

CHAPTER 15

TRANSPORTATION INTEGRITY

PART 1





A PRODUCT OF THE
Western Piedmont
Council of Governments

Greater Hickory Metropolitan
Planning Organization

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****This is considered part 1 of the Transportation Integrity Chapter. Part 2 is included in a separate link (chapter labeled "Transportation Integrity Part 2") that includes a tree canopy analysis. A more cumulative analysis of health equity and past, present, and future transportation projects is currently underway and will be adopted as an appendix to the 2050 MTP.**

TRANSPORTATION INTEGRITY

Transportation Integrity refers to the need for the GHMPO's transportation system to provide mobility options for all persons and enhance the vitality of the human environment. Environmental Justice is a key factor in developing the region's overall transportation integrity. This chapter identifies Environmental Justice populations and analyzes the impacts of transportation projects on those populations.

This chapter is organized in the following manner:

1. Introduction
2. Environmental Justice Indicators and Methodology
3. Environmental Justice Overlapping Populations Analysis
 - A. Highway and Roadway Impacts
 - B. County-Level Evaluations
 - C. How are GHMPO Highway Dollars Being Spent?
 - i. Bicycle and Pedestrian Projects: Current and Future Impacts
 - ii. Transit Impacts
3. GHMPO Initiatives Completed Since the 2045 MTP
4. Goals Moving Forward
5. Conclusion

Appendices for this chapter are included within the MTP's Appendix. The Appendices provide an in-depth analysis of each mode of transportation's effects on each of the population groups identified in this chapter. Results associated with determining impacts are included as part of the analysis within the Appendices.

1) Introduction

ENVIRONMENTAL JUSTICE

Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

By mapping Environmental Justice populations, the GHMPO can identify areas that may experience or currently are experiencing, disproportionately adverse or negative effects caused by transportation projects, policies, or activities. Environmental Justice also helps ensure that minority and low-income populations share in the benefits provided by programs, policies, and activities.

ENVIRONMENTAL JUSTICE FUNDAMENTAL PRINCIPLES

- » To ensure minority and low-income populations have the same degree of protection from environmental, health, social, and economic hazards.
- » To ensure equal access to the transportation decision-making process allowing for a healthy environment in which to live, learn, and work.
- » To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Adverse Effects

Adverse effects as described in Executive Order 12898 are the totality of significant individual or cumulative human health or environmental effects, including interrelated social and economic effects, which may include, but are not limited to:

- » Bodily impairment, infirmity, illness, or death
- » Air, noise, and water pollution and soil contamination
- » Destruction or disruption of:
 - Man-made or natural resources
 - Aesthetic values
 - Community cohesion or a community's economic vitality
 - Availability of public and private facilities and services
- » Adverse employment effects
- » Displacement of persons, businesses, farms, or nonprofit organizations
- » Increased traffic congestion, isolation, exclusion, or separation of minority or low-income individuals within a given community or from the broader community
- » Denial of, reduction in, or significant delay in the receipt of benefits of the GHMPO programs, policies, or activities

2) Environmental Justice Indicators and Methodology

ANALYSIS STUDY AREA

The Greater Hickory MPO planning area includes all jurisdictions within Alexander, Burke, Caldwell, and Catawba Counties. The region's population is approximately 363,000 and consists of 1,666 square miles. The region is further divided into 248 block groups. To determine potential impacts, the GHMPO used 2020 Census data to identify Environmental Justice communities across the four-county region. An analysis was performed for each combination of population groups and modes of transportation.

The three modes of transportation:

- » Highway or roadway projects through horizon year 2050
- » Bicycle and pedestrian projects (existing and currently funded future projects)
- » Public transit services (existing fixed, flex, and microtransit service)

The five population groups (analyzed by census Block Group):

- » African American
- » Asian
- » Hispanic
- » Mixed Race
- » Low income

In total, there were 103 highway projects, 20 funded bicycle and pedestrian projects, and 10 transit routes/service areas scored for each Environmental Justice population. Projects beyond the year 2050 are mapped but not included in the analyses.

REGIONAL AVERAGES

Each Block Group was compared to regional population percentages for African-American, Asian, Hispanic or Latino, Mixed Race, and low-income Environmental Justice (EJ) communities. The regional averages provide a threshold for analyzing EJ population concentrations in each Block Group and helps focus outreach efforts and services accordingly. Table 10-1 shows the regional population percentages for the five EJ groups. At 14.1%, the Low-Income population represents the largest EJ group. African-Americans comprise 6.4% of the region's population; Hispanic or Latino, 8.6%; Mixed Race, 6%; and Asian, 3%.

Source, 2020 Census and 2017-2021 American Community Survey 5-Year Estimates, US Census Bureau.

Table 14-1. Greater Hickory MPO Environmental Justice Population Percentages

Group	Population	Percentage
African-American	23,535	6.4%
Asian	11,127	3.0%
Mixed Race	21,978	6.0%
Hispanic (or Latino)	31,320	8.6%
Low-Income	50,322	14.1%

Source, 2020 Census and 2017-2021 American Community Survey 5-Year Estimates, US Census Bureau.

BLOCK GROUP AVERAGES VS. REGIONAL AVERAGES

The number of Block Group Environmental Justice categories that exceed regional percentages are shown in Table 14-2. Nearly 35% of the African-American Block Group percentages were higher than the regional average. Approximately 38% of the Asian Block Group percentages were higher than the regional average. 32% of Block Groups had higher Hispanic or Latino percentages than the regional average. Nearly half the block Groups in the region had Low-Income percentages that were higher than the regional average.

Table 14-2. Number of Block Group Environmental Justice Categories Exceeding Regional Percentages

Group	High-Concentrated Block Groups	# of Block Groups Over Regional Percentages	% of Block Groups Over Regional Percentages
African-American	61	85	34%
Asian	62	93	38%
Hispanic or Latino	61	79	32%
Mixed Race	60	101	41%
Low-Income	61	114	46%

CONCENTRATION SCALE

The total area and number of Block Groups for the categorized concentration levels are shown in Table 14-3.

- » The No Concentration Level had zero Block Group averages that exceed the regional average and consists of almost 40% of the MPO's planning area.
- » The Low Concentration Level is primarily located between northwest, northeast, and southwest Alexander County, the northwest area of Burke County, northern Caldwell County, and the Lake Norman (southeast) area of Catawba County.
- » The Moderate Concentration Level is the region's second largest in terms of square mileage (nearly 616 square miles).
- » The High Concentration Level covers just over 63 square miles – mostly within Catawba County and the Morganton area.

Table 14-3. Total Area & number of Block Groups for the Categorized Concentration Levels

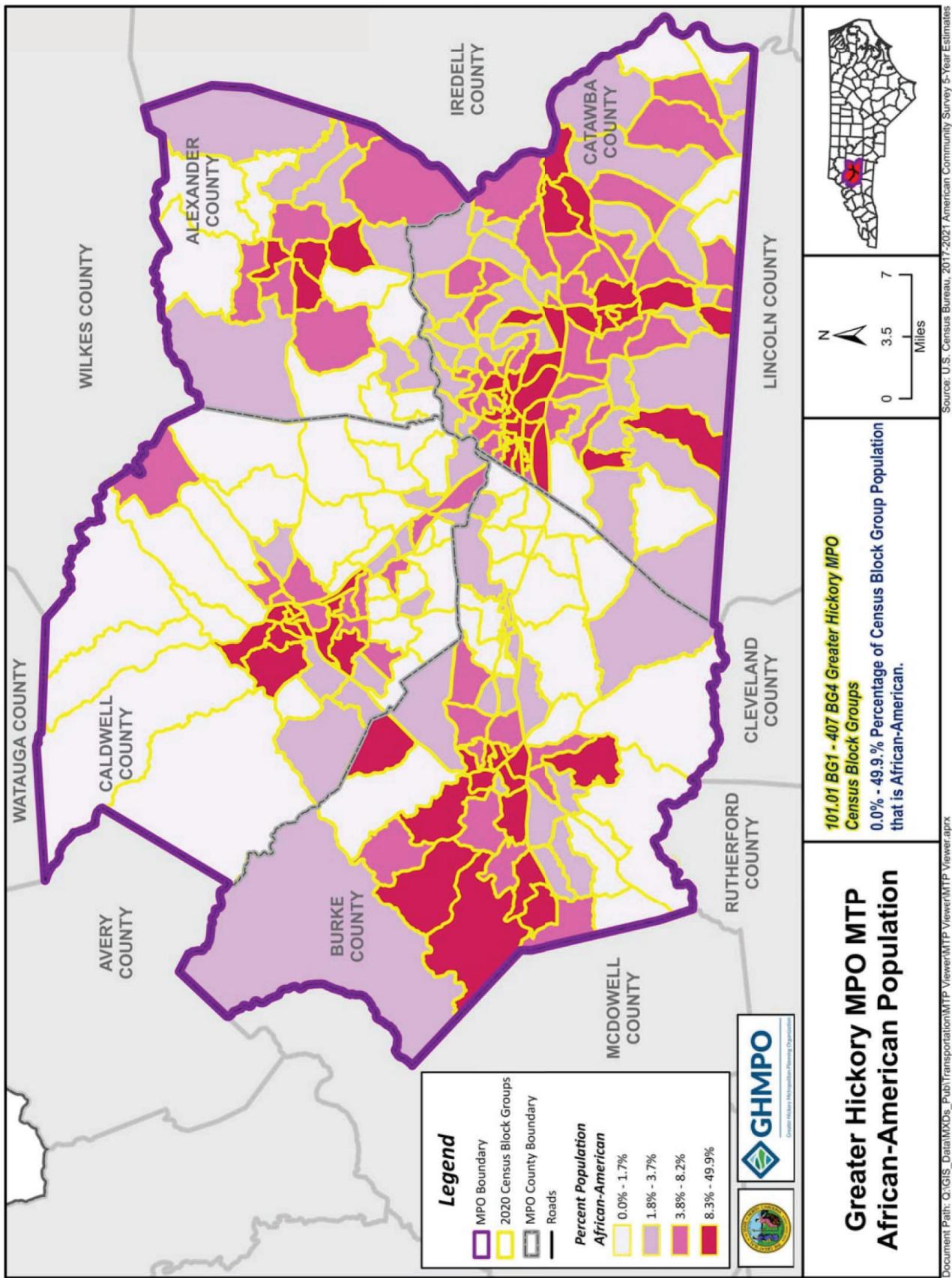
Concentration Level	Area (Square Miles)	Area (%)	Number of Block Groups	Block Groups (%)
No	645.2	38.7%	36	15%
Low	344.18	20.6%	71	29%
Moderate	615.87	36.9%	114	46%
High	63.24	3.8%	27	11%
Total	1,668.50	100.0%	248	100%

Source, 2020 Census and 2017-2021 American Community Survey 5-Year Estimates, US Census Bureau.

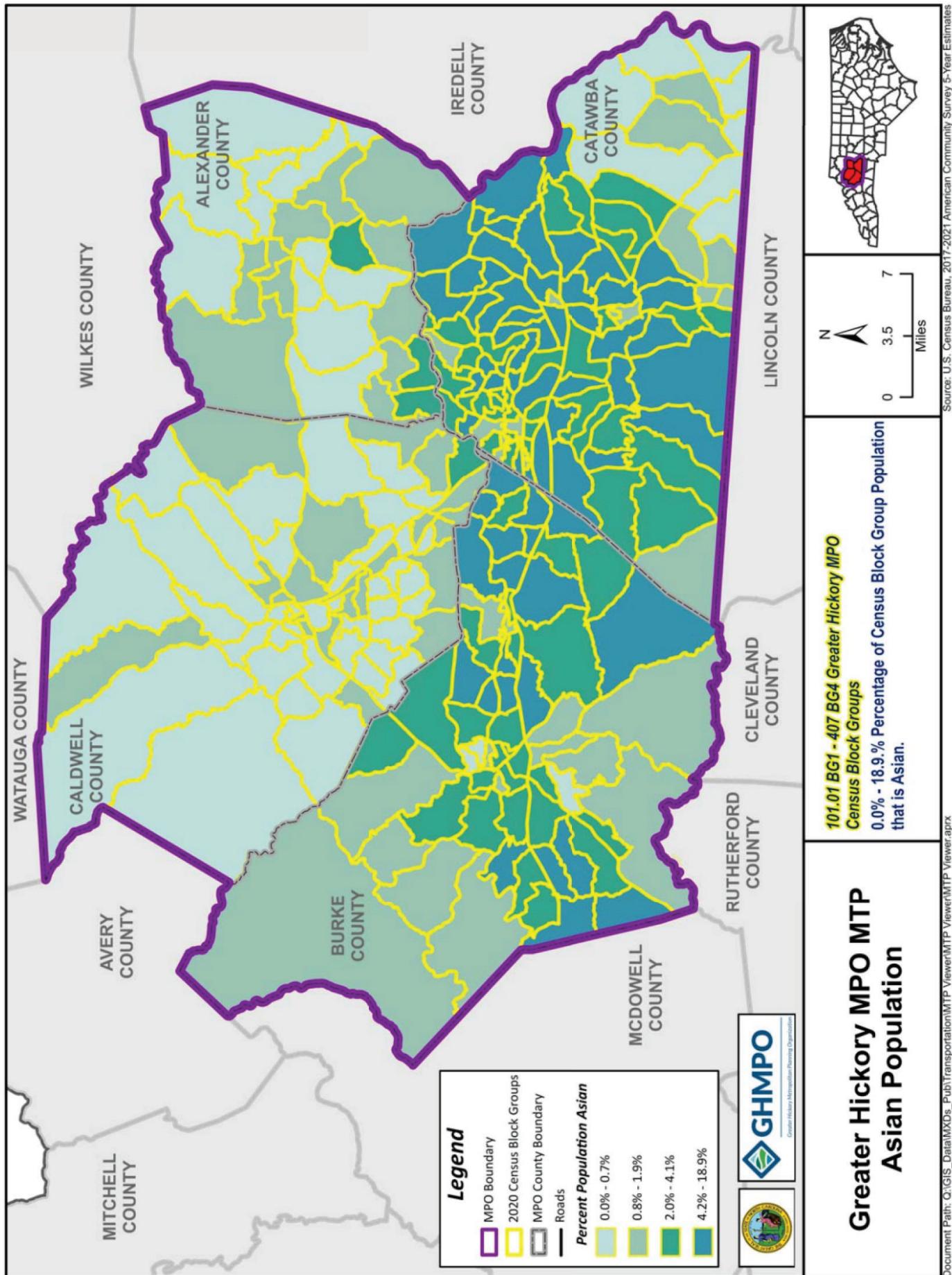
POPULATION GROUP MAPS

This chapter is organized by mode of transportation with an analysis of all overlapping Environmental Justice population groups (individual analyses of each population group with overlapping transportation modes can be found in the appendices). The concentrated areas of each population group are mapped below.

