Kanawha - Putnam Bicycle and Pedestrian Plan

Kanawha and Putnam Counties, West Virginia

May 30, 2019

Revised on December 10, 2020

Regional Intergovernmental Council

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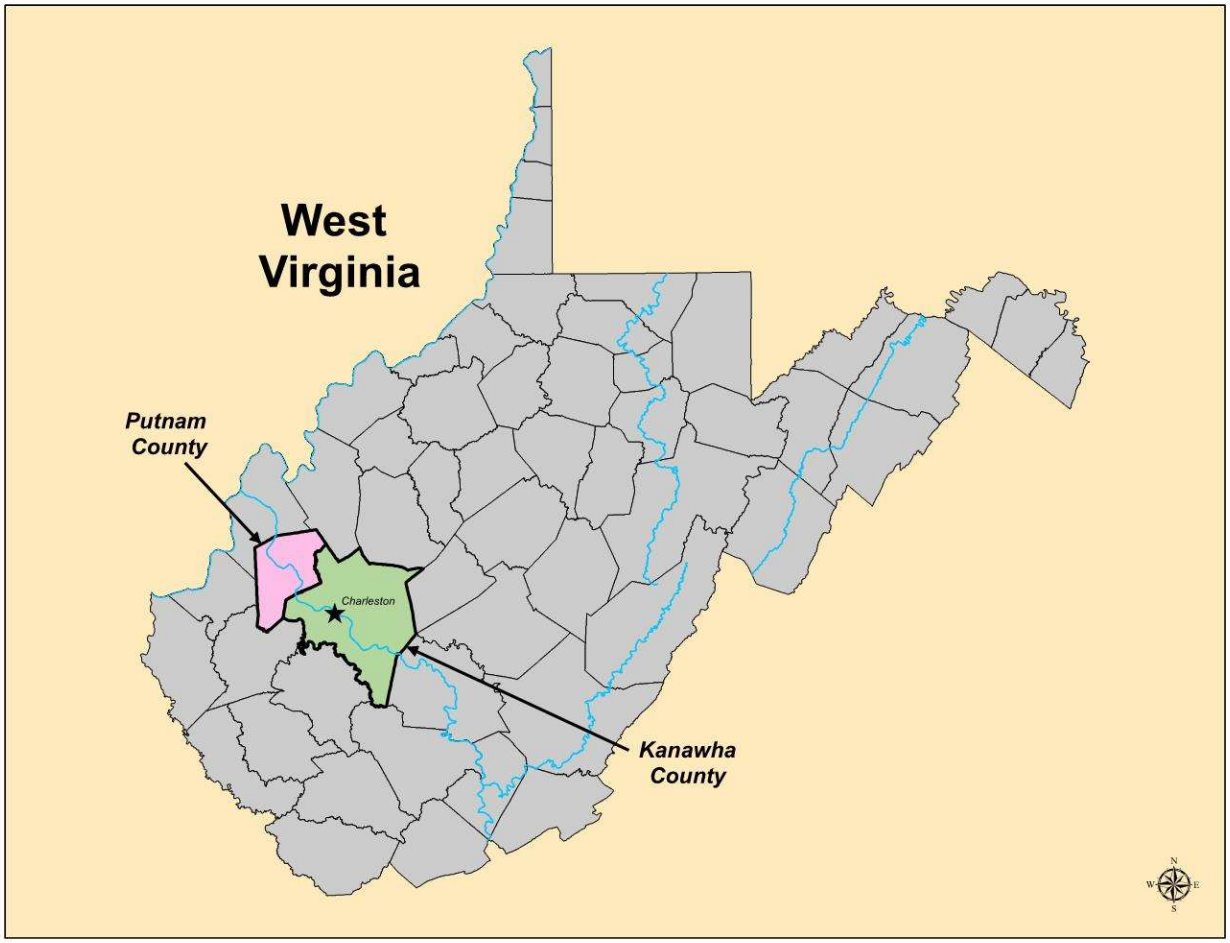
1 Introduction

The Regional Intergovernmental Council (RIC) is the federally designated Metropolitan Planning Organization (MPO) for the Charleston, WV Metropolitan Planning Area. As such, it performs cooperative, continuous and comprehensive transportation planning for Kanawha and Putnam counties. The RIC represents the region's transportation interests and needs at the state and federal levels and has an established history of providing effective and inclusive transportation planning for this region. The RIC has solicited the services of HDR, Inc. (HDR) to update the 2009 Bicycle and Pedestrian Plan for Kanawha and Putnam counties in West Virginia.

The Kanawha – Putnam Bicycle and Pedestrian Plan serves as a guide for communities in Kanawha and Putnam counties interested in enhancing bicycle and pedestrian access, mobility and safety. The Plan provides communities with a strategy for the implementation of recommended improvements to a network of bikeways, trails, and pedestrian facilities. Figure 1-1 illustrates the Study Area that includes all of Kanawha and Putnam Counties, WV.

Figure 1-1: Study Area



1.1 Plan Development

A planning team was established with the primary purpose of managing the project and providing regularly scheduled review and input as the study progresses. The planning team included RIC and consultant staff members and had the direct responsibility of managing the planning process and approving intermediate and final deliverables. The planning team included the following representatives:

1.1.1 Planning Team

- Kara Greathouse, Planning Director, RIC
- Kelsey Harrah, Transportation Planner, RIC
- Doug Rice, Transportation Planner, RIC
- Sam Richardson, Transportation Planner, RIC
- Matt Selhorst, Project Manager, HDR Engineering
- Amy Staud, Deputy Project Manager, HDR Engineering
- Nick Ross, Traffic Engineer, HDR Engineering

1.1.2 Stakeholder Committee

A stakeholder committee was established to oversee the development of the plan and to provide feedback and direction to the planning team. Members met in January, May, October, and December of 2018 to provide input into the plan process, develop priorities for preliminary recommendations, and review final project recommendations.

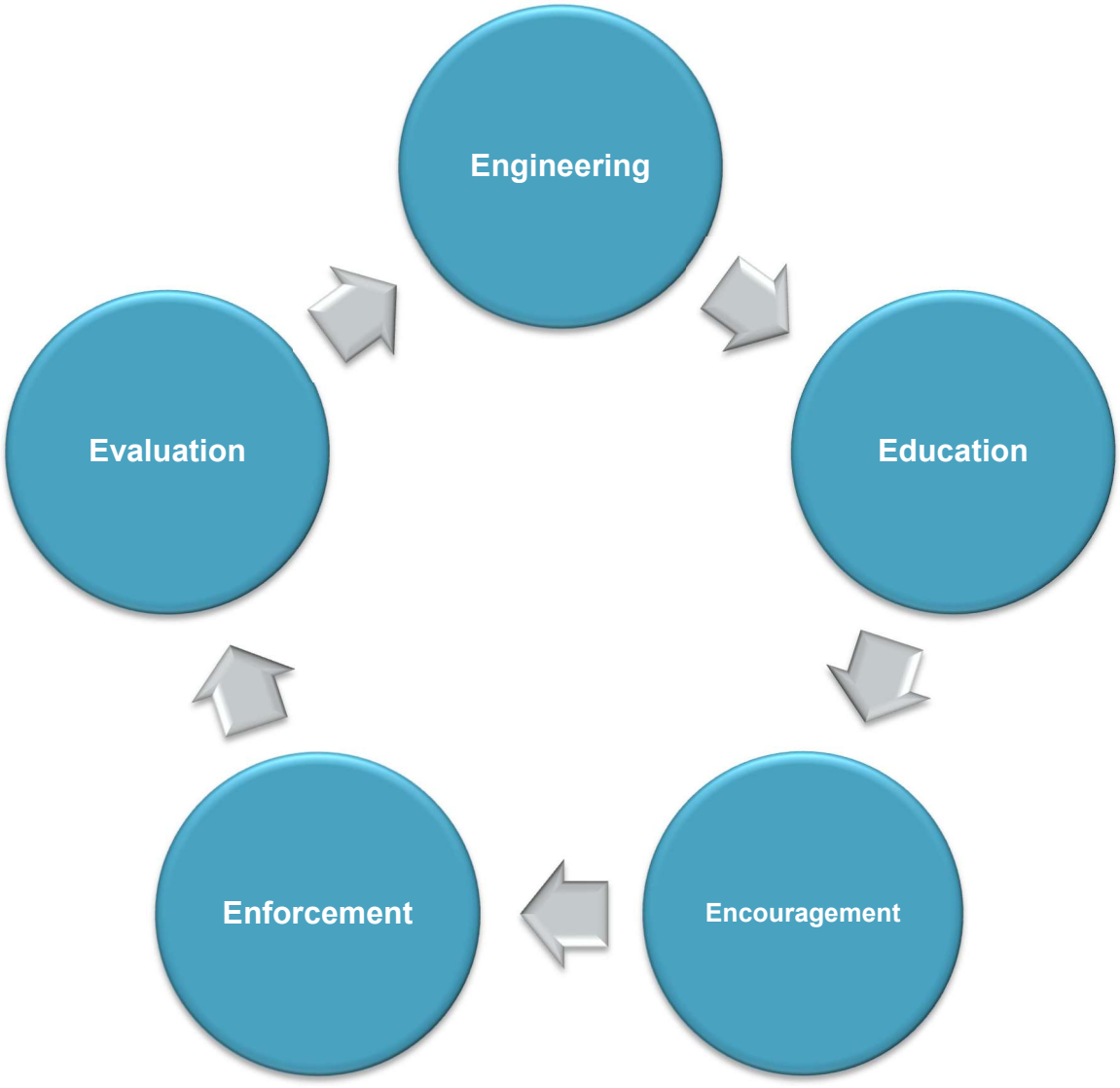
- Putnam County
- Kanawha County
- City of Charleston
- City of Hurricane
- City of St. Albans
- Town of Buffalo
- WVDOH
- FHWA WV
- Kanawha Valley Regional Transportation Authority
- Charleston Area Alliance
- Mountain State Wheelers – Cycling Club

1.2 Vision, Goals, and Prioritization Criteria

The Vision, Goals, and Prioritization Criteria for the Plan were established by the stakeholder committee.

The Vision of the Plan is to serve as a guide to Kanawha and Putnam counties and communities for enhancing bicycle and pedestrian access, providing mobility choices, and safety. This Plan will connect the communities by directing them to potential deficiencies and providing solutions in accordance with the five (5) E's (Engineering, Education, Encouragement, Enforcement, and Evaluation & Planning) of a bicycle friendly community.

Figure 1-2: Vision, Goals, and Prioritization Criteria



1.2.1 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.

1.2.2 Prioritization Criteria

- *Regional Connectivity* – How connectivity (vicinity of existing facility or completes a crucial link) is improved within the Kanawha-Putnam transportation planning area for non-motorized users
- *Access to Local Facilities* – The capability and ease of accessibility (¼ mile, ½ mile) for non-motorized users is important for travel to local community facilities and resources
- *Emphasis on Equity* – Utilizing data from the United States Census Bureau, this measurement focuses on the transportation planning area's local communities that possess a higher volume of low-income households
- *User Safety* – This measurement (volumes, speeds) highly emphasizes the variable of safety for motorized and non-motorized users alike for recommended projects or improvements
- *User Population/Demographics* – Criteria for this measurement include inclusivity of all users, regardless of factors such as age or rider skill level
- *Condition of Facility Type* – This measurement relates to the existing roadway conditions or land terrain of the project or improvement
- *Supports planned development* – Emphasizes incorporating bicycle and pedestrian facilities with other planned improvements

- *Bicycle & Pedestrian Advisory Committee Feedback* – The final measurement is exclusive to project or improvement feedback provided by members of the RIC Bicycle and Pedestrian Advisory Committee.

2 Public Engagement

2.1 Purpose

RIC recognizes that a proactive and effective communications effort will enhance the outcome of all transportation planning activities. HDR followed RIC's Public Participation Plan (PPP), included in Appendix B, through the entire planning process. Throughout plan development the Planning Team achieved a level of public participation activity appropriate to the scope and nature of the planning study. The plan accomplished the following:

1. Utilized visualization techniques to describe plans and studies
2. Solicited input from project stakeholders and local communities
3. Conducted public meetings at convenient and accessible locations and times
4. Made public information available in an electronically accessible format
5. Complied with state and federal legislation and policies

2.2 Public Involvement and Feedback

During the Plan update process, stakeholder interviews and two types of public meetings (workshops and community events) were held.

2.2.1 Stakeholder Involvement

Representatives from the City of Charleston, Hurricane, South Charleston, Putnam County, Kanawha County, Charleston Area Alliance, and Mountain State Wheelers were stakeholders who provided input during interviews. Appendix B includes notes from the stakeholder interviews.

Stakeholder committee meetings were held four times throughout the planning process. One during the kickoff period of the study to present the project scope, schedule, and discuss goals, objectives, and needs. The second stakeholder meeting was held to present the existing conditions and identify prioritization criteria. The third stakeholder meeting was held to present preliminary recommendations (prior to public involvement). The last stakeholder meeting was held to present final priority recommendations.

2.2.2 Public Workshops

Public workshops (one in each county) were held twice during plan development. The first round of public meetings was held in April 2018 to gather input into the plan process and

potential recommendations. The second round of public meetings was held in November 2018 to prioritize and review potential recommendations.

Public meetings were publicized through notices to the media, television news stories, press releases, and social media such as Facebook and Twitter, and the RIC and municipal websites. Updates were communicated on social media through existing accounts from member jurisdictions and the Project Team.

During the public meetings, members of the public were given an opportunity to view maps and other visual media, review plans and studies, speak with RIC staff and other transportation officials, and provide oral and written comments on proposed plans, projects and studies. Appendix D includes attendance sheet, exhibits, and comment forms.

2.2.3 Community Events

The team also attended community events to gather input into the plan process and potential recommendations. The team attended these events in attempt to go to the people rather than ask them to attend a meeting.

The planning team attended St. Albans Founders Day on May 12, 2018 in St. Albans on Main Street from 10 am – 4 pm and the Charleston Area Alliance's Brown Bag lunch concert at the Kanawha Library Plaza in Charleston on June 13, 2018 on Capitol Street from 11 am – 2 pm. Exhibits were presented to solicit comments on the plan process and recommendations.

Figure 2-1: Brown Bag Lunch Display

Figure 2-2: Putnam County Homecoming

Figure 2-3: St. Albans Founders Day

The planning team attended Putnam County Homecoming on September 8, 2018 in Winfield on Main Street from 9 am – 4 pm. Exhibits were presented to solicit comments on the plan recommendations.

2.2.4 Bike Safety Rodeo

The planning team held a successful Bike Safety Rodeo on September 8, 2018 The Rodeo was sponsored by the WV Connecting Communities and held at the Teays Valley Baptist Church. Approximately 40 parents and children attended the event. Complimentary bicycle helmets were distributed to children and education and awareness was gained by traveling through a fun safety obstacle course.

2.3 Online Survey

Content was developed for the RIC website to engage the public through the Internet. An online survey was administered in the visioning and issues identification phase of the plan development. The survey was made available to residents of Kanawha and Putnam counties as part of public outreach for the Bicycle and Pedestrian Plan. A survey was distributed via social media, online, and email to gather input from the public on the needs and improvements for the bicycle and pedestrian facilities. A Facebook advertisement was created for the Kanawha Valley area to advertise the survey and input. The Facebook advertisement reached a total of 30,593 users and made 41,082 impressions. There were 84 link clicks as a result of the Facebook advertisement. Information sought by the survey included location, demographics, bicycling experience and purpose, destinations, challenges, and recommendations. 100 people started or partially completed the survey and 68 people completed the full survey. Appendix E includes a summary of the survey results.

The survey was accessible online for two (2) months and during that time 65 responses were received. The survey revealed that the majority of respondents, regardless of County, feel that bicycle and pedestrian facilities either do not exist, or if they do exist, are in unsatisfactory condition.

After reviewing the survey responses, the following information was surmised:

- Over three-quarters (83%) of the respondents were residents of Kanawha County.
- Charleston residents accounted for over half (54%) of the total respondents.
- Largest group age of responders was 36-45

- 85% were bike owners
- 83% was for recreation and exercise
- 38% rode more than 10 days/month
- 42% walk for 30 minutes more than 10 days/month
- 9% commuted to work (up from 7% in 2008).
- Largest challenge for bicycle safety is no space to ride on roadways (89%)
- Potholes and cracked pavement were the highest contributing factors for road conditions negatively affecting bicycling.
- Lack of designated crosswalks and sidewalks were the highest contributing factors for road conditions negatively affecting walking.

2.3.1 Best and Worst Locations for Bicycling

Survey responders also provided a list of the best roads and worst roads to bike and walk, their favorite biking and walking destinations, and locations for bike and pedestrian improvements. The online survey results and public comments were compiled to identify the perceived best and worst locations for bicycling and walking. Maps were developed for the best and worst current locations for bicycling and walking and to show necessary connections based on demographics and public comment. Figures 2-4 and 2-5 show the best and the worst locations for bicycling.

All comments from the stakeholder interviews and the survey were investigated to determine if these were appropriate and feasible for improvements. The facilities were observed through a cursory field review to identify bicycle and pedestrian activity levels, sidewalk adequacy and bicycle facility adequacy for the area. After these locations were observed, locations were designated as a preliminary recommendation area and carried forward for consideration of a priority improvement.

Figure 2-4: Best and Worst Locations for Bicycling in Kanawha County

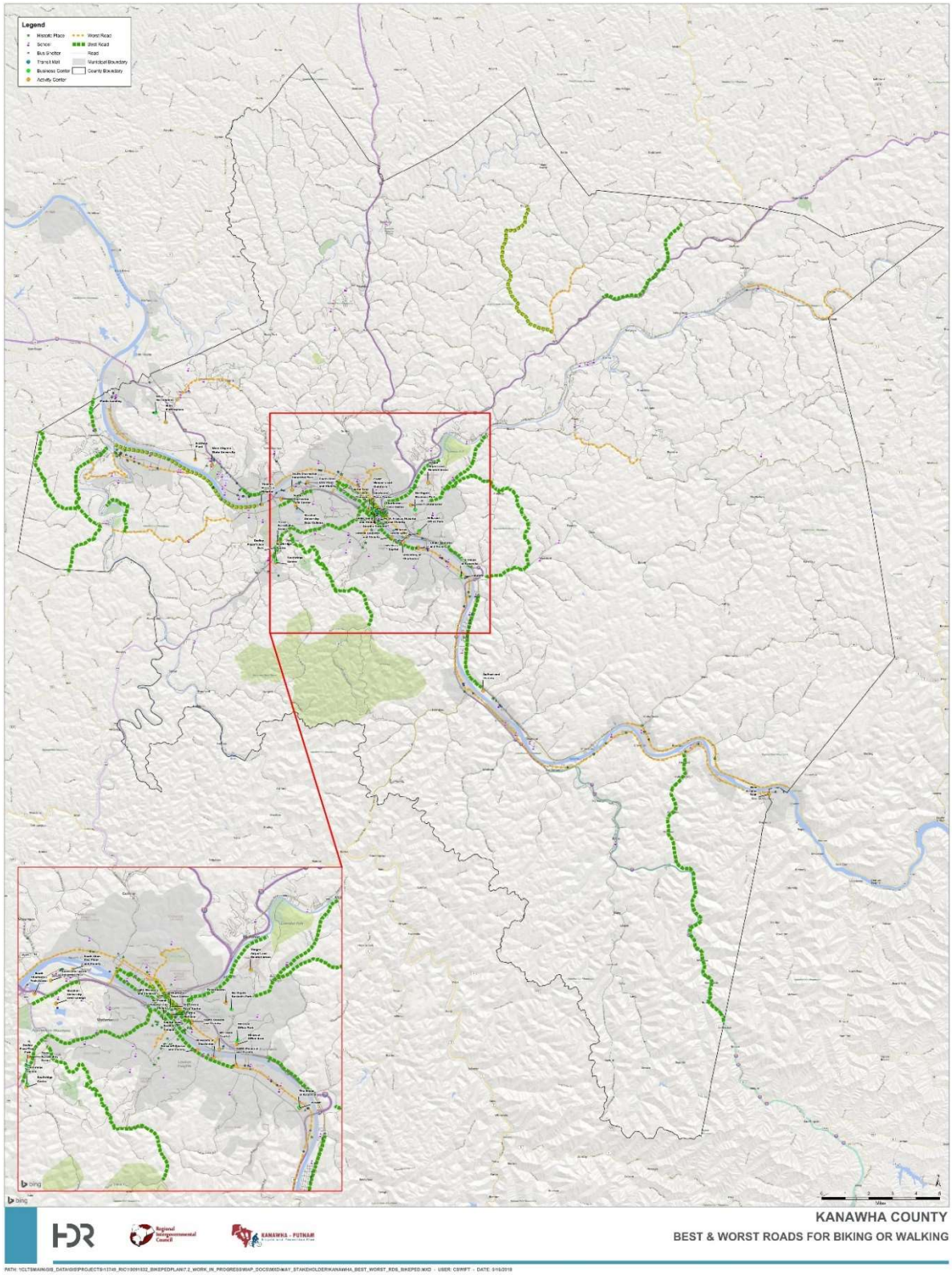
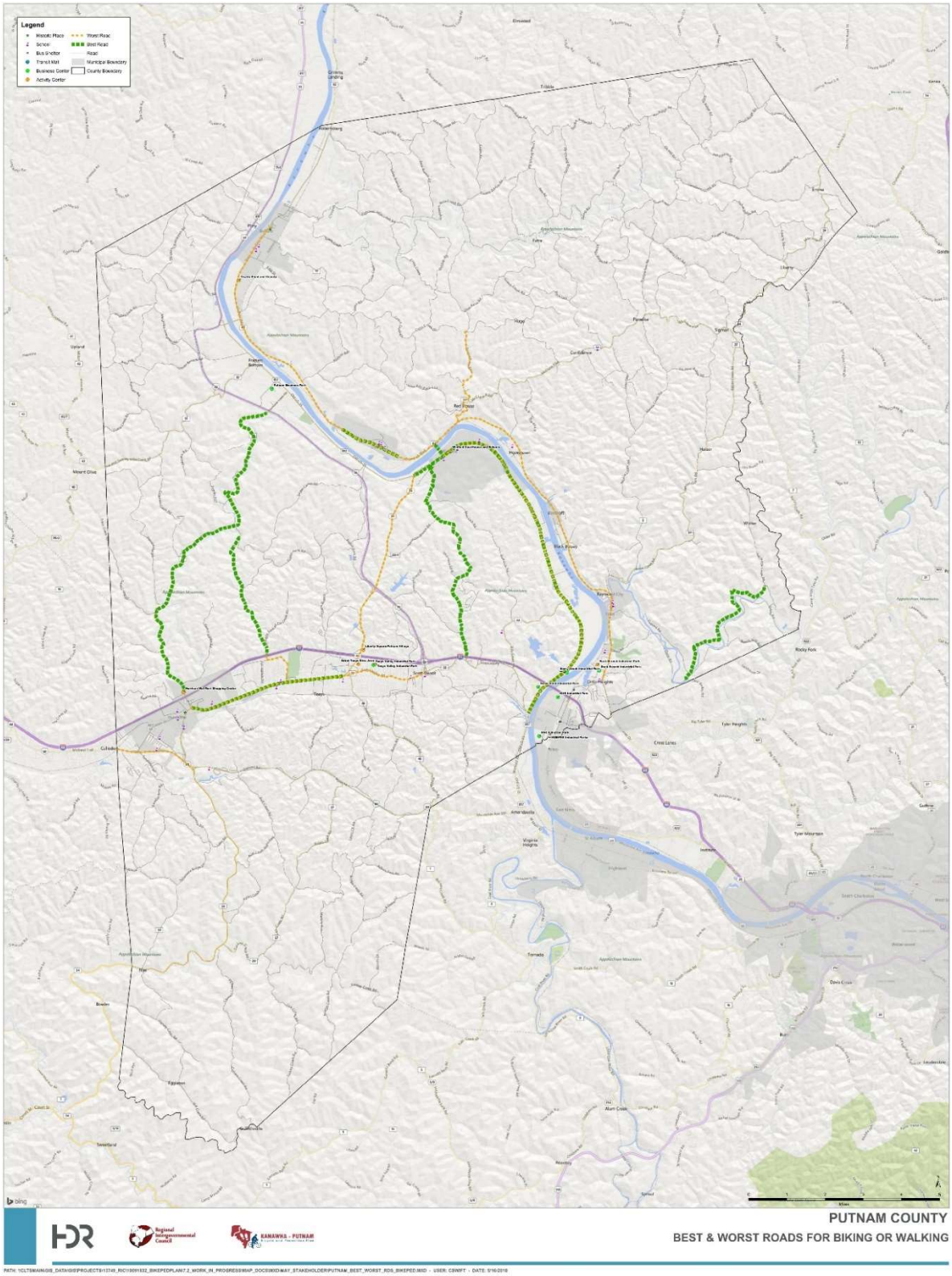


Figure 2-5: Best and Worst Locations for Bicycling in Putnam County



3 Existing Conditions

HDR performed a cursory inventory of existing bicycle and pedestrian facilities, identified areas with a high level of bicycle and pedestrian activity, collected existing demographic data, traffic data, local planning documents, and performed extensive public outreach. Existing resources were reviewed to identify bicycle and pedestrian issues in Kanawha and Putnam counties and to support future analysis and concept development efforts.

