



# Morgantown Monongalia MPO Bicycle Plan

Adopted by the MMMPO Policy Board

as part of the 2013-2040 MMMPO Long Range Transportation Plan

March, 2013

Prepared by

The Morgantown Monongalia Metropolitan Planning Organization

in cooperation with the MMMPO Bicycle Plan Steering Committee

## ACKNOWLEDGEMENTS

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## EXECUTIVE SUMMARY

The Morgantown Monongalia MPO Bicycle Plan (Plan) is a policy document incorporated into the MPO 2040 Long Range Transportation Plan (LRTP). The Plan has a 25 year planning horizon and covers all municipalities and incorporated areas within Monongalia County.

The Plan was developed as an in-house project of the MMMPO Unified Working Program (FY2013-2014). It was built on the framework established by the 2012 Greater Morgantown Bicycle Plan and developed by a Steering Committee consisting of Morgantown bicycle board members, certified bicycling instructors, the city of Morgantown's Asst. City Engineer, and citizens.

### Public Outreach

Two open house events were hosted. The first one was held at Marilla Park in November, 2013; the second one at the Morgantown Public Safety Building in January, 2014. There were two radio interviews on WAJS to discuss the development of the Plan. Other social media used to reach to the public included Facebook, newspapers, website, and online survey.

### Vision, Aims, and Objectives

The Plan's vision is that bicycles should be a practical transportation option and that people should be able to ride bicycles in a safe and supportive environment. There are two measureable aims to implement this vision: (1) Improving bicycle safety and (2) Increasing bicycle ridership. These two aims are achieved by accomplishing four objectives. The first three are that (1) bicyclists ride safely and have access to (2) an informative bicycle data system and (3) a well maintained, safe and effective network of bicycle routes. The fourth objective is that (4) motorists drive in a cycling friendly manner.

### Recommendations

The Plan's recommendations consist of both infrastructure and non-infrastructure related recommendations, which are detailed in the body of this plan. Briefly the infrastructure related recommendations include identifying an effective network of bicycle routes and a prioritized list of specific improvements to trails and roadways so the network can be used safely and effectively by bicyclists. The non-infrastructure recommendations are summarized in the following table.

non-infrastructure recommendation	
Strategies	MPO Action
<b>EDUCATION:</b> Media Marketing   Educational Materials Distribution   Driver's Education   Enforcement Personnel Education   Bicycle Education Program	Assist
<b>ENCOURAGEMENT:</b> Project Integration   Plan Coordination   AASHTO Guide Incentives for Bicycling   Bicycle to School   Bicycle Map and Data   Bicycle Events	Assist Advocate
<b>ENFORCEMENT:</b> Bicycling Law   Legislation for Bicycling   Land Use Regulation	Advocate
<b>EVALUATION:</b> Bicycle Monitoring Program   Bicycle Count and Survey Program   Bicycle Plan Review	Develop Maintain

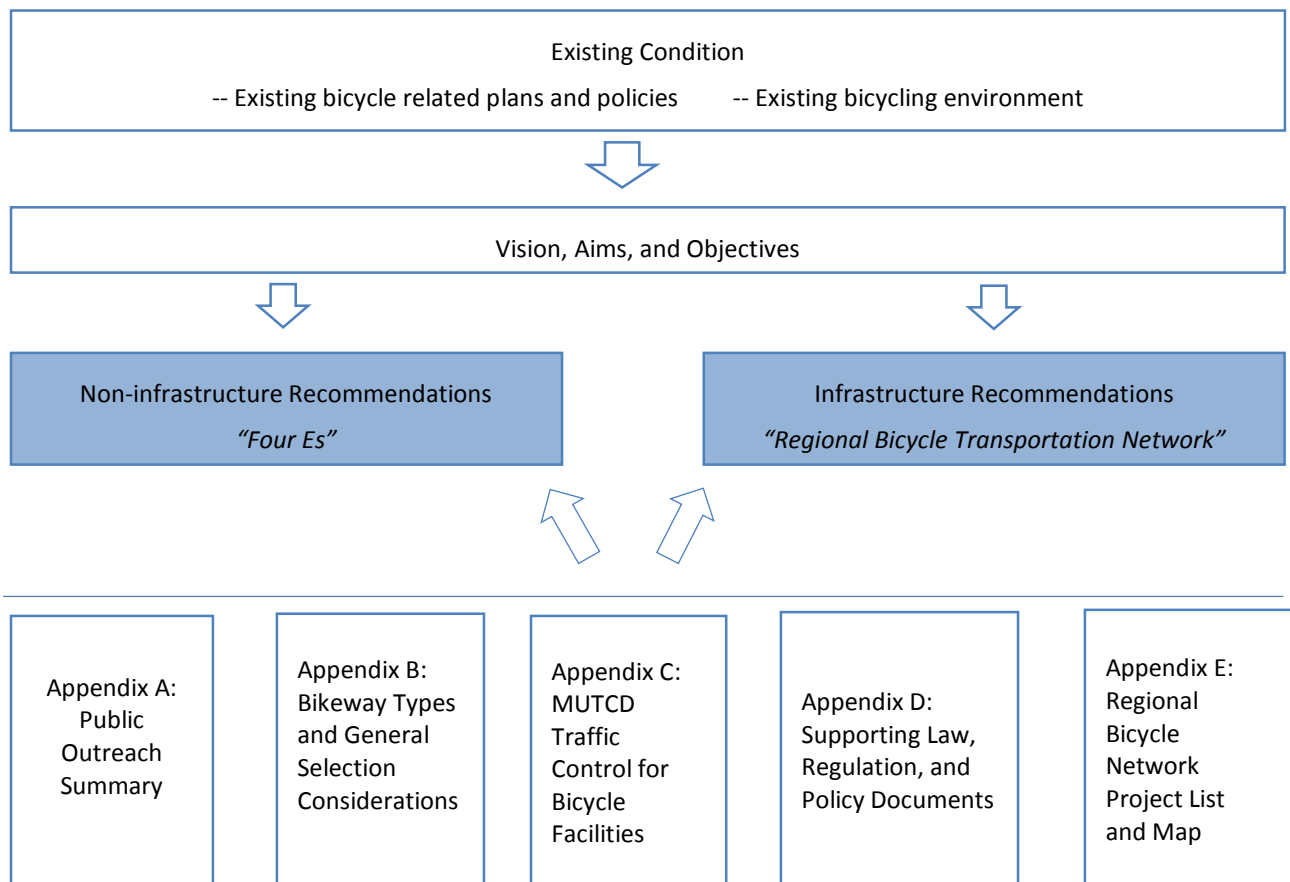
## 1. INTRODUCTION

The creation of the Morgantown Monongalia MPO Bicycle Plan (Plan) is recommended in the MPO's 2013-2040 Long Range Transportation Plan (LRTP) as a tier 1 project. In accordance with the LRTP, the Plan has a 25 year planning horizon.

The Plan is developed from the framework built by the 2012 Greater Morgantown Bicycle Plan. It recommends both non-infrastructure and infrastructure projects to improve the cycling environment in the Morgantown area by creating a logical and interconnected bikeway system for the region.

The scope and time horizon of the Plan is consistent with the MPO's LRTP. It serves Monongalia County, including the City of Morgantown, City of Westover, Town of Blackville, Town of Granville, and Town of Star City. It also serves Brookhaven, Cassville, Cheat Lake and other unincorporated communities within the county.

The plan consists of four sections and five appendices. The two major products of the Plan are the "Four Es" (non-infrastructure recommendations) and the "Regional Bicycle Transportation Network" (infrastructure recommendations). The following flow chart illustrates the process used to develop the plan.