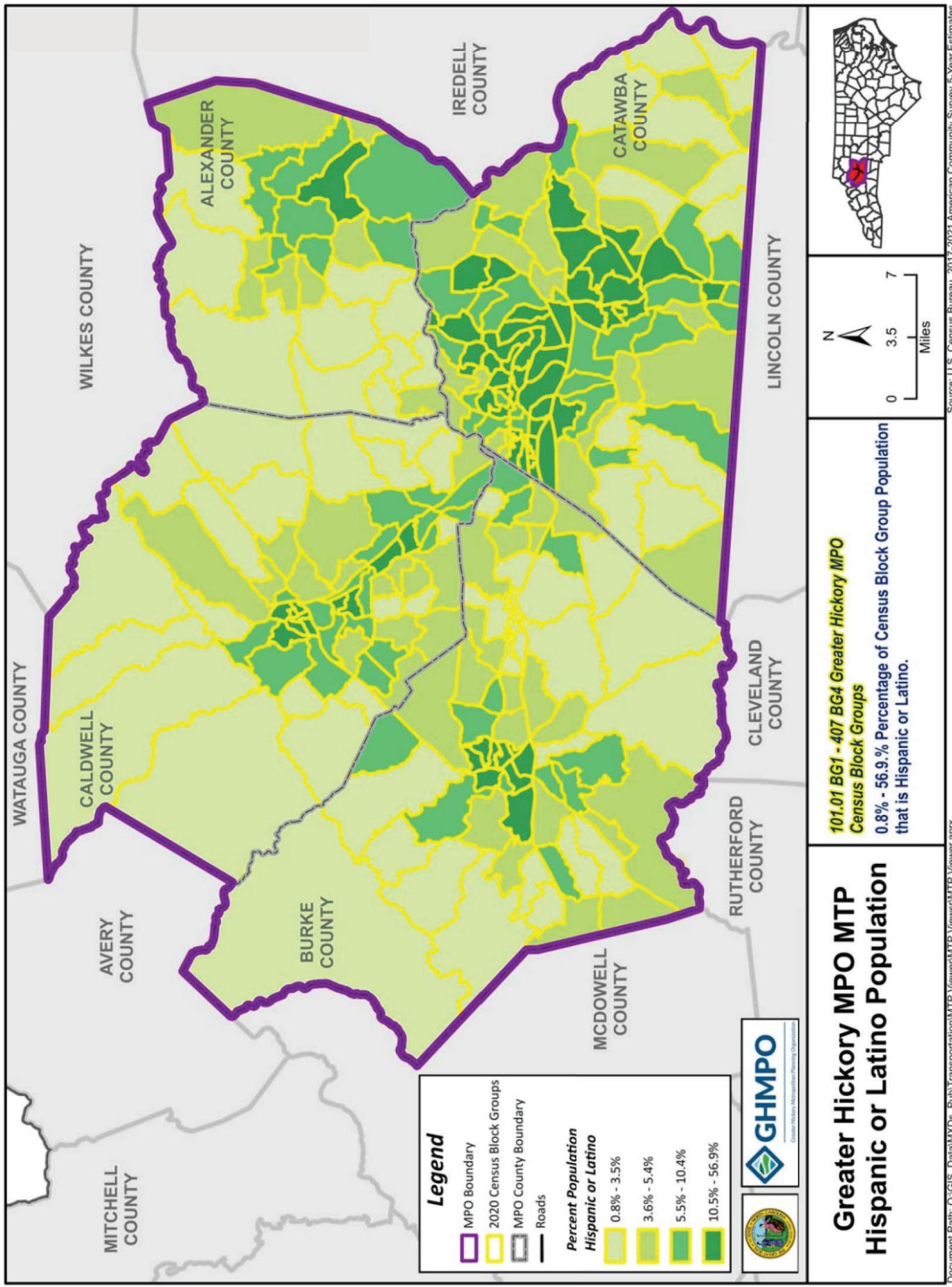
AFRICAN-AMERICAN POPULATION



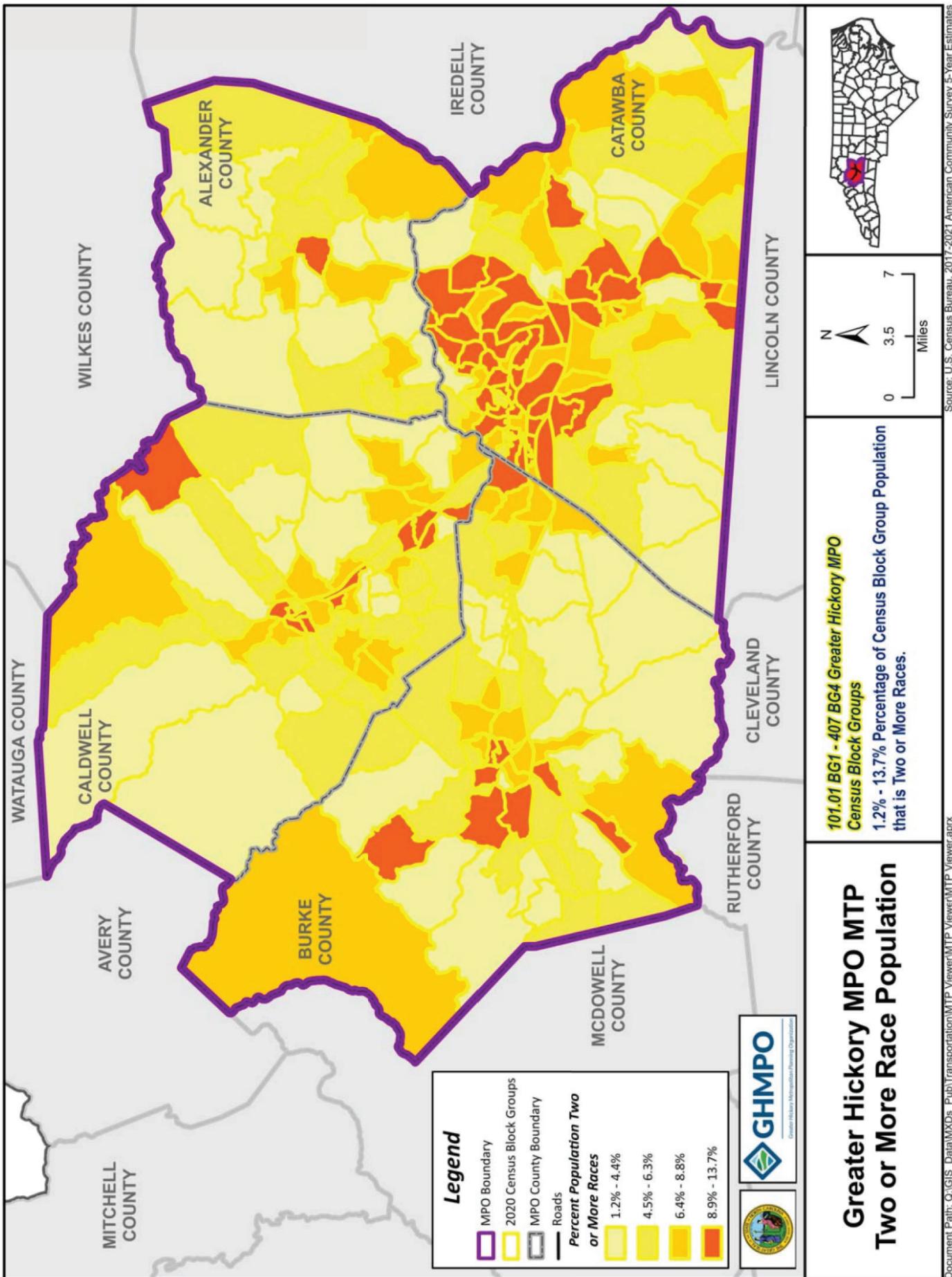
ASIAN POPULATION

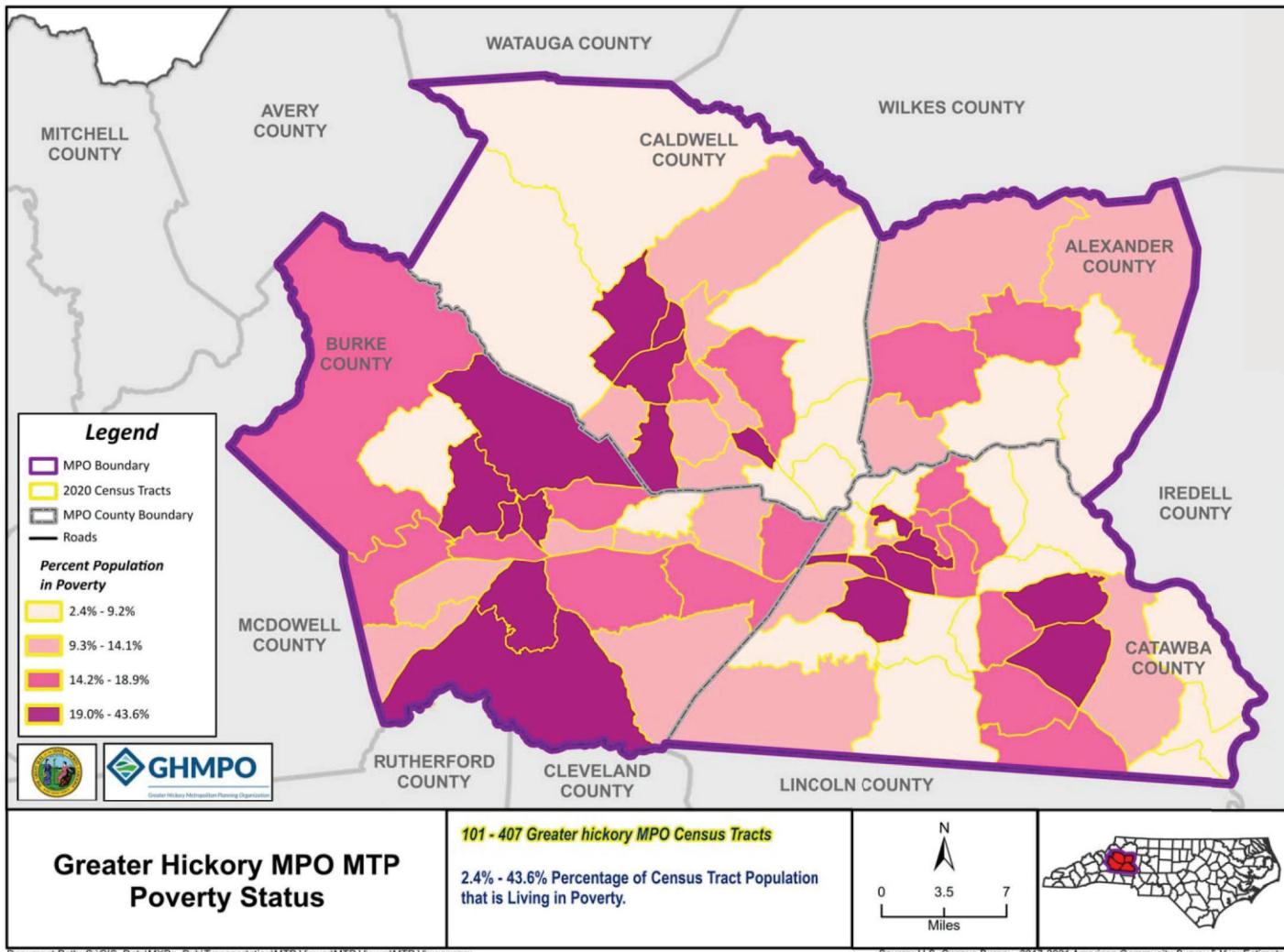


HISPANIC POPULATION



LOW-INCOME POPULATION (CENSUS TRACT DATA)





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Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates

For purposes of simplification and to show the cumulative impacts of transportation projects on EJ populations, all five EJ population groups overlap. As mentioned previously, a more in-depth analysis is provided in the appendices detailing each mode of transportation's effects on each of the individual population groups identified in this chapter.

