REGIONAL INTERGOVERNMENTAL COUNCIL

METROPOLITAN TRANSPORTATION PLAN

2050

November 6, 2025

TABLE OF CONTENTS

The Regional Intergovernmental Council (RIC) thanks the many participants who offered their time and input in the development of the RIC 2050 Metropolitan Transportation Plan (MTP). The RIC 2050 MTP reflects the collaborative efforts of the public, stakeholders, local staff and officials, the West Virginia Department of Transportation (WVDOT), and the Federal Highway Administration (FHWA).

The efforts of everyone are greatly appreciated.

RESOLUTION OF THE 8-C-K-P REGIONAL INTERGOVERNMENTAL COUNCIL TO ADOPT THE 2050 METROPOLITAN TRANSPORTATION PLAN

WHEREAS, The B-C-K-P Regional Intergovernmental Council (RIC) is the officially designated Metropolitan Planning Organization (MPO) for long range transportation planning in the Charleston, West Virginia Metropolitan Planning Area (Kanawha and Putnam counties); and

WHEREAS, The Infrastructure Investment and Jobs Act (IIJA) requires a Metropolitan Transportation Plan be developed and adopted by the Metropolitan Planning Organization (MPO) for each Metropolitan Planning Area; and

WHEREAS, Kanawha and Putnam counties comprise a Maintenance Area for 1997 8-Hour Ozone and Nonattainment for 2006 24-Hour PM2.5 with a mobile source insignificance finding; and

WHEREAS, RIC's current Transportation Plan (2050 Metropolitan Transportation Plan (2021)) was adopted by RIC on September 9, 2021; and

WHEREAS, The 2050 Metropolitan Transportation Plan has been developed in accordance with the provisions of the IIJA, RIC'S public participation process and requirements of the Clean Air Act (the Act) as amended by the Clean Air Act Amendments (the Amendments) of 1990; and

WHEREAS, RIC determines there is transportation conformity between the 2050 Metropolitan Transportation Plan and the West Virginia State Implementation Plan for the attainment of the National Ambient Air Quality Standards (NAAQS).

WHEREAS, RIC assures a qualitative 2050 Metropolitan Transportation Plan and adopted Transportation Improvement Program, of which do not contain goals, directives, recommendations, or projects which contradict any requirements or commitments of the West Virginia State Implementation Plan.

NOW, THEREFORE BE IT RESOLVED,

1. That the B-C-K-P Regional Intergovernmental Council hereby amends the Transportation Plan by the addition of and revising the staging of projects for air quality analysis.
2. That the B-C-K-P Regional Intergovernmental Council adopts the 2050 Metropolitan Transportation Plan.

So, resolved this 6th day of November 2025.

Kris Mitchell

Kris Mitchell, Chair
Regional Intergovernmental Council

RESOLUTION OF THE B-C-K-P REGIONAL INTERGOVERNMENTAL COUNCIL POLICY BOARD CONCERNING THE 2050 METROPOLITAN TRANSPORTATION PLAN (MTP) TRANSPORTATION CONFORMITY DETERMINATION WITH THE 1990 CLEAN AIR ACT AMENDMENTS AND STATE IMPLEMENTATION PLAN

WHEREAS, The B-C-K-P Regional Intergovernmental Council (RIC) is the officially designated Metropolitan Planning Organization (MPO) for long range transportation planning in the Charleston, West Virginia Metropolitan Planning Area (Kanawha and Putnam counties).

WHEREAS, Kanawha and Putnam counties are subject to air quality conformity reporting requirements based on the1997 8-hour Ozone standards and Nonattainment for 2006 24-Hour PM2.5 with a mobile source insignificance finding.

WHEREAS, The Infrastructure Investment and Jobs Act (IIJA) requires a Metropolitan Transportation Plan be developed and adopted by the Metropolitan Planning Organization (MPO) for each Metropolitan Planning Area; and

WHEREAS, Section 176 C of the Clean Air Act (the Act) as amended by the Clean Air Act Amendments (the Amendments) of 1990, requires RIC to make a transportation conformity determination for the 2050 Metropolitan Transportation Plan (MTP) and adopted Transportation Improvement Program for the Charleston Metropolitan Planning Area with respect to the West Virginia State Implementation Plan for attainment of the National Ambient Air Quality Standards (NAAQS).

NOW THEREFORE BE IT RESOLVED, THAT:

RIC determines transportation conformity between the 2050 Metropolitan Transportation Plan and the West Virginia State Implementation Plan for the attainment of the NAAQS, as described below.

RIC determines that the 2050 Metropolitan Transportation Plan as adopted conforms to the West Virginia State Implementation Plan, by supporting its intentions of attaining the NAAQS.

RIC assures a qualitative 2050 Metropolitan Transportation Plan and adopted Transportation Improvement Program, of which do not contain goals, directives, recommendations, or projects which contradict any requirements or commitments of the West Virginia State Implementation Plan.

The West Virginia State Implementation Plan currently does not identify any Transportation Control Measures (TCMs) for the Charleston Metropolitan Planning Area. However, as the State Implementation Plan is revised responding to the 1990 Clean Air Act Amendments and identifies TCM's necessary for the Charleston Metropolitan Planning Area, RIC certifies that the amended Transportation Plan and adopted Transportation Improvement Program shall include these TCM's.

RIC determines that the amended Transportation Plan meets all current transportation conformity requirements for both Ozone and PM 2.5 air pollutants.

As a 1997 Ozone Standard "Orphan Area" and consistent with US EPA's November 29, 2018 guidance resulting from the South Coast II Court Decision, RIC makes a qualitative transportation conformity determination for the 2050 Metropolitan Transportation Plan and FY 2024-2027 Transportation Improvement Program.

The MPO region is designated as attainment/maintenance for the 2006 PM 2.5 National Ambient Air Quality Standard. Regional analysis has determined that on-road mobile source emissions make an insignificant contribution to ambient PM 2.5 levels within the planning area. Accordingly, no regional emissions modeling is required for this pollutant, and the Metropolitan Transportation Plan (MTP) and Transportation Improvement Program (TIP) are considered to conform to the applicable air quality standards based on this insignificance finding.

November 6th, 2025

Kris Mitchell

Kris Mitchell, Chair

Plan Development vi
The Planning Process 1
Community Engagement 2
Guiding Statements 14

Regional Profile 16
Demographics 19
Environmental Conditions 28
Daily Commute 32
Travel Network 34

Highway 48
Planning Framework 49
Recommendations 55
Project Prioritization 58

Active Transportation 62
Planning Framework 63
Bicycle Level of Traffic stress 66
Recommendations 68

Public Transportation 72
Planning Framework 73
Transit Recommendations 74

Freight 76
West Virginia State Freight Plan 77
Freight Advisory Committee 78
Truck Freight 78
Rail Freight 80
Water Freight 80
Pipeline Transport 81
Air Freight 81
Freight Recommendations 89

Financial Element 90
Roadway 91
Bicycle and Pedestrian 105
Transit 106
Performance Measures 108
System Performance Report 109
Air Quality 118
NAAQS Designations 119
Conformity Determination 123
Interagency Consultation 123

List of Figures

Figure 1: RIC 2050 MTP Planning Process 1
Figure 2: Study Area Snapshot 17
Figure 3: Population Density 19
Figure 4: Population Change 23
Figure 5: Racial Diversity 24
Figure 6: Median Household Income by Block Group 25
Figure 7: Job Density 27
Figure 8: Regional Topography 28
Figure 9: Floodplains 29
Figure 10: Total Categories Exceeded 30
Figure 11: Disadvantaged Communities 30
Figure 12: Home Location of the Region's Workforce 32
Figure 13: Base-Year (2023) V/C 34
Figure 14: Regional AADT 35
Figure 15: Crash Data Heat Map 36
Figure 16: Pedestrian Crashes 37
Figure 17: KRT Routes and Ridership 38
Figure 18: Transit Propensity 39
Figure 19: Public Trails 41
Figure 20: Rail Network 42
Figure 21: Railroad Crossings 43
Figure 22: Truck Network 44

Figure 23: Airports 45
Figure 24: Noise Pollution 46
Figure 25: Functional Classification.....53
Figure 26: Future Year Congestion 54
Figure 27: Corridor Recommendations 56
Figure 28: Intersection Recommendations.....57
Figure 29: Bicycle Level of Traffic Stress 67
Figure 30: Active Transportation Recommendations.....68
Figure 31: Freight Safety.....79
Figure 32: Freight Network.....82
Figure 33: 2022 Freight Flows (FHWA Freight Analysis Framework).....87
Figure 34: 2050 Freight Flows (FHWA Freight Analysis Framework).....88
Figure 35: Financially Constrained Projects.....97
Figure 36: Future-Year Congestion 104
Figure 37: Text PM2.5 24-Hour Standard Maintenance Areas with Insignificant Highway Source Emissions 121

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1

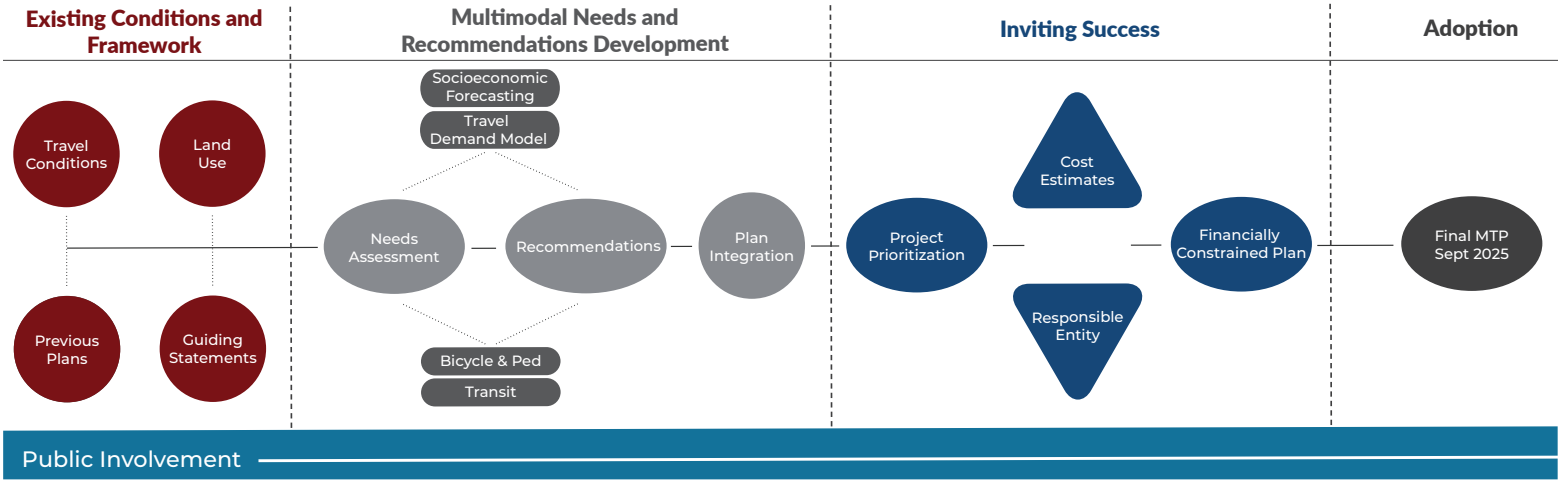
PLAN DEVELOPMENT

Transportation is an everyday part of life that has lasting impacts on people everywhere. It represents a critical piece of an area's built infrastructure and social environment. The 2050 Metropolitan Transportation Plan for the Regional Intergovernmental Council (RIC) establishes a roadmap for a transportation system that positively contributes to the region and meets federal requirements. Every four years, RIC must update the MTP to address all modes of transportation including automobiles, aviation, bicycles, pedestrians, transit, rail, and trucks.

The RIC 2050 MTP serves as a blueprint for directing federal, state, and local dollars toward projects that the community needs and values. It also supports adopted safety targets and system performance measures. On a broader level, the RIC 2050 MTP is governed by the Infrastructure Investment and Jobs Act (IIJA), transportation legislation that ensures that the plan meets federal requirements to: strengthen America's highways, establish a performance-based program, create jobs and supporting economic growth, support the United States Department of Transportation's (USDOT) aggressive safety agenda, streamline Federal Highway Administration (FHWA) transportation programs, accelerate project delivery, and promote innovation.

THE PLANNING PROCESS

Figure 1: RIC 2050 MTP Planning Process



The RIC MTP is the product of ongoing partnerships between local, state, and federal representatives, in addition to a committed Steering Committee, the public, and key stakeholders. The planning process was crafted to help facilitate an open dialogue about the existing and anticipated congestion concerns, safety issues, accessibility concerns, and connectivity gaps for all modes of transportation. The planning process above outlines the MTP approach and timeline.

COMMUNITY ENGAGEMENT

Community involvement, including conversations with residents, stakeholders, elected officials, and other community representatives, played a critical role in the development of the RIC 2050 MTP. This collaborative approach helped to ensure a fuller understanding of the community's desires for the region's transportation vision and priorities.

Objectives

Community involvement for the RIC 2050 MTP focused on the following objectives:

Educate and Empower

- Increase familiarity with the MPO processes, including the MTP
- Allow people to identify issues and needs, express their vision and goals, and review recommendations and priorities

Participate and Collaborate

- Interact with and gather input from people who live in, work in, or visit the MPO area
- Encourage partnership in identifying needs and priorities

Outcomes

Community input yielded actionable feedback that flowed throughout the MTP development.

Confirming the MTP's guiding statements

Community priorities like maintaining existing roadways, reducing congestion, and improving safety helped shape the MTP's overall vision and aligned local values with federal guidance.

Identifying project needs

Public input highlighted key areas for targeted investment, such as high-crash corridors and underserved neighborhoods. These locations will guide where resources are prioritized.

Providing guidance on project priorities

Community feedback confirmed project scoring metrics to prioritize projects focused on safety, congestion, and community benefit.

Activities

Community engagement for the RIC 2050 MTP gathered input from stakeholders and community members to inform the plan's vision, goals, needs, and priorities. The engagement strategy centered on four main activities.

Online Engagement

The project website and interactive survey raised awareness of the MTP and collected targeted input from participants on transportation priorities, funding trade-offs, and mapped ideas.

Steering Committee

Representatives from groups across the region were asked to provide local insight into transportation needs and opportunities, and help promote broader engagement activities.

Public Workshops

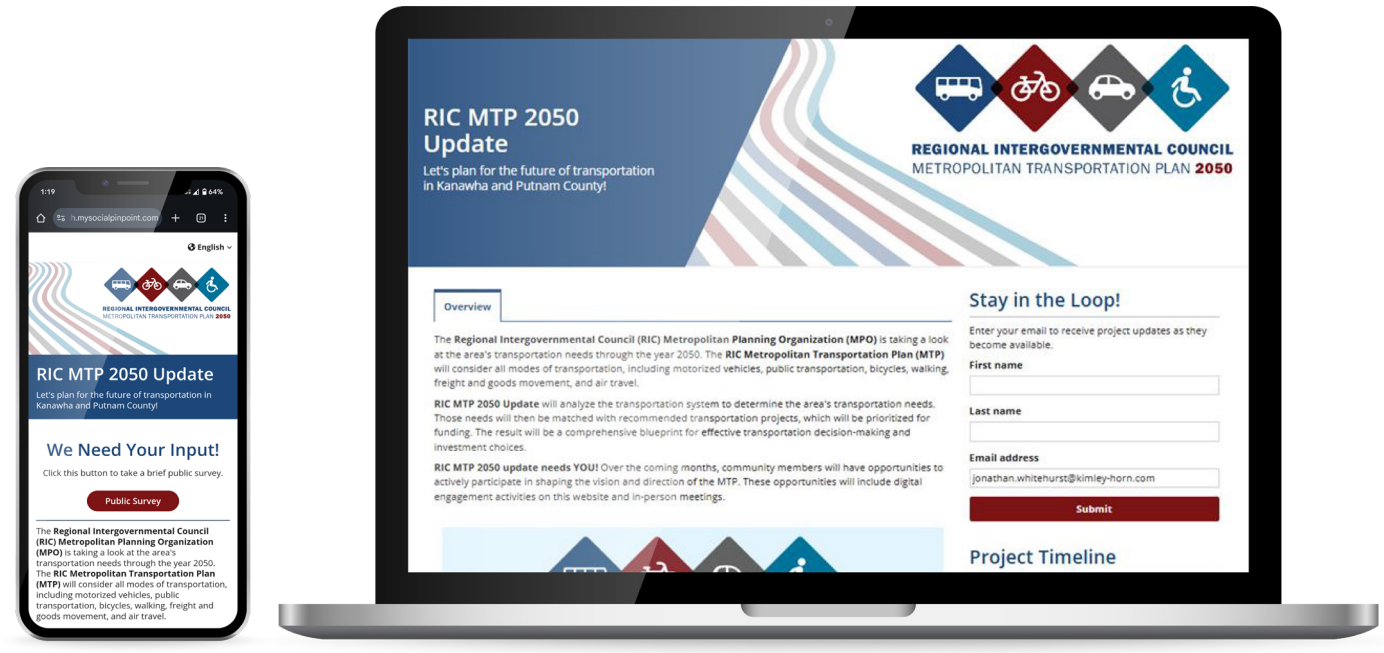
These events featured activities centered on visioning, budgeting, and mapping. Workshops were held in Kanawha and Putnam counties to encourage broad participation throughout the study area.

Freight Advisory Committee

Targeted stakeholder outreach to the Freight Advisory Committee focused on identifying freight issues, anticipated freight generators, and specific freight trends to inform the MTP's freight element.

Project Website

A project website, built on the Social Pinpoint platform, served as a one-stop digital engagement hub with an overview of the planning process, FAQs, and MTP resources. The website was used to promote outreach events and to launch the interactive survey and maps.



Online Engagement

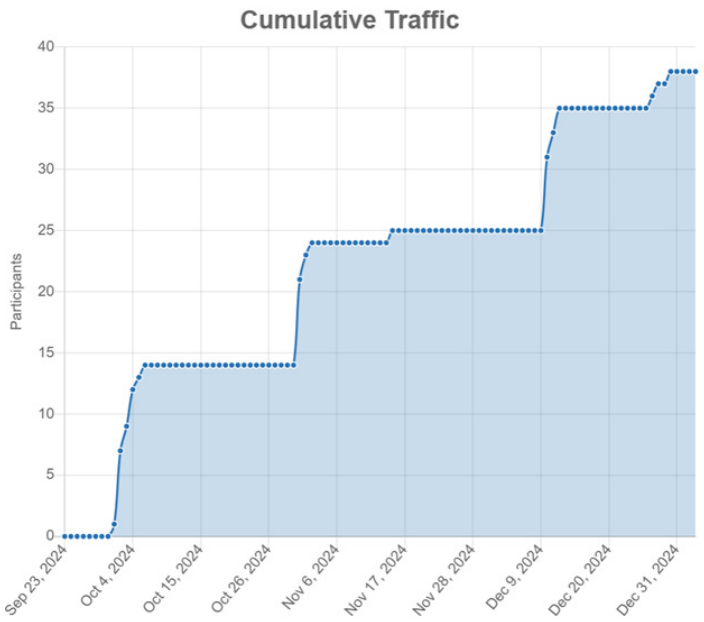
To reach a broad audience, RIC launched an interactive online survey using MetroQuest. The online public survey was open from Tuesday, September 24, 2024 until Friday, January 3, 2025. Designed to be mobile friendly and user-centered, the platform allowed participants to easily provide input on their transportation experiences and priorities. The survey obtained feedback from 38 total people with the bulk participation coming in three waves.

38

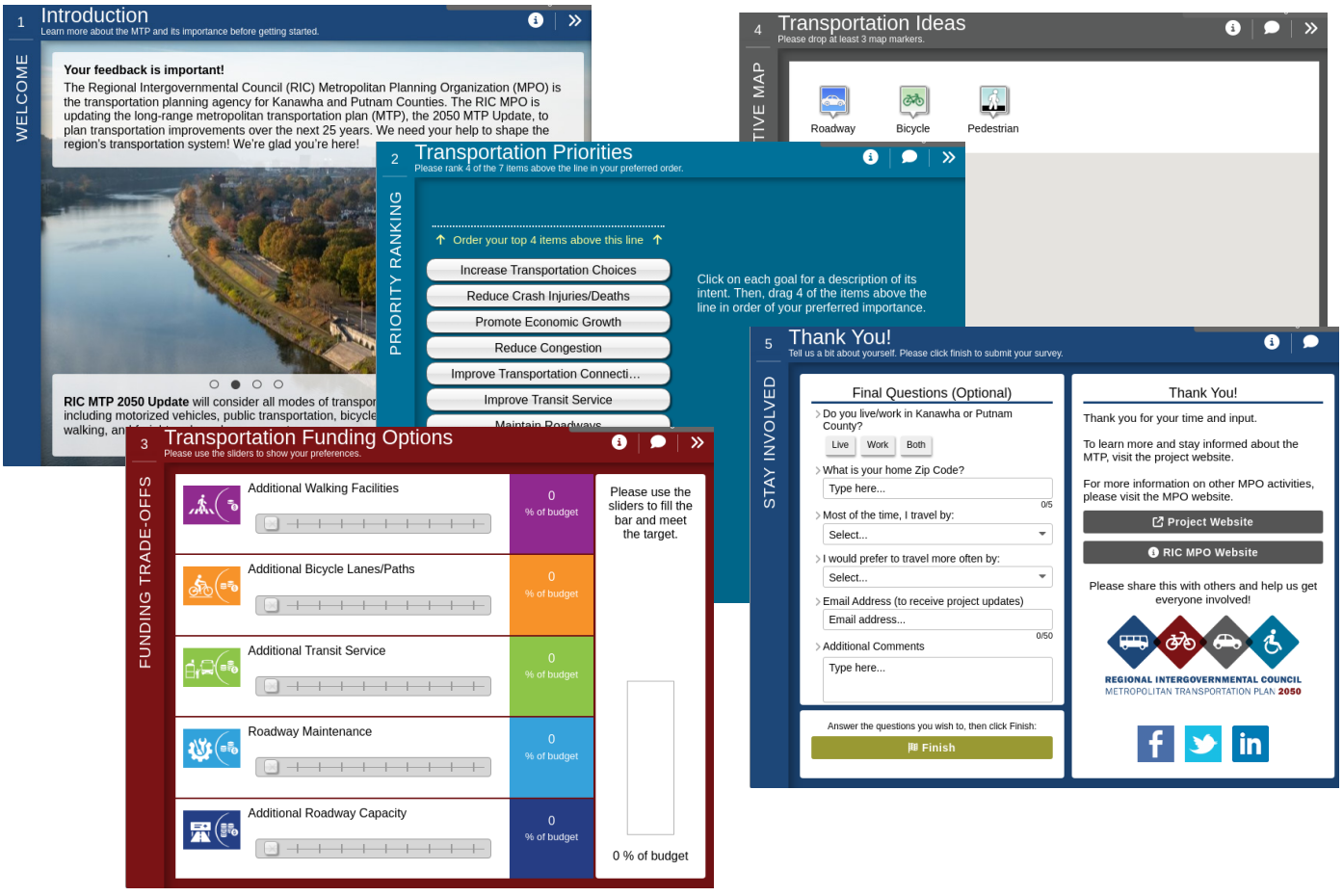
Online Survey Responses

4-month

Survey Timeframe



Survey Screenshots



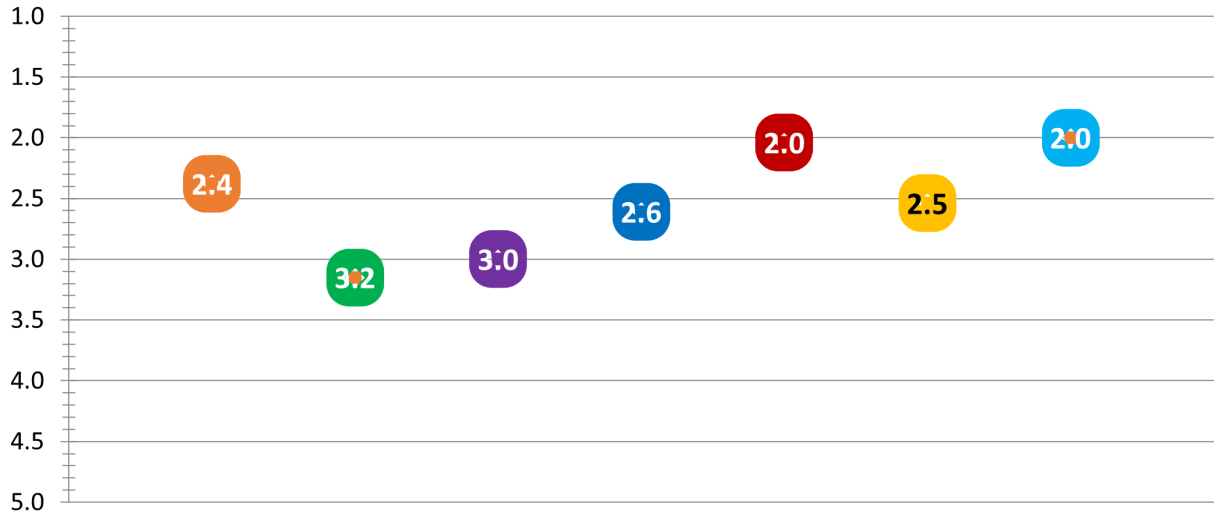
TRANSPORTATION PRIORITIES

The first activity in the survey had participants rank goals in order of their preferred preference. Respondents could only rank four of the seven listed goals. The order of goals was randomized for each participant in an attempt to remove bias. The goals were:

- Increase Transportation Choices
- Reduce Crash Injuries/Deaths
- Promote Economic Growth
- Reduce Congestion
- Improve Transportation Connectivity
- Improve Transit Service
- Maintain Roadways

Of the priorities, Maintain Roadways was listed in the top four the greatest number of times with 24. Reduce Congestion and Reduce Crash Injuries/Death followed with 23 each. Improve Transit Service was ranked the least and only ranked top four 13 times. The chart below shows the average ranking of each response with lower number representing higher relative importance to participants. It is worth noting that this number only accounts for when the goal is rated top four. This means that while Improve Transportation Connectivity was rated as more important by more people than Improve Transit Service, those who rated Transit Service were more likely to rate it higher on their priorities.

Transportation Priorities Average Ranking



Goal	Rank 1	Rank 2	Rank 3	Rank 4
Increase Transportation Choices	5	7	3	4
Improve Transportation Connectivity	2	4	3	11
Promote Economic Growth	3	2	6	7
Improve Transit Servicew	2	3	6	2
Maintain Roadways	10	5	5	4
Reduce Congestion	2	9	9	3
Reduce Crash Injuries/Deaths	11	5	3	4

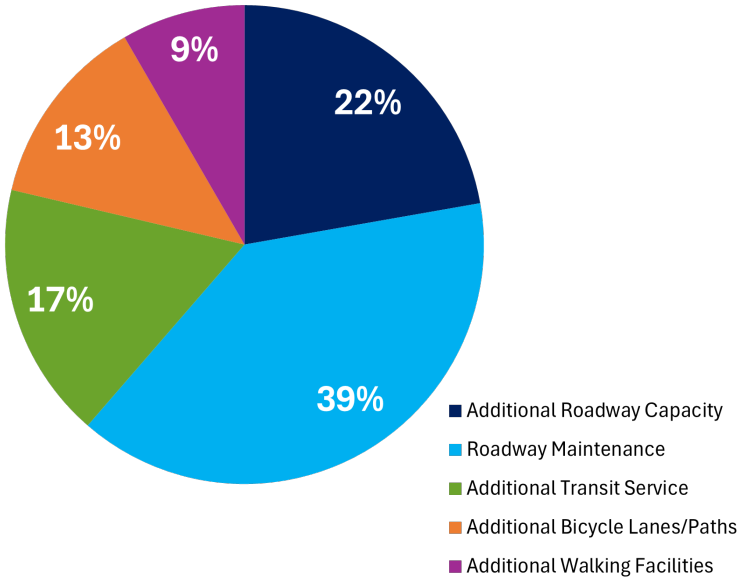
TRANSPORTATION FUNDING OPTIONS

The second activity in the survey had participants allocate a fictional budget of 100% across five different categories. The smallest percentage that could be allocated was 10%. The five categories were:

- Additional Walking Facilities
- Additional Bicycle Lanes/Paths
- Additional Transit Service
- Roadway Maintenance
- Additional Roadway Capacity

The categories were not randomized and participants could not over-allocate funds. The highest percentage of the collective budget was allocated to Roadway maintenance with roughly 39%. The next highest went towards Additional Roadway Capacity (22%), followed by Additional Transit Service (17%), Additional Bicycle Lanes/Paths (13%) and lastly was Additional Walking Facilities (9%).

Transportation Funding Options Survey Tab



INTERACTIVE MAPPING

Interactive map participants opened the screen to a map with the RIC boundaries. The map also had pre-set locations that could be zoomed to including Charleston, Hurricane, Cross Lanes, St Albans/Nitro, and South Charleston. Each participant could explore and drag around the map and place icons representing Roadway, Bicycle, Pedestrian, Transit, and General Comments. Each icon allowed the user to provide an accompanying comment. Overall, 104 markers were placed, with 79 total comments.

Map Marker Summary

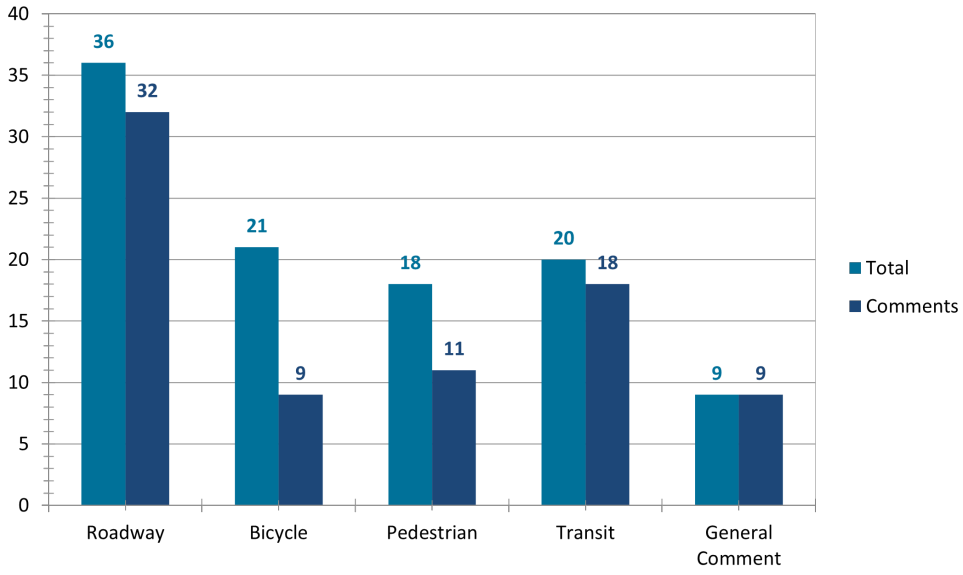


Table 2: Interactive Map Responses Ranked by Category

Category	Subcategory	Count
Roadway	New road	5
Roadway	Repaving	2
Roadway	Road widening	6
Roadway	Intersection	3
Roadway	Complete street	4
Roadway	Other	5
Bicycle	Bike lane	10
Bicycle	Shared lane	0
Bicycle	Greenway/Shared use path	4
Bicycle	Intersection improvement	1
Bicycle	Other	2
Pedestrian	Sidewalk	7
Pedestrian	Crosswalk	2
Pedestrian	Pedestrian signal	0
Pedestrian	Maintenance or repair	1
Pedestrian	Greenway/Shared use path	3
Pedestrian	Other	0
Transit	New bus route	8
Transit	New bus stop	0
Transit	Route modification	0
Transit	Other	8

Interactive Map Sample Comments

Something to assist with school drop off and pick up as this is a huge source of congestion and accidents.

Putnam County needs at Least some transit access into Kanawha county, Poca, Winfield, Teays Valley and Hurricane at minimum.

It is not easy to walk between neighborhoods without a vehicle. It would be nice to expand sidewalks to more sections of this area beyond parts of Teays Valley Road.

Combination bike lane/shared use path rails to trail loop on 119 and along Barlow/airport to coonskin. Spring St bridge or old rail trestle in Charleston for southern elk river crossing.

Need a road that runs parallel to interstate from Teays Valley Road Hurricane Creek.

Steering Committee and Freight Advisory Committee

The RIC 2050 MTP process included the development of a steering committee and freight advisory committee to help guide the development of the plan. The steering committee included a diverse mix of representatives from RIC, KYOVA, and local governments, who provided feedback, helped refine plan goals, and ensured the planning process reflected regional priorities and values. The freight advisory committee included these members, plus representatives from the region's three largest industries—Toyota, CSX, and Nucor Steel.

Meeting #1 | September 25, 2024

This meeting was focused on reviewing the plan goals, vision, and public outreach strategy

Meeting #2/Freight Advisory Committee Meeting | June 4, 2024

This meeting was convened to gather regionally specific information on the state of the freight system

Meeting #3 | July 29, 2025

This meeting provided a project update on the travel demand model, prioritization, and plan recommendations

MEETING #1 KEY DISCUSSION TOPICS

- Population Loss
- Funding
- Transportation Technology
- Safety
- Pedestrian Access
- Mode Shift

MEETING #2 KEY DISCUSSION TOPICS

- Current Housing Stock
- Housing Needs
- Employment
- Regional Socioeconomic Trends

Public Workshops

Two public workshops were held in Kanawha County and Putnam County. To ensure data points from the meetings would be comparable, the workshops were structured identically, with a variety of interactive activities for participants to provide feedback.

ONE WORD

For this activity, participants were instructed to use one word to describe transportation in Kanawha and Putnam Counties today. Then, they were asked to use one word to describe their ideal vision for transportation in Kanawha and Putnam Counties in the year 2050.

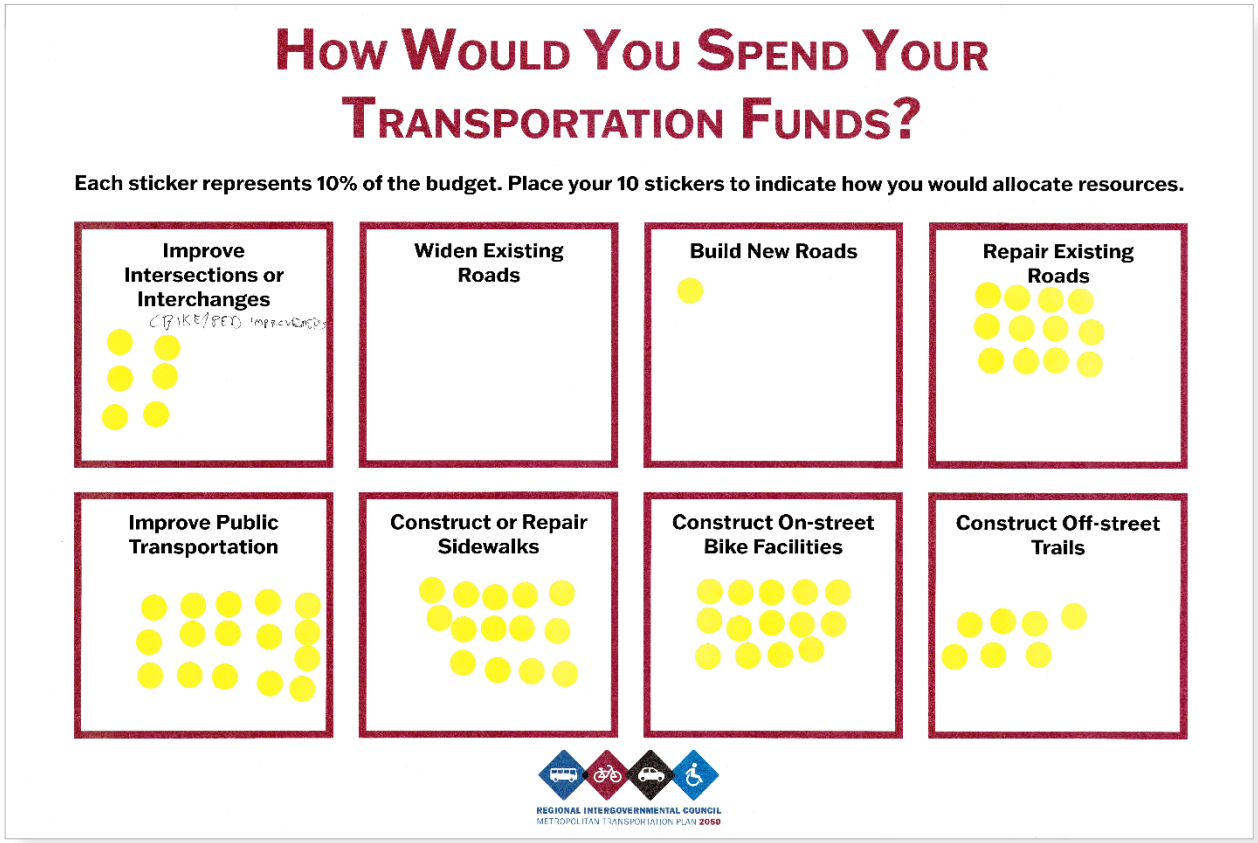
Transportation Today Word Cloud

Transportation in 2050 Word Cloud

BUDGETING ACTIVITY

For this activity, participants were asked "how would you spend your transportation funds?" They were each given 10 stickers and each sticker represented 10% of the budget. Several budget categories received a nearly identical allotment of budget, suggesting there are a variety of priorities that are of particular importance to the community, including **Improve Public Transportation** (16), **Construct or Repair Sidewalks** (14), **Construct On-Street Bike Facilities** (14), and **Repair Existing Roads** (12).