HDR analyzed existing roadways to determine current bicycle and pedestrian deficiencies. The potential improvement areas were identified through an analysis of community specific information compiled from public involvement meetings, an online survey, an analysis of bicycle and pedestrian crashes, field surveys of identified deficiencies, and input received from local officials and the general public.

3.1 Demographic Overview

The demographic profile reviews county-wide population trends, income, vehicle availability, employment, and average time of commute. This data is used to identify areas with a potential of high concentration of bicycle users and/or pedestrians and areas that should have additional connections for those without access to vehicles.

3.1.1 Population

From 2000 to 2017, the population of Kanawha County decreased by approximately 16,780 which results in a population decrease of over eight (8) percent. From 2000 to 2010, the population of Putnam County increased by approximately 5,203 people, resulting in a population increase of over ten (10) percent. During that same time range, West Virginia's population increased by 0.42 percent, approximately 7,513 people, and the country experienced an even higher growth rate of 15.74 percent. Figure 3-1 shows the 2017 population for West Virginia, Kanawha County, and Putnam County. Figure 3-1 shows the percentage of population change for the US, West Virginia, and Kanawha and Putnam counties from 2000 to 2017.

To identify areas with a high concentration of users, population density was identified for the counties. A map, shown in Appendix A, displays the persons/square mile by census tract for each county. Areas with greater than 900 persons/square mile include the Westside of Charleston, Nitro, St. Albans, Dunbar, South Charleston, Cross Lanes area, Southridge area, South Hills area, Sissonville, Pinch, Kanawha City, Belle, Chesapeake, Cabin Creek, Hurricane, Teays Valley area, Bancroft, and Poca. Areas of potential growth were identified during stakeholder interviews. This is shown on the growth areas map in Appendix A. Growth areas include the Southridge area, Downtown Charleston, Kanawha City, Hurricane, Teays Valley area, and Frazier's Bottom area.

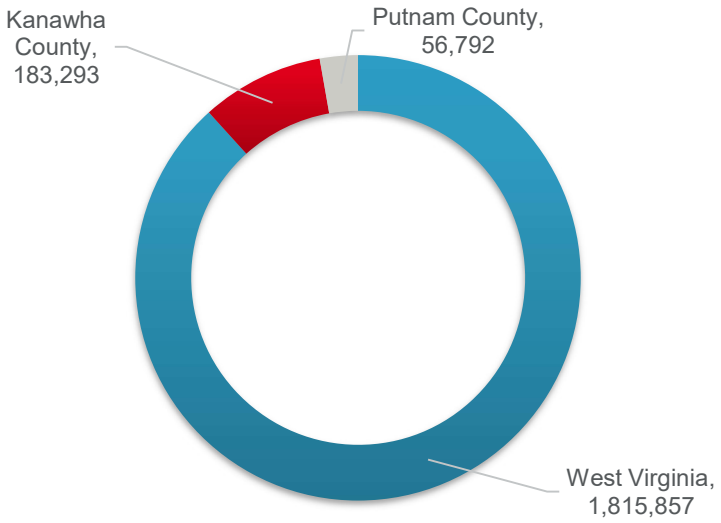


Figure 3-1: 2017 Population

Source: US Census

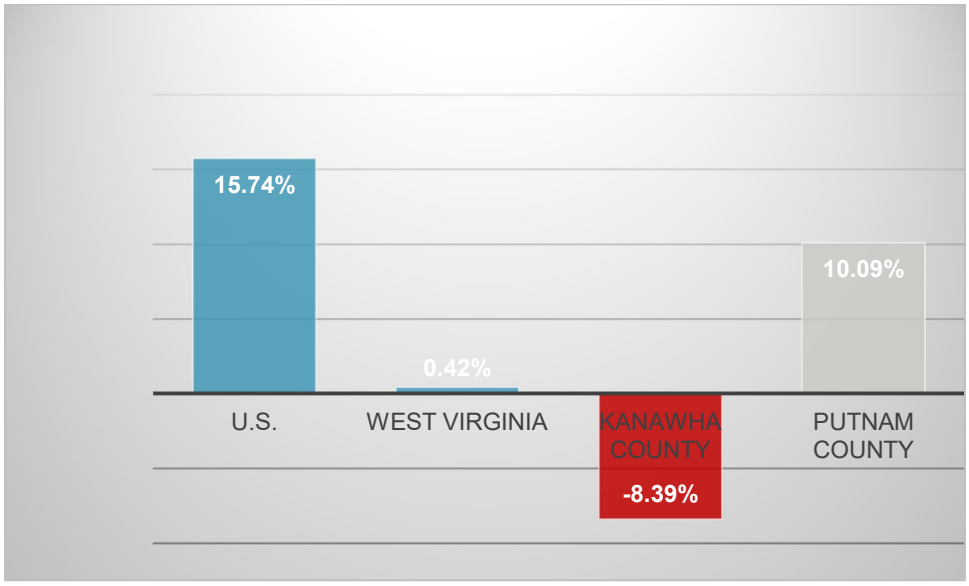


Figure 3-2: % Change in Population from 2000-2017

Source: US Census

3.1.2 Income

The 2016 median household income of Kanawha and Putnam counties was $46,528 and $56,640, respectively. This is higher than the median household income in West Virginia. Kanawha County has experienced faster income growth in comparison to the U.S. but has a lower median household income. Putnam County has experienced similar growth in income and has a higher median household income than the U.S. Figure 3-3 shows the median household income for the US, West Virginia, and Kanawha and Putnam Counties from 2000 to 2016. A map, shown in Appendix A, illustrates the percent of families below the national poverty level by census tract for each county.

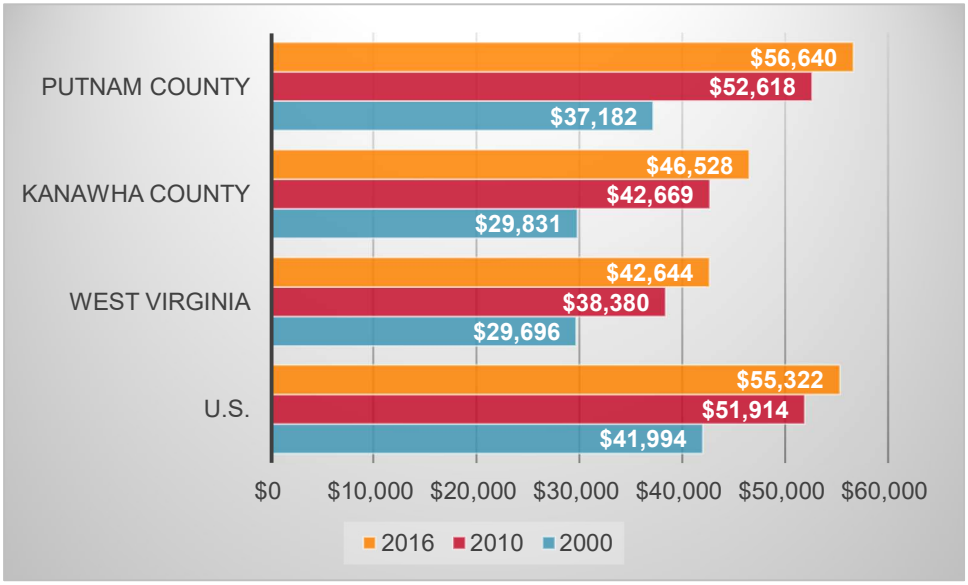


Figure 3-3: Median Household Income

Source: US Census

3.1.3 Unemployment

Kanawha County's unemployment rate was 6.4 percent and Putnam County's unemployment rate was 3.1 percent in 2016. This was lower than West Virginia's unemployment rate of 7.1 percent. However, Kanawha County's unemployment rate did increase by 1.9 percent from 2000 to 2016, whereas the Putnam County's unemployment rate decreased by 1.8 percent. Figure 3-4 shows the unemployment percentage for the US, West Virginia, and Kanawha and Putnam counties from 2000 to 2016.

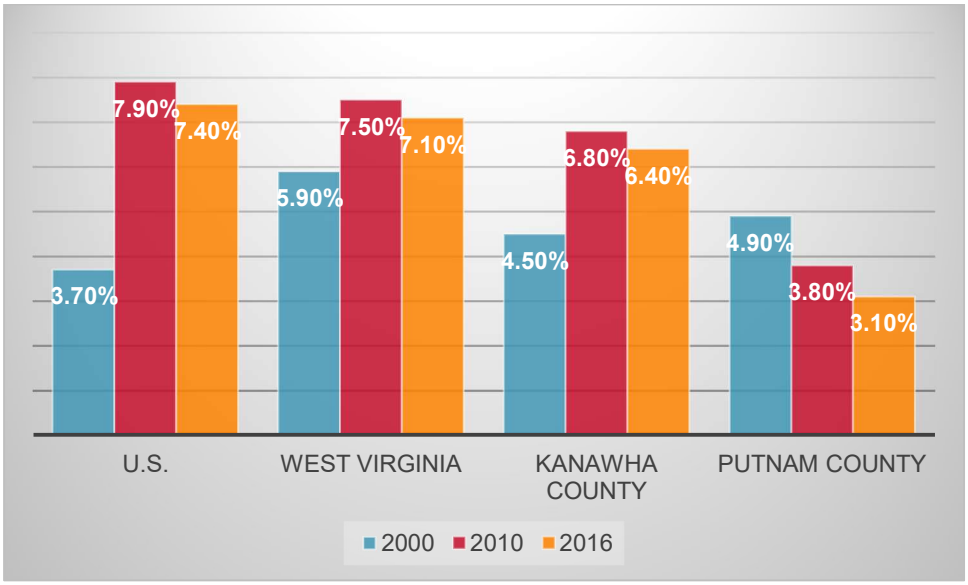


Figure 3-4: Unemployment % from 2000 to 2016

Source: US Census

3.1.4 Average Travel Time to Work

The average Putnam County commute time is similar to West Virginia in 2016, whereas Kanawha County's average commute time is less. Kanawha and Putnam County's commute time are less than the West Virginia and US commute times. Figure 3-5 shows the travel time to work for the US, West Virginia, and Kanawha and Putnam counties from 2000 to 2016.

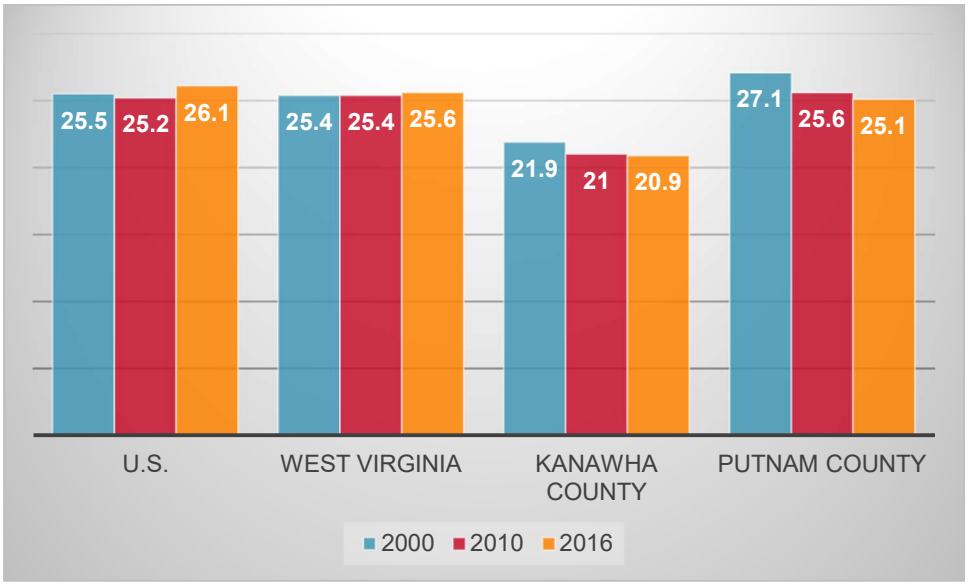


Figure 3-5: Average Travel Time to Work (minutes)

Source: US Census

A map included in Appendix A, illustrates the percent of occupied housing units with zero vehicles available by census tract for each county. Areas with a high percent of households with zero vehicles available (greater than 45%) include the Westside of Charleston, southern Putnam County, Hurricane, and Cabin Creek area of Kanawha County.

A map, in Appendix A, highlights the highest areas of concentration for population density, households below the poverty level, households with zero vehicles available, and areas of potential growth. It can be surmised that where these populations overlap lay the greatest demand for transit, bicycling and/or walking as their primary mode of transportation.

3.2 Transportation System

Existing resources related to bicycle and pedestrian facilities in Kanawha and Putnam counties were obtained and reviewed. Data collected included the following:

- Existing transportation network;
- Existing traffic volume and crash data for roadways;
- Existing bicycle trails and sidewalks, where data was available;
- Previous studies, including the Kanawha-Putnam 2045 Regional Transportation Plan, Charleston Bike and Trail Plan, and the WVDOT Statewide Bicycle Plan

Based on GIS data provided by RIC, the project team created maps illustrating the existing system and used existing conditions to perform and initial deficiency analysis.

3.2.1 Trip Generators

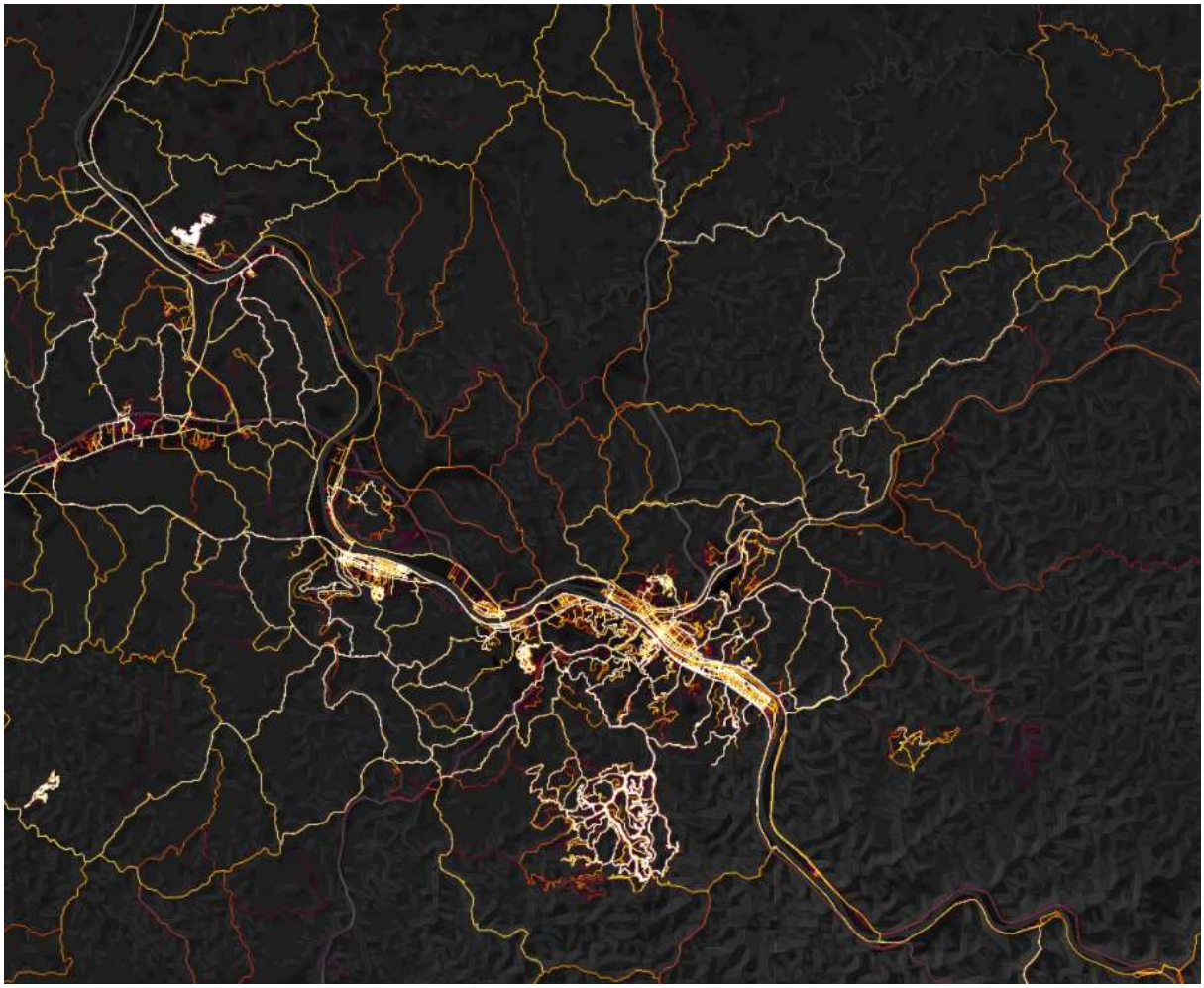
Trip generators, such as schools, libraries, hospitals, commercial districts, and dense residential neighborhoods, attract people that are more likely to bike and walk. Bicycle and pedestrian activity centers were identified and investigated for bicycle and pedestrian facilities. Activity Centers in Kanawha and Putnam counties were identified based on the population of an area and if it was identified as an Activity Center in the latest RIC MTP. Additional areas were added during this mapping and analysis process based upon stakeholder input. The activity centers and business centers were mapped in the maps for the base network and for project recommendations. Areas to focus field inventory efforts were determined based on the proximity of bicycle and pedestrian trip generators and feedback from the public.

3.2.2 Bicycle Patterns

Millions of people upload their bicycle rides and runs to Strava every week via smartphone or GPS. Figure 3-6 shows a Strava heatmap of bicycling in the counties. The heatmap shows the frequency of bicycle activity over the last two years. The brighter the lines, more bicycle rides occur on that facility. This map was used to identify areas that could use improvements to accommodate current riders and/or to look at connections to extend safe

routes for riders. The most used routes that were mapped using Strava include facilities in downtown Charleston, throughout St. Albans, routes to the Kanawha State Forest, routes to and around Little Creek Park in South Charleston, mountain bike paths in Eleanor, and throughout Dunbar.

Figure 3-6: Strava Heat Map



Source: Strava Website

3.2.3 Roadway Congestion

Roadway condition plays a large part in a person's desire to bike and/or walk. Congested roadways are shown in maps, Figures 3-7 and 3-8, using travel time data from RIC's MTP. This information is used to identify roadway areas that either need improvement to help accommodate bicyclists and pedestrians or that should be avoided by bicyclists and pedestrians. These routes were utilized in project prioritization criteria.

