

Visualize 2045

Environmental Justice Analysis

Sergio Ritacco
Transportation Planner

TPB Technical Committee
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Item #4



Purpose

- The TPB must analyze the region's long-range transportation plan for compliance with federal Environmental Justice (EJ) rules and regulations. This work was split into two phases:
 - Phase 1: Adopting methodology and identifying Equity Emphasis Areas (EEAs).
 - Phase 2: Conducting an EJ analysis to examine the constrained element of Visualize 2045 for potential disproportionate and adverse impacts on low-income and minority populations.



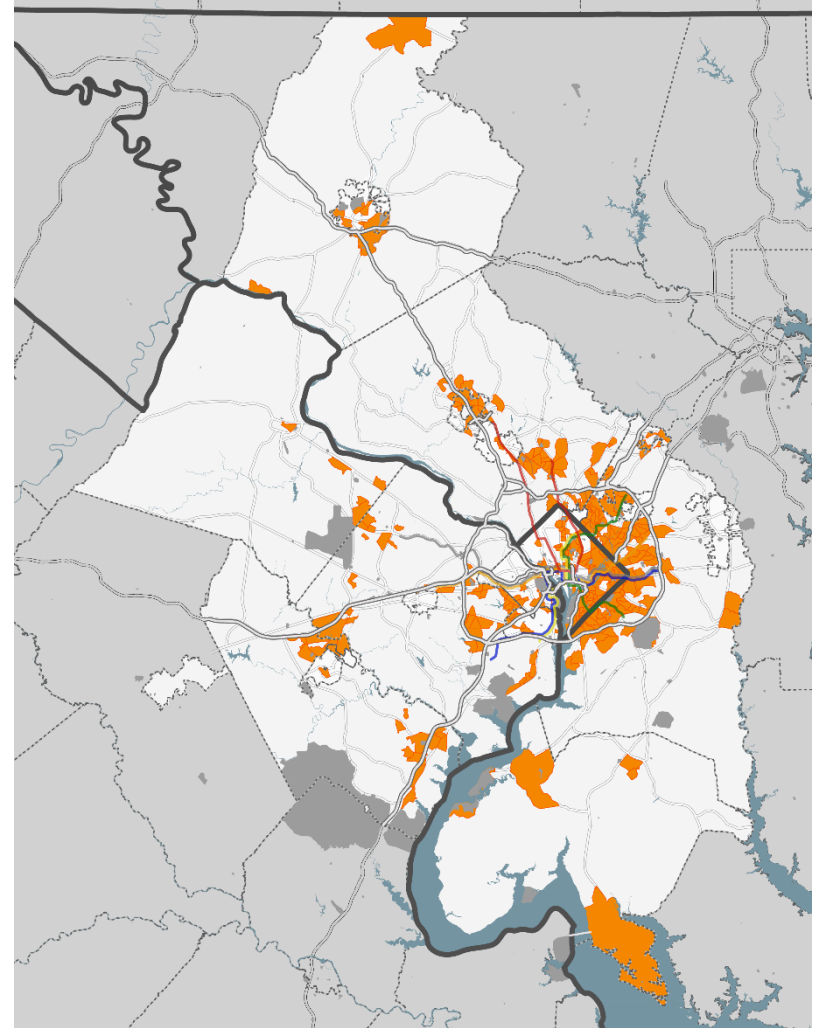
Federal Requirements

- Executive Order 12898 and subsequent guidance mandate identifying and addressing “disproportionately high and adverse human health and environmental effects, including social and economic effects, of their programs, policies, and activities on minority populations and low-income populations.”
- Key activities include:
 - Through an analytical process, determine whether any disproportionate and adverse impact on low-income and minority populations based on identified benefits and burdens would occur.
 - If such impacts would occur, demonstrate how plans, programs, and projects can avoid or minimize disproportionately high and adverse effects.



Phase 1: Identifying Equity Emphasis Areas

- **Criteria 1:** Low-Income concentration more than 1.5 times the regional average.
- **Criteria 2:** High concentrations of 2+ minority population groups or high concentrations of 1+ more minority population groups with low income at or above the regional average.



