



## Memorandum

**To:** TPB Long-Range Plan Task Force

**From:** ICF Team and TPB staff

**Date:** November 20, 2017

**Re:** Initiatives' Assumptions

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This memo provides summaries of the assumptions made for each of the 10 initiatives for analysis. The description of each initiative below begins with the components of the initiative that the task force and TPB endorsed. In addition to those components, the task force conveyed to the team that the analysis should also make the following assumptions:

- **State of Good Repair.** All of the initiatives assume that Metrorail, other transit services, and all highway and bridge infrastructure are in a state of good repair. The analysis results will not hold if existing assets are not in a state of good repair.
- **Supportive Land Use Policies.** The initiatives assume that land use policies will support the significant new infrastructure investments. Specific land use changes assumed for each initiative are discussed below.
- **Improvements in Bicycle and Pedestrian Infrastructure.** The initiatives assume that transit investments will be supported by improvements in bike/walk accessibility to access those transit services. Specifics can be found below.
- **Aspire to Achieve Regional Improvements on the Challenges.** These initiatives are intended to go above and beyond the CLRP to show whether it is worthwhile to the region to increase investment to implement projects, programs, and policies such as those contained in these initiatives. To demonstrate the full potential of each initiative, the research team selected bold assumptions to assess whether these bold assumptions could result in regional improvements.

The rest of this memo consists of one-page summaries of the assumptions made for each initiative. Each begins with a direct quote of what the task force and TPB approved. Then the report provides a snapshot of the assumptions made to transportation, land use, and other policies using a consistent format for each initiative, which will enable making comparisons among the initiatives. The final report will provide more detail as an appendix.

## Initiative 1: Regional Express Travel Network

### INITIATIVE COMPONENTS APPROVED BY TASK FORCE AND ACCEPTED BY TPB

- **Express toll lanes network** (free to HOV and transit vehicles) with added lanes where feasible on existing limited access highways (including remaining portion of the Capital Beltway, I-270, Dulles Toll Road, U.S. 50); includes expanded American Legion Bridge.
- **New express bus services** on network (paid in part through tolls) connecting major Activity Centers.

### TRANSPORTATION ASSUMPTIONS

#### Roadway Assumptions

- **Express Travel Lane Network** of HOV/HOT lanes on access-controlled facilities, including existing HOV facilities, as identified in prior studies and shown at right. The final report will provide a full list of segments in an appendix.
- **Accommodate express lanes** in existing ROW and limited roadway expansions where necessary, such as on the American Legion Bridge.

#### Transit Assumptions

- **Express bus services** on the same express travel network shown in Figure 2, with stops in adjacent Activity Centers plus connections into the core.
- **All bus service uses express lanes** when traveling those portions of the network.
- **Do not reroute existing local bus service.** Existing local bus service connects to the new bus service when they serve the same locations, but the analysis does not reorient or reroute any of the local bus feeder service.
- **Frequent headways assess optimal potential:** 10 minutes in the peak and 20 in the off peak.

#### Bicycle and Pedestrian Assumptions

None.

#### Pricing Assumptions

- The following pricing assumptions apply throughout the express toll lanes network:
  - Dynamic tolls maintain desired travel speeds; use existing rate schedules.
  - Free use for HOV3+ and transit vehicles
- Express bus fares use existing fare structures.