## 1.1 TIMELINE

The Steering Committee responsible for developing The Plan was established in August, 2013 as a part of 2013-2014 MMMPO Unified Work Program. The Plan was adopted by the MPO Policy Board in March, 2014.

In general, the planning process followed the schedule shown in Table 1.

**Table 1: Planning Process and Timeline**

<b>Time</b>	<b>Events</b>
August, 2013	Establishment of Steering Committee
October, 2013	Existing Condition Report
November, 2013	Public Open House
	Goal, Vision, and Objective Report
December, 2013	Regional Bicycle Network Report
	Non-infrastructure Recommendation Report
	Implementation Plan
January, 2014	Public Outreach Report
	First Draft of Bicycle Plan
	Public Open House
February, 2014	Second Draft of Bicycle Plan
March, 2014	Submit to the MPO Policy Board Meeting for adoption



## 2. EXISTING CONDITION

This chapter describes bicycling as a mode of transportation in the existing regulatory context and infrastructure environment. The purpose of this section is to provide a fact-based foundation for the establishment of a regional bicycle network and the development of future bicycling projects.

There are two sections in this chapter. The first section reviews existing bicycling related plans and policies to ensure the external consistency of the plan by placing it in the context of the existing regulatory framework, political reality, and financial constraints of the region. The second section assesses bicycling in the region by documenting elements that influence bicycling such as traffic volume, speed limits, and topography.

### 2.1 EXISTING BICYCLING RELATED PLANS AND POLICIES

Existing plans and policies adopted by city and county agencies provide a planning framework for the region. This section summarizes the key bicycling-related elements identified in these plans.

#### THE MMMPO LONG RANGE TRANSPORTATION PLAN

The 2013-2040 Long Range Transportation Plan (LRTP) was adopted by the MPO Policy Board in March, 2013. It provides an extensive transportation context for this bicycling plan.

The regional transportation vision, highlighted by its emphasis on transportation completeness, states that:

*The Morgantown Monongalia Area will have a complete and attractive transportation system with reduced congestion. The system will support and guide future growth by integrating the use of private vehicles, with public transportation, biking, and walking.*<sup>1</sup>

Table 2 shows the LRTP's goals and objectives that are pertinent to a bicycling plan.<sup>2</sup>

Table 2: Bicycling Related Goals and Objectives in Long Range Transportation Plan

Goal	Objectives
A multimodal transportation system that efficiently moves people and goods	To eliminate/reduce current congestion and <b>multimodal traffic flow restrictions</b> on arterial and collector roadways. (emphasis added)
	Improve ingress/egress to the most densely developed/highest activity areas in the region.
A transportation system in which all modes are highly integrated and connected	To allow for convenient <b>transfer from one mode to another</b> in the region to maximize travel efficiency. (emphasis added)
	To encourage the use of the <b>most efficient mode</b> based on the distance and characteristics of a particular trip. (emphasis added)
	Increase the geographic area in which people have convenient access to <b>non-automobile modes</b> . (emphasis added)
	Improve and expand infrastructure of pedestrians, bicyclists and people with disabilities.

<sup>1</sup> Morgantown Monongalia Metropolitan Planning Organization, *2013-2014 Long Range Transportation Plan*, March, 2013, p.3-2

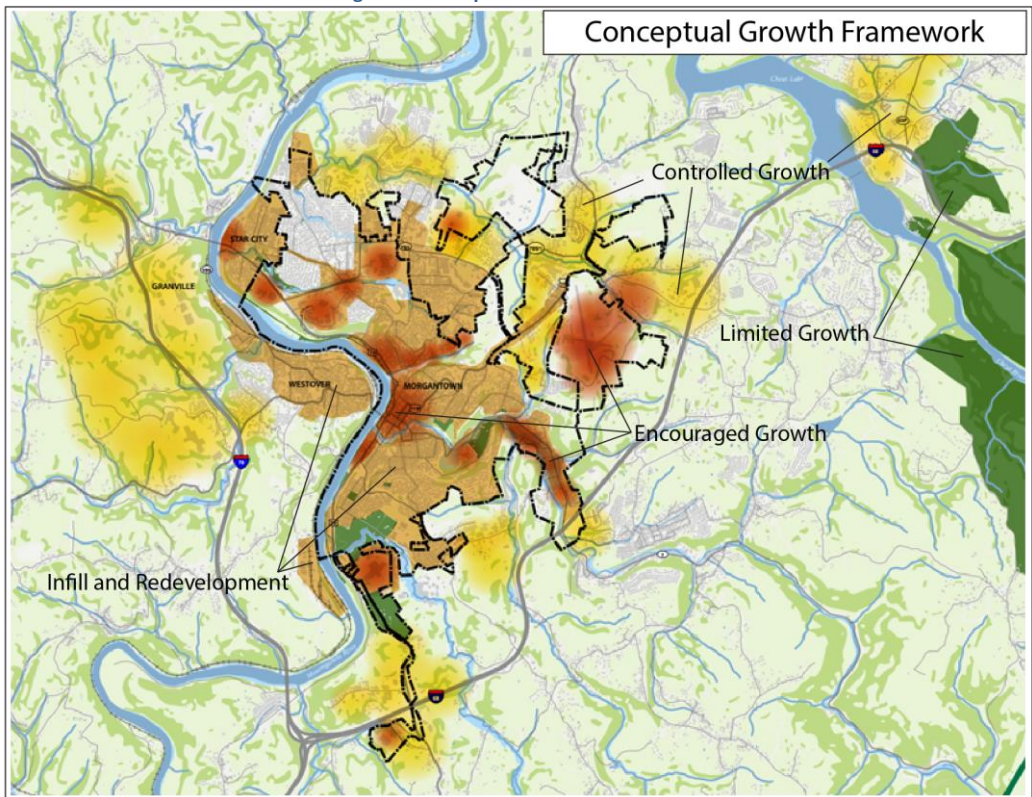
<sup>2</sup> *The 2013-2014 Long Range Transportation Plan*, p.3-4 to 3-8

A transportation system that is attractive, sustainable, and livable	Address <b>multimodal system needs</b> in all planning, design, and construction of transportation improvements. (emphasis added)
Reduce automobile trip demand, especially during peak travel hours	5% of all trips made by bicycle by 2025 <sup>1</sup> . Invest in transportation improvements that encourage and support development/land use patterns that decrease need to travel.

CONCEPTUAL GROWTH FRAMEWORK

The conceptual growth framework illustrates a regional vision through the lens of preservation, growth, infill, and redevelopment.<sup>2</sup> It is a vision shared by the Morgantown Comprehensive Plan and Star City Comprehensive Plan.

Figure 1: Conceptual Growth Framework



PROJECT RECOMMENDATIONS

In order to integrate the bicycling plan into the larger transportation network, it is important to coordinate with the MPO high priority projects listed in the LRTP. Table 3 summarizes the tier 1 projects recommended for funding with state and federal funds forecasted to be available for the next two decades. Figure 1 shows their locations.