Figure 3-7: Kanawha County Congestion Map

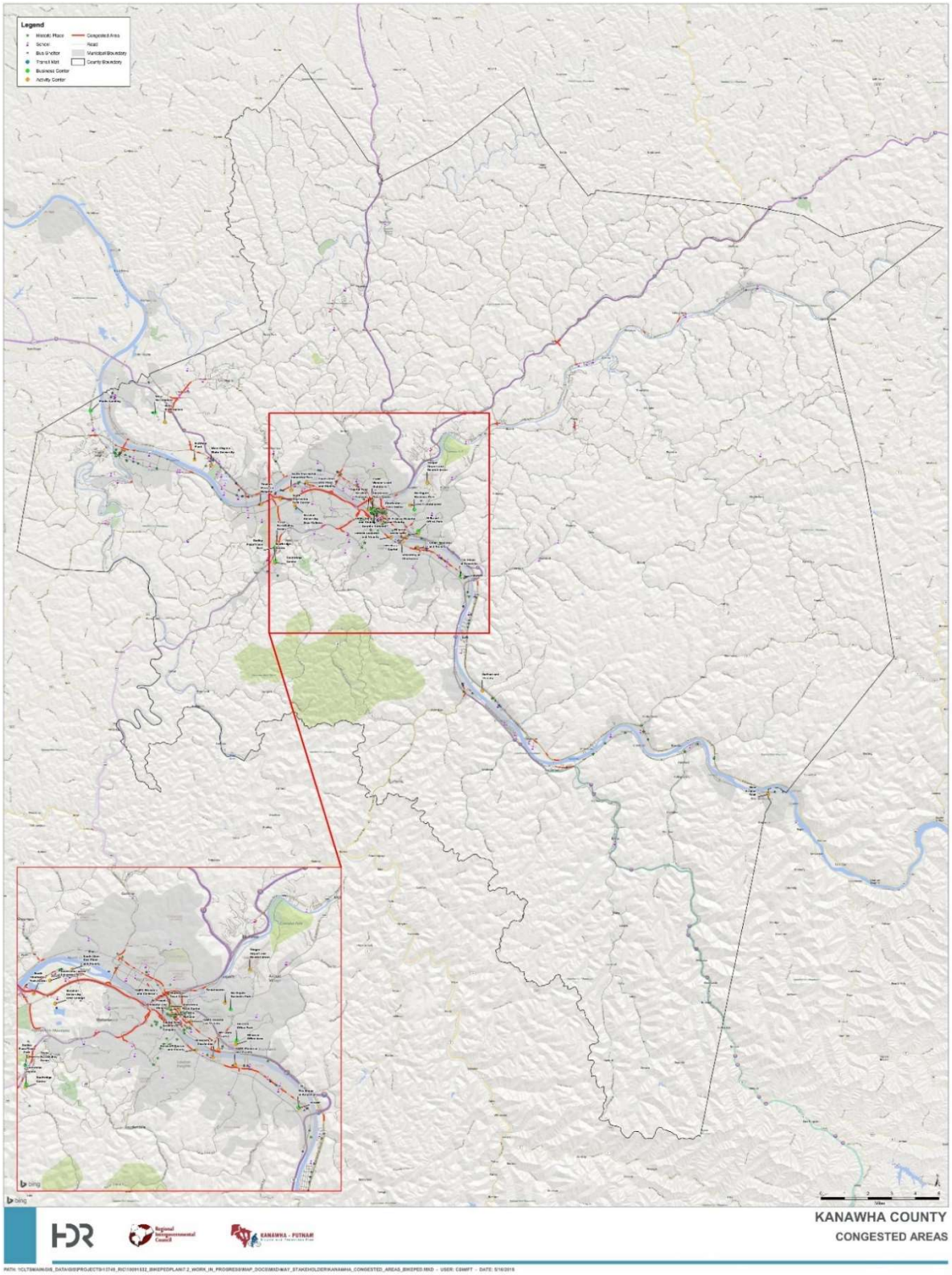
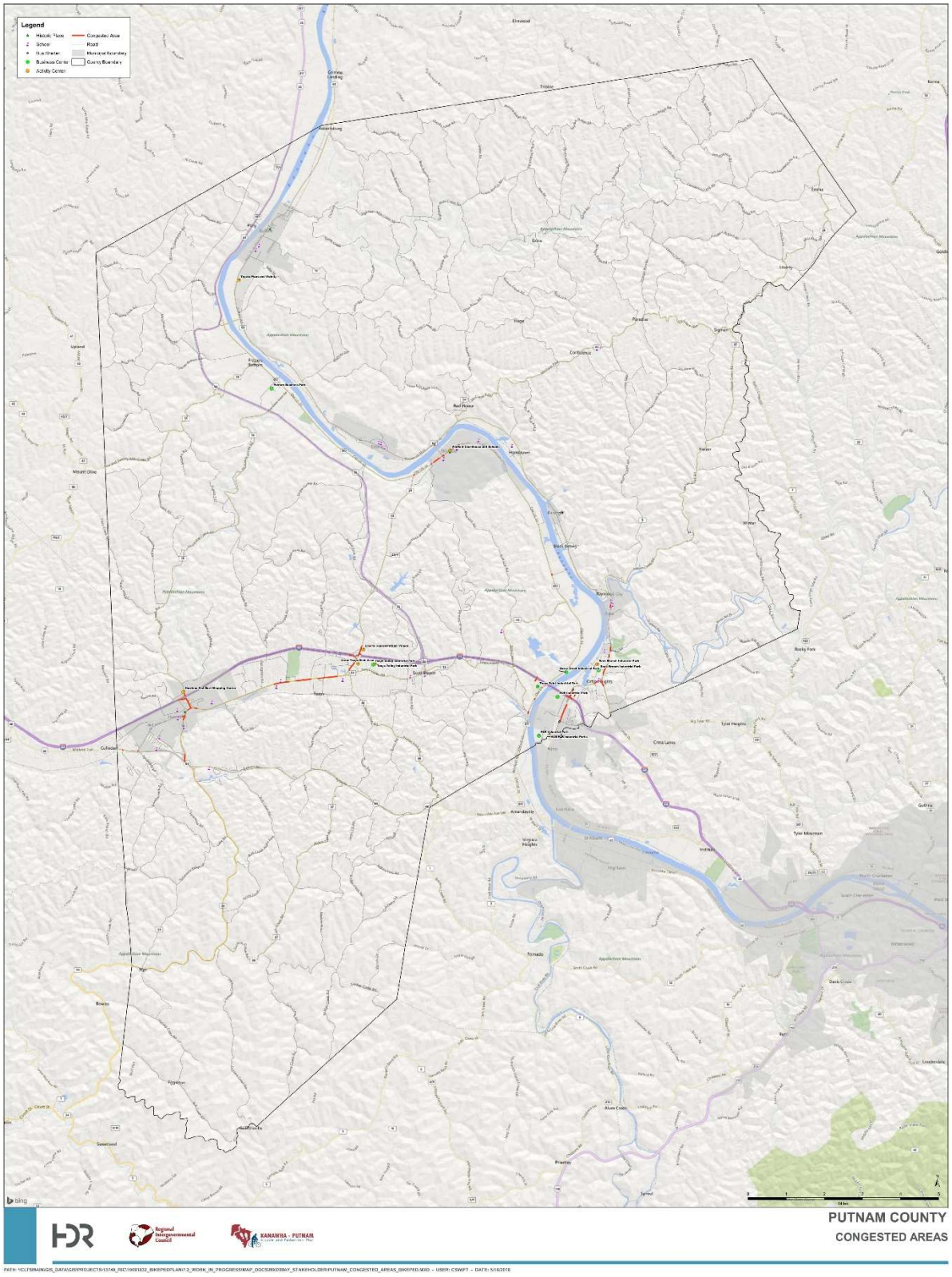


Figure 3-8: Putnam County Congestion Map



3.2.4 Roadway Crashes

Crash location data, from WVDOH, was analyzed to determine unsafe areas or areas that may be congested by too many vehicles and are therefore not safe to route bicyclists and pedestrians. Crash locations are shown in maps, Figure 3-9 and Figure 3-10. This information is used to identify corridors and/or intersections that either need improvement to help accommodate bicyclists and pedestrians or areas that should be avoided by bicyclists and pedestrians. These routes will be utilized as project prioritization criteria.

Figure 3-9: Kanawha County Crashes Map

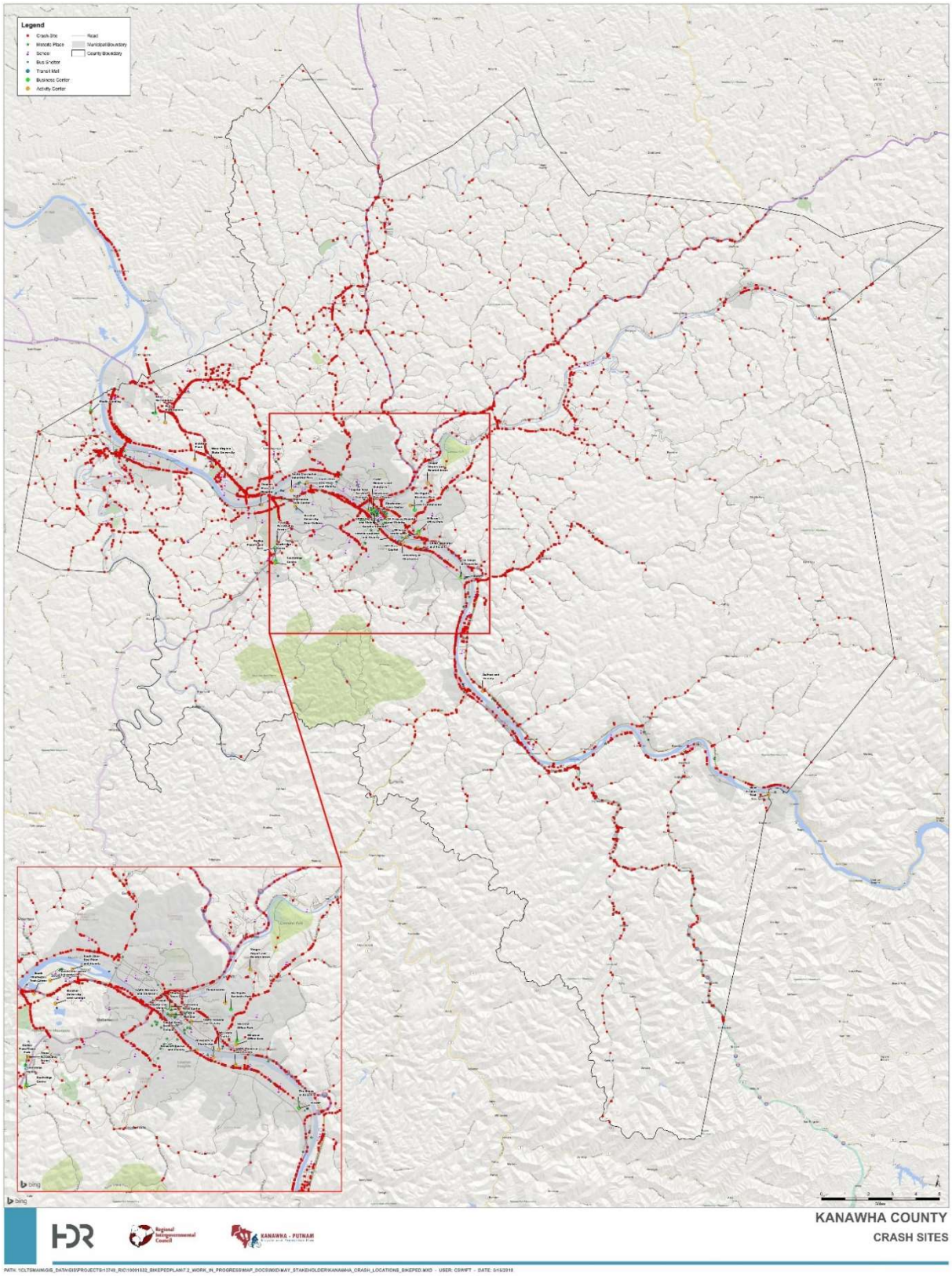
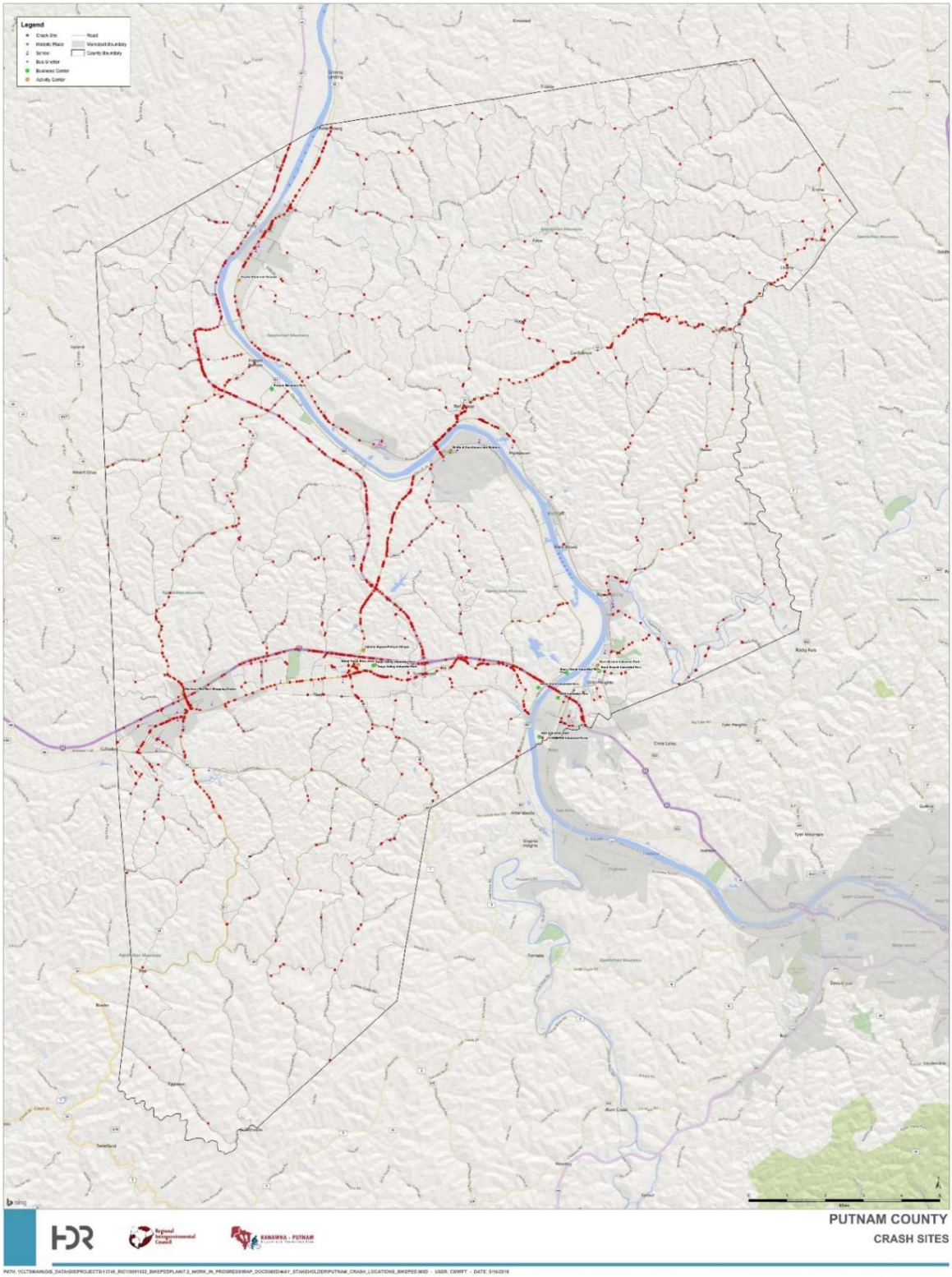


Figure 3-10: Putnam County Crashes Map



3.3 Review of Existing Planning Efforts

Various planning efforts were performed in the past for bicycling and pedestrian improvements in Kanawha and Putnam counties. These include:

- WVDOT Bicycle System Plan, 2017
- Kanawha Putnam 2045 Regional Transportation Plan, 2017
- WVDOT FY 2016-2021 STIP
- City of Charleston Bike & Trail Master Plan, 2015
- City of South Charleston Bike Plan, 2011
- WVDOT Multimodal Plan, 2010
- RIC Kanawha-Putnam Bicycle and Pedestrian Plan, 2009
- Kanawha Trestle and Rail Trail Master Plan, 2007

1 displays a list of previously recommended improvements and what has been implemented to date. These projects have been included as project recommendations following input from stakeholders and the public.

Table 3-1: Status of previously recommended improvements

RIC 2009 Bike/Ped Plan - Kanawha County Recommendations		
Project ID	Location	Status Fall 2018
K1	MacCorkle Ave, Patrick St. to 35th Street	Outstanding
K2	Piedmont Road, Court Street to Leon Sullivan Way	Outstanding
K3	Kanawha Blvd and Chesapeake Avenue	Partially Complete
	Kanawha Blvd and California Avenue	Partially Complete
	Kanawha Blvd and Greenbrier Street	Partially Complete
	Kanawha Blvd and Ruffner Avenue	Outstanding
	Kanawha Blvd and Morris Street	Complete
K4	Intersection of Greenbrier Street and Washington Street	Complete
K5	Washington Street East, 35th Street Bridge to Elk River	Complete
K6	Washington Street West, Elk River to Big Tyler Road	Outstanding

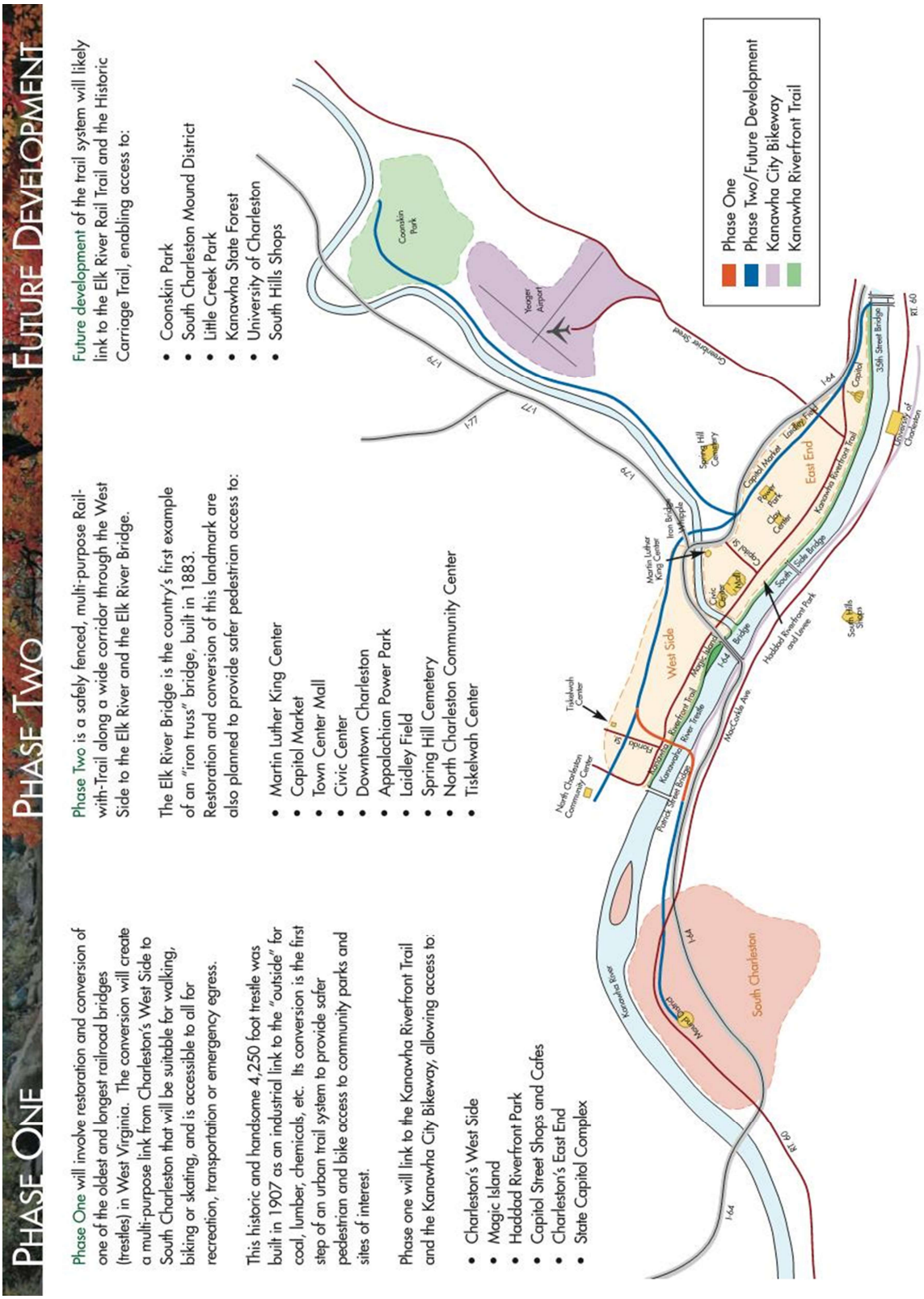
RIC 2009 Bike/Ped Plan - Kanawha County Recommendations		
K7	Kanawha Boulevard, 35th Street to Daniel Boone Park	Outstanding
K8	Kanawha River Trestle Rail Trail	Outstanding
K9	MacCorkle Ave. (US 60) Gateway Shopping Center to Oliver Street	Partially Complete
K10	Kanawha Terrace, MacCorkle Avenue to Poplar Drive	Outstanding
K11	Coal River Road, Glenwood Lane to Riverview Drive	Outstanding
K12	Intersection of MacCorkle Avenue (US 60) & Avesta Drive	Outstanding
K13	WV Rt. 62 (Cross Lanes Drive), Big Tyler Rd. (WV 622) to WV 25	Outstanding
K14	MacCorkle Ave. (US 60), Montrose Drive to Patrick Street	Outstanding
K15	WV 25, North Charleston to Nitro	Outstanding
K16	10th Street, Dunbar Ave. to Toll Bridge	Complete
K17	Edgewood Drive, Washington Street West to Wood Street	Outstanding
K18	Oakwood Rd, US 119 to Bridge Road	Outstanding
K19	Davis Creek Road, US 119 to Kanawha State Forest	Outstanding
K20	MacCorkle Ave. (US 60), St. Albans to South Charleston	Complete from St. Albans to Dunbar Bridge
K21	Malden Drive (US 60) to East End of Malden Historic District	Outstanding
K22	US 60 at Cedar Grove Floral and Custom Signs	Outstanding
K23	WV Route 61, Upper Drive to Handley Fire Department	Outstanding
RIC 2009 Bike/Ped Plan - Putnam County Recommendations		
Project ID	Location	Status Fall 2018
P1	Teays Valley Road (WV Route 34), Great Teays Boulevard to CR 19	Outstanding
P2	US 35, WV 34 to I-64 (Winfield)	Outstanding
P3	WV 62, Nitro WV 25 to Poca	Outstanding
P4	Bills Creek Road, US 35 to CR 33 (Teays Valley)	Outstanding
P5	WV 34, US 35 to I-64 (Teays Valley)	Outstanding
P6	South Poplar Fork Road, Teays Valley Road (CR 33) to CSX Railroad	Outstanding

RIC 2009 Bike/Ped Plan - Putnam County Recommendations		
P7	Intersection of Teays Valley Road (WV 34) and Valley Park Drive	Outstanding
P8	WV 62, Eleanor to Winfield Bridge	Outstanding
P9	Intersection of WV 34 and CR 19 (Hurricane)	Complete
P10	WV 34, Lynn Street to Main Street (Hurricane)	Outstanding
P11	Hurricane Creek Road (CR 19), I-64 to Wal-Mart (Hurricane)	Outstanding
P12	Intersection of I-64 and Hurricane Creek Road (CR 19)-North Side of Interstate	Complete
P13	Great Teays Boulevard, WV 34 to CR 33 (Teays Valley)	Outstanding
P14	WV 34, Great Teays Boulevard to Putnam County Library	Outstanding
Short Term	Restripe crosswalk at intersection of 62 and 622	Complete
Short Term	D street, South Charleston stop bars	Outstanding
Short Term	Curb ramps at I-64/Montrose Drive interchange	Outstanding
Short Term	Crosswalk on Washington St east at Greyhound Bus Terminal	Outstanding
Short Term	Crosswalk on Teays Valley Road at West Teays Elementary School	Outstanding
City of South Charleston Bike Plan - 2011		
Project ID	Location	Status Fall 2018
	Five bicycle routes, 8 sharrow routes, six bicycle routes, and three connector trails recommended	Outstanding
Kanawha Trestle And Rail Trail Master Plan - 2013		
Project ID	Location	Status Fall 2018
	RR Bridge	Outstanding
	Kanawha Blvd from Stockton Street to 35th Street Bridge	Complete
	Trail connections	Outstanding
City of Charleston Bike and Trail Master Plan - 2015		
Project ID	Location	Status Fall 2018
	Kanawha Blvd from Stockton Street to 35th Street Bridge	Complete

3.3.1 Kanawha Trestle Rail Trail

The Kanawha Trestle and Rail Trail Master Plan is highlighted because it creates an important connection throughout Charleston by crossing the Kanawha and Elk Rivers, and connecting South Charleston, Charleston and Coonskin Park. Many elements of this plan were discussed during stakeholder meetings. Stakeholder engagement and public feedback show this is still a highly recommended improvement. Figure 3-11 shows a view of the proposed plan.