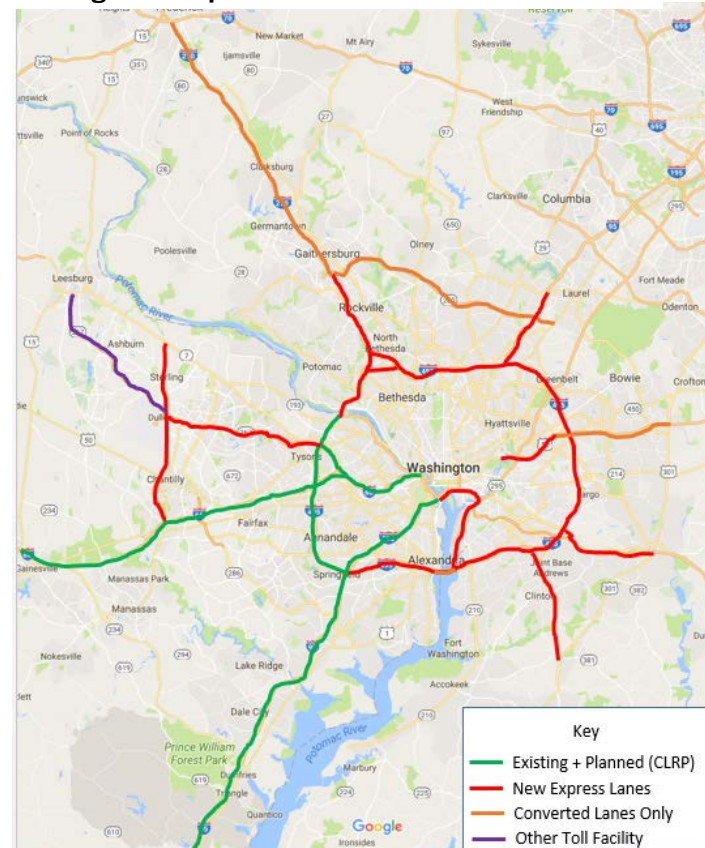
### LAND USE ASSUMPTIONS

2040 CLRP Round 9.0 Cooperative Land Use Forecasts were used without any change.

### OTHER ASSUMPTIONS

None.

**Figure 1: Express Travel Lane Network**



## Initiative 2: Operational Improvements and Hotspot Relief

### INITIATIVE COMPONENTS APPROVED BY TASK FORCE AND ACCEPTED BY TPB

- Application of technology and enhanced system operations strategies, such as ramp metering, active traffic management, and integrated corridor management (including transit signal priority and enhanced multimodal travel information), plus targeted capacity enhancements where feasible to address top regional congestion hotspots and adjoining connections.
- Improved roadway design (such as treatments of turning movements) and reversible lanes on major roadways, as appropriate (to be identified based on strong directional flows).
- Expanded regional incident management where appropriate.
- Technological integration of demand-responsive services for persons with disabilities and others with limited mobility to create efficiencies of scale and improve mobility of traditionally underserved populations.

### TRANSPORTATION ASSUMPTIONS

#### Roadway Assumptions

An appendix to the final report will provide more details, including lists of segments and maps.

- **Active Traffic Management (ATM) and Integrated Corridor Management (ICM)**
  - Identified regional network of facilities from among existing freeways, express and parkways, and major arterials (> ~ 30,000 AADT)
  - Apply 5-6% capacity increase for ATM and 1-3% for ICM
- **Hotspot Relief:** Identified hotspot locations where the 2040 CLRP forecasts volume that exceeds capacity; results in a list of 22 hotspots where analysis increased capacity
- **Reversible Lanes:** Identified and recoded the 17 locations capable of accommodating reversible lanes.
- **Regional Incident Management**
  - Identify regional network of facilities from among expressways, parkways, and high-volume major arterials
  - Apply 0.5% capacity increase
- **Demand-Responsive Services for Persons with Limited Mobility**
  - New technologies may improve options for mobility within a similar framework as the current transportation network companies (TNC), such as Lyft or Uber.
  - As with TNCs, this service may increase VMT and congestion in the region while providing significant benefits to individuals currently underserved.

#### Transit Assumptions

None.

#### Bicycle and Pedestrian Assumptions

None.

#### Pricing Assumptions

None.

### LAND USE ASSUMPTIONS

2040 CLRP Round 9.0 Cooperative Land Use Forecasts are being used without any change.

### OTHER ASSUMPTIONS

None.

## Initiative 3: Additional Northern Bridge Crossing/Corridor

### INITIATIVE COMPONENTS APPROVED BY TASK FORCE AND ACCEPTED BY TPB

- New northern bridge crossing of Potomac River, as a multimodal corridor
- New express bus services connecting existing Activity Centers in this new multimodal corridor

### TRANSPORTATION ASSUMPTIONS

#### Roadway Assumptions

- Assume connection between VA28/VA 7 junction and I 270/I-370 junction (MD-200/Intercounty Connector) across Potomac River (approximately 14 miles long), as shown on the map to the right.
- 3-lanes each direction (to connect with existing 3-lane per direction facilities and not create bottleneck)
- No interchanges between the above termini points of the new facility

#### Transit Assumptions

**Express bus service** connecting activity centers along the corridor with 20-minute peak, 30-minute off-peak headways.

#### Bicycle and Pedestrian Assumptions

None.

#### Pricing

- Vehicle tolls assume the per-mile toll rates from MD-200 (ICC).
- Express bus service fares assume existing fare pricing.

