National Capital Region
Transportation Planning Board

MEMORANDUM

TO: Planning Directors Technical Advisory Committee
FROM: Kanti Srikanth, TPB Staff Director
SUBJECT: Future Concerted Action on Land-Use Focused Aspirational Initiative
DATE: January 19, 2018

The attached documents contain detailed information about the land-use focused initiative endorsed for future concerted action by the Transportation Planning Board.

Contents:

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).

ASSUMPTIONS

No changes from 2040 CLRP.

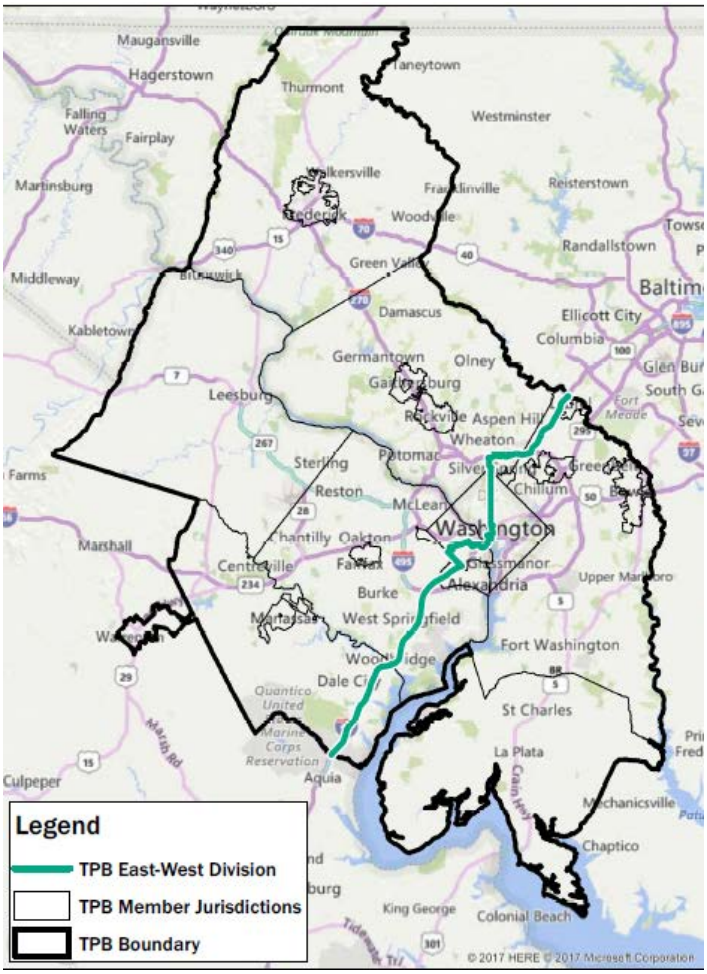
LAND-USE ASSUMPTIONS

Add 130,000 households to the region to reduce daily long-distance "in-commuters" living beyond the region's boundaries.

Allocate the employment and household growth between 2025 and 2040 outside of Activity Centers to better balance jobs and households between the eastern and western subregions to achieve 1.54 jobs-housing ratio (regionwide, in the eastern portion, and in the western portion). It is worth noting that the eastern subregion includes portions of the City of Alexandria, Arlington County, Fairfax County, Prince William County, the District of Columbia, and Montgomery County, in addition to Charles County and most of Prince George's County (as shown in Figure 11).

Allocate growth within each subregion to achieve the 1.54 regional average.

Figure 1: TPB East-West Division and Jurisdictions



Source: COG

Shift growth within jurisdictions to underutilized rail stations and Activity Centers with high-capacity transit.

Table 1 Regional Job and Household Summary

	2040 CLRP			Initiative 8 Land-Use		
	Households	Jobs	Ratio	Households	Jobs	Ratio
Eastern Subregion	1,054,764	1,604,039	1.52	1,107,094	1,702,578	1.54
Western Subregion	1,513,958	2,546,274	1.68	1,591,628	2,447,735	1.54
TPB Planning Region Total	2,568,722	4,150,313	1.62	2,698,722	4,150,313	1.54

FINDINGS

Initiative 8 extends upon regional efforts toward concentrating growth in Activity Centers and around transit, and adds a significant number of households to achieve a better regional and sub-regional jobs and housing balance. Due to the significant land-use shifts, the analysis of Initiative 8 used a full model run to quantify the impacts, which indicate that Initiative 8 would provide significant improvements beyond the CLRP without having any additional investment in infrastructure.

Challenges Addressed by Initiative 8

Road Congestion improves significantly with an 18% reduction in daily vehicle hours of delay, about 325,000 hours saved each day due to shorter vehicle trips and increases in bicycling and walking.

Access to Bike/Ped Options improves significantly because housing and jobs are moving closer to each other and to transit, resulting in a 29% increase in non-motorized trips, the largest of any initiative.

Development Around Metrorail and **Housing & Job Location** improve significantly as the initiative is designed to bring development to Metrorail, and housing and jobs closer together. These assumptions result in improvements in commute travel times, number of jobs accessible by auto and transit, and share of households with access to high-capacity transit.

Incidents and Safety improve because VMT and VHD both decline, leading to a reduction in incidents (from the decline in VMT) and improved resiliency in the system when incidents occur (from the VHD and congestion reductions).

Table 21: Initiative 8 - Performance on Challenges

Challenges	Compared to CLRP
Road Congestion	High
Transit Crowding	Negative
Inadequate Bus Service	Neutral
Access to Bike/Ped Options	High
Development around Metrorail	High
Housing & Job Location	High
Metrorail Repair Needs	Neutral
Roadway Repair Needs	Neutral
Incidents and Safety	Medium
Pedestrian & Bicyclist Safety	Low
Environmental Quality	Medium
Open Space Development	Medium
Bottlenecks	Medium
Reliable Access to Intercity Hubs	Low

KEY: High, Medium, Low, Neutral, Negative

Source: Analyses performed by COG, ICF, Sabra Wang (SWA), Fehr & Peers (F&P), and Shapiro Transportation Consulting (STC).

Pedestrian & Bicyclist Safety improves because VMT decreases, but the improvement is moderated by the increasing exposure as non-motorized mode share increases.

Environmental Quality improves due to significant VMT, VHD, and emissions reductions.

Open Space Development improves as development shifts to Activity Centers away from the areas outside Activity Centers.

Bottlenecks on roadways improve significantly because of the significant VHD reductions, but rail bottlenecks may worsen given the changes in transit patterns.

Reliable Access to Intercity Hubs improves with reduced roadway congestion, but the share of trips on reliable modes does not change under this initiative.

Challenges Not Addressed by Initiative 8

Transit crowding may worsen due to an expected significant increase in Metrorail ridership without new capacity in Metrorail's crowded core. While some of the new transit trips may be traveling in the off-peak direction, it is likely that increasing the amount of housing in some corridors, such as the Orange and Silver lines in Virginia, will increase crowding traveling into the core.

Potential Compatibilities or Conflicts with Other Initiatives

Initiative 8 may be synergistic with all the other initiatives. Optimizing land-use balance paired with transit and/or multimodal investments or other policies could dramatically improve overall system performance.

Performance on Quantitative MOEs

Initiative 8 performs better than the CLRP in many MOEs including reductions in VHD, increases in number of jobs accessible by transit and by auto, increases in bicycle and pedestrian mode share, and reductions in VMT (as shown in Table 22). It also performed very well by reducing travel times for all modes, increasing the share of households and jobs with access to high-capacity transit, and reducing emissions.