Figure 3-11: Kanawha Trestle Rail Trail Plan



Source: West Virginia Trails Coalition

3.4 Users and Facilities

In order to develop and integrate the recommended bicycle and pedestrian network into the overarching vision for the transportation system, the types of users, facilities, and programs must be understood. For bicycling, the most effective set of recommendations addresses the needs and expectations of all advanced, basic adult, and child bicyclists.

- **Advanced —** Usually the most experienced on the road, advanced cyclists have the ability to safely ride in typical arterial conditions of higher traffic volume and speeds. Most advanced cyclists prefer shared roadways in lieu of striped bike lanes and paths but may be more willing to accept striped bike lanes when the street gutter is cleaned regularly. Although this group represents approximately 20% of all cyclists, they account for nearly 80% of annual bicycle miles traveled.
- **Basic Adult** — Due to being less secure in their ability to ride in traffic without special accommodations, basic cyclists are casual or new adult/teenage riders who typically prefer multi-use paths or bike lanes. Such facilities reduce basic cyclists' exposure to fast-moving and heavy traffic. Surveys of the cycling public indicate that about 80% of cyclists can be categorized as basic cyclists.
- **Child Bicyclists** — The children on bicycles that make up this group have a limited field of vision while riding and generally keep to neighborhood streets, sidewalks, and greenways. On busier streets, this group is likely to stay on sidewalks or off-street facilities that protect them from traffic. While in general riding on sidewalks should be discouraged, the comfort level of child and basic cyclists may warrant riding on sidewalks provided they yield to pedestrians.

Like drivers, cyclists gain experience over time. As cyclists ride and gain more experience operating in traffic, they graduate from basic to advanced cyclists. This transition ensures that the needs of all three types of cyclists must be constantly evaluated and accommodated. Roadways need to be designed with an eye toward both the intended use by cyclists and pedestrians and how the facility fits into a system-wide network.

Preliminary designs for the recommended improvements in this plan were developed based on the following most current standards and guidelines for:

- Manual on Uniform Traffic Control Devices (MUTCD)
- American Association of State Highway Transportation Officials (AASHTO) Guide for Development of Bicycle Facilities
- National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide

Figure 3-12: Bicycle and Pedestrian Facility Overview

Striped Bike Lanes

Description

- Exclusive-use area adjacent to the outer most travel lane
- Typical width: 4' to 5' (preferred)

Target User

- Basic and Intermediate Cyclists

Estimated Cost

- $2,000 per mile (striping only)

Wide Outside Lane

Description

- Extra width in outermost travel lane
- Best on roadways with speed limits of 35 mph or higher and moderate to high daily traffic volumes
- Typical width: 14' outside lane preferred

Target User

- Advanced Cyclists

Estimated Cost

- $2,000 per mile (striping only)

Multi-Use Path

Description

- Separated from traffic and located in open space (greenway) or adjacent to road with more setback and width than sidewalks (sidepath)
- Typical width: 10' preferred; 8' in constrained areas

Target User

- All Cyclists; Pedestrians

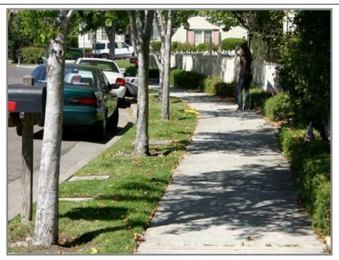
Estimated Cost

- $220,000 per mile

Sidewalk

Description

- Dedicated space within right-of-way for pedestrians
- Should include a landscaped buffer from roadway
- Typical width: 5' preferred



Target User

- Pedestrians

Estimated Cost

- $70,000 per mile

Unpaved Trail

Description

- Formal/informal hiking trail made of dirt, mulch, or pea gravel
- Typically connects recreational and environmental features of a community
- Typical width: 5-8' footpath; 8-10' bike trail

Target User

- Off-Road Cyclists; Pedestrians; Hikers

Estimated Cost

- $10,000 to $20,000 per mile

The initial concepts for the recommended improvements include, bike lanes on the street and shoulders, bike signs, sharrows, narrowed lane widths, and multi-use paths. The cost estimates for the improvements follow these standards. The bike lanes were designed to be a preferred 5 feet with a minimum of 4 feet in areas with no curb. A buffer of one to two feet is included in most cases.

Narrowed lane widths by pavement restriping will not have a large effect on reducing free flow speed on the roadway. Narrowing vehicle travel lanes from 12 foot lanes to 10 foot lanes will only reduce the vehicle free flow speed by 5-10%.

Bike signs and sharrows on the pavement are important to alert vehicles that bicyclists are nearby and that they will share the road. Design considerations should also be given to ancillary bicycle facilities and amenities such as bike racks, bikes on buses and bike amenities at transit stops, and bike-friendly drainage inlets. For pedestrians, attention must be given to curb ramps as well as marked crosswalks and enhancements such as raised crosswalks, pedestrian refuge island, and curb extensions.

Figures 3-13 through 3-16 show the guides for pavement striping for bike lanes, buffers, and sharrows.

Figure 3-13: Shared Roadway Bike Signs and Sharrows

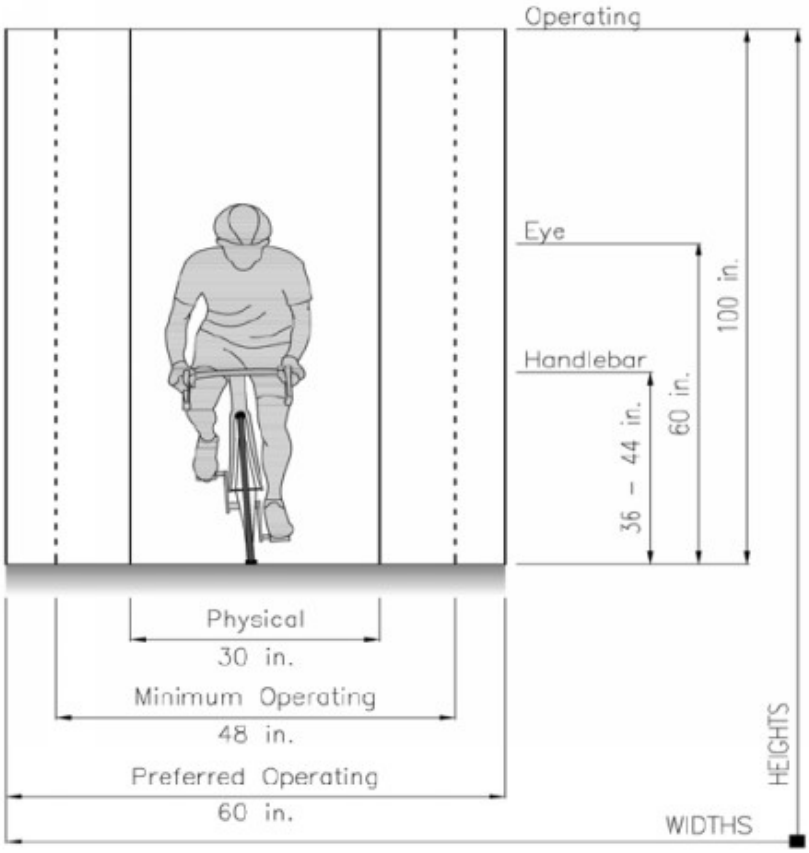


Figure 3-14: Bicycle Operating Space Requirements

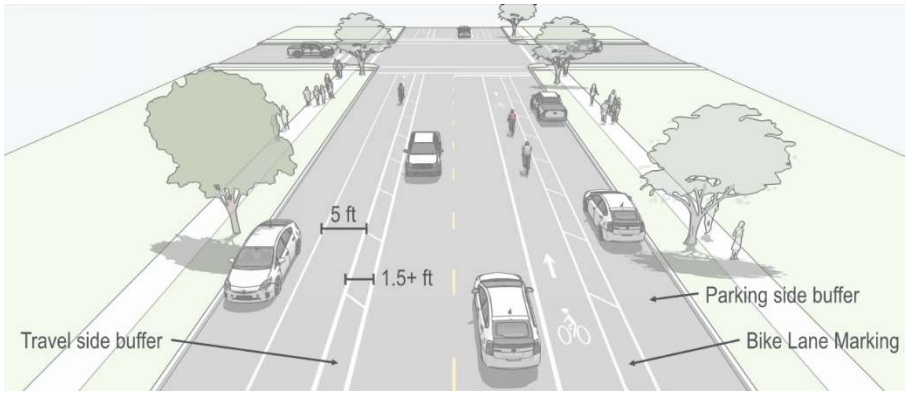


Figure 3-15: Lane Standard Design Guides for Urban Street with Parking

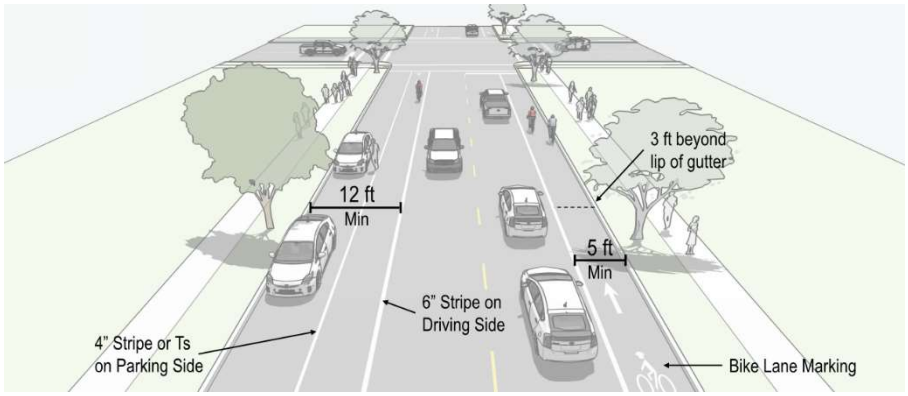
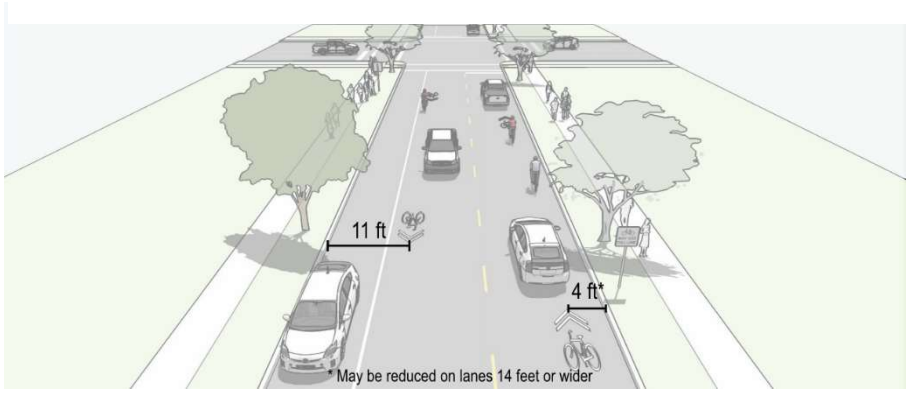


Figure 3-16: Bike Sharrows Design Guide Standard on Urban Street



A preliminary cost estimate was developed for each improvement location. The following are the unit costs used to develop the estimates for the recommended improvements:

- Asphalt - 10 foot outside shoulder – Rural - $38 per sq. yard
- Asphalt - 10 foot outside shoulder – Urban - $41 per sq. yard
- Asphalt - 10 foot outside shoulder – Rural - $218,000 per lane mile

- Asphalt - 10 foot outside shoulder – Urban - $240,000 per lane mile
- Bikeway construction - $220,000 per lane mile
- 4 lane flexible pavement replacement – Urban - $3,300,000 per lane mile
- Lane line striping per lane mile - $2,000
- Signs per lane mile - $100
- $7,500 minimum

4 Recommendations

Recommendations were developed based on an assessment of data collected including the public comments from stakeholder interviews, public feedback and online survey results. Areas that necessitated improvements to connect destinations, improve safety, and to fill-in network gaps were identified. The preliminary recommended improvements were narrowed down to final recommendations based on feasible, implementable, and priorities. The following describes the actions to develop the final list of prioritized recommendations.

4.1 Connections

The project team conducted a generalized demand analysis using demographic information. This identified the expected demand for bicycle and pedestrian facilities by overlaying the locations where people live, destinations, demand for alternative transportation and potential growth areas. When combined with the results of the “best and worst analysis”, areas lacking connectivity can be identified. The result of combining data in this way identifies areas in need of improvement and areas where there is high demand for bicycle and pedestrian facilities. Figures 4-1 and 4-2 show the demand for potential connectivity in each county.

Figure 4-1: Connections for Bicycling in Kanawha County

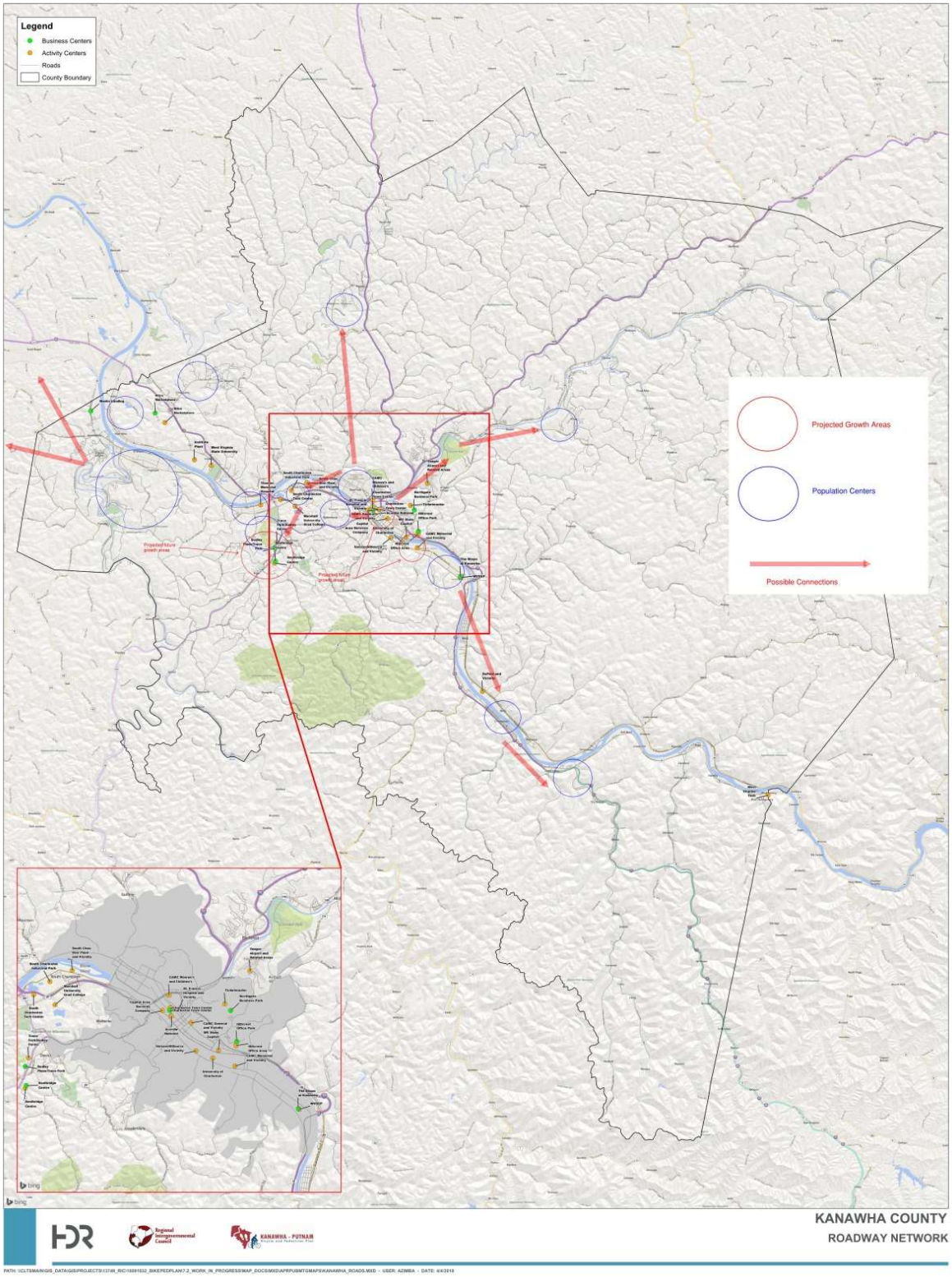
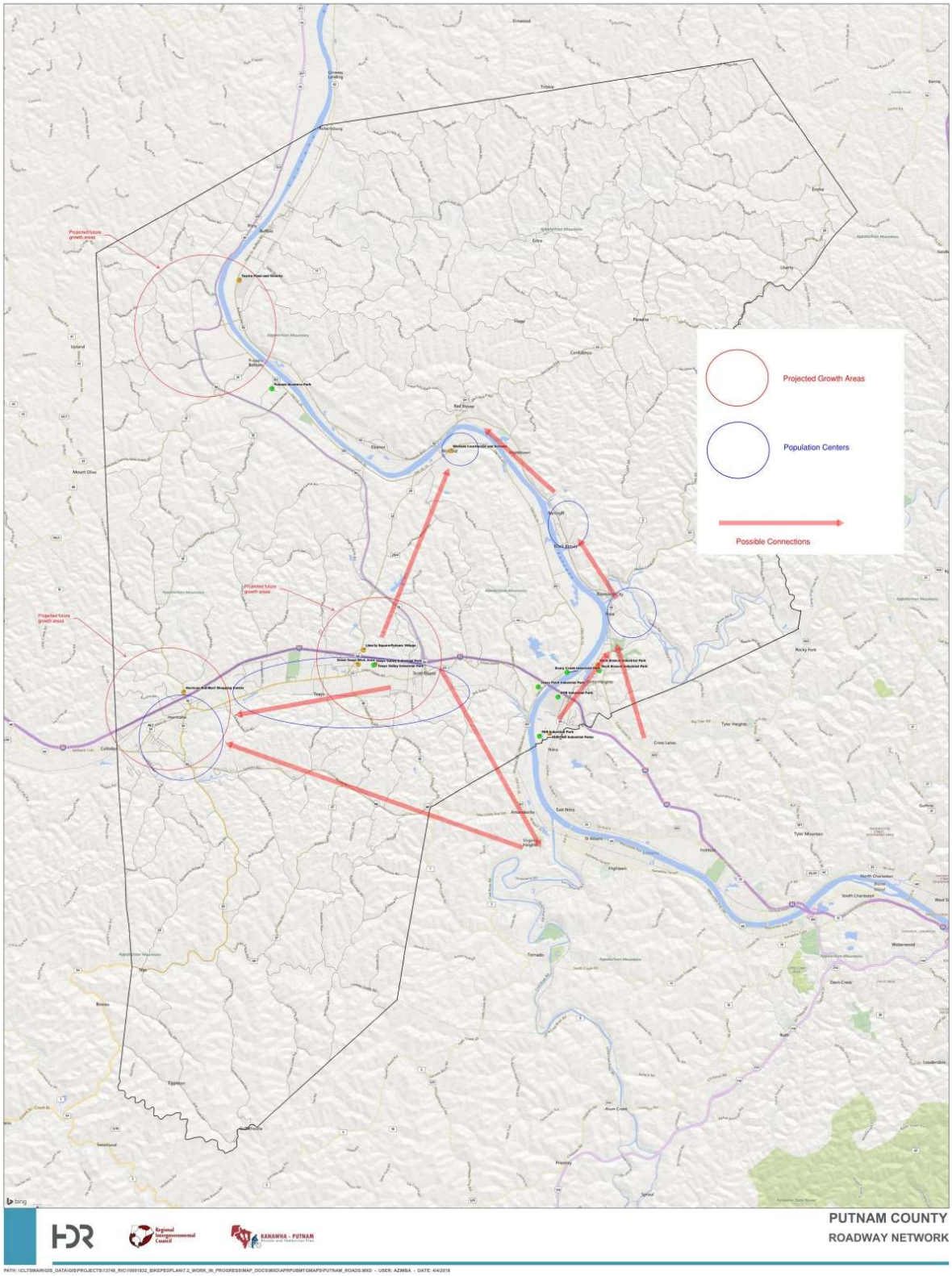


Figure 4-2: Connections for Bicycling in Putnam County



4.2 Deficiency Identification and Preliminary Recommendations

Through a review of existing conditions, analysis of survey results, numerous field reviews, and feedback from both public officials and the public-at-large, a list of locations for potential improvements were identified for both counties. Although there are a number of locations throughout the region that could benefit from the installation or enhancement of bicycle and pedestrian facilities, a list of locations was identified as feasible locations. Table 4-1 details the preliminary recommendation locations. Figures 4-3 and 4-4 illustrate the preliminary recommendation locations for improvements. As a summary of these locations, in general, as one moves away from the city centers, especially Charleston, network connectivity decreases. This makes bicycling more difficult as prospective riders are typically forced onto major roadways and must travel longer distances to reach their destinations. Specifically, connectivity across the Kanawha River and Elk River is limited due to a lack of separated bicycle facilities across many of the bridges.