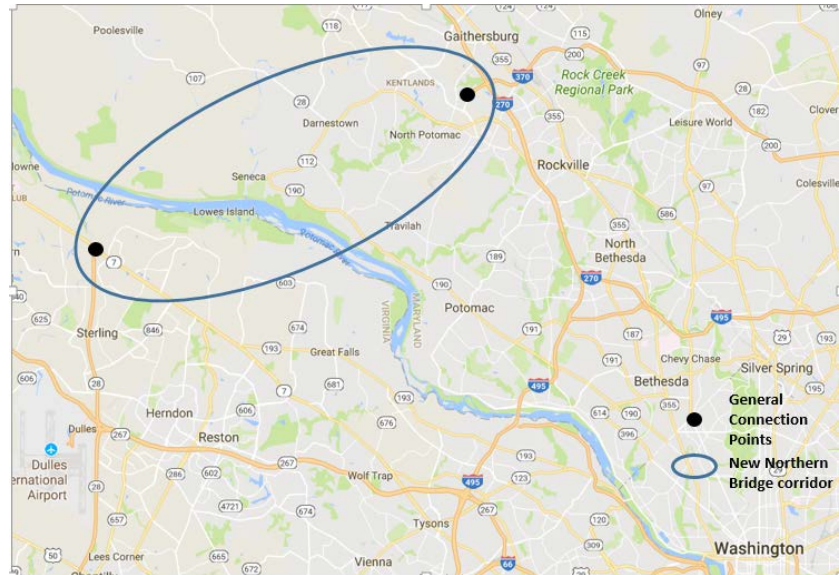
### LAND USE ASSUMPTIONS

- Shift about 8,900 households and 16,200 jobs to areas with existing development and that see travel time reductions due to the corridor.
- Approximately 60% of the job shift and 30% of the household shift are to Activity Centers in the corridor.

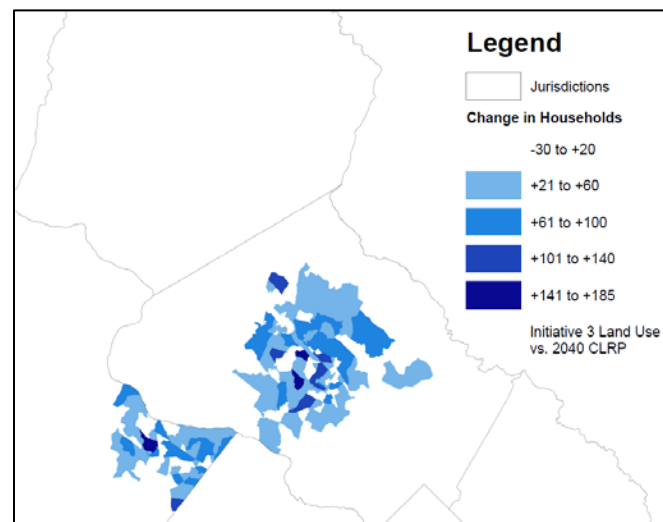
### OTHER ASSUMPTIONS

None.

**Figure 2: General Connection Points for New Corridor**



**Figure 3: Location of Assumed Increase in Households**



## Initiative 4: Regionwide Bus Rapid Transit and Transitways

### INITIATIVE COMPONENTS APPROVED BY TASK FORCE AND ACCEPTED BY TPB

- Bus rapid transit (BRT)/transitway networks in Montgomery County, Prince George's County, Northern Virginia (TransAction 2040), DC, and transitway from Branch Ave to Waldorf; specifications according to jurisdiction plans
- Additional DC streetcar line (north-south) as complement to network
- Improved bicycle and pedestrian connections and access improvements to transit stations.

### TRANSPORTATION ASSUMPTIONS

#### Roadway Assumptions

No changes beyond the CLRP.

#### Transit Assumptions

Add BRT, transitway, and streetcar routes that are in jurisdictions' plans but not yet in the CLRP, as shown at right.

#### Bicycle and Pedestrian Assumptions

Assume an increase percentage in bicyclists and pedestrians accessing rail stations.

#### Pricing Assumptions

Assume existing local bus/streetcar fare pricing.