Table 2: Initiative 8 - Performance Measures of Effectiveness Compared to 2040 CLRP

Quantitative MOEs	2040 CLRP	Initiative	Change from CLRP
Travel Time: average travel time per commute trip			
Single occupant vehicle (SOV)	50.7	48.2	-5%
High-occupancy vehicle (HOV)	58.9	55.4	-6%
Transit	53.9	51.4	-5%
Vehicle Hours of Delay			
Daily vehicle hours of delay	1.85 million	1.53 million	-18%
Jobs Accessible			
Transit: # of jobs accessible within 45-min transit commute	523,000	577,000	10%
Auto: # of jobs accessible within 45-min auto commute	876,000	962,000	10%
Commute Mode Share			
Single occupancy vehicle (SOV)	58.1	57.0	-2%
High-occupancy vehicle (HOV)	11.6	11.2	-4%
Transit	24.6	24.6	<1%
Bicycle/Pedestrian	5.6	7.2	29%
Travel on Reliable Modes			
Share of passenger miles on reliable modes	11.5%	11.5%	0%
Vehicle Miles Traveled (VMT)			
Daily VMT	141.91 million	137.44 million	-3%
Daily VMT per capita	21.2	19.9	-6%
Transit Options			
Share of households in zones with high-capacity transit	39.9%	44.3%	9%
Share of jobs in zones with high-capacity transit	57.7%	59.0%	2%
Emissions (metric tons per day)			
VOC Emissions (seasonal)	17.2	16.4	-4%
NOx Emissions (seasonal)	17.0	16.4	-4%
CO2 Emissions	47,082.3	45,058.3	-4%

Source: Analyses performed by COG, ICF, Sabra Wang (SWA), Fehr & Peers (F&P), and Shapiro Transportation Consulting (STC).

Initiative 8: Optimize Regional Land-Use Balance

The focus of this initiative was to achieve better jobs-housing balance in the region. This initiative encouraged development near and around underutilized premium transit stations.

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).

Assumptions

The jobs/housing ratio was evened out across the region increasing the increment of future employment growth in the eastern portion of the region and reducing this increment of future growth in the western portion of region. The eastern subregion includes the eastern portions of the City of Alexandria, Arlington County, Fairfax County, Prince William County, the District of Columbia, and Montgomery County, in addition to Charles County and most of Prince George's County. Refer to Figure 16 for the map showing the two subregions.

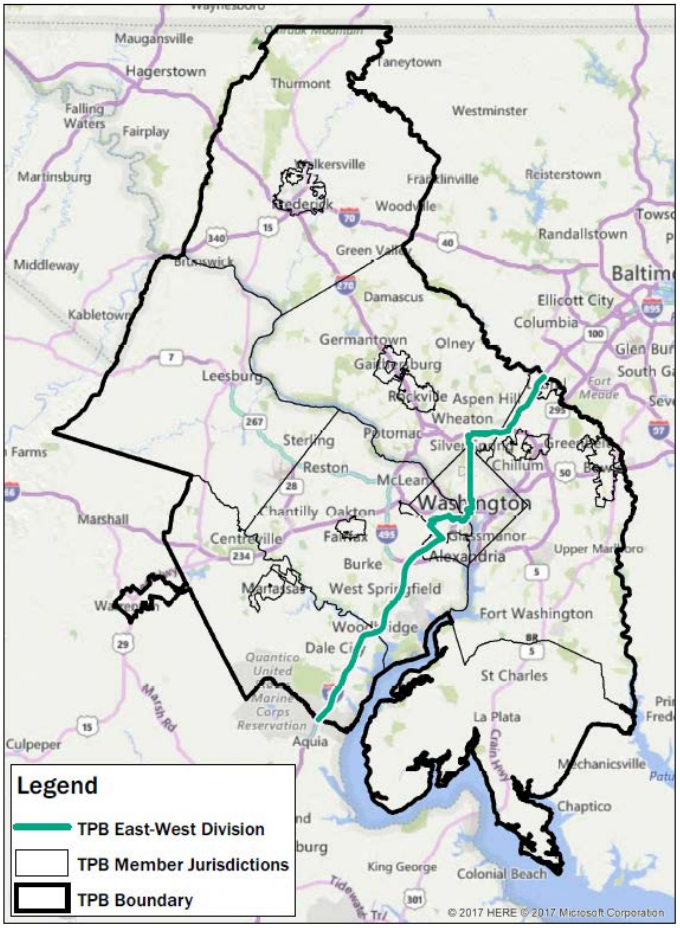


Figure 1 : TPB East- West Division (Source: MWCOG)

The Round 9.0 Cooperative Forecast in 2025 remained unchanged. Only the increment of growth between 2025 and 2040 outside of Activity Centers ("Growth Increment"; 2.3% of 2040 CLRP total) was reallocated. Jobs and housing in this optimization process were reallocated to underutilized rail stations and Activity Centers with high capacity transit.

Additionally, more housing was added to the region (130,000 households) to reduce the need for daily long-distance "in-commuters" living beyond the region's outer boundaries.

Eastern/western subregions were defined using the 2006 Regional Mobility and Accessibility Study. Household growth was not reallocated from the eastern to the western subregion. A maximum of 40,000 additional households beyond those anticipated in the 2040 CLRP could be accommodated in the western region portion of the District of Columbia.

Transportation network assumptions were not changed from the 2040 CLRP.

Approach in Detail

Year 2040 land use for Initiative 8 was allocated in the following steps:

1. Determined the 2040 job/household ratios, including 130,000 additional households, for the TPB Planning Region, the eastern subregion, and the western subregion.
2. Identified the "growth increment" eligible to be allocated. This increment included (1) job growth between the 2025 and 2040 CLRP outside of Activity Centers; (2) housing growth between the 2025 and 2040 CLRP outside of Activity Centers in the western subregion only; and (3) the 130,000 additional households from outside the region.
3. Identified the eastern/western subregion allocation of growth that could achieve jobs/housing balance between the eastern and western subregions, and shifted growth to underutilized rail stations and Activity Centers with high-capacity transit in the eastern subregion.
4. Allocated job and household growth within the eastern and western subregions to individual jurisdictions in an iterative process with the goal of each jurisdiction approaching the regional job/household ratio.

These steps are described in more detail below.

1. East/West Subregional Balance

Table 9 summarizes the jobs and housing included in the 2040 CLRP, with and without the additional 130,000 households. To reach a 1.54 jobs/households ratio in both subregions, growth in jobs would need to increase in the eastern subregion and slow in the western subregion.

Table 1: 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
TPB Planning Region Plus 130,000 Households	**4,150,313**	**2,698,722**	**1.54**

Source: *MWCOG – Round9_2040_zone.dbf*; *Eastern3722TAZs.shp*; *TPBTAZ3722_TPBPlan.shp*

2. Identifying the "Growth Increment"

The "growth increment" of job and household growth between 2025 and 2040 eligible to be reallocated across subregions within the TPB Planning Region (shown in Table 10) comprises of (1) job and housing growth outside of Activity Centers in the western subregion and (2) the 130,000 additional households. Figure 177 illustrates that this increment is a small share of overall regional jobs and households in the year 2040.

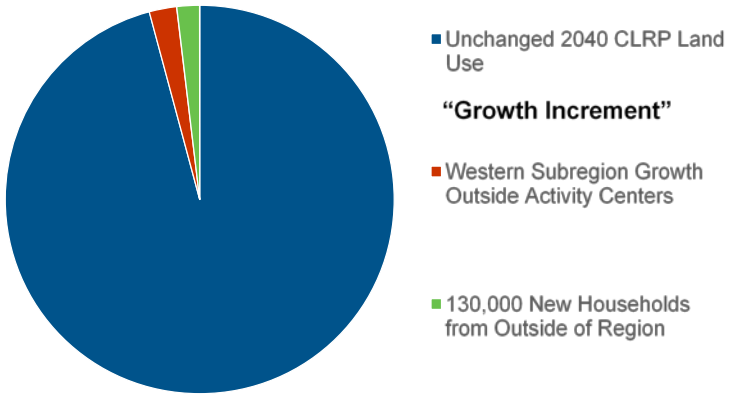


Figure 2: " Growth Increment" in Context of Total 2040 CLRP Land Use (Jobs Plus Households)

Table 2: Job and Household Growth

	2025-2040 Growth Increment Eligible for Reallocation	
	Jobs	**Households**
Western Subregion Outside Activity Centers	98,539	57,244
Households from Outside of Region	—	130,000
Total Eligible Growth Increment	**98,539**	**187,244**

Source: *MWCOG – Round9_2025_zone.dbf; Round9_2040_zone.dbf; Eastern3722TAZs.shp; TPBTAZ3722_TPBPlan.shp; COG_TAZ_by_Activity_Center.shp*

3. Identifying the Eastern/Western Subregion Allocation

Table 11 illustrates the allocation of the jobs and households from the growth increment that achieves jobs/housing balance between the eastern and western subregions and shifts growth to underutilized rail stations and Activity Centers with high-capacity transit in the eastern subregion.