Budgeting Activity Results



IDEA BOARD

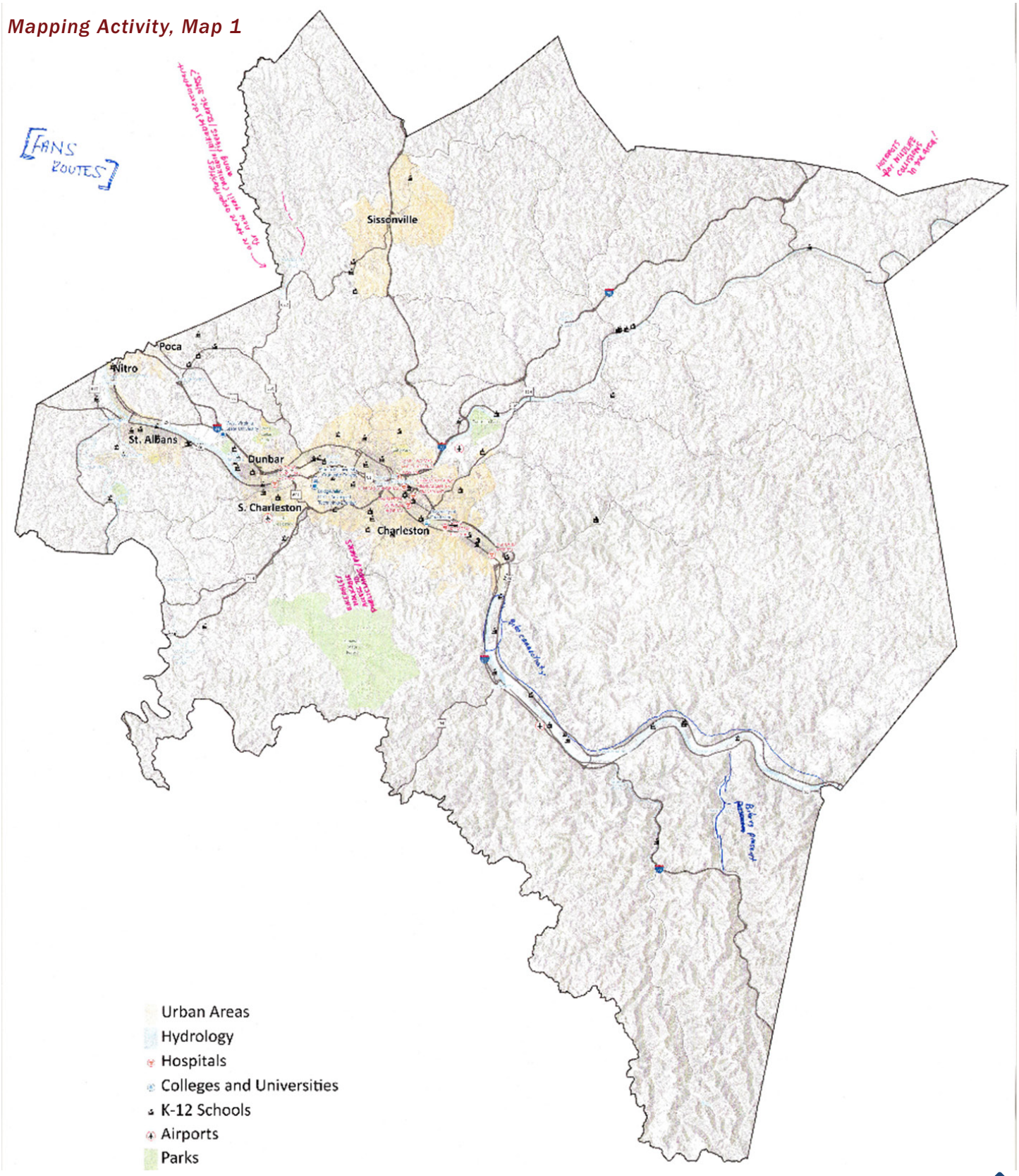
Participants were asked to share their ideas for a transportation improvement project. Suggestions included:

- **Bikeshare programs**
  - Similar to Sugarcycle in Harrisburg, PA
- **Connecting public art with transportation implementation plans**
  - Colorful crosswalks
  - Artistic bike racks
  - Musical highways
  - Storybook trails, create a book step-by-step along a walking path

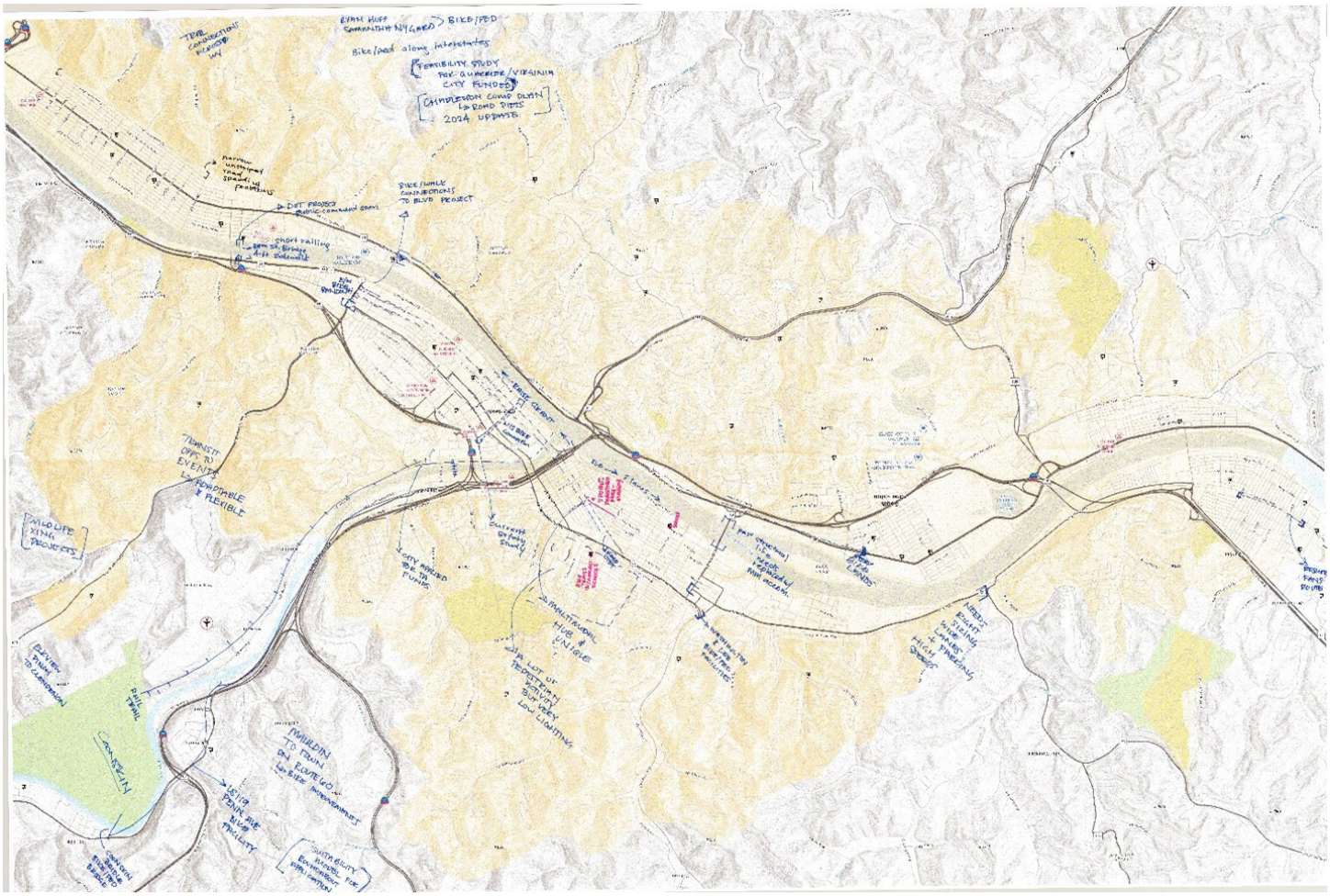
MAPPING EXERCISE

For this activity, participants sat around maps with the project team and discussed the issues they face related to the transportation system, and the opportunities they see for the future. Opportunities and challenges were marked on the map.

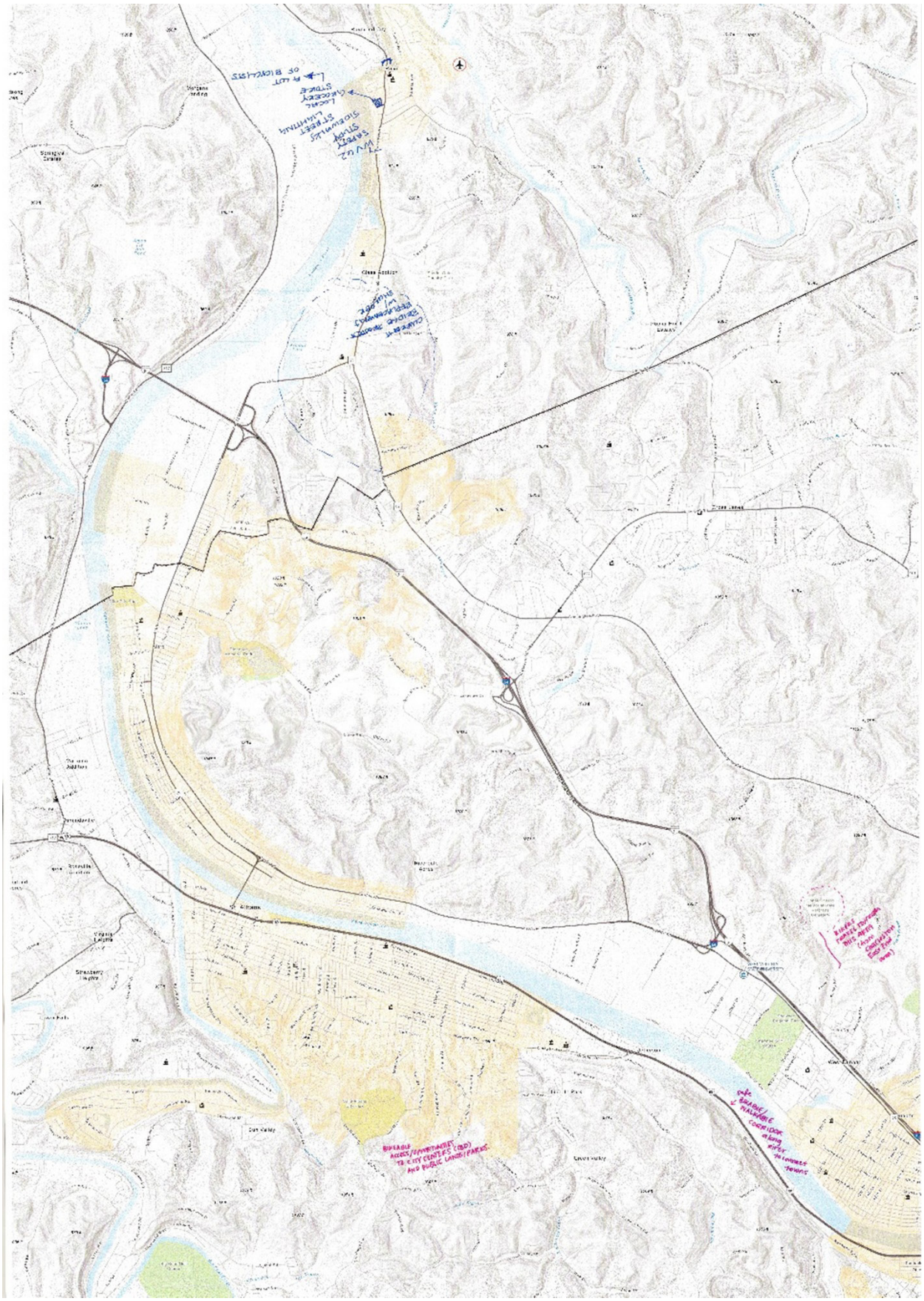
Mapping Activity, Map 1



Mapping Activity, Map 2



Mapping Activity, Map 3



GUIDING STATEMENTS

The guiding statements provided direction throughout the planning process, particularly during the prioritization process. These statements provide the framework for a regional transportation strategy by reflecting the community's vision for transportation and adhering to emphasis areas of the IIJA.

Culture and Environment

Preserve and sustain the natural and built environments

- Develop strategies to decrease single-occupancy vehicle trips and vehicle miles traveled
- Encourage use of alternative transportation modes and energy sources that reduce air pollution, fuel consumption, and other environmental impacts
- Improve access to areas of historical, cultural, and recreational significance
- Minimize development impacts in areas of cultural and historic significance
- Reduce development impacts on environmentally sensitive areas

Economic Vitality

Promote economic development through targeted transportation investments

- Encourage the concentration of employment and activity sites within established transit corridors to maximize transportation efficiency
- Focus transportation system improvements to support and promote tourism
- Improve the access to key economic needs and areas of planned development
- Promote multimodal access to encourage economic growth in areas of need
- Support transportation investments and policies that work to create jobs and improve access to people, places, and goods

Land Use and Transportation

Improve the integration of land use and transportation

- Encourage efficient infill and redevelopment to maximize use of the existing transportation system
- Enhance communication and coordination between various transportation planning and land use planning agencies
- Increase coordination between roadway design and land use development to improve transportation system performance
- Maximize effectiveness of parking infrastructure and regulations

Mobility and Accessibility

Promote an efficient, interconnected, multimodal, and accessible transportation network

- Develop strategies to manage travel demand
- Identify and recommend alternative traffic control and system optimization measures
- Increase intermodal connectivity to allow system users greater mode and route choices
- Increase transit accessibility and availability to transit-dependent users and persons with special needs
- Promote efficient regional routes and internal connectivity for freight and goods movement
- Reduce peak-hour congestion by promoting flexible working hours and innovative workforce policies for regional employers
- Utilize Complete Streets initiatives to improve pedestrian mobility and expand a safe bicycle lane network

Safety and Security

Improve the travel safety and security in the Greater Kanawha Valley

- Facilitate coordination for emergency preparedness
- Implement incident management strategies to quickly reestablish traffic flow and increase the safety of motorists and emergency personnel
- Minimize intersection conflicts, increase pedestrian safety, and enhance safety by refining access management policies
- Mitigate potential conflicts and delays at rail crossing sites
- Promote long-term resiliency of the transportation network to prevent interruptions, endure damages, and quickly recover from disturbances
- Reduce the number of high incident-accident locations
- Reduce the number of injuries, fatalities, and hazardous spills

System Preservation

Support and strengthen the current transportation network

- Develop strategies and implement measures to extend the functional life of transportation facilities
- Increase the use of innovative transportation technology to enhance the efficiency of the existing transportation system and to be better prepared for emerging vehicle technologies
- Reduce the number of potential conflicts between various transportation modes

Table 3: RIC MTP Goal Alignment with Federal Transportation Goals

Federal Goals	RIC 2050 MTP Guiding Statement: Culture and Environment	Economic Vitality	Land Use and Transportation	Mobility and Accessibility	Safety and Security	System Preservation
Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency		◆		◆		
Increase the safety of the transportation system for motorized and non-motorized users					◆	
Increase the security of the transportation system for motorized and non-motorized users					◆	
Increase the accessibility and mobility of people and for freight				◆		
Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns	◆		◆			
Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight				◆		
Promote efficient system management and operation				◆		
Emphasize the preservation of the existing transportation system						◆
Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation						◆
Enhance travel and tourism	◆	◆				

2

REGIONAL PROFILE

A regional transportation plan requires a comprehensive understanding of the regions current conditions and trends. The regional profile serves as a foundational understanding for future planning in the region. Developing a detailed and accurate profile is essential to developing the RIC 2050 MTP.

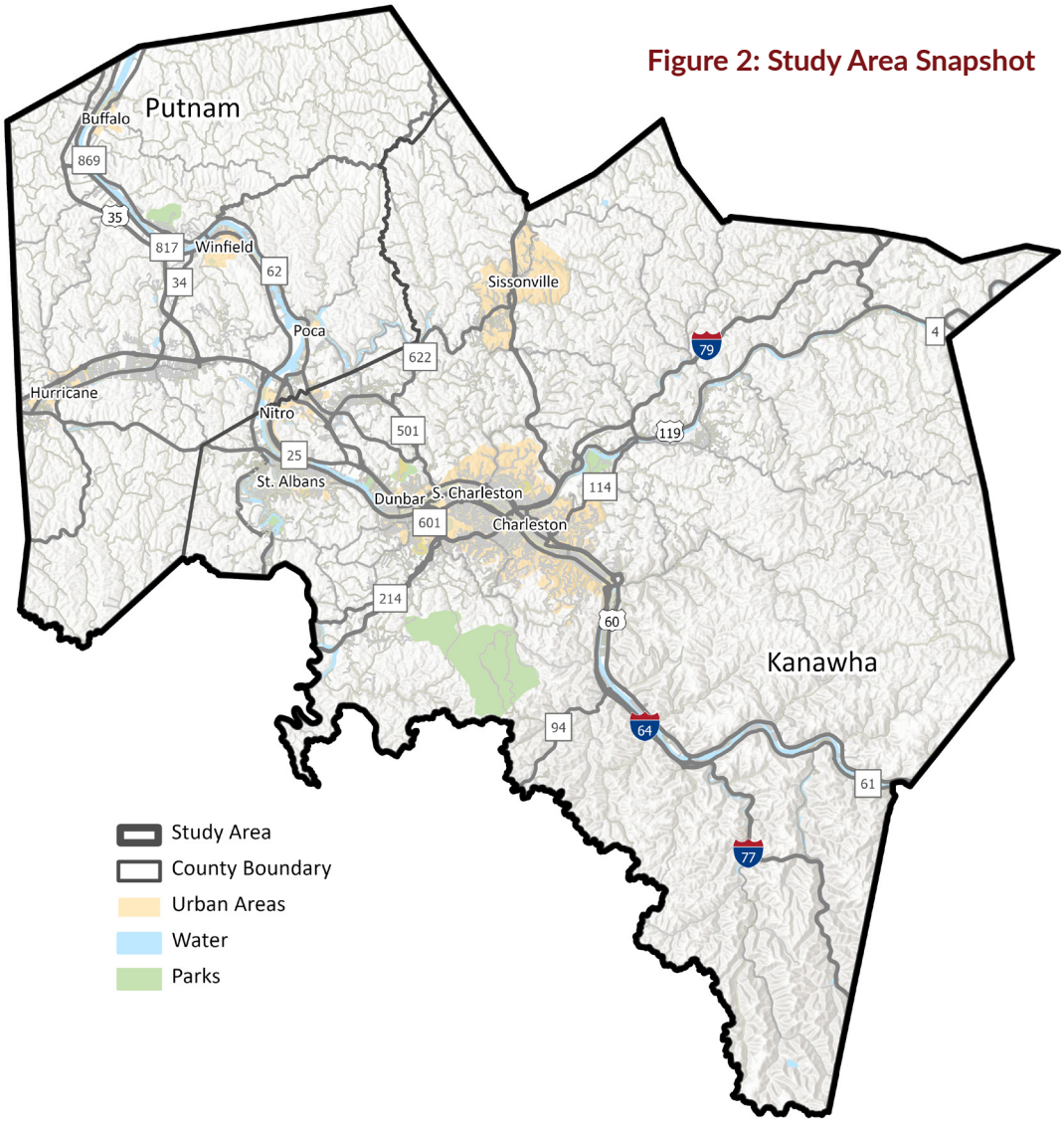
This profile will provide an overview of the study area including a review of relevant and applicable plans within the region. This section will also analyze regional demographics to highlight potential differences in transportation needs throughout the study area, environmental conditions, daily commute patterns, and the travel network to provide a baseline for all forms of multimodal travel within the region.

Study Area

The area of study for the RIC 2050 MTP, shown in Figure 2, covers the entirety of Putnam and Kanawha Counties including the state's capital city, Charleston.

The study area contains Interstates 64, 77,and 79 as well as US Routes 35, 60, and 119. The study area is also traversed by has 13 state routes. The region is bisected by the Kanawha River, the largest waterway in the state, and contains numerous parks including the Kanawha State Forest, located south of Charleston.

Figure 2: Study Area Snapshot



Previous Plans

The RIC MTP is coordinated closely with other local, state, county, and regional plans that impact transportation and land use around the area. The MTP makes effort to acknowledge the planning processes and outcomes of the previous plans and incorporate them when relevant to ensure consistency. Table 4 summarizes the transportation plans that were reviewed and leveraged during the data collection phase.

Table 4: Previous Plans Reviewed

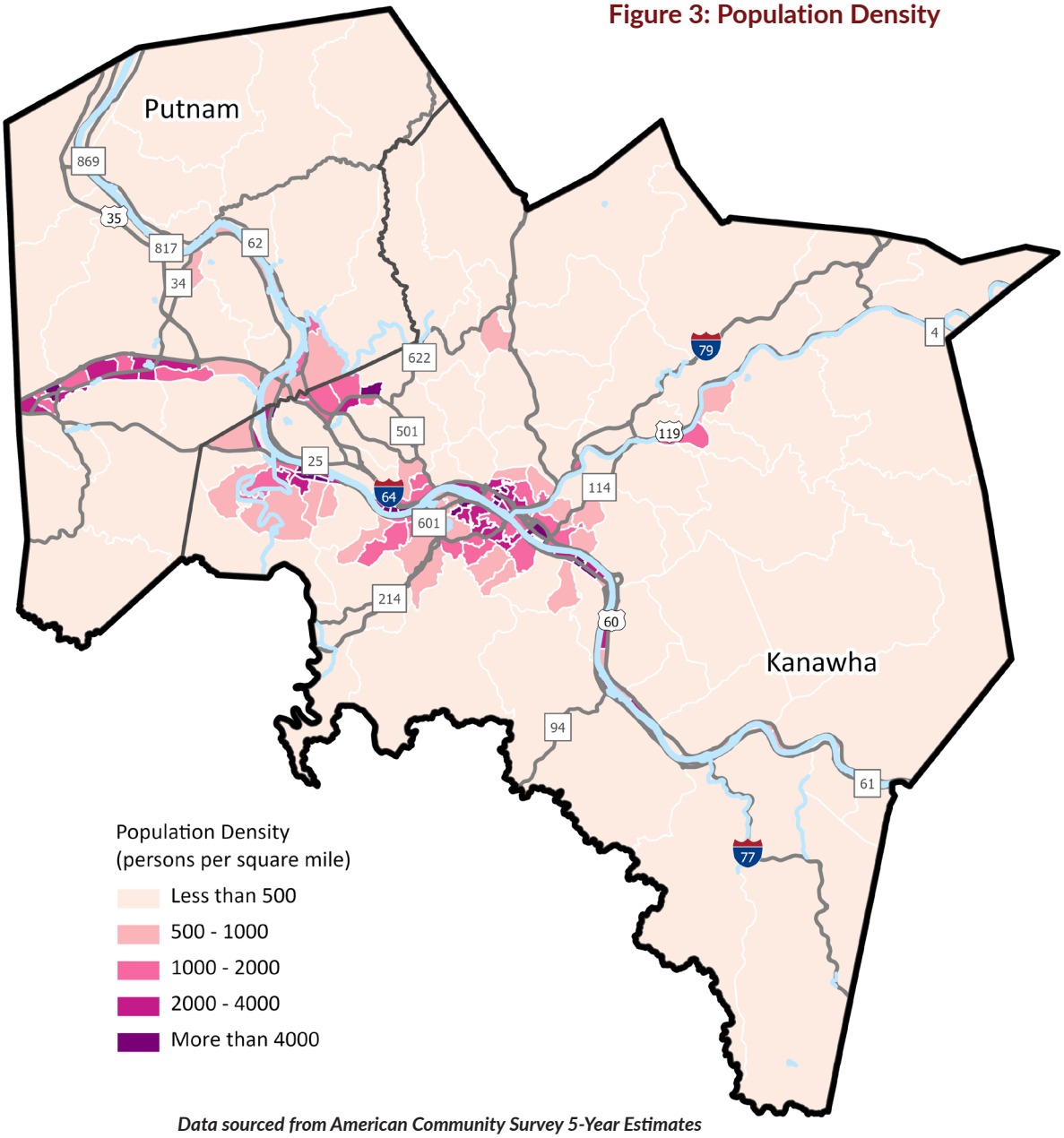
Document Title	Issuing Agency	Year
Unified Planning and Work Program (UPWP)	RIC	2024
Annual Report	RIC	2023
Transportation Improvement Program (TIP)	RIC, WVDOT	2023
West Virginia State Freight Plan	WVDOT	2023
Regional Comprehensive Safety Plan Kanawha and Putnam Counties	RIC	2023
Coordinated Public Transit - Human Services Transportation Plan	WVDOT	2023
Region 3 Hazard Mitigation Plan	RIC	2022
Public Participation Plan	RIC	2022
Montrose Drive and MacCorkle Avenue Road Safety Audit	RIC	2020
Patrick Street and Patrick Street Plaza/Kanawha Boulevard West Road Safety Audit	RIC	2020
Pennsylvania Avenue North and South Road Safety Audit	RIC	2020
US 60 between Mile Branch Rd and Hull Ave Road Safety Audit	RIC	2020
West Virginia State Rail Plan Update	WVSRA, WVDOT	2020
WV 34 from I-64 to Great Teays Boulevard Road Safety Audit	RIC	2020
Kanawha-Putnam Bicycle and Pedestrian Plan	RIC	2019
Multimodal Economic Impact Study for Huntington Tri-State Airport	KYOVA	2018
West Virginia State Freight Plan	WVDOT	2018
Regional Transportation Plan 2045	RIC	2017
Tri-State Airport Access Road Study	KYOVA	2017
Goff Mountain Road and Big Tyler Road (WV 622) Corridor Study	RIC	2016
KRT System Analysis Plan	KVRTA	2016
Third Street Corridor Study	RIC	2016
WV 601, Jefferson Road, US 119 to US 60 Environmental Assessment	FHA, WVDOT	2016
Multi-Jurisdictional Hazard Mitigation Plan	Kanawha County	2015
Regional Development Plan Region III	RIC	2015
Spring Hill Corridor Study	RIC	2015
Congestion Management Process for Huntington, WV-KY-OH Urbanized Area	KYOVA	2014
Imagine Charleston	City of Charleston	2013
Metro Mobility 2040	RIC	2013

DEMOGRAPHICS

Population

The combined population of the region is estimated to be 237,242 residents. Kanawha County has an estimated total population of 179,895, making it the most populous county in West Virginia, and Putnam County has an estimated total population of 57,347. Charleston, the states largest city has a population of 48,415 and contains some of the most dense population clusters in the region. Population density, shown by persons per square mile and categorized by Census block groups can be seen in Figure 3.

Figure 3: Population Density



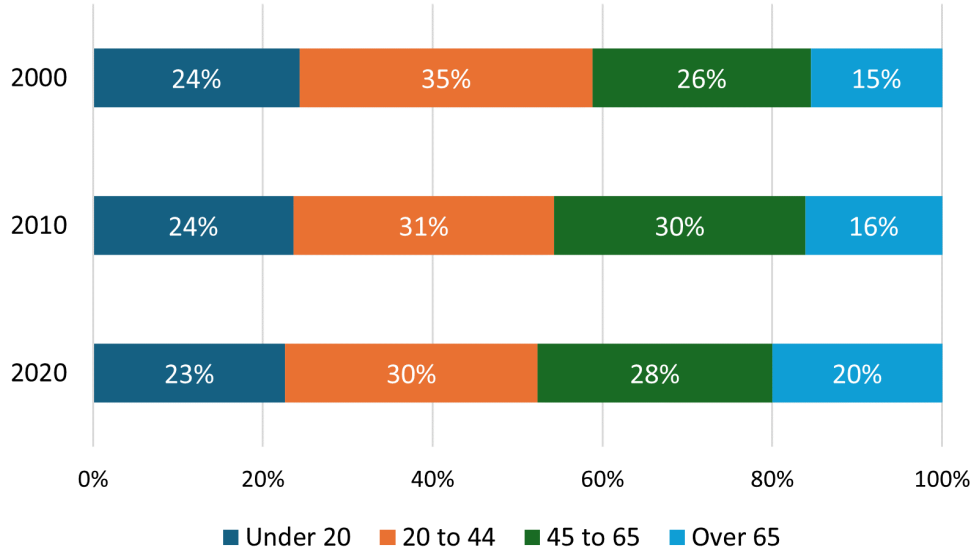
Data sourced from American Community Survey 5-Year Estimates

Age

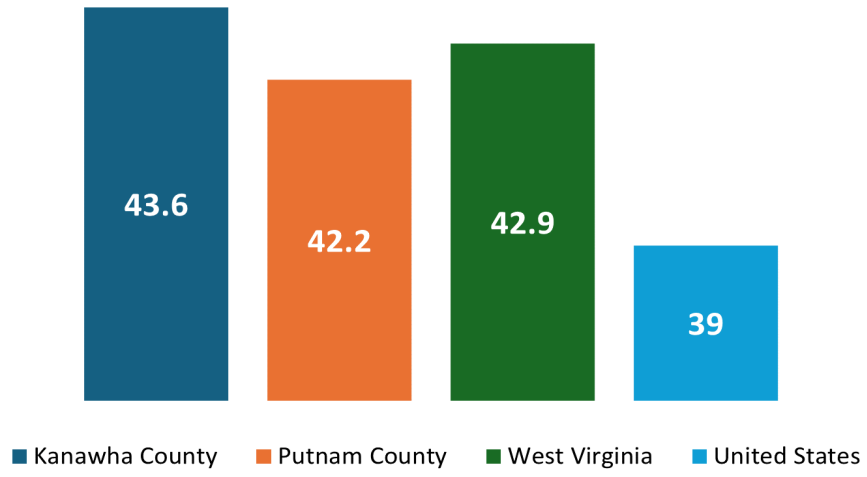
Analyzing the age of a community is important to understanding differing community needs. Retired populations, for example, have differing transportation needs and demands than working populations. The RIC region has a slightly higher median age than the national median. The US median age is 39, West Virginia as a whole has a median age of 42.9 years old. Kanawha County's median age is 43.6 and Putnam County's is 42.2 years old.

The graphics below and on the following page show a region experiencing an aging population. The region jumped to a fifth of the population over the age of 65 between 2010 and 2020 and the population between 20 and 65 fell below 60% for the first time this decade. The population pyramid indicates this trend may continue into the future as the highest percentage of the population is between 55 and 64 years old. The table on the following page shows how age demographics have changed in each county over the last 10 years.

Age Groups

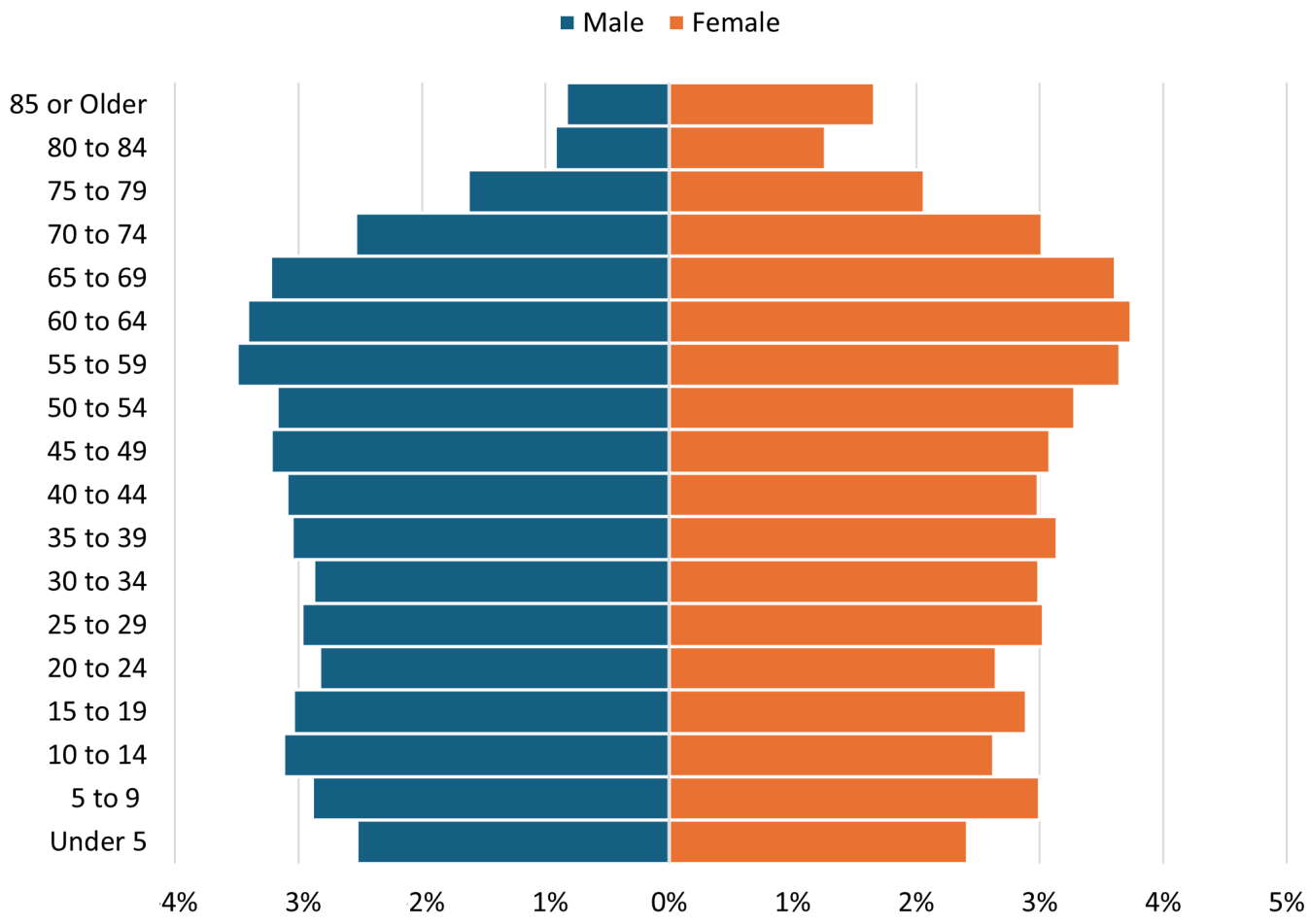


Median Age



Data sourced from Ame

Population Pyramid



Data sourced from American Community Survey 5-Year Estimates

Age Changes by County and Cohort

Cohort	Kanawha County			Putnam County		
	2013	2022	% Change	2013	2022	% Change
17 or younger	39,791	35,729	-10.2%	12,826	12,494	-2.6%
18-34	39,166	35,857	-8.5%	9,973	10,528	+5.6%
35-59	69,217	57,147	-17.4%	19,613	19,224	-2.0%
60 or older	46,145	51,162	+10.9%	11,613	15,101	+30.0%

Data sourced from American Community Survey 5-Year Estimates

Population Trends

The region has seen a decline in population over the last 20 years. The combined population of Putnam and Kanawha County has decreased by approximately 6% since 2000. This trend has not been consistent throughout the region. Kanawha County's population has decreased by an estimated 10% while Putnam County's population has increased by an estimated 10%. County trends from 2000 to 2020 are shown below.

Figure 4 shows localized population change between 2013 and 2022 throughout the region. This change is analyzed by census tracts with the darker colors representing more extreme changes. Extreme changes can put additional stress on infrastructure or represent areas with changing needs. The tracts colored in gray were reshaped during the 2020 Decennial Census and is shown to represent no data on the changes.

Population Change

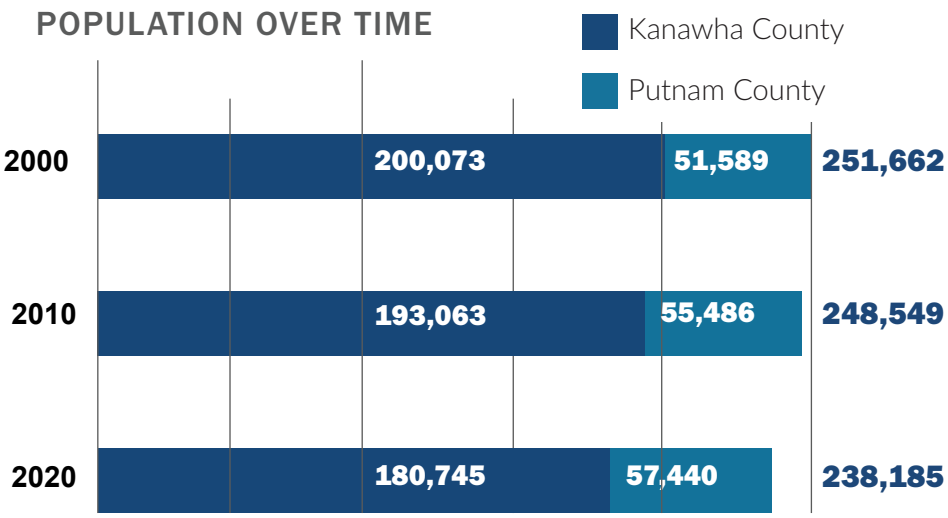
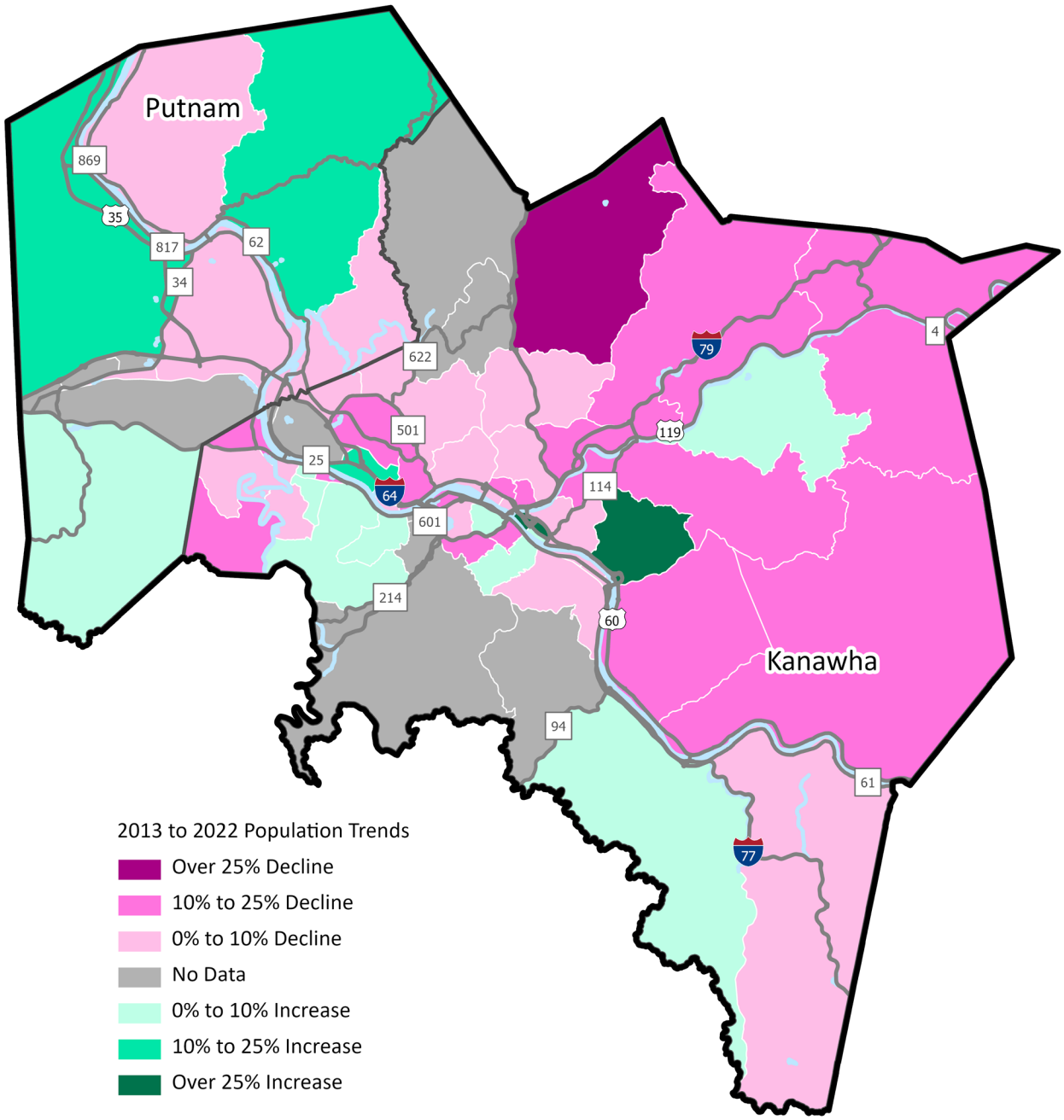


Figure 4: Population Change



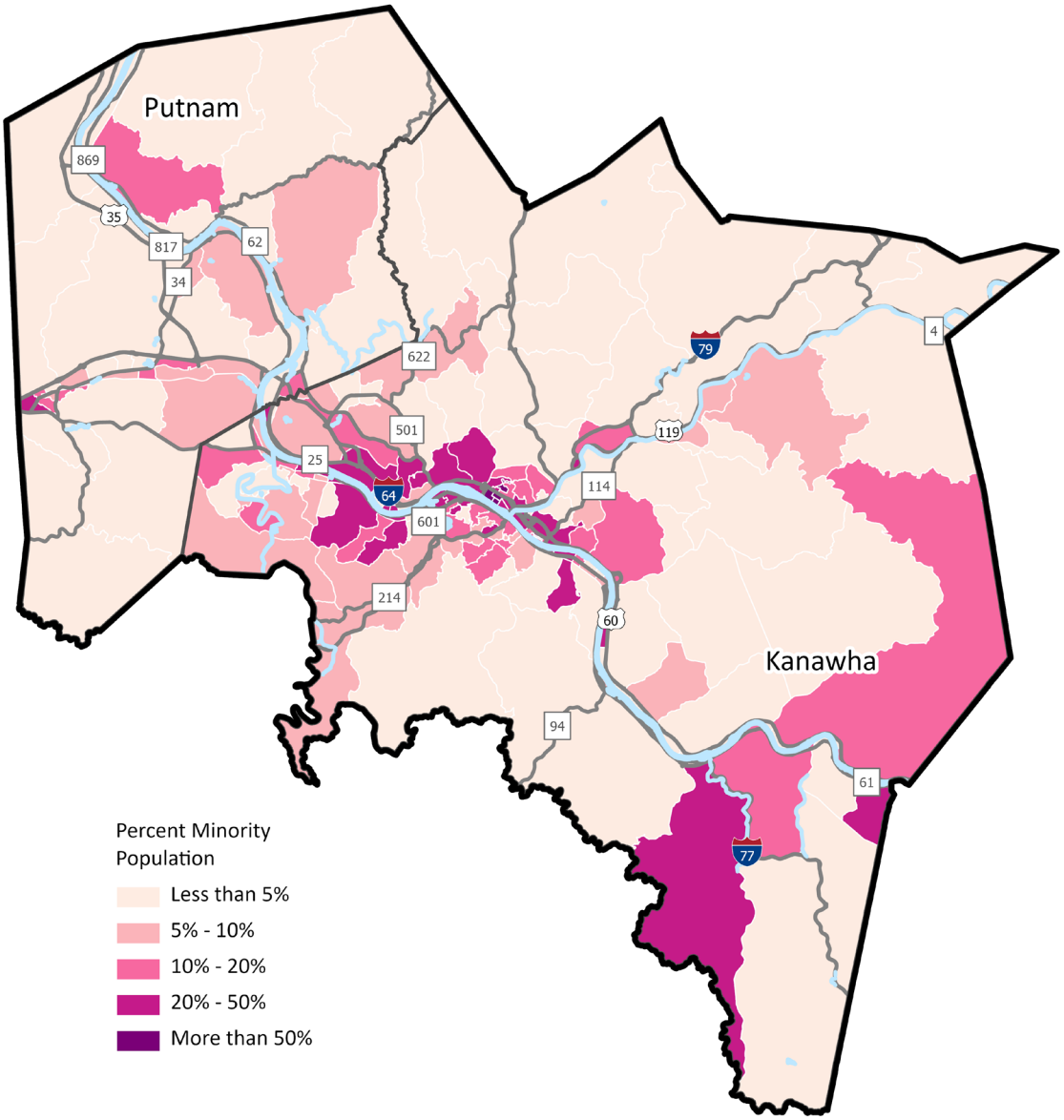
Data sourced from American Community Survey 5-Year Estimates

Race

The region experiences varying levels of racial diversity. The region is 89.2% white, based on the 2022 American Community Surveys 5-year Estimates. This percentage roughly aligns with West Virginia as a whole (90%) and is far above the national average of 58%.

The map in Figure 5 shows the percent of populations that identify as Black or African American, Asian, American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, some other race, or two or more races. The block groups surrounding Charleston show much higher percentages of non-white populations.

