

ITEM 9 – Information

January 16, 2019

Visualize 2045: Environmental Justice Analysis Results

Staff Recommendation: Briefing on the results of the analysis.

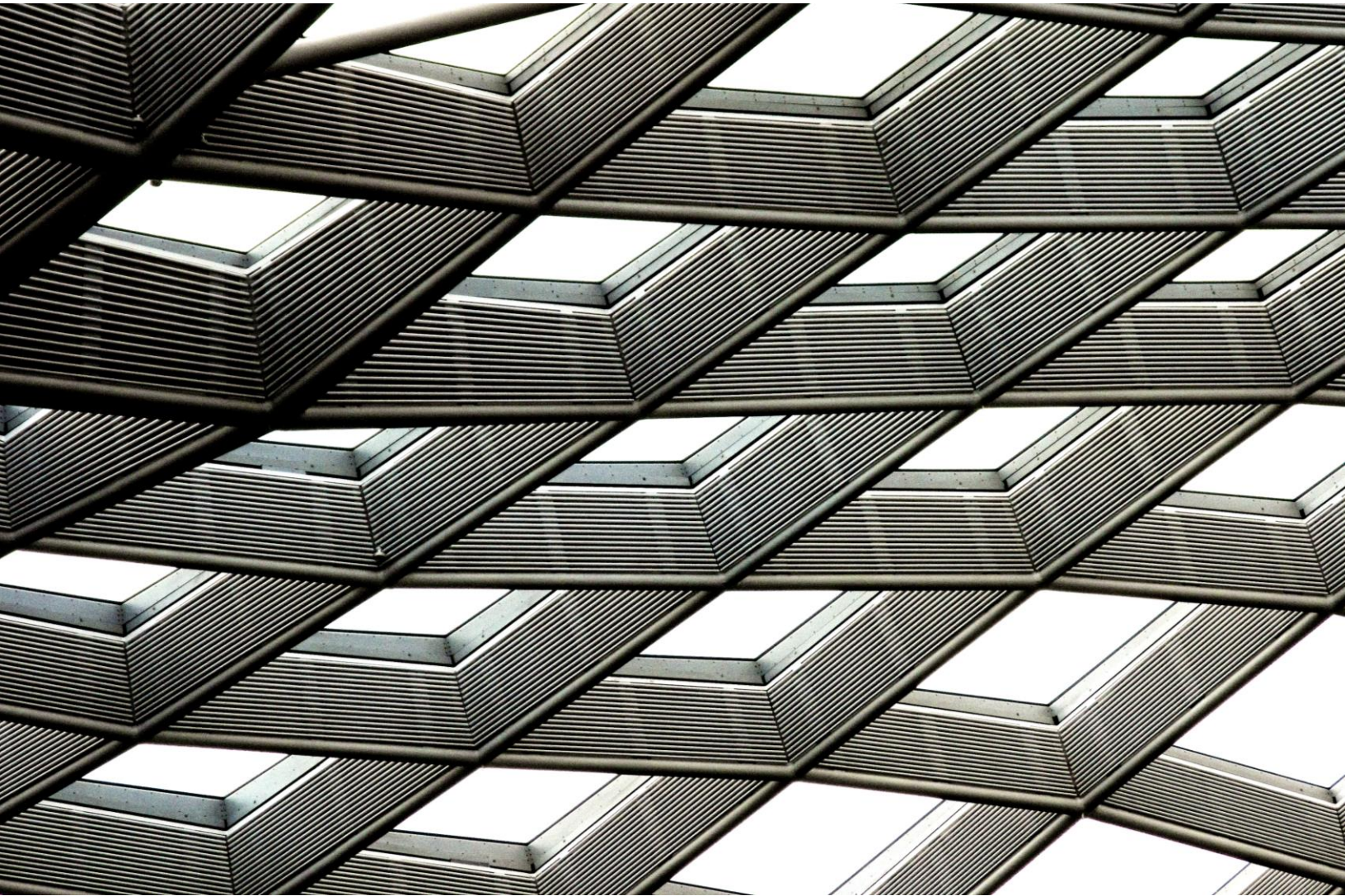
Issues: None

Background: The TPB is required to conduct an Environmental Justice analysis examining the constrained element of Visualize 2045 for impacts on low-income populations, minority populations, or both. Using the TPB-approved Equity Emphasis Areas, staff will present the results of this analysis. The results of the analysis demonstrate that Visualize 2045 does not have a disproportionately high or significantly adverse impact on these populations.

ENVIRONMENTAL JUSTICE AND TITLE VI ANALYSIS OF VISUALIZE 2045

Executive Summary

December 2018



National Capital Region
Transportation Planning Board

ENVIRONMENTAL JUSTICE AND TITLE VI ANALYSIS OF VISUALIZE 2045 EXECUTIVE SUMMARY

Prepared by TPB Staff

December 2018

ABOUT THE TPB

The National Capital Region Transportation Planning Board (TPB) is the federally designated metropolitan planning organization (MPO) for metropolitan Washington. It is responsible for developing and carrying out a continuing, cooperative, and comprehensive transportation planning process in the metropolitan area. Members of the TPB include representatives of the transportation agencies of the states of Maryland and Virginia and the District of Columbia, 23 local governments, the Washington Metropolitan Area Transit Authority, the Maryland and Virginia General Assemblies, and nonvoting members from the Metropolitan Washington Airports Authority and federal agencies. The TPB is staffed by the Department of Transportation Planning at the Metropolitan Washington Council of Governments (COG).

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INTRODUCTION

Visualize 2045, the long-range transportation plan for the National Capital Region Transportation Planning Board (TPB), must be analyzed at the regional level for compliance with federal Environmental Justice (EJ) rules and regulations. EJ analysis requires examining if Visualize 2045 would have any disproportionately high and adverse impact on low-income or minority populations in comparison to the remainder of the population in the region. The TPB analyzed Visualize 2045 and determined that the planned projects in the constrained element of the plan would not have a disproportionately high and adverse impact on low-income and minority populations. This determination is based on the finding that the identified benefits and burdens in Equity Emphasis Areas (EEAs) would not be predominately borne nor appreciably more severe or greater in magnitude than the burdens experienced by persons in the remainder of the Region. The results of this analysis meet applicable Title VI and Environmental Justice guidance, policies, and regulations, that the TPB is responsible for implementing as an agent of government that receives federal funding. Consistent with its commitment to equitable access to and services from the transportation system to its population, the TPB will continue to provide a forum to further explore the findings of this analysis, through ongoing consultation with member jurisdictions, to enhance the equitable distribution of benefits and elimination of any burdens to the minority and low-income populations groups.

The full documentation of the TPB's Environmental Justice and Title VI Analysis of Visualize 2045 is accessible here mwcog.org/documents/2018/10/17/visualize-2045-environmental-justice-analysis/.