3) Environmental Justice Overlapping Concentration Analysis

PURPOSE:

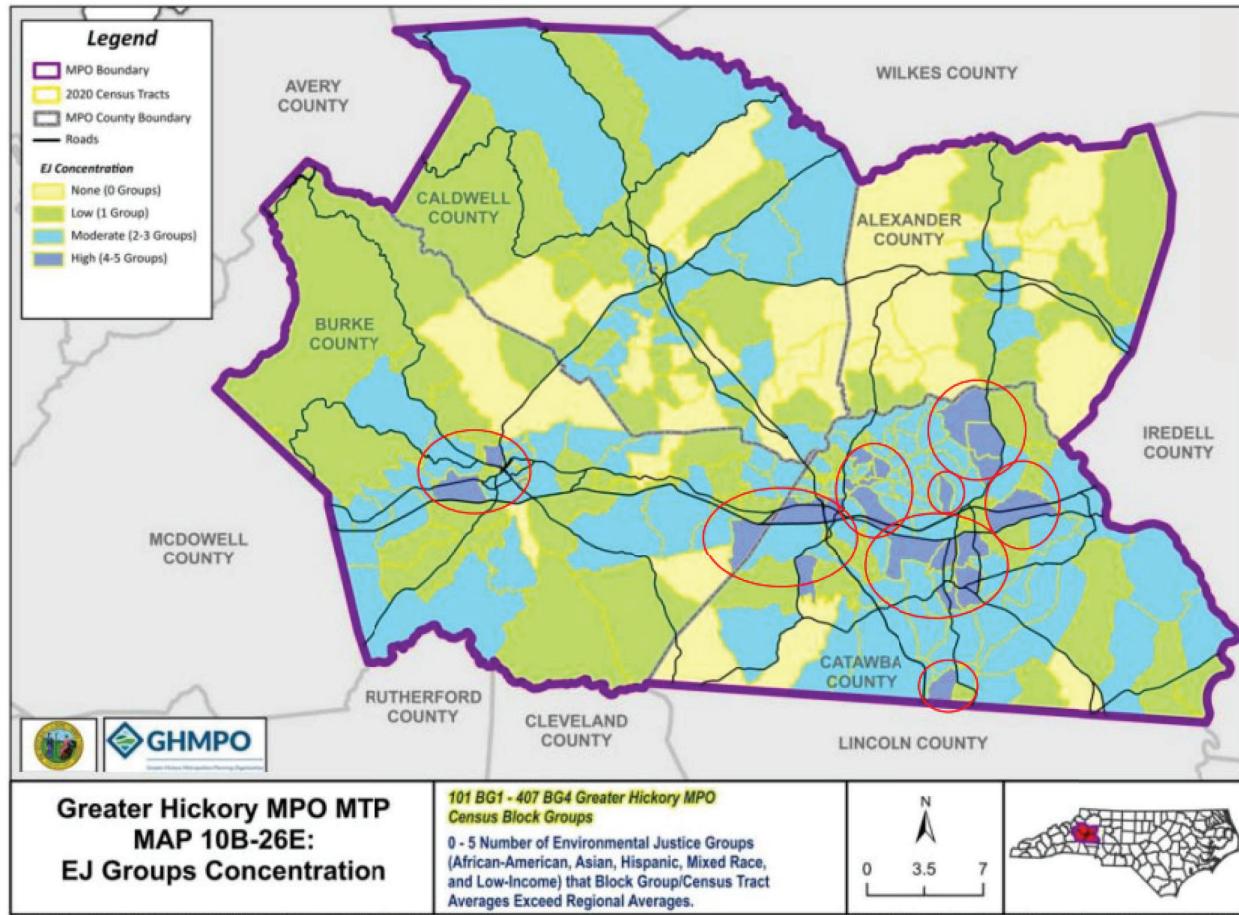
The Environmental Justice (EJ) analysis results illustrated in Maps 10-33 through 10-36 show how low-income and minority populations are distributed throughout the Greater Hickory MPO planning area. This analysis examined low-income and minority populations using 2020 Block Groups, which are small, relatively permanent statistical subdivisions of a county. The purpose of this analysis was to determine EJ group concentrations and the proximity and potential impacts of proposed transportation projects on those groups.

METHODOLOGY TO DETERMINE BLOCK GROUP EJ GROUP CONCENTRATIONS:

- United States Census and 2017-2021 American Community Survey (ACS) 5-Year Estimates data were used to calculate regional African-American, Asian, Hispanic or Latino, and Mixed Race population percentages by dividing the total EJ group population per Block Group by the total regional population. Low-Income population percentages utilized Census Tract data because Census Tract data has a much lower margin of error for this EJ group population. This percentage was calculated by dividing the total Low-Income EJ group population per Census Tract by the total regional population.

2. Block Group and Census Tract population percentages exceeding regional population percentages were scored and placed into a 4-level categorized "EJ Groups Concentration" scale based on total number of EJ Groups:
 - » No Concentration – Block Group with zero groups exceeding regional averages
 - » Low Concentration – Block Group with 1 group exceeding regional averages
 - » Moderate Concentration – Block Group with 2 or 3 groups exceeding regional averages
 - » High Concentration – Block Group with 4 or 5 groups exceeding regional averages
3. The 2050 MTP road network, existing bicycle and pedestrian network, proposed bicycle and pedestrian network, and public transit network were then mapped and overlaid onto the concentration categories.
 - » There are 103 2050 MTP highway projects.
 - » 20 proposed, stand-alone bicycle and pedestrian projects. Stand-alone refers to projects that do not include highway elements.
 - » 10 transit routes/service areas scored for each EJ population.
4. Transit routes and microtransit service areas were scored as a whole, based on whether or not they intersected one or more high-concentration Block Groups and/or Census Tracts. Demand response services were not included in this analysis since rides must be scheduled 72 hours in advance and demand response service generally covers the entire region. A Block Group or Tract is considered highly concentrated if it exceeds regional averages. All 5 populations were mapped to determine overlapping Block Groups and/or Tracts. Similar to the analyses above, each highway, bike and pedestrian, and transit project was assigned a score based on the number of highly concentrated Block Groups and/or Tracts impacted or intersected.
5. Each project was assigned a score based on the total number of highly concentrated Block Groups impacted or intersected. Each of those projects are listed in the table located below each map.
6. **The maps below identify high-concentration populations within each Census Block Group, except poverty which was identified by using Census Tracts. Because the sample size of a Census Tract is larger than a Census Block, Census Tracts have a lower margin of error than Census Blocks. GHMPO's goal is to obtain the most accurate data possible when performing data analyses.**

7. REGIONAL MAP - OVERLAPPING EJ POPULATION



The purple areas circled in red on the map above display all overlapping highly concentrated environmental justice populations in the region. Highly concentrated Block Groups include 4-5 highly concentrated populations. The majority of identified areas are within Catawba County. A small portion of identified areas are within or close to Morganton and in eastern Burke County. There are 27 total highly concentrated block groups within the GHMPO Region.

This overlapping EJ population analysis will be applied below to each of the transportation modes.

A) Highway and Roadway Impacts

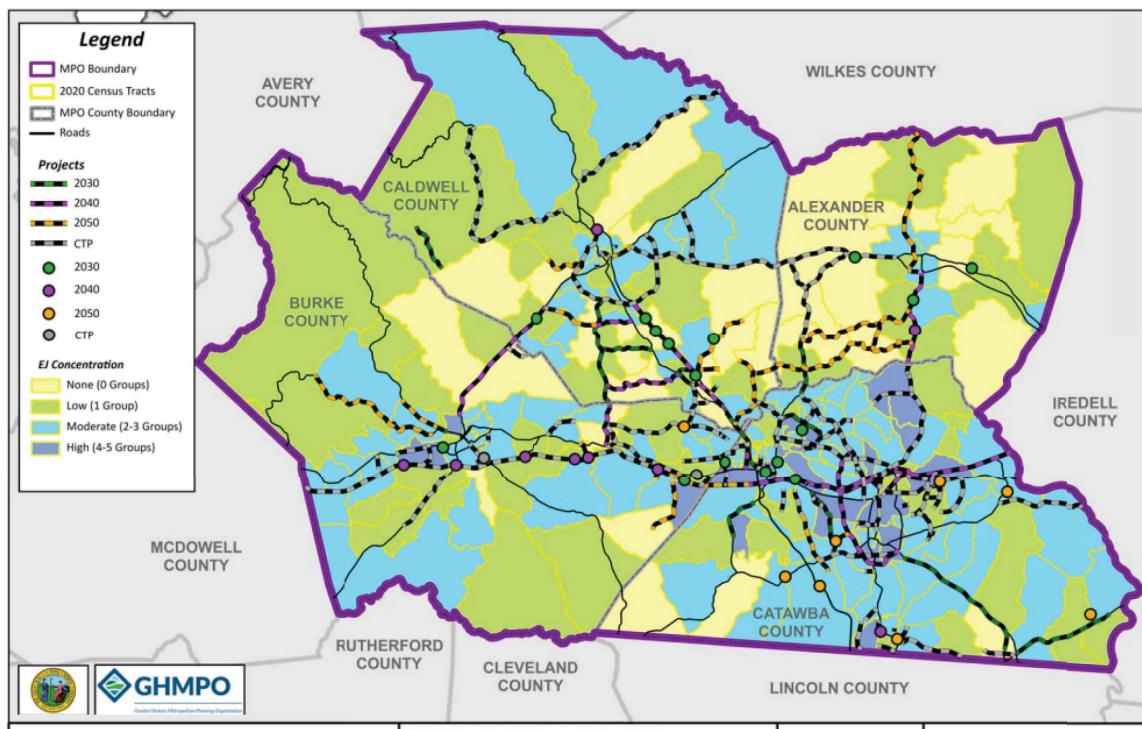
Table 14-4 shows how much of the MTP Highway Network is contained within each Concentration Level. Maps 10-33 through 10-36 (located within the appendix) display how the network's roads intersect the Concentration Levels. If a roadway project intersects (or impacts) a highly concentrated Block Group, that entire project's mileage is included in the "High" category. 44.6% of the MTP's Highway Network is located within the High Concentration Level.

Table 14-4. Greater Hickory MPO Environmental Justice Population Percentages

Concentration Level	Road Miles	Road Miles (%)
No	0	0.0%
Low	27.8	11.5%
Moderate	106	43.96%
High	107.9	44.6%
Total	241.7	100.0%

Source: Greater Hickory Metropolitan Planning Organization, U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates.

REGIONAL MAP – OVERLAPPING EJ POPULATION HIGHWAYS IMPACTS

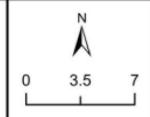


Highway, roadway, intersection and interchange projects scheduled to occur within Environmental Justice (EJ) Block Groups are listed by their respective MTP project ID numbers below. These projects should be monitored more closely because of their proximity to EJ communities. For additional project details, refer to Chapter 4, Highways and Roadways.

**Greater Hickory MPO MTP
MAP 10B-26: Region
EJ Groups Concentration**

101 BG1-407 BG4 Greater Hickory MPO Census Block Groups

0 - 5 Number of Environmental Justice Groups
(African-American, Asian, Hispanic, Mixed Race, and Low-Income) that Block Group/Census Tract Averages Exceed Regional Averages.



Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates

For this analysis, a Block Group is considered highly concentrated if 4-5 highly concentrated populations are located within the Block Group. In total, 21 out of 27 highly concentrated Block Groups were intersected (or impacted) by MTP transportation projects.

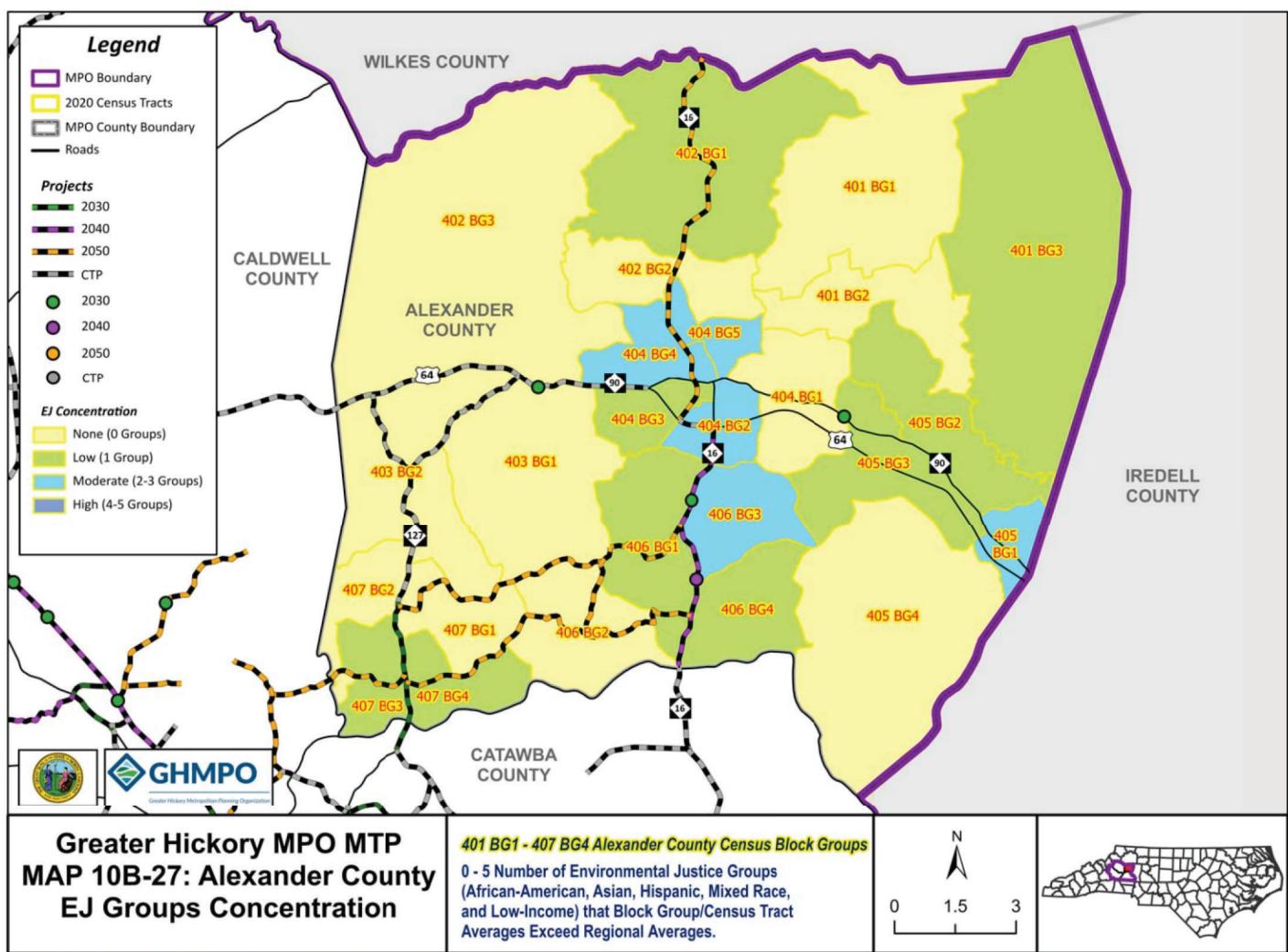
Projects	Score	Projects	Score	Projects	Score
Alexander Co.		Catawba Co.		Multi-County	
None	0	Cata-HR-8	3	Mult -HS-3	2
		Cata-HD-6	2	Mult-HS-2	2
Burke Co.	1	Cata-HD-10	2	Mult-HR-4	1
Burk-HD-4	1	Cata-HD-12	2	Mult-HS-4	1
Burk-HS-7	1	Cata-HS-2	2		
Burk-HR-3	1	Cata-LE-1	2		
Burk-HS-1	1	Cata-HD-15	1		
		Cata-HD-55	1		
Caldwell Co.		Cata-HR-3	1		
None	0	Cata-HD-2	1		
		Cata-HR-4	1		
		Cata-HR-1	1		