Figure 5: Racial Diversity



Data sourced from American Community Survey 5-Year Estimates

Vehicle Ownership

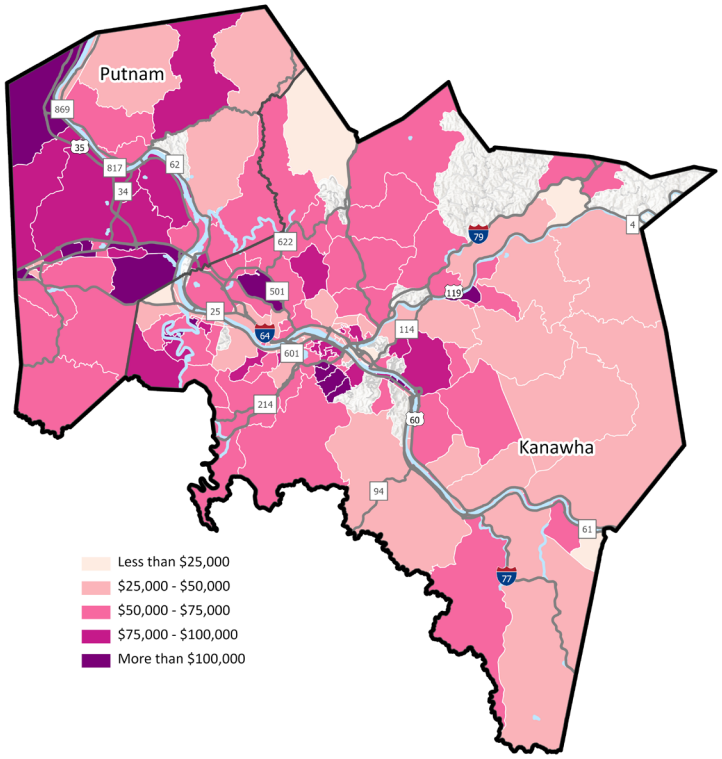
Vehicle ownership is a crucial statistic to understanding overall transportation needs. Households with no vehicle access are reliant on alternative modes of transportation. Households with access to only one vehicle are also potentially vulnerable. Car ownership is expensive. Households without vehicle access in a car dependent community will have limited access to employment, health care, education, and other third spaces that are reachable by predominantly cars.

Throughout the region, 46% of households fall in the aforementioned demographics. Nine percent of households have access to zero vehicles and 37% have access to only one. Sixteen percent of households have three or more vehicles available.

Income Distribution

Analyzing income distribution throughout the region can provide valuable insight into community's differing needs. Figure 6 shows the median household income by Census block group. Putnam County has a median household income of $75,725 which is slightly above the national median ($74,755). The median household income in Kanawha County is $55,215, slightly above West Virginia's medium of $54,329. Table 5 shows the percentages of households making an income below the poverty line. This highlights vulnerable populations.

Figure 6: Median Household Income by Block Group



Data sourced from American Community Survey 5-Year Estimates

Educational Attainment

Table 5 also shows the educational attainment for the two counties and allows for a comparison to state and national data. The region has a slightly higher percentage of the population with high school diploma's and a lower percent of the population with a bachelor's degree or higher when compared to the national average. The region has a higher percentage of residents with a bachelors degree when compared to West Virginia as a whole.

Table 5: Education & Poverty Comparison

	Kanawha County	Putnam County	West Virginia	United States
Households in Poverty	18.4%	11%	17.9%	12.6%
High School Graduate or Higher	90%	93.6%	89.1%	89.6%
Bachelors Degree or Higher	29.9%	29.5%	24.8%	35.7%

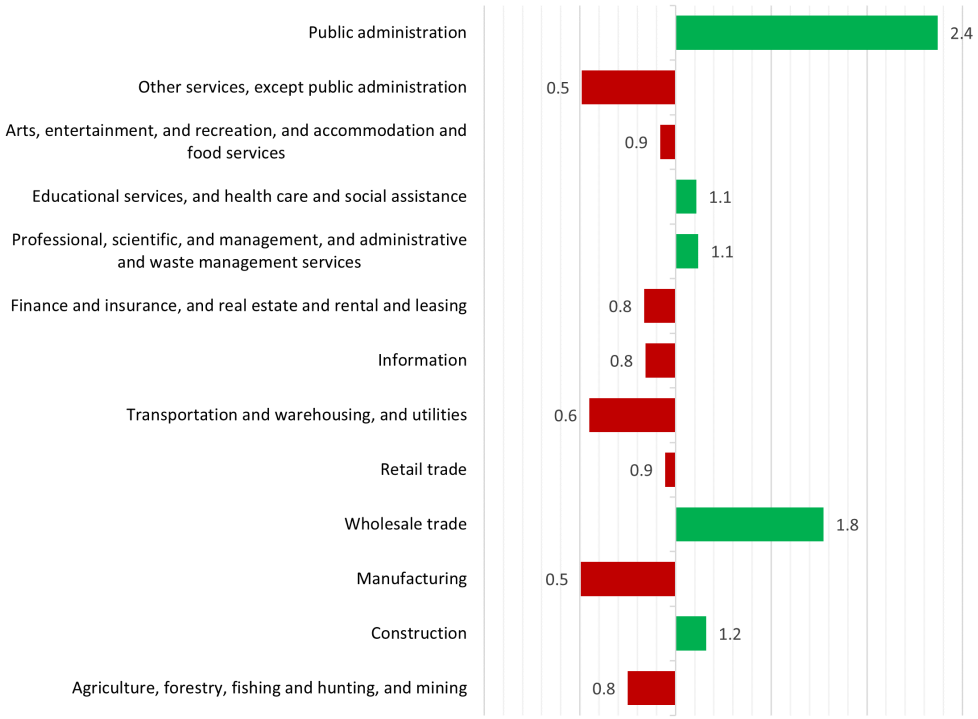
Data sourced from American Community Survey 5-Year Estimates

Employment

Analyzing the regions employment is crucial to understanding weekday commute patterns. Kanawha County has 55.5% of civilians over 16 years old participating in the labor force and Putnam County is at 59.6%. These numbers fall below the national average, in part due to the aging population discussed earlier in the ***Demographics*** section of the report.

Location Quotient is a measure of how specialized a regions economy is. Each industry's employment is compared to the national average to give an LQ. An LQ greater than 1 means that the region has a higher concentration in that specific industry sector. Public Administration, Wholesale Trade, and Construction are industries that the RIC region has a high LQ and therefore represent some of the regions industrial specialization.

Location Quotient



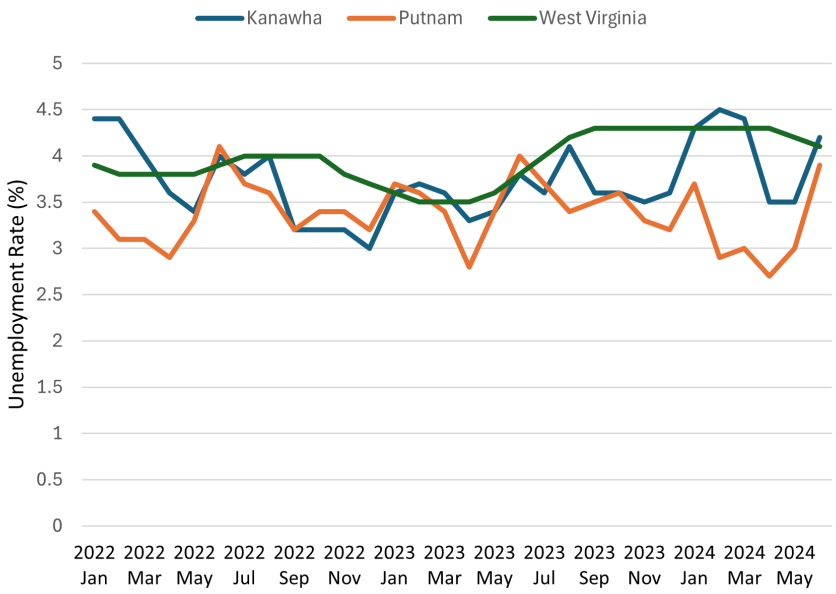
Data sourced from American Community Survey 5-Year Estimates

Unemployment

The chart at right shows the regions unemployment rates over time. Between January 2022 and May 2024, unemployment has remained relatively consistent. Despite small fluctuations, the rate has remained below 4.5%, indicating a relatively healthy unemployment rate in both counties.

These unemployment numbers are particularly strong when analyzing recent history of the region. Following the recession in 2008, Unemployment rates in both counties were consistently above 5% and peaked during the COVID-19 pandemic. These figures represent unemployment on par with the regional rates prior to 2008, signifying a sustained recovery from the pandemic.

Unemployment Rates



Data sourced from US Bureau of Labor Statistics

Job Flows and Density

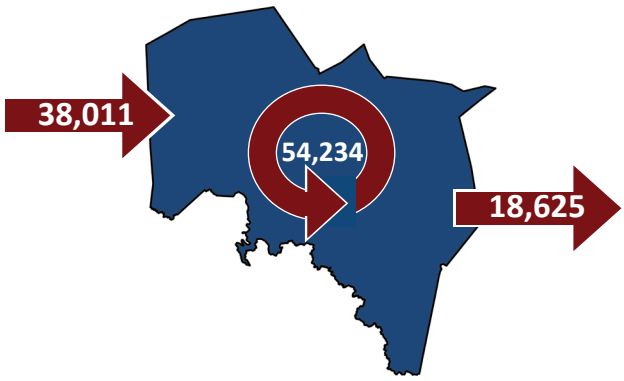
The graphic to the right represents the regions job flows. The graphic shows where people live and work. 38,011 people commute into the region to work but live outside of the two counties. 18,625 live within the region and commute out for work.

54,234 people both live and work within the Ric region. These job flows are somewhat standard for a region containing a large city with an abundance of jobs. The length and starting point of commutes will be discussed in the ***Daily Commutes*** section of this report.

The location of jobs is not evenly spread throughout the region. Unsurprisingly, a majority of the major job hubs exist within urbanized areas with Charleston being a major hub for jobs. The density of jobs is shown in Figure 7.

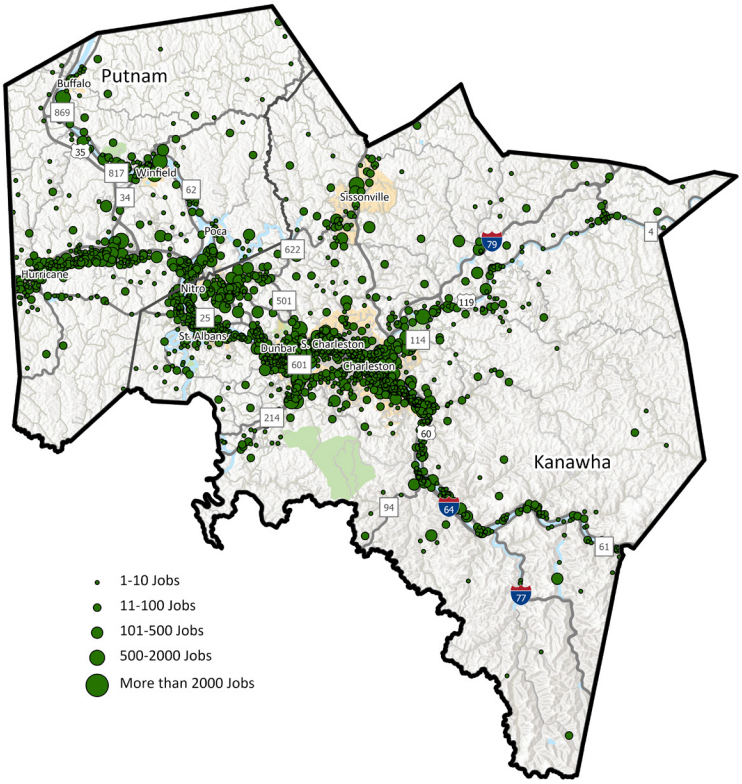
Further analysis of Figure 7 shows strong job hubs lining the major transportation corridors. This trend helps to highlight the regional importance of the interstate system, US routes and state routes that allow fast movement of the workforce throughout the counties.

Job Flows



Data sourced from LEHD on the Map Software

Figure 7: Job Density



Data sourced from LEHD on the Map Software

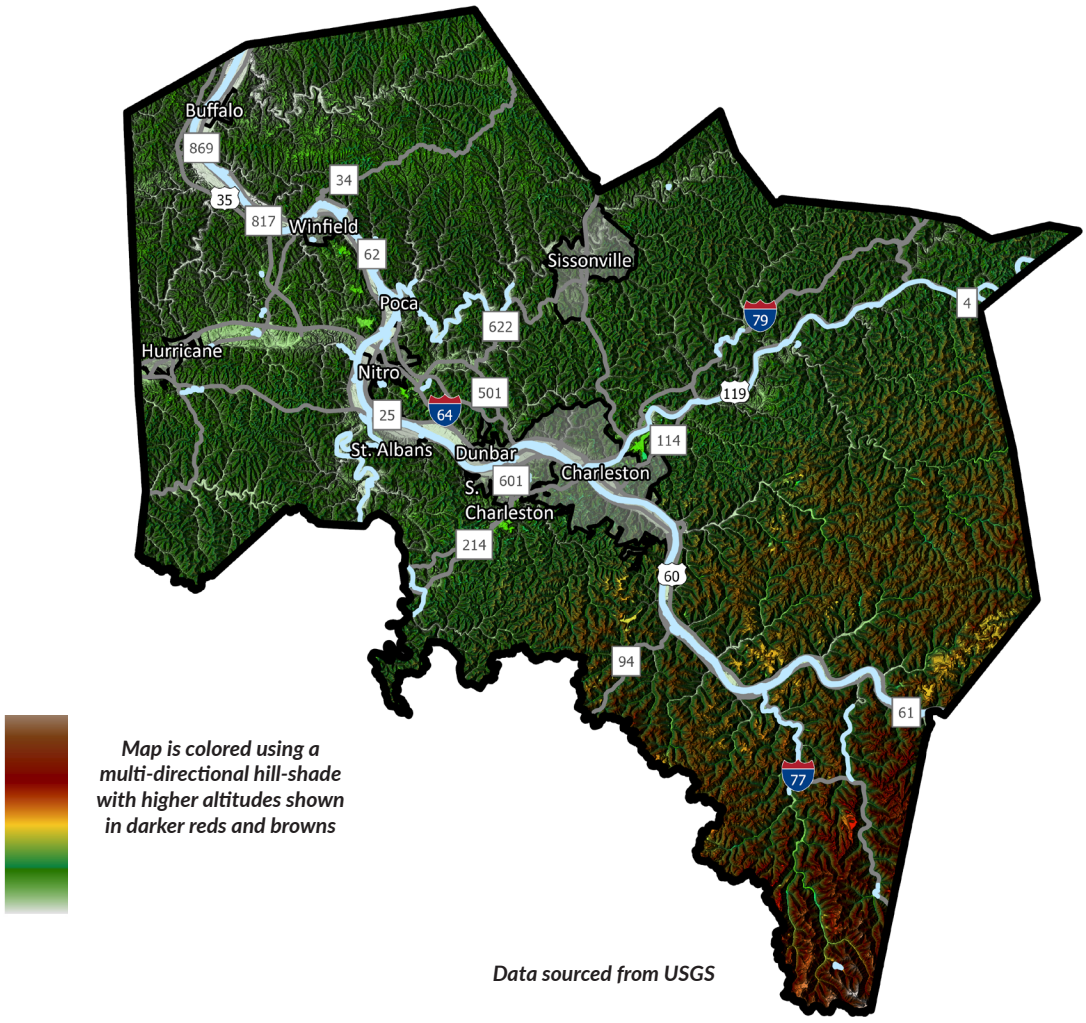
ENVIRONMENTAL CONDITIONS

Land Use

Development within the region takes a very unique form. The region's mountainous topography creates challenges to development in a majority of the region. Figure 8, highlights the topography while overlaying the regions urban areas to show where development occurs.

The urban areas primarily line the habitable valleys, especially along the Kanawha River. While the roadways of the flatter urban areas tend to take the traditional grid pattern seen in many US cities, roadways in the urban peripheries and throughout the region often are categorized with curvatures and steep slopes.

Figure 8: Regional Topography

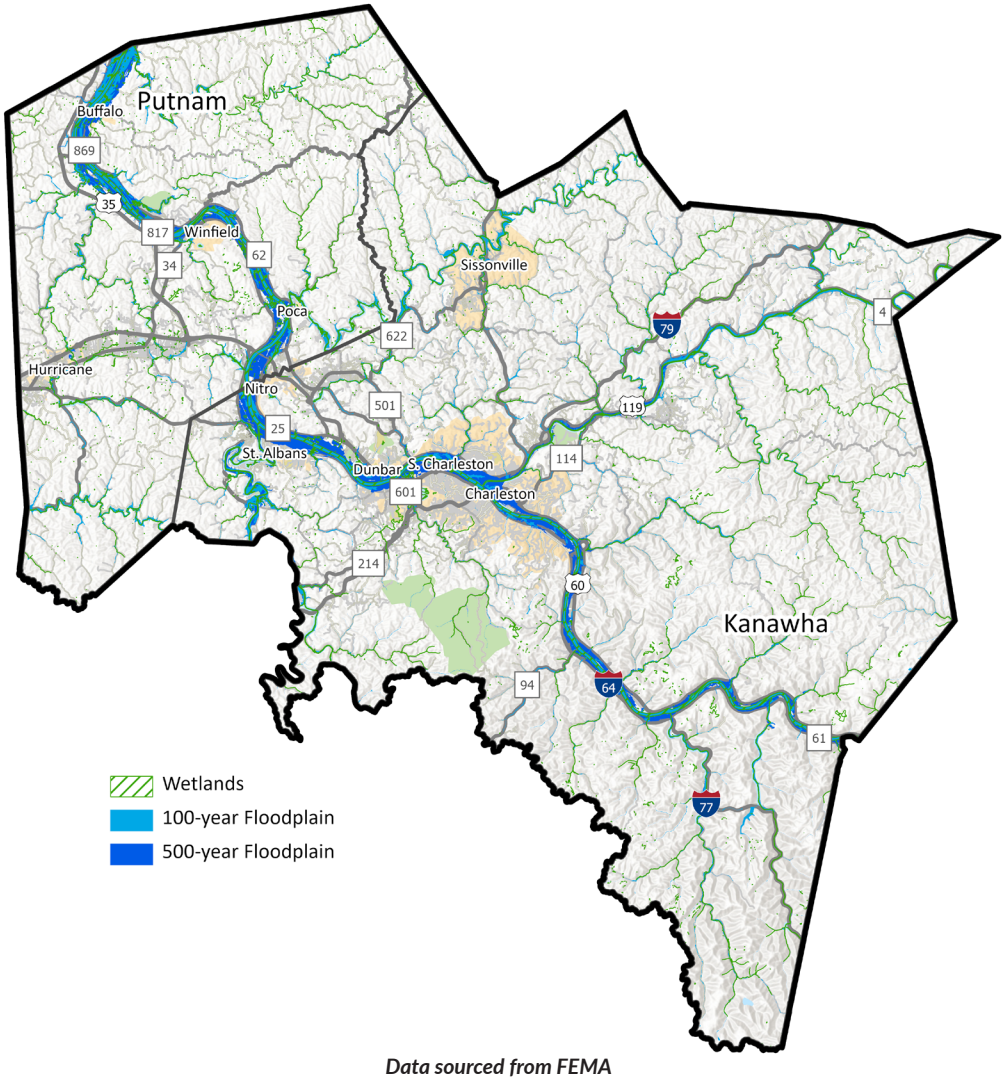


Flooding

When developing transportation throughout the region, environmental constraints need to be considered to avoid or mitigate negative environmental externalities. Due to the development patterns mentioned on the previous page, much of the regions development occurs within the floodplain. The 100-year and 500-year floodplain is mapped below in Figure 9. Managing the impermeable surfaces, like roads and parking lots, is essential to help mitigate the long term flood risk of the region.

Wetlands play a crucial role as a natural tool in mitigating flood risk. These areas have the unique ability to slow down the flow of water and evenly distribute it across an area. In the region, wetlands are particularly essential in managing the impacts of heavy rainfall and snow melt, which could otherwise lead to significant damage to surrounding developments. By acting as a buffer zone, wetlands help protect against flooding and provide valuable ecosystem services.

Figure 9: Floodplains

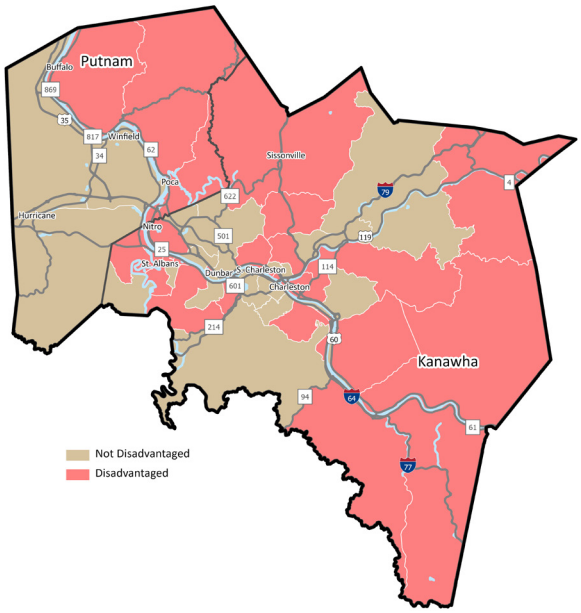


Data sourced from FEMA

Environmental Justice

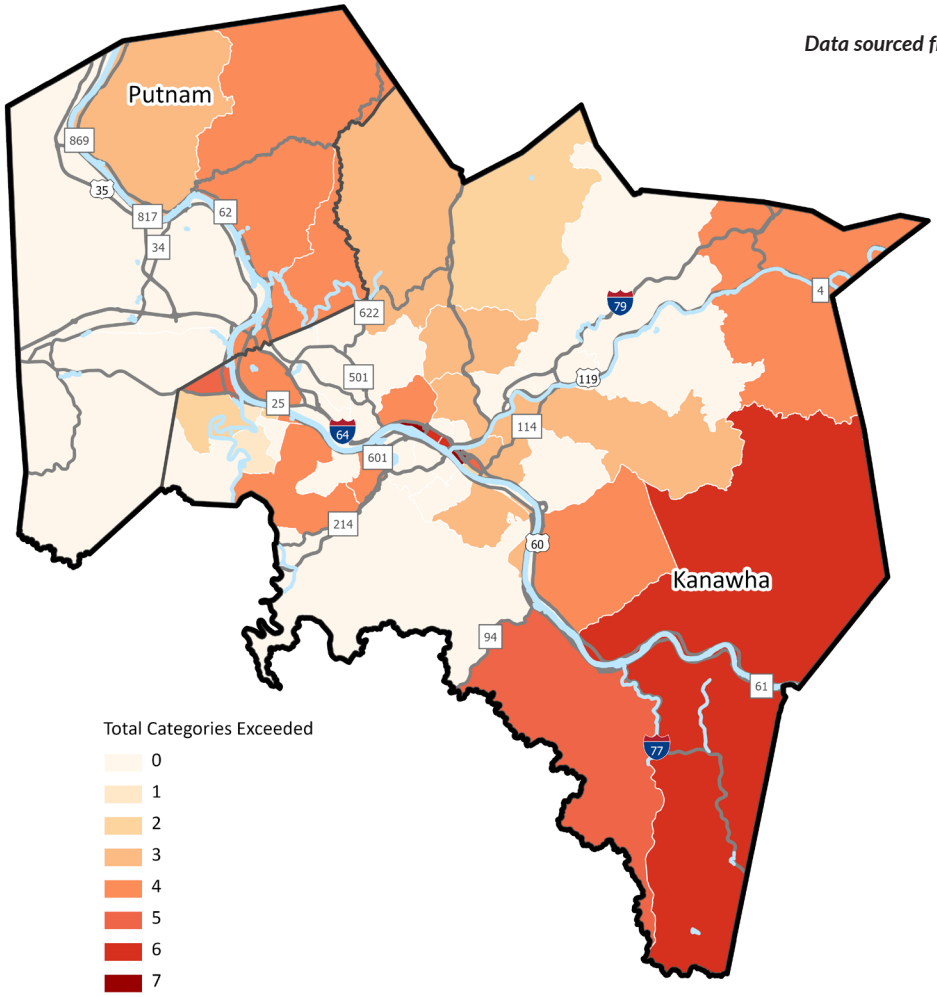
Environmental Justice looks at the region to understand how environmental factors can create benefits or burdens for some communities versus others. When planning transportation networks, it is crucial to understand where disadvantaged communities are located and analyze ways that the network is enhancing these disadvantages to try to foster a more fair and equitable network. Figure 11 shows the communities identified as disadvantaged based on data from the Climate and Economic Justice Screening Tool.

Figure 11: Disadvantaged Communities



Data sourced from Climate and Economic Justice Screening Tool

Figure 10: Total Categories Exceeded



Data sourced from Climate and Economic Justice Screening Tool

Figure 10, maps Census Tracts based on the total number of the categories exceeded from the Climate and Economic Justice Screening Tool. Exceeding the threshold of any category qualifies the tract as a disadvantaged tract. The darker the color, the more categories exceeded. Multiple tracts near Charleston exceed as many as seven categories.

Descriptions of these categories and the thresholds from the Climate and Economic Justice Screening Tool can be found on the next page.

Communities are ***identified as disadvantaged*** if they are in census tracts that are:

Climate Change
At or above the 90th percentile for expected agriculture loss rate OR expected building loss rate OR expected population loss rate OR projected flood risk OR projected wildfire risk

AND are at or above the 65th percentile for low income

Energy
At or above the 90th percentile for energy cost OR PM2.5 in the air

AND are at or above the 65th percentile for low income

Health
At or above the 90th percentile for asthma OR diabetes OR heart disease OR low life expectancy

AND are at or above the 65th percentile for low income

Housing
Experienced historic underinvestment OR are at or above the 90th percentile for housing cost OR lack of green space OR lack of indoor plumbing OR lead paint

AND are at or above the 65th percentile for low income

Legacy Pollution
Have at least one abandoned mine land OR Formerly Used Defense Sites OR are at or above the 90th percentile for proximity to hazardous waste facilities OR proximity to Superfund sites (National Priorities List (NPL)) OR proximity to Risk Management Plan (RMP) facilities

AND are at or above the 65th percentile for low income

Transportation
At or above the 90th percentile for diesel particulate matter exposure OR transportation barriers OR traffic proximity and volume

AND are at or above the 65th percentile for low income

Water and Wastewater
At or above the 90th percentile for underground storage tanks and releases OR wastewater discharge

AND are at or above the 65th percentile for low income

Workforce Development
At or above the 90th percentile for linguistic isolation OR low median income OR poverty OR unemployment

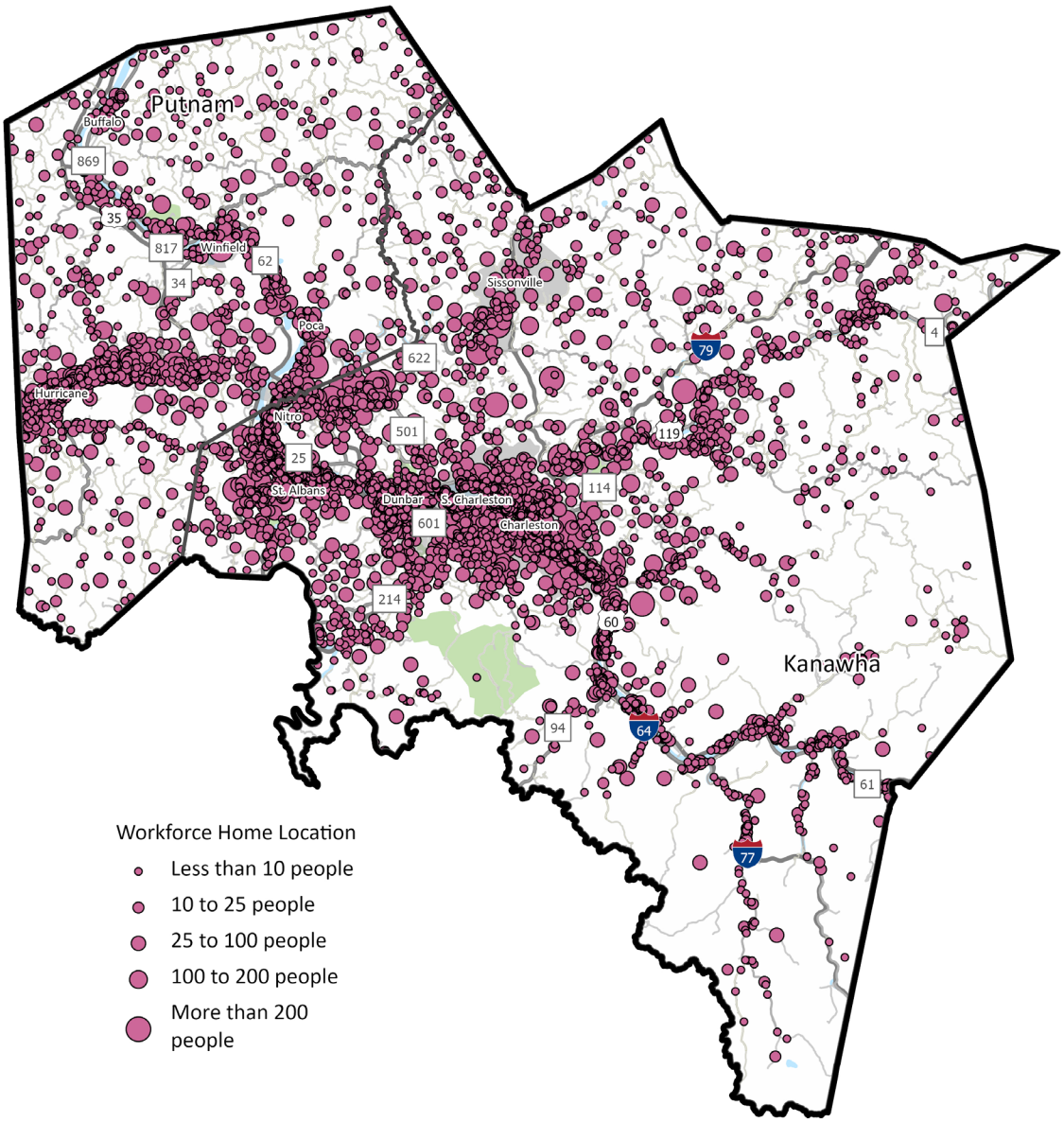
AND more than 10% of people ages 25 years or older whose high school education is less than a high school diploma

DAILY COMMUTE

Home Location

While the region's job density is relatively concentrated within the urban areas, the home location of the region's workforce, Figure 12, is much more dispersed throughout the region. While a majority of the workforce is still concentrated along the river and in urban areas, the expansiveness of the region's workforce highlights the necessity of regional transportation plans. Connecting the workforce with the available jobs is a crucial part of transportation. Concentrating projects to exclusively cover the urban areas would neglect the urban workforce.

Figure 12: Home Location of the Region's Workforce



Data sourced from LEHD on the Map Software

Commute Time

Consistent with the home locations, commute times to work, shown below, vary based on the home vs work location. Almost one-third of the region commutes 10 to 19 minutes. This commute to work is consistent with urban and suburban development. Roughly 13% of the regions workforce is less than 10 minutes. These populations live and work within the same area and are often consistent with urban development.

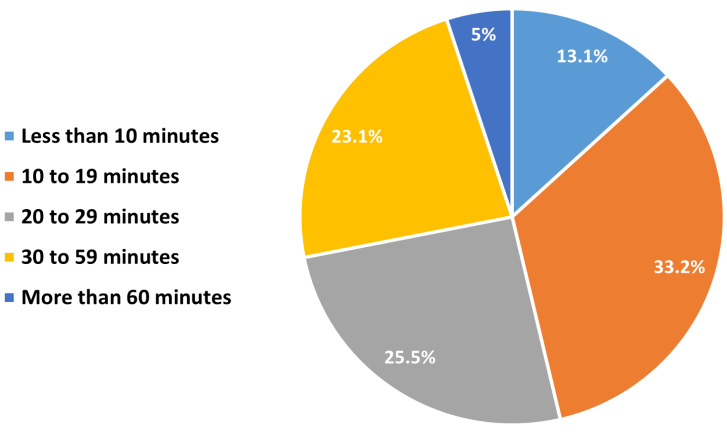
Nearly half of the workforce commutes between 20 minutes and one hour to work. Finally, about 5% of the workforce commutes over one hour to get to work, likely relying heavily on regional infrastructure, and underscoring the region's role as an employment hub.

Commute Mode

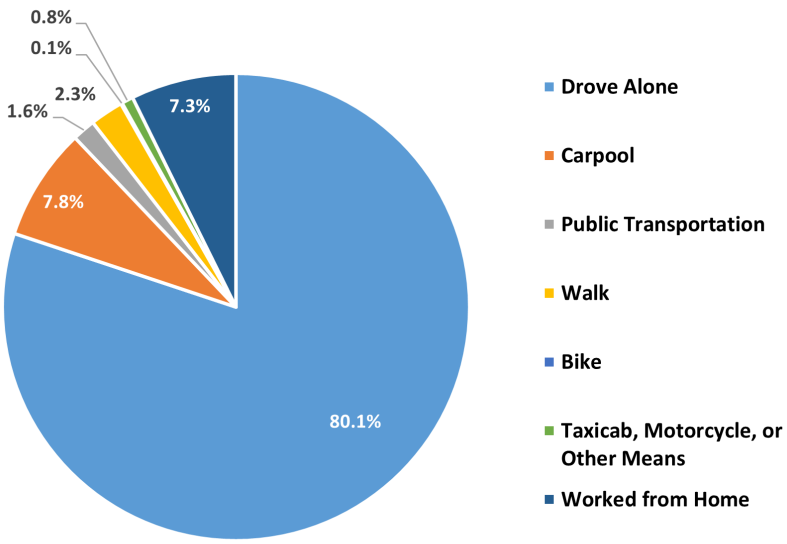
The pie chart below shows the breakdown of commute mode to work in Putnam and Kanawha County. This breakdown highlights the high reliance on cars in the area with nearly 90% commuting to work with personal vehicles. Eighty percent of those commutes are workers driving alone to work with nearly 8% carpooling. Public transportation and walking make up a small but important percentage of commutes to work. Biking to work is very rare, likely due to the topography, distances from work, and the perception of safety on streets.

Work from home makes up a somewhat substantial chunk of the workforce. This is an increasing trend, especially following the pandemic. In 2019, the region had slightly over 3.5% of the population in this category based on 2019 ACS 5-year estimates. These numbers have more than doubled, consistent with nationwide trends, and given the rapidly evolving nature of this type of work, warrant ongoing monitoring.

Commute Time to Work



Means of Transportation to Work



Data sourced from 2022 ACS 5-Year Estimates

TRAVEL NETWORK

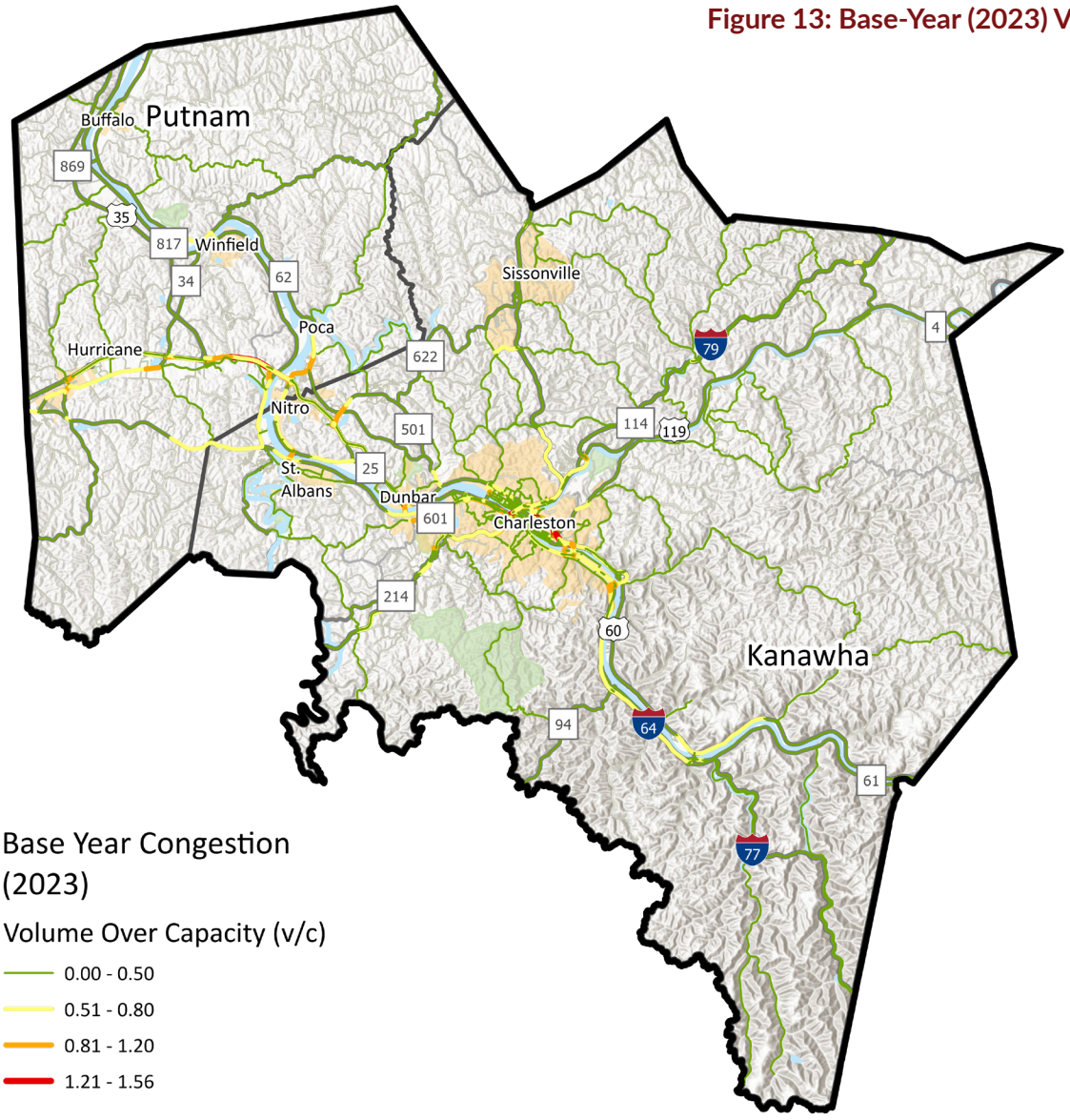
Road Conditions

Base-Year Congestion

Traffic volumes alone cannot be the sole determinant of congestion. The available roadway capacity is equally important in understanding network congestion. An effective means to measure congestion is determining the volume-to-capacity ration. A V/C ratio is calculated by dividing the traffic volume of a roadway segment by the roadway's capacity. In Figure 13, the roadways were grouped into the following categories:

- **Below Capacity:** Facilities with a V/C less than 0.80. Roadways operating below capacity experience little to no congestion during peak travel periods.
- **At Capacity:** Facilities with a V/C between 0.81 and 1.20. Roadways operating at capacity or just above capacity are congested during peak hours
- **Above Capacity:** Facilities with a V/C greater than 1.2. Roadways operating above capacity experience congestion during peak periods.

Figure 13: Base-Year (2023) V/C

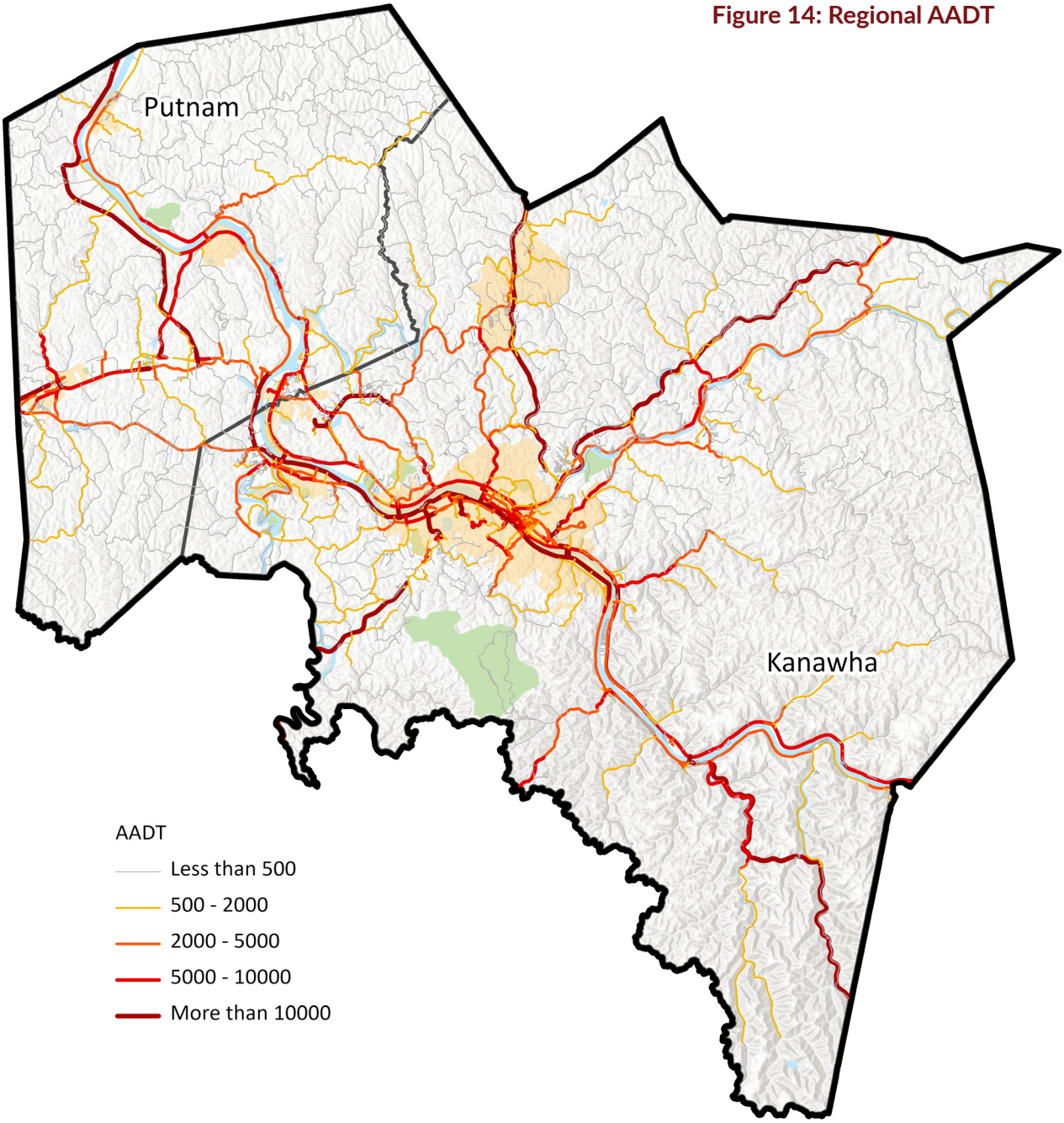


AADT

Average annual daily traffic (AADT) is a metric that estimates the average number of vehicles that pass a specific point on a road or highway over the course of a year. It is important for determining road capacity, planning infrastructure improvements, managing traffic, analyzing safety, and understanding the economic impact of transportation infrastructure.