Purpose and Requirements

This report summarizes the results of an equity analysis of the constrained element of Visualize 2045, the National Capital Region's long-range transportation plan, including the federally required Environmental Justice analysis. It focuses on the financially constrained element, which includes all transportation projects that are regionally significant, federally funded, or both, and are currently programmed to be completed in the region between now and 2045.

The purpose of this report is to demonstrate the TPB has complied with regional metropolitan transportation planning requirements for metropolitan planning organizations (MPOs) by conducting and documenting the results of the Environmental Justice and Title VI analysis of the region's long-range transportation plan. This report also provides decision makers, local elected officials, and the public with additional data, tools, and findings exploring transportation equity in the National Capital Region.

An Environmental Justice analysis seeks to identify and address disproportionately high and adverse impacts of a federal agency's programs and policies on minority and low-income populations in comparison to the remainder of the population. As the federally-designated MPO for regional transportation planning in the National Capital Region, the TPB is required to prepare a long-range transportation plan, which is subject to Environmental Justice regulations. As a result, TPB conducted this Environmental Justice and Title VI analysis of Visualize 2045 to identify and consider high and adverse impacts that may disproportionately burden low-income and minority populations.

Federal guidance defines three fundamental Environmental Justice principles that are consistent with the existing Executive and United State Department of Transportation (DOT) Orders and are the guiding principles for this analysis: ⁱⁱ

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

DOT Orders further define a “disproportionately high and adverse effect on minority and low-income populations” as an effect that:

1. Is predominately borne by a minority population and/or a low-income population, or
2. will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

For MPOs to meet EJ requirements, DOT guidelines suggest the following elements be included. This summary and the Full Technical Report complete elements #1 and #3 through #5. The TPB’s Participation Plan identifies and describes the TPB’s policies and procedures under element #2 to provide public access and involvement under a true collaborative planning process: ⁱⁱⁱ

1. A regional demographic profile of low-income populations and minority populations,
2. Documentation of public involvement activities as it relates to low-income and minority populations,
3. An analytical process and mapping,
4. Determination of any disproportionate and adverse impact on low-income and minority populations based on benefits and burdens identified in the analytical process, and
5. If present, a demonstration for how plans, programs, and projects can avoid or minimize disproportionately high and adverse effects.

Methodology

In 2016, TPB staff undertook a review of the state of the practice in Title VI and Environmental Justice analysis methods used by other MPOs. The major finding from the scan was that while the TPB’s previous approach was typical and compliant with the federal requirements, it could be enhanced. The review found that the Environmental Justice analyses of some MPOs first defined small geographic areas with concentration of low income or minority populations higher than other areas of a region, sometimes called “Environmental Justice Areas,” “EJ Areas,” or “Communities of Concern,” and then examined transportation performance in these smaller areas in comparison with

the rest of their planning areas, herein referred to as the Rest of the Region. The review also found many MPOs use multiple transportation performance measures in their evaluation.

Based on this examination of methods and testing of alternative enhancements, TPB staff developed a revised Environmental Justice analysis methodology. The revised methodology reflects two key elements:

Phase 1: Identifying small geographic areas with higher than average concentrations of low-income populations, minority populations, or both. These were labelled as Equity Emphasis Areas (EEA) denoting an emphasis to place on these areas while making transportation investment decisions. The TPB approved this methodology in March 2017 and the EEAs for this analysis were identified using this methodology in June 2018.

Phase 2: Examining the constrained element of Visualize 2045 for changes in accessibility and mobility, using several different measures; determining if the changes were benefits or burdens; comparing benefits and burdens within EEAs relative to the Rest of the Region and determine if a disproportionately high and adverse impact on low-income and minority populations exists.

PHASE 1: IDENTIFYING EQUITY EMPHASIS AREAS

The TPB methodology to identify EEAs, approved by the TPB at its March 2017 meeting, relies on the most recently available U.S. Census Bureau American Community Survey (ACS) data on income, race, and ethnicity to determine which Census tracts are considered Equity Emphasis Areas. For this analysis, tract-level data from the 2012-2016 5-year American Community Survey estimates for each of the following four population groups is used to identify areas that have above average concentrations of low-income populations, minority populations, or both, compared to the TPB planning area (see Figure 1):

- **Low-Income:** Individuals with household income less than one-and-a-half times the federal government's official poverty threshold, depending on household size.^{iv}
- **Black or African American:** A person having origins in any of the Black racial groups of Africa.
- **Asian:** A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent.
- **Hispanic or Latino:** A person of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin regardless of race.

TPB staff established a system for scoring each Census tract that used clear ground rules. Tracts were identified as Equity Emphasis Areas if one of two criteria are met:

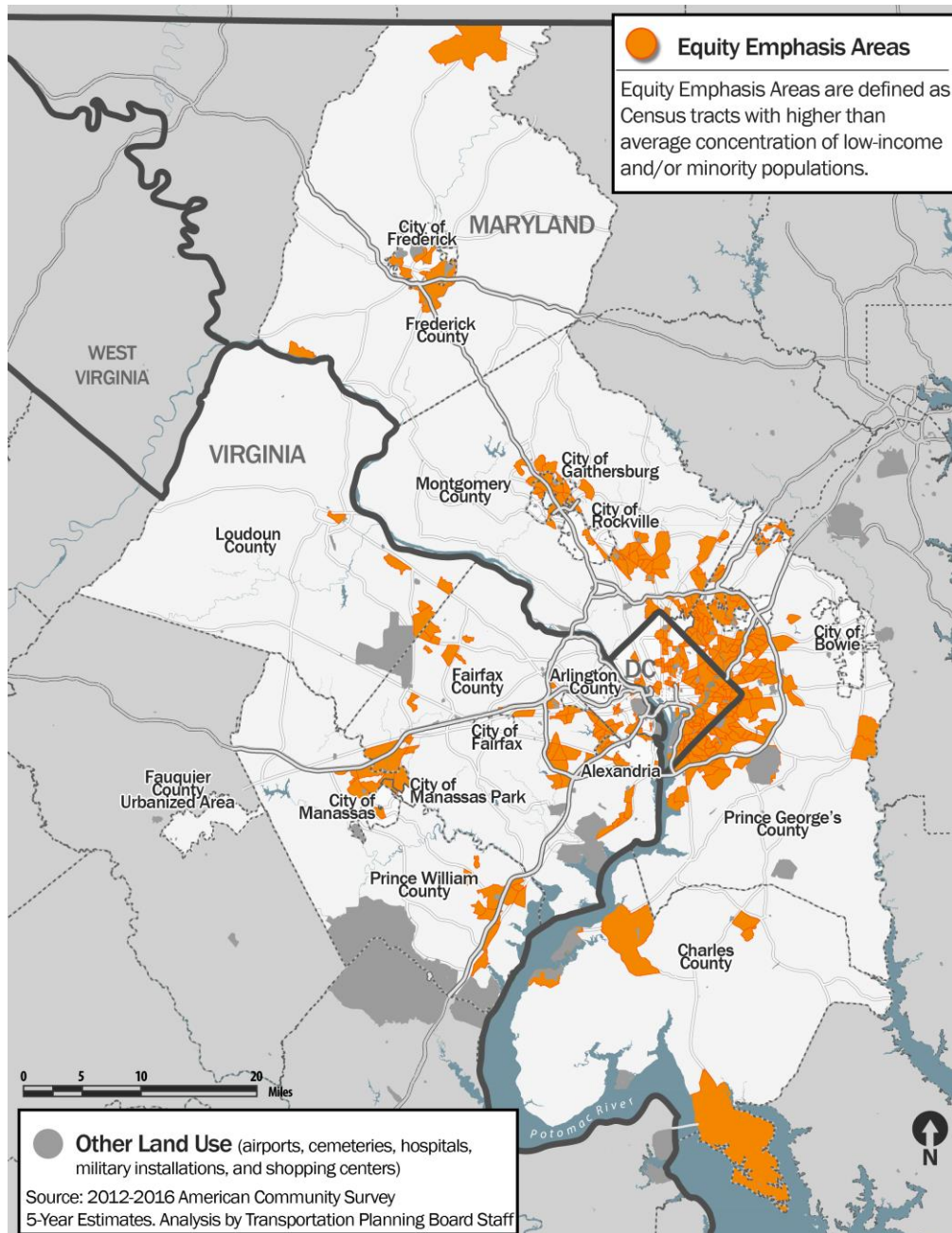
- Criteria 1:** Tracts must have a concentration of individuals identified as low-income more than one-and-a-half times the regional average.
- Criteria 2:** Tracts must have high concentrations of two or more minority population groups or high concentrations of at least one minority population group together with low-income concentrations at or above the regional average.

To identify tracts with above average concentrations of low-income or minority population groups, as well as to normalize and compare results across the four groups and the region, an Index Score was

calculated for every tract in the region based on each group's regional concentration in each tract. Index Scores for each population group were aggregated to reach an uncapped Total Index Score for each tract. Areas with Total Index Scores greater than or equal to 4.00 are considered Equity Emphasis Areas.

The results of the Phase 1 analysis identified 351 of the 1,222 tracts analyzed in the region, or 28%, as Equity Emphasis Areas.^v A map of the TPB Planning Area and identified areas is presented in Figure 1. An online interactive map is available with detailed data information at gis.mwcog.org/webmaps/tpb/clrp/ej.

Figure 1: Equity Emphasis Areas and the TPB Planning Area



PHASE 2: EXAMINING THE CONSTRAINED ELEMENT OF VISUALIZE 2045

Phase 2 of the Title VI and Environmental Justice analysis of the constrained element of Visualize 2045 uses output from the TPB’s travel demand model, which forecasts where, when, and how people will travel around the region in coming decades. To make its predictions, the model relies on the latest regional population and job growth forecasts from the Metropolitan Washington Council of Governments, information on existing travel patterns from the TPB’s 2007-2008 Regional Household Travel Survey, and the future transportation system laid out in the constrained element of Visualize 2045.^{vi}

This analysis primarily compares changes in transportation system performance from 2019 (Today) to a future, labelled “2045 Plan-Build” scenario, using a variety of accessibility and mobility measures. The changes in mobility and accessibility is attributable to the planned transportation projects included under the plan’s financially constrained element and the forecasts change in population and employment. The Full Technical Report also includes “2045 No-Build” scenario data, which represents a future in which no new transportation projects would be constructed, but anticipated population and job growth would still occur. This additional scenario allows the analysis team to better understand if the changes in accessibility and mobility measures are due to the impact of the transportation projects in the constrained element of Visualize 2045 or if they result from anticipated population and job growth. The following measures were analyzed:

Accessibility measures

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

Mobility Measures

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

The analysis developed quantitative estimates for the above measures for three geographic areas: (1) the entire TPB planning area, (2) the Equity Emphasis Areas as a whole and for (3) the Rest of the Region (excluding the EEAs). These estimates were then examined to identify benefits and burdens in all three areas. For the accessibility measures, a benefit is identified as an increase in average accessibility or an increase in the population with access to transit service between Today and 2045. Conversely, a burden is identified when a decrease in average accessibility or a decrease in the population with access to transit service between Today and 2045 is identified. For mobility measures, a benefit is identified when the average commute time or average travel time declines between Today and 2045. Finally, a burden is identified when the average commute time or average travel time increases between Today and 2045.

Using the results of the analysis of benefits and burdens, the final step is to determine if any of the estimated impacts, due to the planned projects in the constrained element of Visualize 2045, places a disproportionately high and adverse impact on low-income and minority populations. The impact would be considered disproportionately high and adverse when the adverse effect, or burden, is predominately borne by the Equity Emphasis Areas or will be suffered by the Equity Emphasis Areas and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the Rest of the Region.

Limitations of the Analysis

The methodology of this analysis is limited by available tools and data. When identifying tract-level areas with above average concentration of low-income, minority populations, or both, five-year U.S. Census American Community Survey is the most statistically significant. However, because data are aggregated over a five-year period instead of reflecting the most recent year. Also, racial and ethnic groups tend to be undercounted in the survey relative to the general population. This means that Census data may underestimate the relative size of minority groups in the Washington region. The number of individuals with disabilities may also be underestimated, because the Census relies on self-reports of disability status and some individuals may be reluctant to identify themselves as having a disability.

Further, the analysis assumes that the areas identified as Equity Emphasis Areas today will remain unchanged in 2045. However, the location of these areas will most likely change by 2045 as land uses, housing prices, and migration patterns alter the demographic profile of the region. Given the multiple variables and the difficulties in predicting how these variables will change in this region in the future, the current geographic distributions are assumed to remain constant through 2045.