Following the identification of the specific locations, a comprehensive field inventory and subsequent analysis to confirm the identified deficiencies was performed.

Table 4-1: Preliminary Recommendation Locations

Road	Between
Teays Valley Road	SR 34 and Scott Depot
SR 62	Winfield Bridge to Eleanor
MacCorkle	Kanwaha City to Marmet
SR 817	I-64 to Winfield
Barlow Rd	Slack St to Coonskin Park
Kanawha River Trestle	Crossing Kanawha River
SR 34	I-64 and Winfield
Hurricane Creek Road	at Cow Creek Road
SR 62	Buffalo to Cross Creek Rd
SR 25	10th Street to 2nd Street
Jefferson Rd	at Kanawha Turnpike intersection
Corridor G	Jefferson to Southridge
Patrick St. Bridge	
Washington St	at Pennsylvania
Greenbrier St	at I-64
35th St Bridge	at Kanawha Blvd
Ferrell Rd	Smith Creek Rd to St. Albans
SR 817	Winfield to Hurricane Creek Rd
SR 62	Raymond City to Eleanor
Buffalo Bridge	SR 817 to SR 62

Road	Between
Jefferson Rd	at Corridor G intersection
SR 119	Conner Dr to I-79 intersection
US 60	Campbell Creek Dr to Malden
SR 25	5th Ave to Washington St W
Sissonville Dr	7th Ave to Sissonville
Washington St	Near CAMC
US 60	Simmons Creek to Warrior Way
SR 34	Valley Park to Hurricane Creek Rd
Teays Valley Road	SR 817 to Hurricane, parallel I-64 SR 817 to US 35 on south side, use Hickory Rod on north side, then parallel I-64 on south side from SR 34 to Hurricane Creek Rd
Kanawha Turnpike	Jefferson to Rock Lake Drive
Roxalana Rd	10th St to Washington St
SR 114 (Indian Creek Rd)	Rutledge Rd to Pinch Rd
Corridor G	Parallel Corridor G from MacCorkle to Southridge Center
Kanawha State Forest Drive	Oakhurst to
SR 23	Loudon Heights Rd to Kanawha State Forest Drive
SR 119	Parallel on north side from Coonskin Park to Elkview
Smith Creek Rd	Kanawha Turnpike to Ferrel Rd
Aaron's Fork Rd	Blunton to Sissonville
SR 25/Charles St	Through Dunbar (parallel RR tracks) to I-64 in Nitro

Figure 4-3: Potential Recommendations for Kanawha County

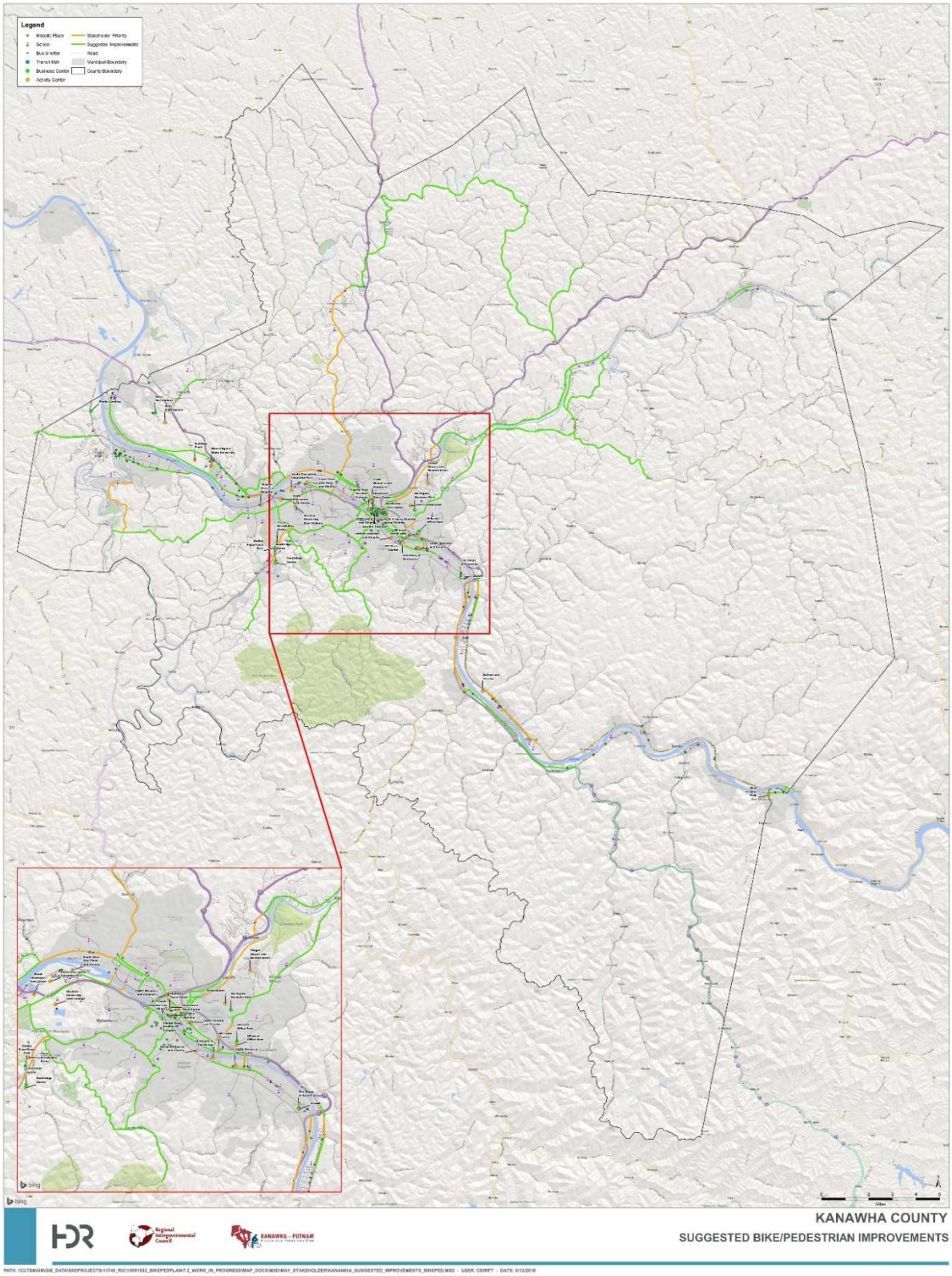
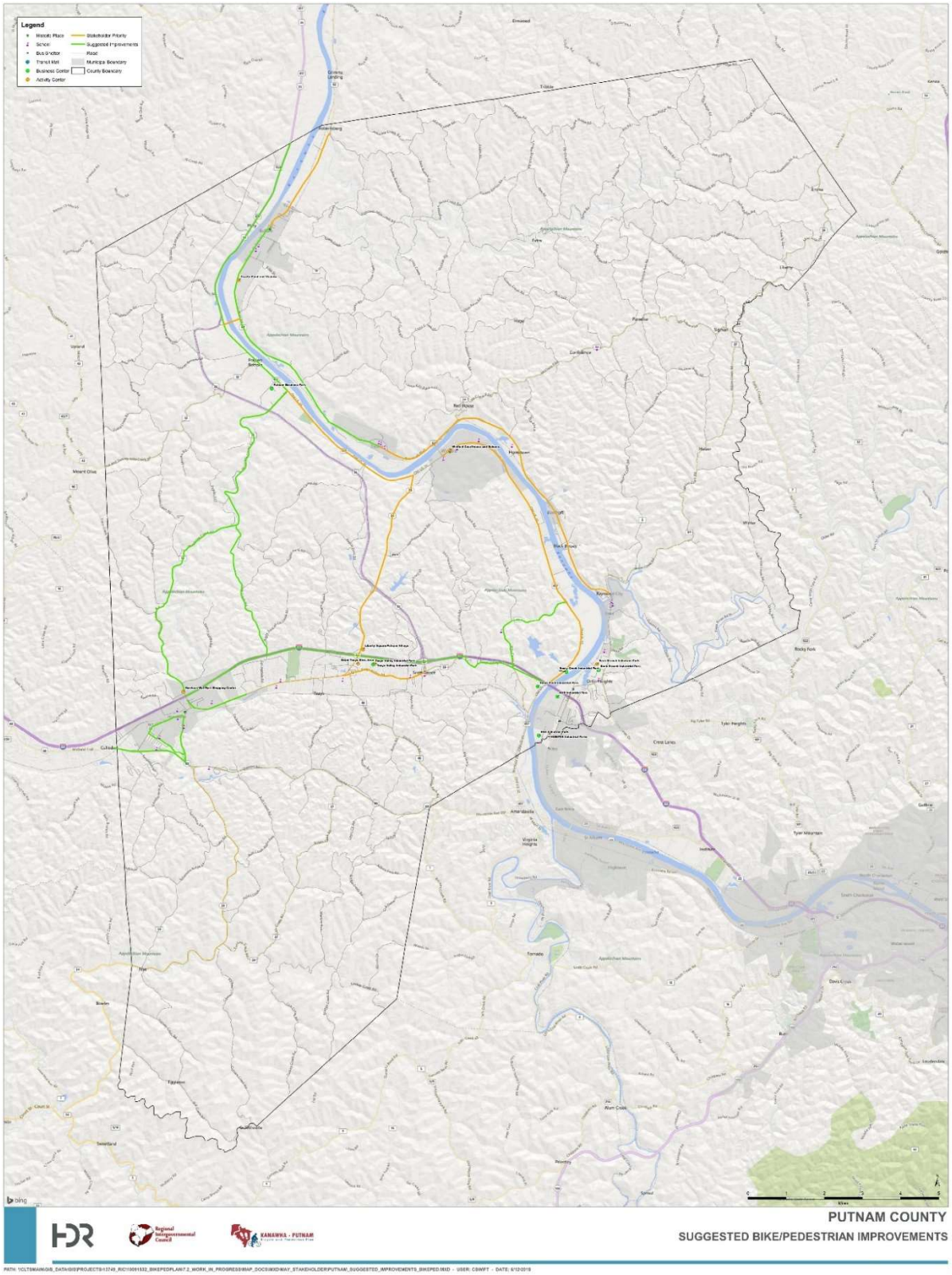


Figure 4-4: Potential Recommendations in Putnam County



4.3 Recommended Improvements

The stakeholder committee developed criteria as shown in the Introduction to prioritize recommendations and improvements for construction as opportunities and funding become available. A scoring system was set up for each criteria category in order to determine whether a project was considered high, medium, low, or no priority. On May 17, 2018, a stakeholder meeting was held to review the list of preliminary recommended improvements, gain stakeholder feedback and allow the stakeholders to add to the list if necessary. Following the May 17, 2018 meeting, this list of the potential recommendations was field reviewed for additional feasibility and draft concepts of the improvements for each site.

Following the field reviews, the project team assigned the prioritization scoring for each location. The list of projects was then separated into categories of high, medium, low and no priorities according to their overall prioritization scores. The overall cost of the list of all recommended improvements is greater than the potential funding for these types of improvements. Therefore, the categories for priorities was developed. Developing a high priority category of projects gives RIC, WVDOT, and the local municipalities a targeted list to prioritize funding and justification for bicycle and/or pedestrian improvements. This list can also be used to incorporate bicycle and pedestrian improvements in other roadway projects that are being developed and can facilitate project development.

Approximately 25% of the project recommendations were included in the high priority category, 25% in the medium priority category, 25% in the low priority category, and 25% not scored. An additional prioritization ranking for pedestrian improvements was developed. A high priority category was developed for these pedestrian improvement recommendations.

The initial recommendation and scoring list was presented to the stakeholder committee on October 11, 2018 for their review and input. Revisions were made to break some projects into phases, based on previous and ongoing development, as well as the ability to implement the improvement with funding constraints. The revised list was then presented to the public on November 8, 2018. The list of recommendations and maps presented at the stakeholder meeting are included in Appendix C. Public Meeting notes and handouts are included in Appendix D.

Figure 4-5 and Figure 4-6 and Table 4-2 through Table 4-5 show prioritized recommendations.

Following public involvement input, a revised recommendation list of projects was presented to the stakeholder committee for their final review and input on December 6, 2018. Following discussion at this final stakeholder committee meeting, a final list of recommendations was completed. Table 4-2 shows the improvements in the high priority project list. 4-3 shows the improvements in the medium priority project list and Table 4-4 shows the improvements in the low priority project list. Figure 4-5 and Figure 4-6 show the maps of the improvements by priority that are recommended for Kanawha and Putnam

counties. Details, such as the location, description of the improvement concept, and cost estimate, on the final recommended high priority projects are shown on separate project sheets following the tables.

High Priority Bicycle Recommendations (21 projects) – Overall cost estimate of $37 to $43.5 million

- Kanawha County (16 projects)
    - City of Charleston (14 projects)
- Putnam County (5 projects)

Table 4-2: High Priority Recommendations

Recommended Project Rankings – High Priority Projects

Number	Road	Between	Location	Proposed Improvement	Cost Range	Right of Way Necessary
1	**WV 62**	Winfield Bridge to Eleanor	Eleanor	Widen shoulder, Sidewalk, Bike Path	$600K-$900K	Possible
2	**Teays Valley Road**	CR 33 and Scott Depot	Teays Valley	Road widening, Sidewalks, Shoulder	$600K-$900K	Yes
3	**Jefferson Road**	at Davis Creek Interchange	Charleston	Signal, Bike lanes, Signs	$300K - $500K	No
4	**Tennessee Ave**	Kanawha Blvd to Virginia St. W	West Side Charleston	Bike Lanes, Signs	$60K-$90K	Yes
5	**Virginia St. West**	Tennessee Ave to Delaware Ave	West Side Charleston	Bike Lanes, Signs	$100K-$150K	No
6	**Quarrier St**	Capitol St to Clendenin St	Charleston	Two-Way Cycle Track bike lanes, Signs, sharrows	$90K-$140K	Possible
7	**Kanawha Boulevard**	Tennessee Ave to Capitol St	Charleston	Cycle Track	$900K - $1.3 mil	Possible
8	**Barlow Drive**	Slack St to Coonskin Park	Charleston	Bike Path, Widen Shoulders, Signs	$1.3 mil - $1.6 mil	Possible

Recommended Project Rankings – High Priority Projects

9	**MacCorkle Ave SE**	Kanawha City to Marmet	Kanawha County	Repave shoulder, Signs	$1 mil - $1.5 mil	No
10	**Corridor G**	Davis Creek Interchange to Southridge	Charleston	Bike Path	$2 mil - $2.6 mil	No
11	**US 60**	4th Avenue to MacCorkle Ave SW	West Side Charleston	Improve approaches, sharrows, signs	$60K-$90K	Yes
12	**WV 817**	Winfield to Hurricane Creek Rd	Putnam County	Widen shoulders, signs	$1.3 mil - $1.6 mil	No
13	**Kanawha Boulevard**	Capitol St to Chesapeake Ave	Charleston	Cycle Track	$2.0 mil - $2.4 mil	Possible
14	**Kanawha Boulevard**	Chesapeake Ave to 35th St Bridge	Charleston	Cycle Track	$200K - $400K	Possible
15	**WV 817**	I-64 to Winfield	Putnam County	Widen shoulders, signs	$3 mil - $3.5 mil	Possible
16	**WV 25**	Iowa St to Washington St W	West Side Charleston	Widen shoulders for bike lanes, signs	$2.2 mil - $2.6 mil	Possible
17	**Stockton St**	Kanawha Blvd to 7th Ave	West Side Charleston	Bike Lanes, Signs	$10K-$30K	No
18	**Former B&O railroad**	Elk River trail connecting Coonskin Park to WV 114	Kanawha County	Bike Trail	$1.5 mil - $1.9 mil	Yes
19	**Elk River (NS) railroad bridge**	Pennsylvania Ave to Bullitt St	Charleston	Bike Path	$14 mil - $14.5 mil	Yes
20	**St. Albans to Teays Valley bike trail**		Putnam County	Bike Path	$5 mil - $5.5 mil	Yes
21	**Kanawha River Trestle Trail**	Kanawha Blvd and 6th St	West Side Charleston	Bike Path, remove viaduct	$900K - $1.3 mil	Yes

Middle Priority Bicycle (21 projects) - Overall cost estimate of $45 to $52.3 million

- Kanawha County (14 projects)
    - City of Charleston (9 projects)
- Putnam County (7 projects)

Table 4-3: Medium Priority Recommendations

Recommended Project Rankings – Medium Priority Projects

Number	Road	Between	Location	Proposed Improvement	Cost Range	Right of Way Necessary
22	**Former B&O railroad**	Elk River trail connecting WV 114 bridge to Elkview	Kanawha County	Bike Trail	$3 mil - $3.5 mil	Yes
23	**Former B&O railroad**	Elk River trail connecting Elkview to Clendenin.	Kanawha County	Bike Trail	$6 mil - $6.5 mil	Yes
24	**35th St Bridge**	at Kanawha Blvd	Kanawha City	Improve approaches, sharrows, signs	$10K-$30K	Yes
25	**Buffalo Bridge**	WV 817 toWV 62	Putnam County	Signs	$10K-$30K	No
26	**US 60**	Campbell Creek Dr to Malden	Kanawha County	Repave shoulders, signs	$200K - $400K	Possible
27	**Piedmont Road**	Court Street to Leon Sullivan Way	Charleston	Designated bike route with sharrows and signs	$200K - $400K	No
28	**Kanawha Boulevard**	35th Street to Daniel Boone Park	Kanawha County	Widen shoulders for bike lanes, signs	$400K-$600K	Possible
29	**MacCorkle Ave. (US 60)**	Montrose Drive to Patrick Street	Charleston	Widen shoulder, signs	$200K - $400K	Yes
30	**US 60**	St. Albans to Culloden	Putnam County	Widen shoulder, bike lanes, signs	$2.0 mil - $2.4 mil	Possible

Recommended Project Rankings – Medium Priority Projects

31	**Kanawha River Trestle Trail**	Bridge over Kanawaha River	West Side Charleston	Bridge upgrade	$25 mil - $29 mil	No
32	**Washington St**	at Pennslyvania Ave	Charleston	Bike Lanes, Signs	$100K - $200K	No
33	**Greenbrier St**	at I-64 Interchange	Charleston	Bike Lanes, Signs	$160K - $190K	No
34	**Washington St**	Near CAMC	Charleston	Bike Lanes, Signs	$160K - $190K	No
35	**South Poplar Fork Road**	Teays Valley Road (CR 33) to CSX Railroad	Teays Valley	Widen shoulders, bike lanes, signs	$200K - $400K	No
36	**Great Teays Boulevard**	WV 34 to CR 33 (Teays Valley)	Teays Valley	Bike lanes, sidewalks, signs	$100K - $200K	Yes
37	**Teays Valley Road**	WV 817 to Hurricane, parallel I-64 WV 817 to US 35 on south side, use Hickory Road on north side, then parallel I-64 on south side from WV 34 to Hurricane Creek Rd	Teays Valley	Bike path	$7.0 mil - $7.5 mil	Yes
38	**Court St**	Kanawha Blvd to Piedmont Rd	Charleston	Bike Lanes, Signs	$10K-$30K	No
39	**7th Ave**	Virginia St W to Patrick St	Charleston	Bike Lanes, Signs, sharrows	$10K-$30K	No
40	**MacCorkle Ave**	Thayer St to 31st St	Charleston	Bike Lanes	$10K-$30K	No
41	**Hurricane Creek Road (CR 19)**	I-64 to Wal-Mart (Hurricane)	Hurricane	Sidewalks, signs	$100K - $200K	Yes
42	**WV 34**	Valley Park to Hurricane Creek Rd	Hurricane	Signs, Pavement Markings	$30-50K	Possible

Lower Priority Bicycle (22 projects) - Overall cost estimate of $24.7 to $29.9 million

Table 4-4: Low Priority Recommendations

Recommended Project Rankings – Low Priority Projects

Number	Road	Between	Location	Proposed Improvement	Cost Range	Right of Way Necessary
43	**WV 34**	I-64 and Winfield	Putnam County	Widen shoulder, Signs	$1.5 mil - $1.9 mil	No
44	**Edgewood Drive**	Washington Street West to Wood Rd	Charleston	Multi-use path	$400K-$600K	No
45	**WV 34**	Great Teays Boulevard to Putnam County Library	Hurricane	Sidewalks, signs	$100K - $200K	Possible
46	**Connection to Little Creek Park**	from S. Charleston across RR	S. Charleston	Bike Path	$400K-$600K	Possible
47	**Sissonville Dr (CR 21)**	7th Ave to Sissonville	Kanawha County	Widen Shoulder, signs	$4.0 mil - $4.5 mil	No
48	**WV 34**	Hurricane Creek Road to Main Street (Hurricane)	Hurricane	Bike lanes, signs	$10K-$30K	Possible
49	**WV 35**	Buffalo Bridge to north Putnam Co. line	Putnam County	Repave shoulder, bike lanes, signs	$3 mil - $3.5 mil	No
50	**WV 25/Charles St**	Through Dunbar (parallel RR tracks) to I-64 in Nitro	Dunbar	Widen shoulders, bike lanes, signs	$5 mil - $5.5 mil	Yes
51	**D Street**	Second Ave to The Mound	S. Charleston	Sharrows, Signs	$10K-$30K	No
52	**WV 62**	Buffalo to Cross Creek Rd	Buffalo	Widen shoulder, signs	$200K - $400K	No
53	**Jefferson Rd**	at Kanawha Turnpike intersection	S. Charleston	Bike lanes	$60K-$90K	Possible
54	**US 119**	Conner Dr to I-79 intersection	Charleston	Widen shoulder, signs	$200K - $400K	No