At a regional level, analyzing AADT can help determine what roadways are particularly crucial to the regional network and connect people to places. Figure 14 shows the AADT of roads in the region. The darker and thicker lines represent roads with higher AADT.

Figure 14: Regional AADT

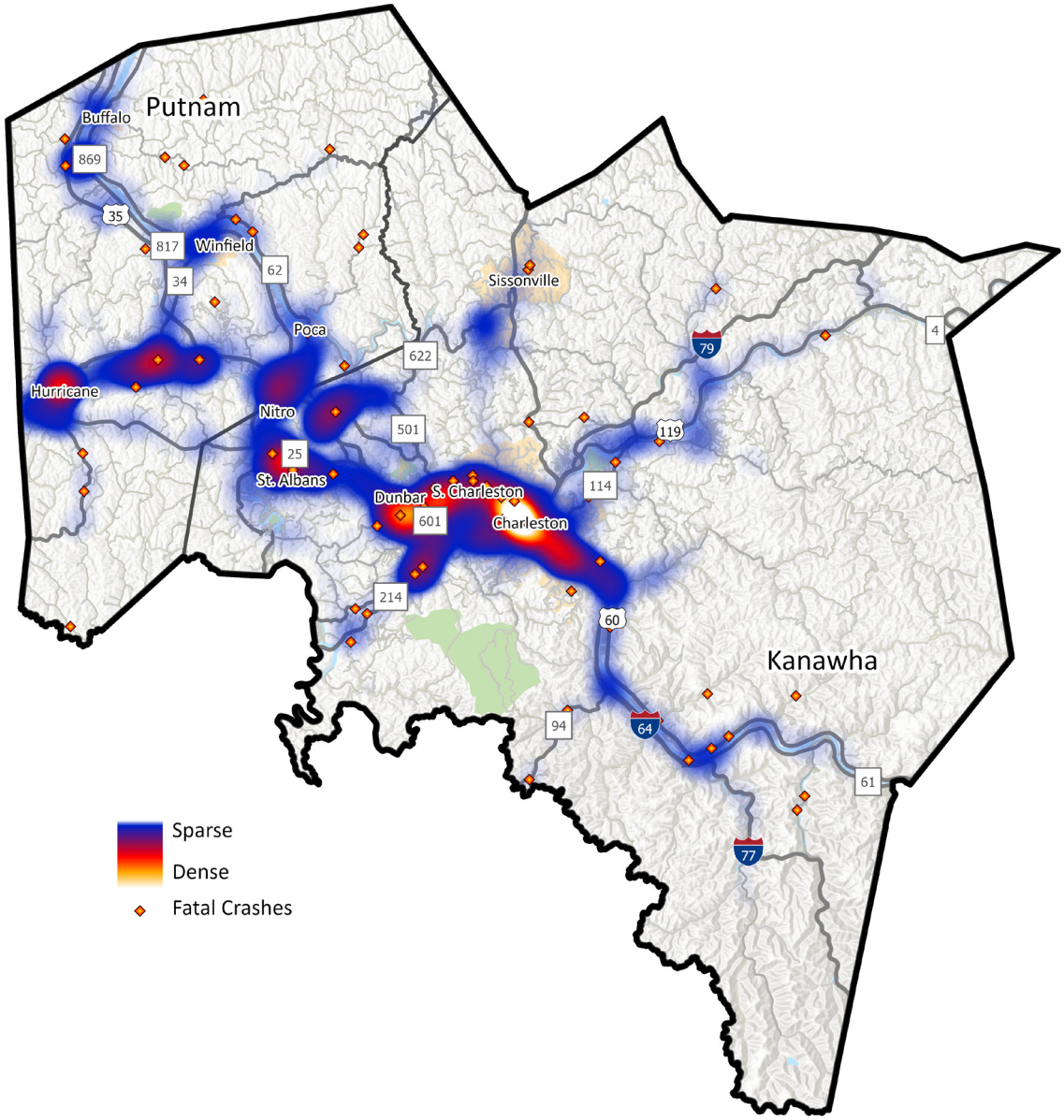


Safety

Safety is one of the most crucial elements of a transportation system. Crashes can have life altering impacts on individuals and create deficiencies in the network. Crashes lead to congestion, economic impacts, and even a lack of public confidence in the network. Figure 15, shows a heat map of the crashes in the region. This map highlights that the majority of the crashes are along major roadways and urban areas.

The most important safety concern in any transportation network is preserving human life. Eliminating traffic fatalities is at the heart of transportation planning. The map below also shows the location of every fatal crash since 2017. These crashes tend to line higher speed roadways. While there are little patterns in the data, WV-214 and US-64 have a slightly higher concentration. Analyzing data and reducing fatalities is crucial to the overall health of the transportation network.

Figure 15: Crash Data Heat Map



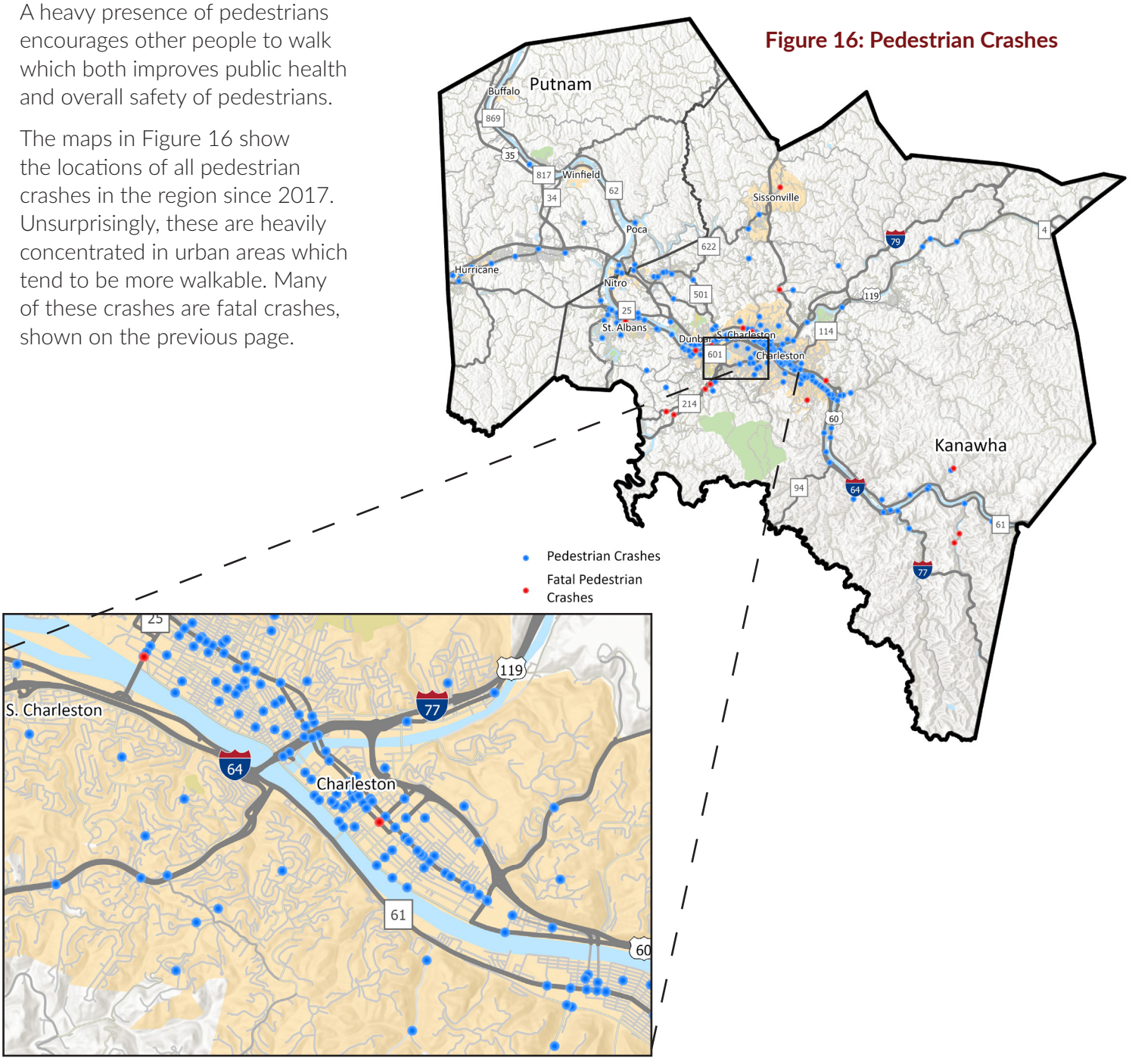
Pedestrian Safety

Another element of the transportation system that is crucial to analyze is pedestrian safety. Crashes between a vehicle and pedestrian are more likely to be fatal, even at slower speeds. A heavy presence of pedestrians encourages other people to walk which both improves public health and overall safety of pedestrians.

The maps in Figure 16 show the locations of all pedestrian crashes in the region since 2017. Unsurprisingly, these are heavily concentrated in urban areas which tend to be more walkable. Many of these crashes are fatal crashes, shown on the previous page.

The inset map at the bottom shows the pedestrian crashes in Charleston. The capital city has the most pedestrian activity and as a result, the most pedestrian crashes. The slower speeds in the city and the expectation of drivers contributes to the lower fatality rate of pedestrian crashes in Charleston.

Figure 16: Pedestrian Crashes



Transit

Kanawha Valley Regional Transit Authority, or KRT, is the transit provider serving Kanawha County. KRT was created in 1971 and is governed by a 13-member board. The current fleet is 49 vehicles with 14 cutaway vans used to support the paratransit routes. KRT had pre-pandemic ridership as high as 1.6 million passenger trips. The most recent FTA ridership data from 2023 shows ridership slightly over 1 million passenger trips. Putnam County does not currently have a public transportation system.

Figure 17: KRT Routes and Ridership

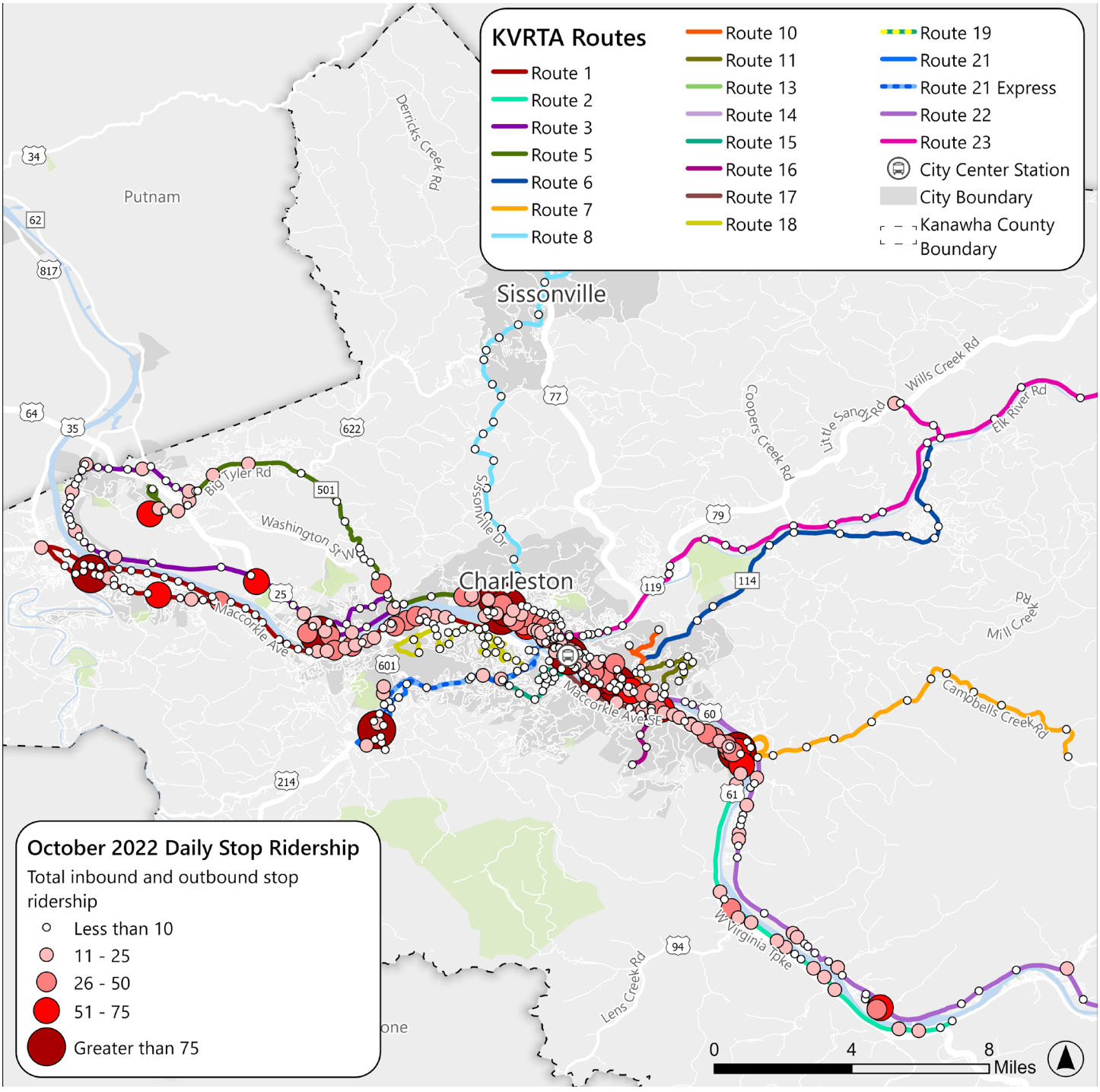
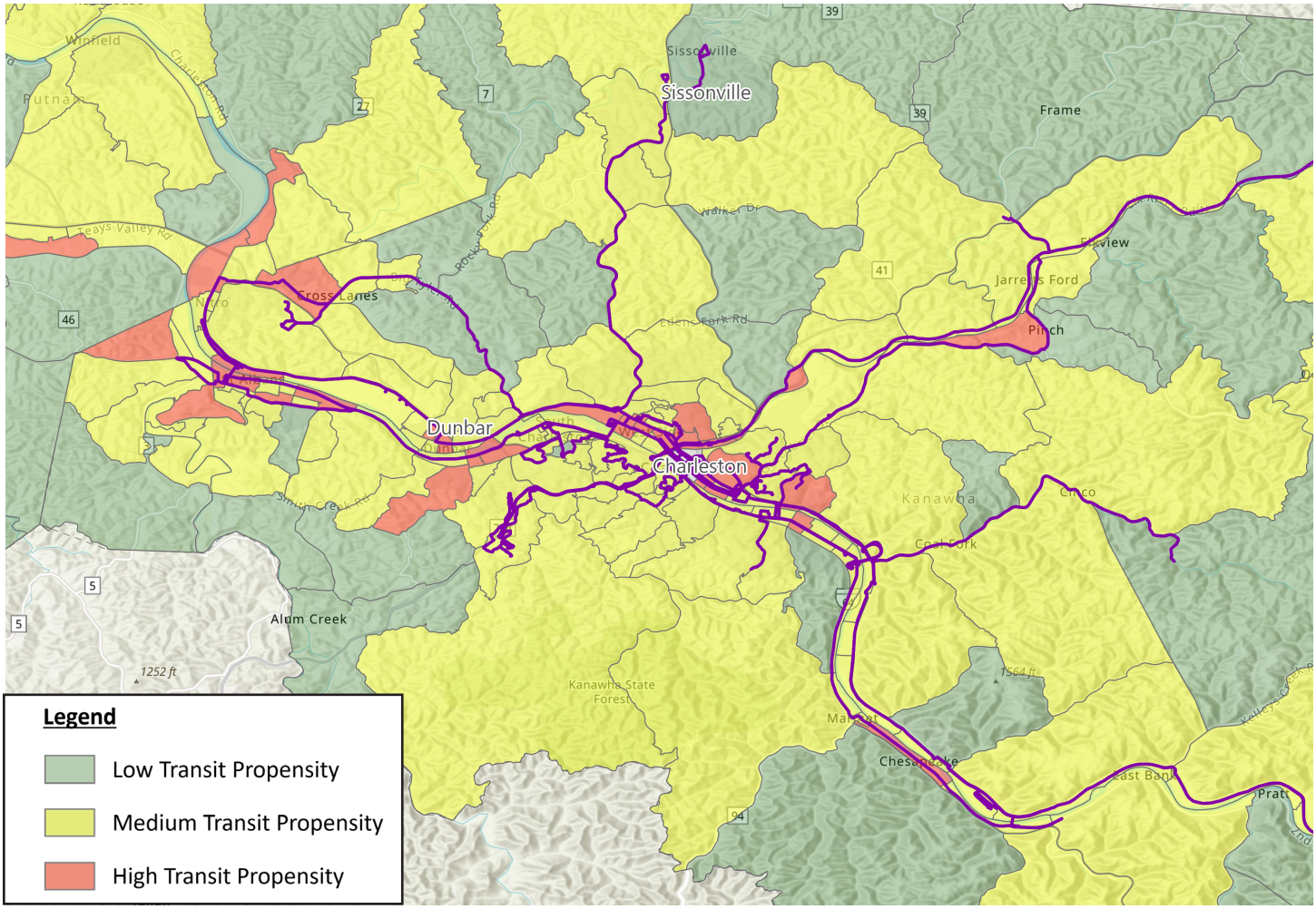


Figure 18 below shows the existing routes mapped on top of a transit propensity map. Transit propensity measures a combination of factors including income, car ownership, disability status, etc. to determine which tracts have the greatest need for transit.

Figure 18: Transit Propensity



On September 26, 2024, KRT approved service changes set to go into effect February 2025. On top of route changes, these changes involved the elimination of Sunday service, decreased frequency of routes, raising the price of a day trip from $2.50 to $3.50, Lowering the price of a 31 day pass from $60 to $50, and decreasing the frequency of routes 5, 6, 7, 8, 10, 11, 13, 15, 16, 18, and 23 by half. These changes come from a comprehensive operations analysis and are set to be supplemented with microtransit. The overall goal was to increase efficiency and cut operating costs.

Bicycle and Pedestrian Conditions

Walking and cycling, referred to as active transportation, goes far beyond just exercise and leisure. Planning for bicycle and pedestrian facilities is a federal requirement. These forms of transportation also come with numerous benefits such as healthier lifestyles and are emission free means of traveling.

EXISTING PLANNING EFFORTS

The following plans focus on active transportation within the RIC region:

Kanawha-Putnam Bicycle and Pedestrian Plan (2019): The planning process for the Bicycle and Pedestrian Advisory Committee involved extensive public involvement through outreach events, stakeholder interviews, surveys, and consideration of existing municipal plans. Based on the initial analysis and recommendations, the projects were ranked in a priority matrix considering feasibility, costs, regional connectivity impact, and safety. A final priority list was created as a guide for regional planning efforts.

Kanawha County Vision Plan (2020): Developed by the Kanawha County Commission, is a comprehensive plan that includes recommendations for improving bicycle and pedestrian infrastructure. The plan includes various recommendations, such as ensuring wheelchair access on the Dunbar Toll Bridge and creating a bridge from US-119 to Coonskin Park over the Elk River. For a complete list of recommendations, refer to the plan.

City of South Charleston Bike Plan (2011): The plan focuses on enhancing recreation and connectivity along key corridors like the Kanawha Turnpike and MacCorkle Avenue. The plan includes recommendations for bike lanes, "share the road" signage, sidewalk improvements, and connector trails.

Imagine Charleston (2013): This plan is a comprehensive downtown redevelopment plan for the city that recommends various improvements for bicycles and pedestrians. The plan focuses on creating connections between important destinations within the city, such as schools, parks, cultural institutions, and existing non-motorized facilities.

City of Charleston's Bike & Trail Master Plan (2016): The vision of this plan is to expand the network of bikeways and trails in the community, providing safe, comfortable, and convenient routes for people of all ages and abilities. The goal is to enhance the quality of life and create economic opportunities for the community.

STATED GOALS AND OBJECTIVES

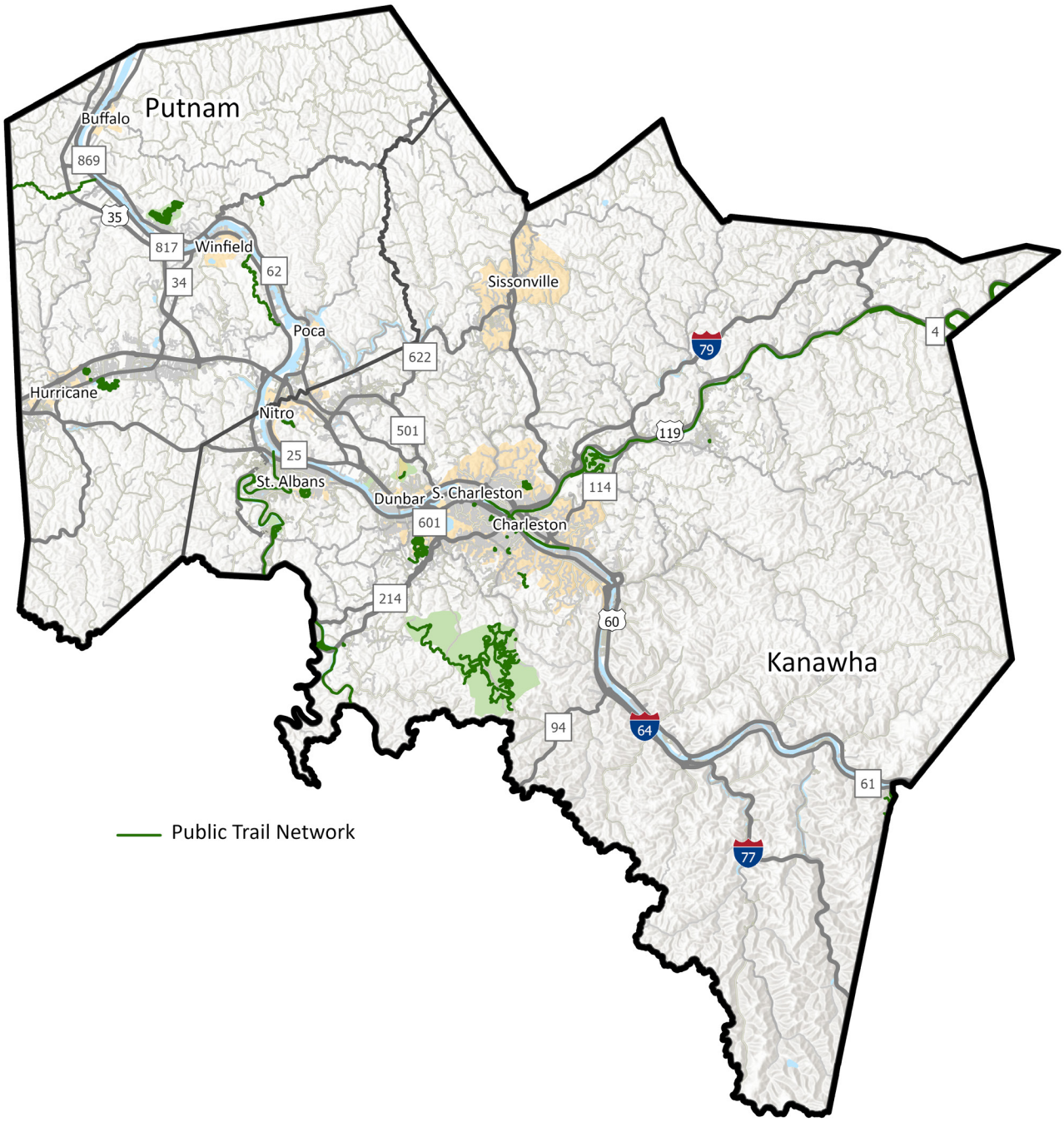
The RIC Kanawha-Putnam Bicycle and Pedestrian Plan has the following stated goals:

- Increase bicycle and pedestrian connectivity between population centers, educational institutions, public recreational areas, and retail/entertainment activity centers in Kanawha and Putnam counties.
  - Improve safety and user comfort levels on all bicycle and pedestrian facilities.
  - Increase public awareness of bicycle and pedestrian facility locations.
  - Promote education of bicycle safety among both motorized and non-motorized users.
  - Promote the adoption and implementation of Complete Streets concepts within each community in Kanawha and Putnam counties.
  - Incorporate bicycle and pedestrian improvements into the transportation network and development projects
- Institutionalize bicycle and walking friendliness as a core value of County and Municipal projects, policies, and programs.

Public Trails

Public trails are important for several reasons. They provide opportunities for physical activity and outdoor recreation, promoting a healthy lifestyle for individuals of all ages, trails can serve as transportation corridors, offering an alternative mode of travel that reduces reliance on cars and promotes sustainable transportation options, and public trails enhance the natural beauty of an area, providing access to scenic landscapes and fostering a sense of connection to the environment. Figure 19 shows the network of public trails throughout the region.

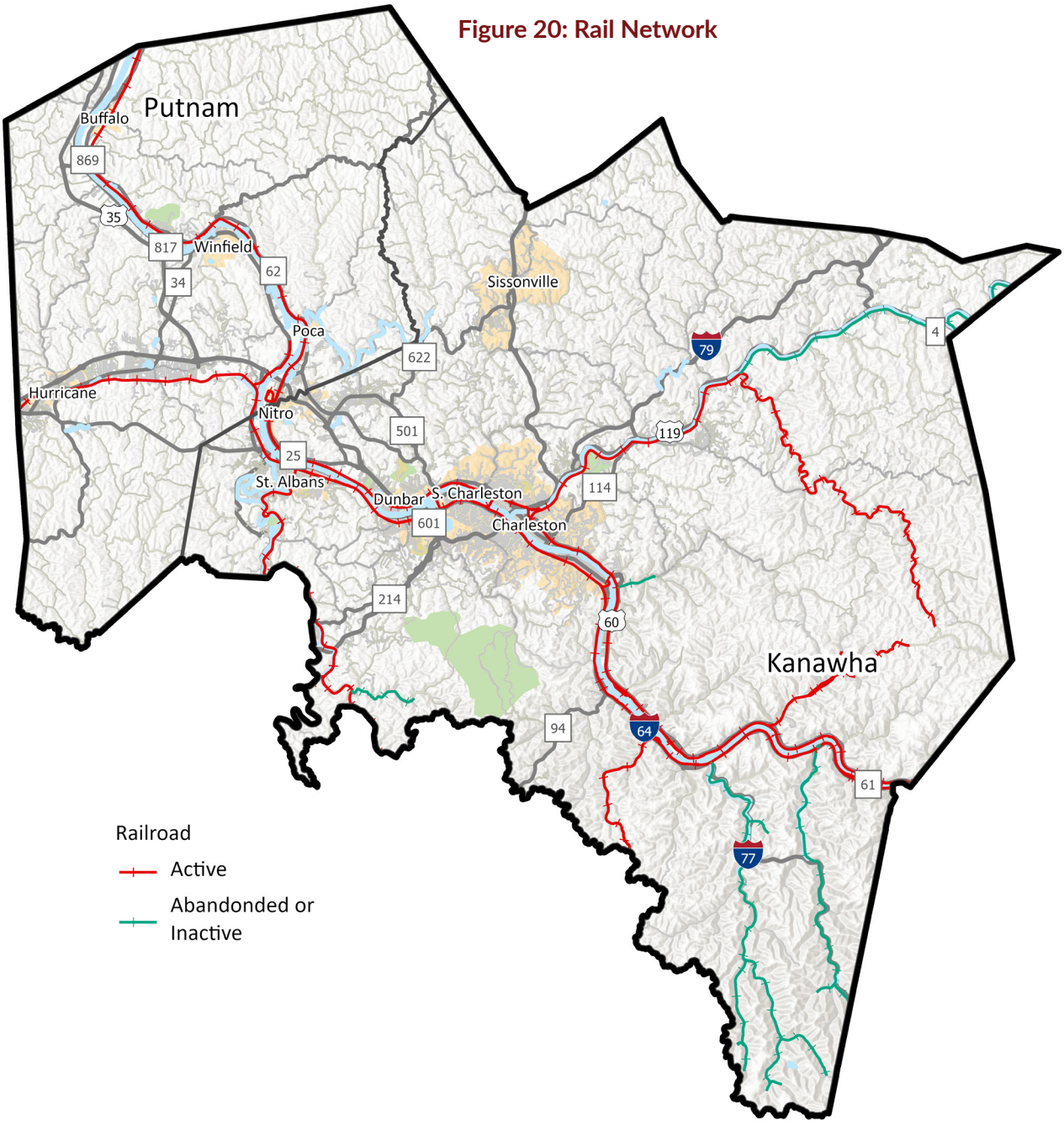
Figure 19: Public Trails



Railroads

Railroads, shown in Figure 20, are crucial for moving goods throughout a region and is especially true for the RIC region. The first railroad in the region, the Chesapeake & Ohio Railroad was completed in 1873 and connected Huntington to Richmond through Charleston. Through the arrival of the railroad and construction of the South Side Bridge, more supplies and goods could arrive to the Kanawha Valley via rail. The second major railroad, the Ohio Central Railroad, arrived in the region around 1883 and linked Charleston with Toledo, Ohio. In 1893, the Kanawha and Michigan Railroad took over the rail line and a series of extensions eventually connected the coalfields of West Virginia with the Great Lakes. Today, Norfolk Southern manages the railroad. The Amtrak Cardinal route is the only passenger rail in the region. The route connects New York to Chicago through Charleston.

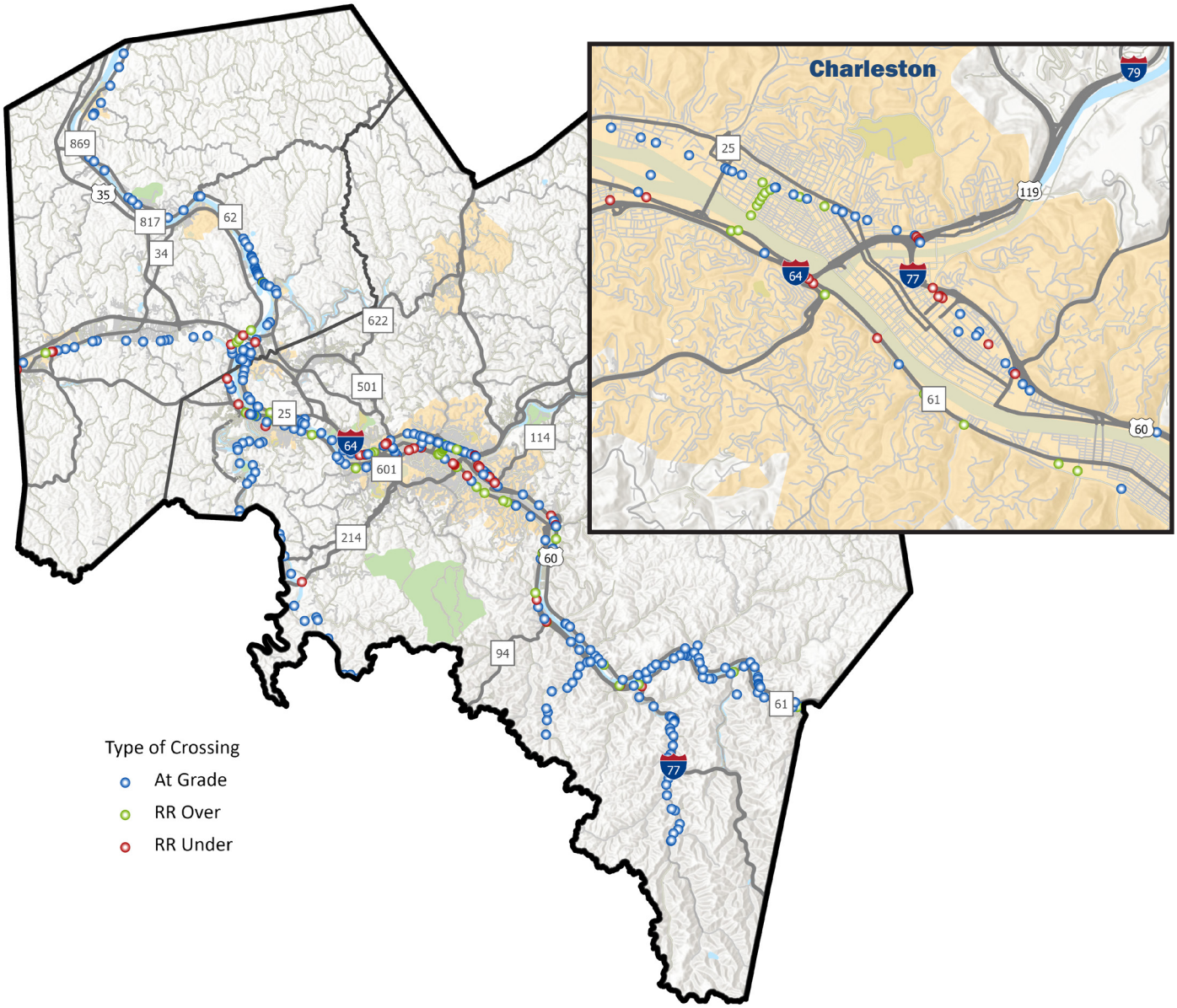
Figure 20: Rail Network



While railroads provide the opportunity to move goods efficiently, they can create challenges on the transportation network. These man-made barriers that cut through the region lead to a number of intersections between roadways and railroads. Figure 21 shows each crossing in the region. These crossings are colored by type with green representing railroad over the roadway and red representing railroad under the roadway.

The most common dot is blue representing at grade crossings. These crossings happen at the same level and require vehicles to give right of way to the railroad. These crossings lead to 200 fatalities in the US each year, according to the Federal Railroad Administration. These crossings can use signage and technology to improve safety and ultimately decrease the risk of incidents and fatalities.

Figure 21: Railroad Crossings

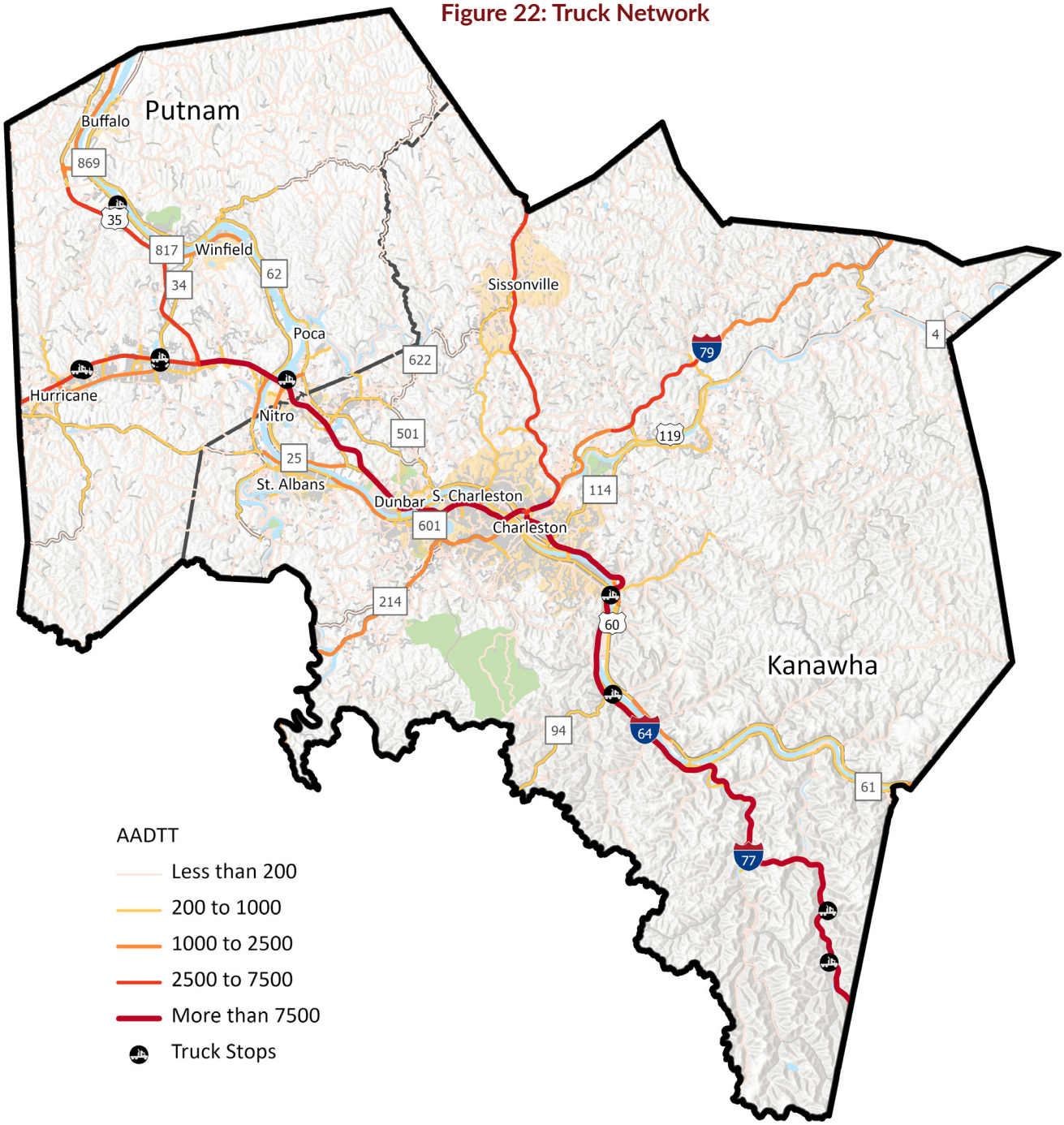


Freight

Figure 22 shows the Average Annual Daily Truck Traffic, or AADTT, throughout the region. The region has fairly consistent truck traffic. The darker and thicker lines represent heavier truck traffic and tend to align with interstates and state routes.

The black and white icons represent truck stops. Truck stops play a crucial role in safety for truck drivers. The east west corridors have several rest stops, however the northern portion of Kanawha County has relatively heavy truck traffic but no rest stops.

Figure 22: Truck Network



Air Travel

The RIC region is also served by air travel. The region has four airports, one public and three private airports.

WEST VIRGINIA INTERNATIONAL YEAGER AIRPORT

West Virginia International Yeager Airport (CRW) is the regions only public airport. Located north of Charleston, the airport served over 6 million passengers in 2023 (3.08 million enplaned and 3.07 million deplaned). The airport also enplaned 8.4 million pounds of freight and deplaned 23 million pounds according to their 2023 Operations Summary. In 2023, the airport had 127,532 aircraft operations with a majority being itinerant, place to place, and roughly 10,000 representing military. In February 2023, the Federal Aviation Administration announced that West Virginia International Yeager Airport will receive $1 million of funds from the Infrastructure Investment and Jobs Act for airport terminal upgrades. These include ADA compliance and installation of a new roof. CRW received over $2 million from the Infrastructure Investment and Jobs Act in 2021, according to flycrw.

ISLAND AIRPORT

Island Airport (WV08) is a private airport located in Chesapeake, West Virginia.