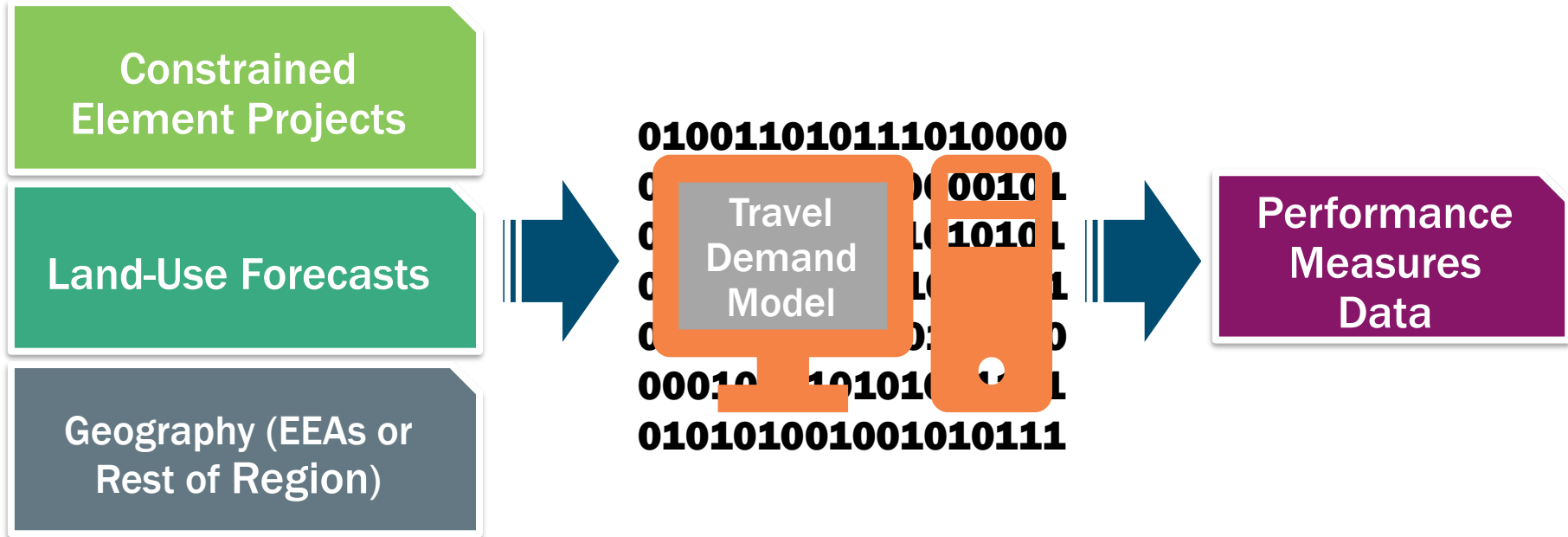
Phase 2: Environmental Justice Analysis

Three Steps:

1. Examine the constrained element of Visualize 2045 for changes in accessibility to jobs and hospitals by different modes of transportation.
2. Identify benefits and burdens in Equity Emphasis Areas (EEAs) as-a-whole and in the Rest of the Region.
3. Determine if a disproportionately high and significantly adverse impact on low-income and minority populations exists.



Phase 2: Environmental Justice Analysis Process



- Round 9.1 Cooperative Forecasts of Population, Households, & Employment
- Version 2.3.75 Travel Demand Model
- Analysis of TPB Planning Area during AM Peak Period



Phase 2: Environmental Justice Analysis Scenarios



Today (2019)

Today's
households and
jobs

Projects on the
ground in 2019



2045 No-Build

*Grow but
don't build*

Forecast growth
for 2045
households and
jobs

No new projects
beyond what is
on the ground in
2019



2045 Planned Build

*Grow and
build*

Forecast growth
for 2045
households and
jobs

All constrained
element projects
would be built
by 2045



Phase 2: Environmental Justice Analysis Measures

Accessibility Measures

1. Average number of jobs accessible by auto
2. Average number of jobs accessible by all transit
3. Average number of jobs accessible by High Capacity Transit
4. Average number of jobs accessible by bus
5. Population with walkable access to High Capacity Transit
6. Population with walkable access to bus service

Mobility Measures

7. Average commute time by auto
8. Average commute time by transit
9. Average travel time to closest hospital by auto
10. Average travel time to closest hospital by transit



Phase 2: Environmental Justice Determination

	Benefit	Burden
Accessibility Measures	Increase	Decrease
Mobility Measures	Decrease	Increase