Recommended Project Rankings – Low Priority Projects

55	**WV 62 (Cross Lanes Drive)**	Big Tyler Rd. (SR 622) to WV 25	Cross Lanes	widen shoulders, signs	$900K - $1.3 mil	Possible
56	**Clayton Ave**	WV 34 (Midland Trail) to Main st	Hurricane	Bike Lanes, Signs, sharrows	$10K- $30K	Yes
57	**US 119**	Elkview to BlueCreek	Elkview	Widen Shoulder, Signs	$400K- $600K	No
58	**Kanawha City**	Connecting Lanes from University of Charleston	Kanawha City	Bike Lanes, Signs	$10K- $30K	Possible
59	**WV 62**	Raymond City to Eleanor	Putnam County	Widen shoulders, signs	$5 mil - $5.5 mil	No
60	**Oakwood Rd**	US 119 to Bridge Road	Charleston	Bicycle route, signs and sharrows	$600K- $900K	Yes
61	**WV 61**	Upper Drive to Handley Fire Department	Handley	Widen shoulders, bike lanes, signs	$100K - $200K	Yes
62	**WV 62**	Nitro WV 25 to Poca	Poca	Widen shoulders, bike lanes, signs	$2.0 mil - $2.4 mil	Possible
63	**Tech Trail**	Montgomery and Smithers	Montgomery	Bike Path	$400K- $600K	Yes
64	**Frame Road**	Elkview to Elk Valley Library, connect Elkview Elementary School	Elkview	Widen shoulder, Signs	$400K- $600K	Yes

High Priority Pedestrian (8 projects) – Overall cost estimate of $370K to $540K

Table 4-5: Recommended Pedestrian Improvements

Recommended Project Rankings – Pedestrian Improvements

Number	Road/Between	Location	Proposed Improvement	Cost Range	Right of Way Necessary
1	**Kanawha Blvd and Chesapeake Avenue**	Charleston	ADA compliant curb ramps	$10K-$20K	No
2	**Kanawha Blvd and California Avenue**	Charleston	ADA compliant curb ramps	$10K-$20K	No
3	**Kanawha Blvd and Greenbrier Street**	Charleston	ADA compliant curb ramps	$10K-$20K	No
4	**Kanawha Blvd and Ruffner Avenue**	Charleston	crosswalks	$10K-$20K	No
5	**Patrick St/5th St intersection improvements**	West Side Charleston	crosswalks and ped signal	$10K-$20K	No
6	**WV 34 b/w Hurricane Creek Rd and Hurricane Middle School**	Hurricane	sidewalk	$300K-$400K	Possible
7	**Ped movements on Penn. Ave.to Women's and Children's Hospital**	Charleston	crosswalks	$10K-$20K	No
8	**MacCorkle Ave. (US 60) Gateway Shopping Center to Oliver Street**	S. Charleston	crosswalks	$10K-$20K	Possible
9	**WV-61 at Lens Creek Rd**	Marmet	Design and installation of new sidewalk	$300k-$400k	Unlikely

Figure 4-5: Kanawha County Recommendations

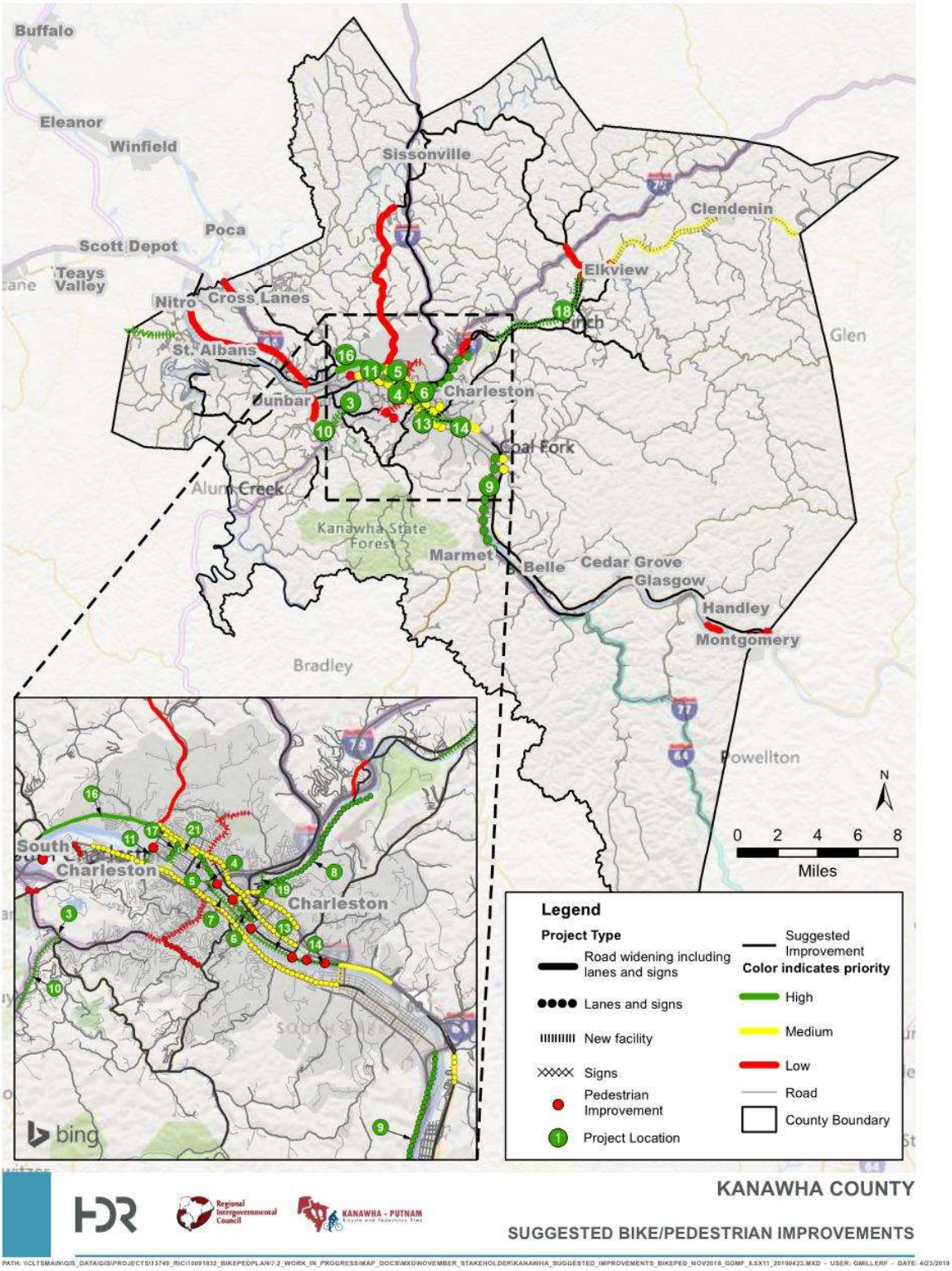
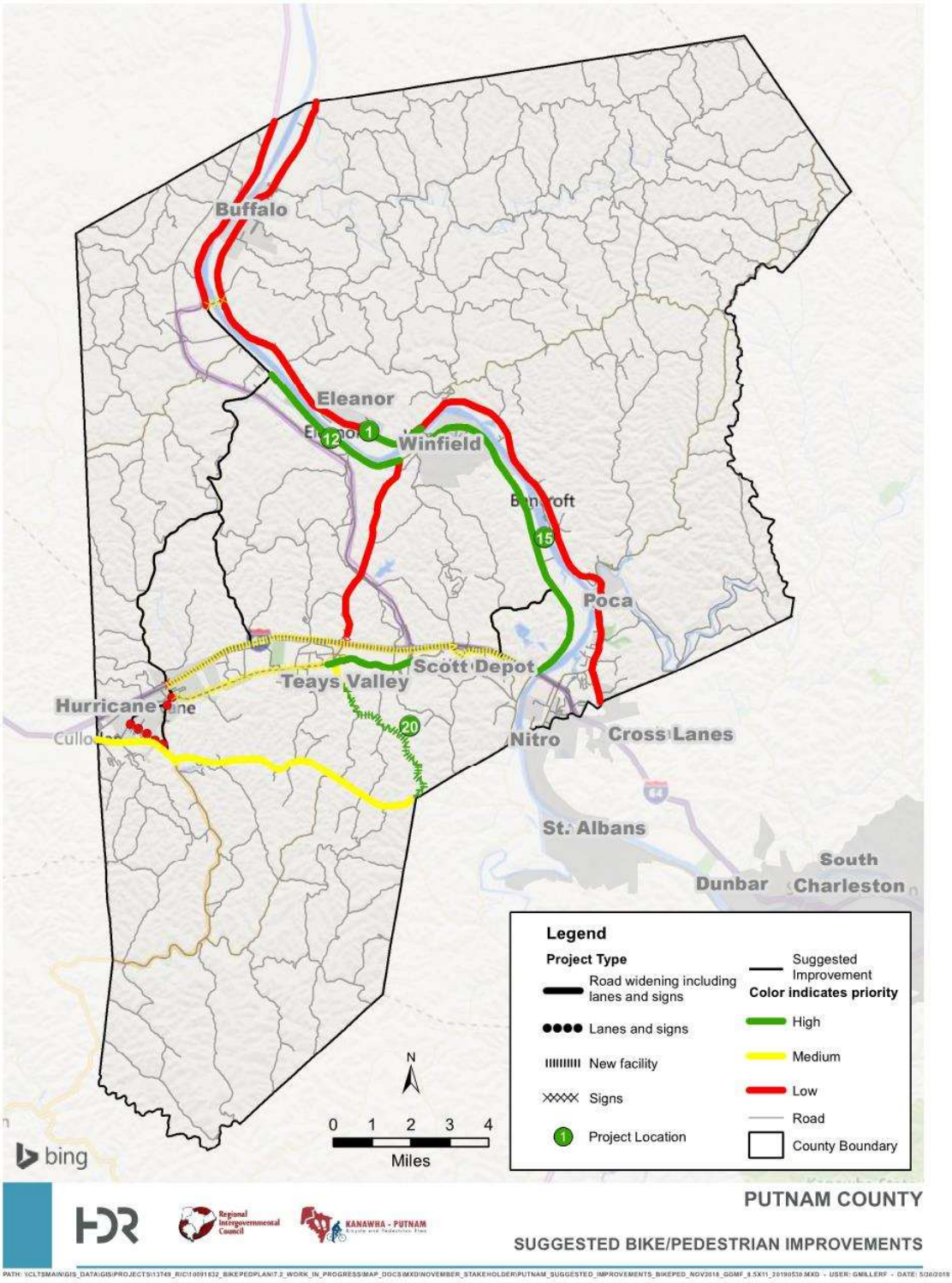
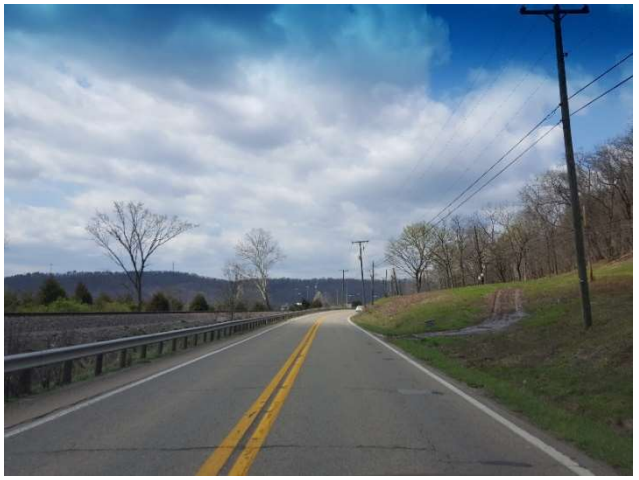


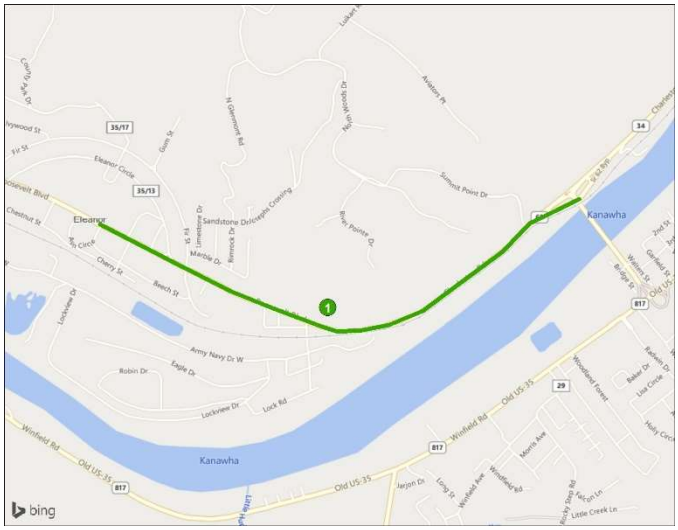
Figure 4-6: Putnam County Recommendations



Project 1: WV 62 – Winfield Bridge to Eleanor

Roadway characteristics	Two lane roadway with 1-2' paved shoulders, guardrail along a railroad track, some right of way available on sides of the roadway.
Deficiencies/Key Issues	Guardrail and railroad on the south side of WV 62, hillside and utility poles on the north side of WV 62.
Improvement Goals/Opportunities	Connect Winfield and Eleanor for bicycle and pedestrian activities.
Proposed Improvements	Continuous 8' shoulders and signing.





Project Mileage	1.01 miles
Planning Level Cost	$600K to $900K not including right of way
Potential Constraints	Available right of way

Project 2: Teays Valley Road – CR 33 and Scott Depot

Roadway characteristics	Two lane roadway with 1' paved shoulders.
Deficiencies/Key Issues	No sidewalks, no turn lanes, narrow paved shoulder, utility poles on the south side of the roadway.
Improvement Goals/Opportunities	Connect to Hurricane and commercial areas around WV 34 and Great Teays Valley Boulevard.
Proposed Improvements	5' bike lanes and 5' sidewalks on both sides of the roadway as part of widening the roadway to three lanes.

Source: Google Maps

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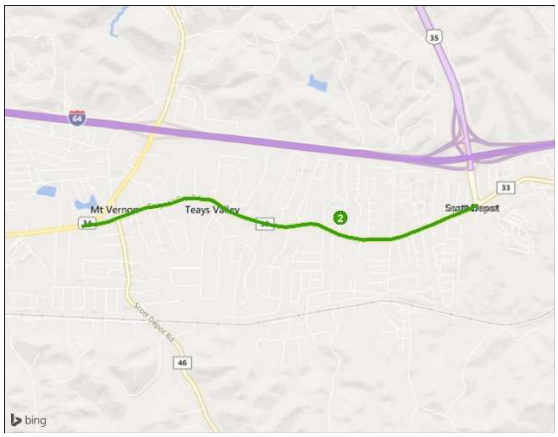
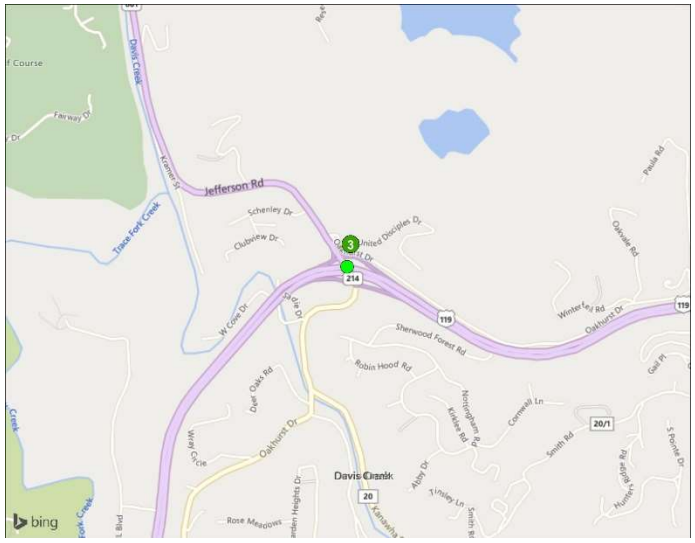


Project Mileage	2.2 miles
Planning Level Cost	$600K to $900K for bike lanes only
Potential Constraints	Available right of way

Project 3: Jefferson Road – at Davis Creek Interchange

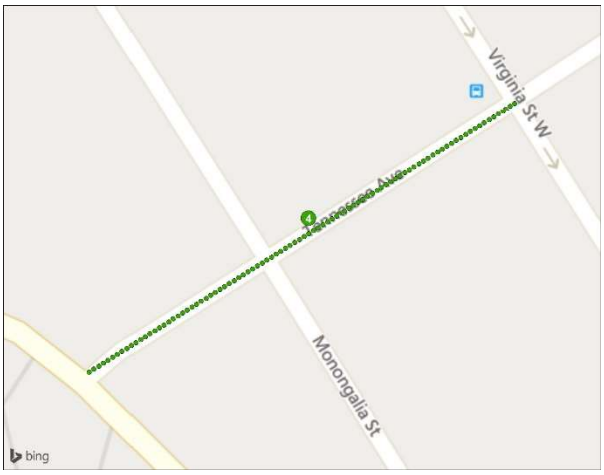
Roadway characteristics	Intersection of an arterial roadway with freeway ramps.
Deficiencies/Key Issues	No stop control for traffic travelling on Jefferson Road that causes conflicts for bicyclists.
Improvement Goals/Opportunities	Provide safe conditions for bicyclist traveling from South Charleston to Kanawha State Forest.
Proposed Improvements	Install traffic signal, add “Share the Road” signing, and stripe the pavement for bicycle lanes.



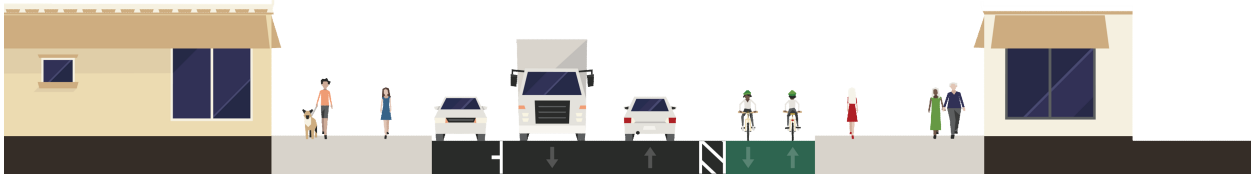
Project Mileage	0.2 miles
Planning Level Cost	$300K to $500K
Potential Constraints	None

Project 4: Tennessee Avenue – Kanawha Boulevard to Virginia Street W

Roadway characteristics	Two lane, two-way roadway with parking on each side of the street.
Deficiencies/Key Issues	Currently there is no bicycle connectivity along Tennessee Avenue.
Improvement Goals/Opportunities	Provide a bicycle connection through the Westside of Charleston to downtown from the existing Kanawha Boulevard Path to proposed facilities on Virginia Street.
Proposed Improvements	Remove parking on the east side of the street for bi-directional cycle track from Kanawha Boulevard to Virginia Street.

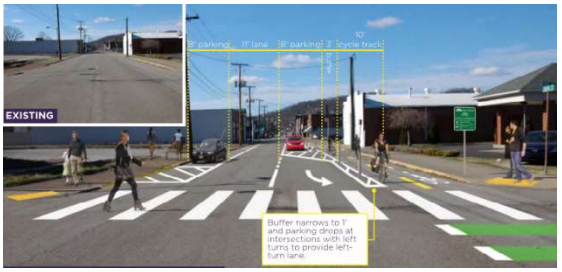


Project Mileage	0.3 miles
Planning Level Cost	$60K to $90K
Potential Constraints	Parking demand along Tennessee Avenue

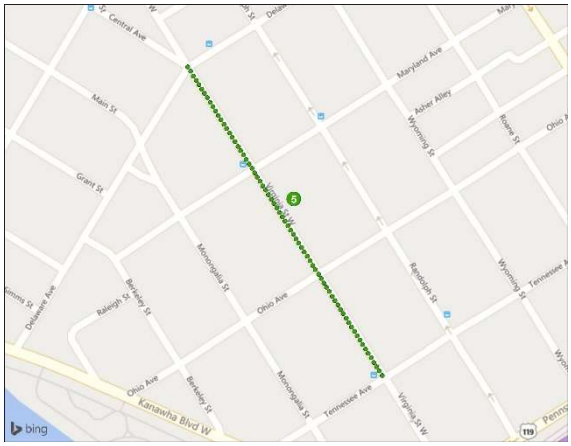


Project 5: Virginia Street West – Tennessee Avenue to Delaware Avenue

Roadway characteristics	2 lane, one direction (southbound) roadway with parking, 40' wide pavement with parking.
Deficiencies/Key Issues	Currently there is no bicycle connectivity along Virginia St. The wide lanes and long, straight roadway encourage speeding which creates an unsafe and uninviting corridor for bicyclists and pedestrians.
Improvement Goals/Opportunities	The two-way cycle track on Virginia Street will provide a bicycle connection through the West Side to proposed facilities that connect to downtown and the riverfront.
Proposed Improvements	Two-way cycle track from Park Avenue to Tennessee Avenue. Existing conditions indicate that a two-way cycle track could be implemented by either re-purposing one travel lane or removing parking from one side of the street. Dedicated turn bays would likely maintain acceptable vehicular traffic flow if the number of lanes is reduced. Minor parking removal or conversion to a one-way road west of Central Avenue.