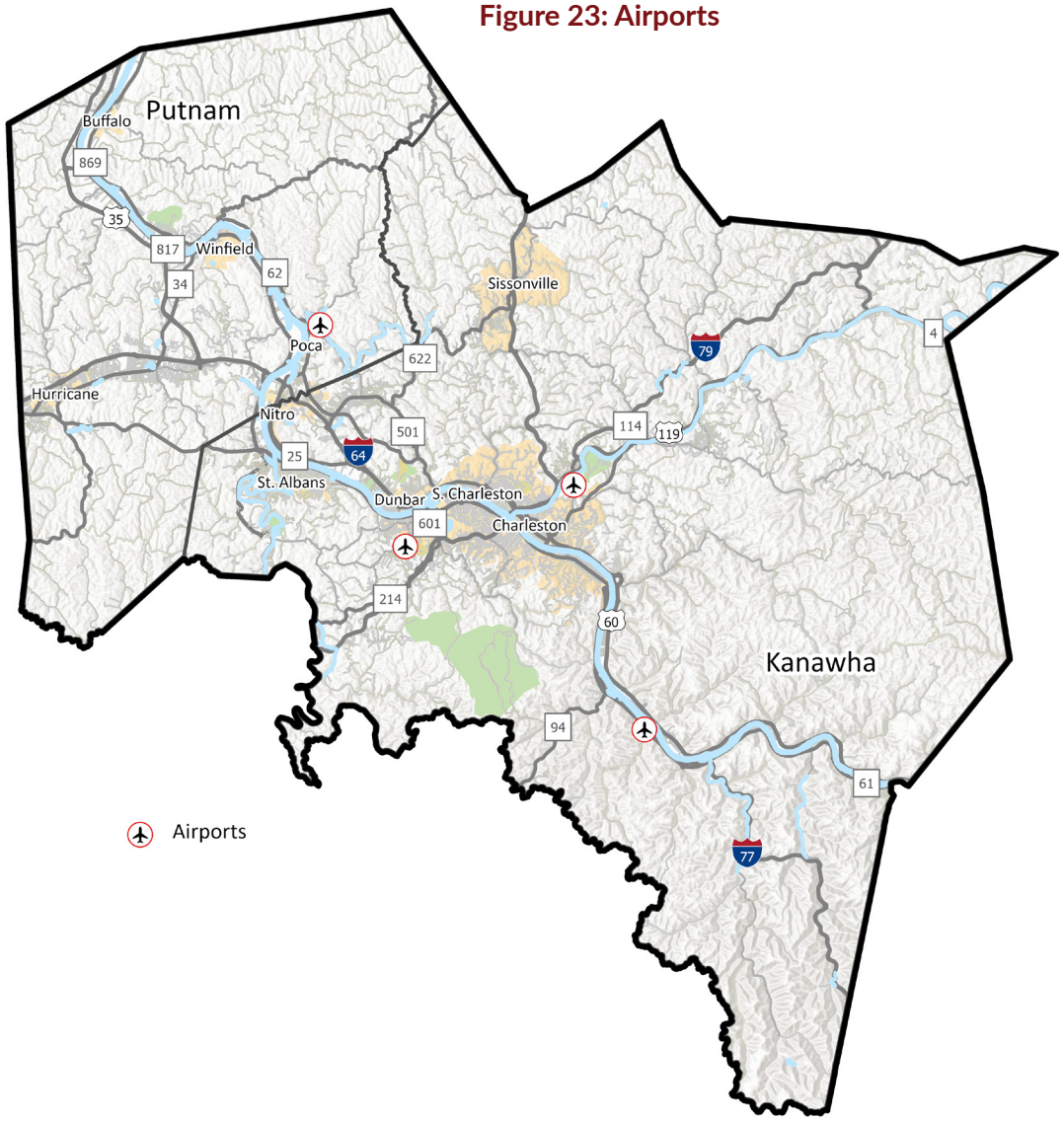
Kurt's Field Airport

Kurt's Field Airport (27WV) is a private airport located in Poca, West Virginia.

Mallory Airport

Mallory Airport (WV12) is a private airport in South Charleston, West Virginia.

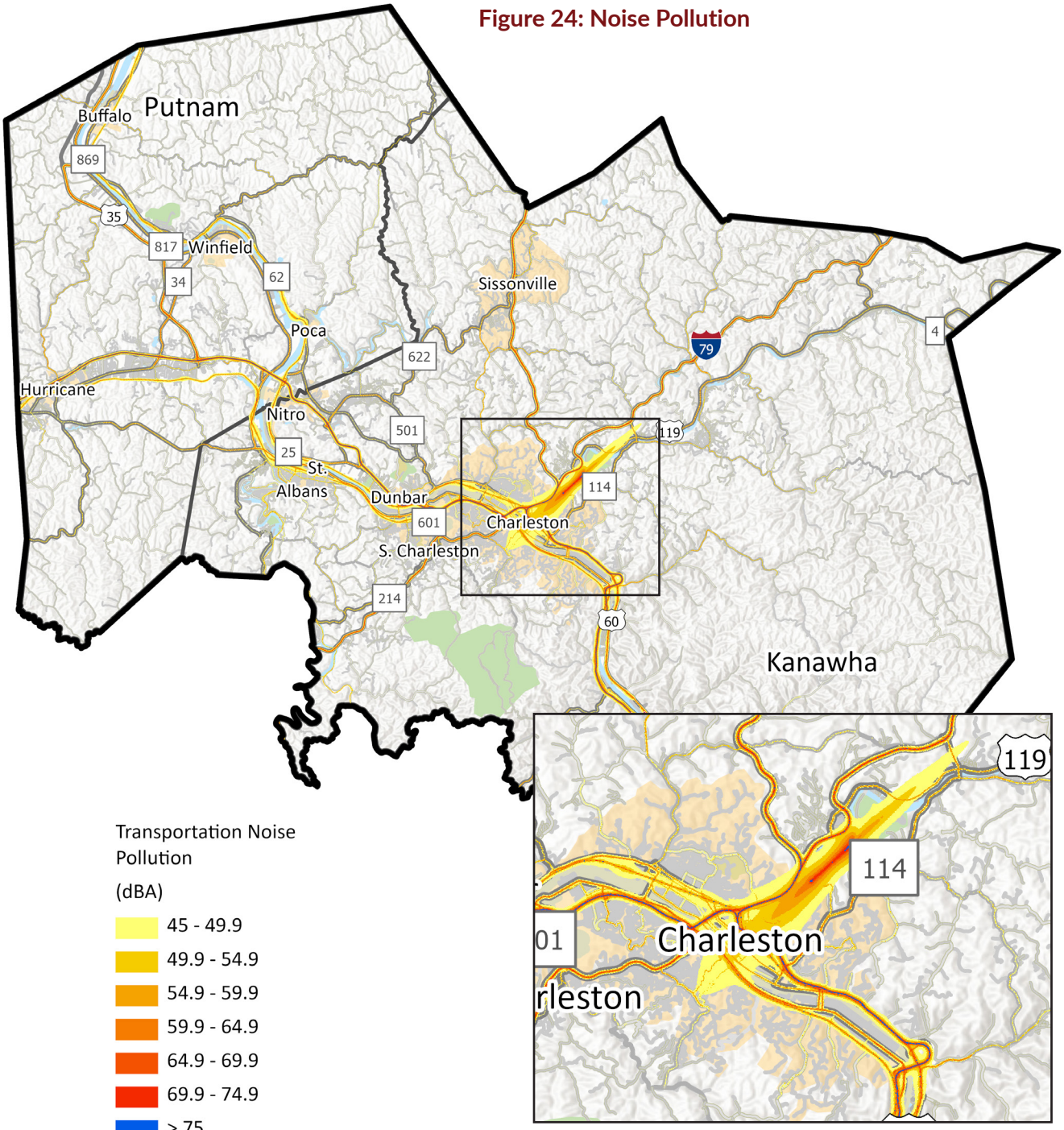
Figure 23: Airports



Noise Pollution

Transportation is a major contributor to noise pollution. While noise pollution may be an annoyance, it also has major health impacts including high blood pressure, sleep deprivation, hearing loss, and increased risk of stress-related illness. Figure 24 maps transportation noise pollution in dBA, decibels adjusted for human hearing. Continued exposure to noise over 70dBA will have long term hearing impacts. The most noise pollution comes from the airports, rail lines, and major freight networks with the airport being the largest source of noise pollution.

Figure 24: Noise Pollution



Data sourced from USDOT Bureau of Transportation Statistics

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3

HIGHWAY

A safe and convenient transportation system is an essential element of a community. A well-planned system connects people to shops, jobs, and recreational activities while minimizing congestion and travel delays and promoting healthy lifestyles. The strategy featured in this chapter focuses on highway improvements that help fulfill the statements shown in Chapter 1 and recognizes the characteristics of the region shown in Chapter 2. The RIC 2050 MTP highway element is one part of a coordinated multimodal framework that focuses on enhancements to mobility, safety, economic vitality, and quality of life.

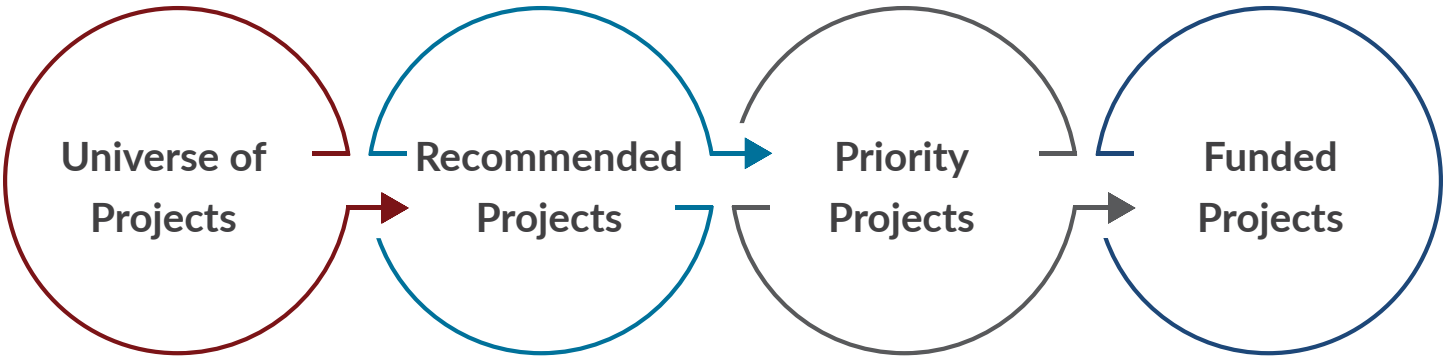
A well functioning transportation system connects people to various amenities such as stores, job opportunities, and recreational activities while also making it more efficient to move goods within and through the area. An effective transportation system also makes positive contributions to quality of life when it minimizes traffic congestion and promotes healthy lifestyles. The RIC 2050 MTP forwards a transportation strategy that builds upon the broader regional initiatives with particular focus on mobility, safety, choice of travel modes, and economic vitality. The network of streets and roads are the foundation of the overall transportation system

PLANNING FRAMEWORK

From Project to Priority

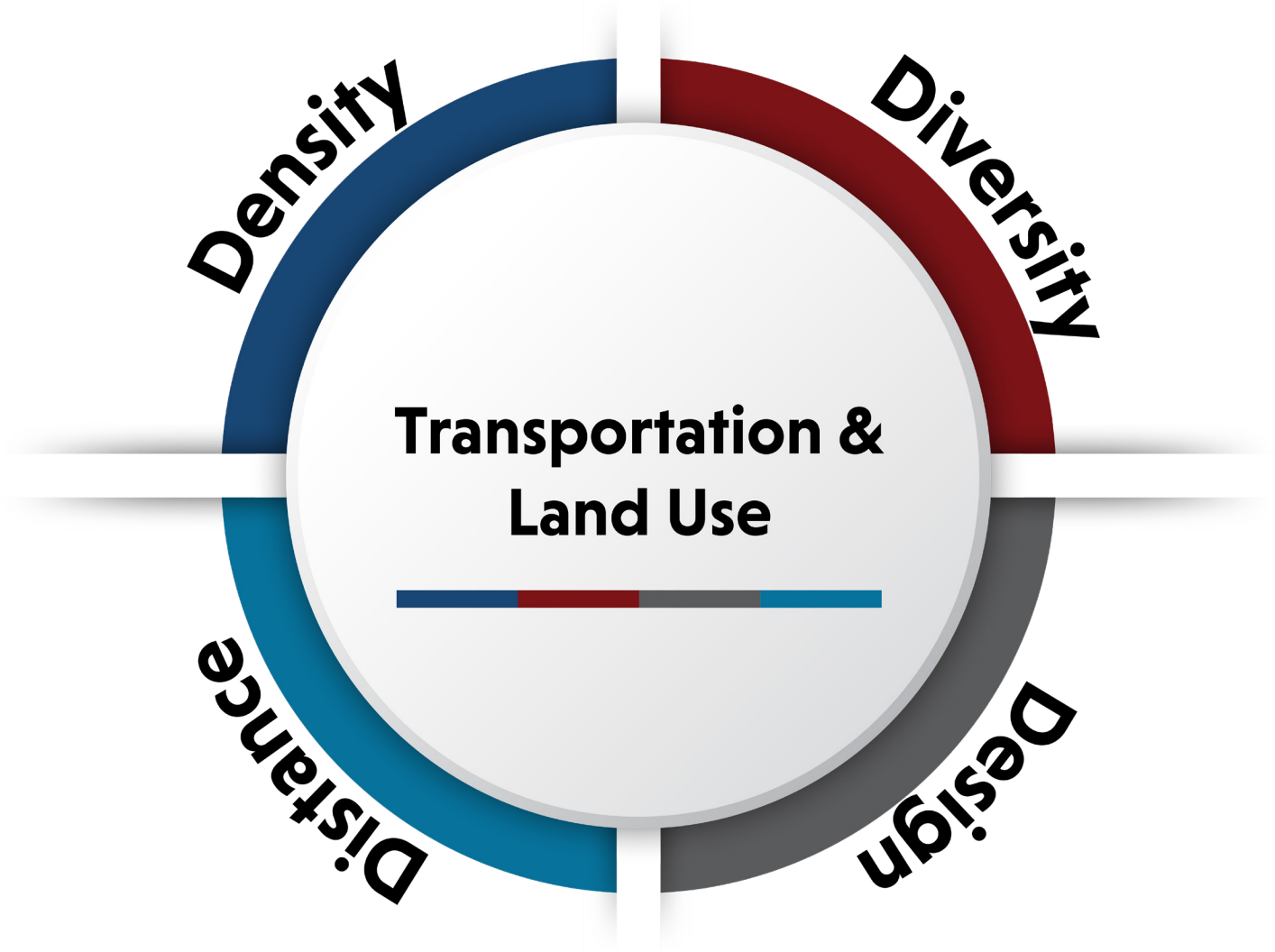
The consideration of socioeconomic, environmental, cultural, and congestion factors during the development of the RIC 2050 MTP helps ensure the plan is comprehensive and responsive to the many issues at play. As a tool, prioritization is an effective way to guide the allocation of future resources in a dynamic way. Notably, the projects shown in this chapter are not financially constrained. Instead, these projects are presented independent of potential revenues and are used as a guide to advocate for future funding sources.

Path to Funding Diagram



Land Use and Transportation

The transportation system influences development patterns by dictating the fastest, most convenient, and safest travel routes. Available travel modes also influence settlement patterns. People who desire daily services accessible by foot, bike, or public transit choose to live in different locations than people who prefer to drive to these destinations. As transportation corridors are improved and expanded, new development typically follows. This push-pull relationship typically results in concentrated growth along major thoroughfares as residents seek to take advantage of the most convenient transportation facilities. When blended with supportive public policies and investment strategies, the transportation network can serve as an effective tool for guiding regional development. This relationship also underscores the importance of the linkage between transportation and housing.



The relationship between urban form and transportation can be expressed in terms of density, diversity, design, and (travel) distance. The evaluation of these elements as part of the RIC 2050 MTP contributed to developing the region's multimodal transportation recommendations.

Density

A diversity of housing and travel options is beneficial to the community. Residential density and nonresidential intensity can look and feel different based on building form and a neighborhood's design. As in most communities, location is often the main factor in determining density and intensity in the RIC study area. Moving away from downtown Charleston, land has typically developed at a lower density and intensity. Managing the location and magnitude of new density or intensity within the built environment helps planners determine infrastructure needs and implementation costs, shifting impacts away from environmentally sensitive areas.

Diversity

Mixed-use developments combine a variety of public amenities with compatible land uses, creating places where people live, play, work, and shop. They offer advantages over single-use developments by fostering a more efficient, livable transportation system characterized by shorter trip lengths, more choice among modes, convenient access, and more internal trips. The cities and counties continue to work collaboratively to identify preferred locations for these types of development.

Design

Urban design shapes the blocks, neighborhoods, and districts that organize the built environment and give our cities identity. Elements of urban design provide a three-dimensional physical form to locally adopted comprehensive plans or zoning ordinances. Urban design connects people, places, and buildings. Some elements of urban design (e.g., street pattern, streetscape design, block size, building scale and massing, parking, and landscaping) directly influence travel mode choice and travel behavior. These design elements provide context to the transportation system and relate to the complete streets described in the following section. The type, placement, and scale of design elements vary with the context of the surrounding environment, and programming improvements must be tailored to rural, suburban, and urban environments.

Distance

The distance between the origin and destination is a primary factor (along with travel mode choice) influencing travel behavior. The physical distance between complementary land uses in rural or suburban settings tends to promote automobile travel, particularly since safe, convenient facilities usually are not available for pedestrians and bicyclists. Denser mixed-use areas decrease the travel distance between complementary land uses and support transit, bicycle, and walking as viable alternatives to the automobile.

Functional Classification

Functional classification groups streets of different characteristics and usage into broad categories based on the intended service they aim to provide. The roadway characteristics and traffic operation of streets define these categories. The roadway functional classifications include:

- Interstates
- Freeway and Expressways
- Other Principal Arterials
- Minor Arterials
- Collectors
- Local Roads

The two major considerations for classifying arterials for neighborhood streets are mobility and access.

The primary function of an arterial is to provide mobility. By limiting access points such as intersections and/or driveways, arterials enhance traffic flow and movement. While enhancing the movement is beneficial, too much mobility at high speeds discourages pedestrian and bicycle access. Typically, arterials are designed to carry more traffic than is generated within the corridor with higher speeds, higher volumes, and traveling longer distances.

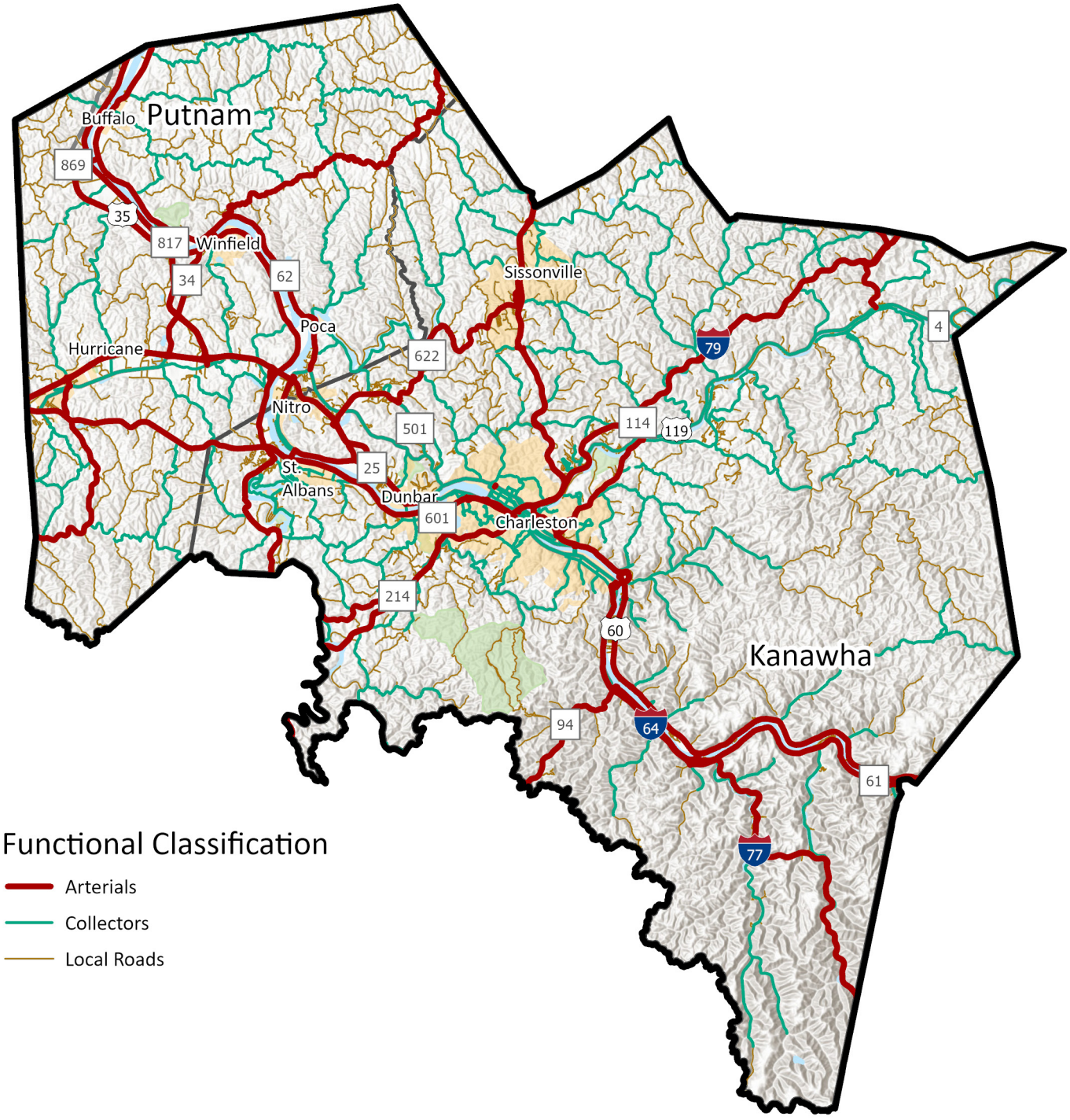
The primary function of local or neighborhood streets is to provide access; these streets are intended to serve neighborhoods or localized areas including mixed-use or commercial land uses with low speeds, low volumes, and typically for short distance trips.

See Table 7 and Figure 25.

Table 6: Functional Classification Definitions and Examples

Functional Classification	Definition
Arterials	Arterials operate at high speeds, provide high mobility, and provide significant roadway capacity, have a great degree of access control, and serve longer distance travel. Arterials can be further subdivided into categories that include facilities with full access control—freeways and expressways—in addition to major and minor arterials. Typically, arterials connect to one another. Arterials rarely connect to local streets.
Examples	*Expressway & Freeways | I-64, I-77, and I-79* *Major Arterials | MacCorkle Ave (US 60, WV-61), US 35, US 119 (Corridor G), WV 34, and WV 25* *Minor Arterials | Dupont Ave, Kanawha Terrace, Big Tyler Rd, WV 61, and WV 62*
Collectors	Collectors typically operate at lower speeds, provide less overall mobility, have more frequent and greater access flexibility, and serve shorter trips and distance than arterials. Collector streets provide critical connections in the roadway network by acting as the nexus between arterials and local roadways. Most collectors connect other collector streets and local streets.
Examples	*Cow Creek Rd, Five Mile Rd, Poca River Rd, Sissonville Dr, and Superior Avenue*
Local	Local streets provide greater access and the least amount of mobility. These facilities typically connect to one another and provide a high level of access to adjacent land uses or developments. Local roadways serve short distance travel and typically have low speed limits. The majority of roadways in the Kanawha-Putnam area are classified as local.

Figure 25: Functional Classification



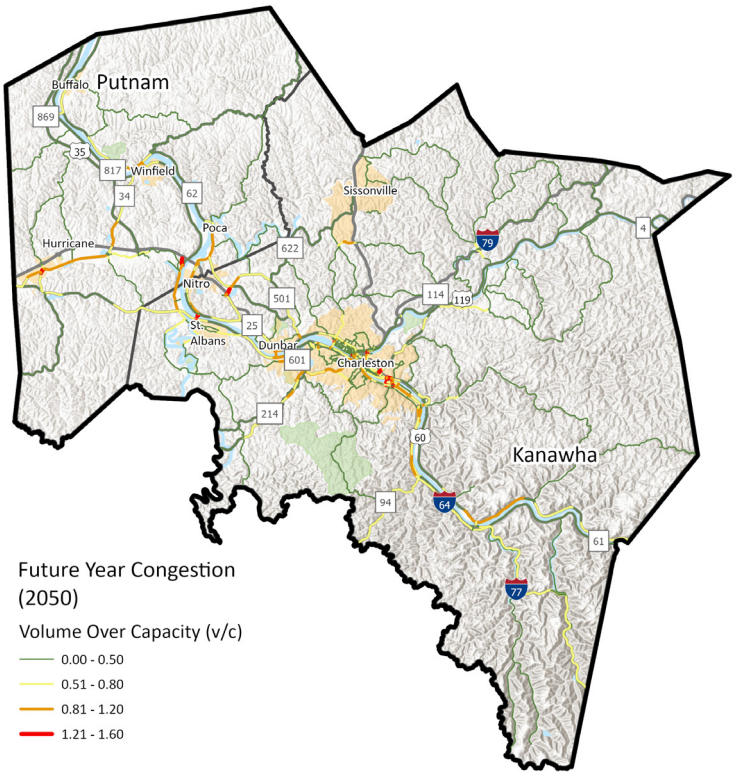
Travel Demand Model

The region's travel demand model was updated as part of the 2050 Metropolitan Transportation Plan (MTP). This update included revising the socioeconomic data to reflect a 2023 base year, refining the 2050 forecasts, and modifying Traffic Analysis Zones (TAZs) to better align with the latest census geographies. As part of the process, the project team met with the RIC Steering Committee to assign each updated TAZ a growth designation categorized as growing, static, or declining. These designations were used to more accurately distribute population and employment growth totals across the two-county region.

Table 7: Countywide Control Totals

	Kanawha County			Putnam County		
	2023	2055	% Change	2023	2055	% Change
Households	85,738	84,500	-1.44%	24,143	27,000	11.83%
Population	175,104	172,000	-1.77%	59,641	64,000	7.31%
Employment	116,238	114,000	-1.93%	24,148	28,000	15.95%
School Enrollment	25,718	25,347	-1.44%	9,214	10,304	11.83%

Figure 26: Future Year Congestion



Future Year Traffic Congestion

Chapter 2 describes the current conditions and needs of the region's transportation network. It also outlines pressures the transportation network may be facing in the future. Population shifts continue to occur, with Putnam County increasing in population. While Kanawha County's population is declining, it remains the state's most populated county. Population and employment levels were projected through the travel demand model through the year 2050. Using this information, the travel demand model was run to reflect current and future year congestion.

RECOMMENDATIONS

The RIC 2050 MTP's coordinated recommendations are shown with maps for the different modes of transportation across multiple chapters of the report. While presented as individual pieces, thoughtful consideration during planning and design can help ensure coordination among different travel modes and alignment with the greater vision of the region. The highway recommendations include improvements to corridors and intersections/interchanges.

Corridors

The corridor recommendations shown in Figure 27 include the following project types.

ACCESS MANAGEMENT
Improving mobility and safety by restricting some turning movements and consolidating driveways

COMPLETE STREET/ROAD DIET
Reallocating existing pavement or right-of-way to add space for pedestrians, bicyclists, or transit users

MODERNIZATION
Enhancing existing corridors by reconfiguring travel lanes, smoothing curves, or installing curb and gutter

NEW LOCATION
Constructing a new roadway to provide more travel options and better distribute vehicular traffic

SAFETY
Reflecting projects focused on improving safety

WIDENING
Adding at least one lane of travel in each direction, typically to address congestion concerns

Intersections

The intersection recommendations shown in Figure 28 include the following project types.

BRIDGE REPLACEMENT
Replacing existing bridges to address locations with known or potential issues

FUTURE STUDY
Needing additional study to allow for more detailed analysis and customized recommendations

INTERCHANGE IMPROVEMENT
Improving the safety or operational efficiency of existing grade-separated interchanges

INTERSECTION IMPROVEMENT
Realigning or reconfiguring existing at grade intersections

These unprioritized lists of recommended roadway and intersection improvements were then analyzed through a prioritization methodology. For more information on that methodology as well as the results of the analysis, see the Project Prioritization section later in this chapter.

Figure 27: Corridor Recommendations

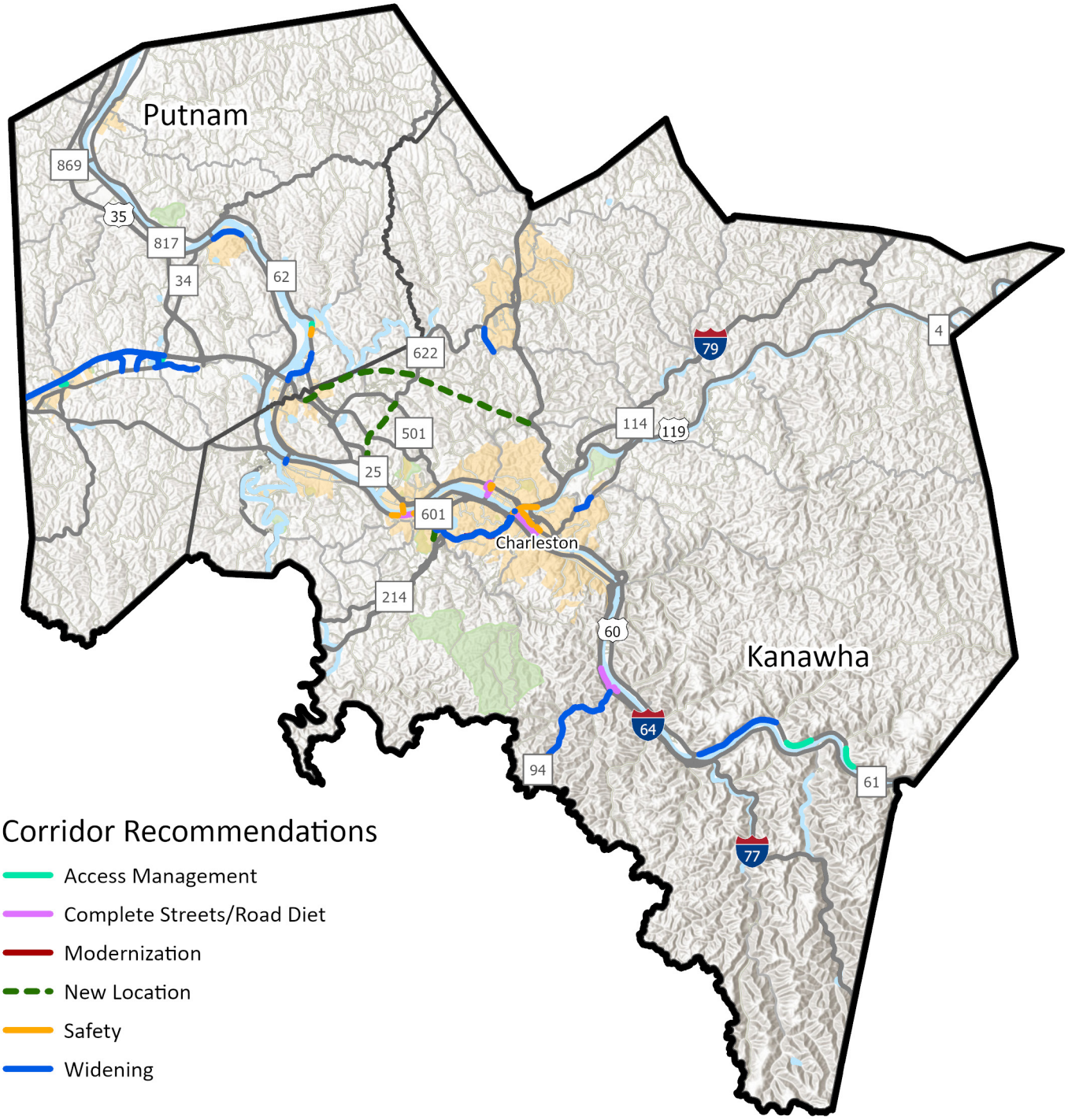
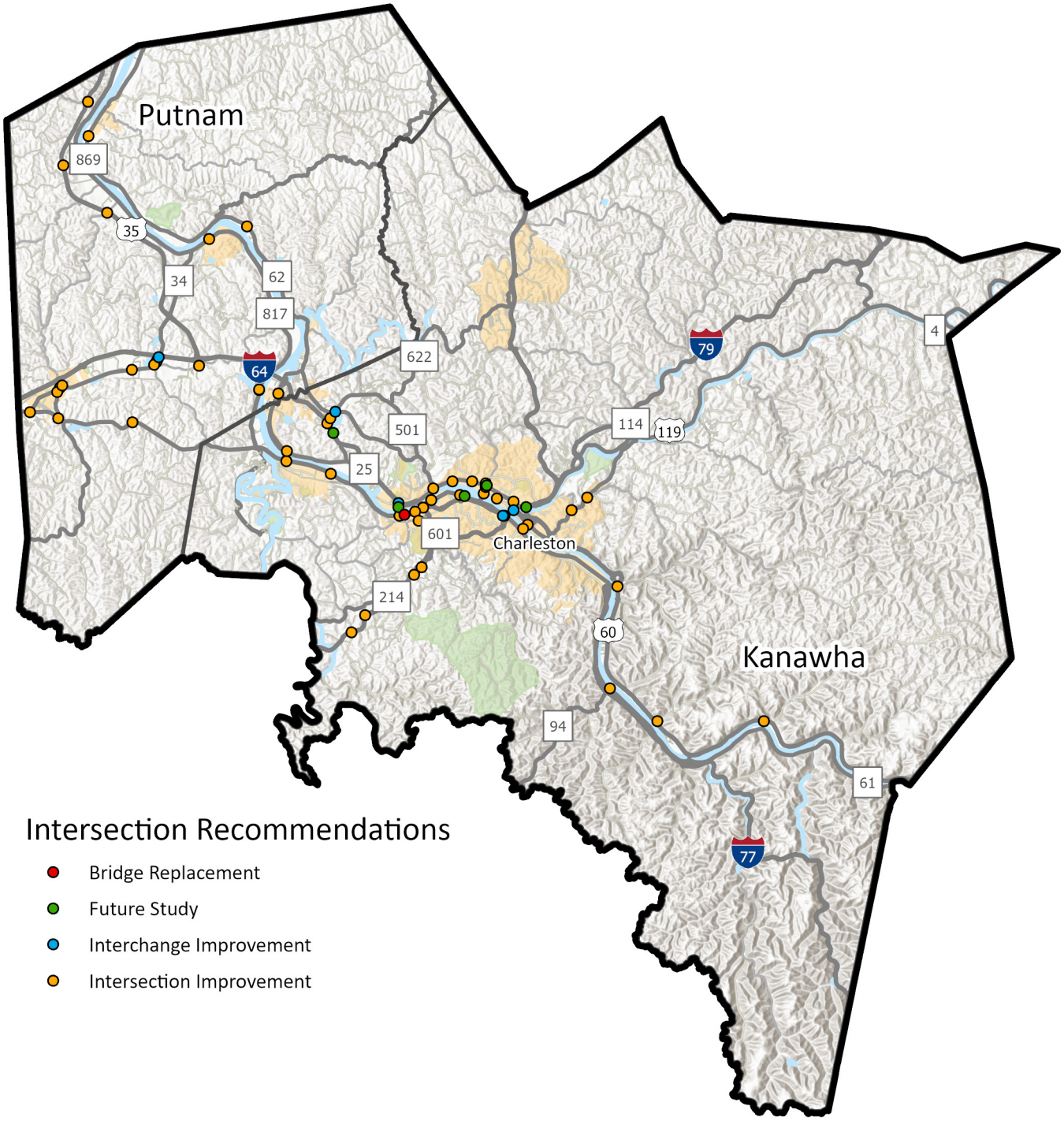


Figure 28: Intersection Recommendations



PROJECT PRIORITIZATION

The evaluation of roadway projects for the RIC 2050 MTP includes metrics selected in coordination with the Steering Committee and RIC staff. Table 8 describes the metrics used in the prioritization process and shows how each metric aligns with one or more of the guiding statements that were introduced in Chapter 1. The financially constrained projects are shown in Chapter 7.

- *Culture and Environment*
- *Economic Vitality*
- *Land Use and Transportation*
- *Mobility and Accessibility*
- *Safety and Security*
- *System Preservation*

Table 8: Prioritization Measures, Criteria, and Relevant Guiding Principles

Prioritization Measure	Criteria	Guiding Principle(s)
Safety	Projects received safety points if they were located along a corridor with fatal or serious injury crashes or within a location identified in the RIC Comprehensive Safety Action Plan.	
Maintenance	Projects received maintenance points if the pavement condition was rated Fair or below or if the bridge was designated as structurally deficient or functionally obsolete.	
Growth	Projects received growth area points if they were located within a traffic analysis zone projected to experience population or employment growth by 2050.	
Multimodal	Projects received multimodal points if they directly included bicycle and pedestrian facilities.	
Congestion	Projects received congestion points if they were situated along a corridor with a volume-to-capacity ratio of 0.8 or greater.	
Local Priority	Projects received local priority points if they were identified as a priority by a member of the RIC steering committee.	

Table 9 displays the results of the prioritization process in which project could receive a score up to six. Higher priority projects occur throughout the study area but are most concentrated in [insert text]. Overall, projects along the high injury network and intersection projects tended to score higher than other projects. This highlights the overall importance placed on safety and the return on investment that comes with addressing hotspot locations with safety and/or congestion issues. How the results of the prioritization process inform the financial plan is explained in the following sections of Chapter 7.

Table 9: Prioritized Project List

ID	Facility Name	County	Project Description	Score
HIN-1	10th St	Kanawha	Explore crash mitigation along high injury network	5
CFP-6	Patrick St	Kanawha	Bridge Replacement and bike/ped accommodations	4
HIN-2	Washington St	Kanawha	Explore crash mitigation along high injury network	4
HIN-5	Patrick St / 5th Ave / Iowa St / Washington St	Kanawha	Explore crash mitigation along high injury network	4
HIN-6	Lee St	Kanawha	Explore crash mitigation along high injury network	4
PMTP-10	3rd St Underpass	Kanawha	Widen and upgrade the underpass; Consider alternative options as grant wasn't selected	4
PMTP-2	Patrick St	Kanawha	Fourth Ave Turn Lane and Patrick St Plz Turn Lane	4
CFP-8	Fort Hill Bridge Interchange (Long Term)	Kanawha	Interchange Improvement	4
MP-2	Fort Hill Bridge Interchange (Near Term Study)	Kanawha	Look at all options long term, study and potentially test ramp metering or temporary ramp closures at peak	4
TS-11	Center St & 1st Ave	Kanawha	Roundabout and shared use path; short term turn lane enhancements	4
TS-15	Washington St W & Rebecca St	Kanawha	Consider within Patrick Street corridor study; lighting, sidewalk, and ADA enhancements	4
TS-2	Dunbar Bridge	Kanawha	Dunbar Bridge Replacement	4
HIN-3	MacCorkle Ave	Kanawha	Explore crash mitigation along high injury network	3.5
HIN-7	MacCorkle Ave	Kanawha	Explore crash mitigation along high injury network	3.5
PMTP-35	MacCorkle Ave	Kanawha	Restripe; provide multimodal accommodations; underground utilities; improve intersections	3.5
CFP-3	Virginia St	Kanawha	Consider road diet or two-way conversions with bike/ped improvements	3
CFP-4	Quarrier St	Kanawha	Consider road diet or two-way conversions with bike/ped improvements	3
HIN-4	WV 62 / Main St	Putnam	Explore crash mitigation along high injury network	3
HIN-8	Lee Street	Kanawha	Explore crash mitigation along high injury network	3
MP-1	Cross Lanes Interchange	Kanawha	Study Diverging Diamond option for Cross Lanes Interchange	3
MP-3	Dunbar 10th St & Fairlawn Ave	Kanawha	Upcoming RIC Corridor Study/DOH 10th Street Study; Consider Rail Crossing Elimination and I-64 EB changes	3
TS-12	10th St & Myers Ave	Kanawha	Pending new study	3
PMTP-27	WV 817	Putnam	From Winfield Bridge to Planters Road: Widen to 3-lanes	2.5

ID	Facility Name	County	Project Description	Score
PMTP-3	WV 34	Putnam	Install roundabouts at I-64 ramp and Great Teays Blvd . Implement access management	2.5
CFP-2	MacCorkle Ave	Kanawha	Streetscape Enhancements (sidewalks and lighting)	2
CFP-5	Pennsylvania Ave	Kanawha	Explore options to mitigate crashes	2
PMTP-14	Cantley Flyover	Kanawha	Add Cantley Flyover to US 119 southbound; flyover ties in south of Cantley Drive (costs include all CG3 improvements)	2
PMTP-24	WV 114 (Greenbrier St)	Kanawha	From Airport Road to CR 46 (Rutledge Road): Widen to 3-lanes with a two-way left-turn lane	2
PMTP-31	WV 25 (1st Ave)	Putnam	From Interstate 64 to WV 62: Widen to 3-lanes with a two-way left-turn lane, and use access management to increase mobility and safety	2
MP-5	Goff Mountain Rd	Kanawha	Explore options for traffic congestion relief during peak hours.	2
TS-10	Montrose Dr & MacCorkle Ave	Kanawha	Turn lane and pedestrian additions	2
TS-13	Campbells Creek & US 60	Kanawha	Lighting, bus stop relocation, and freight movement enhancements	2
TS-14	WV 817 and Teays Valley Rd	Putnam	Roundabout and access management	2
TS-16	Pennsylvania Ave N & S	Kanawha	Consider with Fort Hill interchange improvements; redesign signals and add a drop decision lane	2
TS-8	WV 34 & I64 ramps	Kanawha	Interchange modification study	2
PMTP-25	Institute Connector, All Phases	Kanawha	Institute Connector, Sections A and B 2 lane facility from Institute Interchange to WV 622 at Rocky Fork Intersection	1.5
PMTP-28	I-64	Putnam	Cow Creek Road to WV 34: Widen to 6-lanes	1.5
PMTP-34	I-64	Putnam	From Cow Creek Road to Cabell County line: Widen to 6-lanes	1.5
PMTP-32	WV 62	Putnam	From WV 25 to Dairy Road: Widen to 3-lanes with two-way left turn lane	1.5
CFP-1	MacCorkle Ave	Kanawha	Sidewalk	1
PMTP-30	Teays Valley Rd (CR 33)	Putnam	Widen to 3 lanes between WV 34 and US 35 in areas where two lanes currently exist	1
PMTP-1	I-64 EB Off Ramp	Kanawha	Widen off-ramp to Virginia Street W to provide a drop decision lane (Included in Fort Hill Project)	1
PMTP-20	WV 94 (Lens Creek Rd)	Kanawha	From Six Mile Hollow Road to Interstate 64: Widen to 3-lanes on steep grades to provide truck passing lanes	1
PMTP-21	US 60 (Dupont Ave)	Kanawha	From CR 81 (Kellys Creek Road) to Chelyan Bridge (Admiral TJ Lopez Bridge): Widen to 4-lanes divided (Section A of US 60 Upgrade Study)	1
PMTP-22	US 60	Kanawha	Add center turn lane from Sycamore Road to Britt Hollow (approximately 1.2 miles). Add right turn lane at recycling center. The improvements will help reduce the risk of rear end collisions while improving traffic flow.	1

ID	Facility Name	County	Project Description	Score
PMTP-23	US 60	Kanawha	Add center turn lane west through London for approx. 1 mile in length; reducing the risk of rear end collisions and improving traffic flow	1
PMTP-33	WV 62	Putnam	On WV 62 (Charleston Road): Add two-way left turn lane at Poca Middle School and the Poca Food Fair grocery store	1
PMTP-4	US 60 (Dupont Ave)	Kanawha	EB right at William Street, RIRO at William Street, Turnaround loon for U-turns	1
CFP-7	MacCorkle Ave and Lens Creek Rd	Kanawha	Signage and Lighting Improvements	1
TS-9	Hull Ave & US 60	Kanawha	Turn lane and access management	1
EP-1	Patrick St Bridge Replacement	Kanawha	Replace the Patrick Street Bridge	1
EP-2	Downtown Charleston Safety Improvements	Kanawha	Implement Safety improvements in downtown Charleston	1
PMTP-26	Northern Connector, ALL PHASES	Kanawha	Northern Connector, Sections C, D, E - 4 lane facility from I-64 to I-77	0.5
PMTP-37	Sleepy Hollow Rd	Putnam	upgrade and widen to a full two-lane local collector classification	0.5

Priority Project Spotlight:

The I-64/I-77 viaducts in downtown Charleston, built in 1975, will reach the end of their service life by 2055. These structures are vital for regional mobility, supporting interstate traffic, freight, emergency services, and commuters. Due to their age and the high cost of replacement (estimated at $2.5–$3.5 billion over 15+ years), a long-term strategy is essential.