Table 3: Subregional Job/Household Allocation

	Jobs	Households	Ratio
Growth Increment			
Total Eligible Growth Increment	98,539	187,244	—
Growth Allocated to Eastern Subregion	98,539	52,330	—
Growth Allocated to Western Subregion	0	134,914	—
Resulting Allocation			
Adjusted Eastern Subregion (2040)	1,702,578	1,107,094	1.54
Adjusted Western Subregion (2040)	2,447,735	1,591,628	1.54
TPB Planning Region Total	4,150,313	2,698,722	1.54

Source: *MWCOG – Round9_2025_zone.dbf; Round9_2040_zone.dbf; Eastern3722TAZs.shp; TPBTAZ3722_TPBPlan.shp; COG_TAZ_by_Activity_Center.shp*

4. Jurisdiction-Level Allocation

The growth increment land use available for reallocation was too small for all jurisdictions to reach the regional job/housing ratio of 1.54; jobs and households were allocated to individual jurisdictions within each subregion in proportion to the delta between the current jurisdiction's job/household ratio and the regional ratio of 1.54. Even this allocation would result in too much household growth in the western portion of the District of Columbia; growth there was capped at 40,000 additional households, and the remaining households were allocated to other jurisdictions to further close their job/household ratio deltas.

Table 4: Jurisdictional Level Job and Household Summary

Jurisdiction	2040 CLRP			Initiative 8 Land Use		
	Households	Jobs	Ratio	Households	Jobs	Ratio
Alexandria	92,898	142,735	1.54	92,898	142,735	1.54
Arlington	131,149	267,641	2.04	165,427	266,422	1.61
Charles	83,426	58,762	0.70	83,426	71,019	0.85
District of Columbia	396,233	1,011,806	2.55	485,486	1,007,702	2.08
Fairfax	530,118	908,430	1.71	578,515	903,797	1.56
Fauquier	10,806	25,296	2.34	13,140	20,961	1.60
Frederick	126,539	133,934	1.06	113,522	127,507	1.12
Loudoun	167,588	273,910	1.63	162,387	249,798	1.54
Montgomery	450,922	653,917	1.45	438,110	644,989	1.47
Prince George's	370,023	393,336	1.06	370,011	453,943	1.23
Prince William	209,020	280,546	1.34	195,800	261,440	1.34
Eastern Subregion	**1,054,764**	**1,604,039**	**1.52**	**1,107,094**	**1,702,578**	**1.54**
Western Subregion	**1,513,958**	**2,546,274**	**1.68**	**1,591,628**	**2,447,735**	**1.54**
TPB Planning Region Total	**2,568,722**	**4,150,313**	**1.62**	**2,698,722**	**4,150,313**	**1.54**

Source: *MWCOG – Round9_2040_zone.dbf; Eastern3722TAZs.shp; TPBTAZ3722_TPBPlan.shp*

Allocations were iteratively adjusted to ensure no jurisdiction's job/household ratio diverged away from the regional ratio of 1.54.

Allocation of "Growth Increment" to TAZs within each Jurisdiction

1. **First Allocation:** Households and jobs from the "growth increment" were allocated to TAZs that were both Activity Center and premium transit TAZs ("Activity Center + premium transit TAZs"). TAZ growth was allocated based on the proportion of the TAZ households plus jobs to the jurisdiction households plus jobs for the 2040 unadjusted CLRP (segmented by eastern and western subregion when the jurisdiction has TAZs in both subregions). Household growth was not allocated to TAZs with zero households in the 2040 unadjusted CLRP.

   Final household and job totals were calculated separately in the east and west. In the east, allocated job and household growth was added to the 2040 CLRP totals. TAZs in the east that received zero growth retained the housing and job totals from the 2040 CLRP. In the west, allocated job and household growth was added to the 2040 CLRP totals. TAZs in the west that received zero growth differed based on whether or not the TAZ is an Activity Center:

   - Activity Center TAZs retained the housing and job totals from the 2040 CLRP.
   - Non-Activity Center TAZs retained the housing and job totals from the 2025 CLRP.

   Thresholds: TAZ growth was capped in two ways:

   - **TAZ Density:** TAZ density is defined as the sum of TAZ jobs and households divided by the TAZ acreage. TAZ density resulting from growth assigned from the growth increment was capped for each jurisdiction (segmented by east and west when the jurisdiction has TAZs in both regions). The selected threshold was the maximum TAZ density for the unadjusted 2040 CLRP, 742 households plus jobs per acre, with the exception of the eastern portions of the District of Columbia and Prince George's County, where the cap was 105 jobs plus households per acre. Decreasing the cap in the eastern portion of these jurisdictions ensured that the majority of the growth increment allocated there was distributed to low density TAZs, allowing more TAZs with low density and premium transit to reach the "target" density of 105 jobs plus households per acre and supporting growth near underutilized transit stations. The lower density cap only prevented the growth increment from being assigned to TAZs where the density exceeded the cap; it did not result in the reduction of land uses in those TAZs.
   - **TAZ Growth:** TAZ growth was capped based on the percent growth between the unadjusted 2040 CLRP households plus jobs and the new, adjusted 2040 TAZ households plus jobs. TAZ growth was capped for each jurisdiction (segmented by east and west when the jurisdiction has TAZs in both regions). The cap was 50 percent growth for all jurisdictions with exceptions in Prince William County, the District of Columbia, and Prince George's County:
     - The eastern portion of Prince William County had a growth cap of 70 percent. This cap was higher than other jurisdictions because the eastern portion of Prince William County was allocated a larger number of jobs, relative to the unadjusted 2040 CLRP job total, than other jurisdictions.

- The eastern portions of the District of Columbia and Prince George's County had no growth cap. Relaxing this threshold allowed for growth in the currently low-density Activity Center + premium transit TAZs.

2. **Second Allocation:** During the first allocation, TAZs in two jurisdictions exceeded the thresholds. Housing growth in Activity Center + premium transit TAZs in the western portion of the District of Columbia exceeded the density threshold, while job growth in Activity Center + premium transit TAZs in the eastern segment of Prince William County exceeded the TAZ growth threshold. When TAZ growth caused a TAZ to exceed either threshold, the "overflow" jobs or housing were removed and reallocated, this time to TAZs that are premium transit TAZs but not Activity Center TAZs. This second allocation followed a similar methodology; it allocated growth based on the proportion of TAZ households plus jobs to jurisdiction households plus jobs for the 2040 unadjusted CLRP. Household growth was not allocated to TAZs with zero households in the 2040 unadjusted CLRP.
3. **Third Allocation:** During the second allocation, job growth in TAZs in the eastern segment of Prince William County exceeded the TAZ growth threshold. When TAZ growth caused a TAZ to exceed either threshold, the "overflow" jobs were removed and reallocated, this time to TAZs that are Activity Center TAZs but not premium transit TAZs. This third allocation followed a similar methodology; it allocated growth based on the proportion of TAZ households plus jobs to jurisdiction households plus jobs for 2040 unadjusted CLRP; household growth was not allocated to TAZs with zero households in the 2040 unadjusted CLRP.

   After the third allocation, no TAZs exceeded the TAZ density or growth thresholds.

4. **Exceptions to the allocation approaches described above:**
   - **Fauquier County:** Fauquier County does not have any premium transit or Activity Center TAZs. As a result, growth was allocated to all CLRP TAZs as a proportion of unadjusted 2040 TAZ households plus jobs to unadjusted 2040 jurisdiction household plus jobs.
   - **Charles County:** Charles County does not have any premium transit TAZs, but does have Activity Center TAZs. Allocated growth was distributed to Activity Center TAZs. While growth to Activity Center TAZs that are not premium transit TAZs was allocated in the third allocation for other jurisdictions, it was allocated in the first allocation for Charles County, as these were the priority TAZs in this jurisdiction.
   - **Eastern Portion of the District of Columbia:** After the first allocation, the "overflow" households in the eastern portion of the District of Columbia were reallocated within the remaining Activity Center + premium transit TAZs that had not yet reached the density target instead of to premium transit TAZs that are not Activity Centers (as was implemented for the second allocation). The households were allocated to the remaining Activity Center + premium transit TAZs below the 105 households plus jobs per acre density target, and they were allocated proportionally based on the gap between the density target and the density after the first allocation. This step allocated all of the growth increment for the eastern portion of the District of Columbia to Activity Center + premium transit TAZs.