Source: Charleston Bike and Trail Master Plan

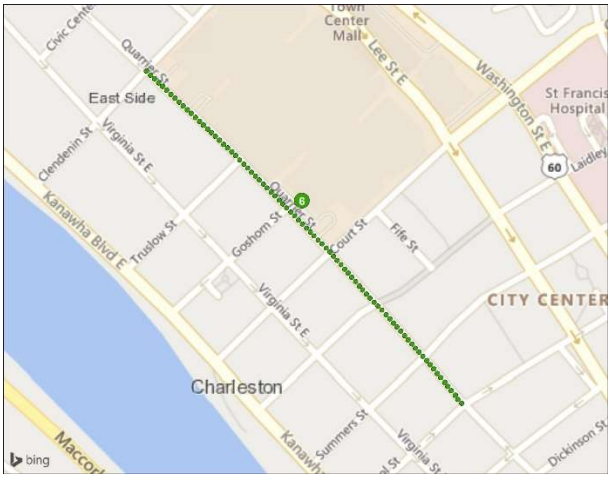


Project Mileage	0.6 miles
Planning Level Cost	$100K to $150K not including right of way
Potential Constraints	Parking demand and traffic constraints along Virginia Street West.

Project 6: Quarrier Street – Capitol Street to Clendenin Street

Roadway characteristics	4 lane, 40’ wide, one direction (northbound) roadway.
Deficiencies/Key Issues	Currently there is no bicycle connectivity along Quarrier Street. The street is currently unsafe and uninviting for bicyclists due to a lack of signage and pavement striping for bicyclists.
Improvement Goals/Opportunities	The two-way cycle track on Quarrier St. will provide a seamless bicycle connection from the Civic Center into the heart of downtown. The shared lane markings and bicycle boulevard sections of Quarrier St. will link adjacent neighborhoods to downtown.
Proposed Improvements	Project extents are from Elk River Trail at Civic Center to Elizabeth Street. The cycle track extends from the riverfront trail to Summers Street. It then continues as a shared lane marking until Morris Street, and then a bicycle boulevard until Elizabeth Street.

Source: Charleston Bike and Trail Master Plan



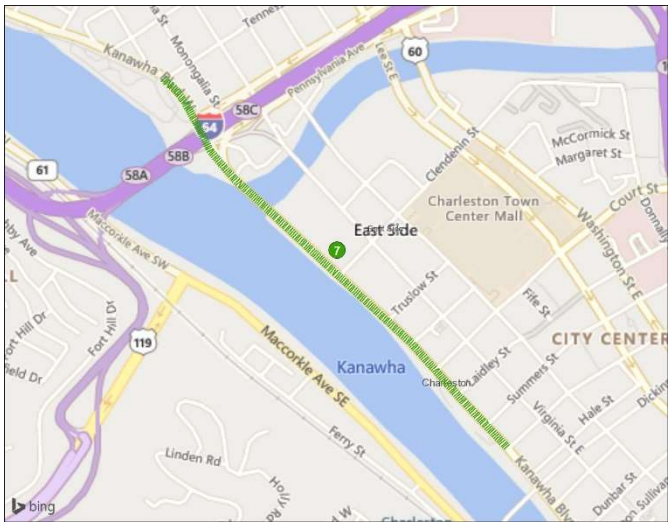
Project Mileage	1.69 miles
Planning Level Cost	$90K to $140K
Potential Constraints	Traffic demand

Project 7: Kanawha Boulevard – Tennessee Avenue to Capitol Street

Roadway characteristics	5 lanes, 11’ (3 northbound and 2 southbound), 10’ multiuse path between the roadway and Kanawha River
Deficiencies/Key Issues	Kanawha River proximity, one lane multiuse path is crowded.
Improvement Goals/Opportunities	Provide extension of path creating a connection from downtown Charleston to the Westside.
Proposed Improvements	This recommendation proposes continuing the existing facility south of Magic Island using the existing bridge structure at Elk River. Two-way cycle track with adjacent pedestrian path (16' minimum) or shared-use path/sidepath (12' minimum). Utilize design similar to improvements north of Magic Island.

Previously Proposed Improvements to Kanawha Boulevard North of Magic Island

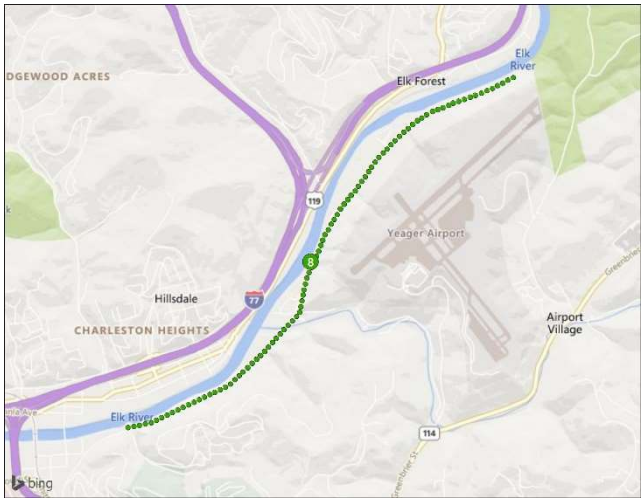
Source: Charleston Bike and Trail Master Plan



Project Mileage	1 mile
Planning Level Cost	$900K to $1.3 million
Potential Constraints	Narrow under the I-64 bridge, connection around the Union Building

Project 8: Barlow Drive – Slack Street to Coonskin Park

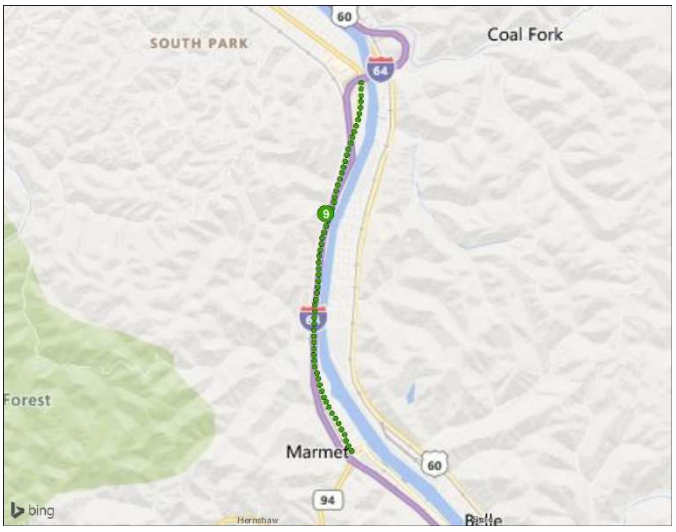
Roadway characteristics	Narrow roadway, 12’ wide in some sections, one lane bridge west of Keystone, railroad bed begins just west of Keystone, north side of roadway is the Elk River.
Deficiencies/Key Issues	River and utility poles on the north side of the roadway. There is a hillside on the south side of the roadway.
Improvement Goals/Opportunities	Connect Downtown Charleston with Coonskin Park for bicycle and pedestrian activities.
Proposed Improvements	1. Add sharrows and signing. 2. Provide a 10' - 12' shared use path on one side of the roadway on railroad bed. 3. Pave the gravel path from the end of Barlow Drive to Coonskin Park. 4. Widen Barlow Drive on the south side of the roadway.



Project Mileage	3.9 miles
Planning Level Cost	$1.3 million to $1.6 million not including right of way
Potential Constraints	Available right of way

Project 9: MacCorkle Avenue SE – Kanawha City to Marmet

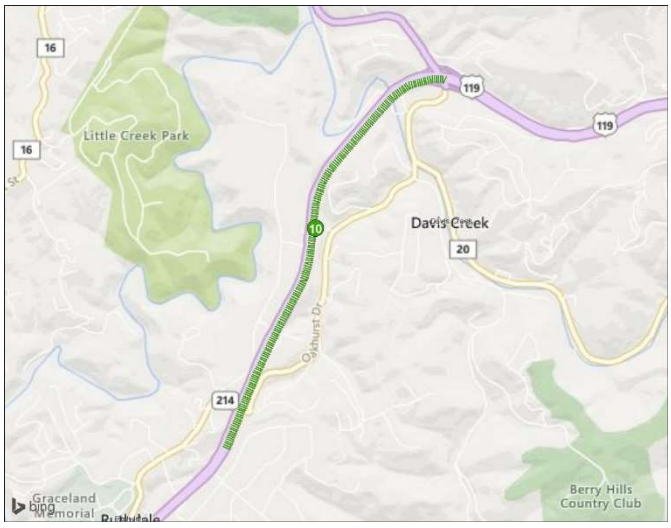
Roadway characteristics	Two lane roadway with 5-6' paved shoulders, concrete barrier along the east side between MacCorkle Avenue and I-64.
Deficiencies/Key Issues	Traffic volumes and speeds, speed bumps on side
Improvement Goals/Opportunities	Connect Kanawha City and Marmet and the southern part of Kanawha County for bicycle and pedestrian activities.
Proposed Improvements	1. Maintain continuous 8' shoulders and signing. 2. Grade and pave shoulders, remove rumble strips.



Project Mileage	5.3 miles
Planning Level Cost	$1 million to $1.5 million
Potential Constraints	None

Project 10: Corridor G - Jefferson Road to Southridge

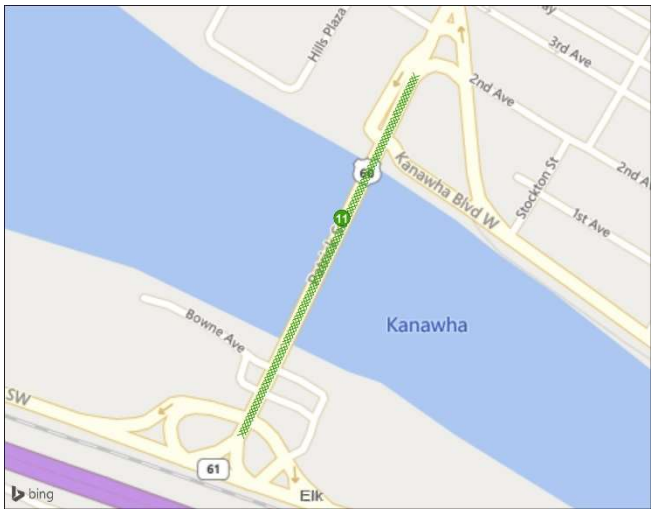
Roadway characteristics	Four lane divided freeway with 1-2' paved shoulders.
Deficiencies/Key Issues	Hilly terrain, right of way, heavy traffic volumes.
Improvement Goals/Opportunities	Connect path just north of US 119 at Jefferson Road intersection to the recreation amenities of the South Charleston Trace Fork commercial center and then to the Southridge Center.
Proposed Improvements	Connection would be made with bike lanes on Jefferson Road from US 119 to Kramer Street, bridge over Davis Creek, and then paving an existing roadbed to S. Charleston Memorial Ice Arena. Share the road signs would then be placed on RHL Blvd to Oakhurst Drive to cross US 119.



Project Mileage	2.1 miles
Planning Level Cost	$2 million to $2.6 million not including right of way
Potential Constraints	Available right of way

Project 11: US 60 – 4th Avenue to MacCorkle Avenue SW

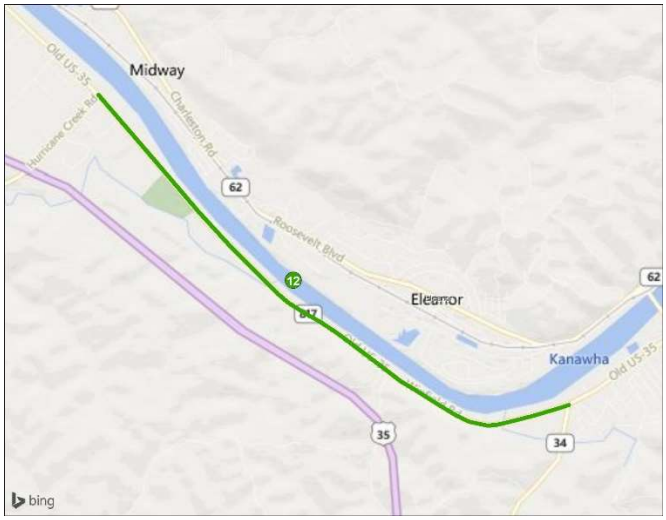
Roadway characteristics	4th Avenue is a 4 lane bridge across the Kanawha River with sidewalks on each side. MacCorkle Avenue SW is a two lane roadway in each direction at the bridge, with ramps to and from the bridge.
Deficiencies/Key Issues	Poor and unsafe connections from Patrick Street Bridge to 4th Avenue and to MacCorkle Avenue.
Improvement Goals/Opportunities	These improvements would provide a more bike-friendly connection across the Kanawha River to connect the Westside of Charleston and MacCorkle Avenue.
Proposed Improvements	1. Widen shoulder on ramps leading to and from the bridge on the MacCorkle Avenue side. 2. Provide crosswalks and pedestrian crossing on Patrick Street on the Westside intersections. 3. Provide share the road signs.



Project Mileage	0.2 miles
Planning Level Cost	$60K to $90K not including right of way
Potential Constraints	None

Project 12: WV 817 – Winfield to Hurricane Creek Road

Roadway characteristics	Two lane roadway with 1-2' paved shoulders, unpaved graded shoulders alongside of the roadway, some right of way available on sides of roadway.
Deficiencies/Key Issues	Lack of signage and pavement markings indicating a priority cycling route. Lack of paved shoulders.
Improvement Goals/Opportunities	Connect Winfield and northern Putnam County for bicycle activities.
Proposed Improvements	Maintain 5' paved shoulders and signage.



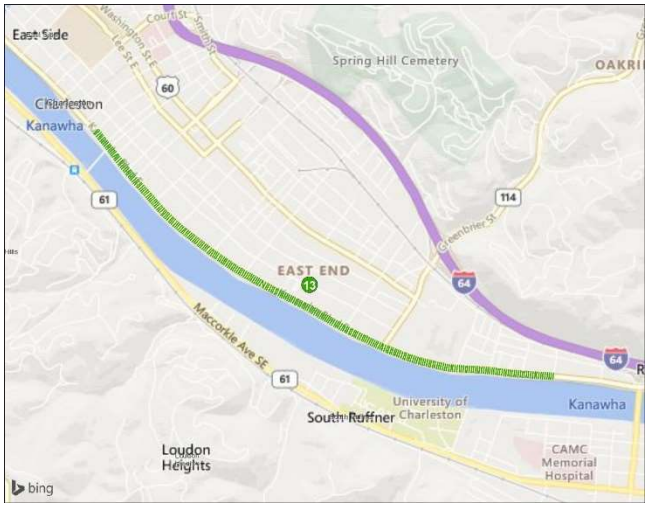
Project Mileage	4.2 miles
Planning Level Cost	$1.3 million to $1.6 million not including right of way
Potential Constraints	None

Project 13: Kanawha Boulevard – Capitol Street to Chesapeake Avenue

Roadway characteristics	5 lanes, 11' (3 northbound and 2 southbound), 10' multiuse path between roadway and Kanawha River.
Deficiencies/Key Issues	Kanawha River proximity, one lane multiuse path is crowded.
Improvement Goals/Opportunities	Provide extension of path creating a connection from downtown Charleston to the Westside, traffic capacity is available.
Proposed Improvements	This recommendation proposes continuing this facility south of Magic Island using the existing bridge structure at Elk River. Two-way cycle track with adjacent pedestrian path (16' minimum) or shared-use path/side path (12' minimum). Utilize design similar to improvements north of Magic Island.

Previously Proposed Improvements to Kanawha Boulevard North of Magic Island

Source: Charleston Bike and Trail Master Plan



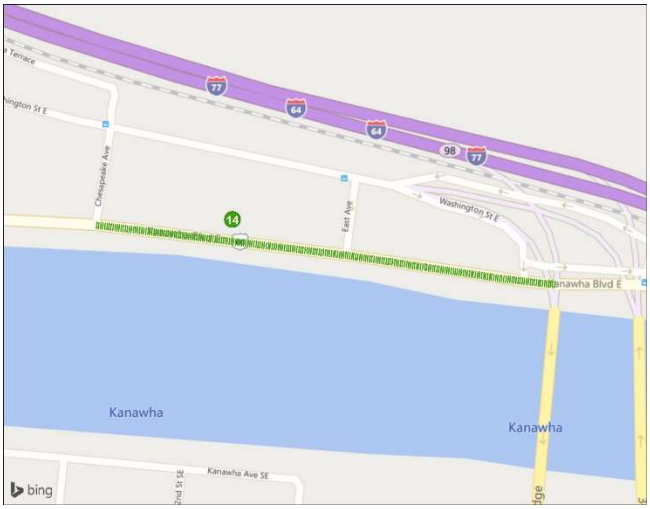
Project Mileage	2.1 miles
Planning Level Cost	$2 million to $2.4 million
Potential Constraints	Connection around Union Building

Project 14: Kanawha Boulevard – Chesapeake Avenue to 35th Street Bridge

Roadway characteristics	5 lanes, 11' (3 northbound and 2 southbound), 10' multiuse path between roadway and Kanawha River.
Deficiencies/Key Issues	Kanawha River proximity, one lane multiuse path is crowded.
Improvement Goals/Opportunities	Provide extension of path creating a connection from downtown Charleston to the Westside, traffic capacity is available.
Proposed Improvements	This recommendation proposes continuing this facility south of Magic Island using the existing bridge structure at Elk River. Two-way cycle track with adjacent pedestrian path (16' minimum) or shared-use path/sidepath (12' minimum). Utilize design similar to improvements north of Magic Island.

Previously Proposed Improvements to Kanawha Boulevard North of Magic Island

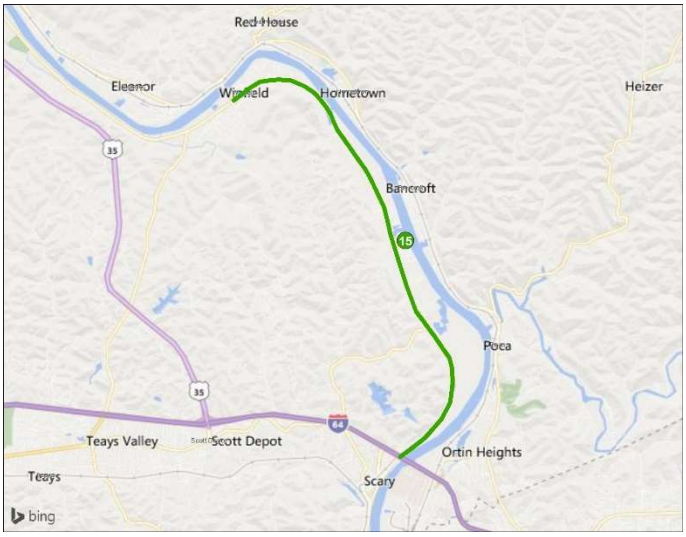
Source: Charleston Bike and Trail Master Plan



Project Mileage	0.4 miles
Planning Level Cost	$200K to $400K not including right of way
Potential Constraints	None

Project 15: WV 817 – I-64 to Winfield

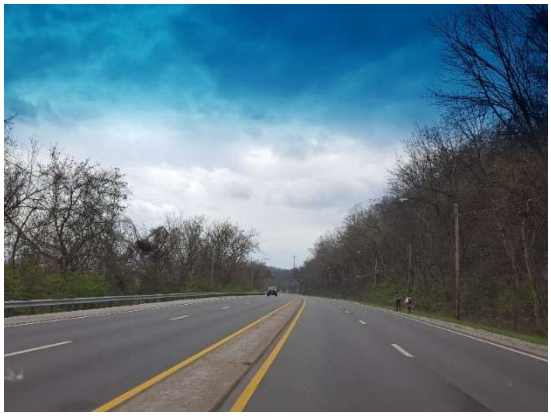
Roadway characteristics	Two lane roadway with 1-2' paved shoulders, some right of way available on sides of roadway
Deficiencies/Key Issues	Lack of paved shoulders.
Improvement Goals/Opportunities	Connect Winfield and St. Albans for bicycle and pedestrian activities.
Proposed Improvements	Maintain continuous 8' shoulders and signing.

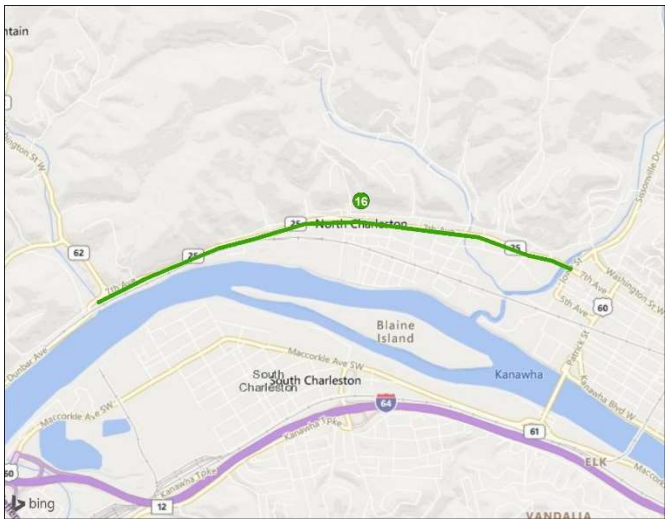


Project Mileage	8.6 miles
Planning Level Cost	$3 million to $3.5 million, not including right of way
Potential Constraints	Available right of way

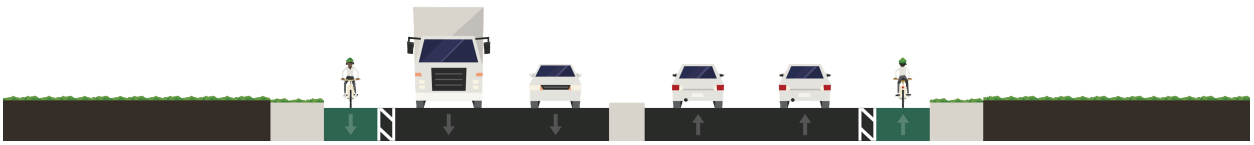
Project 16: WV 25 – Iowa Street to Washington St West

Roadway characteristics	Four lane divided roadway with 2'-8' paved shoulders, some right of way available on sides of roadway.
Deficiencies/Key Issues	Guardrail and railroad on the south side of WV 25, hillside and utility poles on the north side of WV 25.
Improvement Goals/Opportunities	Connect the westside of Charleston to the City of Dunbar for bicycle and pedestrian activities.
Proposed Improvements	"Share the Road" by maintaining continuous 8' shoulders and signing.



