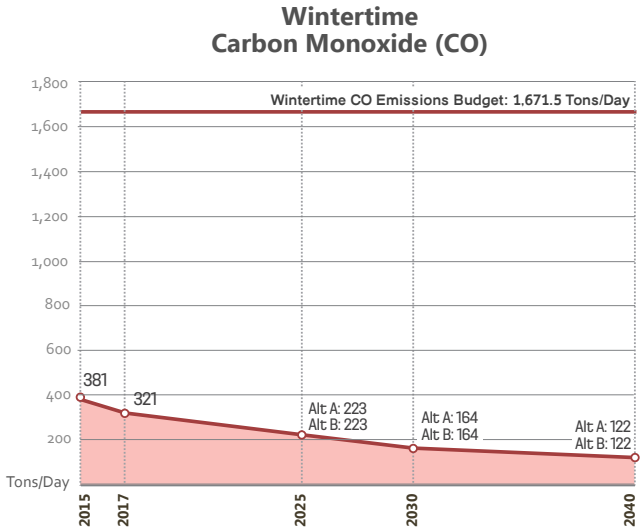
Emissions of all criteria pollutants are expected to drop steadily between now and 2040.

- 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.

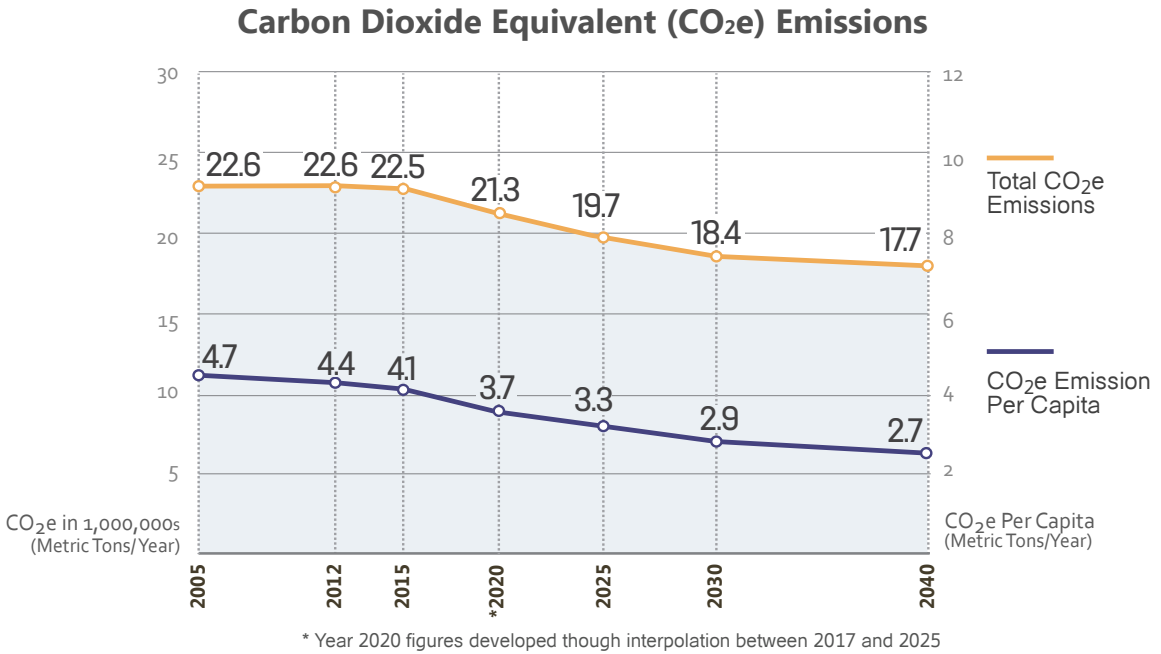
Air Quality: Mobile Source Emissions (2015-2040)







Mobile Source Greenhouse Gas Emissions: (2005-2040)



* Year 2020 figures developed though interpolation between 2017 and 2025

- Total CO_2e emissions under the 2015 CLRP are forecast to drop by 22% by 2040, while CO_2e emissions per capita are expected to drop at an even greater rate of 44%.
- 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.

Regional Transportation Priorities Assessment:

- The Regional Transportation Priorities Plan, adopted by the TPB in January 2014, identifies strategies with the greatest potential to advance regional goals rooted in the TPB Vision.
- The TPB has committed to using the Priorities Plan on a regular basis to assess the CLRP.

Priority 1: Meet Our Existing Obligations

- The region's commitment to maintenance is solid: *The CLRP demonstrates full funding for maintenance, operations, and state of good repair of the region's highway and transit systems.*

Priority 2: Strengthen Public Confidence and Ensure Fairness

- Regional economic disparities continue to affect transportation patterns:
- The TPB is seeking to improve public information and analysis.

Regional Transportation Priorities Assessment:

Priority 3: Move More People and Goods More Efficiently

- Individuals, on average, are expected to drive less in the future than they do today.
- The region has unfinished business when it comes to maximizing use of existing transit systems.
- The region is effectively using its Activity Centers to focus growth, enhance non-motorized circulation, and improve regional connections
  - *DC bike lane projects*
- The region is diversifying its public transit systems by developing new, cost-efficient options like BRT and streetcars.
  - *New BRT Projects in VA*
- New tolling projects are managing demand while raising revenue.
  - *I-66 Projects*
- Projects target bottleneck relief.

Key Findings:

- By 2040, the region is expected to be home to 1.3 million more people and 1.1 million more jobs.
- Most new people and jobs are forecast to locate in Regional Activity Centers, and concentrate toward the west side of the region.
- Growth in carpooling, transit, walking, and bicycling is expected to out pace growth in trips by single drivers between now and 2040, both for work and non-work trips. Single driver trips will be the predominant mode of travel for work trips, but the average amount of driving per person will be less in 2040 than it is today.
- Congestion will continue to be concentrated in a few key segments of our region's roadways, but impact a greater share of travelers and trips.
- Without additional capacity, four out of five Metrorail lines passing through the region's core will be congested or highly congested by 2040.

Key Findings:

- The average number of jobs accessible within 45 minutes is expected to increase between now and 2040 for both automobile and transit commuters, but significant declines in job accessibility by automobile are expected on the eastern side of the region.
- Emissions of all criteria pollutants are expected to drop steadily between now and 2040.
- Total CO2 emissions are forecast to drop by 2040, and CO2 emissions per capita are expected to drop at an even greater rate.
- Assessing the CLRP with the Regional Transportation Priorities Plan demonstrates that:
  - *The region's commitment to maintenance is solid*
  - *Regional Disparities will continue to affect transportation patterns*
  - *Regional Agencies are planning projects that will provide new ways to move people and goods more efficiently, but there is still work to be done to maximize use of the existing transit system.*