

Chapter 4: Socio-Economic Trends and the Travel Demand Model

This chapter reviews statewide and regional trends for future growth, and how the 2040 LRTP Scenario Planning Process has been updated to reflect these changing regional trends. Scenario planning is an analytical process that helps stakeholders visualize how they can shape their region's future growth to realize a long-term vision. By analyzing the land use, population and employment trends that affect growth, scenario planning tests how well different future growth patterns meet the region's goals.

The 2040 LRTP Scenario Planning Process created a preferred scenario for where growth would occur in the region. The preferred scenario then informed the selection of transportation investments in the Plan. Updated population and employment growth trends for 2018-2045 informed the development of the SAWMPO's first Travel Demand Model ("the Model"), which uses land use and transportation network characteristics for a region to predict where travel will occur. The Model is a tool both for understanding regional travel patterns, and for evaluating the performance of individual transportation projects for certain metrics.

Through the development of the travel demand model, and the information that it provides about current and future transportation network performance, the LRTP working group adjusted the preferred scenario for 2045.

This chapter contains the following:

- 4 – 1 VTrans 2045 and Statewide Trends
- 4 – 2 Scenario Planning Process from 2040 Plan
- 4 –3 Changes to the 2040 Preferred Scenario
- 4 –4 Travel Demand Model

4-1 VTrans 2045 and Statewide Trends

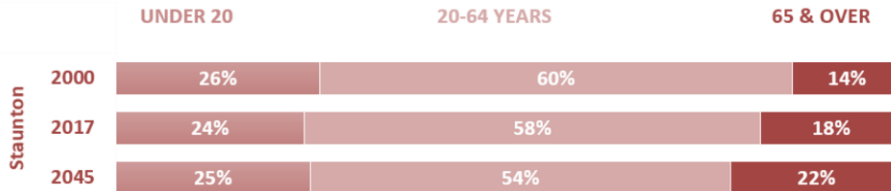
VTrans 2045, the statewide long-range transportation plan, evaluates statewide and regional trends in demographics and employment to understand transportation needs on a large scale. VTrans projects that 84% of the state's population growth between 2018 and 2045 will occur in Northern Virginia, Hampton Roads, and Richmond. The rest of the state will see modest growth, or even continue depopulation trends in some cases.

By 2045 in the VDOT Staunton Construction District, which is an area that covers jurisdictions west of the Blue Ridge from Rockbridge County to Frederick County, 22% of the population will be age 65 or older. The area will see a 75% increase in persons 75 and older between 2017-2045 (see **Figure 7**). Through **Chapter 5, Needs**

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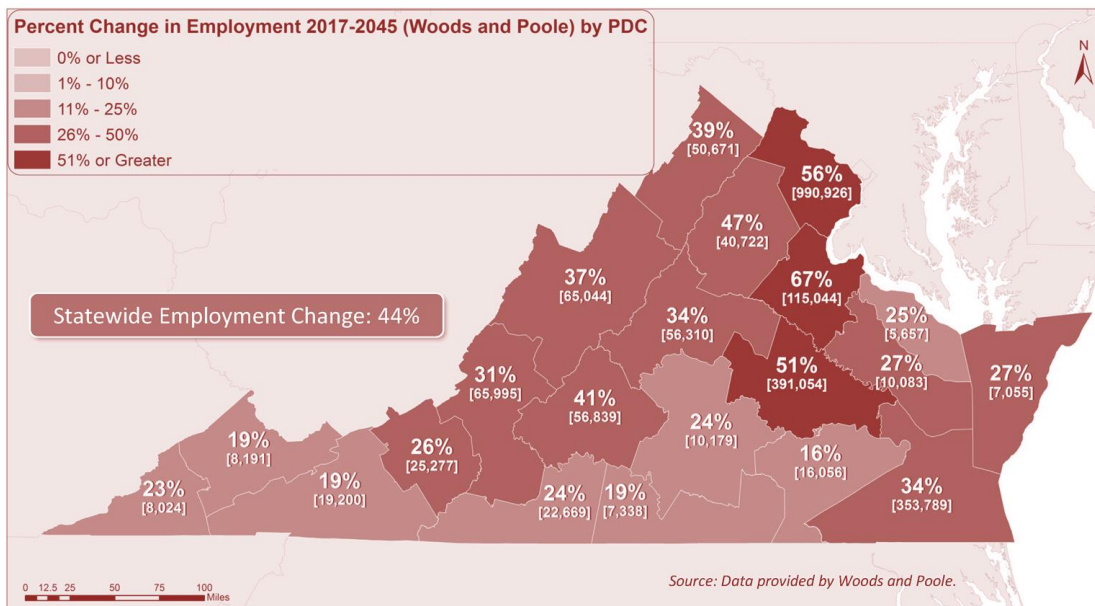
Assessment, and through the projects identified in this Plan, SAWMPO will address the changes in travel behavior that will come with our region’s growing aging population, as they become less reliant on car travel, and will need alternative means of mobility.