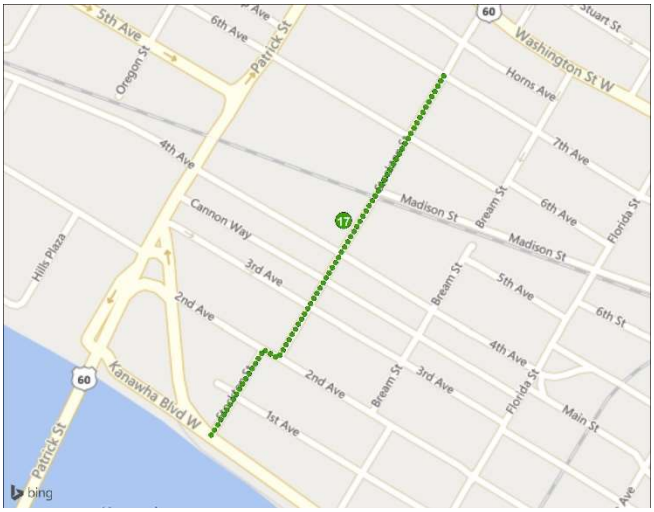


Project Mileage	3.5 miles
Planning Level Cost	$2.2 million to $2.6 million, not including right of way
Potential Constraints	Available right of way, utilities

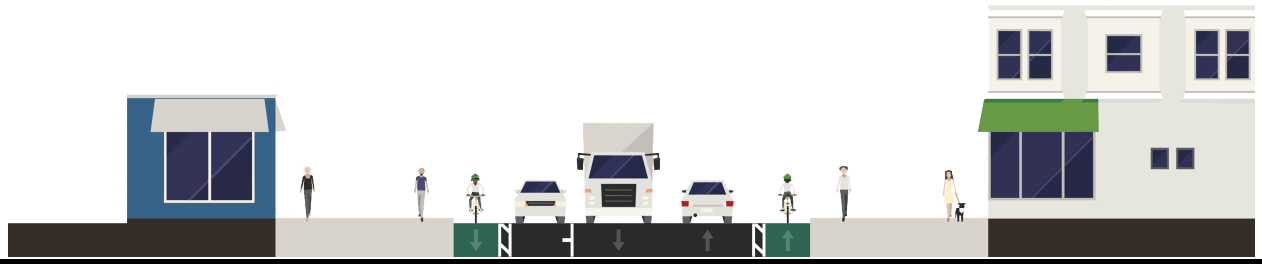


Project 17: Stockton Street – Kanawha Boulevard to 7th Avenue

Roadway characteristics	Two lane, two direction urban roadway, with parking.
Deficiencies/Key Issues	Narrow travel lanes
Improvement Goals/Opportunities	Provide a bicycle connection through the westside of Charleston to downtown from the existing Kanawha Boulevard Bicycle Path to proposed facilities on Virginia Street.
Proposed Improvements	Bicycle boulevard improvements include bicycle/pedestrian cut-throughs, wayfinding signage and pavement markings.

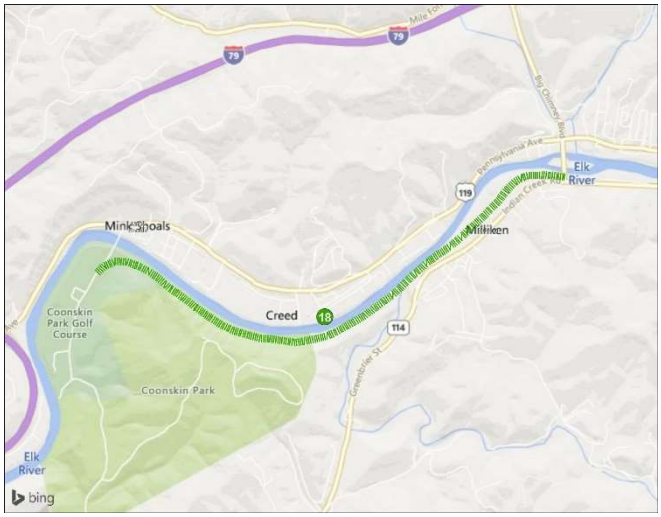


Project Mileage	0.4 miles
Planning Level Cost	$10K to $30K not including right of way
Potential Constraints	Available right of way



Project 18: Former B&O Railroad - Elk River trail connecting Coonskin Park to WV 114

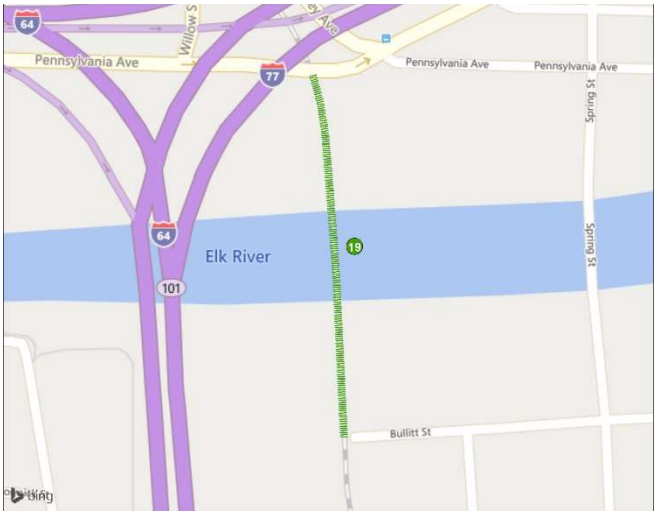
Roadway characteristics	Unused railroad bed
Deficiencies/Key Issues	Willingness of property owners to sell, vegetation is overgrown and there are many landslides.
Improvement Goals/Opportunities	Connect Elkview with Coonskin Park for bicycle and pedestrian activities.
Proposed Improvements	Rails to Trails improvement, provide a 10' - 12' shared use path on the railroad bed.



Project Mileage	2.5 miles
Planning Level Cost	$1.5 million to $1.9 million, not including right of way
Potential Constraints	Multiple property owners

Project 19: Elk River (NS) Railroad Bridge – Pennsylvania Avenue to Bullitt Street

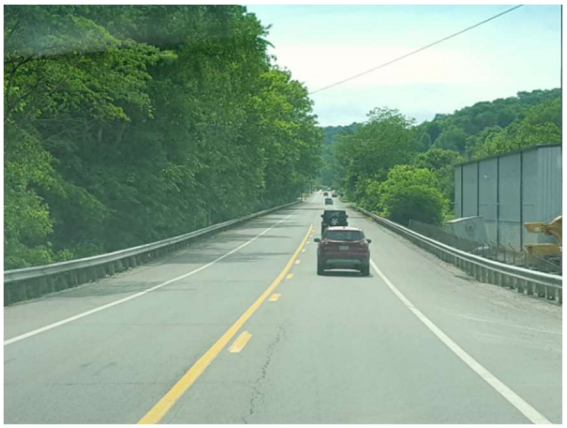
Roadway characteristics	Unused railroad bridge
Deficiencies/Key Issues	Willingness of property owner to sell, condition of the bridge.
Improvement Goals/Opportunities	Connect Westside, Downtown, and Coonskin Park by providing an Elk River crossing for bicycles and pedestrians with little conflict with vehicular traffic.
Proposed Improvements	Provide a 10' - 12' shared use path on a replaced structure.

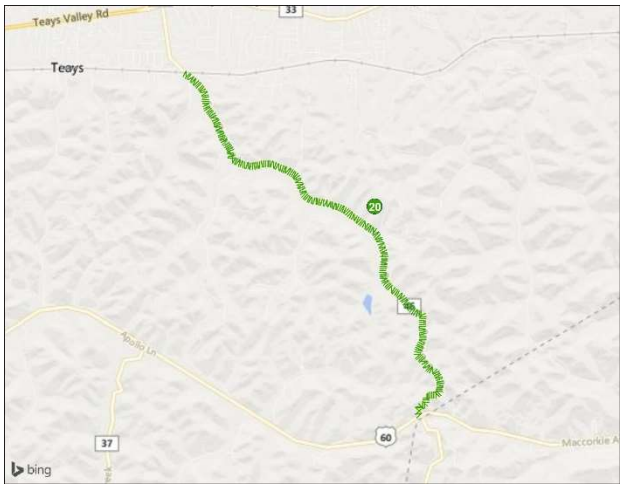


Project Mileage	0.1 miles
Planning Level Cost	$14 million to $14.5 million, not including right of way
Potential Constraints	Potential structure replacement, inspection will need to be conducted on the bridge

Project 20: St. Albans to Teays Valley Bike Trail

Roadway characteristics	Two lane rural roadway with 8'-10' wide paved shoulders, smooth pavement, high speed.
Deficiencies/Key Issues	Two lane roadway with no paved shoulders, high speed traffic, steep topography.
Improvement Goals/Opportunities	Connect St. Albans to Teays Valley for bicycle and pedestrian activities.
Proposed Improvements	"Share the Road" by maintaining continuous 8' shoulders on US 60 from WV 817 to Poplar Fork Road. Repave and provide 1-2' shoulders on Poplar Fork from US 60 to Teays Valley Road. Investigate right of way to provide a new 10-12' multi-use path directly from WV 817 to Poplar Fork Road.

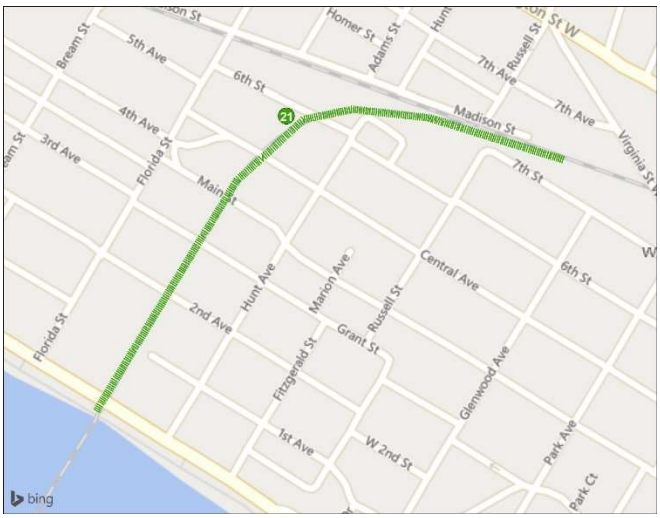




Project Mileage	7.7 miles
Planning Level Cost	$5 million to $5.5 million not including right of way
Potential Constraints	Available right of way

Project 21: NS Railroad trail – Kanawha Boulevard to 6th Street

Roadway characteristics	Unused railroad structures
Deficiencies/Key Issues	Unused railroad overpasses and sustaining property in the Westside for future bicycle and pedestrian use.
Improvement Goals/Opportunities	Connect Virginia Street with Kanawha Boulevard for bicycle and pedestrian activities and preserve the land for neighborhood use.
Proposed Improvements	Provide a 10' - 12' shared use path on the railroad right of way. Remove the railroad structures of Kanawha Boulevard from the NS Railroad trestle over the Kanawha River to 6th Street.



Project Mileage	0.4 miles
Planning Level Cost	$900K to $1.3 million not including right of way
Potential Constraints	Available right of way

5 Funding and Programs

5.1 Public Funding

The WVDOT have approximately $1.3 million per year available for bicycle and pedestrian improvements. While funding through other programs cannot be guaranteed, potential sources are shown in this section to provide guidance on strategies that may be pursued to maximize the number of recommendations that are implemented. Further coordination and prioritization of projects through organizations and local agencies can help pool available investment to advance core projects. Funding sources available for bicycle lanes and multi-use paths include National Highway System (NHS), Surface Transportation Block Grant Program (STBG), Transportation Alternative Program (TAP), Bridge (BR), Safe Routes to Schools (SRTS), Highway Safety Improvement Program (HSIP), Recreational Trails Program (RTP), Congestion Mitigation/Air Quality Program (CMAQ), Federal Transit Capital, Urban & Rural Funds (FTA), Partnership for Sustainable Communities from the US Dept. of Housing and Urban Development (HUD), Rivers, Trails, and Conservation Assistance Program from the National Park Service (NPS), Community Development Block Grant Program (CDBG), Community Transformation Grants from the Centers for Disease Control and Prevention (CDC), and Scenic Byways (SB).

Bicycle and pedestrian improvements should be combined with planned roadway improvements where feasible, potential improvements such as pavement rehabilitation, and/or drainage maintenance or safety projects. NHS, STBG and CMAQ funds that are being used for maintenance or safety funds can be applied to include the pedestrian and bicycle recommendations.

Transportation Enhancement (TE) activities through the Transportation Alternative Program (TAP) offer funding opportunities to help expand transportation choices and enhance the transportation experience through 12 eligible TE activities related to surface transportation. TE activities include; pedestrian and bicycle infrastructure, safety programs, scenic and historic highway programs, landscaping and scenic beautification, historic preservation, and environmental mitigation. Approximately 10% of the states' National Highway Performance Program (NHPP), STBG, and HSIP is for the TAP program. The West Virginia DOH has an electronic process for TE project applications. This process may be found at http://dohgrants.wv.gov.

"Safe Routes to School" is a FHWA program administered locally by WVDOH. The SRTS Program supports projects and programs that enable and encourage active transportation like walking and bicycling to and from school. Through this program, a local may apply for financial support to complete School Travel Plans for any K-8 school within the district. A School Travel Plan is the written document that outlines a community's intentions for enabling students to engage in active transportation. In West Virginia, this 100 percent reimbursable grant program is federally funded and is managed through the West Virginia Division of Highways. Infrastructure-Related projects may range from a minimum total cost

of $10,000 to a maximum total cost of $100,000. Non-Infrastructure-Related projects may range from a minimum total cost of $10,000 to a maximum total cost of $30,000.

The Highway Safety Improvement Program funding (HSIP) is administered through WVDOH. This program targets locations with high crash rates for specific improvements to address safety problems. Several of the recommended improvements may be eligible for this program. A safety study would be required, meeting state requirements, in order to apply for these funds. The funding will not be tied to any system of functionally classified highways and can, if needed, be expended on publicly owned bicycle and pedestrian pathways or trails.

The Recreational Trails Program (RTP) provides funds to the States to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. In West Virginia, the total cost of eligible projects range from $5,000 to $100,000. Eligible projects include development of urban trail linkages, trail head and trailside facilities; maintenance of existing trails; restoration of trail areas damaged by usage; improving access for people with disabilities; acquisition of easements and property; development and construction of new trails; purchase and lease of recreational trail construction and maintenance equipment; environment and safety education programs related to trails.

5.2 Private Funding

In addition to public agency funding, there are also private and non-profit companies that offer programs for bicycle and pedestrian improvements. There is an application process for these competitive programs.

The Bikes Belong Coalition welcomes grant applications from organizations and agencies within the United States that are committed to putting more people on bicycles more often. Fundable projects include paved bike paths, lanes, and rail-trails as well as mountain bike trails, bike parks, BMX facilities, and large-scale bicycle advocacy initiatives.

CAMC Foundation, Inc. is the fund-raising organization for the Charleston Area Medical Center (CAMC), a regional medical center that is recognized for its excellence in medical services. The CAMC Foundation works with donors to secure current and future support for CAMC programs and services to improve the health of the people of West Virginia.

The Robert Wood Johnson Foundation is the nation’s largest philanthropy dedicated solely to health. The Foundation funds programs and policy initiatives which are each critical to health equity.

The Walmart Community Grant Program funds projects and programs to enhance the quality of life for communities. The competitive program will fund project that will improve access to recreation, arts or cultural experiences for low income individuals and families in the United States.

The Kodak American Greenways Awards Program, a partnership project of the Eastman Kodak Company, the Conservation Fund and the National Geographic Society, provides small grants to stimulate the planning and design of greenways in communities throughout America. The organization is interested in funding activities such as mapping, eco-logical assessments, surveying, conferences and design activities; developing brochures, interpretative displays, audio-visual productions or public opinion surveys; hiring consultants; incorporating land trusts; and/or building footbridges, planning bike paths or other creative projects.

5.3 Programs and Policy Issues

In addition to the construction of bicycle facility infrastructure, it is important that steps be taken to raise awareness of the rights and responsibilities of bicyclists. Solutions to some safety problems are found through programs than through new facilities. Such steps can make a strong contribution to creating a safer bicycling environment and forging a higher level of understanding between bicyclists and other road and path users. Bicycle education and encouragement efforts can make a strong contribution to creating a safer bicycling environment and forging a higher level of understanding between bicyclists and other road/path users.

5.3.1 The Five E's of a Bicycle Friendly Community

The friendliest areas for bicyclists and pedestrians balance the Five E's — Engineering, Education, Encouragement, Enforcement, and Evaluation. Any bicycle and pedestrian improvement should be supplemented with coordinated programs and policies that instruct and encourage bicyclists and pedestrians in the full and proper use of the non-motorized transportation network.

1. Engineering

Engineering refers to the network of pathways that must be planned, designed, and constructed. A well-planned bicycle and pedestrian system can enhance user safety and enjoyment and may increase the attraction of each mode. Bicycle and pedestrian facility projects can be divided into two types: independent and incidental projects. Independent projects are separate from scheduled highway projects, while incidental projects are constructed as a part of a highway project. A combination of both types of projects is necessary to develop a well-connected and user-friendly network.

2. Education

Once the pathways are in place, new and experienced cyclists and pedestrians must be made aware of their locations and the destinations that can be reached by using them. Bicyclists, pedestrians, and motorists must be educated on the "rules of the road" to ensure everyone's safety while operating on and adjacent to the bicycle and pedestrian facilities. Education programs can be initiated from a variety of sources. Local governments can host workshops and bike rodeos, law enforcement officers can launch school-based education programs, and local advocacy groups can distribute educational materials.

3. Encouragement

People need to be encouraged to bicycle and walk. Encouragement should become easier as the network of pathways makes the region more bicycle- and pedestrian-friendly. Encouragement becomes more critical as these facilities are constructed to justify the investment. Popular encouragement programs include Safe Routes to School, Walk/Bike to School Days, Bicycle to Work Week, Bicycle Rodeos, and Bicycle Mentor Programs.

Figure 5-1: Teays Valley Bike Safety Rodeo

4. Enforcement

To ensure the safety of all users and the long-term sustainability of the bicycle and pedestrian system, the formal and informal "rules of the road" must be heeded by all. Effective enforcement programs ensure consistent enforcement of traffic laws affecting motorists and bicyclists. These programs include bicycle licensing/registration efforts and positive reinforcement programs implemented by local law enforcement.

5. Evaluation

Though often overlooked, evaluation is a critical component of bicycle and pedestrian planning. The friendliest communities for cyclists and pedestrians have a system in place to assess existing programs and outline steps for future expansion.

5.3.2 Bicycle Awareness Programs

Current programs and initiatives that promote bicycling and walking within the region should continue in the near-term. The Kanawha County Sheriff Office, Charleston Police Department and WV Connecting Communities sponsor and hold Bicycle Safety Rodeos by request. Complimentary bicycle helmets are provided to children at these rodeos and education and training are provided through a fun safety obstacle course.

New educational and awareness programs

Many cyclists in the region are riding on sidewalks which creates an unsafe and unpleasant environment for pedestrians and cyclists. These issues can be addressed through educational programs to help the bicyclists understand how to avoid the true risks involved and to gain the skills needed to become more comfortable in selecting routes and sharing the road with traffic. Development of educational programs and enforcement by local safety officers would help improve the overall safety of bicyclists and pedestrians. An education program for bicycling should include a promotion of safe routes to schools for students and

educators, safety on the use of bicycle lanes, and continued development, marketing, and awareness of current bicycle paths. In addition to educating the cyclist, programs should be developed to educate the non-cyclist. Bicycle awareness is not typically taught in drivers' education classes nor included on driver licensing exams. Awareness can be accomplished by utilizing print media, public service announcements and targeted group presentations and marketing campaigns.

New programs and initiatives to implement in the region to educate and encourage bicycling include the following:

- Annual bike events
- Implement Share the Road campaigns
- Update the WVDOT bicycle program website
- Operate booths at fairs and events
- Bicycle rodeos
- Awareness material in water bill inserts
- Provide bicycle stickers, posters, brochures, and other promotional items
- Provide local training webinars for engineers and planners
- Provide bicycle awareness presentations to RTA new operators classes
- Educate cyclists on how to use bike racks on transit to promote safe usage
- Partner with organizations such as the Safe Routes to School Program and YMCA
- Provide adult bicycle skills classes
- Provide "Basics of Bicycling" school curriculum at one pilot school
- Provide bicycle awareness in drivers' education and licensing
- Provide bicycle mapping resources;
- Provide a bicycle tour of bicycle facilities;
- Regular production of videos for distribution to bike shops, bike clubs, government channel broadcast and website viewing
- Partner in commuting program to assist commuters in choosing bike routes

Local sponsors should also identify opportunities to track progress in pursuing educational and awareness goals. Tracking existing educational programs will establish a benchmark to demonstrate the success of the expanded range of education and awareness programs envisioned.

Bike racks and shelters

Bike racks and shelters can be used to promote the use of biking. The RIC region has a deficiency in available bicycle parking, however there are bike parking racks throughout downtown Charleston that were funded through a Sustainable Kanawha Valley Initiative grant sponsored by the Mountain State Wheelers Bicycle Club. There are bicycle racks on all Kanawha Valley Regional Transportation Authority (KVRTA) buses, and at several bus shelters.

Figure 5-2: Bicycle Parking

Figure 5-3: Urban Racks System

Municipalities should pursue funding for bicycle racks to promote the use of biking including working with local land and business owners. Bicycle parking should be required with new development.

The Association of Pedestrian and Bicycle Professionals published *Bicycle Parking Guidelines*, a basic guide to the selection and placement of bicycle racks specifically for short-term parking. These guidelines should be referred to for the location of racks and shelters throughout the RIC region. The cost for an 11-bike in-ground rack ranges from $250 to $1,400 per rack. Bike lockers can also be used along with the racks and shelters. The lockers cost in the range from $200-$1,200. Bike shelters can cost in the range from $1,000 to $10,000 depending on the size and style. Some examples of bike shelters, bike racks, and lockers include:

Figure 5-4: City of Columbus Bike Rack

Appendix A: Demographic Maps

Appendix B: Public Participation Plan

Appendix C: Stakeholder Interview Notes

Appendix D: Public Meetings

Appendix E: Summary of Survey Results