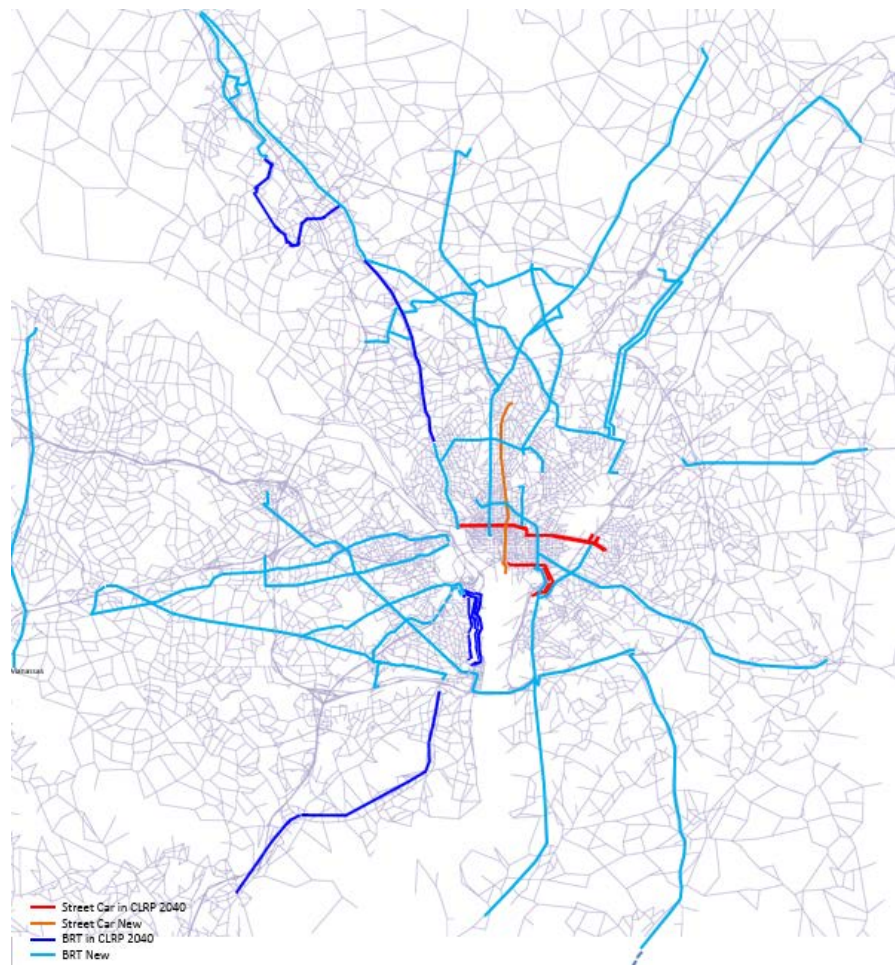
### LAND USE ASSUMPTIONS

Increase jobs and housing around new stations to 5 households/acre and 30 jobs/acre by pulling some housing and jobs from the same jurisdiction's areas outside of Activity Centers.

### OTHER ASSUMPTIONS

None.

**Figure 4: Proposed and Planned BRT and Transitways**



## Initiative 5: Regional Commuter Rail Enhancements

### INITIATIVE COMPONENTS APPROVED BY TASK FORCE AND ACCEPTED BY TPB

- VRE System Plan 2040, MARC Growth, and Investment Plan (including run-thru and two-way service on selected lines, increased frequency and hours of service).<sup>1</sup>
- Long Bridge corridor improvements including at least 4 tracks and bicycle-pedestrian facilities.
- Improved bicycle and pedestrian connections and access improvements to rail stations

### TRANSPORTATION ASSUMPTIONS

#### Roadway Assumptions

No additional improvements beyond the CLRP.

#### Transit Assumptions

- **Improve headways:** Upgrade all 60-minute, peak time headways in the CLRP to 30-min headways and 30-minute headways in CLRP to 20-minute headways.
- **Establish off-peak service** on 60-minute headways
- **Allow run-through service at Union Station**
- **New stations** on extended Haymarket branch of the Manassas VRE line

#### Bicycle and Pedestrian Assumptions

Assume an increase percentage in bicyclist and pedestrians accessing rail stations.

#### Pricing Assumptions

Assume existing fare structures and pricing.