Replacing the viaducts is one of the region's most complex infrastructure needs. Without alternative routes, construction would severely disrupt traffic, freight, and emergency access.

The MPO recommends a study to assess expanding the Northern Connector from I-64 near Cross Lanes to I-77/I-79 near the WV Turnpike. This bypass could reduce downtown traffic, support redevelopment, and serve as a long-term alternative or complement to viaduct replacement.

Due to the scale, cost, and timeline, the MPO designates this initiative as a Tier 1 Strategic Priority, emphasizing early planning and coordination to ensure safe and efficient transportation through 2055 and beyond.

Next Steps:

- Launch a state-led feasibility and environmental study.
- Explore viaduct replacement options.
- Engage stakeholders and communities.
- Identify funding and federal grant opportunities.

4

ACTIVE TRANSPORTATION

Active transportation offers numerous benefits. It encourages a healthier lifestyle, better serves the natural environment, and brings more balance to the transportation network. Regional planning efforts should consider the need for and benefits of active transportation that extend well beyond recreation. Studies continue to show how safer and more convenient bicycle and pedestrian infrastructure increase an area's quality of life, yield a return on infrastructure investment, and spark growth in the local economy.

Although federal law requires RIC to plan for bicycle and pedestrian facilities is required by, these benefits show a full suite of benefits that extend well beyond any real or perceived reduction in traffic.

This chapter was developed in collaboration with local municipal constituents, members of the public, the RIC Bicycle and Pedestrian Advisory Committee, the Transportation Technical Advisory Committee (TTAC), and interagency partners including the Federal Highways Administration and WVDOT. Much like the planning process for all roadway projects, changes to the Kanawha-Putnam Bicycle and Pedestrian Plan must be approved by the TTAC and the RIC Policy Board, with the one exception being new project recommendations for the Bicycle-Pedestrian plan may begin with the BPAC committee. The planning process for bicycle and pedestrian improvement projects takes specific considerations that are exclusive to bicycle and pedestrian travel versus those of motorized travel.

PLANNING FRAMEWORK

Prioritization Criteria

Previously, the Bicycle and Pedestrian Advisory Committee and RIC Staff developed criteria specific to bicycle and pedestrian mobility for the planning prioritization process. Ultimately, these factors are weighted to determine which projects will be included in the TIP. The following are descriptions of the prioritization criteria:

- **Regional Connectivity**—Making better connections for non-motorized users
- **Access to Local Facilities**—Making it easier for non-motorized users to access local community facilities, government resources, essential services, and transit routes
- **Emphasis on Low-Income Communities**—Improving communities with a higher volume of low-income households, specifically zero-vehicle households dependent on travel modes other than personal vehicles

- **User Safety**—Enhancing safety for motorized and non-motorized users
- **User Population/Demographics**—Including all users, regardless of factors such as age or rider skill level.
- **Condition of Facility Type**—Accounting for surface conditions or land terrain of the project or improvement
- **Bicycle & Pedestrian Advisory Committee and Public Feedback**—Incorporating feedback from the RIC Bicycle and Pedestrian Advisory Committee and/or the public

Previous Plans and Ongoing Initiatives

Chapter 2 introduced the many plans that touch on active transportation within the RIC region. These include plans with a specific focus on bicycle and pedestrian movement as well as plans with a broader mission that acknowledge the widespread contributions of an active transportation network.

- Kanawha County Vision Plan (2020)
- Kanawha-Putnam Bicycle and Pedestrian Plan (2019)
- City of Charleston's Bike & Trail Master Plan (2016)
- Imagine Charleston (2013)
- City of South Charleston Bike Plan (2011)

Goals from the region's bicycle and pedestrian plan focus on key aspects of the network, including education and awareness, connectivity, safety, and complete streets. The plan also focuses on enhancing the multimodal network by integrating active transportation into larger infrastructure projects and strengthening policies and programs to more fully leverage physical investments.

The E's of Bicycle and Pedestrian Planning

Successful bicycle and pedestrian planning requires considering five interrelated components: Engineering, Education, Encouragement, Enforcement, and Evaluation/Planning.

ENGINEERING

This refers to on-road and off-road facilities that must be planned and designed. To create a successful, well-integrated pathway network, design and route choices must be established and properly implemented.

EDUCATION

This refers to the resources available for all network users, including cyclists and motorists. Cyclists and motorists, new and experienced, need to know how to ride safely in different networks (from off-road multi-use paths to congested arterials) as well as how to share multimodal facilities with other pedestrians, cyclists, and/or motorists.

ENCOURAGEMENT

This refers to various ways to promote bicycling and walking. Cyclists and pedestrians need access to programs and a cycling or walking culture that comes from focusing planning efforts on specific facilities suitable for cyclists or pedestrians. This can be as simple as providing a means for desirable, attractive destinations that people want to visit.

ENFORCEMENT

This refers to intentional actions that protect the safety of all users, including the cycling and pedestrian communities. Targeted enforcement can encourage cyclists and motorists to use multimodal facilities more safely.

EVALUATION/PLANNING

This refers to the periodic review of existing and planned facilities. The friendliest communities for cyclists and pedestrians have a system to assess existing programs and outline steps for future expansion. The facilities recommended as part of the 2050 MTP should be supplemented with coordinated programs and policies that instruct and encourage cyclists and pedestrians to fully and properly use the non-motorized transportation network.

Types of Users

The types and users and facilities must be understood to integrate the bicycle and pedestrian network into the overarching vision for the transportation system. Different reasons for traveling by bike or foot, combined with varying skill levels, require a flexible and responsive approach to bicycle and pedestrian planning.

TRIP PURPOSE

Active transportation often fall into two types of trips based on purpose. The skill level can vary for both types.

Utilitarian

- Non-discretionary travel where someone travels to a specific place (e.g., work, school, store, or home)
- Someone without access to or ability to drive motor vehicles
- Often includes the elderly, children, and persons with disabilities.

Recreational

- Discretionary travel where someone is bicycling or walking to travel just for fun.
- Those who prefer a healthy, active lifestyle regardless of access to personal vehicles.
- Typically includes persons of all ages and abilities.

SKILL LEVEL

Both trip purposes require a complete network of bicycle and pedestrian facilities and programs that educate and encourage current and future users. Bicyclists can be further grouped by skill level.

Advanced Cyclists

- Typically, the most experienced on the road
- Can safely ride on typical arterials with higher traffic volumes and speeds
- Most prefer shared roadways in lieu of striped bike lanes and paths
- Represents approximately 20% of adult cyclists but nearly 80% of annual bicycle miles traveled

Basic Adult Cyclists

- Less experience on the road
- Less secure in their ability to ride in traffic without special accommodations
- New or casual adults or teenagers
- Often prefer multi-use paths or bike lanes to reduce exposure to fast-moving and heavy traffic
- Represent approximately 80% of adult cyclists

Child Cyclists

- Little to no experience on the road.
- Limited field of vision while riding.
- Generally, keep to neighborhood streets and greenways.
- Likely will ride on sidewalks along busier streets.

Federal Requirement for Bicycle and Pedestrian Planning

Bicycle and pedestrian legislation is contained in Sec. 217 (g) of the United States Code (U.S.C.). This legislation includes a provision titled “Planning and Design,” which states:

(1) In general—Bicyclists and pedestrians shall be given due consideration in the comprehensive transportation plans developed by each metropolitan planning organization and State in accordance with sections 134 and 135, respectively. Bicycle transportation facilities and pedestrian walkways shall be considered, where appropriate, in conjunction with all new construction and reconstruction of transportation facilities, except where bicycle and pedestrian use are not permitted.

(2) Safety considerations—Transportation plans and projects shall provide due consideration for safety and contiguous routes for bicyclists and pedestrians. Safety considerations shall include the installation, where appropriate, and maintenance of audible traffic signals and audible signs at street crossings.”

BICYCLE LEVEL OF TRAFFIC STRESS

Bicycle Level of Traffic Stress (BLTS) assigns a score for road segments in an analysis network that extends throughout the study area. The scores show how stressful a roadway's traffic is on bicyclists. The scoring ranges from 1, the least stressful, to 4, the most stressful.

Creating the BLTS Score

The BLTS process for RIC scores each road segment in the analysis network based on five categories:

- existing bicycle infrastructure
- number of travel lanes
- traffic speed
- traffic volumes
- slope of the terrain

The segment score is based on the highest score among the five categories. For example, if a road fits all the criteria for BLTS 2 but in one category meets BLTS 3 category, the segment is classified as BLTS 3.

Customizing the Analysis

The descriptions and calculations were altered to better align with the existing cycling circumstances in the RIC area.

- Factors such as pavement quality, crime, and weather (ice or snow) affects a cyclist's comfort level. While poor pavement quality or high crime create stressors for cyclists, all roadways will be assumed to be in good condition due to limitations in available data.
- Traditional BLTS focuses on dedicated cycling space, which is not prevalent in the region. Cyclists have adapted to the RIC region by cycling in roads with fewer cars or slower speeds without dedicated bike lanes.

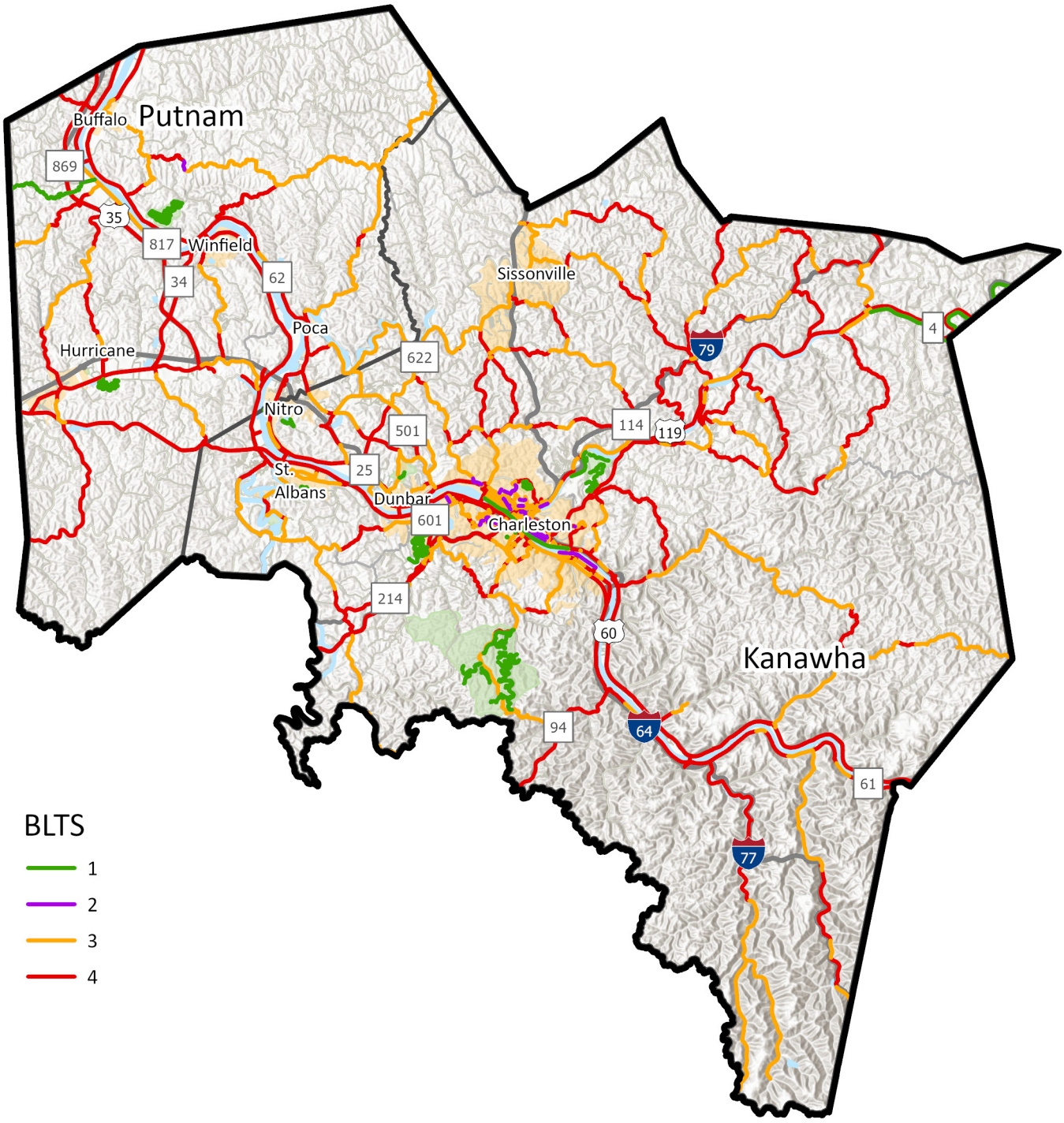
Using the BLTS Score

The BLTS scores are shown in Figure 29.

RIC BLTS 1	Suitable for all ages of bikers of varying levels of skill.
RIC BLTS 2	Suitable for almost all adult bikers.
RIC BLTS 3	Suitable for confident cyclists who are comfortable sharing space with cars at slower speeds or on labeled bikeways.
RIC BLTS 4	Suitable only for cyclists characterized as "strong and fearless."

As traffic stress on bicyclists increases, more protective measures are needed to make biking safer and a viable option for a greater portion of the population. The final element of the BLTS that will be crucial for the analysis of the region is connectivity. Once the RIC BLTS was calculated, potential recommendations were re-evaluated to identify connectivity issues between BLTS roadways to better understand network shortcomings.

Figure 29: Bicycle Level of Traffic Stress



RECOMMENDATIONS

Bicycle and pedestrian improvements require extensive planning if they are to be successfully implemented. The RIC 2050 MTP shows where active transportation recommendations should be located. Strategies to help ensure a more active transportation network include providing bicycle facilities (e.g., bike lanes, sharrows, shared use paths, etc.), sidewalks, and safe crossings. These facilities must be strategically placed and designed with safety in mind. If a roadway improvement occurs on a corridor not highlighted on the active transportation recommendation map bicycle and pedestrian improvements should be considered during the more detailed planning and design phase for that improvement. See Figure 30 and Table 10.

Figure 30: Active Transportation Recommendations

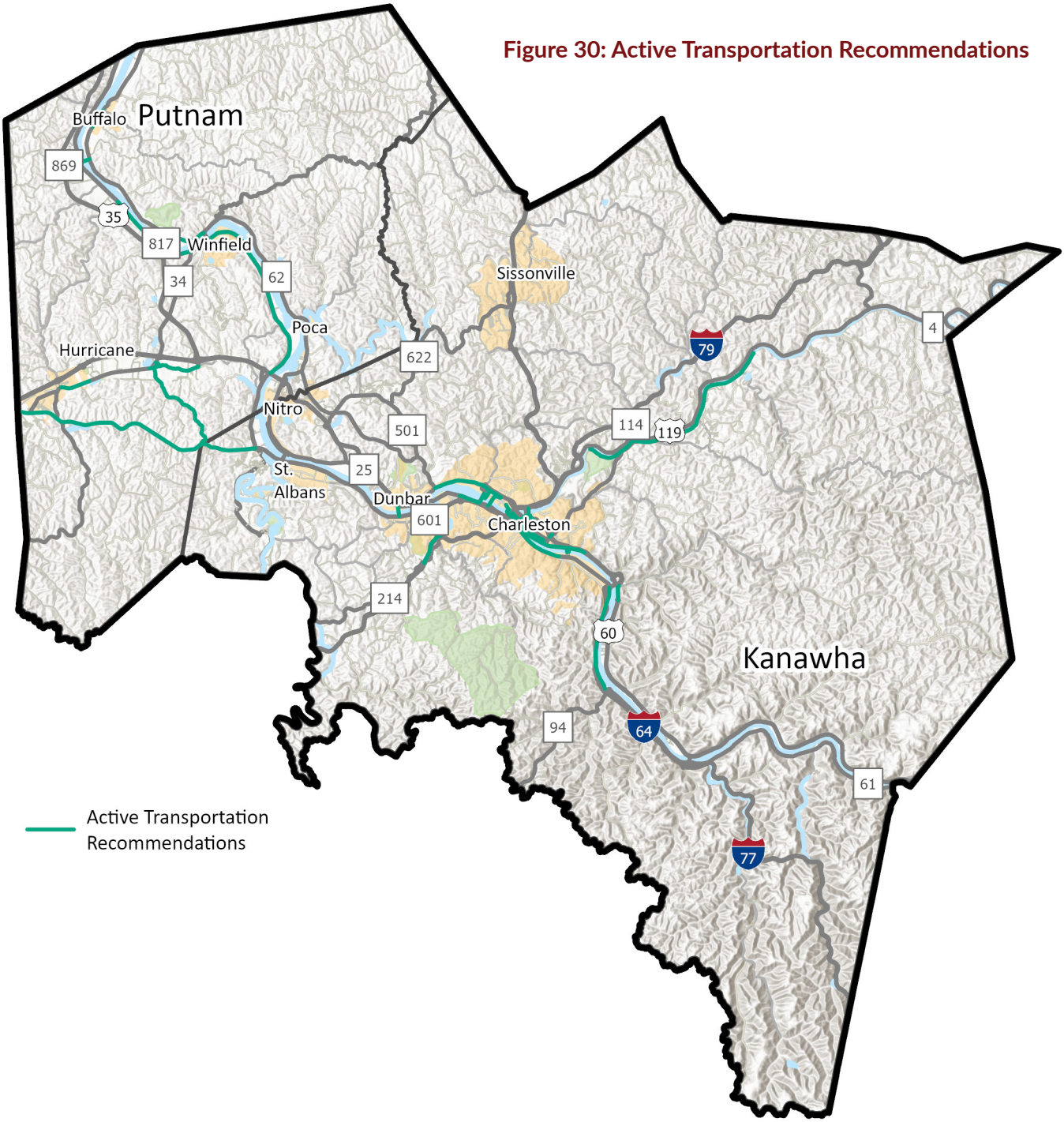


Table 10: Active Transportation Recommendations

ID	Project Road	Extent From	Extent To	Description
7	Kanawha Blvd	Tennessee Ave	Capitol Street	Cycle Track
16	WV 25	Iowa Street	Washington St West	Shoulder improvements
1	WV 62	Winfield Bridge	Eleanor	Shoulder improvements. sidewalk, and bicycle path
2	Teays Valley Rd. (Cr 33)	WV 34	Scott Depot	Widening, sidewalks, and shoulder
3	Jefferson Rd - Davis Creek Interchange			Install traffic signal, 'Share the Road', pavement striping
4	Tennessee Ave	Kanawha Blvd	Virginia St W	Bicycle lanes and signage
5	Virginia St. W	Tennessee Ave.	Delaware Ave	Bicycle lanes and signage
6	Quarrier St	Elk River Trail	Elizabeth St	Two-way cycle track, shared lane markings, bicycle blvd
8	Barlow Dr	Slack Street	Coonskin Park	Bicycle path, widen shoulders, and signage
9	MacCorkle Ave SE	Kanawha City	Marmet	Shoulder improvements and signage
10	Corridor G	Jefferson Road	Southridge	Bicycle path
11	US 60	4th Ave	MacCorkle Ave SW	Intersection improvements, "Share the Road," and signage
12	WV 817	Winfield	Hurricane Creek Rd	Shoulder improvements and signage
13	Kanawha Blvd	Capitol St	Chesapeake Ave	Cycle Track
14	Kanawha Blvd	Chesapeake Ave	35th St Bridge	Cycle Track
15	WV 817	I-64	Winfield	Shoulder improvements, bicycle lanes, and signage
17	Stockton St	Kanawha Blvd	7th Ave	Bicycle lanes and signage
18	Former B&O railroad - Elk River Trail	Coonskin Park	WV 114	Bicycle trail
19	Elk River (NS) Railroad Bridge	Pennsylvania Ave	Bullitt St	Bicycle path
20	Teays Valley Bike Trail - Poplar Fork	St. Albans	Teays Valley	Bicycle path
21	NS Railroad Trail	Kanawha Blvd	6th Street	Bicycle path
22	Former B&O Railroad	WV 114	Elkview	Elk River Trail
23	Former B&O Railroad	Elkview	Clendenin	Elk River Trail
24	35th Street Bridge			Improve approaches, sharrows, signs
25	Buffalo Bridge	WV 817	WV 62	Signs
26	US 60	Campbells Creek	Malden	repave shoulders, signs

ID	Project Road	Extent From	Extent To	Description
27	Piedmont Road	Court Street	Leon Sullivan Way	Designated bike route with sharrows and signs
28	Kanawha Blvd	35th street	Daniel Boone Park	Widen Shoulders got bike lanes, signs
29	MacCorkle Ave - US 60	Montrose Dr	Patrick Street	Widen shoulders, signs
30	US 60	St. Albans	Culloden	Widen Shoulder, bike lanes, signs
31	Kanawha River Trestle Trail			Bridge Upgrade
32	Washington St	at Pennsylvania		Bike Lanes Signs
33	Greenbrier St	at I-64 Interchange		Bike Lanes Signs
34	Washington St	near CAMC		Bike Lanes Signs
35	South Poplar Fork Rd	Teays Valley Rd CR33	CSX Railroad	widen shoulders, bike lanes, signs
36	Great Teays Blvd	WV 34	CR 33	bike lanes, sidewalks, signs
38	Court St	Kanawha Blvd	Piedmont Rd	Bike Lanes Signs
39	7th Ave	Virginia St	Patrick St	Bike Lanes, signs, sharrows
40	MacCorkle Ave	Thayer St	31st St	Bike Lanes
41	Hurricane Creek Rd CR 19	I-64	Wal-Mart	Sidewalks, signs
42	WV 34	Valley Park	Hurricane Creek Rd	Signs, pavement markings

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5

PUBLIC TRANSPORTATION

Transit provides mobility to thousands of residents who cannot, or choose not to drive. In addition to enhanced mobility, bus and/or rail transit also provides a regional air quality benefit by reducing the number of cars on the road, particularly during congested travel periods and on hot summer days. The region's transit services provide access to major regional employers, shopping areas, health care services, social services, and universities. Chapter 5 examines existing transit, rail, and air services as well as future initiatives.

Public transportation must be reliable and convenient, with the goal of providing service that gets people where they need to go when they need or want to get there. By working to make transit both useful and convenient, it will better accommodate all users—captive, choice, and all others. The RIC 2050 MTP recognizes the efforts of transit operators in the study area and reflects the recommendations from previous and ongoing plans spearheaded by these organizations. The RIC 2050 MTP also offers support by recommending multimodal connections to and along transit routes throughout the region.

PLANNING FRAMEWORK

Transit Today

The Kanawha Valley Regional Transportation Authority System (KRT) system serves Kanawha County and portions of Fayette and Putnam counties. Characteristics of the system include:

- **913**—service area in square miles
- **193,000+**—service area population
- **88%**—Kanawha County's residents who live within 3/4-mile of a KRT route
- **6**—days per week with service
- **20**—fixed-routes oriented around the commercial center of Charleston
- **49**—vehicle fleet for fixed-route service, including 30' and 35' transit coaches
- **14**—cutaway vans for the KAT complementary

KRT's operations, maintenance, and administrative headquarters are located on 4th Avenue in Charleston. The downtown transfer center, KRT City Centre Station, recently completed a major renovation. The new transit centre houses a ticket office, conference room, and office space for dispatchers. Additional ticket vending machines were installed in front of the new building and upgraded passenger shelters were installed along Laidley Street. The bus travel lanes and sidewalks were widened during the remodel and digital passenger informational displays were installed. The new KRT City Centre Station is a component of the multiuse, multimodal space that includes commercial and entertainment venues, hotels, and government offices. KRT is making route adjustments in late 2025 - early 2026 that may alter the data above.

TRANSIT RECOMMENDATIONS

Kanawha Valley Regional Transportation Authority

To adapt to a challenging fiscal climate, KRT continues to conduct and perform system analysis to evaluate potential service expansion and reduction. Most recently KRT has undergone major changes to modernize their system and improve operational efficiency, including:

- **Expansion of KRT Plus (On-Demand Microtransit)**
  - KRT is shifting toward a more flexible, app-based transit model called KRT Plus, which uses van-style vehicles to provide on-demand service. This system currently operates in West Charleston, East Charleston, and South Hills, and is set to expand into South Charleston, Southridge, and Kanawha City.
- **Modification of Existing Routes**
  - KRT has been reviewing their existing fixed routes to identify additional routes that may be converted to KRT Plus due to high operating costs. These routes may include partial or full replacement, but are still under analysis.
- **Fleet and Fare Changes**
  - KRT has recently completed a fare analysis and adjusted the cost of their monthly and day pass tickets. The agency has also began to introduce smaller van-style vehicles which are more fuel efficient and easier to maintain.

FUTURE IMPROVEMENTS

The Kanawha Valley Regional Transportation Authority has identified several near-term improvements for which it is seeking federal discretionary funding. These projects include a new Bus Maintenance and Operations Facility, St. Albans Station improvements, Nitro/Marmet fuel station upgrades, bus stop enhancements (shelters and signage), and routine vehicle replacements. These investments are intended to modernize infrastructure, improve service reliability, and better meet the needs of transit riders across the region.

Passenger Rail

The Cardinal route, operated by Amtrak, provides passenger rail service from Chicago, IL to New York, NY, with stops in Charleston, Huntington, and several other West Virginia communities. Service is currently limited to three trips per week, and ridership at the Charleston station has not yet returned to pre-pandemic levels—6,352 riders in FY 2023, down from 11,251 in FY 2018.

The Regional Intergovernmental Council continues to advocate for expanded service along the Cardinal route, as well as the development of a future infill station in Hurricane, WV. Strategically located between Charleston and Huntington, a Hurricane station would offer a valuable opportunity to support regional commuter traffic, making daily travel more accessible for residents across the Kanawha Valley. Over time, this station could serve as the foundation for a dedicated regional rail service, independent of the Cardinal's long-distance schedule, providing frequent and flexible transit options tailored to local needs.

Additionally, the West Virginia State Rail Plan outlines recommendations for intercity passenger rail service throughout the state, as outlined below.

Immediate Intercity Passenger Rail Recommendations

- Create regional routes and state partnerships with Virginia, Pennsylvania, and Ohio to support upgrading *Cardinal* passenger Rail service.
- Re-examine the Cardinal Passenger Train Enhancement Fund and consistently fund.
- Increase multimodal options and improve transportation accessibility and station access in Huntington, WV.
- Construct sidewalks and improve station accessibility and station access in Martinsburg, WV.
- Develop a more robust awareness campaign for passenger (commuter and intercity) rail service in the state, including availability of up-to-date timetables at stations and an online presence.
- Improve universal accessibility / ADA compliance at passenger, commuter, and tourist rail stations.
- Ensure bike racks are available on Amtrak intercity rail corridors and advertise this feature locally.

Near-Term Intercity Passenger Rail Recommendations

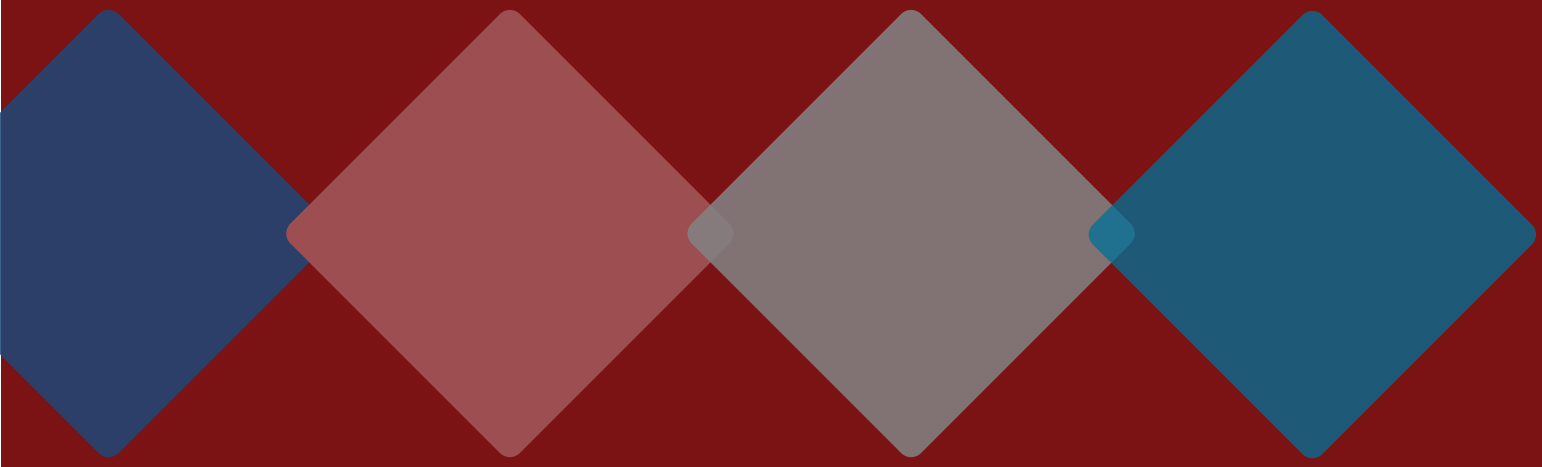
- Continue to collaborate with freight railroads and Amtrak to mitigate delays.
- Continue involvement in the Cardinal working group.
- Upgrading of *Cardinal* service- Establish funding and operational strategy; Establish state partnerships and collaboration for regional routes, i.e. WV/VA, WV/PA, WV/OH.
- Evaluate coordination of connecting bus and train schedules.
- Utilize the Amtrak Station Host Program to post volunteers at stations.
- Identify Charleston station needs including dedicated parking spaces and better connections to local transit, conduct needs assessment for multimodal terminal.
- Conduct assessment of potential Huntington Multimodal Terminal, to include transit and rail co-location.

Yeager International Airport

Yeager Airport, located in Kanawha County, serves six commercial airlines: American Airlines, United, Delta, Spirit, Contour, and Breeze Airways. The airport offers direct flights to several major destinations, including Charlotte, Chicago, Washington, D.C., Atlanta, New York/Newark, Tampa, Myrtle Beach, and Orlando. According to the FAA's preliminary enplanement data for 2024, passenger traffic at Yeager Airport has returned to pre-pandemic levels. Recently, Yeager Airport launched a major terminal development project aimed at modernizing its infrastructure. The initiative includes demolishing and reconstructing outdated concourses, renovating the original terminal, and upgrading the areas surrounding Taxiways A and B to enhance operational efficiency and support future growth. Full construction is expected to take approximately 36 months.

6

FREIGHT



Freight transportation is critical to the regional and national economy. Truck traffic is a significant component, and the highway element of the 2050 MTP considers freight needs in the discussion and prioritization of highway recommendations. However, freight is a highly multi-modal sector, with longer and less time-sensitive freight trips made by rail and barge, while the most time-sensitive freight is shipped by air.

While most of the discussion surrounding freight focuses on goods movement, trends in recreation and tourism also affects these transportation modes. As with goods movement, tourism trips often follow trends originating outside the Kanawha-Putnam region but have direct effects on affect transportation needs within the region

Chapter 6 examines the regional freight network in the context of truck, rail, water, pipeline, and air freight movement. The chapter then addresses freight impacts on safety and air quality, reviews the 2023 West Virginia State Freight Plan, and concludes with a series of recommendations.

WEST VIRGINIA STATE FREIGHT PLAN

The West Virginia State Freight Plan (October 2023) explains the economic importance of freight, discusses the challenges and opportunities, compares the existing freight network with 2050 estimates, and details ways to improve the current system. The goals of the plan align with those from WVDOT's statewide long-range transportation plan, which are:

- System Condition, Efficiency, and Fiscal Sustainability
- Safety and Security for All Users
- Economic Vitality
- Multimodal Mobility, Reliability, and Accessibility
- Livable and Healthy Communities

The Freight Plan added objectives under each goal that reflect specific freight transportation system needs and the National Multimodal Freight Policy (49 USC Sec. 70101).

Key takeaways from the plan include:

- Freight-intensive industries in Kanawha and Putnam counties accounted for 46% of the state Gross Domestic Product (GDP) in 2021.
- Most of the region's largest industries are forecasted to have increased freight flow tonnage and value through 2050.
- Kanawha County ranked among the state's top 5 counties for freight tonnage and value in 2019, and it was predicted to remain inside the top 5 for both again in 2050.
- West Virgina is unique in that pipelines are the second largest freight mode following truck.
- The plan presents 24 strategies to enhance the multimodal freight system.
- The plan selects nine of the strategies for short-term implementation, including addressing truck parking shortages and crossing safety, leveraging Federal grant opportunities, and better integrating economic development with freight planning.

FREIGHT ADVISORY COMMITTEE

RIC staff convened a meeting of the Freight Advisory Committee (FAC) on June 4, 2025. In attendance were RIC staff, representatives from local governments, and key industry partners including Nucor Steel, Toyota, and CSX. The group discussed challenges and trends in the region, highlighted areas that could have more freight traffic, and identified key projects which would improve freight mobility within the region.

Industry partners during the meeting shared that they do not have major concerns with freight mobility or demand in the region. Nucor and Toyota both rely mainly on truck freight with some barge and rail connections. The rest of the group identified a railroad crossing near the Rite Aid plant causing issues for heavy trucks and expressed concern that future construction on the Buffalo bridge would create freight congestion. Another general concern shared by the group was deteriorating pavement conditions on local routes.

To close out the meeting members discussed projects which would benefit freight mobility in the region. Nucor and CSX both shared ideas for future roadway widening and bridge crossing improvements that will eventually become critical for continued flow. The rest of the group mentioned two areas, the Northern Connector and Lens Creek, which need further studying. Also highlighted were upcoming SS4A project along Patrick Street and improvements along I-64.

TRUCK FREIGHT

The Kanawha-Putnam region is located at a critical juncture of freight corridors in West Virginia. Two major north-south corridors, I-77 and I-79, meet West Virginia's primary east-west corridor, I-64, in Charleston. These three interstates are part of the National Truck Network and connect the region with markets in Kentucky, Ohio, Pennsylvania, Virginia, and North Carolina. Other significant highway facilities in the region include US 35, US 60, and US 119 which are state designated truck routes that expand upon the national network. US 119 is also a part of the Appalachian Development Highway System as Route G. Finally, Kanawha County sits at the northern edge of West Virginia's Coal Resource Transportation System, an important network that connects to the coal-rich southern part of the state.

Truck freight continues to be the dominant mode in West Virginia and is anticipated to remain dominant barring significant disruptions in the future. According to 2017 FAF data (the most recent survey year), the region's interstates (I-64, I-77, I-79) handled the bulk of truck traffic in Kanawha and Putnam counties. Sections of I-77 in Kanawha County have AADT truck percentages that exceed 30%.

Increased truck volumes in the region have not caused widespread congestion issues, however, certain unique challenges and bottlenecks associated with trucks exist. These include the lack of truck parking, especially along the region's interstates, and a lack of planned maintenance on local routes. In addition, ongoing industrial development in both Kanawha and Putnam Counties could lead to future congestion issues along regional routes.

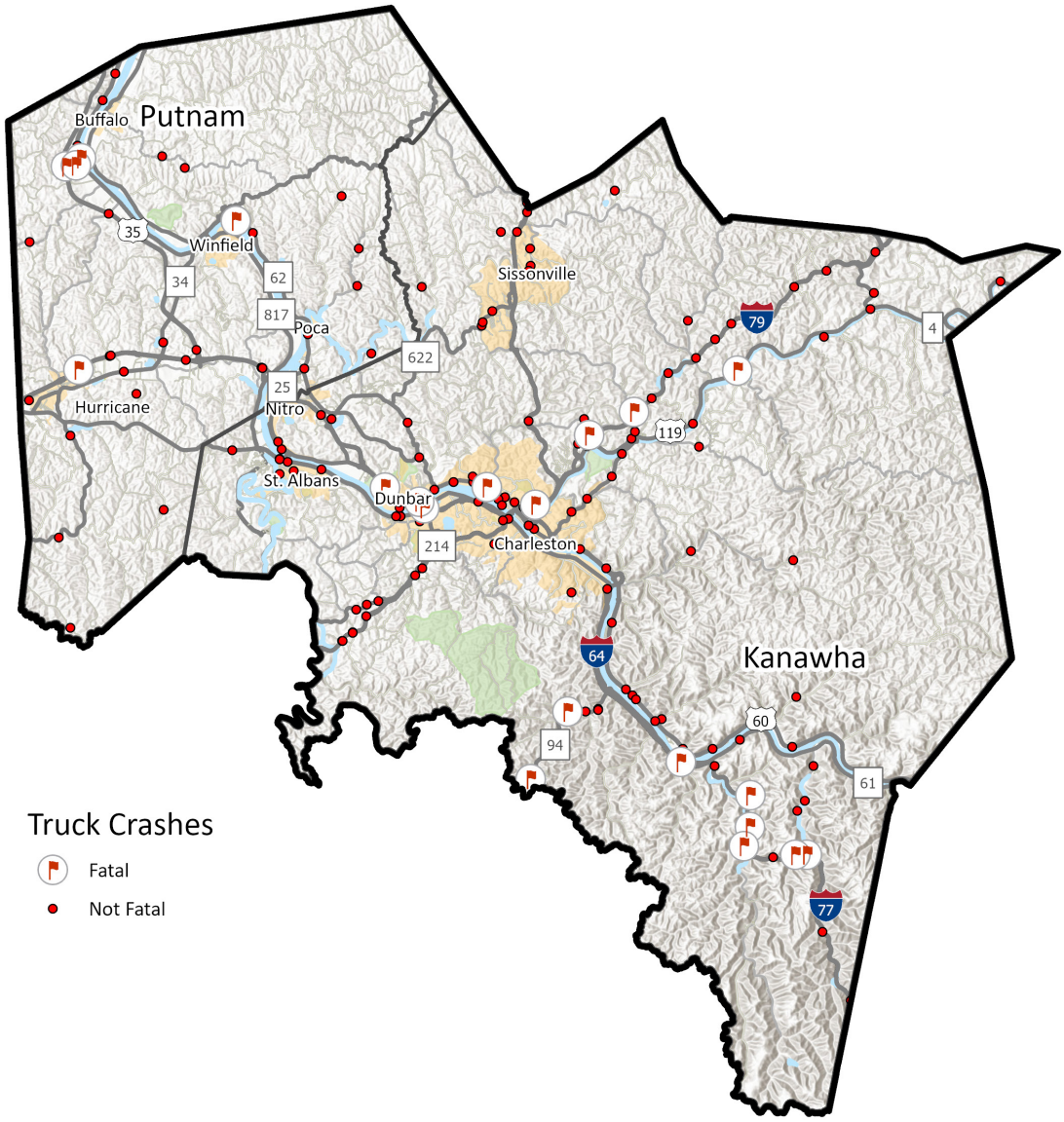
Freight Safety

Safety has always been a high priority topic for transportation planning. For freight the issue has become even more serious due to recent high-profile national safety incidents. In West Virginia, where freight is such a key economic driver, any disruption to the industry is significant. Between 2017 and 2021 there were 518 fatal and serious injury crashes involving trucks across the state which is approximately 10 percent of the US total during that same period. RIC has already taken steps to improve safety on roads by adopting a Regional Comprehensive Safety Action Plan (CSAP) in June 2023.

Another safety concern unique to the RIC region is an increase in truck fires along the West Virginia Turnpike which is primarily due to the switch from trucks with manual transmissions to automatic transmissions. This issue is mitigated somewhat by the Turnpike's effective incident management plan.

Limited truck parking in the region is also causing safety concerns in some areas, especially overnight along interstates. West Virginia DOT investigated the issue at a high level in the State Freight Plan and is exploring a more detailed study in the near future..