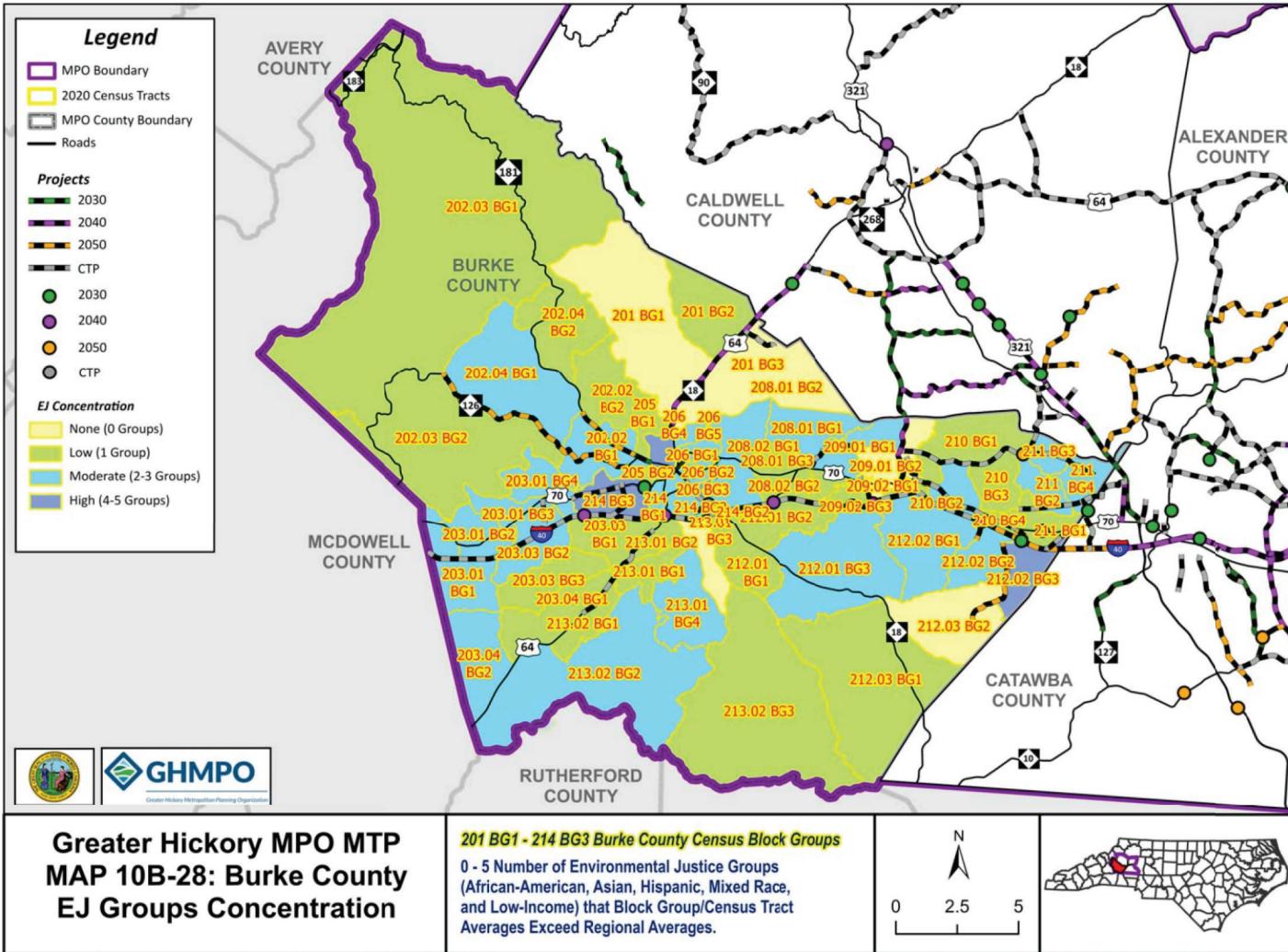
COUNTY LEVEL EVALUATIONS

Descriptions of Highway Projects Intersecting Overlapping EJ Group Concentrations

ALEXANDER COUNTY

There were no intersected or impacted highly concentrated Block Groups in Alexander County.

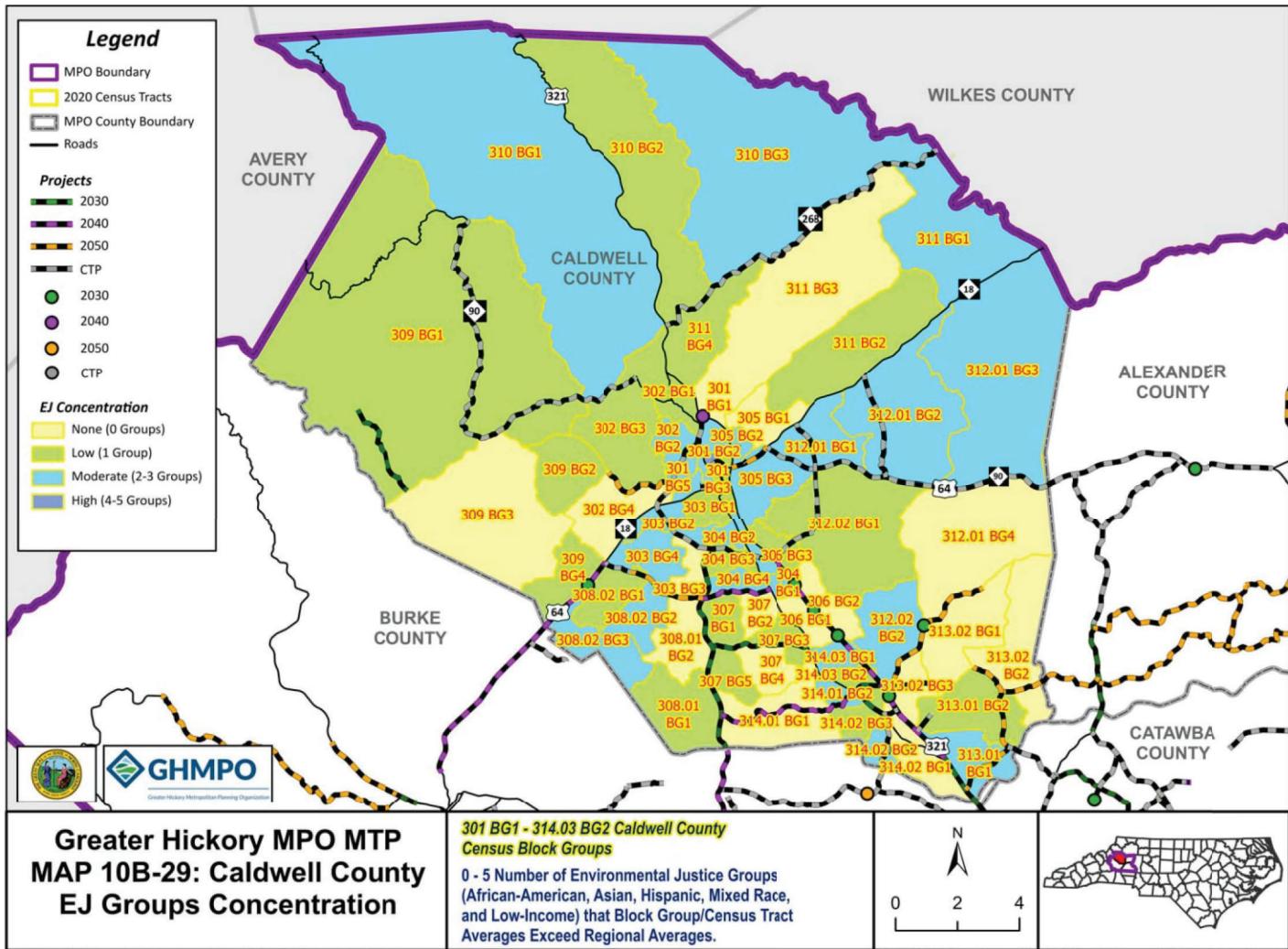




BURKE COUNTY

The following projects intersect (or impact) highly concentrated Block Groups within Burke County. Highly concentrated Block Groups include 4-5 highly concentrated, federally-identified Environmental Justice populations.

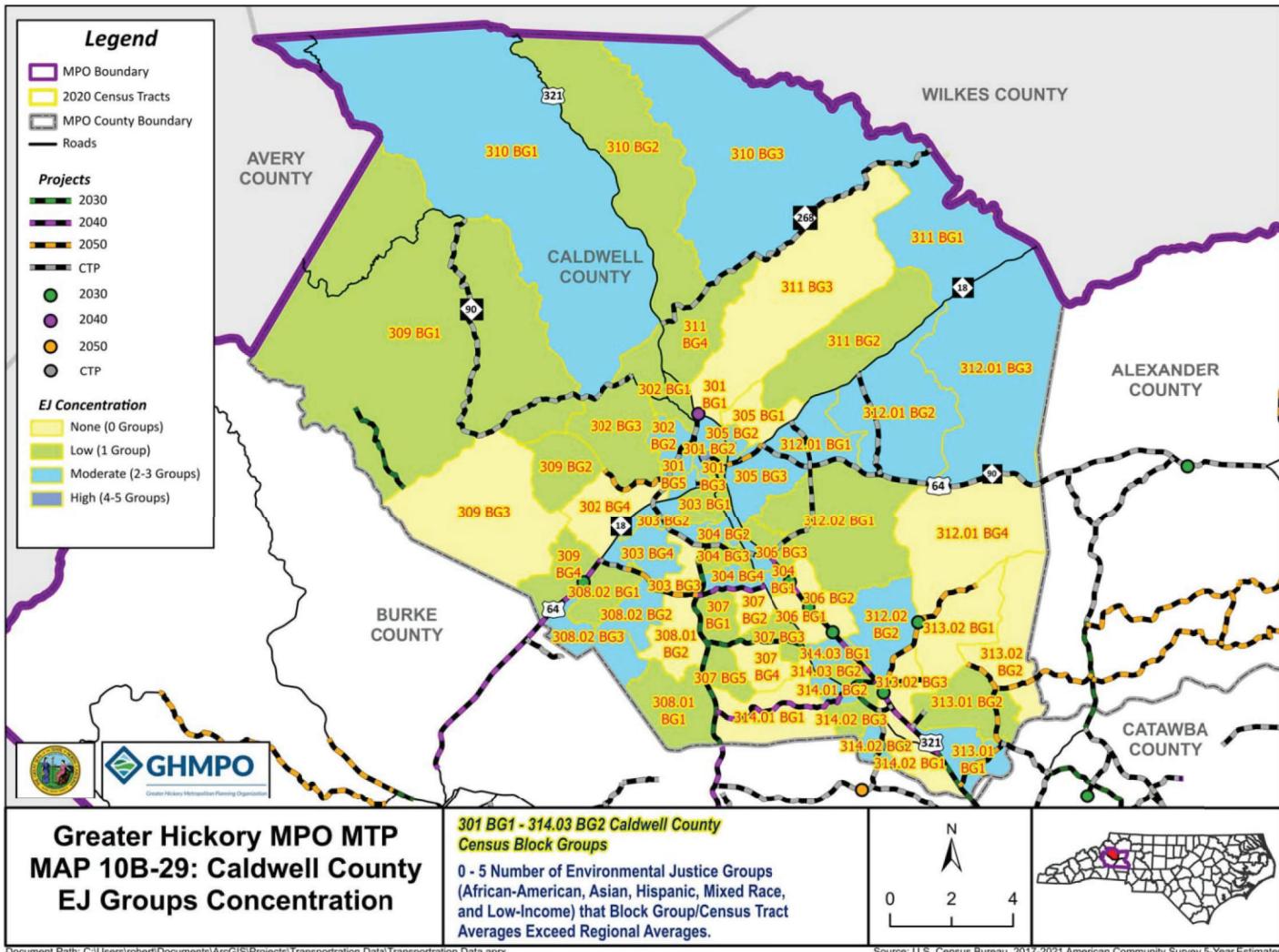
- » Mult-HS-3 – Burke and Catawba Counties – I-40 Widening - Widen from four-lane facility to six-lane facility (US 321 - Exit 123 to Old NC 10 (SR 1761) in Burke County).
- » Burk-HD-4 – Johnson Bridge Road - Improve Johnson Bridge Road (SR 1803) from Old NC 10 to George Hildebrand School Road.
- » Burk-HS-7 – Funded project - I-40 Exit 118 - SR 1716 (Old NC 10) - EXIT 118 - SR 1761 (OLD NC 10). Construct interchange improvements.
- » Burk-HR-3 – Funded project - NC-181 – St. Mary's Church Road to Morganton ETJ – widen existing roadway.
- » Mult-HR-4 – Burke and Caldwell Counties – US 64/NC 18 (Morganton Blvd.) - Widen to four-lane divided facility from Rocky Road (SR 1143) in Gamewell to US 64 in Morganton.
- » Burk-HS-1 – I-40 / Jamestown Road – upgrade interchange.