Updated Land Use Inputs

This exercise revised the 2040 CLRP total households and total employment for each TAZ. To run the MWCOG model, all land use inputs were updated to reflect these changes, including household population, group quarters population, total household population, and individual employment sectors (industrial, retail, office, and other sectors).

- **Household Population:** Household population was calculated based on the ratio between the number of households and household population for each TAZ in the unadjusted 2040 CLRP. If the TAZ had zero households in unadjusted 2040 CLRP (13 TAZs), then the regional ratio of households to household population was used.
- **Group Quarters Population:** The group quarters population for the revised land use inputs was the same as the 2040 unadjusted CLRP.
- **Total Population:** Total population was the sum of the adjusted household population and unadjusted 2040 CLRP group quarters population.
- **Employment by Sector:** Employment by sector was calculated based on the ratio between each sector and total employment for each TAZ in the unadjusted 2040 CLRP. If a TAZ had zero employment in the adjusted 2040 calculation, then all employment types were set to zero. For one TAZ in the eastern portion of Prince William County (TAZ 2783), there were zero jobs in the unadjusted 2040 CLRP, so the distribution of employment across sectors was based on the average ratio for job sectors for the eastern portion of Prince William County.

Analysis Approach

2040 CLRP Round 9.0 Cooperative Land Use Forecasts were adjusted as described above. External travel was adjusted to reflect reduced regional in-flow associated with 130,000 households moved from outside the region. A full regional model with modified land use and unmodified 2040 CLRP transportation network was run. The model results were used to analyze the MOEs.

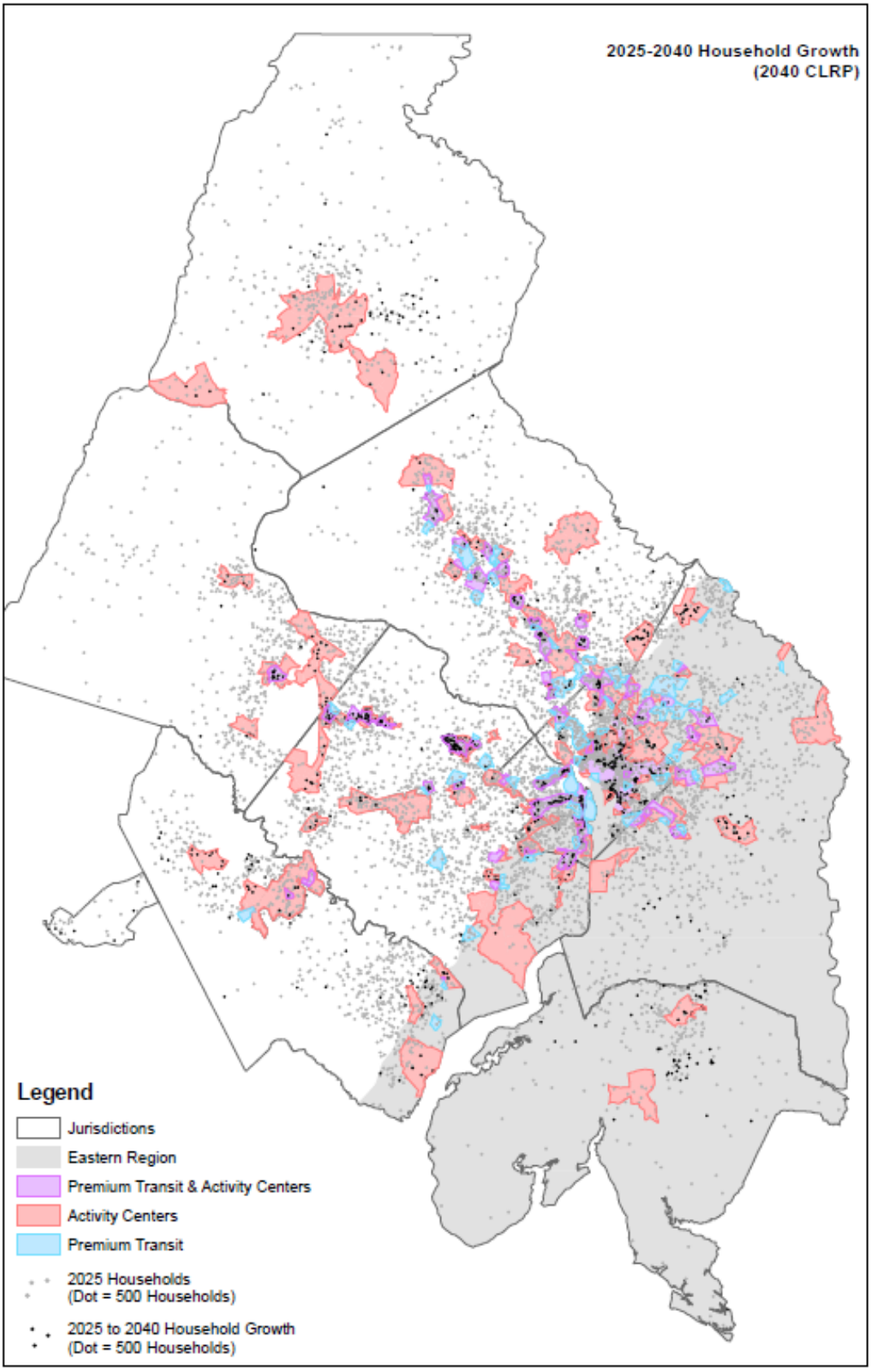


Figure 3: 2025-2040 Household Growth (2040 CLRP)