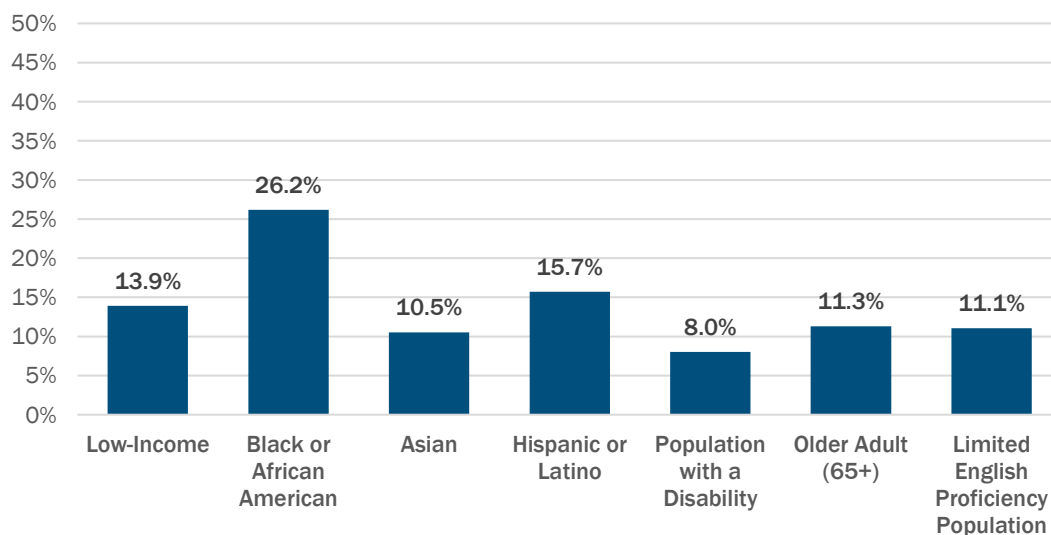
DEMOGRAPHIC PROFILE AND REGIONAL TRAVEL INDICATORS FOR THE NATIONAL CAPITAL REGION

This section provides the regional demographic profile of traditionally disadvantaged population groups in the National Capital Region.

Two important initial components in the Environmental Justice analysis include identifying the demographic makeup of the region and comparing the geographic location of traditionally disadvantaged population groups with the location of major transportation improvements from the constrained element of Visualize 2045. This approach allows a greater understanding of how the major transportation improvements over the next 27 years may affect traditionally disadvantaged population groups. Maps detailing the location of traditionally disadvantaged population groups with overlays of the major highway, major transit, and major managed High-Occupancy Toll (HOT), High-Occupancy Vehicle (HOV), and Toll Lane Projects from the constrained element of Visualize 2045 can be found in the Full Technical Report, Appendix A.

According to the U.S. Census, the National Capital Region is home to over 5.4 million residents. Traditionally disadvantaged population groups make up important shares of the region's population. Figure 2 presents the share of the region's population which identifies as low-income, members of a racial or ethnic minority, persons with a disability, older adults, or persons with limited English proficiency.^{vii}

Figure 2: Demographic Profile of the National Capital Region (2017)



Source: U.S. Census, 2012-2016 American Community Survey 5-year estimate

In 2019, Round 9.1 of the Cooperative Forecast expects the region's population to be over 5.6 million residents and 3.3 million jobs. By 2045, the region is expected to add 23% more residents and 26% more jobs, to 6.9 million and 4.3 million, respectively. Equity Emphasis Areas account for 29% of the region's population and 25% of jobs. Table 1 present summary demographic data for the region, Equity Emphasis Areas, and the Rest of the Region.

Table 1: Summary Demographic Data from COG Cooperative Forecast

	2019	2045	Change
Population			
EEAs	1,630,714	2,037,476	+406,762 (24.9%)
Rest of the Region	4,025,831	4,925,982	+900,151 (22.4%)
Region	5,656,545	6,963,458	+1,306,913 (23.1%)
Jobs			
EEAs	824,410	1,050,938	+226,528 (27.5%)
Rest of the Region	2,516,993	3,251,284	+734,291 (29.2%)
Region	3,341,403	4,302,222	+960,819 (28.8%)

Source: COG Round 9.1 Cooperative Forecast

Using the Equity Emphasis Area (EEAs) geographies, the analysis identifies important differences in how low-income and racial and ethnic minorities are expected to use the region’s transportation network in 2045. The analysis looks at mode share for two groups of trips – all trips and work trips only.

For all types of trips taken in the region, people in EEAs will be more likely to take transit or use bicycle and pedestrian facilities than people in the Rest of the Region. In contrast, people in EEAs are less likely to drive alone (Single Auto) or drive with two or more people (HOV) than people in the Rest of the Region (see Figure 3).

When work trips are isolated for 2045, the patterns in mode share are similar between the two geographies, although the differences are sharper. People in EEAs are expected to be even more likely to take transit for work trips than for all trips. Similarly, driving alone for people in the Rest of the Region is expected to be much higher for work trips than for all trips (see Figure 4). For both groups, people will be much less likely to walk, bike, or use an HOV for work trips than they will for all trips.

Figure 3: Share of All Trips for EEAs and the Rest of the Region (2045)

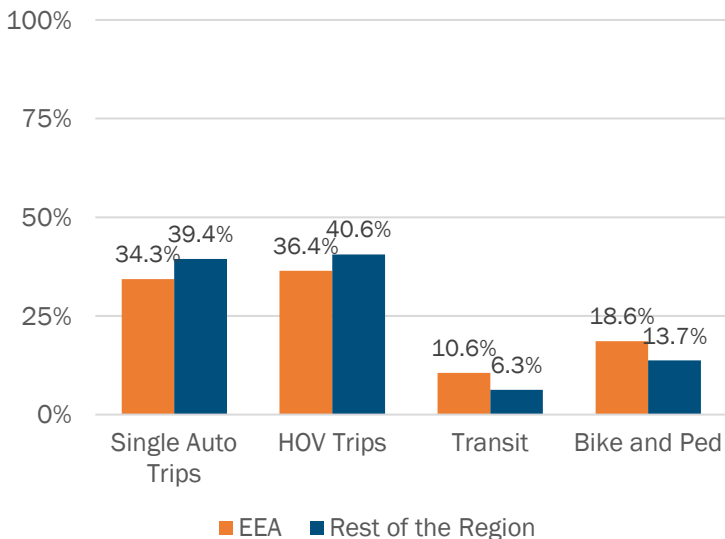
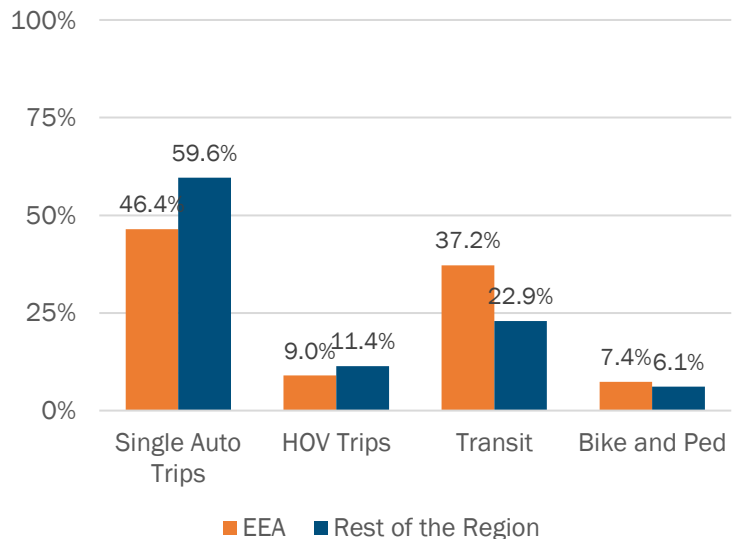


Figure 4: Share of Work Trips for EEAs and the Rest of the Region (2045)



ENVIRONMENTAL JUSTICE ANALYSIS RESULTS

This analysis finds that implementing the constrained element of Visualize 2045 would not have a disproportionate and adverse impact on low-income and minority populations. This determination is based on the findings from the analytical process identified in the Phase 2 methodology.