Figure 8: Historic Population Growth, VDOT Staunton District



Employment growth in Virginia will concentrate in major urban areas, with steady growth in the rest of the State. VTrans projects that the CSPDC region will gain 65,044 jobs between 2017 and 2045, with much of that growth in the health care and professional and technical services sectors, while manufacturing jobs in the region will slowly decline (see **Figure 8**).

Figure 9: Forecast Employment Change by PDC, 2017 - 2045



The LRTP working group reviewed regionally-specific data from the same sources as the VTrans effort to update the SAWMPO preferred scenario for 2045 and develop the Travel Demand Model.

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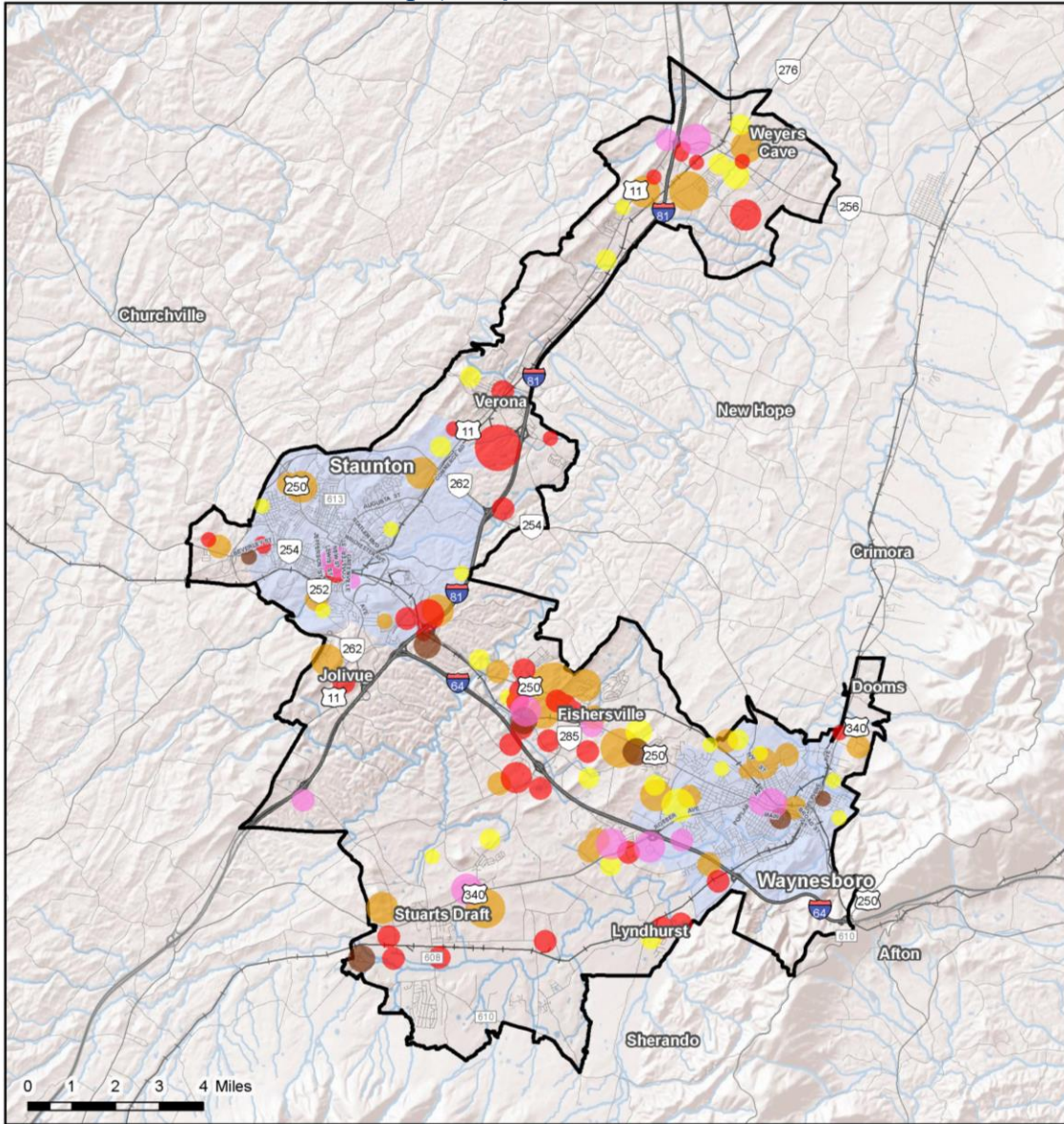
4 – 2 Scenario Planning Process from 2040 Plan