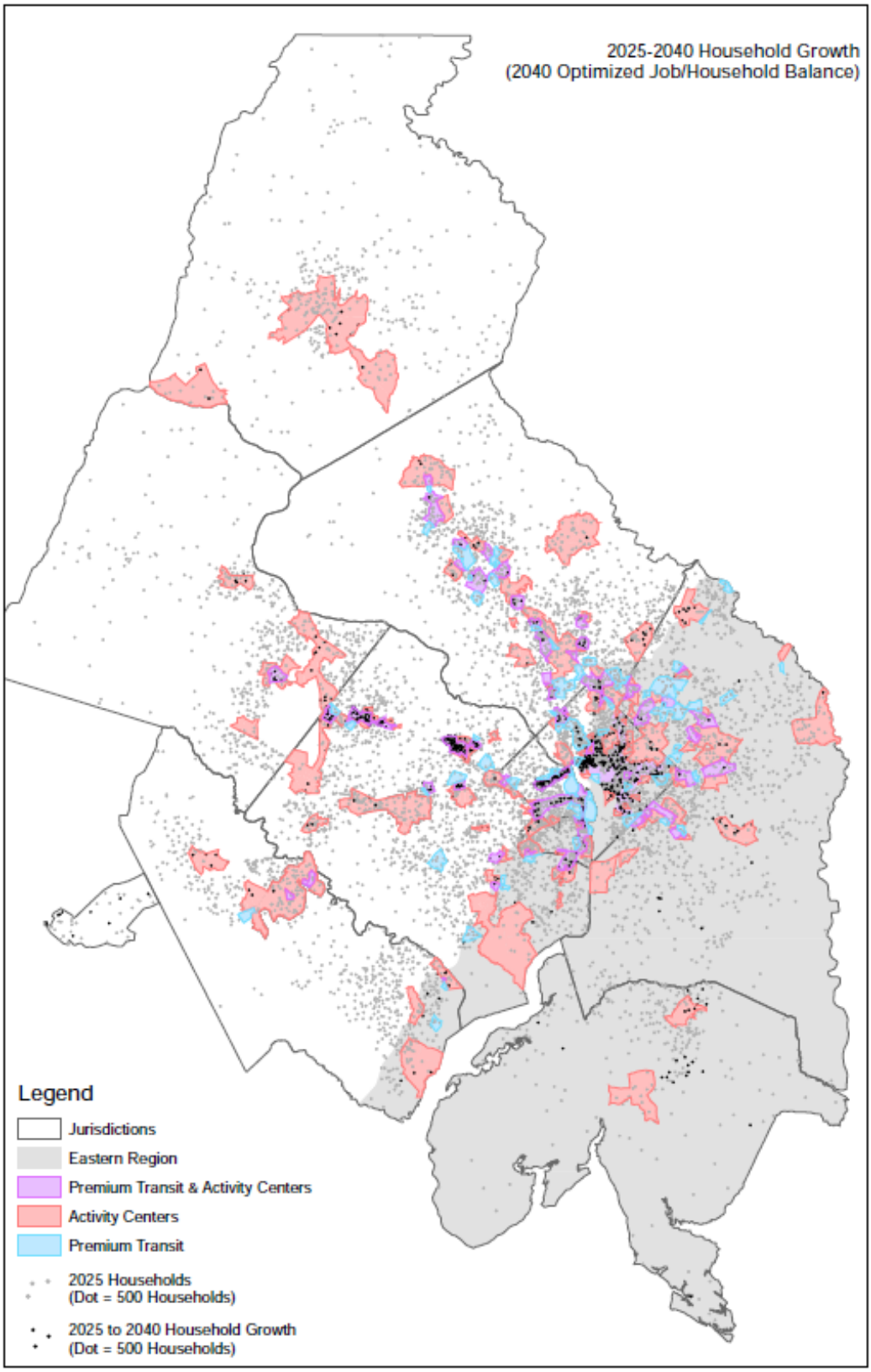


Figure 4: 2025-2040 Household Growth (2040 Optimized Balance)

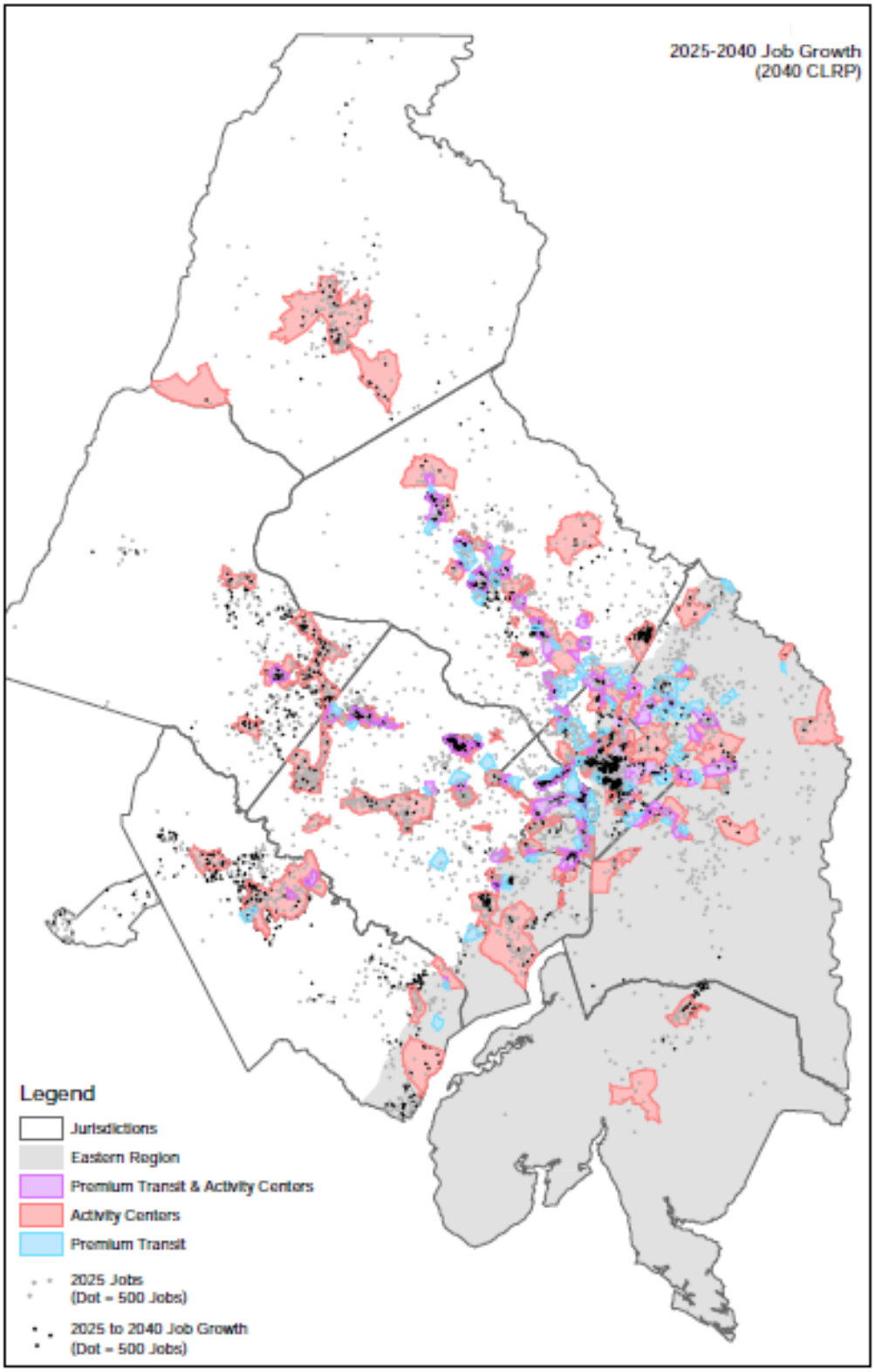


Figure 5: 2025-2040 Job Growth (2040 CLRP)

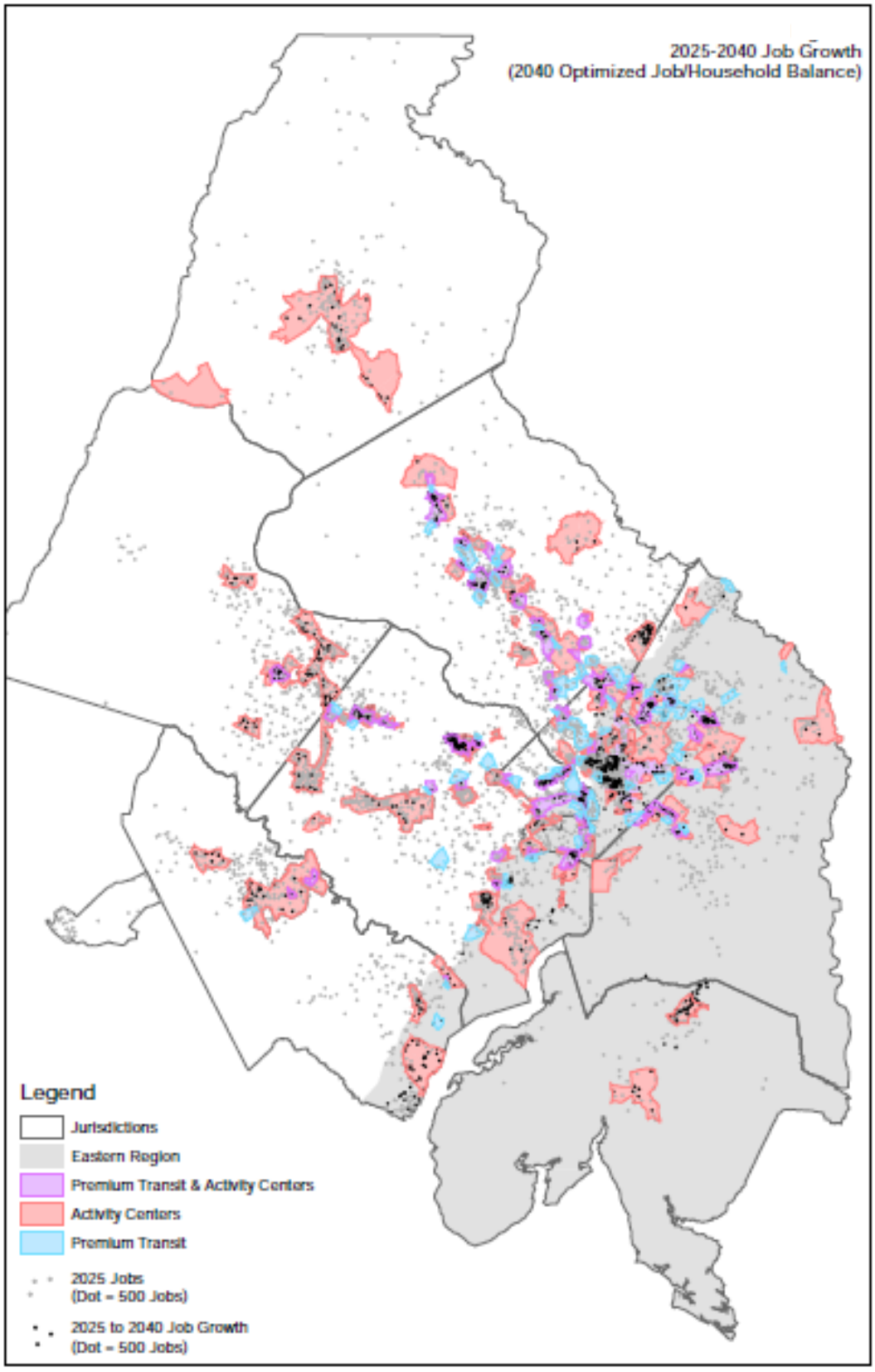


Figure 6: 2025-2040 Job Growth (2040 Optimized/ Household Balance)