Determination Test

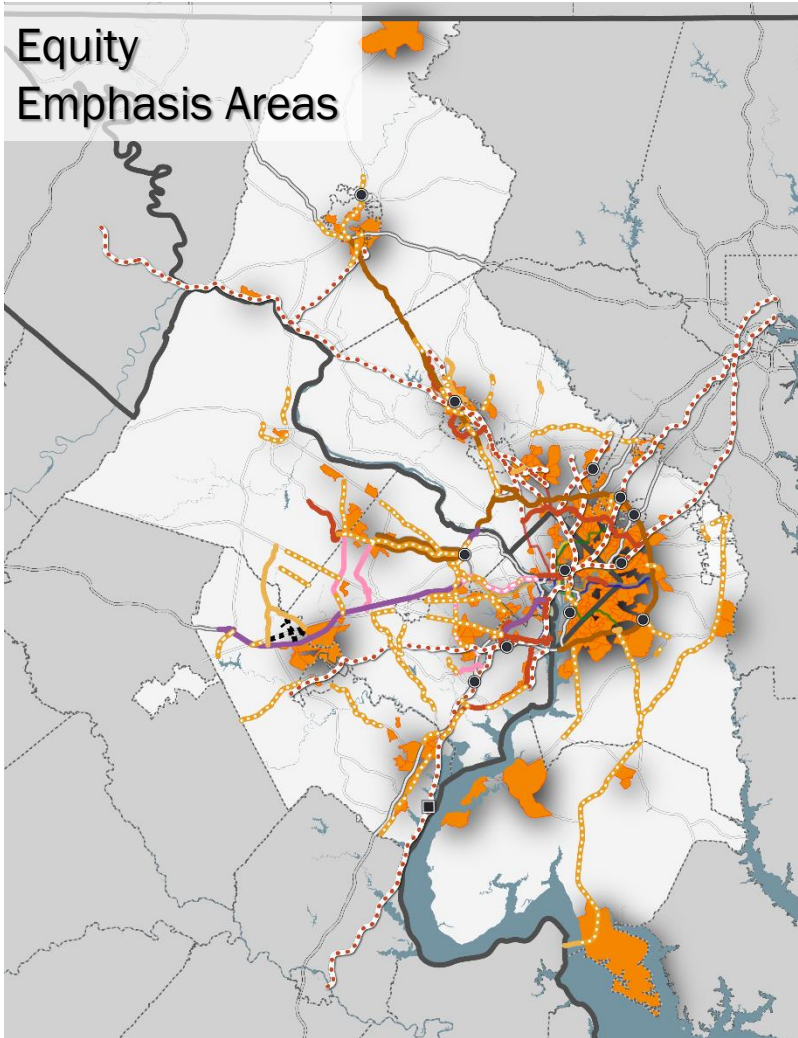
Impact of the constrained element of the plan would be considered disproportionately high and adverse when:

- 1) The burden is predominately borne by the Equity Emphasis Areas, and
- 2) Is appreciably more severe or greater in magnitude in EEAs than the Rest of the Region.

Bottom line: EEAs must experience a **Burden** while the Rest of the Region a **Benefit**.