The 2040 LRTP developed a preferred future land use scenario of where growth would ideally occur between 2015 and 2040 to direct supporting transportation investments. The preferred future land use scenario was reflective of the future land use plans in the localities' Comprehensive Plans. Using base year (2015) population, household and employment data and future year (2040) projections, the preferred growth scenario assigned population and jobs to sub-areas of the MPO as represented in **Map 17**.

At the outset of the 2045 LRTP update process, the SAWMPO TAC and Board agreed to uphold the 2040 preferred Growth Scenario and update it as needed. Since the 2040 LRTP was adopted in December, 2015, all three localities have updated their Comprehensive Plans, but maintained future land use patterns that align with this regional preferred growth scenario

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Map 17: 2040 Preferred Scenario



SAW MPO PREFERRED SCENARIO CONCEPT

	RANGE OF TOTAL HOUSING UNITS AND JOBS	DEVELOPMENT TYPE	
	< ~50	MIXED USE	
	~50 ~125	EMPLOYMENT	
	~126 ~250	MULTIFAMILY	
	~251 ~400	MIX OF RESIDENTIAL TYPES	
~400 ~575	SINGLE FAMILY DETACHED		

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4 –3 Changes to the 2040 Preferred Scenario

Population

Since 2015, Weldon Cooper Center has adjusted its population estimates and projections for Staunton, Augusta County, and Waynesboro. **Table 2** compares 2040 Plan projections to Population to 2045 Plan estimates and projections.

Table 2: Population Projections Comparison

Population Projections					
Source	Census	2040 Plan Population Weldon Cooper		2045 Plan Population Weldon Cooper Center	
Year	2010	2019 (projection)	2040 (projection)	2018 (estimate)	2045 (projection)
Augusta County Total (excluding 2 cities)	73,750	75,651	94,730	75,254	87,939
Augusta County within MPO*	34,042	35,420	49,894	35,914	48,366
% of Augusta County w/in MPO*	46%	47%	53%	48%	55%
Staunton	23,746	24,775	26,440	24,972	25,468
Waynesboro	21,006	21,497	24,613	22,285	25,332
MPO Total	78,794	81,692	100,947	158,425	187,106

* 2019--2045 figures estimated because the County MPO area is not an official census designation

2018 population estimates for the two cities are slightly higher than the 2019 projection developed in 2015. Yet Staunton's population projection for 2045 declines slightly due to the Weldon Cooper Center's methodology for projecting future population. The projection reflects trends from the past several decades, during which time Staunton's population was nearly static. The City of Waynesboro's growth has been modest, but its population is projected to continue to grow through 2045. Weldon Cooper also reduced its projection for growth in Augusta County by 2045 by nearly 6,800 people.