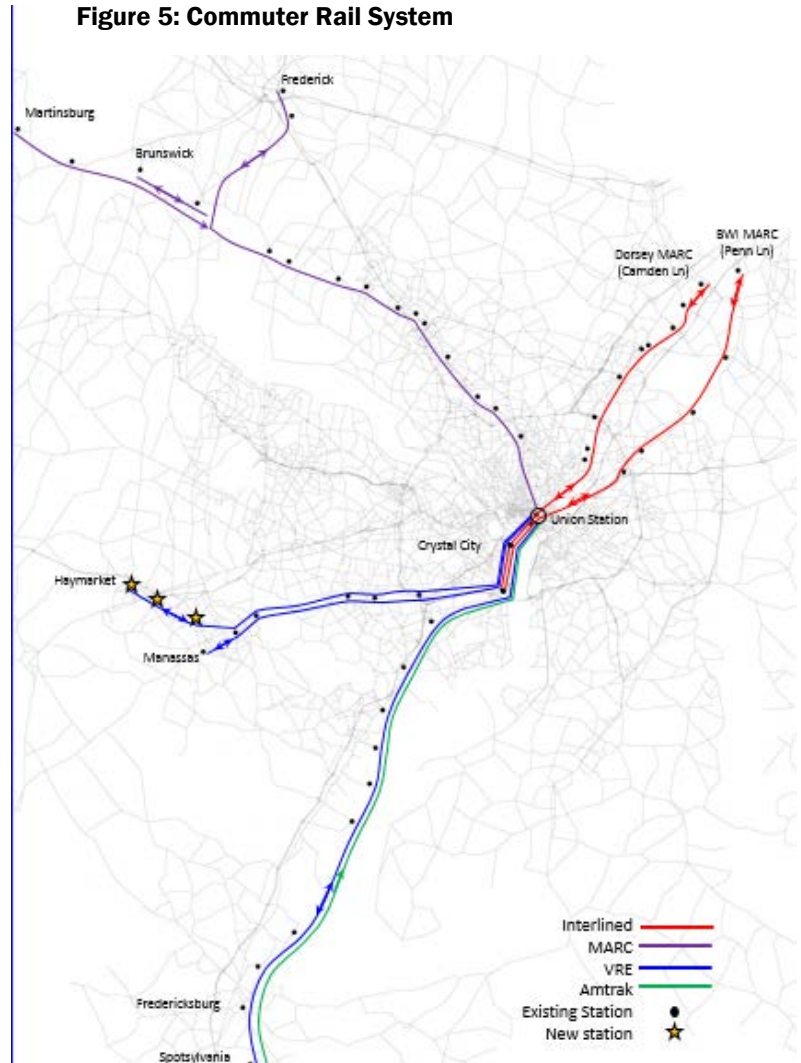
### LAND USE ASSUMPTIONS

2040 CLRP Round 9.0 Cooperative Land Use Forecasts are used without any change.

### OTHER ASSUMPTIONS

None.

**Figure 5: Commuter Rail System**



<sup>1</sup> Both the Virginia Railway Express (VRE) and Maryland Area Regional Commuter Train Service (MARC) have planned system and service improvements that are scheduled to be implemented by the year 2040. More details on these plans and how they overlap with this initiative will be available in an appendix to the report.

## Initiative 6: Metrorail Regional Core Capacity Improvements

### INITIATIVE COMPONENTS APPROVED BY TASK FORCE AND ACCEPTED BY TPB

- 100% 8-car trains
- Metrorail station improvements at high-volume stations in system core
- Second Rosslyn station to reduce interlining and increase frequency
- New Metrorail core line to add capacity across Potomac River (new Rosslyn tunnel) between Virginia and DC through Georgetown to Union Station toward Waterfront.
- Improved bicycle and pedestrian connections and access improvements to rail stations.