In no measure are Equity Emphasis Areas (EEAs) forecast to experience a burden while the Rest of the Region benefits. As such the planned projects of Visualize 2045 does not impose an adverse impact on minority and low-income populations of this region.

Equity Emphasis Areas (EEAs) and the Rest of the Region are forecast to experience similar benefits and burdens from the planned projects of Visualize 2045. As such, burdens would not be predominately borne nor be appreciably more severe or greater in magnitude in EEAs than the burdens experienced by the Rest of the Region.

An examination of individual performance measures finds EEAs and the Rest of the Region experience similar benefits or burdens across all measures with one measure disproportionately benefiting EEAs. For seven of the ten measures, benefits are identified for EEAs and the Rest of the Region. For two measures, burdens are identified for EEAs and the Rest of the Region. For one indicator, average commute time by transit, EEAs experience a benefit while the Rest of the Region experiences a burden.

Similar Benefits for EEAs and the Rest of the Region

- 1. Average number of jobs accessible by auto
- 2. Average number of jobs accessible by 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 EEAs and the Rest of the Region

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

Disproportionate Benefit for EEAs

- 8. Average commute time by transit

For three of the six accessibility measures, the Rest of the Region’s benefits were often greater and burdens less severe in percentage terms because the percentage changes will impact the smaller baseline figures in the Rest of the Region more acutely than the larger baseline accessibility figures in EEAs. Because EEAs today have better accessibility to jobs by auto and transit, it is more challenging to improve the EEA accessibility at the same rates in percentage terms as the Rest of the Region.

However, in no measure was a burden predominately borne by EEAs or appreciably more severe or greater in magnitude than the adverse effect suffered by the Rest of the Region and, as a result, this analysis demonstrates that the constrained element of Visualize 2045 does not have a disproportionately high and adverse impact on low-income and minority populations.

Reviewing the 2019 and 2045 Plan-Build transportation networks separately and not the change between scenarios, EEAs have the same or better transportation options than the Rest of the Region. EEAs are likely to have greater access to jobs and will have larger share of their populations close to transit options compared to the Rest of the Region, both Today and in the 2045 Plan-Build. Commute times and travel times to hospitals were lower for the EEA residents in all but one measure.

The following table summarizes the overall results of the ten measures. For determination, color blocking is used to identify burdens in **red** and benefits in **green**.

Table 2: Summary Findings of the Environmental Justice Analysis of Visualize 2045

		2019	2045 Plan-Build	Impact of Visualize 2045 Percent Change
1. Average number of jobs accessible by auto	EEAs	1,029	1,045	+1.6%
	Rest of the Region	799	853	+6.8%
2. Average number of jobs accessible by transit*	EEAs	540	738	+36.7%
	Rest of the Region	302	428	+42.0%
3. Average number of jobs accessible by High Capacity Transit**	EEAs	197	335	+70.2%
	Rest of the Region	125	203	+62.9%
4. Average number of jobs accessible by bus***	EEAs	99	145	+46.3%
	Rest of the Region	70	104	+49.4%
5. Population with walkable access to High Capacity Transit+	EEAs	648	1,119	+72.8%
	Rest of the Region	977	1,517	+55.2%
6. Population with walkable access to bus service‡	EEAs	1,492	1,872	+25.5%
	Rest of the Region	2,617	3,211	+22.7%
7. Average commute time by auto†	EEAs	42.3	47.0	+11.1%
	Rest of the Region	47.4	52.5	+10.8%
8. Average commute time by transit†	EEAs	54.1	52.9	-2.2%
	Rest of the Region	53.3	54.3	+1.9%
9. Average travel time to closest hospital by auto†	EEAs	15.3	16.7	+9.2%
	Rest of the Region	16.8	18.5	+10.1%
10. Average travel time to closest hospital by transit†	EEAs	33.9	33.6	-0.9%
	Rest of the Region	45.0	44.9	-0.2%

Notes

Figures in thousands and minutes

* This measure includes both walk and drive access to transit, including walking to transit and driving to a transit station nearby (commuter lots, park and ride, etc.).

** This measure examines access by walking to transit and using HCT for any part of the trip (HCT-to-bus transfers are included). For this measure, HCT includes Metrorail, commuter rail, streetcar, or light rail but excludes BRT. Exclusion of BRT has a minimum impact on average accessibility.

*** This measure examines accessibility for transit trips that begin with walking to bus, including BRT, with no transfer to HCT.

+ High Capacity Transit includes Metrorail, commuter rail, streetcar, light rail, or BRT. All population and jobs in a TAZ were considered accessible to HCT if its centroid is located within 1 mile of a rail station or within ½ mile of a BRT station.

‡ All population and jobs in a TAZ were considered accessible to bus service if its centroid was located within ½ mile of a bust stop. This measure does not include BRT.

† In minutes. Average commute and travel times by auto includes travel time on roadways and “terminal” time (e.g., to park the vehicle, etc.). Average commute and travel times by transit includes time it takes to reach transit and destination, including walk access time, drive access time, transfer time, and/or wait time. Hospital is defined as a facility that provides in-patient medical care, including 24-hour emergency care (including Children’s Hospitals) for patients. This does not include stand-alone urgent care facilities, psychiatric hospitals, Veterans Administration hospitals, private hospitals exclusive to members, and hospitals with no emergency care.

POLICY IMPLICATIONS AND NEXT STEPS

While this environmental justice analysis was conducted to meet federal requirements on transportation equity for low-income and minority populations, it can also contribute to important and ongoing transportation policy discussions for promoting the fair and equitable treatment of all individuals, including low-income populations, racial and ethnic minorities, people with disabilities, and older adults. This section provides some high-level observations from this analysis that can be useful for those discussions.

Equity Emphasis Areas have strong walkable transit access, especially bus service.

In 2019, 91% of people in EEAs have walkable access to bus service and 40% have walkable access to High Capacity Transit.^{viii} By 2045, with the addition of jobs, population, and transit projects, walkable bus service access will continue to be nearly ubiquitous for people in EEAs, at 92%, and growth in walkable HCT access will increase to 55%.