Employment

When the 2040 plan was developed in 2013, the SAWMPO region was experiencing aftershocks of the Great Recession. Without projections to a return to steady employment growth, the 2040 Plan took a conservative approach to estimating new jobs in the region. The SAWMPO region has shared in the nation's economic recovery since 2013, and 2018 estimates for jobs in the MSA have already outpaced the 2040 projection.

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Table 3: Employment Projections Comparison

Employment Projections				
Source	2040 Plan Employment		2045 Plan Employment	
Year	VEC		Moody's	
	2013	2040	2018	2045
Augusta County Total (excluding 2 cities)	24,753	28,403	26,340	29,516
Staunton	20,593	21,593	13,233	14,758
Waynesboro			11,168	12,487
MSA Total	45,346	49,996	50,742	56,761

2045 Updates

The most notable updates to the 2040 Preferred Growth Scenario for population growth are Weldon Cooper Center's revised projection for population growth in the County, and the MPO's revised assumption for the percentage of that growth that will occur within the MPO's planning area. The 2040 Plan assumed that 75% of the County's growth between 2015 and 2040 would occur within the MPO planning area.

Based on trends from the ensuing five years, the MPO has revised its assumptions for concentrating population growth in the County and shifted to more of a trend development pattern with just less than 50% of the County's population and household growth occurring in the MPO area. The County continues to focus on directing new growth in the Verona, Fishersville and Stuarts Draft urban service areas within the MPO, but it also continues to see by-right subdivisions of larger parcels for low-density residential development occurring in the rural areas.

This adjustment to the Preferred Growth scenario does not shift how the MPO evaluates investments in the regional transportation network. Population and job growth is still occurring in the region's growth centers, and the region's transportation network still has enough capacity to accommodate the projected growth.

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The stronger employment figures for base year 2018 and 2045 are still compatible with the population estimates and projections. In most localities not heavily weighted to one land use type (i.e. bedroom communities), employment is generally 50% of total population. For Augusta County, Staunton and Waynesboro, the percent comparisons are:

Table 4: Employment Percent of Population Comparison, 2018 and 2045

2018			
Locality	Population	Employment	Employment % of Population
Augusta County (excluding cities)	75,254	26,340	35%
Staunton	24,972	13,233	53%
Waynesboro	22,285	11,168	50%
MSA	122,511	50,742	41%

2045			
Locality	Population	Employment	Employment % of Population
Augusta County (excluding cities)	87,939	29,516	34%
Staunton	25,403	14,758	58%
Waynesboro	25,332	12,487	49%
MSA	138,674	56,761	41%

4 –4 Travel Demand Model

A travel demand model is a computer-based forecasting tool used to estimate travel behavior and travel demand on the transportation network on a large scale based on a set of regional land-use and transportation related assumptions. The SAWMPO model used a four-step transportation forecast process that includes trip generation, trip distribution, mode choice, and route assignment. The SAWMPO model inputs were calibrated to local traffic data, socio-demographic factors, travel behavior (such as the amount of travel), and other variables for the 2018 base year.