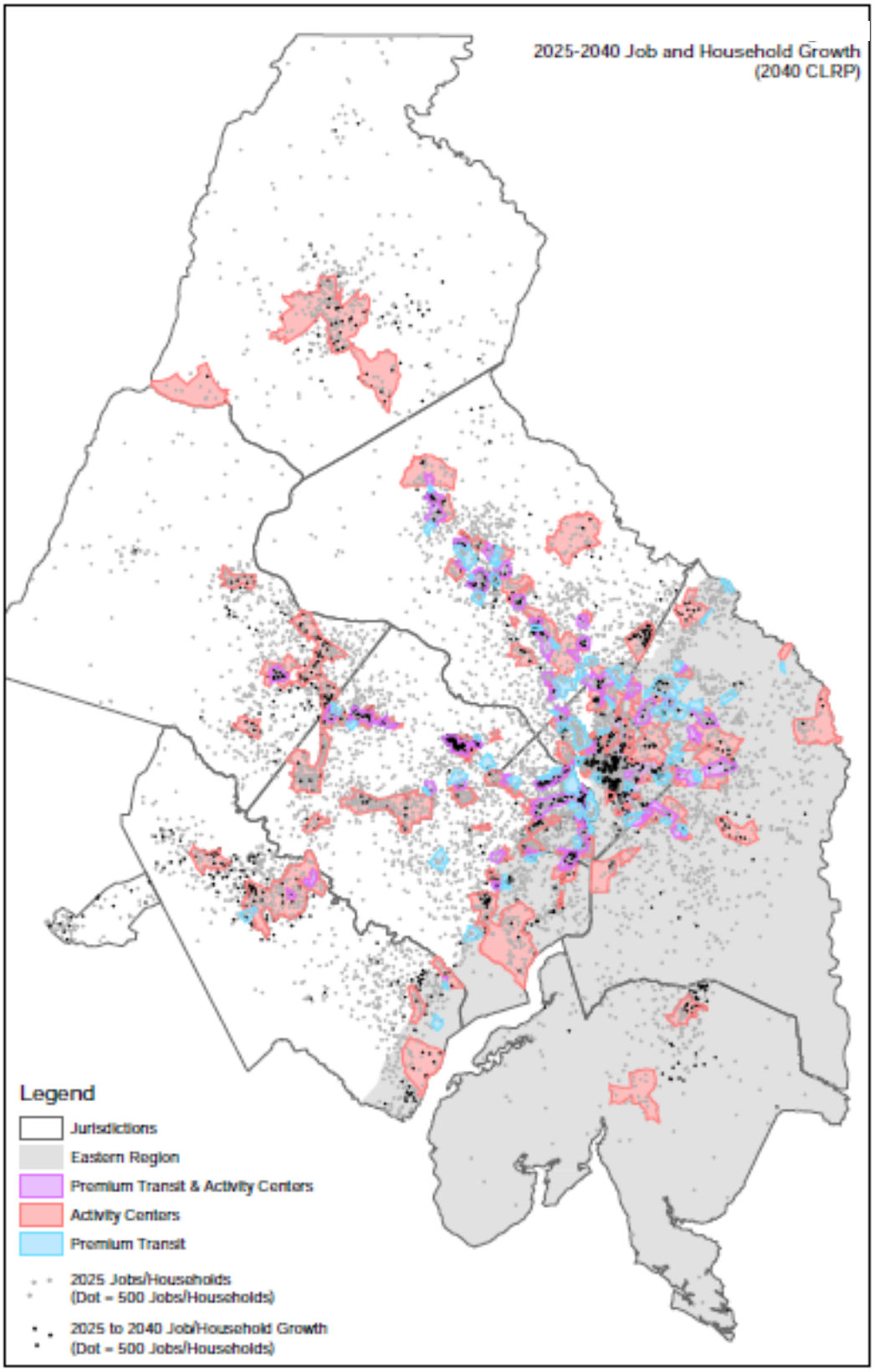


Figure 7: 2025-2040 Job and Household Growth (2040 CLRP)

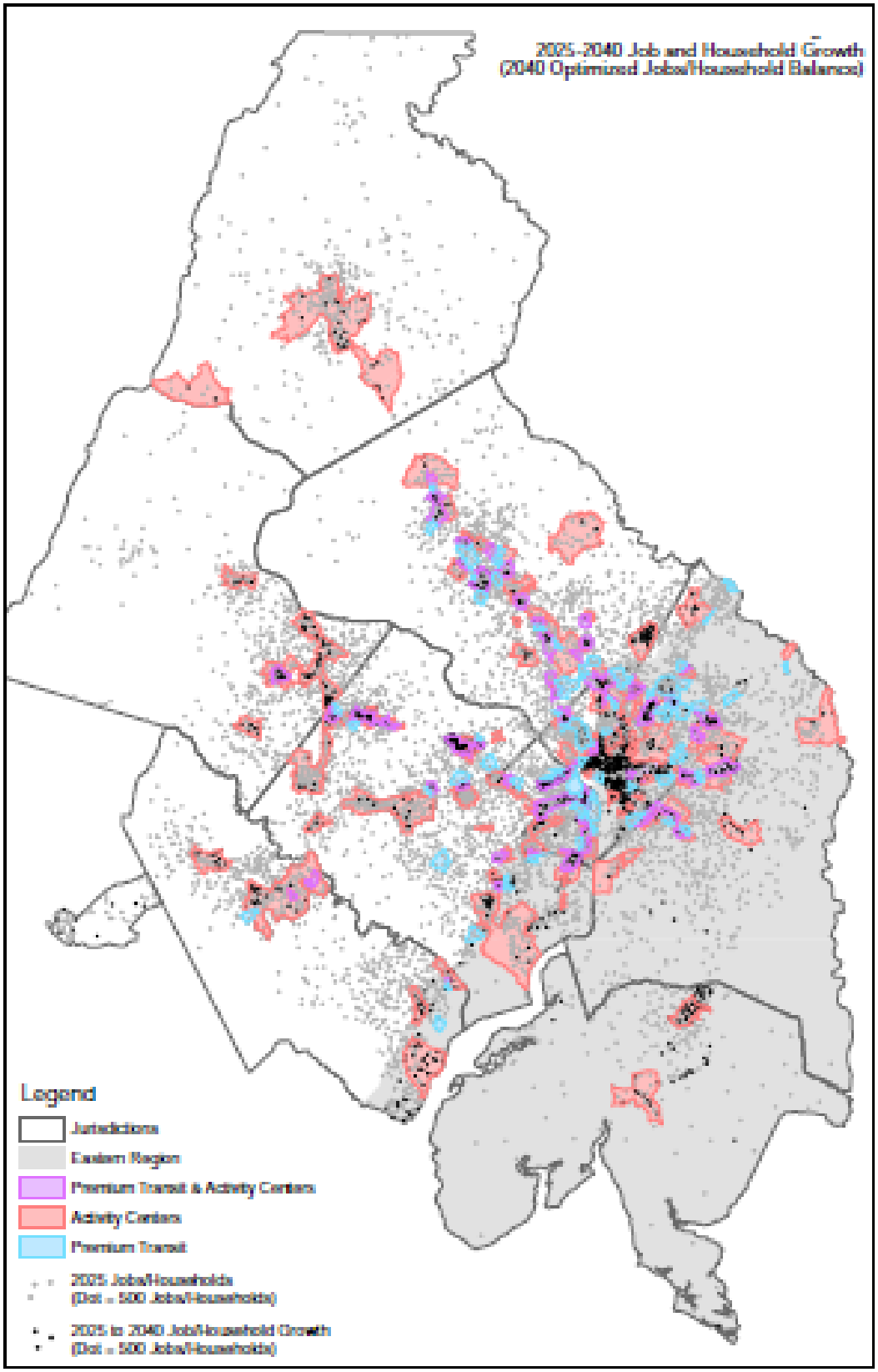


Figure 8: 2025-2040 Job and Household Growth (2040 Optimized Jobs/ Household Balance)