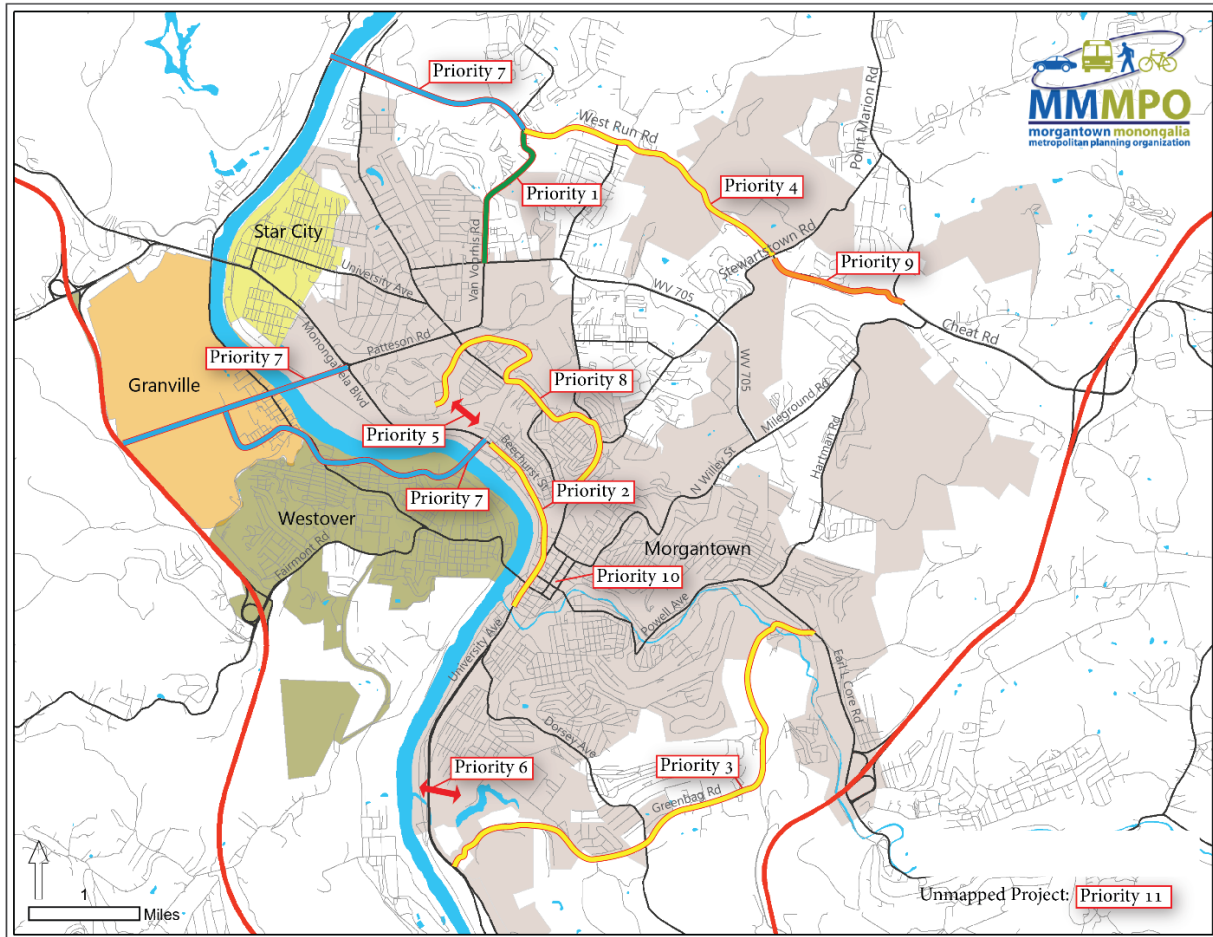
<sup>1</sup> The planning horizon of the Greater Morgantown Bicycle Plan is 2020

<sup>2</sup> The 2013-2014 Long Range Transportation Plan, p.2-11

Table 3: MMMPO LRTP Prioritized Tier One Projects

Priority	Project Name	Purpose (summarized)
# 1	Improve Van Voorhis Rd	Multimodal Connection
# 2	Beechurst Ave Spot Improvements	Automobile Capacity & Multimodal Connection
# 3	Improve Greenbag Rd	Traffic Capacity & Multimodal Connection
# 4	Improve West Run Rd (Western Section)	Traffic Capacity & Multimodal Connection
# 5	Grant Ave Bicycle & Pedestrian Corridor	Bicycle & Pedestrian. Connection
# 6	White Park/Caperton Trail Connection	Community Connection to Trail
# 7	Monongahela River New Bridge & Connecting Road	Traffic Capacity & Relieve Congestion
# 8	North Side Connector Bus Rapid Transit	Transit Service
# 9	West Run Improvements (Eastern Section)	Traffic Capacity & Multimodal Connection
# 10	Downtown Morgantown Signalization & Street Changes	Downtown Enhancement
# 11	Regional Bikeway Plan Implementation Program	Bikeway system

Figure 2: LRTP Tier One Projects Map (#11 not shown)



The Greater Morgantown Bicycle Plan was developed by the Morgantown Bicycle Board and adopted by Morgantown City Council in May , 2012. The plan is a significant step towards improving bicycling in the city and greater Morgantown area. The plan features an in-depth understanding of the local bicycling environment and a holistic approach to improving bicycling conditions in the area.

The vision of the plan is:

*All Morgantown residents can enjoy bicycling safely and fearlessly anywhere, anytime for any reason. Morgantown residents choose to ride bicycles for transportation as well as recreation. Our state and our nation recognize Morgantown for the benefits of bicycling to our health, our environment, our economy and our quality of life.<sup>1</sup>*

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## EXISTING CYCLING CONDITION

The Greater Morgantown Bicycle Plan examines existing bicycling conditions and makes the following points:

### Existing Physical Condition

- Metropolitan area built out so no room to widen roads.
- Limited traffic law enforcement and the enforcement that is done discourages bicycling.
- Distracted driving, running stop signs, failure to signal and failure to yield violations are increasing and are especially detrimental to bicyclists.

### Existing Bicycling Population

- Two thriving bicycle shops indicate an active community
- Active bicycling races and clubs

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## PRIORITIZED ACTIONS

Actions to be taken in the Greater Morgantown Bicycle Plan are developed under five categories. Table 4 briefly summarizes the top priority projects for each category.

**Table 4: Greater Morgantown Bicycle Plan Prioritized Actions<sup>2</sup>**

Category	Action
Education	Continue the Confident City Cycling education. Educate bicyclists that they have same rules and responsibilities as motorists.
Enforcement	Cite motorists for improper driving around bicyclists with emphasis on failure to stop for stop signs, failure to yield at intersections and passing bicyclists too closely and too fast.
Engineering	Install Shared Lane Markings and R4-11 Bicycles May Use Full Lane signs in all corridors that would see substantial increases in bicycle use if bicyclists felt less threatened there and motorists were reminded that bicyclists belong.
Encouragement	Establish and maintain a budget to enable implementation of this plan.
Evaluation	Measure bicycle use, bicycle crashes, bicycle injuries and, bicycle-related citations and publish the results quarterly and yearly. Analyze data to identify opportunities for increasing bicycle use and reducing crashes. Every year, 2 months before the beginning of the City's

<sup>1</sup> Morgantown Municipal Bicycle Board, *Greater Morgantown Bicycle Plan*, January, 2012, p.5