CALDWELL COUNTY

The following projects intersect (or impact) highly concentrated Block Groups within Caldwell County. Highly concentrated Block Groups include 4-5 highly concentrated, federally-identified Environmental Justice populations.

- » Mult-HR-4 – Burke and Caldwell Counties – US 64/NC 18 (Morganton Blvd.) - Widen to four-lane divided facility from Rocky Road (SR 1143) in Gamewell to US 64 in Morganton.
- » Mult-HS-2 – Funded – Burke, Caldwell, and Catawba Counties – US 321 - Widen to six-lanes/superstreet from US 70 in Hickory to US 321-A in Granite Falls.



CATAWBA COUNTY

The following projects intersect (or impact) highly concentrated Block Groups within Catawba County. Highly concentrated Block Groups include 4-5 highly concentrated, federally-identified Environmental Justice populations.

- » Cata-HR-8 – NC 16 - Modernize from I-40 to Springs Road.
- » Mult-HS-4 – Catawba and Iredell Counties – I-40 - Widen from four-lane facility to six-lane facility from I-77 in Iredell County line to NC 16.
- » Cata-HD-55 – Rock Barn Rd (SR 1709) - Improve Rock Barn Rd. from 1st St East to I-40.
- » Cata-HD-10 – Newton Conover Loop Southern Portion - Construct multi-lane facility from NC 10 southwest of Newton to NC 16 via "P" St.
- » Cata-HD-15 – Newton Conover Loop Western Portion - Widen Fairgrove Church Rd. (SR 1476) and extend new roadway south to NC 10 West in Newton and new roadway north to Section House Rd. (SR 1491).
- » Cata-HD-12 – Startown Road (SR 1005) - Widen two-lane facility from US-70 to NC-10.
- » Cata-HS-2 – I-40 - Widen from four-lane facility to six-lane facility from US 321 to Fairgrove Church Road.
- » Cata-LE-1 – Funded - 4th Street Drive – construct intersection improvements (in Hickory).
- » Cata-HR-3 – Funded - NC-127 - 1st Ave. SE to 2nd Ave SE. Add Turn Lanes.
- » Cata-HD-6 – 17th St. SW - Widen to 3-lane from US 70 to 2nd Avenue NW.
- » Mult-HS-2 – Funded – Burke, Caldwell, and Catawba Counties – US 321 - Widen to six-lanes/superstreet from US 70 in Hickory to US 321-A in Granite Falls.
- » Cata-HD-2 – Funded - 33rd St SW (SR 1124) and 34th St NW - Realign Intersection.
- » Cata-HR-4 – Funded – NC 127 - Widen to multi-lane from SR 1132 (Huffman Farm Rd) to SR 1008 (Zion Church Rd).
- » Cata-HR-1 – US-321 Business - US-321B: Improve traffic flow from N. Carolina Ave (US-321B) to S Main Ave.

ii). How are GHMPO Highway Dollars Being Spent?

The State Transportation Improvement Plan (STIP) is scheduled for adoption via the Board of Transportation (BOT) in June of 2023. In the draft 2024-2033 version of this STIP, GHMPO has the following highway projects selected and funded through the prioritization process. The highlighted projects are projects that intersect (or impact) a Block Group with 4-5 overlapping, highly concentrated Environmental Justice communities.

Highway Project Total: **\$1,062,220,900**

Projects Impacting 4-5 Overlapping, Highly Concentrated EJ Communities: **\$568,359,000**

Project Name	Project Description
US 321 and Bridge 367 Div 11, 12 & 13	Widen to six-lanes/superstreet from US 70 in Hickory to US 321-A in Granite Falls.
NC-127	SR 1400 (CLONINGER MILL ROAD) TO SR 1156 (RICHEY ROAD).
US-64 /Church Road	US 64 AND SR 1124. ADD LEFT TURN LANE ON WESTBOUND US 64/NC 90.
NC-16	INTERSECTION OF NC 16 AND SR 1609 (COUNTY HOME ROAD). CONSTRUCT INTERSECTION IMPROVEMENTS.
I-40 Exit 118 – SR 1716 (Old NC 10)	EXIT 118 – SR 1761 (OLD NC 10). CONSTRUCT INTERCHANGE IMPROVEMENTS.
NC-181	SR 1414 (ST MARY'S CHURCH ROAD) TO MORGANTON ETJ. WIDEN EXISTING ROADWAY.
US-321	US 321 at Mount Herman Rd. (SR 1160).
US-321	US 321 at Pine Mountain Rd. (SR 1809/1952).
US-321	US 321 at Mission Rd. (SR 1108).
US 321 / DUDLEY SHOALS ROAD (SR 1002)	SR 1002 (DUDLEY SHOALS ROAD) GRADE SEPARATION. CONSTRUCT RAMP ONTO SOUTHBOUND US 321.
US-321A	Pinewood Road (SR 1109) to Duke Street (SR 1106).
US 64 / Calico Road	Intersection Improvements.
Dudley Shoals Road (SR 1002)	Construct Roundabout at five-points intersection
Pinewood Rd. (SR 1109)	US 321 to SR 1931 (Bert Huffman Rd) modernization
Cajah's Mtn. Rd. (SR 1130)	Improvements from Connelly Springs Rd (SR 1001) to 321A
Connelly Springs Road (SR 1001)	Widen to multi-lane facility from just north of Burke County line to SR 1933 (Southwest Blvd.).
SR 1328 Brown Mountain Beach Road	Widen Roadway to 20 feet at five locations.
Pinewood Rd Extension	INTERSECTION OF US 321 AND SR 1109 (PINEWOODS ROAD EXTENSION). CONSTRUCT INTERSECTION IMPROVEMENTS.
I-40 Exit 125 - Lenoir-Rhyne Blvd (SR 1007)	Add Clover ramp in Northeast Quadrant.
NC-127	1st Ave SE to 2nd Ave. SE. Add Turn Lanes.
NC-127	Widen to multi-lane from SR 1132 (Huffman Farm Rd.) to SR 1008 (Zion Church Rd.).
17th Street NW Connector	Construct 2 Lane connector from 9th Ave. NW to Clement Blvd. NW.
NC-150	East of SR 1840 (Greenwood Rd) to Relocated NC 16 (TIP R-2206). Widen to multi-lanes. Intersection Improvements at Greenwood Road.
33rd St SW (SR 1124) and 34th St NW	Realign intersection.
29th Ave Dr NE	SR 1453 (SPRINGS ROAD) TO NC 127.
16th Street	16TH STREET (SANDY RIDGE ROAD) AT 21ST AVENUE NE IN HICKORY. CONSTRUCT ROUNDABOUT.
4th Street Drive	SR 1358 (4TH STREET DRIVE SW) INTERSECTION IN HICKORY. CONSTRUCT INTERSECTION IMPROVEMENTS.

B) Bicycle and Pedestrian Projects: Current and Future Impacts

Maps 7-7 through 7-10 (located in the Appendix) show the locations of existing and proposed bicycle and pedestrian infrastructure within the MPO's planning area. The tables below describe how many linear feet of existing and proposed bicycle and pedestrian infrastructure are contained in each Concentration Level.

Table 14-7. Existing Sidewalk Network Length and Percentages by Concentration Level

Concentration Level	Linear Feet	Linear Feet (%)
No	79,732.20	5.03%
Low	238,813.10	15.06%
Moderate	833,564.80	52.57%
High	433,656.00	27.35%
Total	1,585,766.10	100.00%

Table 14-8. Existing Bicycle Network Length and Percentages by Concentration Level

Concentration Level	Linear Feet	Linear Feet (%)
No	0.00	0.00%
Low	9,475.80	15.18%
Moderate	30,931.00	49.56%
High	22,006.00	35.26%
Total	62,412.80	100.00%

Table 14-9. Existing Greenway Network Length and Percentages by Concentration Level

Concentration Level	Linear Feet	Linear Feet (%)
No	8,079.55	7.01%
Low	6,728.11	5.83%
Moderate	24,728.97	21.44%
High	75,792.11	65.72%
Total	115,328.74	100.00%

Table 14-10. Proposed Walkway Network Length and Percentages by Concentration Level***

Concentration Level	Linear Feet	Linear Feet (%)
No	0.00	0.00%
Low	17,583.53	14.77%
Moderate	45,619.54	38.33%
High	55,802.06	46.89%
Total	119,011.40	100.00%

Table 14-11. Proposed Sidewalk Network Length and Percentages by Concentration Level

Concentration Level	Linear Feet	Linear Feet (%)
No	0.00	0.00%
Low	3,355.16	8.88%
Moderate	2,602.46	6.89%
High	31,810.15	84.23%
Total	37,767.77	100.00%

Table 14-12. Proposed Multi-Use Path Network Length & Percentages by Concentration Level

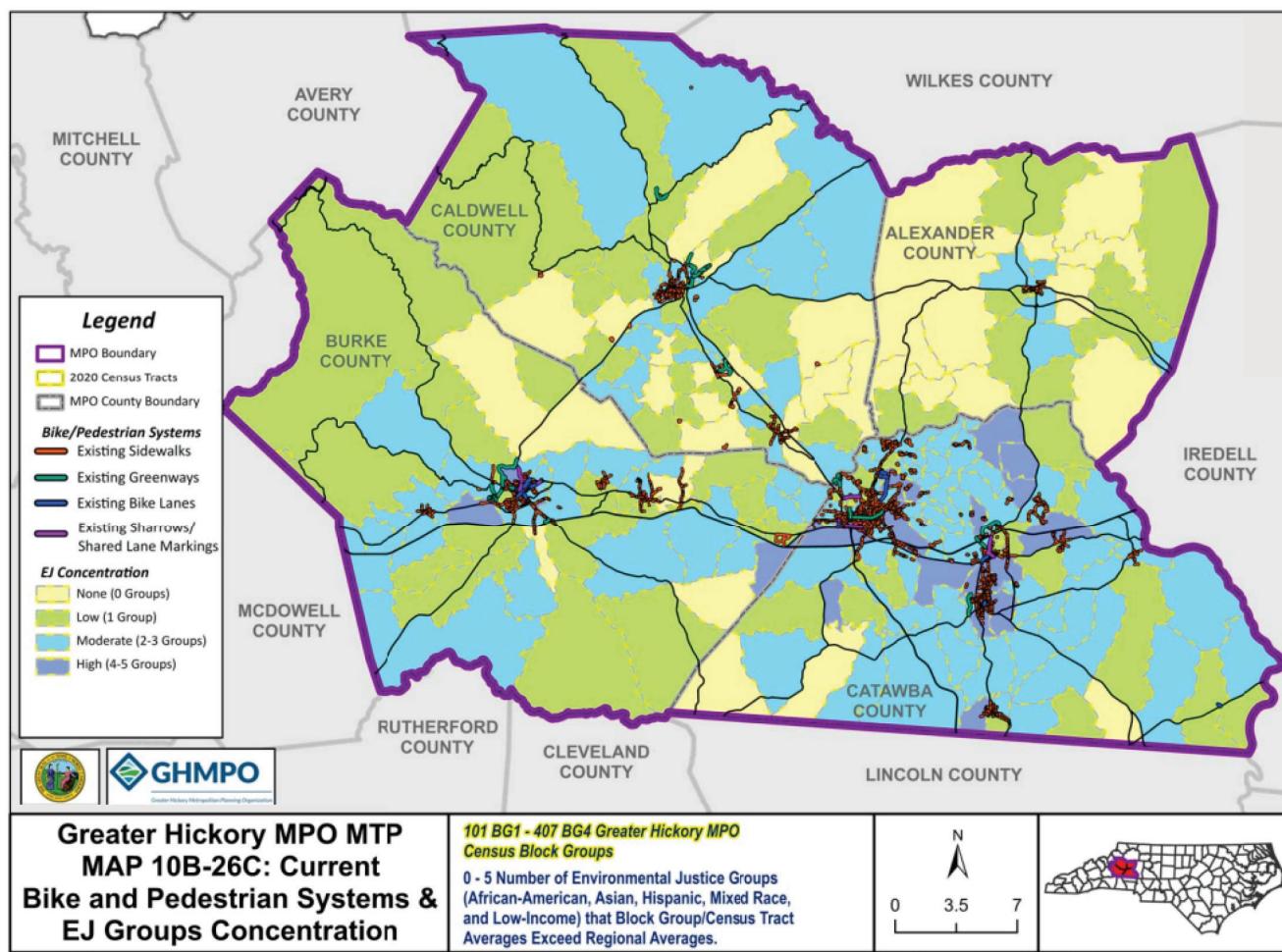
Concentration Level	Linear Feet	Linear Feet (%)
No	0.00	0.00%
Low	537.28	0.80%
Moderate	43,017.08	63.69%
High	23,991.91	35.52%
Total	67,546.27	100.00%