### TRANSPORTATION ASSUMPTIONS

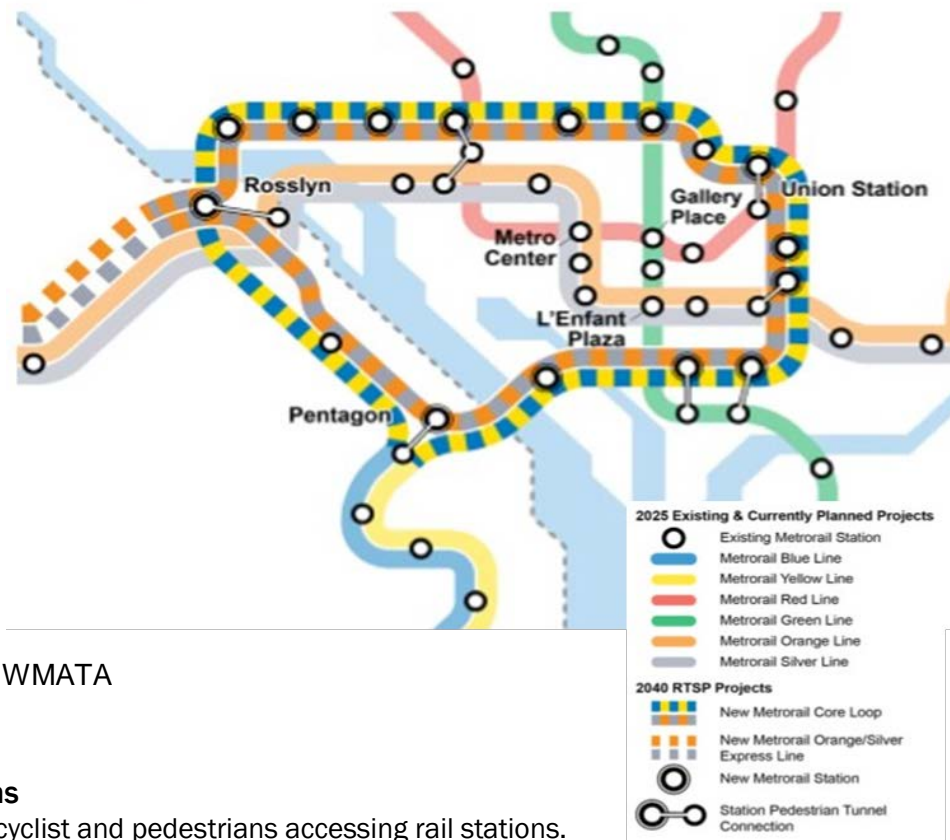
#### Roadway Assumptions

None beyond the CLRP.

#### Transit Assumptions

- **Remove capacity constraints** in place for Metrorail core.
- **Increase station access and transfers** to reflect capacity improvements.
- **Add a second Rosslyn station**, with reductions in interlining and increases in frequency of service.
- **Add new Metrorail core line** as new capacity across the Potomac (New Rosslyn tunnel between Virginia and DC through Georgetown to Union Station toward Waterfront as loop, based on WMATA Momentum 2040)

Figure 6: Metrorail Core Capacity Improvements



#### Bicycle and Pedestrian Assumptions

Assume an increased percentage in bicyclist and pedestrians accessing rail stations.

#### Pricing Assumptions

Assume existing fare structures and pricing.

### LAND USE ASSUMPTIONS

2040 CLRP Round 9.0 Cooperative Land Use Forecasts was used without any change.

### OTHER ASSUMPTIONS

None.

## Initiative 7: Transit Rail Extensions

### INITIATIVE COMPONENTS APPROVED BY TASK FORCE AND ACCEPTED BY TPB

- Metrorail extensions to Centreville/Gainesville, Hybla Valley/Potomac Mills.
- Can consider an extension(s) in MD, such as to National Harbor or north of Shady Grove (to be defined later).
- Purple line extension to Tysons (west) and Eisenhower Avenue (east)
- Improved bicycle and pedestrian connections and access improvements to rail stations.

## TRANSPORTATION ASSUMPTIONS

### Roadway Assumptions

None beyond the CLRP.

### Transit Assumption

62 new stations on the following extensions:

- **Orange Line:** Extend west beyond Vienna-Fairfax to Centreville
- **Blue Line:** Extend south beyond Franconia-Springfield to Potomac Mills
- **Yellow Line:** Extend south beyond Huntington to Hybla Valley
- **Red Line:** Extend northwest beyond Shady Grove to Germantown
- **Green Line:** Extend north beyond Greenbelt to South Laurel and south beyond Branch Ave to Waldorf
- **Purple Line Light Rail:** Extend west beyond Bethesda to Tysons and east beyond New Carrollton to Eisenhower Avenue (with stops at Branch Avenue and National Harbor)

### Bicycle and Pedestrian Assumptions

Assume an increase percentage in bicyclist and pedestrians accessing rail stations due to the improvements in bicycle and pedestrian infrastructure.

### Pricing Assumptions

Assume existing fare structures and pricing.