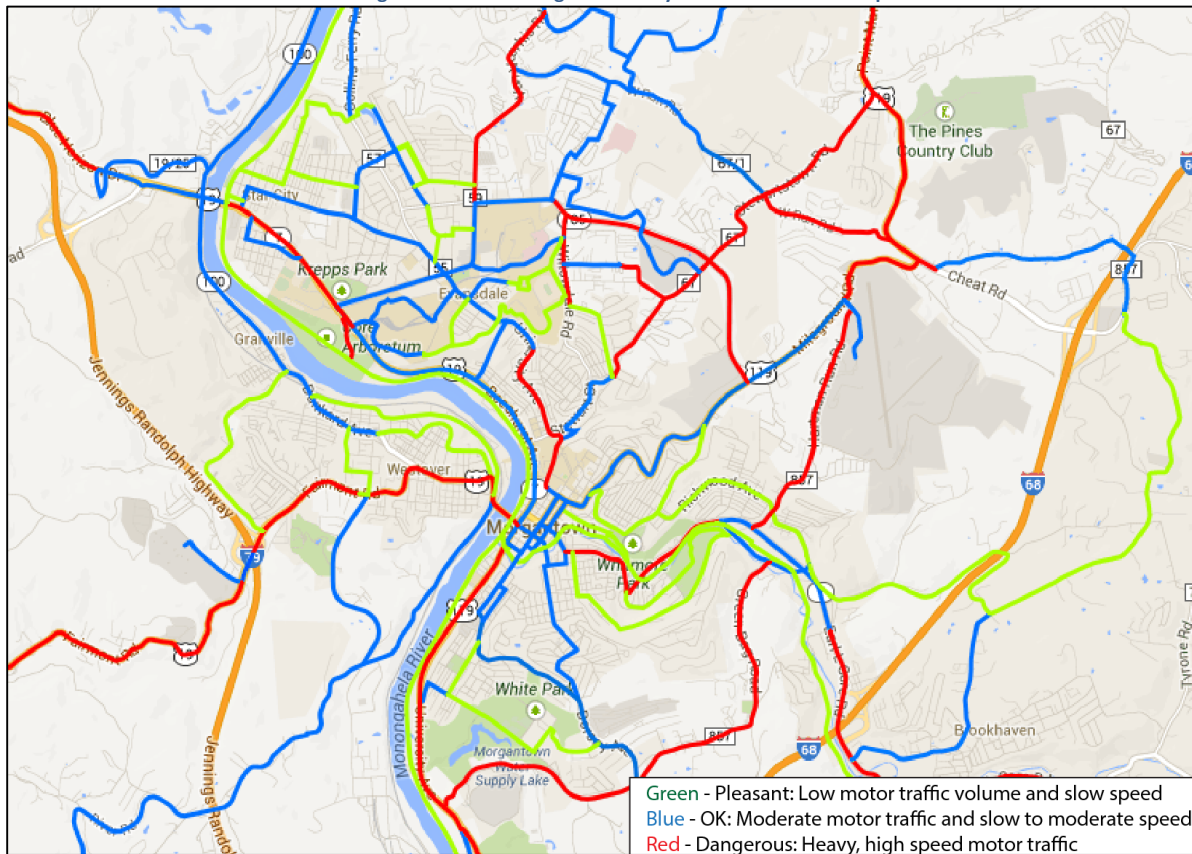
<sup>2</sup> Morgantown Municipal Bicycle Board, *Greater Morgantown Bicycle Plan*, January, 2012, p.23-34

Evaluation (Cont.)	annual budget cycle, conduct an annual review with City Council, Chief of Police, City Engineer and the Bicycle Board of trends in bicycle use, bicycle crashes, bicycle injuries and, bicycle-related citations and identify required changes to the Bicycle Plan and related plans and operations.
Equity	Identify and repeal ordinances that discriminate against bicyclists, or restrict their right to travel, or reduce their safety relative to other travelers.

COMMUTER MAP

The commuter map was created based on the routes that knowledgeable bicyclists take to travel between 5 selected points. The routes were classified in terms of comfort which is largely defined in terms of subjective assessments of motor traffic volume and speed. It provides a valuable insight into the bicycle rideability of the existing street systems in the study area.

Figure 3: Greater Morgantown Bicycle Plan Commuter Map<sup>1</sup>



MORGANTOWN COMPREHENSIVE PLAN

The most recent Morgantown Comprehensive Plan was adopted in June, 2013. The plan is founded on 11 principles<sup>2</sup> which encourage compact development through infill, redevelopment, mixed-uses in areas such as downtown and the adjacent neighborhoods, and the river front. Principle 7 addresses bicycling in the area.

<sup>1</sup> Morgantown Municipal Bicycle Board, *Greater Morgantown Bicycle Plan*, January, 2012, p.36

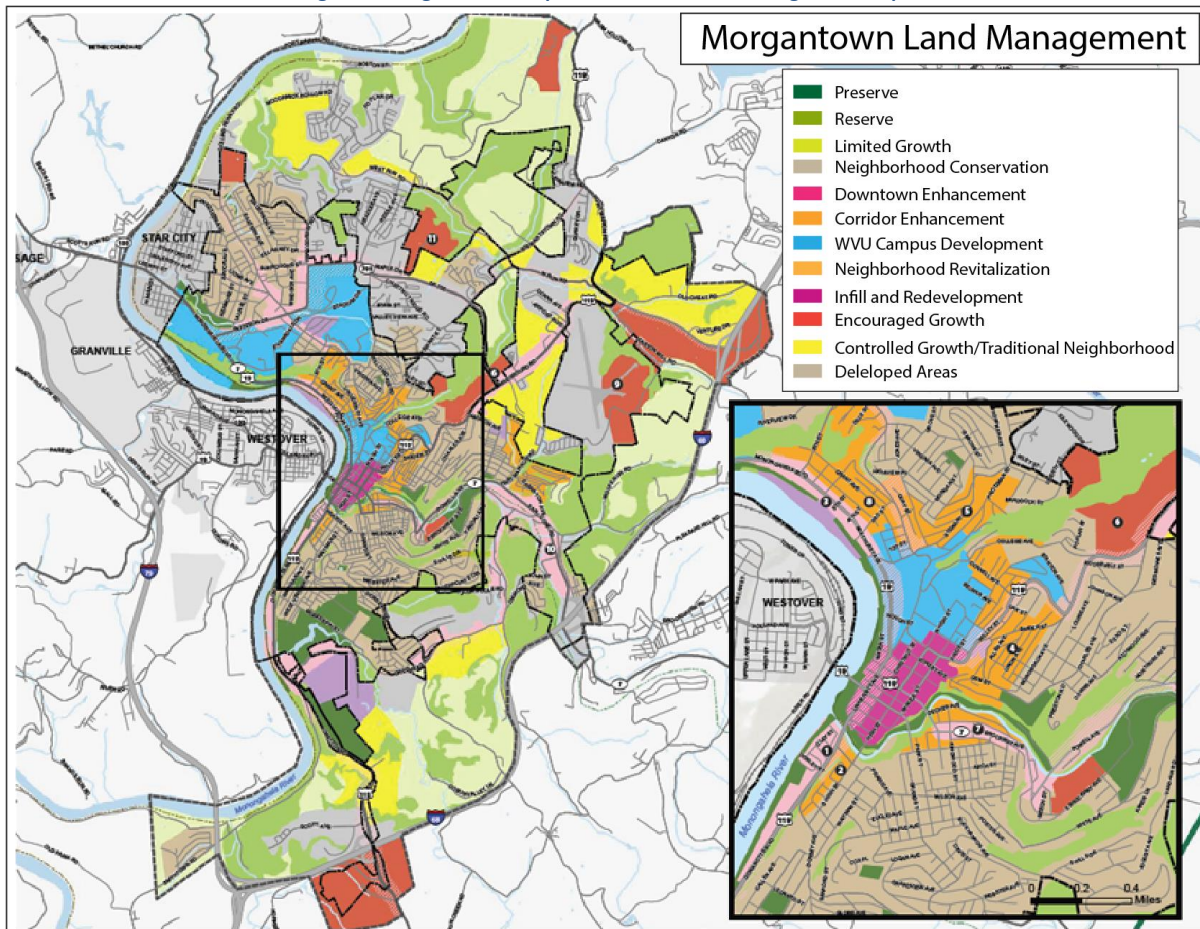
<sup>2</sup> *City of Morgantown Comprehensive Plan 2013 update*, p.8

Places will be better connected to improve the function of the street network and create more opportunities to walk, bike and access public transportation throughout the region.<sup>1</sup>

## MORGANTOWN LAND MANAGEMENT

Land management guides the land use development pattern in the city. The land management map reflects where and how growth is anticipated to occur.