Table 1: Initiative Components

Multimodal Initiatives	
1. Regional Express Travel Network	• 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.
2. Operational Improvements and Hotspot Relief	• 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.
3. Additional Northern Bridge Crossing/Corridor	• New northern bridge crossing of Potomac River, as a multimodal corridor between the Intercounty Connector and Northern Virginia. • New express bus services connecting existing Activity Centers in this new multimodal corridor.
Transit-Focused Initiatives	
4. Regionwide Bus Rapid Transit and Transitways	• Bus rapid transit (BRT)/transitway networks in Montgomery County, Prince George's County, Northern Virginia (TransAction 2040), Washington D.C., and transitway from Branch Ave to Waldorf; specifications according to jurisdiction plans. • Additional D.C. streetcar line (north-south) as complement to network. • Improved bicycle and pedestrian connections and access improvements to transit stations.
5. Regional Commuter Rail Enhancements	• 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).[1] • Long Bridge corridor improvements including at least four tracks and bicycle-pedestrian facilities. • Improved bicycle and pedestrian connections and access improvements to rail stations.

[1] 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 can be found in Appendix C.

Transit-Focused Initiatives (Continued)	
6. Metrorail Regional Core Capacity Improvements	• 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 D.C. through Georgetown to Union Station toward Waterfront. • Improved bicycle and pedestrian connections and access improvements to rail stations.
7. Transit Rail Extensions	• 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.
Policy-Focused Initiatives	
8. Optimize Regional Land-Use Balance	• 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) and reduce the number of long distance commuters outside of the region.
9. Transit Fare Policy Changes	• Reduced price Metrorail fare for off-peak direction during peak period and on underutilized segments. • Free transit for low-income residents.
10. Amplified Employer-based Travel Demand Management	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

STUDY RESULTS

A technical analysis was undertaken for each of the ten initiatives. The analysis was used to arrive at regional measures of effectiveness (MOEs) which compared the regional performance of each initiative to the performance of the 2016 CLRP for the year 2040. The consultant team devised a method by which the quantitative measures could be related to each of the 14 challenges identified by the task force. This method allowed for the creation of a more user-friendly summary of results, shown as Table 2.

Table 2 presents a qualitative assessment summary that shows how each initiative performs relative to the 2040 CLRP with respect to each of the 14 challenges. The table relates initiatives to the challenges in terms of either positively improving the CLRP's performance (High, Medium, Low), having no effect on the CLRP's performance (Neutral) or worsening the CLRP's performance (Negative). For example, at the top left of Table 2, it is indicated that the Express Travel Network initiative will result in a "Medium" (or moderate) improvement in regional roadway congestion, relative to the CLRP's performance. Given the wide range of challenges relating to transportation performance, land development, repair needs, safety and environmental concerns, it is not surprising to note that any single initiative does not respond positively to all challenges. The table does provide the reader with a general sense of how the initiatives respond to the policy concerns of the TPB through a qualitative assessment.

A more detailed quantitative assessment of initiatives, developed from the technical analysis, is shown in Table 3. Table 3 presents the baseline MOEs for the 2040 CLRP and shows the percentage change in each MOE for each initiative relative to the baseline. For example, at the top left of the table, it is indicated that the average Single Occupant Vehicle (SOV) travel time of the Express Travel Network initiative will decrease (or improve) by 2%. The color coding provides a visual aid for more easily interpreting the quantitative results: light green to dark green indicates moderate to substantial improvement while orange indicates degradation in performance, compared to the baseline.

The task force reviewed the technical analysis and discussed the results in detail. Not surprisingly, many task force members requested more detailed information from the analysis team. The analysis team compiled responses to the task force questions and shared them with the members for their consideration in preparing their recommendations. While the team addressed most of the questions asked, the regional focus and technical methods used in the study would not support expeditious answers to some of the important questions pertaining to sub-area analyses.

Table 2: Summary of Performance Across Challenges Relative to 2040 CLRP

CHALLENGES	BASE: 2040 CLRP	I1: Express Travel Network	I2: Operational Improvements & Hotspot Relief	I3: Add'l Northern Bridge	I4: BRT and Transitways	I5: Commuter Rail	I6: Metrorail Core Capacity	I7: Transit Rail Extensions	I8: Optimize Regional Land-Use Balance	I9: Transit Fare Policy Changes	I10: Travel Demand Management
Road Congestion	BASELINE										
Transit Crowding											
Inadequate Bus Service											
Access to Bike/Ped											
Development around Metrorail											
Housing & Job Location											
Metrorail Repair Needs											
Roadway Repair Needs											
Incidents and Safety											
Pedestrian & Bicyclist Safety											
Environmental Quality											
Open Space Development											
Bottlenecks											
Reliable Access to Intercity Hubs											

KEY: High; Medium; Low; Neutral; Negative

Source: Analyses performed by COG, ICF, Sabra Wang (SWA), Fehr & Peers (F&P), and Shapiro Transportation Consulting (STC).

Table 3: Summary of Performance Across Quantitative MOEs Relative to 2040 CLRP

QUANTITATIVE MEASURES OF EFFECTIVENESS	BASE 2040 CLRP	I1 Express Travel Network	I2 Operational Improvements & Hot Spot Relief	I3 Add'l North Bridge	I4 BRT and Transitways	I5 Commuter Rail	I6 Metrorail Core Capacity	I7 Transit Rail Extensions	I8 Regional Land-Use Balance	I9 Transit Fare Policy Changes	I10 Travel Demand Management
Travel Time (SOV)	50.7	-2%	-4%	0%	-1%	-1%	-2%	-1%	-5%	0%	-4%
Travel Time (HOV)	58.9	-5%	-4%	-1%	-1%	-1%	-1%	-1%	-6%	<1%	-6%
Travel Time (Transit)	53.9	-1%	-2%	- <1%	-1%	<1%	-6%	- <1%	-5%	1%	<1%
Daily Vehicle Hours of Delay	1.85 million	-11%	-8%	-3%	-2%	-2%	-9%	-3%	-18%	-2%	-24%
Jobs Accessible by Transit	523,000	2%	2%	- <1%	4%	1%	19%	10%	10%	0%	0%
Jobs Accessible by Auto	876,000	5%	8%	1%	1%	<1%	2%	1%	10%	<1%	10%
Mode Share: SOV	58.1%	<1%	3%	<1%	-1%	-1%	-4%	-1%	-2%	<1%	-8%*
Mode Share: HOV	11.6%	-1%	-7%	0%	-1%	-1%	-5%	-3%	-4%	-2%	24%*
Mode Share: Transit	24.6%	1%	-4%	- <1%	4%	2%	11%	5%	<1%	2%	6%*
Mode Share: Non-Motorized	5.6%	0%	0%	0%	<1%	<1%	<1%	<1%	29%	0%	16%*
Travel on Reliable Modes**	11.5%	42%	-5%	-2%	6%	2%	9%	6%	0%	3%	-3%
VMT daily	141.91 million	<1%	2%	1%	- <1%	- <1%	-1%	-1%	-3%	-1%	-6%
VMT daily per capita	21.17	<1%	2%	1%	- <1%	- <1%	-1%	-1%	-6%	-1%	-6%
Share of Households in Zones with High-Capacity Transit	39.9%	0%	0%	- <1%	25%	<1%	<1%	17%	9%	0%	0%
Share of Jobs in Zones with High-Capacity Transit	57.7%	0%	0%	- <1%	15%	<1%	0%	13%	2%	0%	0%
VOC Emissions	18.9	0%	-3%	1%	-1%	0%	-2%	-1%	-4%	-1%	-8%
NOx Emissions	18.8	0%	0%	1%	0%	0%	-2%	-1%	-4%	-1%	-7%
CO_2 Emissions	47,082	0%	-1%	1%	-1%	0%	-2%	-1%	-4%	-1%	-7%

* Mode shares reflect trips taken. Due to telework, actual number of transit trips declines; bicycle/pedestrian stays flat; HOV increases slightly.