Table 14-13. Proposed Greenway Network Length and Percentages by Concentration Level

Concentration Level	Linear Feet	Linear Feet (%)
No	0.00	0.00%
Low	13,691.09	100.00%
Moderate	0.00	0.00%
High	0.00	0.00%
Total	13,691.09	100.00%

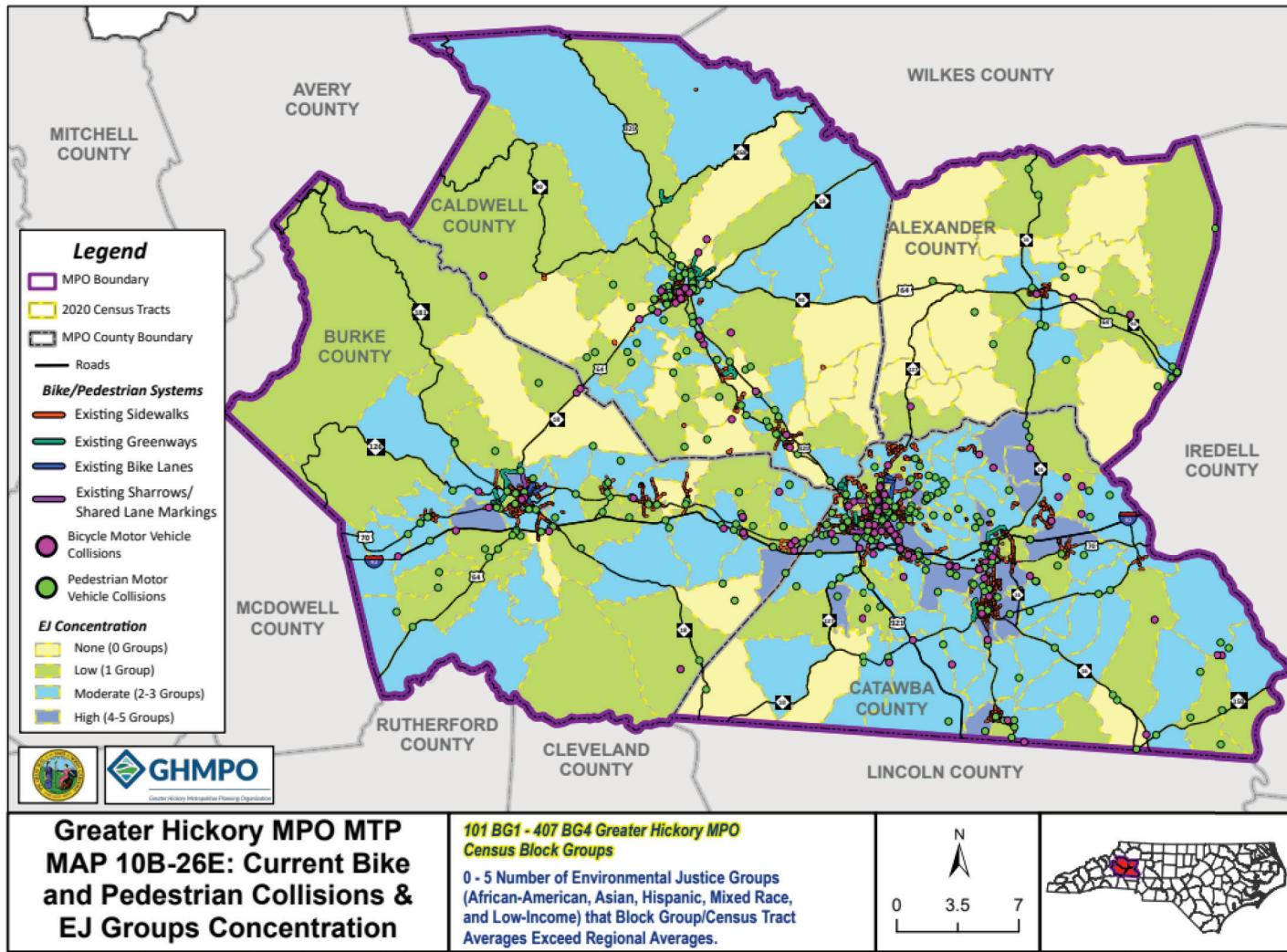
***For the purpose of this analysis, a walkway includes sidewalks, greenways, and multiuse paths. As shown in the tables above, much of the existing and proposed bicycle and pedestrian infrastructure fall within moderate and highly concentrated Block Groups. Greenways located within parks are not included in this analysis.

REGIONAL MAPS: EJ GROUP CONCENTRATIONS – CURRENT BICYCLE AND PEDESTRIAN SYSTEM IMPACTS



For this analysis, a Block Group is considered highly concentrated if 4-5 highly concentrated populations are located within the Block Group. The purple represents all of the highly concentrated Block Groups. Out of 248 block Groups, 27 are considered highly concentrated. 22 out of 27 have existing bicycle and /or pedestrian infrastructure.

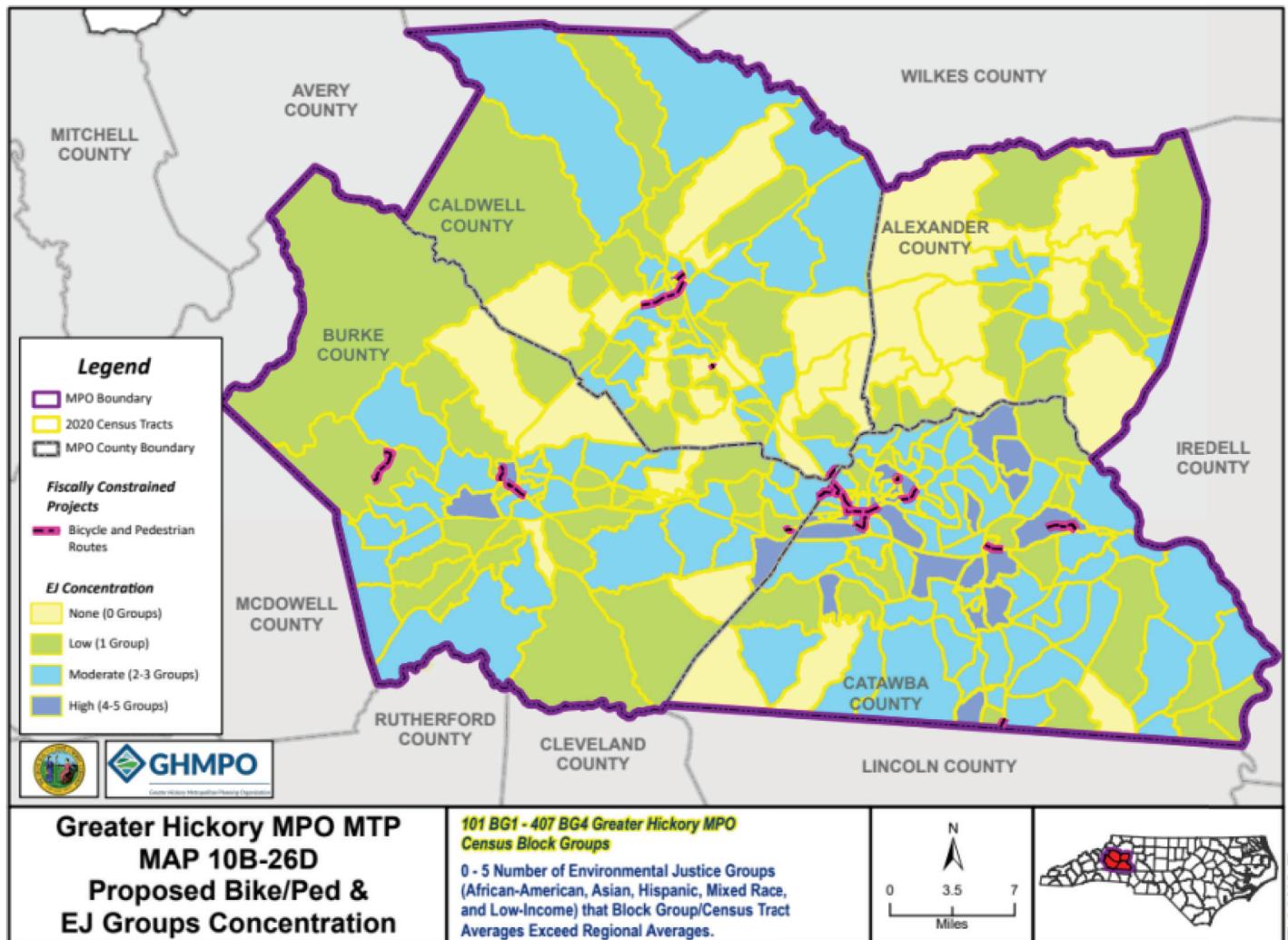
EJ GROUP CONCENTRATIONS – CURRENT BICYCLE AND PEDESTRIAN COLLISIONS & EJ GROUP CONCENTRATIONS



The map above displays bicycle and pedestrian-involved collisions with vehicles from 2015 to 2021. Environmental Justice Concentrations are displayed with the current bicycle and pedestrian network. Note the correlation between bicycle and pedestrian crashes with vehicles and high Environmental Justice concentrations (more urbanized areas). Improvements should be prioritized in these areas to improve safety and accessibility for vulnerable users.

EJ GROUP CONCENTRATIONS – PROPOSED BICYCLE AND PEDESTRIAN PROJECTS

When assessing proposed bicycle and pedestrian infrastructure, one crucial criteria within GHMPO bicycle and pedestrian methodology is to project connections to points of interest. Points of interest include places of employment, food options, transit stops, medical services, educational services, and several others. The list below the map displays all proposed bicycle and pedestrian projects that intersect (or impact) highly concentrated Block Groups (Block Groups with 4-5 highly concentrated EJ populations). The list includes some of the connected points of interest, as well as any closed gaps that connect the bicycle and pedestrian network.



For this analysis, a Block Group is considered highly concentrated if 4-5 highly concentrated populations are located within the Block Group. In total, 10 out of 27 overlapping highly concentrated Block Groups were intersected or impacted by the proposed bicycle and pedestrian infrastructure. Almost all planned bicycle and pedestrian infrastructure improve connectivity within a concentrated Environmental Justice community.

Projects	Score	Projects	Score
Alexander Co.		Catawba Co.	
None	0	C-5196	3
Burke Co.		BL-0066	2
EB-5978	1	EB-5750	1
EB-5807	1	EB-5938	1
BL-0001	1	EB-5977	1
Caldwell Co.		EB-5937	1
None	0	EB-5935	1
		EB-5828	1
		C-5624	1

Below is a detailed description of the projects shown above (Block Groups only):

EB-5978 – College St. Multi-Modal Connector - connect development at the 800 acres that contains NC School for Deaf, NC School of Science and Mathematics, Broughton Hospital and Western Piedmont Community College, employment centers such as Tannery Square and Case Farms to downtown, multiple recreation facilities, Mountain View Elementary School and the Catawba River Greenway.

EB-5807 – Morganton Downtown Greenway Connector – Aquatic Center, Mountain View Rec. Center, Morganton Housing Authority, Burke Senior Center, and numerous businesses along NC 181.

BL-0001- Main Ave. East (sidewalk from 2nd St. SE to US 70 in Hildebran) – connects residential neighborhoods to the downtown area (food and recreation) and nearby commercial services.

EB-5935 – Centennial Blvd. Sidewalk (Phase II) (N. Lookout St. to Main St.) – Connects a major employment center (CommScope) to the City's of Claremont's current sidewalk system and close a gap in connectivity.

EB-5828 – Centennial Blvd. Sidewalk (North Oxford St. to N. Lookout St.) - connect pedestrian access to downtown Claremont and schools for an 88-unit apartment complex.

C-5624 – 1st St. E/W and Conover Blvd E (US 70) from I-40 to NC 16 – improve safety and promote use of non-motorist travel through downtown Conover and nearby commercial services and civic destinations.

BL-0066 – Springs Rd. NE (Sidewalk from Sandy Ridge Road to McDonald Parkway) – connects retail, grocery stores residential, churches, medical facilities and school, Trinity Village retirement home, Centro Latino, St. Stephens Lutheran Christian School.