Phase 2: Recap



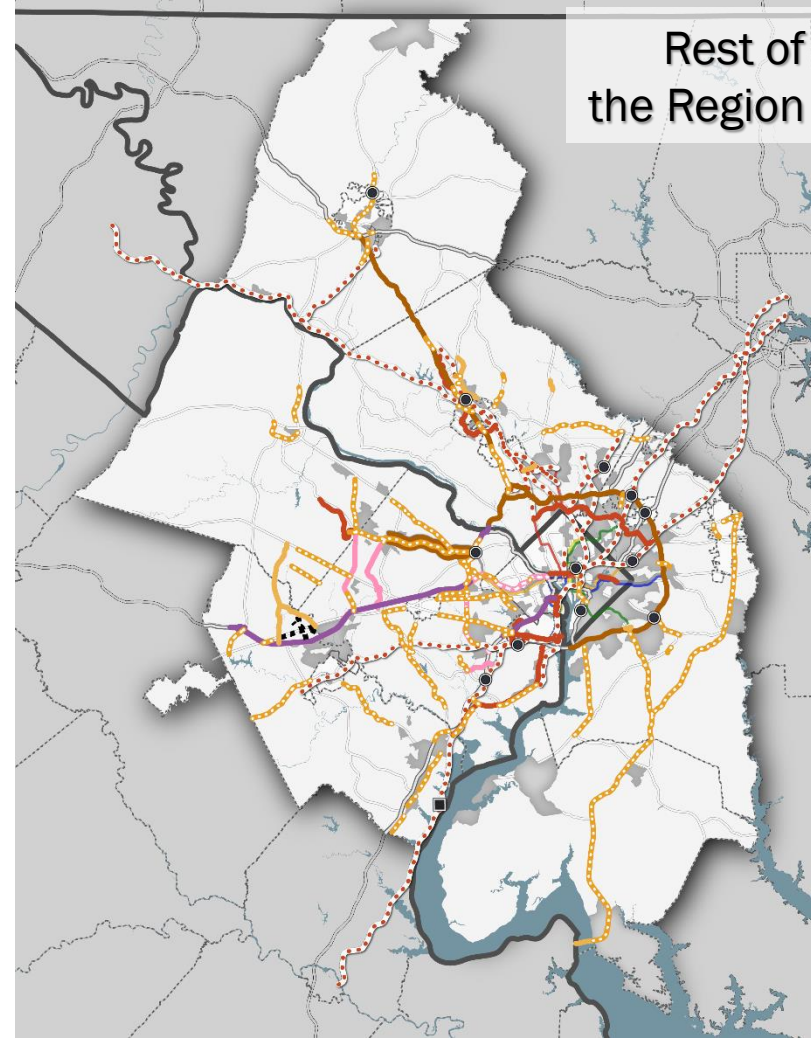
Today



2045
No-Build



2045
Build



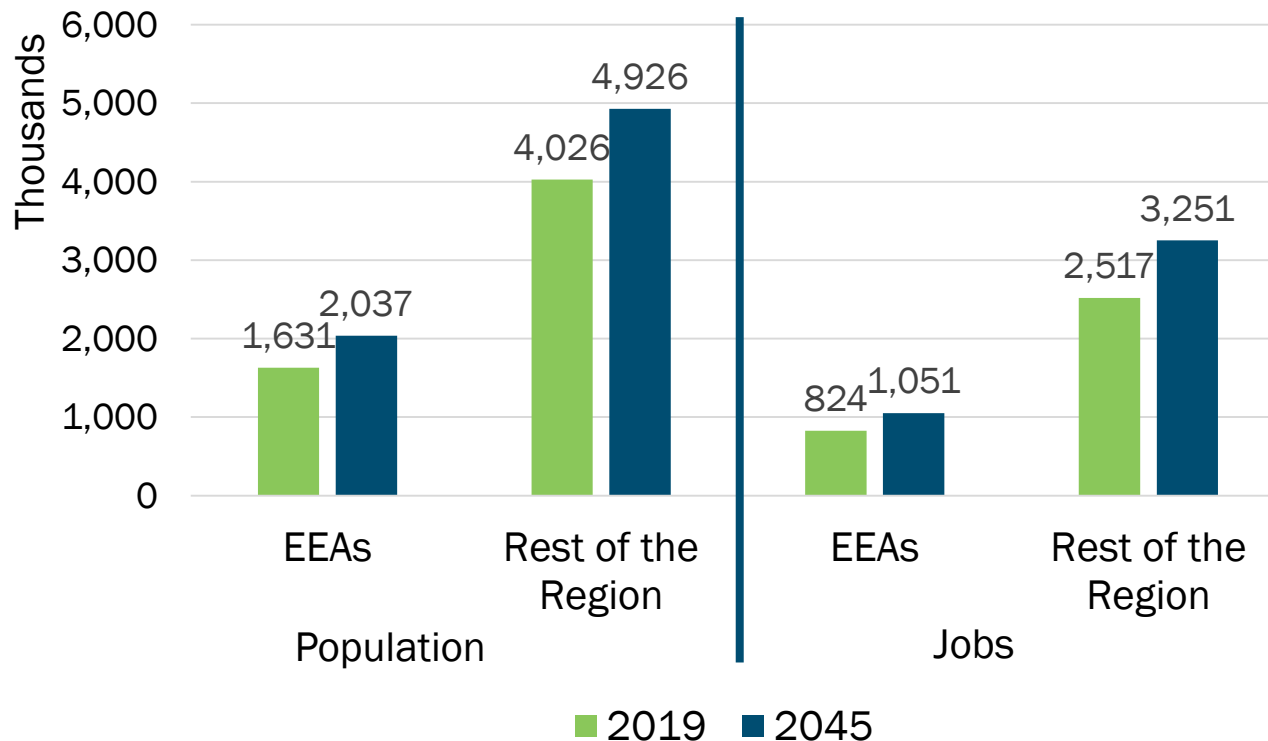
Phase 2: Analysis Context

- U.S. Census American Community Survey aggregates data over a five-year period to ensure reliable tract-level data.
- Relative to the general population, racial and ethnic minority groups tend to be undercounted.
- Limited to a regional-level analysis whose findings are not associated with any particular EEA, project, corridor, or sub-area.
- Current location of EEAs remain unchanged in 2045.
- Location and number of Hospitals remain unchanged in 2045.
- This analysis does not consider more qualitative aspects like:
 1. Safety and comfort
 2. Reliability
 3. Availability of information and ease of use
 4. Language barriers
- Analysis does not examine the availability or quality of off-peak service.