Figure 5: Share of population with walkable access to bus service

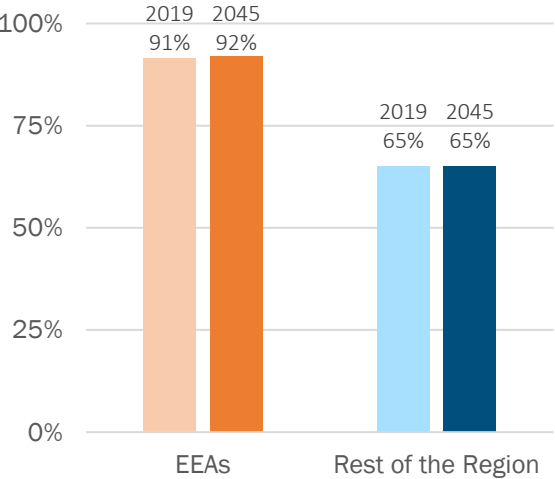
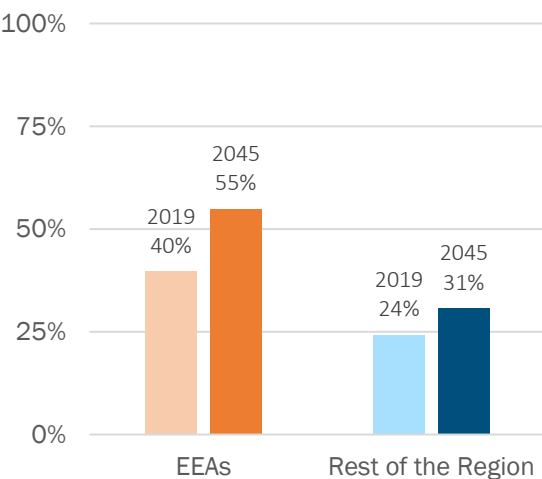


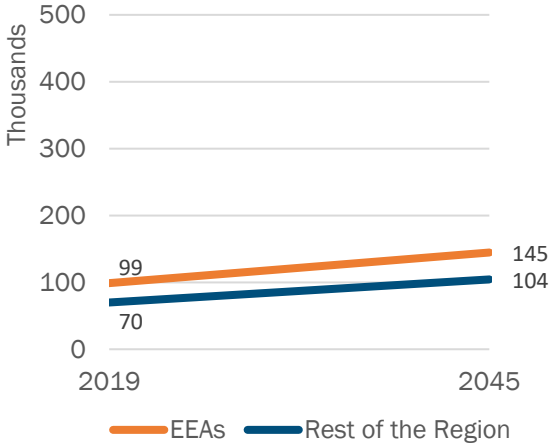
Figure 6: Share of population with access to High Capacity Transit



Jobs accessible in 45 mins by bus service only is limited...

Considering the significant geographic reach of bus service in the region and the high degree of walkable access to such service in EEAs, TPB staff analyzed job access by bus service now and in 2045. For 2019, the average number of jobs accessible is 99,000 for EEAs and by 2045 with the addition of population, jobs, and bus service improvements, an additional 46,000 jobs will be accessible by bus – a 46.3% increase. While this is an improvement it is less than that experienced by High Capacity Transit.

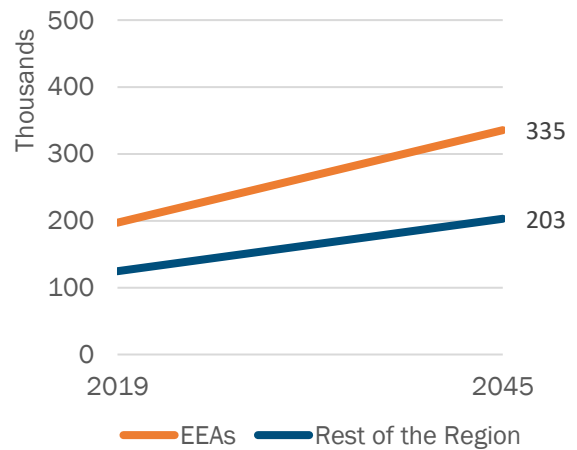
Figure 7: Average number of jobs accessible by bus



...until connected with High Capacity Transit.

While the reach of HCT is limited, the number of jobs accessible on HCT (where one walks to access HCT) is higher and experiences a greater improvement. For 2019, the average job access is 197,000 for EEAs and 125,000 for the Rest of the Region. By 2045, with the addition of population, jobs, and HCT service improvements, EEAs and the Rest of the Region will be able to access 335,000 and 203,000 more jobs, a 70.2% and 62.9% increase, respectively.

Figure 8: Average number of jobs accessible by HCT



Equity Emphasis Areas are likely to change

The analysis assumes that the areas identified as Equity Emphasis Areas today will be the same in 2045. These areas will most likely change by 2045 as land use, housing prices, and migration patterns alter the demographic profile of the region. As it is difficult to predict where changes will occur, the current geographic distributions are assumed to remain constant through 2045. As a result, it will be important for policy makers and future analysis to monitor how accessibility and mobility measures shift based on these assumptions.

Endnotes

ⁱ For a full map of the National Capital Region and the TPB member jurisdictions, see mwcog.org/transportation/about-tpb/jurisdictions/

ⁱⁱ Executive Order 12898. February 11, 1994. "Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations." Federal Register, Vol. 59, No. 32.

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United States Federal Highway Administration. 1998. "FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." Order 6640.23.

United States Environmental Protection Agency. August 4, 2011. "Memorandum of Understanding on Environmental Justice and Executive Order 12898."

U.S. Department of Transportation. May 2, 2012. "Department of Transportation Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." Order 5610.2(a).

United States Federal Highway Administration. June 14, 2012. "FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." Order 6640.23A.

United States Federal Transit Administration. August 12, 2012. "Environmental Justice Policy Guidance for Federal Transit Administration Recipients." FTA C 4703.1. Docket No. FTA-2011-0055.

ⁱⁱⁱ United States Federal Highway Administration. April 1, 2015. "Environmental Justice Reference Guide." Pg. 26.

^{iv} For example, income less than \$36,509 for a family of four would be considered low-income. For more info see: <https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html>

^v The region includes 1,231 tracts. Nine tracts were excluded for having no to very little population.

^{vi} The results of this analysis use MWCOC's Round 9.1 Cooperative Land-Use Forecasts and TPB's Version 2.3.75 Travel Demand Model. These findings are based on regional model estimates that come with a degree of uncertainty.