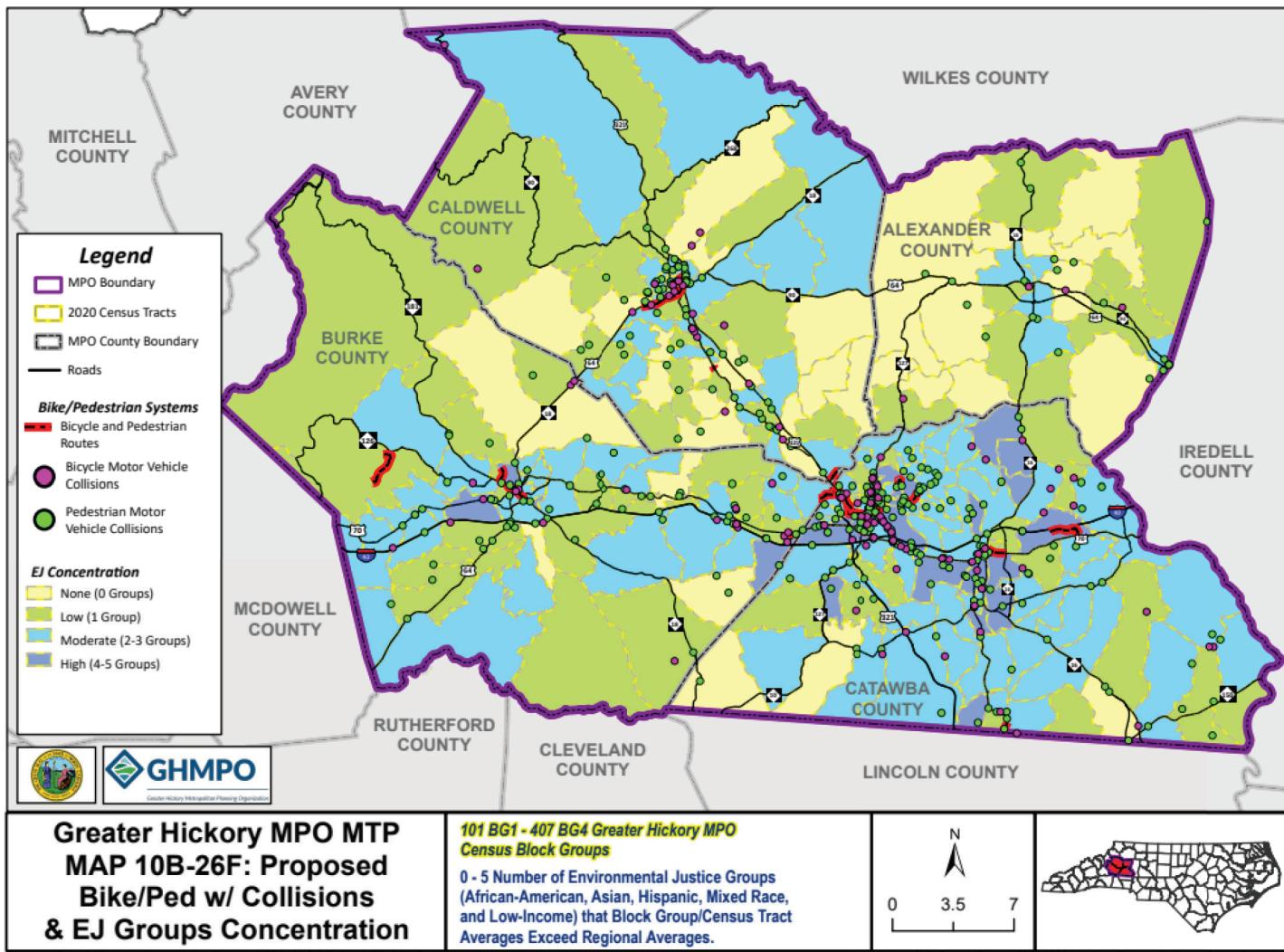
EB-5750 – Main Ave. NW/NE (7th Ave. NE to 9th St. NW) – City Walk connects Hickory neighborhoods to downtown Hickory, SALT Block, parks, and Lenoir-Rhyne University.

EB-5937 – Historic Ridgeview Walk (construct multi-use path from Hickory's City Walk to Ridgeview Library) - connection for citizens in the Ridgeview Community and other adjacent neighborhoods in southwest Hickory to the downtown area and other parts of the City.

EB-5938 – Historic Ridgeview Walk South (construct multi-use path from Ridgeview Library to Walmart) - connects citizens in the Ridgeview Community and other adjacent neighborhoods in southwest Hickory to the downtown area and an existing grocery store on US 70.

EB-5977 – 9th St. NW Connector (Construct multi-use path from City Walk to Old Lenoir Rd.) - connects Lake Hickory and the Riverwalk to Lenoir-Rhyne University through downtown Hickory via City Walk, multiple neighborhoods and neighboring counties.

EJ GROUP CONCENTRATIONS – PROPOSED BICYCLE AND PEDESTRIAN PROJECTS WITH PEDESTRIAN COLLISIONS



The map above shows bicycle and pedestrian collisions with vehicles from 2015 to 2021. Environmental Justice Concentrations are displayed with the proposed bicycle and pedestrian network. Note the correlation between bicycle and pedestrian crashes with vehicles and high EJ concentrations. As stated above, the most highly concentrated areas and collisions are located within the more urbanized areas such as Hickory, Newton, Conover, Lenoir, and Morganton.

All planned improvements should address safety and connectivity, particularly within high crash areas that have EJ groups. Bicycle and pedestrian improvements should continue within these Block Groups to improve safety and accessibility for vulnerable users.

C) TRANSIT IMPACTS

The transit maps shown previously in the analysis section show the current public transportation routes that serve the cities of Conover, Hickory, and Newton. Morganton flex routes serve Morganton, and microtransit serves Morganton and portions of eastern Burke County. Greenway Public Transportation also operates a flex route in the downtown Taylorsville area. Greenway Public Transportation also provides all four counties with demand response van service, which is often used by low-moderate income and older populations.

Transit access is generally good for urban residents in Catawba County's largest cities (Hickory, Newton, and Conover), and urban residents in Morganton and eastern Burke County. Lenoir (Caldwell County) is not served by fixed route, flex route or microtransit service. Demand response service is currently the only transit option for Caldwell County.

Table 14-15 lists the percentage of public transit routes by EJ Group Concentration Levels and the number of bus stops per EJ Group Concentration Level. More than 90% of the region's public transit network is located within Moderate to High Concentration areas. Approximately 3% of the public transit network is located in areas of Low Concentration and zero percent is located in the No Concentration category.

Table 14-15. Percentage of Public Transit Routes by EJ Group Concentration Levels

Concentration Level	Linear Feet	Linear Feet (%)
No	0.0%	0
Low	2.7%	9
Moderate	48.8%	165
High	48.5%	164
Total	100.0%	338

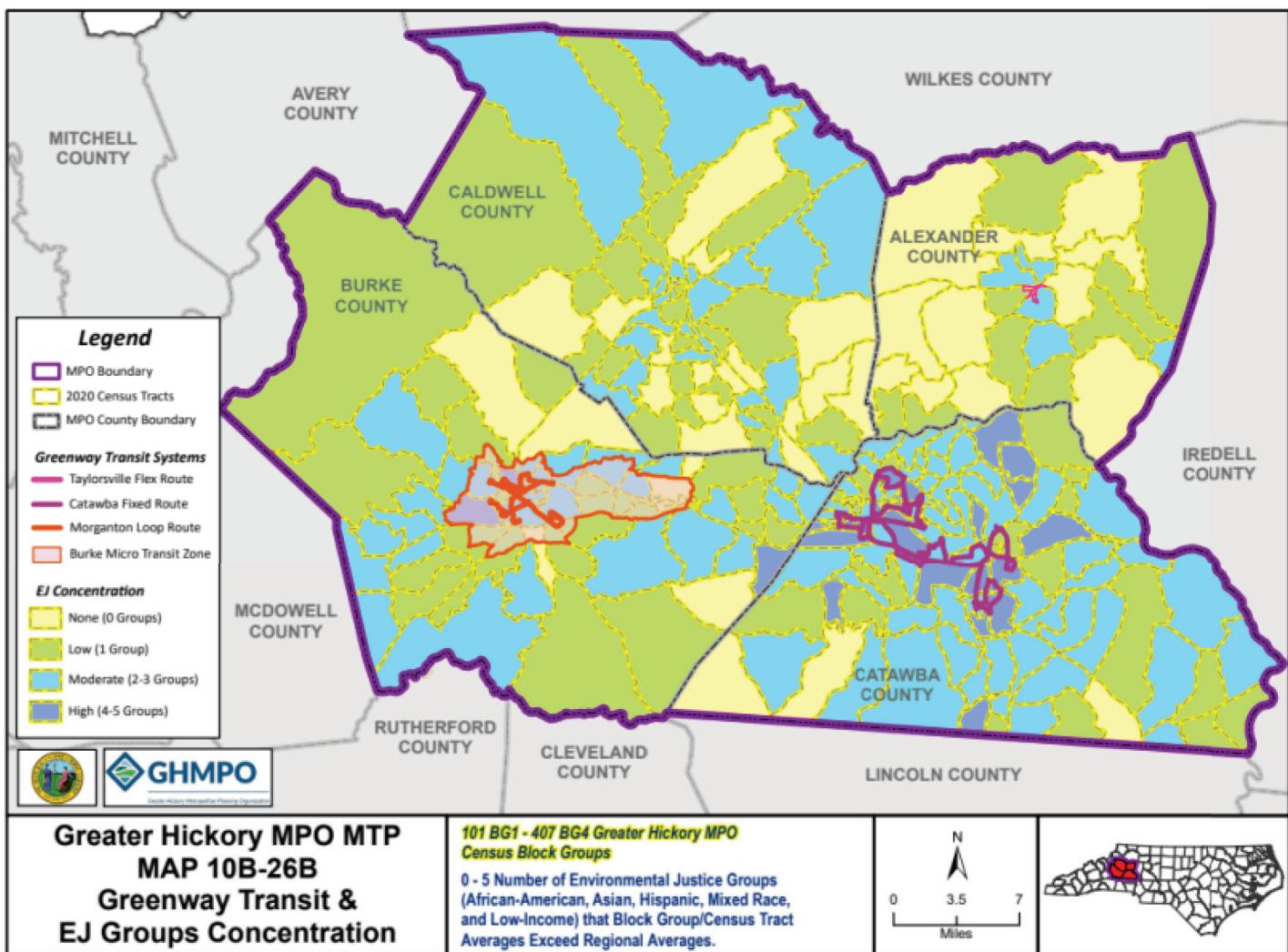
Table 14-16 provides a summary of the range of public transit services provided in the GHMPO region and the extent to which public transit is available in High Concentration EJ areas. The table also provides information on the location of air quality monitoring stations in relation to EJ areas.

Table 14-16. Public Transit Service and Air Quality Monitoring Stations

County	Fixed/Flex Route Transit	Fixed Route Transit Service to High Concentration EJ Blocks	Rural Fixed Route Transit	Rural Demand Response Transit	Air Quality Monitor in EJ Blocks
Alexander	Yes - Flex, Taylorsville	Yes	None	Yes	Yes - Tract 404, Block Group 2
Burke	Yes - Flex, Morganton Microtransit - Morganton/Eastern Burke	Yes	None	Yes	No Monitors
Caldwell	None	N/A	None	Yes	Yes - Tract 305, Block Group 1
Catawba	Yes - Hickory, Newton, Conover	Yes	None	Yes	Yes - Tract 109, Block Group 1

Source: GHMPO, NCDEQ.

EJ GROUP CONCENTRATIONS – GREENWAY TRANSIT SERVICE AREA MAP



For this analysis, a Block Group is considered highly concentrated if 4-5 highly concentrated populations are located within the Block Group. 90% of transit fixed/flex/microtransit services in the region intersect with Block Groups with high concentrations of all 5 EJ populations.

As the GHMPO's proposed projects (highway, bicycle & pedestrian, transit) move from the conceptual phases through to construction and completion, Environmental Justice and National Environmental Policy Act (NEPA) regulations require the evaluation (and mitigation of disproportionate impacts where necessary) of each project. Some of the potential negative impacts resulting from proposed projects include, but are not limited to:

- » Overall community accessibility and mobility (both within the EJ Tract and the wider region)
- » Community cohesion
- » Access to schools, senior centers, hospitals and social service providers
- » Access to parks and the impacts of projects on parks
- » The environment (auditory, visual, air/water pollution, vibration)
- » Employment in the project vicinity (permanent or temporary business closures)
- » Construction effects (dust, noise, emissions, vibration)
- » The ability of residents and visitors to locate parking
- » Indirect and cumulative effects (loss or gain in property values)

With the completion of the above analysis, it is important to consider the actions initiated by the GHMPO over the last five years to address the needs of the region's EJ population.

4) GHMPO EJ Initiatives Completed Since the 2045 MTP

Since the last MTP update in 2045, the GHMPO has continued to strive to enhance EJ outreach and planning efforts. The GHMPO has worked to establish EJ community outreach programs, have conversations with EJ groups, and taken action to alleviate community concerns.

Below is a list of initiatives that GHMPO has completed over the past five years:

ESTABLISHED MOVABILITY ADVISORY COMMITTEE (MAC):

In December of 2019, the Greater Hickory MPO submitted a grant application to the National Association of Chronic Disease Directors (CDC) to develop a regional Walkability Plan. The plan's purpose is to address barriers at the intersection of movability, equity, and health. GHMPO was one of six teams in the United States chosen by the CDC to participate in an academy to develop a walkability plan with the help of nationally recognized experts. This program intentionally brought together cross-disciplinary teams representing public health, planning, transportation, elected officials, state human service representatives, and other disciplines for an intensive, six-month applied-learning course on improving walkability - focusing on community input and transportation design. The program, known as the Walkability Action Institute (WAI), resulted in the creation of GHMPO's Team Action Plan and the establishment of the GHMPO's Movability Advisory Committee (please see below).



MAC-initiated walk audit conducted in the Town of Long View.