Phase 2: Summary Pop. and Jobs Data

Summary Demographic Data from COG Cooperative Forecast

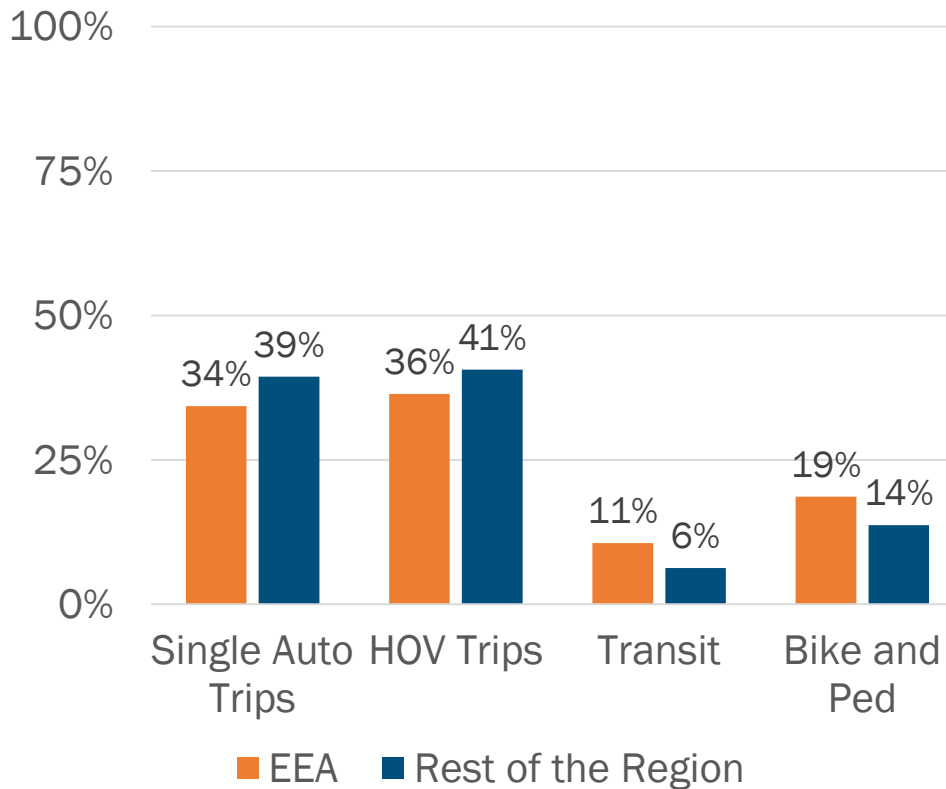


Source: COG Round 9.1 Cooperative Forecast

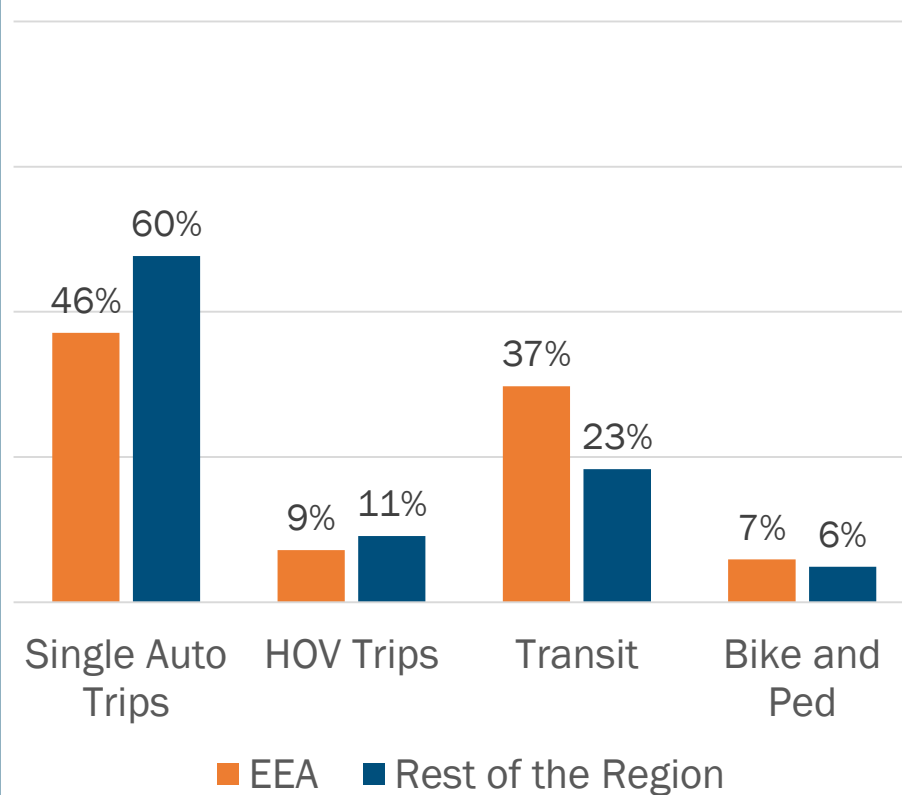


Phase 2: Summary Travel Characteristics

Share of All Trips for EEAs and the Rest of the Region (2045)



Share of Work Trips for EEAs and the Rest of the Region (2045)



Phase 2: Results Overview

Determination

Implementing the constrained element of Visualize 2045 would not have a disproportionate and adverse impact on low-income and minority populations.

Similar Benefits for EEs and the Rest of the Region

1. Average number of jobs accessible by auto
2. Average number of jobs accessible by all transit
3. Average number of jobs accessible by High Capacity Transit
4. Average number of jobs accessible by bus
5. Population with walkable access to High Capacity Transit
6. Population with walkable access to bus service
10. Average travel time to closest hospital by transit