Figure 4: Morgantown Comprehensive Plan Land Management Map<sup>2</sup>



The Land Management Map also identifies places where specific development patterns apply. These places include:

- Waterfront / Wharf District
- South High Street and University Avenue
- Beechurst Avenue Corridor
- North Willey Street / Richwood Avenue Area
- Stewart Street Area
- 705 University Farms Area
- Brockway Avenue Corridor (Route 7)

## VISION FOR BICYCLING

<sup>1</sup> City of Morgantown Comprehensive Plan 2013 update, p.8

<sup>2</sup> City of Morgantown Comprehensive Plan 2013 update, p.39

The transportation vision of the City of Morgantown Comprehensive Plan is:

*A balanced, safe, attractive well-connected transportation system that offers reduced congestion, supports and encourages desirable growth, and integrates private vehicles, public transportation, biking, and walking.*<sup>1</sup>

Bicycling is addressed in Transportation Objective 5.

*Increase bicycle use through infrastructure improvements and education.*<sup>2</sup>

*This objective is supported by following strategies.*

- *TR 5.1 Implement the Morgantown Bicycle Plan.*
- *TR 5.2 Develop a bicycling education plan.*
- *TR 5.3 Develop a traffic enforcement plan to improve bicycling safety and to reduce the perceived risk of bicycling in Morgantown.*
- *TR 5.4 Implement the “Complete Streets” policy adopted by City Council in December 2007 to guide development review and approval, roadway maintenance, right-of-way improvements, and right-of-way expansion wherever practical.*
- *TR 5.5 Develop a feeder trail system that connects neighborhoods with the Caperton and Decker’s Creek Trails.*

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## NEIGHBORHOOD AND COMMUNITY

The importance of walkable and connected neighborhoods is recognized in the chapter on Neighborhood and Housing.

*The option to walk, ride a bike, or take public transportation from home to a nearby place like a grocery store, school or park was important to many respondents....Higher density, walkable neighborhoods that are close to services and amenities are increasingly desired by two major demographics: young professionals and empty-nesters.*<sup>3</sup>

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## STAR CITY COMPREHENSIVE PLAN

As an integrated part of the metropolitan area, Star City developed its’ first-time comprehensive plan in 2013. There are ten principles framing future development. Principle No. 7 addresses bicycling:

*Places will be well-connected to improve the function of the street network and create more opportunities to walk, bike and access public transportation and recreational trails.*<sup>4</sup>

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## STAR CITY LAND MANAGEMENT

Star City has a distinctive small-town character. The entryway on Boyers Ave and the riverfront have been identified as two major growth areas in the city, and mixed uses at strategic locations and redevelopment of underutilized sites are encouraged. The land management map illustrates how development will occur.

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<sup>1</sup> *City of Morgantown Comprehensive Plan 2013 update, p.55*

<sup>2</sup> *City of Morgantown Comprehensive Plan 2013 update, p.65*

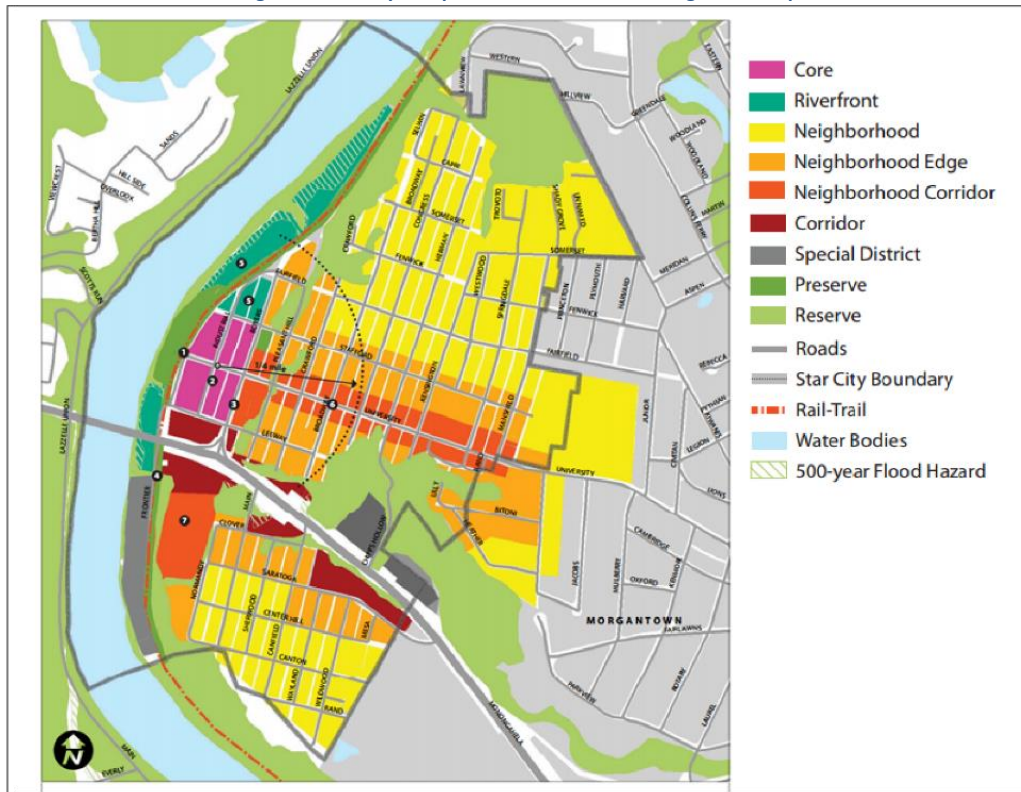
<sup>3</sup> *City of Morgantown Comprehensive Plan 2013 update, p.74*

<sup>4</sup> *Town of Star City Comprehensive Plan 2013 update, p.6*

The plan identifies four trends defining the development pattern in the city. They are:

- Continue riverfront revitalization by focusing on the two blocks between the Caperton Rail-Trail, Boyers Avenue, University Avenue and Leeway Street.
- Corridor enhancement along University Avenue.
- Maintain and enhance neighborhoods.
- Seek connections between the north and south sides of Monongahela Boulevard.<sup>1</sup>

Figure 5: Star City Comprehensive Plan Land Management Map



## NON-VEHICULAR CONNECTIONS

Primary concerns of residents, as revealed by public input and technical analysis, are improving physical appearance of Star City and reducing traffic. An improved bicycling environment could be part of the answer. Objective 2 recognizes the needs of non-vehicular connection

*Objective 2: Improve vehicular and non-vehicular connections between the north and south sides of Star City.<sup>2</sup>*

Three strategies supporting development of bicycling under this objective are:

- TR 3.4 Participate in meetings and activities of Morgantown's Bicycle Board to promote biking in the region.

<sup>1</sup> Town of Star City Comprehensive Plan 2013 update, 24

<sup>2</sup> Town of Star City Comprehensive Plan 2013 update, 42



- *TR 3.5 Contribute to developing the MMMPO's Regional Bike Route Plan to expand connecting bike route network through Star City.*
- *TR 3.6 Require that bicycle parking facilities (bike racks or shelters) are accounted for within development plans. (facilities may be shared)*

The community also recognizes that the city enjoys a wealth of parks and recreational options. There are opportunities to create new park or trail amenities within the city.