Figure 31: Freight Safety



RAIL FREIGHT

Rail also plays an important role in the movement of goods throughout the region and the state. Rail is typically used to transport heavy bulk commodities that do not have a time-sensitive schedule for delivery. Rail freight represents approximately 30% of goods and commodities moved from West Virginia, in large part due to the importance of coal to the state's economy. However, the Statewide Freight Plan indicates that rail freight has decreased in recent years due to the decreased market demand for coal. Other rail-dependent commodities with growth potential in the state, such as oil and gas products and container cars, can satisfy that demand.

CSX Transportation (CSXT) and Norfolk Southern Corporation (NS), the state's two Class I railroads, operate over 2,100 miles of West Virginia's rail infrastructure and two primary routes on the northern and southern banks of the Kanawha River. CSXT operates a primary route through the region, connecting Charleston to Cincinnati, OH and Richmond, VA. Meanwhile, NS operates a secondary route that connects Charleston to Columbus, OH. These railroads also capitalize on the region's intermodal facilities. CSXT serves the TRANSFLO facility in South Charleston, while NS serves the Allied Warehousing facility in Nitro.

WATER FREIGHT

The Kanawha River is essential for the movement and exchange of commercial goods in the region. The Kanawha River is joined at Charleston by the Elk River, at St. Albans by the Coal River, and at Poca by the Pocatalico River.

The U.S. Army Corps of Engineers (USACE) estimates that there are 65 port facilities (docks) located throughout the two-county region, 16 of which connect to the region's rail infrastructure. These ports are primarily responsible for the shipment of bulk commodities such as limestone, sand, gravel, coal, petroleum products, and chemicals. Barge transportation accounts for 23% of all goods moved in tons to West Virginia and 27% of all goods moved in tons from West Virginia. As fuel prices rise, barge traffic could potentially become a more attractive shipping mode, particularly since barges are approximately 29% more fuel-efficient than rail and 31% more fuel-efficient than truck (National Waterways Foundation). Barge transit is best suited for commodities that do not have time-sensitive delivery schedules and has the potential to reduce landside freight movement congestion.

The M-70 Marine Highway Corridor (one of 24 national marine highway corridors) includes the Ohio, Mississippi, and Missouri Rivers—as well as connecting commercial navigation channels, ports, and harbors—from Pittsburgh to Kansas City. Additional investments along the Ohio River, located 20 miles from the Putnam County line, could also increase throughput tonnage along the Kanawha River.

PIPELINE TRANSPORT

West Virginia has been at the center of recent growth in the domestic shale gas industry in the last few years. According to the FAF data, pipeline transportation represents 23% of all goods and commodities moved in tons and 14% by value from West Virginia, behind rail (30.7%) and water (27.2%) as the most used modes to ship goods outside the state. Growing demand for natural gas and petroleum products could offset the decreasing demand for coal. According to the United State Energy Information Administration, in 2016 West Virginia ranked third among U.S. states in natural gas production with over 2.36 billion cubic feet produced. In 2019, West Virginia ranked sixth with 1.97 billion cubic feet produced, representing a slight decline in production relative to other rapidly growing states.

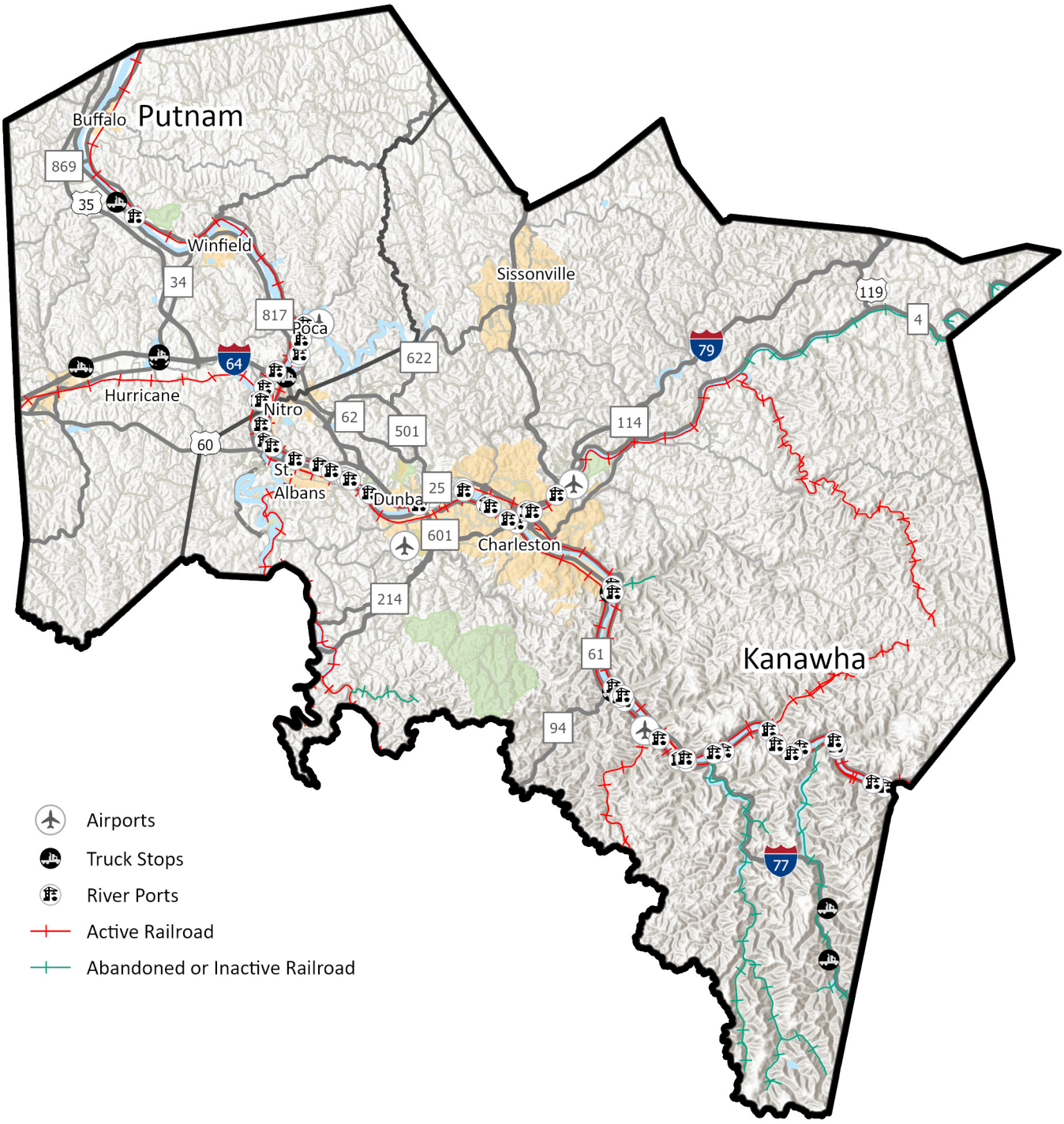
At the time of the development of the Statewide Freight Plan, there were nine pipeline projects at various stages of development underway in the state. Though oil and gas production is centered in the resource-rich northern part of the state, several pipelines carry commodities through the Kanawha-Putnam region, and given its central location in the state, the region could be an ideal site for resource processing plants in the future. For instance, the Appalachian Storage Hub is a proposed pipeline near Huntington, West Virginia that would run along the entire length of the West Virginia and Ohio border. This project would also require several plants in the Charleston area, bringing in-demand jobs and investment to the region.

AIR FREIGHT

Air freight is typically characterized by low-weight, small volume, high-value cargo shipments that need to be delivered on time-sensitive schedules. Air cargo operations are divided into air cargo freight forwarding companies, integrated carriers (FedEx, UPS), and cargo shipments stored in regularly scheduled commercial passenger flights. Air cargo is typically more prevalent at airports that have strong connectivity and short travel times to domestic and international destinations. Notable air cargo hubs around West Virginia include Memphis, TN, Louisville, KY, Cincinnati, OH, and Indianapolis, IN.

Yeager Airport in Kanawha County serves four commercial airlines (American Airlines, Breeze Airways, Delta Airlines, and United Airlines) and provides direct flights to Charlotte, Washington, D.C., Atlanta, Chicago, Orlando, Newark, Tampa (seasonal), and Myrtle Beach (seasonal). Yeager Airport has the largest number of passengers of any airport in West Virginia but has limited air cargo activity. The National Plan of Integrated Airport Systems (2025-2029) listed Yeager Airport as a non-hub commercial service airport, and no air cargo data was found, possibly due to limited activity.

Figure 32: Freight Network



West Virginia Freight Flows

The FHWA's Freight Analysis Framework (FAF) provides estimates for the tonnage and value of goods moved to, from, and within the state of West Virginia using 2017 data from the Commodity Flow Survey. These estimates are an indicator of the changing economic conditions in the state over time. Tables 11 and 12 show goods movements to, from, and within the state for 2022 and 2050. Table 13 and Table 14 shows 2022 and 2050 goods movement by mode.

Through the 2050 horizon year, overall freight tonnage is projected to decline while the value of freight goods increases. The primary factor for reduced freight tonnage is a decrease in outbound freight. Conversely, the rise in freight value is driven by inbound freight. Truck freight remains the dominant mode in West Virginia both by tonnage and value, a trend expected to persist through 2050. Freight transported by rail and water has been decreasing since 2017 and is anticipated to continue declining through 2050. Meanwhile, pipeline freight tonnage and value saw an increase between 2017 and 2022. This trend will continue for pipeline tonnage; however, the value of pipeline freight is expected to decrease through 2050.

Table 11: 2022 WV Commodity Flows (FAF)

Top Commodities Shipped from West Virginia			
By Weight Moved (In Millions of Tons)		**By Valued (Moved in Billions U.S. Dollars–2017 Constant)**	
Coal	76.64	Natural gas and other fossil products	$12.28
Natural gas and other fossil products	68.87	Pharmaceuticals	$7.35
Wood products	3.94	Coal	$5.65
Nonmetal min. products	2.64	Plastics/rubber	$3.83
Base metals	1.70	Machinery	$2.72
Top Commodities Shipped to West Virginia			
By Weight Moved (In Millions of Tons)		**By Valued (Moved in Billions U.S. Dollars–2017 Constant)**	
Natural gas and other fossil products	12.84	Mixed freight	$5.95
Gravel	9.62	Pharmaceuticals	$4.93
Coal	6.61	Precision instruments	$4.73
Gasoline	4.49	Machinery	$4.27
Fuel oils	2.31	Electronics	$3.36
Top Commodities Shipped Within West Virginia			
By Weight Moved (In Millions of Tons)		**By Valued (Moved in Billions U.S. Dollars–2017 Constant)**	
Coal	34.00	Gasoline	$4.14
Logs	12.84	Fuel oils	$3.42
Gravel	10.27	Coal	$1.72
Gasoline	7.94	Natural gas and other fossil products	$1.57
Fuel oils	6.69	Machinery	$1.54

Table 12: 2050 WV Commodity Flows (FAF)

Top Commodities Shipped from West Virginia			
By Weight Moved (In Millions of Tons)		**By Valued (Moved in Billions U.S. Dollars–2017 Constant)**	
Natural gas and other fossil products	73.47	Pharmaceuticals	$17.80
Coal	22.40	Natural gas and other fossil products	$13.11
Wood products	5.91	Plastics/rubber	$11.27
Basic chemicals	5.57	Base metals	$4.56
Fuel oils	5.15	Chemical products	$4.22
Top Commodities Shipped to West Virginia			
By Weight Moved (In Millions of Tons)		**By Valued (Moved in Billions U.S. Dollars–2017 Constant)**	
Natural gas and other fossil products	16.11	Pharmaceuticals	$14.55
Gravel	11.00	Mixed freight	$11.97
Basic chemicals	6.78	Machinery	$9.15
Mixed freight	4.19	Plastics/rubber	$8.99
Plastics/rubber	3.15	Precision instruments	$8.44
Top Commodities Shipped Within West Virginia			
By Weight Moved (In Millions of Tons)		**By Valued (Moved in Billions U.S. Dollars–2017 Constant)**	
Gravel	20.25	Fuel oils	$3.24
Logs	12.75	Gasoline	$3.12
Natural gas and other fossil products	7.89	Plastics/rubber	$3.06
Fuel oils	6.33	Machinery	$2.47
Gasoline	6.00	Mixed freight	$2.10

Pipeline shipping is domestic only; all others include international imports and exports.

Table 13: 2022 West Virginia Freight Mode Share (FAF)

Freight Mode Share Shipped From West Virginia				
Mode	**By Weight (Millions of Tons)**	**Mode Weight %**	**By Value (In $Billions–2017)**	**Mode Value %**
Air (include truck-air)	0.01	0.0%	0.28	0.6%
Multiple modes & mail	1.78	1.1%	2.16	4.4%
Other and unknown	0.0	0.0%	0.0	0.0%
Pipeline*	66.94	40.3%	11.42	23.0%
Rail	28.49	17.2%	2.49	5.0%
Truck	31.19	18.8%	31.23	62.9%
Water	37.64	22.7%	2.05	4.1%
Freight Mode Share Shipped To West Virginia				
Mode	**By Weight (Millions of Tons)**	**Mode Weight %**	**By Value (In $Billions–2017)**	**Mode Value %**
Air (include truck-air)	0.03	0.0%	0.64	1.2%
Multiple modes & mail	2.71	4.9%	15.36	28.9%
Other and unknown	0.0	0.0%	0.0	0.0%
Pipeline	15.35	27.7%	4.46	8.4%
Rail	6.09	11.0%	1.51	2.8%
Truck	19.45	35.1%	30.37	57.1%
Water	11.84	21.3%	0.82	1.5%
Freight Mode Share Shipped Within West Virginia				
Mode	**By Weight (Millions of Tons)**	**Mode Weight %**	**By Value (In $Billions–2017)**	**Mode Value %**
Air (include truck-air)	0.0	0.0%	0.0	0.0%
Multiple modes & mail	0.3	0.3%	0.31	1.4%
Other and unknown	0.03	0.0%	0.0	0.0%
Pipeline*	3.34	3.7%	0.58	2.6%
Rail	10.50	11.6%	0.95	4.3%
Truck	64.13	70.6%	19.83	89.1%
Water	12.49	13.8%	0.60	2.7%

Table 14: 2050 West Virginia Freight Mode Share (FAF)

Freight Mode Share Shipped From West Virginia				
Mode	**By Weight (Millions of Tons)**	**Mode Weight %**	**By Value (In $Billions–2017)**	**Mode Value %**
Air (include truck-air)	0.05	0.0%	0.73	0.9%
Multiple modes & mail	2.45	1.8%	4.77	5.8%
Other and unknown	0.09	0.1%	0.13	0.2%
Pipeline*	70.27	52.6%	11.98	14.5%
Rail	19.28	14.4%	3.49	4.2%
Truck	34.45	25.8%	60.37	72.8%
Water	7.02	5.3%	1.41	1.7%
Freight Mode Share Shipped To West Virginia				
Mode	**By Weight (Millions of Tons)**	**Mode Weight %**	**By Value (In $Billions–2017)**	**Mode Value %**
Air (include truck-air)	0.07	0.1%	2.13	1.9%
Multiple modes & mail	5.69	7.7%	35.09	32.0%
Other and unknown	0.01	0.0%	0.00	0.0%
Pipeline*	14.31	19.4%	3.78	3.4%
Rail	6.66	9.0%	3.37	3.1%
Truck	34.99	47.4%	64.13	58.4%
Water	12.04	16.3%	1.31	1.2%
Freight Mode Share Shipped Within West Virginia				
Mode	**By Weight (Millions of Tons)**	**Mode Weight %**	**By Value (In $Billions–2017)**	**Mode Value %**
Air (include truck-air)	0.0	0.0%	0.0	0.0%
Multiple modes & mail	0.3	0.4%	0.66	2.1%
Other and unknown	0.04	0.1%	0.0	0.0%
Pipeline	4.41	5.7%	0.73	2.3%
Rail	3.30	4.3%	1.05	3.3%
Truck	67.72	87.8%	29.11	92.1%
Water	1.36	1.8%	0.07	0.2%

Figure 33: 2022 Freight Flows (FHWA Freight Analysis Framework)

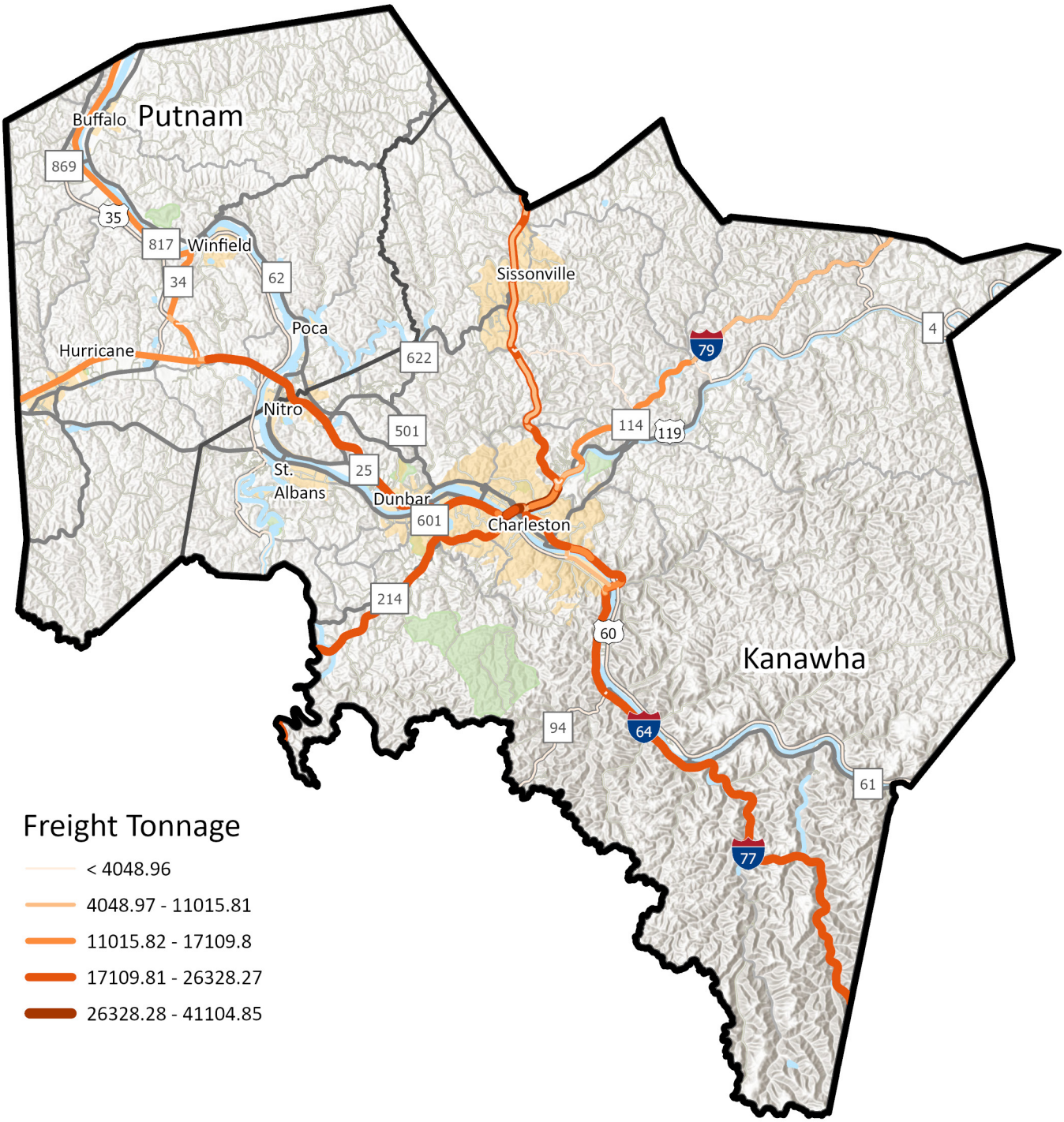
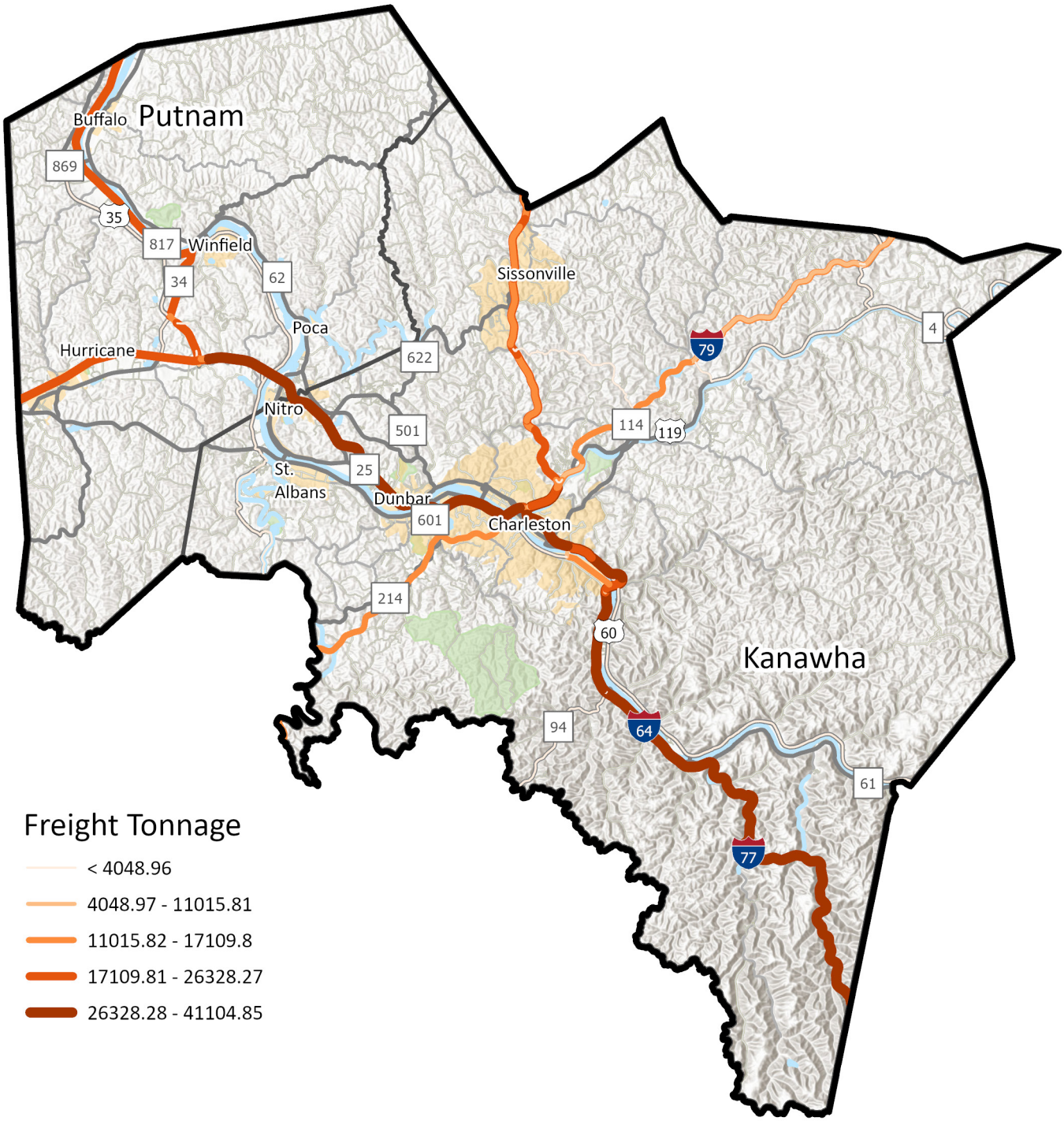


Figure 34: 2050 Freight Flows (FHWA Freight Analysis Framework)



FREIGHT RECOMMENDATIONS

Several of the RIC Metropolitan Transportation Plan's financially constrained project recommendations address current and anticipated freight needs. The existing conditions and current forecasts for rail, water, and air transportation modes do not call for additional or distinct transportation improvements. As noted in the discussions above, demand for these modes may be affected by economic trends in commodities (particularly the energy sector) or tourism. These trends should be monitored to determine if distinct future needs arise for rail, water, or air transportation improvements.

7

FINANCIAL ELEMENT

The roadway projects identified in the RIC 2050 MTP are required by state and federal agencies to be financially constrained. This step must show how high-priority projects can realistically be funded by 2050. The financial plan requires the MPO to document anticipated future funding, estimate planning-level project costs, and address all modes of transportation. The financial plan allows RIC and supporting agencies to focus initial resources on near-term solutions without losing sight of longer-term strategic investments.

Chapter 3 introduced the roadway recommendations and showed how quantitative and qualitative metrics identified priority projects. Grouping the projects into priority tiers allows for the necessary flexibility when making funding and implementation decisions. The prioritization process served as a starting point for developing the financially-constrained plan. Standalone bicycle, pedestrian, and transit projects were not independently prioritized, but these projects will be constructed concurrently with roadway projects when possible. This approach offers a more cost-effective solution and minimizes construction impacts to the overall transportation system.

ROADWAY

The financial plan paints a realistic view of future investments based on funding availability over the plan's horizon. Key considerations include the funding periods, revenue forecast, cost estimates, and annual inflation rate.

Process Overview

The RIC 2050 MTP blends data analysis with community input to identify ways to create a safer and more efficient transportation network. The transportation planning process is further driven by the need to make positive contributions to the quality of life in a region home to unique communities and treasured natural resources. The RIC 2050 MTP layers a systematic, quantifiable prioritization of roadway projects with coordinated solutions for active transportation and transit service. The final task is developing a financially constrained plan, which is required by the IIJA, FAST Act, and MAP-21.

The financial plan is built in accordance with state and federal requirements, which requires RIC to demonstrate how recommended projects and stated priorities can realistically be funded through the plan's horizon year of 2050. Due to limited funding resources, it is critical to provide transparency for how recommendations are prioritized and implemented.

To create the financial plan, RIC demonstrates a reasonable expectation of future funding levels and estimates project planning-level costs in the year of expenditure dollars.

Data and Assumptions

FUNDING PERIODS

The financially-constrained plan, required by federal legislation for regional long-range transportation plans, demonstrates that future investments are based on a reasonable expectation of future funding. It does so by identifying a series of funding periods:

2024 - 2027	*The 2024-2027 period includes committed projects and associated funding from the Dynamic State Transportation Improvement Program (DSTIP) or West Virginia STIP. The projects and funding levels identified during this time period have been identified as priority projects through previous performance-based planning efforts. As such, these projects are not re-evaluated as part of the RIC 2050 MTP.*
2028 - 2032 2033 - 2040 2041 - 2050	*The 2028-2032, 2033-2040, and 2041-2050 funding periods help divide the remaining projects and revenues into five- to ten-year time bands.*
Unfunded Vision (post 2050)	*The projects that cannot be funded within the 2050 fiscally constrained plan are considered to be a part of the vision plan.*

REVENUE FORECAST

The revenue forecast is based on previous local and state expenditures, current funding trends, and anticipated funding levels. The process required coordination among the RIC, WVDOT, and FHWA. All the dollar figures have been initially assessed in 2025-year dollars and then inflated accordingly to reflect the midpoint of the projected horizon band in which the project is funded.

ANNUAL INFLATION RATES

The inflation rate to determine year of expenditure dollars comes from WVDOT's Calendar Year 2017 Long Range Revenue Estimates for use in MPO Long Range Transportation Plans. The annual inflation rates used in the financial plan are 1.5% for revenues and 4.5% for costs The different rates help account for costs that are expected to increase at a greater rate than available revenues.

COST ESTIMATES

Some projects from previous planning efforts have estimated project costs. Where possible, these estimated costs were inflated to current year dollars. Projects without previously identified costs were independently estimated using a unit cost for the facility type, coupled with project elements, such as contingency, anticipated right-of-way, design, and environmental and/or utility costs.

Roadway Revenues

ROADWAY CAPITAL

The federal revenue levels available for the RIC MPO have been projected by WVDOT in the document Calendar Year 2017 Long Range Revenue Estimates for use in MPO Long Range Transportation Plans. The revenues in the RIC area are projected from 2024-2050 in the document. To fully project the revenues for the life of the RIC MTP, the assumptions outlined by WVDOT were used to develop these revenue projections, along with a 1.5% annual inflation rate, were applied to forecast the years 2041-2050. The funding levels for committed projects in the STIP were combined with the projected revenues for the years 2028-2050 to determine that there will be a total of $963.1 million available for capacity highway projects of the life of this plan.

It is essential that the revenue estimates reflect a reasonable level of future funding dollars based on the current level of funding. As a result, this revenue estimate does not consider potential changes to the state funding structure.

Table 15: Highway Capital Revenue Summary (year of expenditure dollars)

Period	Amount
2024-2027	$97,405,856
2028-2032	$138,161,100
2033-2040	$291,456,900
2041-2050	$533,474,550
Total	**$963,092,550**

ROADWAY MAINTENANCE

Maintenance funding in the Kanawha-Putnam region is primarily utilized for routine roadway maintenance, in addition to paving dirt roadways, replacing traffic signals, and adding pedestrian and bicycle facilities. Maintenance needs are primarily funded by the state, with some additional funding provided by municipalities. The City of Charleston has a user fee in place to help cover the cost of maintenance on city streets. For the purposes of this plan, maintenance funding levels were determined using the WVDOT Calendar Year 2017 Long Range Revenue Estimates for use in the MPO Long Range Transportation Plans. Statewide non-improvement expenditures, including Set Asides, Debt Service, Administration, and Routine Maintenance, were pulled from this document. Per the guidance of this document, 14.3% of all available statewide funding is expected to be used for the RIC MPO area. These maintenance funds are only expected to increase with inflation.

By projecting these funding sources through the 2050 horizon year of the RIC MTP, the total maintenance funding available for the region totals to approximately $4.7 billion. The maintenance costs generated annually are assumed to be equal to the revenue available.

Table 16: Highway Maintenance Revenue Summary (year of expenditure dollars)

Period	Amount
2024-2027	$45,306,823
2028-2032	$669,806,387
2033-2040	$1,412,985,674
2041-2050	$2,586,546,062
Total	**$4,714,644,946**

FUNDING SET ASIDES

Recently, MPOs have been setting aside a certain amount of revenue to ensure all of the region's needs are being addressed. Similar to the maintenance funds described above, this financial plan considers two crucial categories shown in Table 17. These funding categories ensure that the RIC MPO has dedicated funds to use on safety and ADA compliant projects through the plan's 2050 horizon year as new needs arise. These funds could be used by the RIC MPO to pursue projects that are high-impact and low-cost.

Table 17: New Funding Categories (per year)

New Funding Categories	Amount Per Year
Safety and Intersections	$5,000,000
ADA Implementation	$2,500,000

Roadway Financial Plan Results

When the funding levels have been established, the next step is to consider the needs that should be fulfilled within each funding period of the plan. To determine the priority order, the prioritization results documented in the Highway chapter were considered. The capital roadway project prioritization evaluated recommendations based on a series of quantitative and qualitative metrics that addressed the plan's guiding principles. While it would be ideal to implement every project, realistically, only certain projects can be funded. As a result, higher ranked projects were considered first for funding.

During the financial constraint process, higher cost projects were also considered higher priority despite not having enough revenues available for a given funding period. In those instances, lower cost projects with the most favorable prioritization score would be advanced to make use of the available revenues in that funding period.

FINANCIALLY CONSTRAINED PROJECTS

The following figures and tables divide the capital roadway projects into 2024-2027 (committed), 2028-2032, 2033-2040, 2041-2050, and unfunded vision categories. Figure 35 shows the capital roadway projects divided by these funding periods. Table 18 breaks out the financially constrained projects during each of these funding periods.

Based on the financial analysis, 37 out of 52 roadway capital projects for the RIC MTP can be funded within the 2050 horizon year. Each funding period's list of projects is financially constrained within that period with a small amount of revenue that is carried over to the next funding period. In accordance with federal guidance, the midpoint year for each funding period was used to determine the potential project year of expenditure (resulting in an inflated project cost). There are approximately $14 billion of unmet needs in the MPO planning area.

Figure 35: Financially Constrained Projects

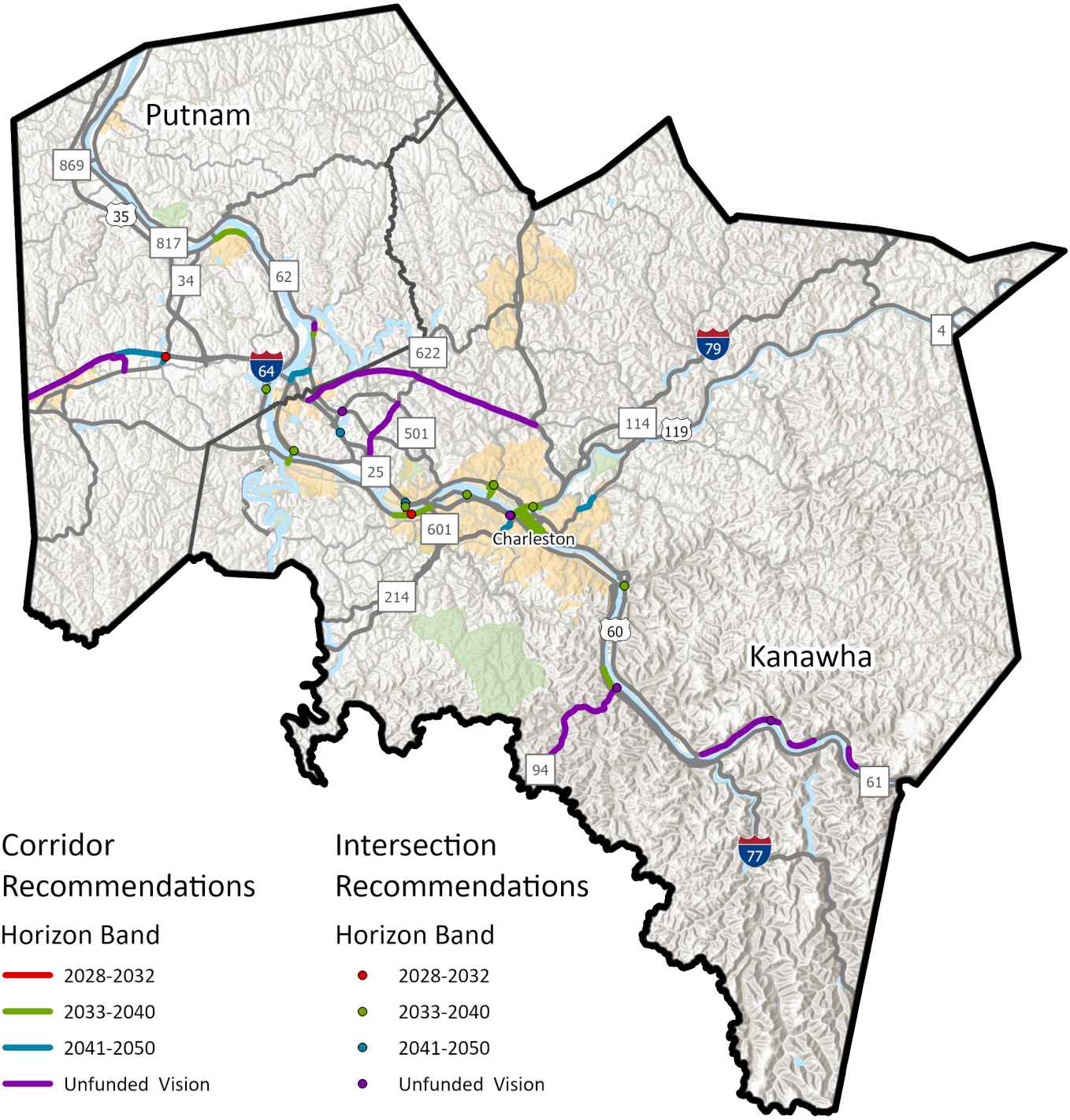


Table 18: Fiscally Constrained Projects

ID	County	Project Round	Limits	Project Description
HIN-1	Kanawha	10th St	From: Dunbar Ave To: Kanawha River	Explore crash mitigation along high injury network
MP-2	Kanawha	Fort Hill Bridge Interchange (Near Term Study)		Look at all options long term, study and potentially test ramp metering or temporary ramp closures at peak
TS-2	Kanawha	Dunbar Bridge		Dunbar Bridge Replacement
TS-8	Kanawha	WV 34 & I64 ramps		Interchange modification study
CFP-2	Kanawha	MacCorkle Ave	From: 81st Street To: 99th Street	Streetscape Enhancements (sidewalks and lighting)
CFP-3	Kanawha	Virginia Street	From: Columbia Avenue To: Bradford Street	Consider road diet or two-way conversions with bike/ped improvements
CFP-4	Kanawha	Quarrier Street	From: Columbia Avenue To: Bradford Street	Consider road diet or two-way conversions with bike/ped improvements
CFP-5	Kanawha	Pennsylvania Ave	From: Kanawha Boulevard To: Ash Street	Explore options to mitigate crashes
CFP-6	Kanawha	Patrick Street	From: Kanawha Boulevard To: Washington Street	Bridge Replacement and bike/ped accommodations
CFP-9	Kanawha	Downtown I-64/I-77 Viaduct Replacement and Northern Connector Corridor Study		Initiate a state-led corridor feasibility and environmental study for the expanded Northern Connector with active MPO participation.
HIN-2	Kanawha	Washington St	From: Morris Street To:Beauregard Street	Explore crash mitigation along high injury network
HIN-3	Kanawha	MacCorkle Ave	From: MacCorkle Ave To: Rock Lake Drive	Explore crash mitigation along high injury network
HIN-4	Putnam	WV62 / Main Street	From: Truett Street To: Etta Street	Explore crash mitigation along high injury network
HIN-5	Kanawha	Patrick Street / 5th Ave / Iowa Street / Washington Street		Explore crash mitigation along high injury network
HIN-6	Kanawha	Lee Street	From: Clendenin Street To: Court Street	Explore crash mitigation along high injury network
HIN-7	Kanawha	MacCorkle Ave	From: Vine Street To: McDonald Ave	Explore crash mitigation along high injury network

		2028-2032		2033-2040		2041-2050		Unfunded Vision	
	Revenue	$138,161,100		$291,478,732		$535,461,234		$25,986,924	
	Expenditures	$138,139,268		$289,492,048		$509,474,310		$4,566,654,059	
	Balance	$21,832		$1,986,684		$25,986,924		$(4,540,667,136)	
Cost Estimate	**Horizon Year**	X	**Inflated Cost**	X	**Inflated Cost**	X	**Inflated Cost**	X	**Inflated Cost**
$1,200,000	2028-2032	x	$1,495,418		$-		$-		$-
$100,000	2028-2032	x	$124,618		$-		$-		$-
$102,000,000	2028-2032	x	$127,110,558		$-		$-		$-
$50,000	2028-2032	x	$62,309		$-		$-		$-
$1,200,000	2033-2040		$-	x	$2,035,058		$-		$-
$1,200,000	2033-2040		$-	x	$2,035,058		$-		$-
$1,200,000	2033-2040		$-	x	$2,035,058		$-		$-
$1,200,000	2033-2040		$-	x	$2,035,058		$-		$-
$100,000,000	2033-2040		$-	x	$169,588,143		$-		$-
$250,000	2033-2040			x	$423,970				
$1,200,000	2033-2040		$-	x	$2,035,058		$-		$-
$1,200,000	2033-2040		$-	x	$2,035,058		$-		$-
$1,200,000	2033-2040		$-	x	$2,035,058		$-		$-
$1,200,000	2033-2040		$-	x	$2,035,058		$-		$-
$1,200,000	2033-2040		$-	x	$2,035,058		$-		$-
$1,200,000	2033-2040		$-	x	$2,035,058		$-		$-

ID	County	Project Round	Limits	Project Description
HIN-8	Kanawha	Lee Street	From: Summers Street To: Leon Sullivan Way	Explore crash mitigation along high injury network
PMTP-10	Kanawha	3rd Street Underpass		Widen and upgrade the underpass; Consider alternative options as grant wasn't selected
PMTP-2	Kanawha	Patrick Street	From: 4th Ave To: Patrick Street Plaza	Fourth Ave Turn Lane and Patrick St Plz Turn Lane
PMTP-27	Putnam	WV 817	From: Winfield Bridge To: Planters Road	From Winfield Bridge to Planters Road: Widen to 3-lanes
PMTP-35	Kanawha	MacCorkle Ave	From: Rock Lake Drive To: Jefferson Ave	Restripe; provide multimodal accommodations; underground utilities; improve intersections
TS-10	Kanawha	Montrose Dr & MacCorkle Ave		Turn lane and pedestrian additions
TS-11	Kanawha	Center St & 1st Ave		Roundabout and shared use path; short term turn lane enhancements
TS-12	Kanawha	10th St & Myers Ave		Pending new study
TS-13	Kanawha	Campbells Creek & US 60		Lighting, bus stop relocation, and freight movement enhancements
TS-14	Putnam	WV 817 and Teays Valley Rd		Roundabout and access management
TS-15	Kanawha	Washington St W & Rebecca St		Consider within Patrick Street corridor study; lighting, sidewalk, and ADA enhancements
MP-3	Kanawha	Dunbar 10th St & Fairlawn Avenue		Upcoming RIC Corridor Study/DOH 10th Street Study; Consider Rail Crossing Elimination and I-64 EB changes
MP-5	Kanawha	Goff Mountain Road		Explore options for traffic congestion relief during peak hours.
PMTP-14	Kanawha	Cantley Flyover		Add Cantley Flyover to US 119 southbound; flyover ties in south of Cantley Drive (costs include all CG3 improvements)
PMTP-24	Kanawha	WV 114 (Greenbrier Street)	From: Airport Road To: Rutledge Road (CR 46)	From Airport Road to CR 46 (Rutledge Road): Widen to 3-lanes with a two-way left-turn lane
PMTP-28	Putnam	Interstate 64	From: Cow Creek Road To: WV 34	Cow Creek Road to WV 34: Widen to 6-lanes
PMTP-3	Putnam	WV 34	From: I-64 To: Great Teays Blvd	Install roundabouts at I-64 ramp and Great Teays Blvd . Implement access management
PMTP-31	Putnam	WV 25 (1st Avenue)	From: I-64 To: WV 62	From Interstate 64 to WV 62: Widen to 3-lanes with a two-way left-turn lane, and use access management to increase mobility and safety