Similar Burdens for EEs and the Rest of the Region

7. Average commute time by auto
9. Average travel time to closest hospital by auto

Disproportionate Benefits for EEs

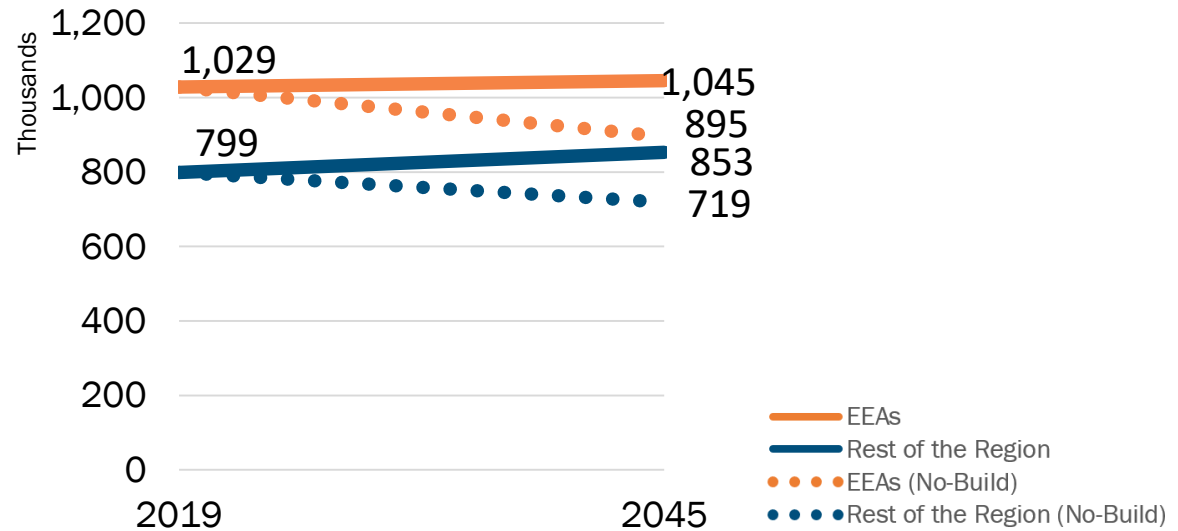
8. Average commute time by transit



Phase 2: Accessibility Results

Measure 1: Average number of jobs accessible by auto (thousands)

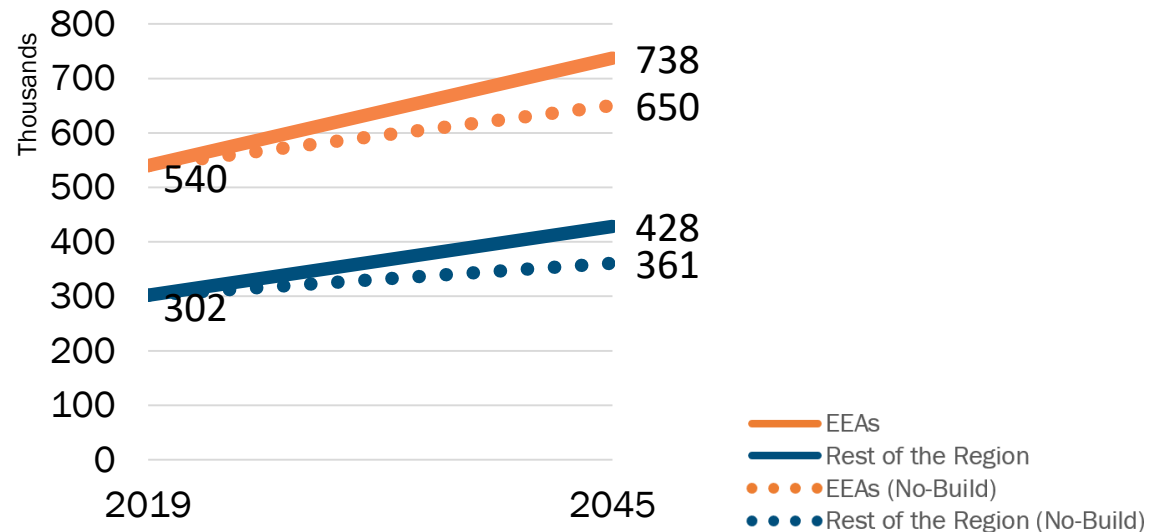
	Today	Plan Build 2045	No-Build 2045
EEAs	1,029	1,045 +1.6%	895 -13.0%
Rest of the Region	799	853 +6.8%	719 -10.0%



Phase 2: Accessibility Results

Measure 2: Average number of jobs accessible by all transit (thousands)

	Today	Plan Build 2045	No-Build 2045
EEAs	540	738 +36.7%	650 +20.5%
Rest of the Region	302	428 +42.0%	361 +19.5%



Phase 2: Accessibility Results

Measure 3: Average number of jobs accessible by High Capacity Transit (thousands)

	Today	Plan Build 2045	No-Build 2045
EEAs	197	335 +70.2%	280 +42.0%
Rest of the Region	125	203 +62.9%	173 +38.6%

Measure 4: Average number of jobs accessible by bus (thousands)