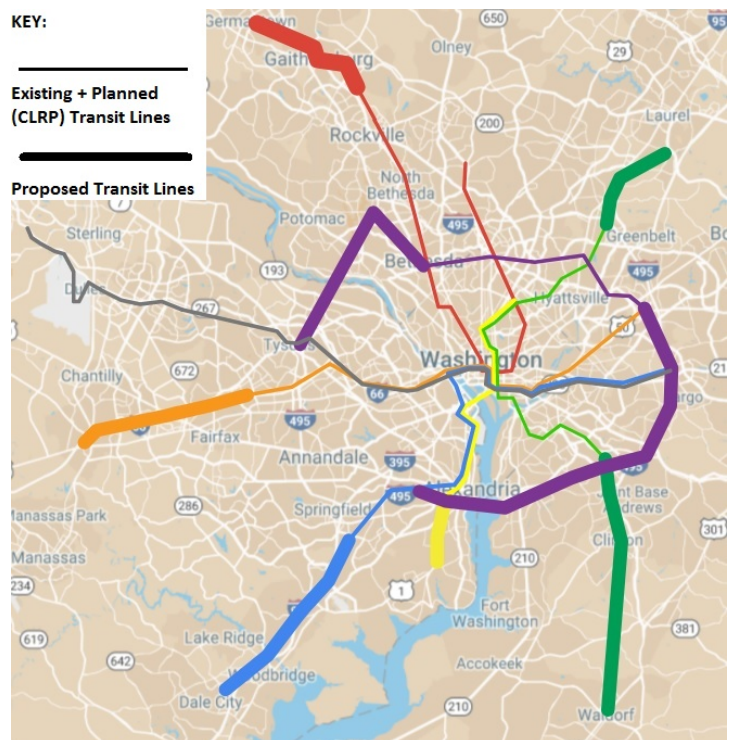
## LAND USE ASSUMPTIONS

Increase employment and housing densities in zones with new services by relocating employment and housing from outside Activity Centers within the jurisdiction. Increase jobs and housing around new LRT stations to 5 household/acre and 30 jobs/ acre. Increase jobs and housing around new Metrorail stations to 15 household/acre and 90 jobs/acre.

## OTHER ASSUMPTIONS

None.

**Figure 7: Existing Metrorail and Proposed Extensions**





## Initiative 8: Optimize Regional Land-Use Balance

### INITIATIVE COMPONENTS APPROVED BY TASK FORCE AND ACCEPTED BY TPB

- Optimize jobs/housing balance regionwide
- Increase jobs and housing around underutilized rail stations and Activity Centers with high-capacity transit.
- Build more housing in the region to match employment (about 130,000 more households).

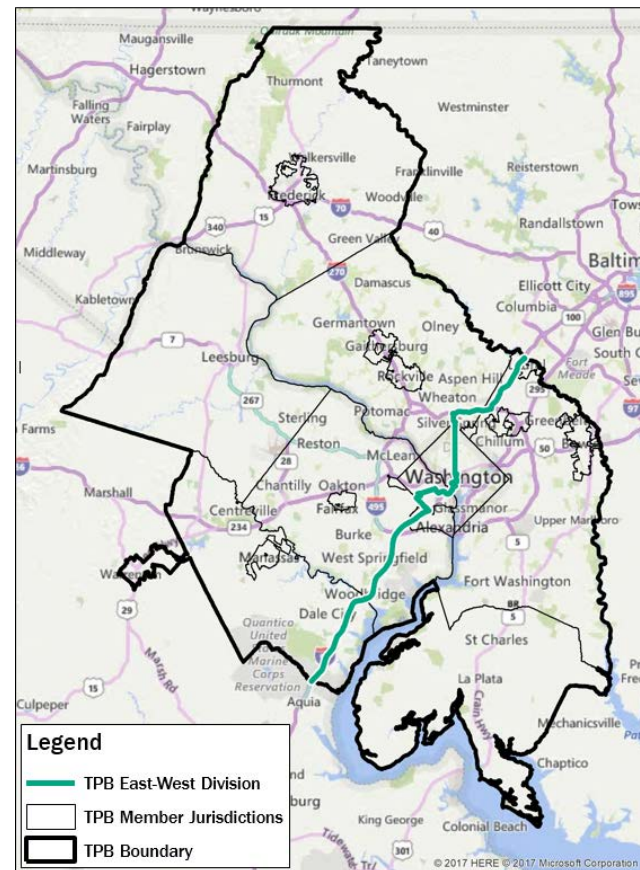
### TRANSPORTATION ASSUMPTIONS

None beyond the CLRP.