^{vii} American Indian and Alaskan Native, Native Hawaiian and Pacific Islander, Other, or Two or More Races populations were not included in this analysis because data showed these populations representing less than 1% of the Washington region. Population with a Disability is a person with any form of disability, including sensory, physical, mental, self-care, going outside the home, and employment disability. Older Adult refers to a person over the age of 65. Limited English Proficiency is a person who speaks English less than "very well."

^{viii} High Capacity Transit includes Metrorail, commuter rail, streetcar, light rail, or BRT.

Visualize 2045 Environmental Justice Analysis

Sergio Ritacco
Transportation Planner

Transportation Planning Board
January 16, 2018

Item #9

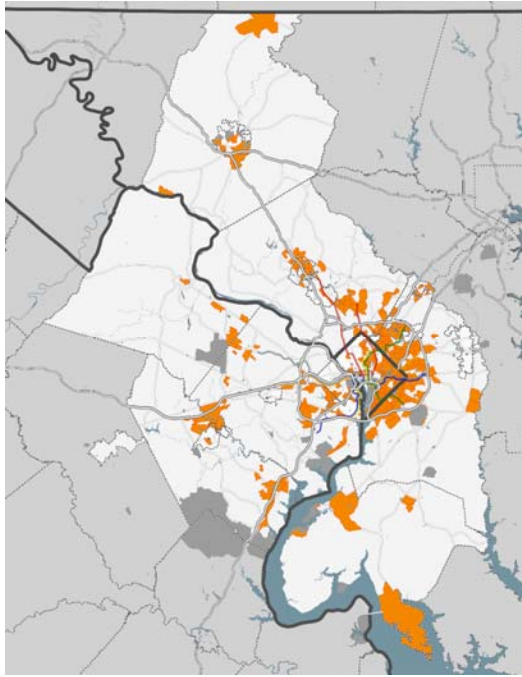


Purpose

Share the results of the Environmental Justice (EJ) analysis to determine if the planned projects of Visualize 2045 poses a disproportionately high and adverse impact on low income and minority populations of the region



Equity Emphasis Areas



U.S. Census Tracts with high concentration of Low-Income residents, Minority residents, or both.

Method Approved: March 2017
Map Updated: June 2018



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EJ Analysis Results: Overview

Determination

Planned projects of Visualize 2045 would not have a disproportionate and adverse impact on low-income and minority populations

On ten performance measures:

- ✓ **Seven measures:** Similar **Benefits** for EEAs and the Rest of the Region
- ✓ **One measure:** Disproportionate **Benefits** for EEAs
- **Two measures:** Similar **Burdens** for EEAs and the Rest of the Region



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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



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Environmental Justice Test

Determination Test

Impact would be considered disproportionately high and adverse when:

- 1) The burden is predominately borne by EEs and
- 2) Appreciably more severe or greater in magnitude in EEs than the Rest of the Region

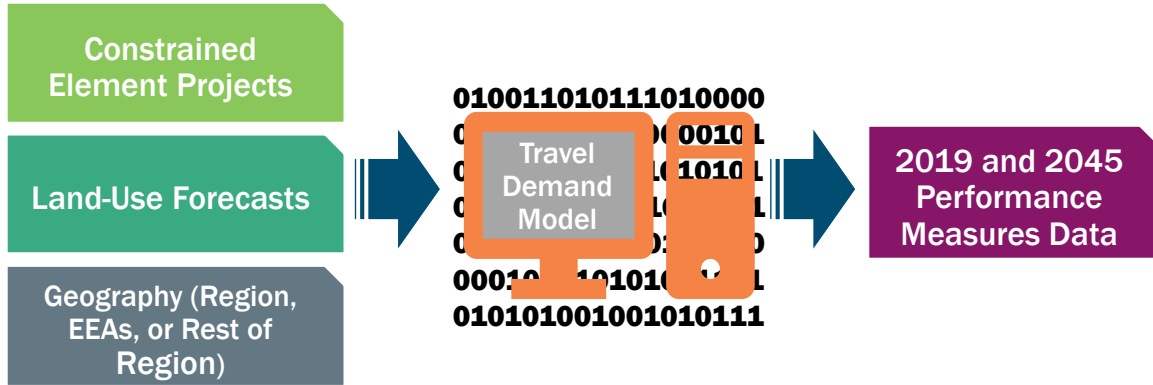
Bottom line:

EEs must experience a **Burden** while the Rest of the Region **Benefits**



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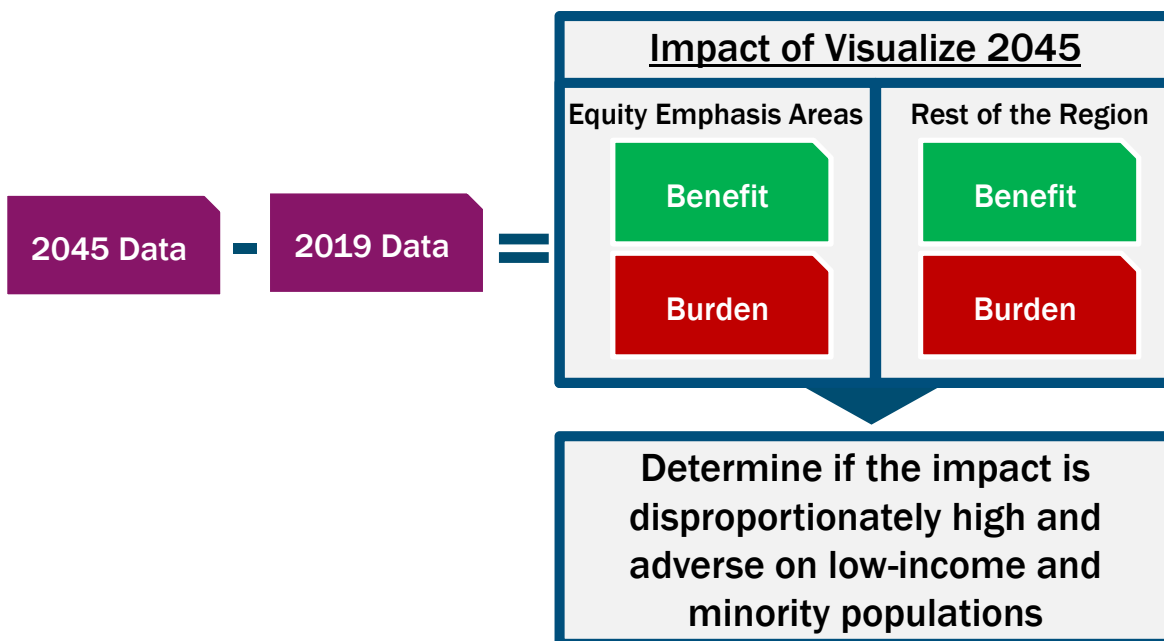
Environmental Justice Analysis Process