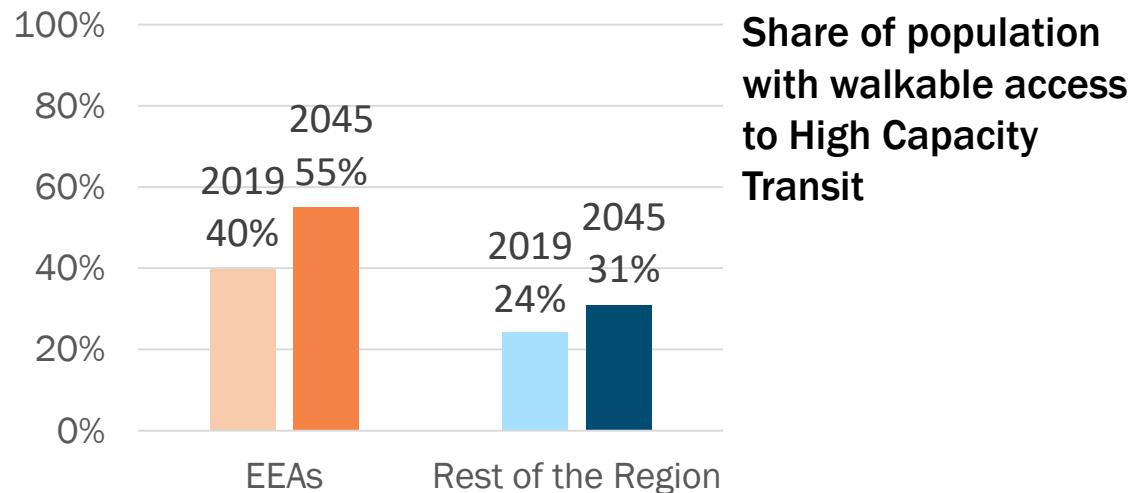
	Today	Plan Build 2045	No-Build 2045
EEAs	99	145 +46.3%	129 +30.9%
Rest of the Region	70	104 +49.4%	89 +27.8%



Phase 2: Accessibility Results

Measure 5: Population with walkable access to High Capacity Transit (thousands)

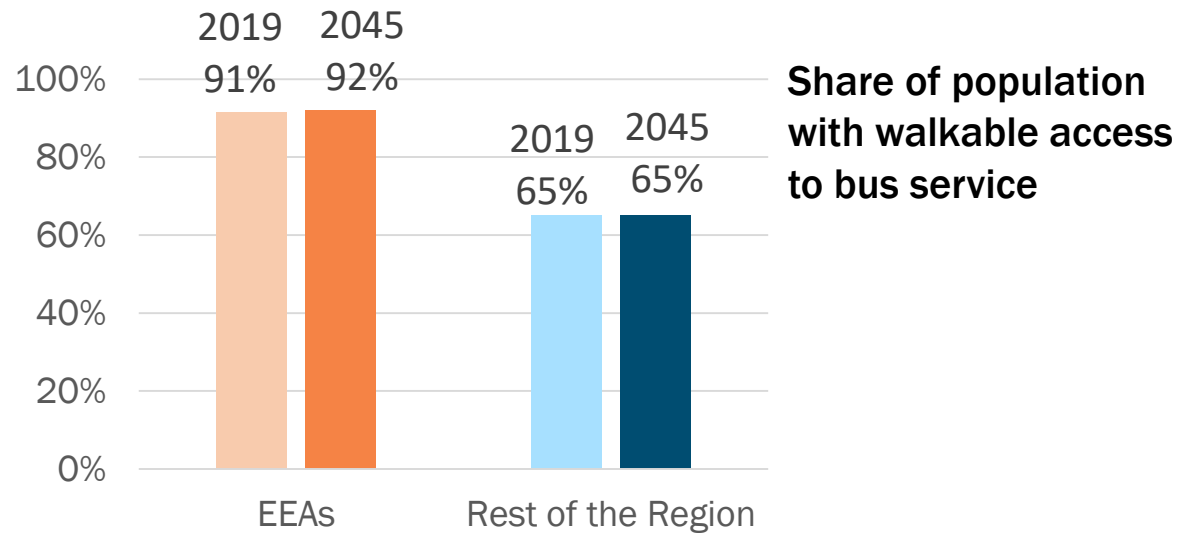
	Today	Plan Build 2045	No-Build 2045
EEAs	648	1,119 +72.8%	872 +34.7%
Rest of the Region	977	1,517 +55.2%	1,309 +33.9%



Phase 2: Accessibility Results

Measure 6: Population with walkable access to bus service (thousands)