**Travel on reliable modes reflects the percentage of passenger miles on express lanes, Metrorail, bus rapid transit, commuter rail, walking, and biking; it does not reflect improvements in reliability due to reduced traffic congestion or programs that affect non-recurring delay, such as improved incident management.

Source: Analyses performed by COG, ICF, Sabra Wang (SWA), Fehr & Peers (F&P), and Shapiro Transportation Consulting (STC).

R8-2018
December 20, 2017

NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD
777 North Capitol Street, N.E.
Washington, D.C. 20002

RESOLUTION ENDORSING INITIATIVES RECOMMENDED
BY THE LONG-RANGE PLAN TASK FORCE

WHEREAS, the National Capital Regional Transportation Planning Board (TPB), as the metropolitan planning organization (MPO) for the Washington Region, has the responsibility under the provisions of the Fixing America's Surface Transportation (FAST) Act for developing and carrying out a continuing, cooperative, and comprehensive transportation planning process for the Metropolitan Area; and

WHEREAS, the TPB, as part of the regional metropolitan planning process, continues to develop and adopt a fiscally constrained long-range plan (formerly referred to as the "CLRP", now called "Visualize 2045") as mandated by the federal FAST Act as a means of ensuring that federal funding and approval for transportation projects in the region are made available; and

WHEREAS, there is concern that the combination of project inputs to the current CLRP results in unsatisfactory performance compared to current conditions, with peak hour congested lane miles increasing by 65%[1], daily vehicle hours of delay increasing by 74%[1], and reductions in CO2 emissions falling far short of the region's 80% multi-sectoral goal; and

WHEREAS, the TPB understands that one of its primary responsibilities is "to coordinate future plans, provide fair, balanced and comprehensive data and analysis to decision-makers to inform and influence transportation programming decisions so as to advance the regional Transportation Vision and Priority Principals by advancing a more effective set of projects and policy inputs to the region's long-range transportation plans"; and

WHEREAS, the TPB believes the region needs to a develop a long-range transportation plan that goes beyond the project inputs reflected in its current CLRP, and that includes a combination of projects, programs, and policies that would better achieve the broad range of transportation goals embedded in TPB and COG's adopted guiding documents; and

WHEREAS, the TPB and staff have been carrying out the charges identified in Resolution R16-2017, As Amended, and Resolution R1-2018, which created the Long-Range Plan Task Force (task force) and charged the task force and staff to complete several tasks by December 31, 2017, which will ultimately inform the future updates to the long-range transportation plan (Visualize 2045); and

[1] Transportation Planning Board," Performance Analysis of the 2016 CLRP Amendment", November 16, 2016

WHEREAS, in April 2017, the Long-Range Plan Task Force membership was appointed by the TPB officers, comprising a subset of TPB members and representatives of citizen involvement committees, including: the three TPB officers; nine local officials (three each from Maryland, Virginia, and the District of Columbia); one representative of each state-level department of transportation and WMATA; and one member each from the TPB Citizens Advisory Committee and the TPB Access for All Advisory Committee; for a total of 18 task force members; and

WHEREAS, the task force conducted ten meetings beginning on April 10 and completed the following tasks:

- The task force agreed to the transportation goals and developed a set of transportation challenges faced by the region, both of which are based on existing COG and TPB policy documents, that the task force sought to address through its work activities;
- The task force reviewed past scenario analyses, considered lessons learned, and brainstormed and compiled over 80 different projects, programs and policy ideas not currently in the CLRP that have the potential to address the challenges the region faces in achieving its transportation goals;
- From the larger set of ideas, the task force created ten improvement initiatives by combining mutually supportive projects, program and policy ideas; the task force recommended the ten initiatives to the TPB for further analysis to determine if the initiatives would help make significantly better progress towards achieving the transportation goals laid out in TPB and COG's governing documents;
- The TPB approved Resolution R1-2018 on July 19, 2017 accepting for further analysis the ten improvement initiatives recommended by the task force; charged staff with determining if and how any of these ten initiatives could make significantly better progress towards achieving the goals laid out in TPB and COG's regional governing documents; charged the task force with reviewing the analysis and presenting to the TPB later this year a summary of findings; presenting to the TPB a recommended process by which the TPB may later endorse a final selection from among the ten initiatives for inclusion in the aspirational element of the region's long-range transportation plan and/or future concerted TPB action;
- The task force continued to meet to oversee the analysis and agreed to a set of assumptions for each initiative and a common set of performance measures to be used in the sketch-planning analysis;
- The task force agreed to a process by which they would select for the TPB's endorsement a set of initiatives from amongst the ten initiatives analyzed; the process for selecting the initiatives with the most potential for improvements included the consideration of the quantitative assessments of the performance measures, a qualitative assessment of the regional transportation challenges, and other factors not explicitly analyzed;
- The task force presented the results of the analysis to the TPB at the November 15 meeting and subsequently held detailed discussions on the results of the analysis and its implications for its work activities;

- Using the process it had previously developed, the task force identified five of the 10 improvement initiatives analyzed as having risen to the top and having the most potential to address the region's transportation challenges; and

WHEREAS the task force has presented the attached set of five improvement initiatives from the ten that were analyzed as having the most potential to address the region's transportation challenges and help make significantly better progress towards achieving the TPB's transportation goals and recommends the TPB endorse these initiatives;

NOW THEREFORE BE IT RESOLVED THAT THE NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD:

1. Recognizes that combining projects, programs and policies represents a multi-modal and multi-disciplinary approach to effectively address the congestion and mobility challenges forecast for this region.

2. Endorses the attached list of five initiatives, found to have the most potential to significantly improve the performance of the region's transportation system compared to current plans and programs, for future concerted TPB action, and directs staff to include these initiatives in the aspirational element of the TPB's long-range transportation plan, Visualize 2045.

3. Recognizes that the TPB's endorsement is a milestone first step, and calls on its member jurisdictions and agencies to commit to fully explore the initiatives to identify specific implementation actions that could be taken, individually and collectively, to make them part of TPB's future fiscally constrained long-range plans.

R8-2018
December 20, 2017

FIVE IMPROVEMENT INITIATIVES ENDORSED BY THE TPB FOR FUTURE CONCERTED TPB ACTION

Optimize Regional Land-Use Balance: This initiative would optimize the balance of jobs and housing region-wide. The idea is to increase jobs and housing around underused rail stations and Activity Centers with high-capacity transit. Plus, it would encourage building additional housing in the region to match employment projections.

Regionwide Bus Rapid Transit (BRT) and Transitways: BRT, transitway, and streetcar routes that are in jurisdictions' plans but not yet in the TPB's long-range plan would be added at various locations throughout the region. This initiative would also improve pedestrian access to transit stations and increase the amount of jobs and housing around the transit stations.

Metrorail Core Capacity Improvements: This initiative includes running eight-car trains exclusively on all Metrorail lines—replacing six-car trains entirely. It would also add a second Rosslyn station, and a new rail line across the Potomac River connecting the District and Virginia through Georgetown to Union Station towards Waterfront. It also would add better bicycle and pedestrian access to rail stations.

Employer-Based Travel Demand Management Policies: New policies would increase teleworking regionwide and increase the number of employees receiving transit and carpool subsidies. This initiative would also increase the price for most of the parking for work-trips in Activity Centers.

Regional Express Travel Network: The region would have an extensive network of express toll lanes on existing highways. These lanes would use dynamic tolls to maintain desired travel speeds and be free to carpoolers and transit vehicles. New express bus service connecting Activity Centers would also travel on the network.