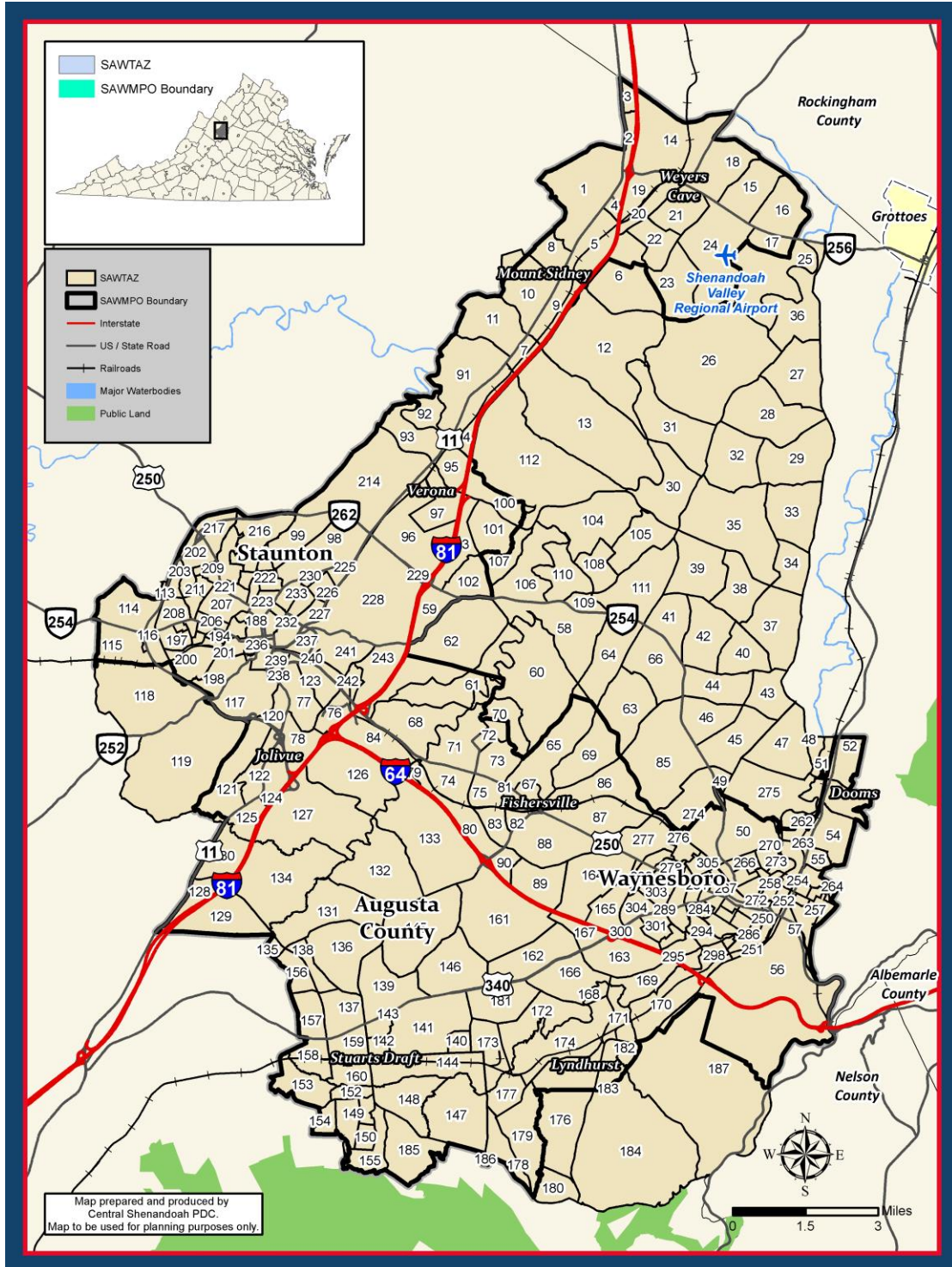
A transportation analysis zone (TAZ) is a common unit of geography used in travel demand models to measure socioeconomic variables, such as population, households, employment, and vehicle ownership. The TAZ boundary is based on U.S. Census tracts and population distribution, existing roads, and natural borders. The TAZs are used as inputs into the Model to forecast trends in the region over a 25-year period (see **Map 18**)³.

Map 19 shows the region's traffic volume from 2018 to 2045. The 2018 volumes are a result of running the existing year model utilizing direct inputs from the VDOT count program to calibrate the model, while the 2045 volumes are an output of running the future No-Build model, and utilizing the population and employment forecast assignments without considering additional transportation improvements.

³ The SAWMPO TAZ border includes areas outside of the MPO due to modeling constrains.