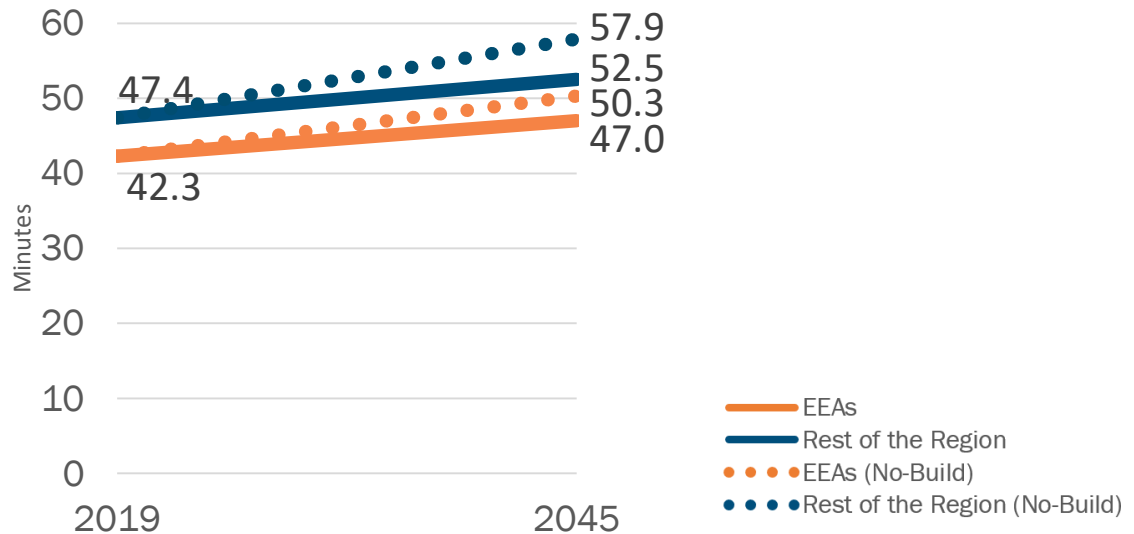
	Today	Plan Build 2045	No-Build 2045
EEAs	1,492	1,872 +25.5%	1,871 +25.4%
Rest of the Region	2,617	3,211 +22.7%	3,193 +22.0%



Phase 2: Mobility Results

Measure 7: Average commute times by auto (minutes)

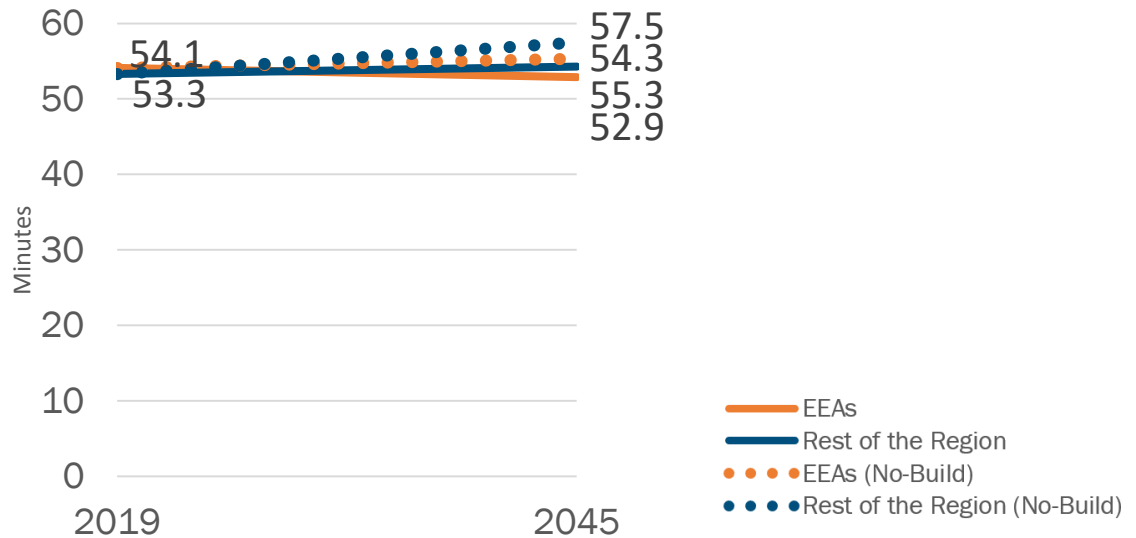
	Today	Plan Build 2045	No-Build 2045
EEAs	42.3	47.0 +11.1%	50.3 +18.9%
Rest of the Region	47.4	52.5 +10.8%	57.9 +22.2%



Phase 2: Mobility Results

Measure 8: Average commute times by transit (minutes)

	Today	Plan Build 2045	No-Build 2045
EEAs	54.1	52.9 -2.2%	55.3 +2.2%
Rest of the Region	53.3	54.3 +1.9%	57.5 +7.9%



Phase 2: Mobility Results

Measure 9: Average travel time to closest hospital by auto (minutes)

	Today	Plan Build 2045	No-Build 2045
EEAs	15.3	16.7 +9.2%	17.4 +13.7%
Rest of the Region	16.8	18.5 +10.1%	19.6 +16.7%

Measure 10: Average travel time to closest hospital by transit (minutes)

	Today	Plan Build 2045	No-Build 2045
EEAs	33.9	33.6 -0.9%	35.2 +3.8%
Rest of the Region	45.0	44.9 -0.2%	48.2 +7.1%



Next Steps

- Present to the Transportation Planning Board at the December meeting.



Sergio Ritacco

Transportation Planner

(202) 962-3232

sritacco@mwkog.org

visualize2045.org

Metropolitan Washington Council of Governments

777 North Capitol Street NE, Suite 300

Washington, DC 20002