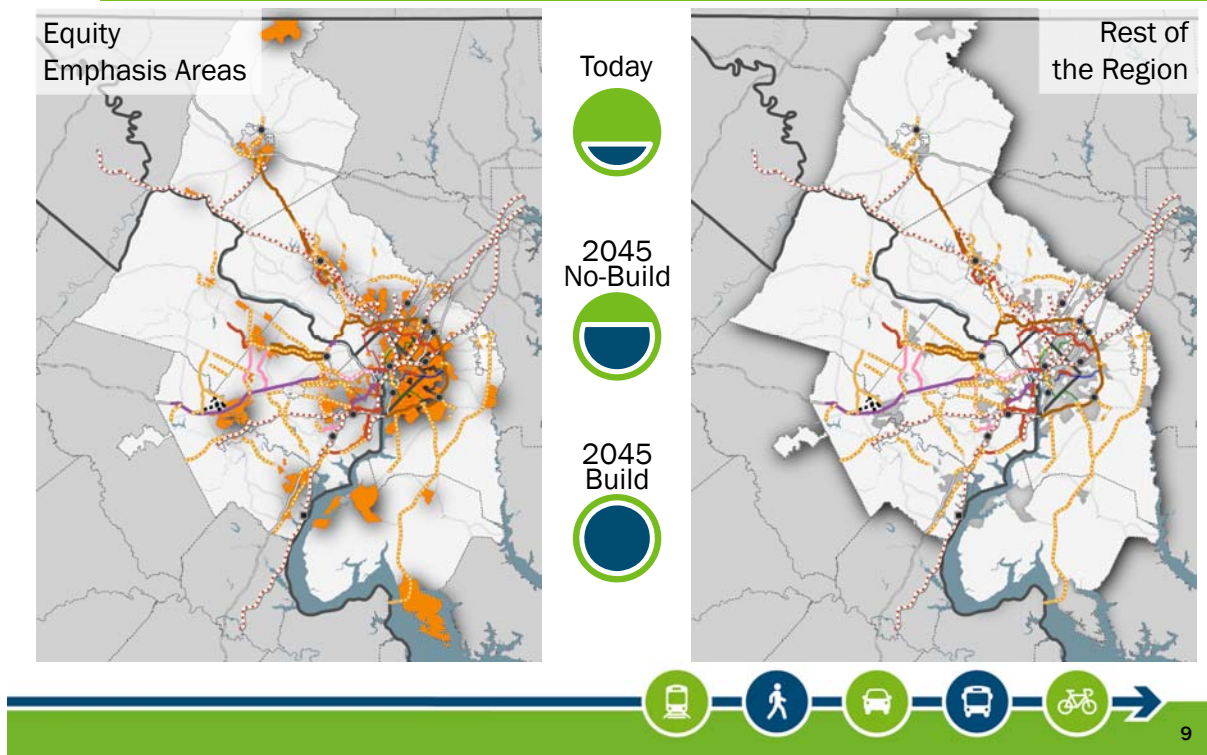
- Round 9.1 Cooperative Forecasts of Population, Households, & Employment
- Version 2.3.75 Travel Demand Model
- Analysis of TPB Planning Area during AM Peak Period



Environmental Justice Analysis



Recap of EJ Analysis Process



EJ Analysis Results: Similar Benefits

Similar **Benefits** for EEAs and the Rest of the Region

Measure		Impact of Visualize 2045	
		Absolute	Percent
Avg. # of jobs accessible by auto	EEAs	+16	+1.6%
	Rest of the Region	+54	+6.8%
Avg. # of jobs accessible by transit	EEAs	+198	+36.7%
	Rest of the Region	+126	+42.0%
Avg. # of jobs accessible by High Capacity Transit	EEAs	+138	+70.2%
	Rest of the Region	+78	+62.9%
Avg. # of jobs accessible by bus	EEAs	+46	+46.3%
	Rest of the Region	+34	+49.4%

Note: Figures in thousands

EJ Analysis Results: Similar Benefits, cont.

Similar **Benefits** for EEAs and the Rest of the Region

Measure		Impact of Visualize 2045	
		Absolute	Percent
Pop. with walkable access to High Capacity Transit	EEAs	+471	+72.8%
	Rest of the Region	+540	+55.2%
Pop. with walkable access to bus service	EEAs	+380	+25.5%
	Rest of the Region	+594	+22.7%
Avg. travel time to closest hospital	EEAs	-0.3	-0.9%
	Rest of the Region	-0.1	-0.2%

Note: Figures in thousands



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EJ Analysis Results: Benefits and Burdens

Disproportionate **Benefits** for EEAs

Measure		Impact of Visualize 2045	
		Absolute	Percent
Avg. commute time by transit	EEAs	-1.2	-2.2%
	Rest of the Region	+1.0	+1.9%

Similar **Burdens** for EEAs and the Rest of the Region

Avg. commute time by auto	EEAs	+4.7	+11.1%
	Rest of the Region	+5.1	+10.8%
Avg. travel time to closest hospital by auto	EEAs	+1.4	+9.2%
	Rest of the Region	+1.7	+10.1%

Note: Figures in minutes



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Qualifiers for Findings

- Regional-level analysis whose findings are not applicable to particular EEA(s) or attributable to specific 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



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Policy Observations

- ✓ Visualize 2045 complies with and passes federal EJ determination
- ✓ Parity between EEAs and Rest of the Region on most performance measures
- Opportunities exists for improved outcomes:
 1. EEA's advantage of access to more jobs by auto compared to Rest of Region is forecast to narrow
 2. No. of jobs accessible in EEAs by Bus only travel is half that accessible by High Capacity Transit
 3. Walk access to High Capacity Transit in EEAs and Rest of the Region is half that to Bus



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Policy Observations

Measure		2019	2045 Plan-Build	Impact of Visualize 2045	
				Absolute	Percent
1. Average number of jobs accessible by auto	EEAs	1,029	1,045	+16	+1.6%
	Rest of the Region	799	853	+54	+6.8%
2. Average number of jobs accessible by transit	EEAs	540	738	+198	+36.7%
	Rest of the Region	302	428	+126	+42.0%
3. Average number of jobs accessible by High Capacity Transit	EEAs	197	335	+138	+70.2%
	Rest of the Region	125	203	+78	+62.9%
4. Average number of jobs accessible by bus	EEAs	99	145	+46	+46.3%
	Rest of the Region	70	104	+34	+49.4%
5. Population with walkable access to High Capacity Transit	EEAs	648	1,119	+471	+72.8%
	Rest of the Region	977	1,517	+540	+55.2%
6. Population with walkable access to bus service	EEAs	1,492	1,872	+380	+25.5%
	Rest of the Region	2,617	3,211	+594	+22.7%

Note: Figures in thousands