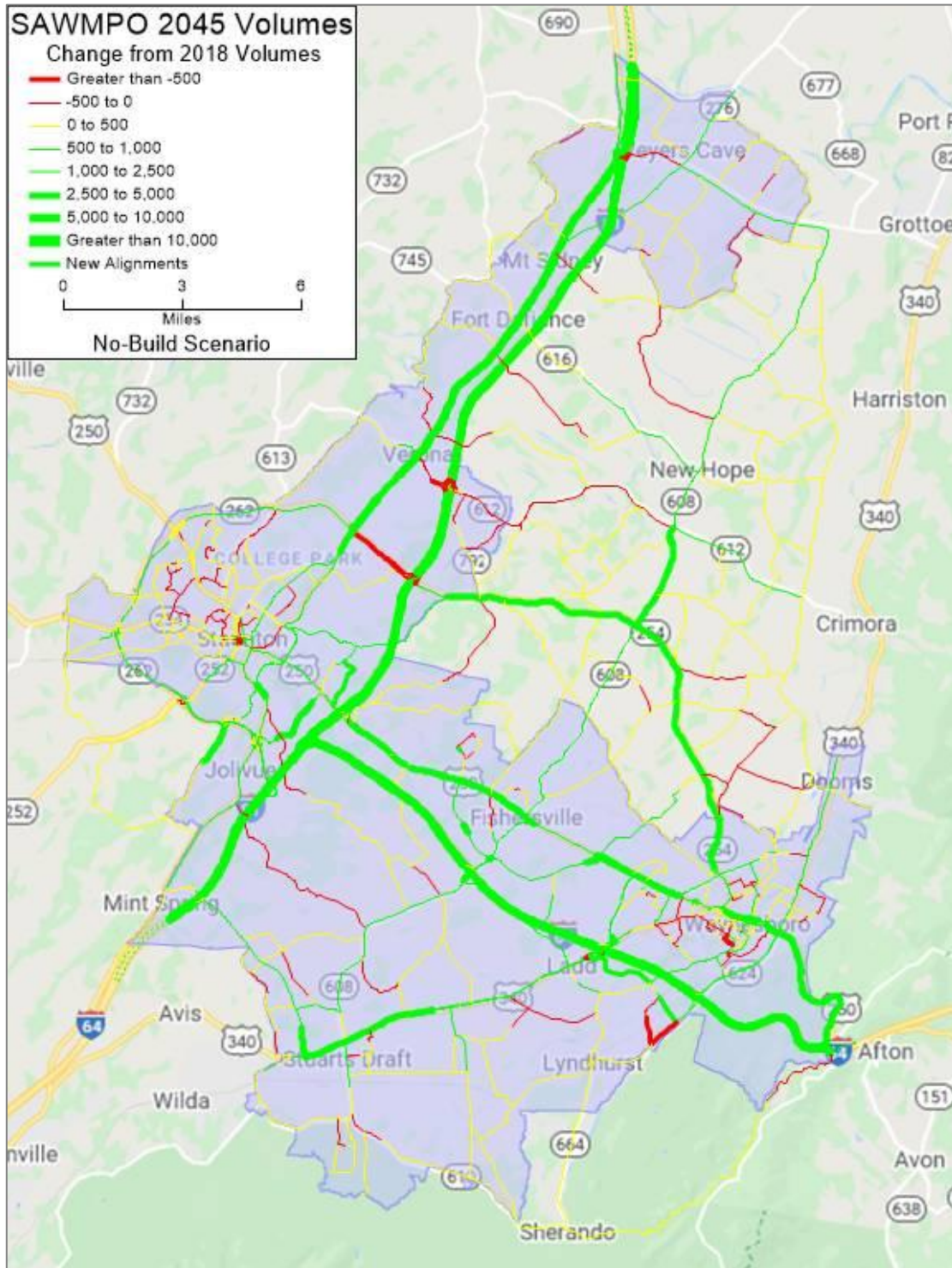
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Map 18: SAWMPO TAZs



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Map 19: SAMWPO 2045 Traffic Volumes



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4–5 Summary

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This adjustment to the Preferred Growth scenario does/does not shift how the MPO evaluates investments in the regional transportation network.