In the chapter titled Community Facility, the plan addresses the concerns of maintaining and expanding the parks and recreational trail system.

*CF 2.4 Identify and evaluate opportunities to improve connections between the Caperton Rail-trail and other existing or proposed multi-use paths.<sup>1</sup>*

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## MONONGALIA COUNTY COMPREHENSIVE PLAN

The Monongalia County Commission adopted the Comprehensive Plan for the Stewartstown, West Run, Cheat Lake, and Cheat Neck Planning District in February, 2013. This plan outlines the future growth and policy practices needed for these communities. The plan provides valuable perceptions on the growth pattern in the greater Morgantown area and indicates how bicycling can be integrated into the existing and future urban fabrics.

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### GROWING AREAS

Four areas have been identified as designated growth areas, where compact development is encouraged. They are the Pierpont District, the West Run District, the Lake Lynn District, and the Canyon District. In addition, the plan also recognizes four areas that are growing but not included in the planning districts. They are Brookhaven, Chaplin Hill, the Grafton Road area, and the Goshen Road area.

The plan designates the Pierpont District as a service-oriented mixed use commercial and residential area. A pedestrian/bicycle connection to Mileground corridor is recommended.

*Strategy 3.6.2d: Public facilities - Improve public facilities such as street trees, sidewalks, lighting, street furniture, and pedestrian/bicycle paths to make the corridor more walkable and encourage bicycling and walking connections to Easton Hill and the improved Mileground corridor.<sup>2</sup>*

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### A VIABLE OPTION FOR TRAVEL

Bicycling is considered a viable option for travel in the countywide transportation system. The plan states that:

*For this plan, the road and highway network must be considered multimodal, including bicycle and pedestrian facilities as viable options for travel.<sup>3</sup>*

The plan further states that:

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<sup>1</sup> *Town of Star City Comprehensive Plan 2013 update, 55*

<sup>2</sup> *Monongalia County, WV. Comprehensive Plan for Stewartstown, West Run, Cheat Lake, and Cheat Neck Planning Districts, 37*

<sup>3</sup> *Monongalia County, WV. Comprehensive Plan for Stewartstown, West Run, Cheat Lake, and Cheat Neck Planning Districts, 42*

Develop *multiple travel options* – *Strongly encourage multimodal transportation in growth areas. Incorporate facilities for pedestrian and bicycle travel into density plan.* (Strategy 4.1.2c) <sup>1</sup>

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## COMMUNITY DESIGN GUIDELINES

Guidelines recommended in the Community Design chapter encourage development that contributes positively to the vision of Monongalia County’s future without imposing any legal requirements, restrictions, or zoning standards.

The plan encourages a bicycling friendly environment:

- Goal 10.3: Every street in Monongalia County should be improved to be as “complete” as possible. <sup>2</sup>

One strategy focuses on enhancing bicycle safety as well as overall pleasantness.

*Strategy 10.3.1 a: To the extent possible, improve each street to be “complete” by accommodating the vehicles, the bicyclist, and pedestrians of all physical abilities.* <sup>3</sup>

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## COMPLETE STREET POLICY RESOLUTIONS

The City of Morgantown adopted a complete street policy resolution<sup>4</sup> in 2007. The Greater Morgantown Metropolitan Planning Organization<sup>5</sup> also adopted a complete street policy resolution<sup>6</sup> in 2008. These two resolutions support:

*The indispensability of Complete Streets solutions for its total population in the planning, design, development, construction and maintenance of all corridors and connector street projects...[and]...provision for use by transit services, bicyclists, pedestrians as well as automobiles in a manner that fits in the context of the community, its Comprehensive Plan, and federal transportation safety standards.*<sup>7</sup>

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## WEST VIRGINIA STATEWIDE TRAIL PLAN

The West Virginia Statewide Trail Plan was adopted by the West Virginia Trail Plan Committee in 2002. The plan encourages utilizing trails<sup>8</sup> for alternative transportation and incorporating alternative transportation into all road planning and design<sup>9</sup>.

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<sup>1</sup> *Comprehensive Plan for Stewartstown, West Run, Cheat Lake, and Cheat Neck Planning Districts*, 45

<sup>2</sup> *Comprehensive Plan for Stewartstown, West Run, Cheat Lake, and Cheat Neck Planning Districts*, 65

<sup>3</sup> *Comprehensive Plan for Stewartstown, West Run, Cheat Lake, and Cheat Neck Planning Districts*, 66

<sup>4</sup> A Resolution on Use of Complete the Street Policy in Planning Road Improvements in the City of Morgantown and Adjacent areas.

<sup>5</sup> The former name of the Morgantown Monongalia Metropolitan Planning Organization

<sup>6</sup> Resolution on Use of Complete the Streets Policy in Planning Road Improvements in the Greater Morgantown Area

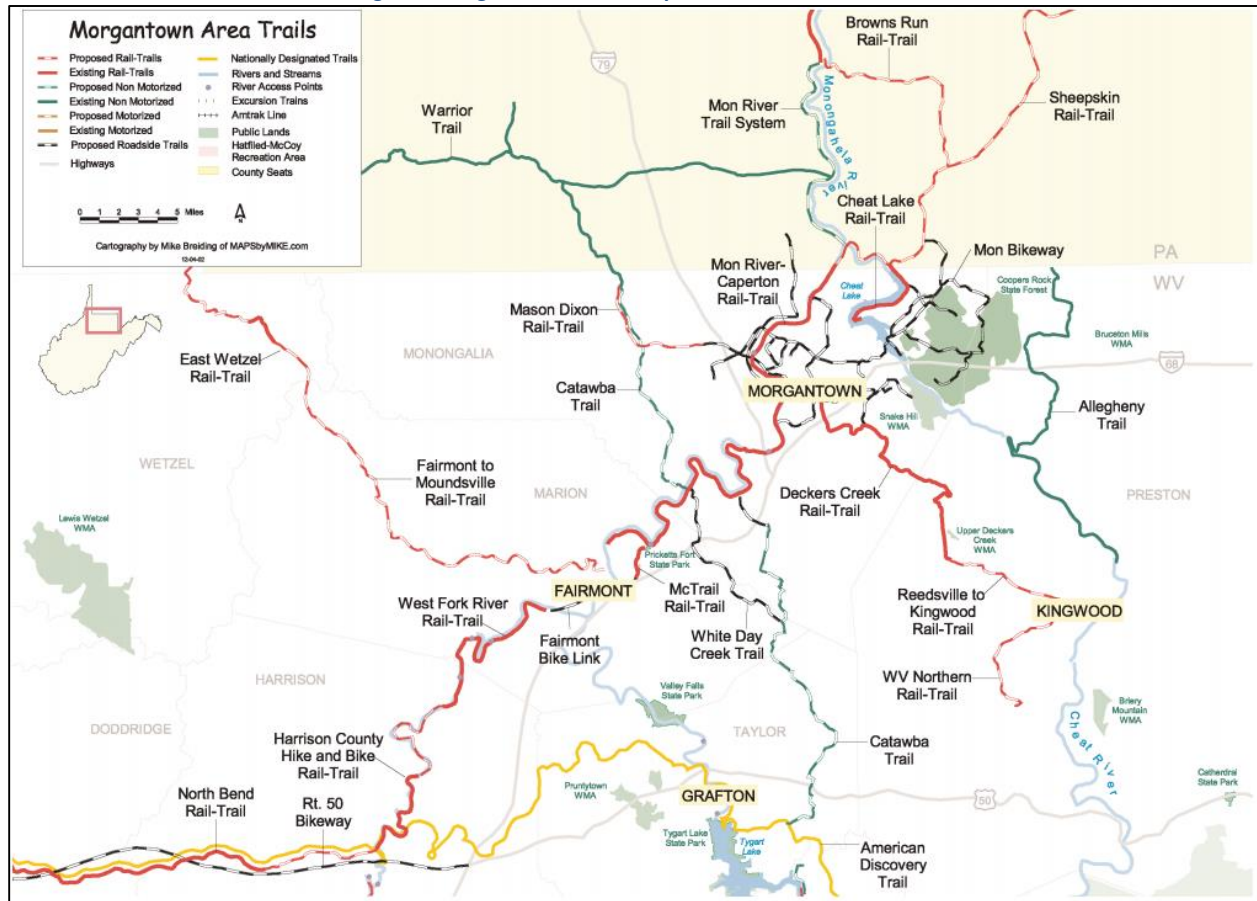
<sup>7</sup> Greater Morgantown MPO Resolution 2008-02