### LAND USE ASSUMPTIONS

- **Increase employment growth in the east of the region.** Apply to growth occurring between 2025 and 2040 (2.3% of the total growth shown in the 2040 CLRP) to achieve 1.54 jobs-housing ratio (regionwide, in the eastern portion, and in the western portion). Shift no jobs away from Activity Centers. See map at right for the East-West Division.
  - **Allocate growth within subregions** to ensure that no jurisdictions sharply diverge from the 1.54 regional average.
  - **Shift within jurisdictions** so that new growth occurs around underutilized rail stations and Activity Centers with high-capacity transit rather than in other locations.
  - **Add 130,000 households** to reduce the need for daily long-distance “in-commuters” living beyond the region’s outer boundaries. Allocate according to the same proportions applied to the 2.3% of growth reallocated above.
- An appendix of the final report will provide more details on the assumptions and jurisdiction-by-jurisdiction allocations of growth.

East-West Division and Jurisdictions



Regional Job and Household Summary	Jobs	Households	Ratio
Western Subregion (2040 CLRP)	2,546,274	1,513,958	1.68
Eastern Subregion (2040 CLRP)	1,604,039	1,054,764	1.52
TPB Planning Region (2040 CLRP)	4,150,313	2,568,722	1.62
<b>TPB Planning Region Plus 130,000 Households</b>	<b>4,150,313</b>	<b>2,698,722</b>	<b>1.54</b>

Source: MWCOC – Round9\_2040\_zone.dbf, Eastern3722TAZs.shp; TPBTAZ3722\_TPBPlan.shp

### OTHER ASSUMPTIONS

None.

## Initiative 9: Transit Fare Policy Changes

### INITIATIVE COMPONENTS APPROVED BY TASK FORCE AND ACCEPTED BY TPB

- Reduced price Metrorail fare for off-peak direction during peak period and on underutilized segments.
- Free transit for low-income residents.

### TRANSPORTATION ASSUMPTIONS

#### Roadway Assumptions

None beyond the CLRP.

#### Transit Assumptions

None beyond the CLRP.

#### Bicycle and Pedestrian Assumptions

None beyond the CLRP.

#### Pricing Assumptions

- **Change Certain Peak Fares to Off-Peak Rates**
  - for off-peak direction during peak period
  - for on underutilized segments.
- **Eliminate fares for low-income residents** (those falling in the lowest income quartile from the MWCOG model).

### LAND USE ASSUMPTIONS

2040 CLRP Round 9.0 Cooperative Forecasts were used without any change.

### OTHER ASSUMPTIONS

None.

## Initiative 10: Amplified Employer-based Travel Demand Management

### INITIATIVE COMPONENTS APPROVED BY TASK FORCE AND ACCEPTED BY TPB

New policies (e.g., employer trip reduction requirements) and programs (e.g., financial incentives) implemented at the local and regional scale to significantly reduce single-occupancy vehicle commute trip making, including:

- Employer-based parking cash-out
- Expanded employer-based transit/vanpool benefits
- Expanded telework and flexible schedule adoption
- Substantial increase in priced commuter parking in major Activity Centers

### TRANSPORTATION ASSUMPTIONS

#### Roadway Assumptions

- No changes to the road network.
- Shift of trips from SOV to HOV due to increases in parking costs and subsidies for carpooling; proportion shifted varied by land use context and proximity to the core.

#### Transit Assumptions

- No changes to the transit network.
- Shift of trips from SOV to transit due to increases in parking costs and subsidies for transit; proportion shifted varied by land use context and proximity to the core.

#### Bicycle and Pedestrian Assumptions.

None.

#### Pricing Assumptions

- **Transit/Vanpool Subsidy:** Transit subsidies averaging \$50 per month for 80 percent of employees
- **Parking Pricing Increase:**
  - Charge for 90 percent of parking for work-trips in Activity Centers
  - Average parking costs of \$6 per day (much higher in the core and lower in areas not currently charging for parking).

### LAND USE ASSUMPTIONS

2040 CLRP Round 9.0 Cooperative Land Use Forecasts is used without any change.

### OTHER ASSUMPTIONS

**Increase in telework.** Regional reduction in the number of commute trips for all modes to achieve a 20% telecommute rate.<sup>2</sup>

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<sup>2</sup> 2016 MWCOC State of the Commute Survey Report showed 10.2% telework.

<https://www.mwcog.org/documents/2016/06/21/state-of-the-commute-survey-report--carsharing-state-of-the-commute-travel-surveys/>