		2028-2032		2033-2040		2041-2050		Unfunded Vision	
	Revenue	$138,161,100		$291,478,732		$535,461,234		$25,986,924	
	Expenditures	$138,139,268		$289,492,048		$509,474,310		$4,566,654,059	
	Balance	$21,832		$1,986,684		$25,986,924		$(4,540,667,136)	
Cost Estimate	**Horizon Year**	X	**Inflated Cost**	X	**Inflated Cost**	X	**Inflated Cost**	X	**Inflated Cost**
$1,200,000	2033-2040		$-	x	$2,035,058		$-		$-
$15,269,000	2033-2040		$-	x	$25,894,414		$-		$-
$1,600,000	2033-2040		$-	x	$2,713,410		$-		$-
$17,878,000	2033-2040		$-	x	$30,318,968		$-		$-
$5,716,000	2033-2040		$-	x	$9,693,658		$-		$-
$590,000	2033-2040		$-	x	$1,000,570		$-		$-
$2,100,000	2033-2040		$-	x	$3,561,351		$-		$-
$500,000	2033-2040		$-	x	$847,941		$-		$-
$500,000	2033-2040		$-	x	$847,941		$-		$-
$2,100,000	2033-2040		$-	x	$3,561,351		$-		$-
$500,000	2033-2040		$-	x	$847,941		$-		$-
$40,900,000	2041-2050		$-		$-	x	$103,077,863		$-
$1,200,000	2041-2050		$-		$-	x	$3,024,289		$-
$34,990,000	2041-2050		$-		$-	x	$88,183,238		$-
$10,846,000	2041-2050		$-		$-	x	$27,334,536		$-
$57,517,000	2041-2050		$-		$-	x	$144,956,711		$-
$32,060,000	2041-2050		$-		$-	x	$80,798,931		$-
$9,640,000	2041-2050		$-		$-	x	$24,295,125		$-

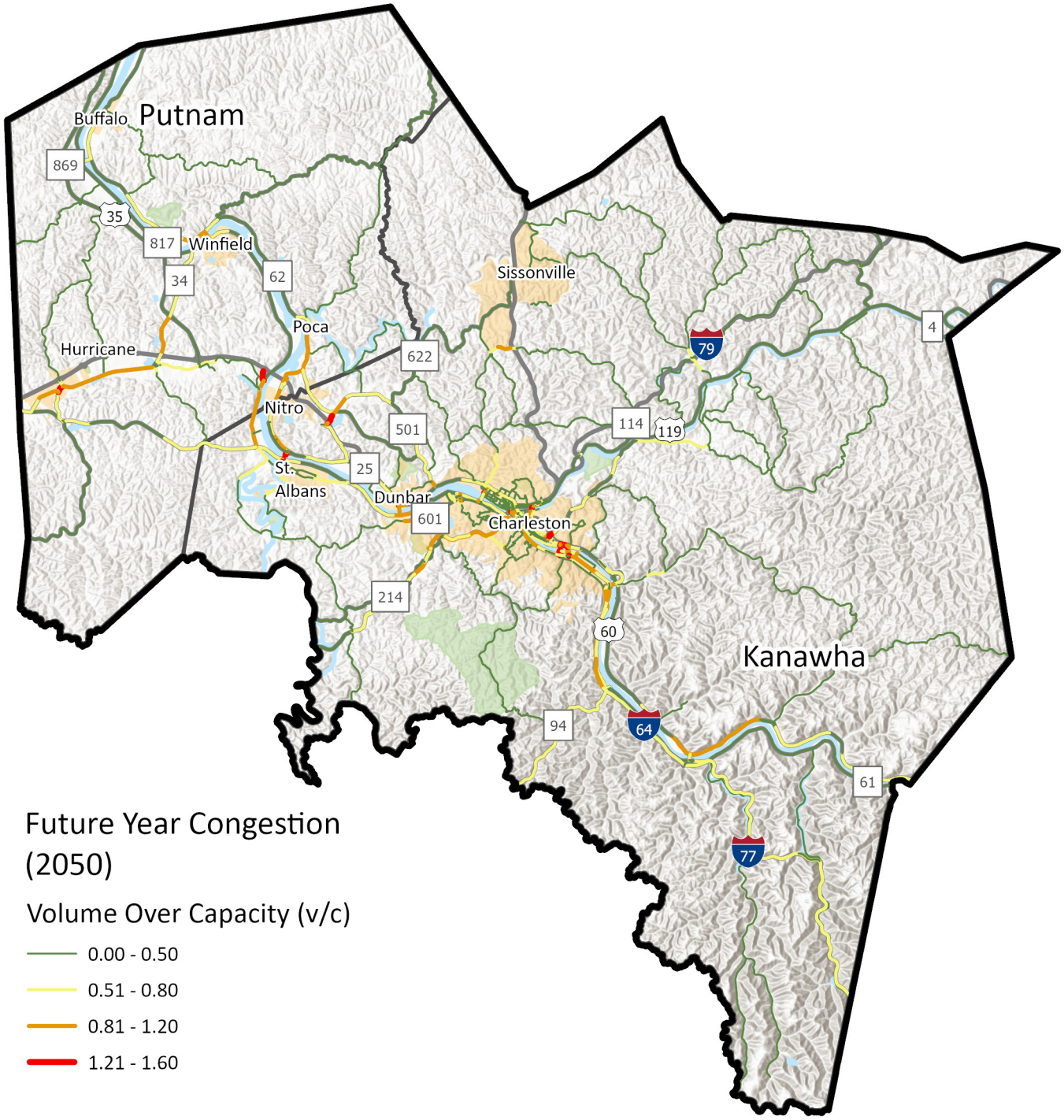
ID	County	Project Round	Limits	Project Description
CFP-7	Kanawha	MacCorkle Ave and Lens Creek Road		Signage and Lighting Improvements
CFP-8	Kanawha	Fort Hill Bridge Interchange (Long Term)		Interchange Improvement
MP-1	Kanawha	Cross Lanes Interchange		Study Diverging Diamond option for Cross Lanes Interchange
PMTP-20	Kanawha	WV 94 (Lens Creek Road)	From: Six Mile Hollow Road To: I-64	From Six Mile Hollow Road to Interstate 64: Widen to 3-lanes on steep grades to provide truck passing lanes
PMTP-21	Kanawha	US 60 (Dupont Avenue)	From: Kellys Creek Road (CR 81) To: Chelyan Bridge	From CR 81 (Kellys Creek Road) to Chelyan Bridge (Admiral TJ Lopez Bridge): Widen to 4-lanes divided (Section A of US 60 Upgrade Study)
PMTP-22	Kanawha	US 60	From: Sycamore Road To: Britt Hollow	Add center turn lane from Sycamore Road to Britt Hollow (approximately 1.2 miles). Add right turn lane at recycling center. The improvements will help reduce the risk of rear end collisions while improving traffic flow.
PMTP-23	Kanawha	US 60	From: Old Town road To: Browns Mountain Road	Add center turn lane west through London for approx. 1 mile in length; reducing the risk of rear end collisions and improving traffic flow
PMTP-25	Kanawha	Institute Connector, All Phases	From: Institute Interchange To: WV 622	Institute Connector, Sections A and B 2 lane facility from Institute Interchange to WV 622 at Rocky Fork Intersection
PMTP-26	Kanawha	Northern Connector, ALL PHASES	From: I-64 To: I-77	Northern Connector, Sections C, D, E - 4 lane facility from I-64 to I-77
PMTP-33	Putnam	WV 62	From: Truett Street To: Laurel Avenue	On WV 62 (Charleston Road): Add two-way left turn lane at Poca Middle School and the Poca Food Fair grocery store
PMTP-34	Putnam	Interstate 64	From: Cow Creek Road To: Cabell County Line	From Cow Creek Road to Cabell County line: Widen to 6-lanes
PMTP-37	Putnam	Sleepy Hollow Road	From: Teays Valley Road To: Cow Creek Road	upgrade and widen to a full two-lane local collector classification
PMTP-4	Kanawha	US 60 (Dupont Ave)	From: Hull Ave To: William Street	EB right at William Street, RIRO at William Street, Turnaround loon for U-turns
TS-9	Kanawha	Hull Ave & US 60		Turn lane and access management

		2028-2032		2033-2040		2041-2050		Unfunded Vision	
	Revenue	$138,161,100		$291,478,732		$535,461,234		$25,986,924	
	Expenditures	$138,139,268		$289,492,048		$509,474,310		$4,566,654,059	
	Balance	$21,832		$1,986,684		$25,986,924		$(4,540,667,136)	
Cost Estimate	**Horizon Year**	X	**Inflated Cost**	X	**Inflated Cost**	X	**Inflated Cost**	X	**Inflated Cost**
$500,000	Unfunded Vision		$-		$-		$-	x	$3,140,679
$167,920,000	Unfunded Vision		$-		$-		$-	x	$1,054,765,638
$16,590,000	Unfunded Vision		$-		$-		$-	x	$104,207,729
$30,639,000	Unfunded Vision		$-		$-		$-	x	$192,454,528
$56,108,000	Unfunded Vision		$-		$-		$-	x	$352,434,435
$13,015,000	Unfunded Vision		$-		$-		$-	x	$81,751,875
$11,930,000	Unfunded Vision		$-		$-		$-	x	$74,936,601
$41,171,000	Unfunded Vision		$-		$-		$-	x	$258,609,791
$260,287,000	Unfunded Vision		$-		$-		$-	x	$1,634,955,833
$9,219,000	Unfunded Vision		$-		$-		$-	x	$57,907,840
$105,447,000	Unfunded Vision		$-		$-		$-	x	$662,350,359
$10,391,000	Unfunded Vision		$-		$-		$-	x	$65,269,591
$2,800,000	Unfunded Vision		$-		$-		$-	x	$17,587,802
$1,000,000	Unfunded Vision		$-		$-		$-	x	$6,281,358

FUTURE YEAR CONGESTION

After determining the financial constraint, the projects that are anticipated to receive funding were tested within the travel demand model. Figure 36 shows the remaining 2050 network congestion following the implementation of these projects. Additional performance data for the financially constrained network can be found in the Appendix.

Figure 36: Future-Year Congestion



BICYCLE AND PEDESTRIAN

New bicycle and pedestrian facilities in the Kanawha-Putnam area are primarily funded utilizing state and federal funding. These funding sources have historically included the Transportation Alternatives Program (TAP), National Recreational Trails (NRT), Highway Safety Improvement Program (HSIP), and other state and federal funding sources. Since a portion of the RIC MPO includes Huntington—a part of the WV-KY-OH Transportation Management Area—a portion of TAP funds can be directly allocated inside the RIC MPO area. The local match is typically around 20% for TAP funding. Bicycle and pedestrian projects are not fiscally constrained because they are not considered regionally significant. Active transport projects are listed in the Active Transportation section of this plan.

Bicycle and Pedestrian Revenues

To forecast bicycle and pedestrian revenue projections, statewide TAP and NRT funding levels were obtained from the DSTIP. The committed projects that appear in the DSTIP are added into the 2024-2027 period. Using guidance from the WVDOT Calendar Year 2017 Long Range Revenue Estimates for use in MPO Long Range Transportation Plans, 14.3% of all available statewide funding is expected to be used in the RIC MPO. Table 19 projects the revenues for bicycle and pedestrian projects within the Kanawha-Putnam area using these assumptions.

Table 19: Bicycle and Pedestrian Revenue Summary (year of expenditure)

Period	Amount
2024-2027	$11,016,000
2028-2032	$11,608,691
2033-2040	$24,804,158
2041-2050	$46,210,424
Total	**$93,639,273**

TRANSIT

Data from the Federal Transit Administration's National Transit Database was used to gather information about historic capital and operations and maintenance spending of Kanawha Regional Transit. Historic data was gathered for FY 2014-2023 and then forecast through 2050 using a 1.5% inflation.

Table 20: Transit Revenue Summary (year of expenditure)

Period	Operations and Maintenance	Capital
2024-2027	$54,098,283	$13,477,460
2028-2032	$72,314,733	$18,015,709
2033-2040	$127,506,539	$31,765,598
2041-2050	$182,297,710	$45,415,677
Total	**$382,118,982**	**$95,196,984**

CONCLUSION

The RIC MTP provides a vision for transportation that considers existing and future needs and priorities for all modes of travel. The creation of a financially constrained plan helps ensure that prioritized projects can be reasonably funded and implemented for the duration of the long range plan. The RIC MTP has identified numerous transportation needs throughout the region, not all of which can be funded using the currently projected revenue streams. As projects move into funding and implementation, the RIC MPO will collaborate with WVDOT and FHWA to determine how to best advance the recommended projects of this plan. The MPO will continue to opportunistically seek new funding sources. The project priorities should be reassessed through future planning cycles as new data becomes available. This dynamic process will provide guidance for the region to effectively address its transportation needs.

8

PERFORMANCE MEASURES

The modern legacy of performance-based transportation planning dates back nearly two decades. In 2010, the Moving Ahead for Progress in the 21st Century Act (MAP-21) established new requirements for performance-based planning to make transportation investments more efficient. In 2015, the Fixing America's Surface Transportation (FAST) Act continued the performance-based planning approach with some modifications. More recently, the Infrastructure Investment and Jobs Act (IIJA), or the Bipartisan Infrastructure Law (BIL), continued the commitment to performance-based planning set forth by MAP-21 and the FAST Act. As a result, WVDOT and the state's MPOs must apply a transportation performance-based planning approach when implementing federally required transportation programming and planning activities.

This chapter provides an overview of RIC's approach to system performance. This approach is closely related to the quantitative prioritization process developed specifically for the 2050 MTP.

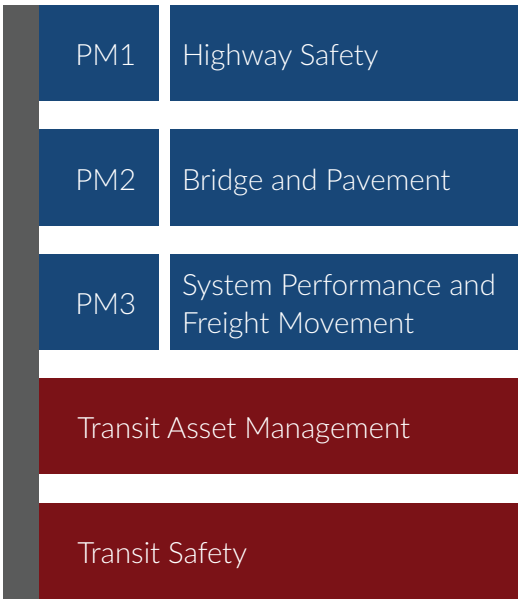
Performance-based planning and programming uses system-generated information to confirm investment and policy decisions achieve the goals set for the transportation network. More specifically, Performance-Based Planning & Programming (PBPP) applies performance management as a standard practice in the planning and programming decisions. These requirements support national goals by outlining a systematic and objectives-driven approach.

In May 2016, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) issued the Final Rule on Statewide and Non-metropolitan Transportation Planning and Metropolitan Transportation Planning—also known as the Planning Rule. This regulation requires states and MPOs to adhere to the planning and transportation performance management provision of both MAP-21 and the FAST Act, and was carried forward in the IIJA.

SYSTEM PERFORMANCE REPORT

RIC must publish a System Performance Report to show how the transportation system performs relative to established metrics and targets. The report also plays a role in FTA's and FHWA's Transportation Performance Management (TPM) approach. By maintaining a systematic approach, RIC can assess whether the area's transportation system addresses current needs and if the system is equipped to meet future challenges. Through the development of the 2050 MTP, RIC has aligned project prioritization criteria with elements of the performance measure requirements.

This System Performance Report evaluates the performance of the transportation system for targets associated with highway safety (PM1), pavement and bridge condition (PM2), and system performance and freight movement (PM3). Targets also are provided for transit asset management and transit safety.



PM1 | Highway Safety

One of the goals of the IIJA is to reduce the number of traffic fatalities and serious injuries on all public roadways, including non-State-owned public roads and those on tribal lands. As a continuation of the Highway Safety Improvement Program, the IIJA requires a data-driven approach to improving highway safety with an emphasis on performance-based planning. The Federal Highway Administration (FHWA) published the HSIP Final Rule and Safety Performance Management Measures Final Rule in April 2016. State DOTs were required to report first round targets to FHWA in August 2017. RIC elected to support WVDOT safety performance targets, which were adopted at the RIC Policy Board in December 2017. State DOTs and MPOs are expected to establish and report safety performance measure targets annually to FHWA. RIC has continued to adopt the WVDOT's performance targets. Table 21 outlines the current safety performance targets adopted by RIC on December 27, 2024.

Table 21: Safety Performance Targets

Performance Measure	Goal	2020	2021	2022	2023
Number of Fatalities	Zero Fatalities by 2050	253	245	249	241
Number of Serious Injuries	66% reduction by 2050 (from 2021)	869	830	742	705
Fatality rate per Hundred Million Vehicle Miles Traveled (HMVMT)	Fatality Rate for Zero Fatalities by 2050	1.38	1.34	1.54	1.63
Injury rate per Hundred Million Vehicle Miles Traveled (HMVMT)	66% reduction by 2050 (from 2021)	4.753	4.525	4.592	4.768
Number of Non-Motorized Fatalities and Serious Injuries	66% reduction by 2030 (from 2013)	87	81	64	70

Note: Performance targets are based on a five-year rolling average.

Table 22: 2021 Performance Assessment for Safety PM—Number of Fatalities

Performance Assessment	TY 2020	TY 2021	TY 2022	TY 2023	TY 2024
Total Number for Target Year (TY*)**	267	280	265	260	
Target to Reach Goal	253	245	249	241	246
Was Target Met	Not Met	Not Met	Not Met	Not Met	
Met or Made Significant Progress		No	Yes	No	

**** TY refers to target year***

***** Depicts 5-year rolling average***

Table 23: 2021 Performance Assessment for Safety PM—Number of Serious Injuries

Performance Assessment	TY 2020	TY 2021	TY 2022	TY 2023	TY 2024
Total Number for Target Year**	805	766	815	801	
Target to Reach Goal	869	830	742	705	775
Was Target Met	Met	Met	Not Met	Not Met	
Met or Made Significant Progress	Yes	Yes	No	No	

*** Depicts 5-year rolling average***

Table 24: 2021 Performance Assessment for Safety PM—Fatality Rate Per 100 Million Miles (HMVMT)

Performance Assessment	TY 2020	TY 2021	TY 2022	TY 2023	TY 2024
Average Fatality Rate**	1.66	1.74	1.73	1.47	
Average Target Fatality Rate	1.38	1.34	1.54	1.63	1.59
Was Target Met	Not Met	Not Met	Not Met	Met	
Met or Made Significant Progress		No	No	Yes	

*** Depicts 5-year rolling average***

Table 25: 2021 Performance Assessment for Safety PM—Injury Rate Per 100 Million Miles (HMVMT)

Performance Assessment	TY 2020	TY 2021	TY 2022	TY 2023	TY 2024
Average Serious Injury Rate**	5.014	4.764	5.324	4.538	
Average Target Serious Injury Rate**	4.753	4.525	4.592	4.768	5.019
Was Target Met	Not Met	Not Met	Not Met	Met	
Met or Made Significant Progress		Yes	No	Yes	

*** Depicts 5-year rolling average***

Table 26: 2021 Performance Assessment for Safety PM—Non-Motorized Fatalities and Serious Injuries

Performance Assessment	TY 2020	TY 2021	TY 2022	TY 2023	TY 2024
Average Serious Injury Rate**	72	83	94	81	
Average Target Serious Injury Rate**	87	81	64	70	89
Was Target Met	Met	Not Met	Not Met	Not Met	
Met or Made Significant Progress	Yes	No	No	Yes	

*** Depicts 5-year rolling average***

PM2 | Pavement and Bridge Conditions

The National Highway Performance Program (NHPP) provides guidance on the condition and performance the National Highway System (NHS), for the construction of new facilities. The NHPP also ensures that investments of Federal-aid funds in the construction of highways directly support the progress towards the achievement of performance targets.

The Pavement and Bridge Condition Performance Measures Final Rule was published in January 2017. The rule took effect in May 2017. State DOTs were required to set targets by May 2018. MPOs had until November 2018 to report their targets to the State DOTs. While State DOTs are required to set both 2- and 4-year targets, MPOs are only required to set 4-year targets. To the maximum extent practicable, the MPO and State DOT must coordinate in the selection of performance targets.

PAVEMENT CONDITION

Per FHWA guidance, there are four established national performance measures regarding the assessment of pavement condition and two established national performance measures regarding the assessment of bridge condition. All six performance measures for both pavement and bridge are calculated by percentages. State DOTs and MPOs are required to establish and report targets for the following performance measures regarding Interstate and Non-Interstate National Highway System (NHS) pavement conditions:

1. Percent of pavements on the Interstate NHS system in Good condition
2. Percent of pavements on the Interstate NHS system in Poor condition
3. Percent of pavements on the non-Interstate National Highway System (NHS) in Good condition
4. Percent of pavements on the non-Interstate National Highway System (NHS) in Poor condition

The FHWA metrics are based upon the percentage of tenth-mile Highway Performance Monitoring System (HPMS) section data that are in Good, Fair, or Poor condition. More detailed information about the Pavement Condition Measures can be found in the System Performance Report.

The four pavement condition performance measures are separated into two categories, one for applicable lane miles on the Interstate National Highway System (NHS), and the other for applicable lane miles on the non-Interstate NHS. The 2017 pavement condition assessment for the RIC MPO area consisted of 417.8 applicable lane miles of the Interstate NHS sand 304.9 applicable miles of non-Interstate NHS. Table 27 shows the Pavement Condition Assessment for the RIC MPO.

Table 27: 2017 Pavement Condition Assessment

Performance Measure	Value
Pavement on the Interstate NHS in **Good** Condition	62.4%
Pavement on the Interstate NHS in **Poor** Condition	0%
Pavement on the non-Interstate NHS in **Good** condition	28.1%
Pavement on the non-Interstate NHS in **Poor** condition	0.4%

BRIDGE CONDITION PERFORMANCE MEASURES

West Virginia currently has 1,294 bridges comprising 24,504,470 square feet of deck area on the NHS. In total, WVDOT owns 1,195 (92%) of the NHS bridges and 22,590,843 square feet (92%) of the total NHS deck area. The WV Turnpike owns 97 (8%) of the NHS bridges and 1,823,323 square feet (8%) of the total NHS deck area.

There are two national performance measures for managing of bridge performance on the NHS. Both performance measures are based on the bridge deck area and are classified using the National Bridge Inventory (NBI) condition ratings. Targets must be established for all bridges that carry the NHS, including on- and off-ramps connected to the NHS within a State, and bridges carrying the NHS that cross a State border, regardless of ownership. RIC elected to adopt the WVDOT bridge condition targets. The two performance measures include:

1. Percent of NHS bridges by deck area classified in Good Condition
2. Percent of NHS bridges by deck area classified in Poor Condition

Table 28 shows the NHS Bridge Condition Performance.

Table 28: 2017 NHS Bridge Condition Assessment

Performance Measure	Value
Percent of NHS bridge deck area classified as in **Good** condition	12.9%
Percent of NHS bridge deck area classified as **Poor** condition	4.9%

PM3 | System Performance and Freight Movement

In January 2017, FHWA published the System Performance/Freight/CMAQ Performance Measures Final Rule. The rule assessed the performance of the Interstate and non-Interstate National Highway System (NHS) for the purpose of carrying out the National Highway Performance Program (NHPP), assessing freight movement on the Interstate System, and assessing traffic congestion and carrying out the Congestion Mitigation and Air Quality Improvement (CMAQ) Program. State DOTs were required to set targets by May 2018. MPOs had until November 2018—with the exception of Traffic Congestion—to report their targets. A requirement of the CMAQ is to develop a CMAQ Performance Plan (CPP), which is to be updated biannually. The CPP outlines the baseline level for traffic congestion and emissions, provides a description of the progress made in achieving performance measure targets, and provides a description of projects funded through the CMAQ program.

TRAVEL TIME RELIABILITY

There are five performance targets to evaluate travel time reliability. The last two targets (numbers 4 and 5) are not applicable to the first performance period (2018-2021). The current performance measures for PM3 are listed as follows:

1. Percent of person miles traveled on the Interstate system that are reliable, Level of Travel Time Reliability (LOTTR)
2. Percent of person miles traveled on the non-Interstate system that are reliable, Level of Travel Time Reliability (LOTTR)
3. Percent of Interstate mileage providing Truck Travel-Time Reliability (TTTR)
4. Annual hours of peak-hour excessive delay per capita – (Not applicable until 2022)
5. Percent of non-single occupant vehicle travel – (Not applicable until 2022)

Table 29: Travel Time Reliability

Performance Measure	Baseline (2017)	Performance (2019)	Target (2019)	Significant Progress?	Target (2021)
Percent of person miles traveled on the Interstate system that are reliable, Level of Travel Time Reliability (LOTTR)	99.8%	**99.1%**	98.0%	Yes	96.0%
Percent of person miles traveled on the non-Interstate system that are reliable, Level of Travel Time Reliability (LOTTR)	91.9%	**93.7%**	93.7%		87.0%
Percent of Interstate mileage providing Truck Travel-Time Reliability (TTTR)	1.21	**1.28**	12.5	No	1.30

AIR QUALITY

The RIC MPO region (Kanawha and Putnam counties) is currently designated as part of the Charleston, WV maintenance area under both the 1997 8-hour ozone and 2006 24-hour PM2.5 NAAQS. The region is in attainment of the 2008 8-hour ozone, 2015 8-hour ozone, and 2012 annual PM2.5 NAAQS. Transportation conformity requires non-attainment and maintenance areas to demonstrate that all future transportation projects will not prevent an area from reaching its air quality attainment goals.

Table 30 shows the Conformity Analysis for VOC and NOx. Chapter 11 further details Air Quality in the Kanawha-Putnam region.

Table 30: Ozone Emission Conformity Analysis

Pollutant	2018 Budget	2018	2025	2035	2045
VOC	13.7	4.10	2.71	1.55	1.41
NOx	17.1	11.34	6.50	4.31	4.56
Conformity Result	**Pass**	**Pass**	**Pass**	**Pass**	

The CMAQ Emission Reduction measure assesses performance of the CMAQ Program through measurement of total cumulative reductions of on-road mobile source PM2.5 and PM10 emissions resulting from CMAQ funded projects in applicable regions in West Virginia managed under the Clean Air Act national ambient air quality standards. Table 31 shows the Emissions Reduction performance measures for PM2.5.

Table 31: Travel Time Reliability

Performance Measure	Baseline (2017)	Performance (2019)	Target (2019)	Significant Progress?	Target (2021)
PM 2.5 (kg/day)	0.092	**0.122**	0.092	Yes	0.092

Transit Asset Management

The Federal Transit Administration (FTA) published the Transit Asset Management (TAM) Final Rule in July 2016. Similar to FHWA's TPM target setting process, transit providers must coordinate with MPOs in the selection of TAM performance targets to the maximum extent feasible.

The Kanawha Valley Regional Transportation Agency (KRT) serves as the transit provider for the Charleston, West Virginia Metropolitan Area. Per the requirements of FTA and FHWA for transit agencies, KRT is required to report performance targets to the West Virginia Division of Public Transit and the National Transit Database (NTD) annually.

Performance measures for transit providers are divided into the four following categories:

- Rolling Stock
- Equipment
- Facilities
- Infrastructure (Does not apply to KRT)

Transit Safety

Per federal requirements, operators of public transportation systems that are recipients of or subrecipients of Federal Transit Administration (FTA) 49 U.S.C. Section 5307 grant funds must maintain new safety plans under the Public Transportation Agency Safety Plan (PTASP) by December 2020. These safety plans must include performance targets that must be assessed annually and are to be coordinated with the applicable Metropolitan Planning Organization (MPO). The performance targets are based on the following safety performance criteria established under the National Public Transportation Safety Plan:

1. Fatalities – total number of reportable fatalities and rate per total vehicle revenue miles by mode
2. Injuries – total number of reportable injuries and rate per total vehicle revenue miles by mode
3. Safety events – total number of reportable events and rate per total vehicle revenue miles by mode
4. System reliability – mean distance between major mechanical failures by mode

Performance Measures Moving Forward

The intent of this chapter is to identify helpful tools to help guide transportation decision-making and monitor network performance in future years. The data described in this chapter is easily obtainable and is readily utilized by RIC staff to track performance and monitor regional trends. Notably, these performance measures adhere to federal requirements for MPOs to take a performance-based approach to planning and programming projects.

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9

AIR QUALITY

Transportation air quality conformity is a way to direct federal funding and approval to transportation activities consistent with air quality goals. Under the Clean Air Act (CAA), transportation and air quality modeling procedures must be coordinated so the TIP and MTP are consistent with the State Implementation Plan (SIP).

The State Implementation Plan (SIP), a federally required document, provides a comprehensive assessment of regional air quality conditions (motorized and non-motorized) and desired targets if applicable. The SIP ensures the State and its member jurisdictions can attain or maintain the levels of the National Ambient Air Quality Standards (NAAQS).

To receive transportation funding from the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA), state and local transportation agencies in non-attainment or maintenance areas must demonstrate meeting all transportation air quality conformity requirements of the CAA as set forth in the transportation conformity rule. As such, transportation plans are expected to conform to the SIP.

The integration of transportation and air quality planning seeks to ensure transportation plans, programs, and projects will not:

- Cause or contribute to any new violation of any standard in any area;
- Increase the frequency or severity of any existing violation of any standard in any area; or
- Delay timely attainment of any standard or any required interim emissions reductions or other milestones in any area.

NAAQS DESIGNATIONS

The CAA requires the EPA to set National Ambient Air Quality Standard (NAAQS) designations for pollutants considered harmful to public health and the environment.

- A non-attainment area is any area that does not meet the national primary or secondary NAAQS.
- A maintenance area is any area that the EPA previously designated as a non-attainment area for one or more pollutants, and subsequently redesignated as an attainment area subject to the requirement to develop a maintenance plan under section 175A of the CAA.

Transportation conformity requires non-attainment and maintenance areas to demonstrate future transportation projects will not hinder the area from reaching its attainment goals.

The Charleston area has previously been designated maintenance under the ozone and fine particulate matter (PM2.5) NAAQS. Currently, the Charleston area is in attainment for all criteria pollutants. Additional information is provided about the background and history of the region's previous non-attainment and maintenance status.

Ozone

Ozone forms by chemical reactions occurring under specific atmospheric conditions. Two classes of compounds in these reactions are hydrocarbons (including VOC) and oxides of nitrogen (NOx), which are components of vehicle exhaust. The hydrocarbons also may be produced by evaporation from vehicle fuel system components and displacement of vapors in the gas tank during refueling. By curbing these emissions, ozone formation can be controlled.

As shown in the timeline below, the Charleston region is in attainment for the currently applicable 8-hour ozone standards, but it continues to be subject to the qualitative conformity reporting requirements from its previous maintenance designation under the 1997 standards resulting from the South Coast v. EPA finding.

TIMELINE

April 30, 2004—Federal Register (69 FR 23858) designates the Charleston area, then comprising only Kanawha and Putnam counties, as non-attainment for the 8-hour ozone standard.

June 15, 2004—EPA finalizes ground-level ozone designations under the 1997 8-hour ozone NAAQS. A region is designated as being in non-attainment if the 3-year average of the individual fourth highest air quality monitor readings averaged over 8 hours throughout the day exceeded the NAAQS of 0.08 parts per million (ppm).

August 10, 2006—The Charleston area is reclassified to attainment and required to adhere to a maintenance plan that establishes motor vehicle emission budgets (MVEBs) for NOx and VOCs. Estimates of vehicle emissions were compared against these budgets to determine regional conformity for the ozone precursors.

March 12, 2008—The EPA strengthens the ozone standard to 0.075 ppm. This revised 2008 8-hour ozone NAAQS is calculated in the same way as in 1997, and Kanawha and Putnam counties are designated as attainment areas.

July 20, 2012—The EPA establishes air quality designations (77 FR 30088) to accompany the 2008 standard. The rule revokes the 1997 ozone NAAQS for transportation conformity purposes to occur one year after the effective date of the designations for the 2008 ozone NAAQS. Transportation conformity no longer applies to areas redesignated to attainment for the 1997 ozone NAAQS and also classified as attainment for the 2008 ozone NAAQS.

December 28, 2015—Federal Register (80 FR 65292) strengthens the 8-hour ozone standard to 0.070 ppm on. The previous 2008 standard was not revoked and remained in effect for designated areas. The Kanawha-Putnam region is in attainment for the 2015 8-hour ozone standard.

February 16, 2018—South Coast Air Quality Management District v. EPA finds the requirements for maintenance areas under the 1997 8-hour ozone standard should be retained.

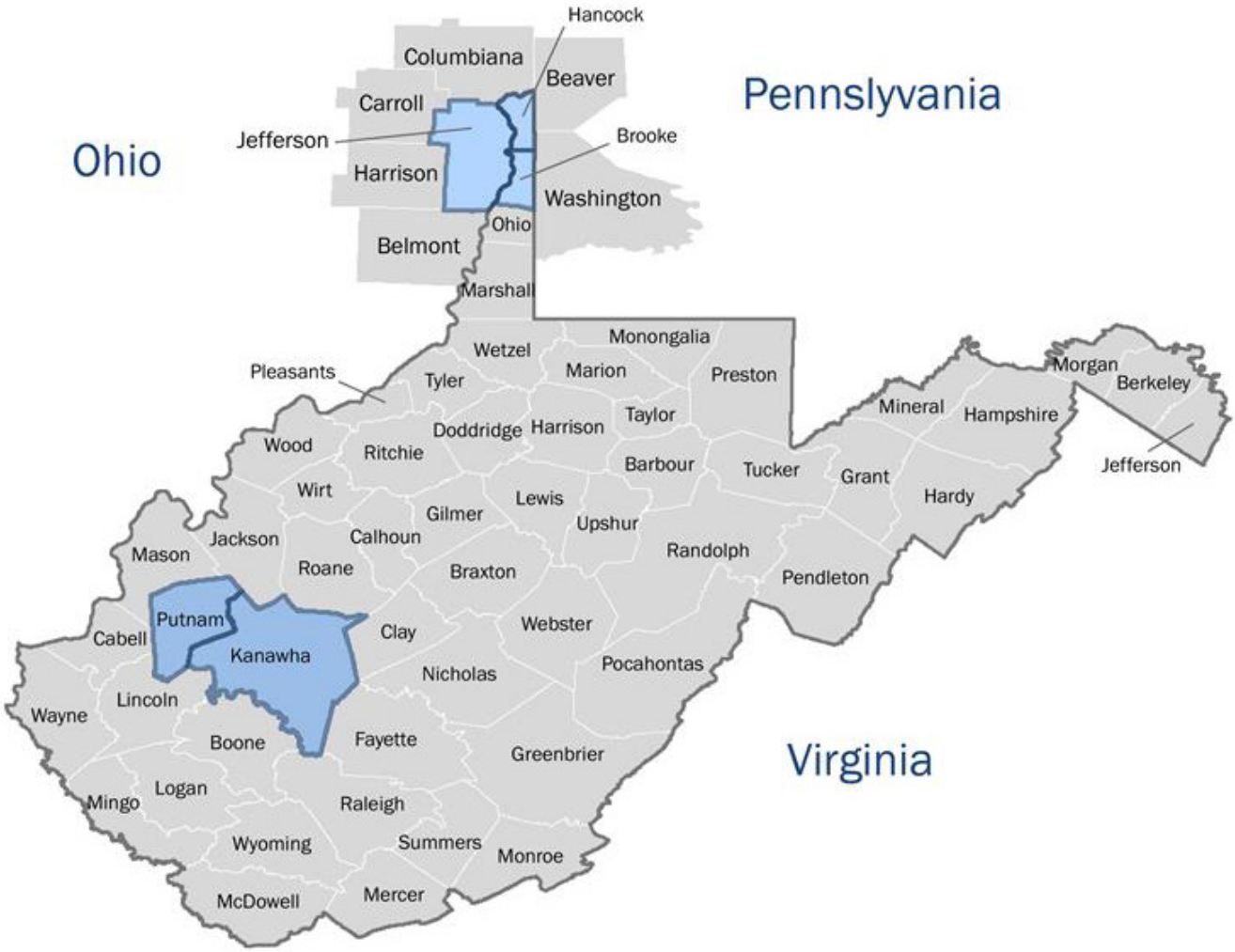
September 13, 2018—The most recent quantitative air quality conformity analysis for the Charleston region prepared by RIC and WVDOT is adopted.

November 29, 2018—EPA Guidance Issued Post-South Coast II Decision helps areas comply with transportation conformity under the revoked 1997 ozone standard. Conformity demonstration requires 1) latest planning assumptions; 2) interagency consultation; 3) fiscal constraint for MTP/TIP; and 4) timely implementation of transportation control measures (if applicable).

PM 2.5

Fine particle pollution can be emitted directly into or formed in the atmosphere. For example, sulfates and nitrates are two types of secondary particles. The former is a result of power plant and industry emissions, while the latter results from automobiles, power plants, and other combustion emission sources. Scientific studies have found a significant association between the exposure to fine particulates and severe health issues such as heart disease, lung disease, and premature death.

Figure 37: PM2.5 24-Hour Standard Maintenance Areas with Insignificant Highway Source Emissions



PM2.5 ANNUAL STANDARD

In 1997, the EPA issued the PM2.5 fine particulate NAAQS to protect public health. The annual standard, set at 15 micrograms per cubic meter (µg/m3), was based on a 3-year average of annual mean PM2.5 concentrations. The Charleston area (Kanawha and Putnam counties) was designated as a non-attainment area under the 1997 annual PM2.5 NAAQS. However, the area was redesignated to an attainment area on April 30, 2014.

On January 15, 2013, the EPA updated annual and 24-hour PM2.5 standards. Known as the 2012 PM2.5 standard, the threshold for annual PM2.5 was set at 12 µg/m3 and is assessed in the way as the 1997 annual PM2.5 NAAQS. The Charleston area was designated as an attainment area for the 2012 annual PM2.5 standard. The rule revokes the 1997 annual PM2.5. Transportation conformity no longer applies to areas redesignated to attainment for the 1997 annual PM2.5 NAAQS and also classified as attainment for the 2012 annual PM2.5 NAAQS. As a result, no air quality analysis for the annual PM2.5 standard is required for the Kanawha-Putnam area.

PM2.5 24-HOUR STANDARD

On December 18, 2006, the 2006 PM2.5 standard issued by the EPA tightened the 24-hour fine particle standard from 65 µg/m3 to 35 µg/m3. The Charleston area (Kanawha and Putnam counties) was designated as a non-attainment area under the 2006 24-hour PM2.5 standard. However, the area was redesignated to an attainment area on April 30, 2014. As part of the 2012 PM2.5 standard (issued January 15, 2013), the EPA affirmed the 24-hour PM2.5 threshold set in 2006, maintaining a value of 35 µg/m3.

In 2012, the West Virginia Department of Environmental Protection (WVDEP) redesignated the Kanawha-Putnam area to reflect a finding of insignificance for highway sources of the 2006 24-hour PM2.5 standard.

Through 40 CFR 93.109(f), federal requirements stipulate areas designated as attainment with SIP insignificant motor vehicle emissions findings are not required to satisfy a regional emissions analysis for §93.118 and/or §93.119 for a given pollutant/precursor and NAAQS. Instead, areas with SIP insignificance findings adopt qualitative conformity determination for regional transportation plans and TIPs.

Although the Charleston area is in attainment and a finding of insignificance exists, RIC must comply with other transportation conformity rule requirements, such as interagency consultations, hot spot analyses, latest planning assumptions, public participation, etc.

CONFORMITY DETERMINATION

Financial Constraint

The planning regulations, Sections 450.322(b)(11) and 450.324(e), require the 2050 MTP to be financially constrained while the existing transportation system is being adequately operated and maintained. Only projects for which construction and operating funds are reasonably expected to be available are included. The RIC MPO, in conjunction with WVDOT, has developed an estimate of available funds for "capacity increasing" transportation projects within the region. A project selection process was used to identify the projects that improve regional traffic congestion and fall within the overall available funding estimates.

Public Participation

The 2050 MTP has undergone the public participation requirements set forth in the Final Conformity Rule and Final Statewide / Metropolitan Planning Rule. The draft document was made available for 15 days of public review and comment beginning on August 25, 2025. Any comments received on the 2050 MTP and conformity determination will be considered for incorporation prior to a request for approval from the RIC Policy Board.

INTERAGENCY CONSULTATION

Members of the region's interagency consultation group—consisting of FHWA, FTA, US EPA, WVDOT, and WV DEP-DAQ—were engaged in discussions about the status of the region's air quality and its relation to the 2050 MTP. Based on the current attainment status of the region, as well as the feedback of the interagency consultation group, it has been concluded that the 2050 MTP conforms to federal and state air quality requirements. This chapter represents the qualitative air quality conformity process that is required for the preparation of this plan.