<sup>8</sup> The trail, in this document, is defined as a designated land corridor or body of water that provides recreational, aesthetic, alternate transportation or educational opportunities to both motorized and non-motorized users, for all ages and abilities.

<sup>9</sup> West Virginia Trail Plan Committee, *West Virginia Statewide Trail Plan*, 2002, 6

Figure 6 illustrates both existing and proposed rail-trails, non-motorized paths, and roadside trails in the Morgantown area from the 2002 Plan. The WVDOH began updating the Plan in 2012. It is currently unclear when this work will be completed.<sup>1</sup>

Figure 6: Morgantown Area Trail by Statewide Trail Plan 2002

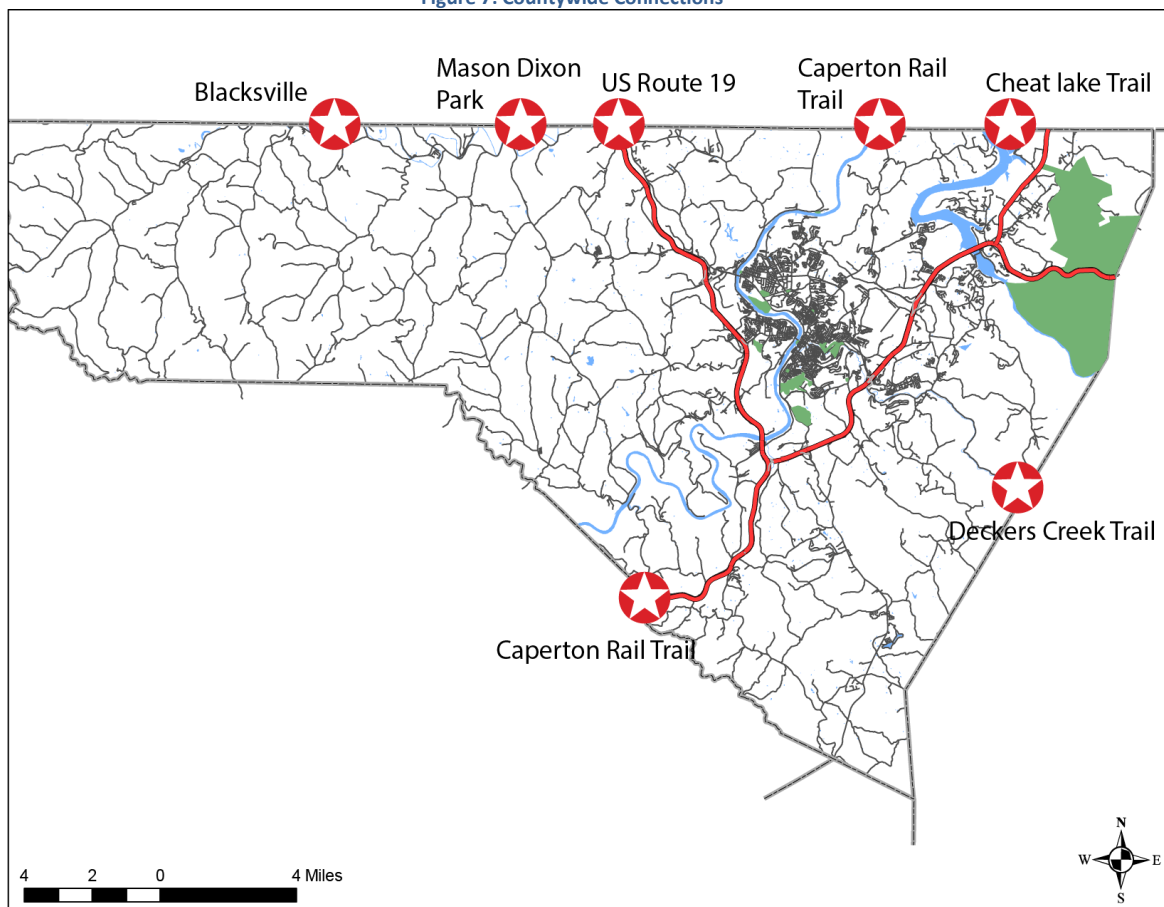


## COUNTYWIDE CONNECTION

Neighboring counties, such as Green County, PA and Fayette County, PA, have planned for bikeways and trails. Their connections to Monongalia County have been proposed at locations illustrated by Figure 7. There is a lack of such plans by Preston, Marion and the other WV county due west.

<sup>1</sup> West Virginia Trail Plan Committee, *West Virginia Statewide Trail Plan*, 2002, 141

Figure 7: Countywide Connections



### 3.2 EXISTING BICYCLING ENVIRONMENT

This section describes existing bicycling conditions in terms of the urban and natural environment. Its purpose is to develop information to assist the development of the regional bicycle network. Streets studied in this part are selected from the National Functional Classification street system developed by WVDOT.

#### URBAN ENVIRONMENT

The urban cycling environment consists primarily of land use and transportation settings. Land use management maps in cities' comprehensive plans provide valuable perspectives on land use development patterns. This information was discussed in the previous section. This section focuses on bicycling-related existing transportation conditions.