Creation of the Movability Advisory Committee (MAC) is listed as goal number one in GHMPO's Team Action Plan. MAC was specifically designed to help the GHMPO region identify necessary policy, systematic, and environmental changes. The Committee promotes equitable access to all forms of transportation, specifically bicycle, transit, and pedestrian modes. For many, walking, transit, and biking are their only means of accessing employment, education, medical care, food, and entertainment. MAC strives to make alternative transportation modes as safe as possible by identifying and removing mobility barriers. MAC utilizes locally adopted plans as well as public involvement to identify mobility barriers. The committee addresses them by coordinating planning efforts with municipalities, NCDOT, and key representatives in the four-county region (Alexander, Catawba, Burke, and Caldwell). Representatives serving on the committee have the expertise to determine the most effective ways to reach the right voices and promote transportation equity throughout our region. MAC hopes that future work will be much more effective by expanding to include representatives from the region's health, education, and recreation sectors.

WALK AUDITS IN EJ COMMUNITIES:

GHMPO hosts walk audits (often through the MAC) to identify mobility barriers and gaps in pedestrian and cyclist infrastructure. GHMPO includes community members, NCDOT, municipal staff, MAC members, public health representatives, and other relevant parties depending on the audit location. Since December 2019, GHMPO has hosted walk audits in the following EJ locations:

- » City of Morganton – Area surrounding Hill Crest Elementary School (East Union Street and surrounding apartment streets)
- » NC School of Science and Math & NC School of the Deaf – West Fleming and Burkemont Avenue
- » Town of Long View – 1st Ave and 33rd Street
- » Ridgeview Community – 7th Ave, 1st Street, 8th Ave, 3rd Street

LOWER PM2.5 & OZONE READINGS:

GHMPO has PM2.5 and Ozone monitors located within highly concentrated environmental justice communities (as shown in Table 10-8, above). Monitors are located within Alexander, Caldwell, and Catawba counties. According to these monitors, PM2.5 and Ozone readings have steadily declined and are well below the targets set by the Department of Environmental Quality. Please see the MTP Natural Environment chapter for monitor readings.

UPDATED CONGESTION MANAGEMENT PLAN WITH BOTTLENECK LOCATIONS:

GHMPO's Congestion Management Plan (CMP) was updated as part of the 2050 MTP Update. The CMP update includes maps of the region's most problematic bottlenecks in relation to highly concentrated EJ Communities. GHMPO produces a CMP report every two years that will report progress on potential solutions for correcting bottlenecks in highly concentrated minority and low income areas (see below). Maps of each bottleneck can be found in the Congestion Management Plan section of this plan.

» Alexander County

- Intersection of NC 16 and US 64 -This is identified as Alex-HR-4 in the 2050 MTP and R-2403A in the State Transportation Improvement Plan (STIP).

» Burke County

- Exit 100 on I-40 – This is identified as BURK-HS-1 in the 2050 MTP and I-5874 in the STIP.
- US 64 Interchange on I-40 – This is identified as Burk-HS-3 in the 2050 MTP and I-5009 in the STIP.
- NC-18N @ Bush Dr/I-40.
- Exit 111 on I-40 – This is identified as Burk-HS-4 in the 2050 MTP and I-5008 in the STIP.
- Exit 112 on I-40 – This is identified as Burk-HS-5 in the 2050 MTP and I-5975 in the STIP.
- I-40E @ Old NC 10/Exit 118 – This is identified as Burk-HS-7 in the 2050 MTP and I-5990 in the STIP.
- I-40W @ Center St/Exit 119.
- US-70BR-W @ Huffman St/Center St.
- US-70W @ US-70-BR/E Union Street.
- US-70W @ US-70/E Union Street.
- US-70E @ Drexel Rd/S Main Street.

» Caldwell County

- Intersection of US-321N @ US-64/NC-90/NC-18 (Smiths Crossroads).

» Catawba County

- McDonald PKWY S @ I-40.
- I-40E @ Exit 126.
- I-40E @ US-70A/Exit 130.
- NC-16N @ NC-16 Bus.
- NC-127 @ 2nd Ave.
- I-40W @ US-321/Exit 123.
- I-40E @ Exit 125 – This is identified as Cata-HS-1 in the 2050 MTP and I-5716 in the STIP.
- S Center Street @ US-70.

TARGETED PUBLIC OUTREACH EFFORTS:

Since 2019, GHMPO has collaborated efforts with the Western Piedmont Council of Governments (WPCOG) for air quality outreach. WPCOG's Outreach Coordinator works with GHMPO to inform the public of transportation events, plans, and services at festivals and other outreach events.

Many meetings, including TCC and TAC, now have a virtual component. Public meetings are held in locations that are fully accessible via public transit and/or pedestrian amenities. Please see the Public Involvement chapter for more information about targeted outreach efforts and events. Additionally, GHMPO is updating its Public Involvement Plan to include additional targeted outreach efforts in fiscal year 2024. These efforts include interactive mapping tools and more defined public comment procedures.

HEALTH EQUITY MAPPING TOOL (CURRENTLY UNDER DEVELOPMENT):

Equity considerations improve quality of life by addressing transportation benefits and burdens in a sustainable way. Equitable planning and investment decisions are made through inclusive collaboration by developing safe, reliable, and attainable transportation options. In order to meet the mobility needs of all GHMPO residents, it is essential to recognize and mitigate barriers to access experienced by historically underserved communities.

This GIS tool will assess community-level existing conditions and potential impacts resulting from MTP-recommended projects. The review will include the following.

- » Overlay recommended transportation projects by mode/type with Community-Scale Existing Conditions Assessment scores and summarize what percentage of projects by mode/type fall in the areas with the worst health outcomes.
- » Identify areas with the worst health scores where no investment in bicycling/pedestrian or transit networks or roadway modernization projects are proposed.
- » Determine whether there are potential additional applicable projects.

REGIONAL TRANSPORTATION SAFETY PLAN:

GHMPO is applying for funding from the Highway Safety Improvement Program (HSIP) to create a regional safety plan. The safety plan will meet all of the requirements of a Safe Streets for All Plan and will make the region eligible for safety-related implementation funding. If approved, plan writing should begin in fiscal year 2024.

TRANSIT SERVICE EXPANSION TO UNDERSERVED AREAS:

Catawba County -

Beginning July 5th, 2022, Greenway Public Transportation implemented its restructured Catawba Fixed Route service. Previously, the Catawba Fixed Route service had not been updated in over a decade. The Catawba Fixed Route service continues to provide service to the cities of Hickory, Newton, and Conover. It contains seven different routes (previously six) which improves travel time and expands access to destinations that offer healthy food options, medical care, and recreational access.

An example of the new service can be seen on Route 1 of the Catawba Fixed Route. This route now serves riders on S. Center Street in Hickory, offering direct service to destinations in West Hickory which includes the new stop at the Walmart Neighborhood Market on US-70 and faster service to the Hickory Transit Center, while keeping sections of the original route based on expressed passenger needs.

Burke County -

Beginning April 4th, 2022, updated services became available for use in Burke County. Greenway introduced the newly updated Morganton Loop Flex Route as well as Microtransit. The Morganton Flex Loop is a Fixed Route that features eight deviations available on request. Those deviations provide riders with additional options for healthy foods, medical care, and senior services.

Microtransit is a relatively new concept gaining popularity around the state and the country. The service allows curb-to-curb same-day service upon a simple call to dispatch. Microtransit is available in a large portion of the county in many areas located outside of the current Morganton Loop Flex Route. These locations consist of both urban

and rural areas. This allows towns such as Rutherford College and Valdese, which were located on the previous Flex Route, continued access to public transportation. Ridership through Microtransit is expected to continue to increase with the rollout of a smartphone application which will allow users to directly book trips.

Caldwell County -

GHMPO received grant funding from the CARES Act via the U.S. Economic Development Administration to evaluate the establishment of transit operations in Caldwell County – the only county in the region that does not have fixed, flex, or microtransit options. Several meetings with community groups and local governments were held over the period of a year to develop potential service options. The work to provide transit service to the County still underway, but micro transit was identified by the stakeholders as being a potential viable option.

Alexander County -

GHMPO assisted Western Piedmont Regional Transit Authority (WPRTA) with placing fixed route transit services in the more highly concentrated EJ group populations of Alexander County (please see Map XX above). Most other areas of the county are served by demand response service.

Outreach -

Service changes in Burke and Catawba Counties required intensive planning and public outreach. Staff at Greenway and the GHMPO analyzed ridership data and the American Community Survey (ACS) to identify areas where both demand and need were the most pressing. Additionally, keeping in mind that both demand and need can be considered subjective, public outreach methods such as public hearings, surveys, and rider feedback were heavily utilized during the planning phases leading up to the restructuring of services.

ADA PLANNING FOR THE REGION (GREENWAY PUBLIC TRANSPORTATION AND MUNICIPALITIES):

GHMPO partners with local governments to develop ADA policies, improve existing facilities, and develop ADA Transition Plans. The ADA planning group ensures that local government programs, facilities, policies and procedures are in compliance with ADA regulations. ADA staff maintain current information regarding state and federal ADA regulations, and adhere to best practices regarding the rights of persons with disabilities. The team also reviews ADA-related grievances and appeals.

To document mobility hazards within the pedestrian right of way, GHMPO and ADA staff developed a Pedestrian Right-of-Way GIS Collector Application. Inventories of pedestrian amenities and sidewalk miles within the local government are collected using the tool. Because ADA covers a broad range of criteria, the tool was designed to address non-compliant sidewalks, curb ramps, driveway cuts, intersections, railroad crossings, bus stops, crosswalks, and pedestrian islands. The tool uses the most up-to-date set of proposed PROWAG technical ADA standards from the US Access Board and will provide local governments with an inventory of non-compliant locations.

GHMPO performs ADA surveys of each municipally-owned (and/or rented) public use facility within a local government's jurisdiction. Facility types include but are not limited to, buildings, parking lots, playgrounds, and pedestrian amenities. Each survey is included within an ADA Transition Plan. These surveys prioritize mobility barriers for the local government to address as part of an effort to:

- » Comprehensively document elements of the built environment that negatively impact individuals with disabilities.
- » Plan for the most important facility improvements in conjunction with the 2010 ADA Standards for Accessible Design.

Indoor facility surveys include approach and entrance, access to goods and services, public restrooms, and additional access to accessory items. Exterior facility surveys include the same categories as indoor facilities but for parks, playgrounds, and parking lots.

Upon completion of an inventory and transition plan, GHMPO staff provide on-going support to local governments to update plans and document any changes.

Completed ADA Inventory and Transition Plans are listed below:

- » City of Conover ADA Transition Plan
- » Town of Granite Falls ADA Transition Plan
- » Town of Sawmills ADA Transition Plan – currently underway
- » Western Piedmont Council of Governments ADA Transition Plan
- » Greenway Public Transportation ADA Transition Plan (for bus stops and facilities) – currently underway
- » City of Conover ADA Maintenance – Currently underway
- » Town of Granite Falls ADA Maintenance – Currently underway

ENVIRONMENTAL STUDY: TREE CANOPY

WPCOG has applied for grant funding from the NC Forestry Department to work with elementary schools in EJ Census tracts to study areas lacking tree canopy coverage using drone technology.

The 2050 MTP includes a brief tree canopy analysis for our planning area. Please see Transportation Integrity Part II for the analysis.

5) Goals Moving Forward

- » The GHMPO will continue the above-mentioned initiatives to aid EJ populations with connectivity concerns, accessibility planning and community input.
- » The GHMPO shall continue to practice the following three basic Environmental Justice principles to benefit minority, low-income, and older populations:
 - avoid or minimize high and adverse human health, environmental, social, and/or economic effects on minority and low-income populations;
 - ensure full and fair participation of all potentially affected communities in the transportation decision-making process; and
 - prevent denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations
- » Investigate organizations offering Environmental Justice Grants that support solutions to local environmental and public health issues.
- » Evaluate enhanced transit options to low-income residents in the GHMPO, where feasible and as funding allows, to low-income residents in rural areas of the counties.
- » Targeted public outreach is recommended for future planning efforts, as well as during the National Environmental Policy Act (NEPA) process.
- » Work to establish fixed transit routes in minority, low-income, and older population areas of Caldwell County where they are currently non-existent.
- » Work to expand microtransit service in areas where fixed or flex route services are not feasible.
- » Continue to conduct meetings in locations that are convenient and easily accessible to Title VI and Environmental Justice populations.
- » Develop a practice of connecting with key community leaders, organizations, and institutions within minority and low-income communities to ensure effective public outreach in those communities.
- » Improve bicycle and pedestrian infrastructure in order to create a more interconnected network in low-income and minority communities.
- » Continue to map past transportation projects in identified environmental justice areas (minority and poverty concentration) to evaluate project effects over time.
- » Ensure that public meetings are accessible via transit and bicycle and pedestrian facilities where applicable.

6) Conclusions

Nearly every high-concentration Block Group in the GHMPO has major roads that are classified as needing improvement, indicating that environmental justice issues should be anticipated in those block groups. Many high-concentration Block Groups also have scheduled bicycle and pedestrian improvements or transit services available.

The GHMPO should continue to encourage the development of other modes of transportation with highly concentrated EJ block groups. An extensive EJ Community involvement process must be undertaken in order to encourage full EJ Community participation in both the project planning and decision-making phases. To ensure that no disproportionately high and adverse property impacts accrue to low-income or minority populations, planners must avoid, minimize, and mitigate impacts to EJ Communities.

Outreach to EJ communities through neighborhood and small group meetings must take place early in the planning process. The potential impacts of a project on EJ Community cohesion is a critical factor that must be considered during the outreach and planning phases.

Implementation of any of the alternatives considered for a project may have both beneficial and adverse impacts on communities within a project area, making public dialog and involvement that much more important. Only a transparent and comprehensive evaluation of potential alternatives, conducted in concert with all impacted EJ Community Groups, will result the selection of the best project alternatives.