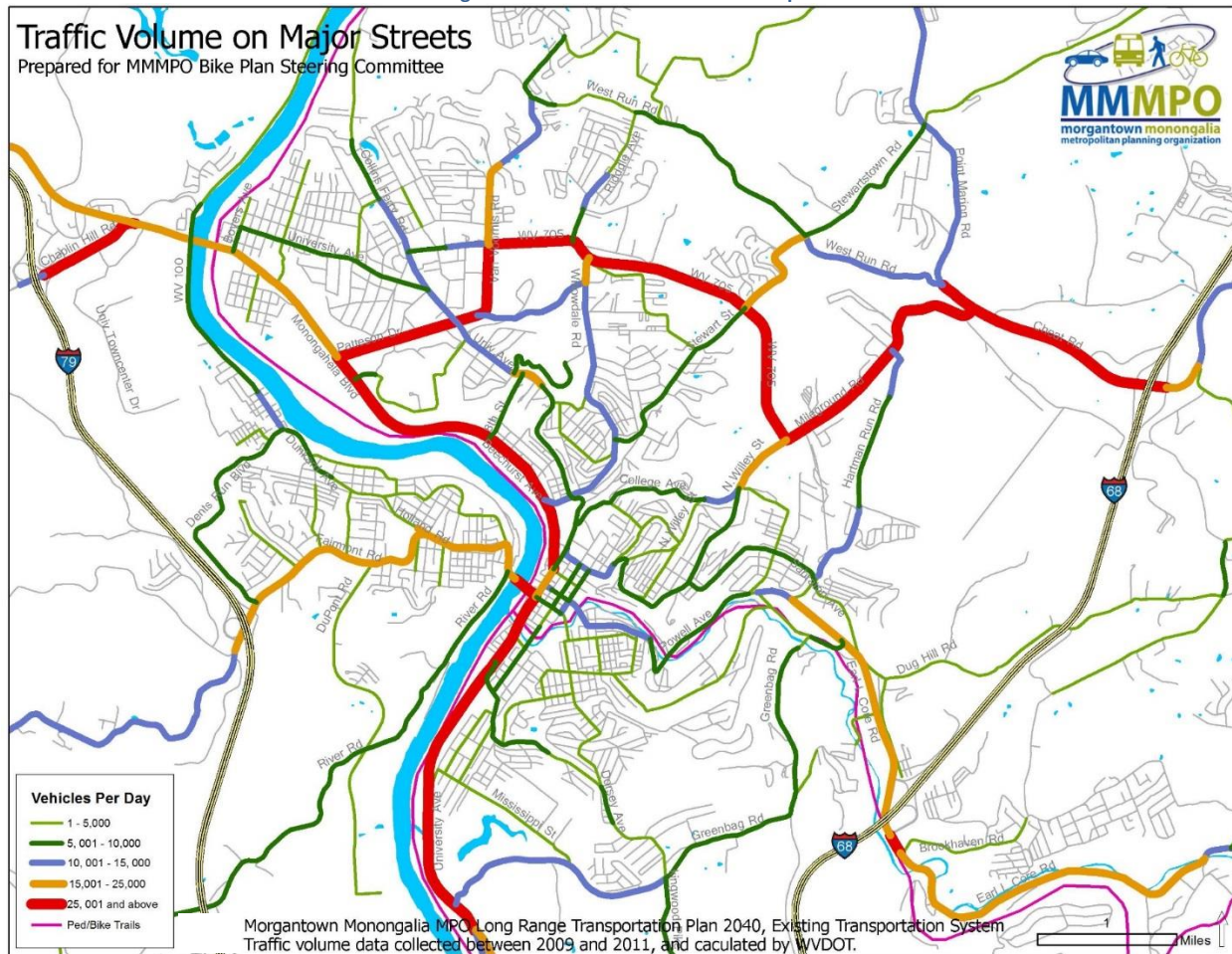
#### TRAFFIC VOLUME AND POSTED SPEED LIMITS

Traffic volume, traffic speed, and topography are generally considered to be the primary factors in evaluating bicycle rideability and recommending bicycle facilities. In general, bicycle routes preferably have lower traffic volume, lower vehicle speeds, and relatively level topographical surfaces. Figure 8 shows the traffic volume per

day in the current condition and Figure 9 shows the posted speed limit<sup>1</sup> on selected streets. In general, it can be found that:

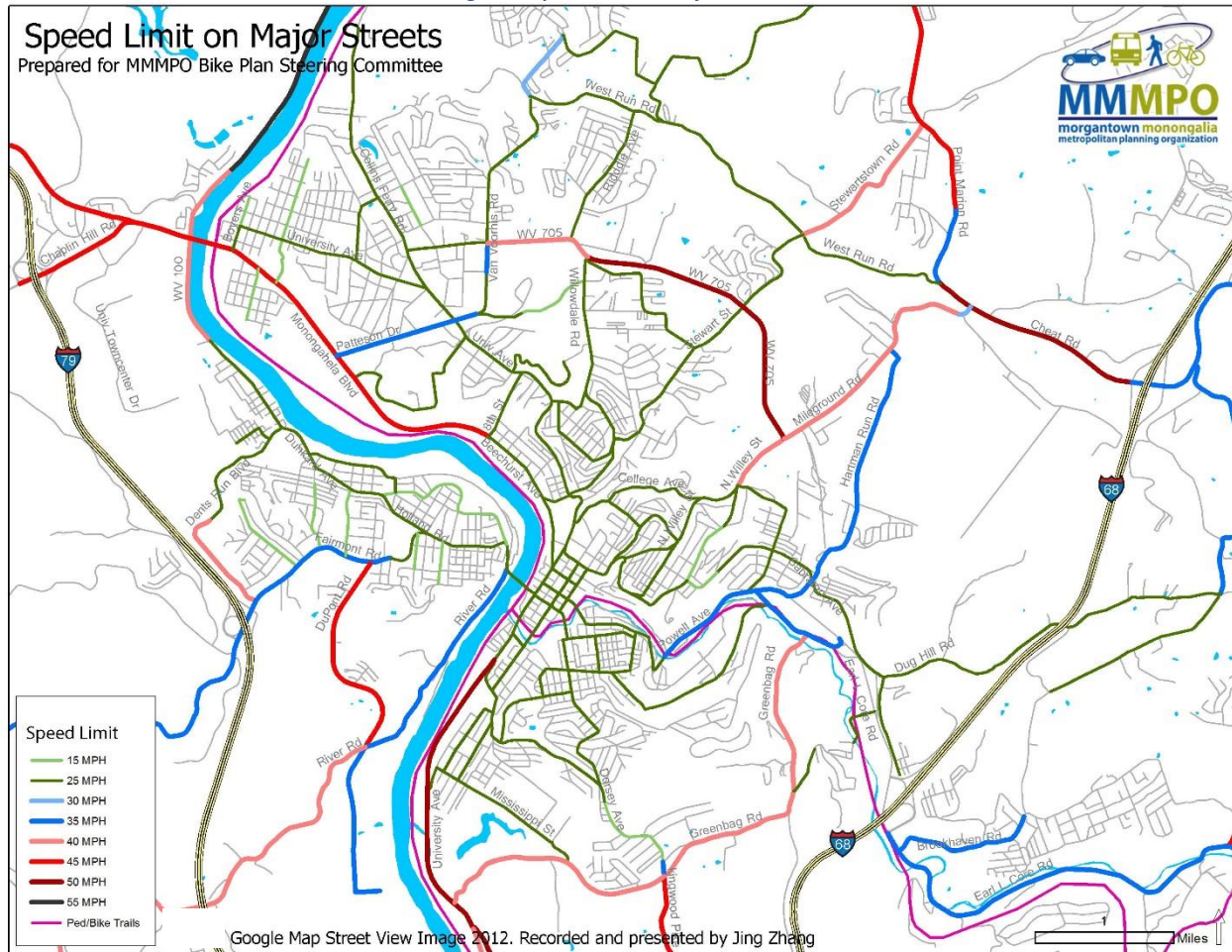
- Most streets in the Morgantown area have a posted speed limit less than 35 MPH.
- Streets with speed limit over 40 MPH are primarily located at the outer circle of the Morgantown area.
- On some streets, most motorists exceed the posted speed limit by more than 10 mph, such as Hartman Run Rd and Dorsey Ave.
- Streets with traffic volume higher than 25,000 per day are located at WV 705-Mileground corridor and University Ave-Monongahela Blvd Corridor.
- Most neighborhood streets have traffic volume less than 5,000 per day, such as those in Suncrest, South Park, Greenmont, and Westover.

Figure 8: 2009-2011 Traffic Volume Map



<sup>1</sup> When no speed limit is posted, 25 MPH has been designated to streets in business and residential area.

Figure 9: Speed Limit on Major Streets



## LANE WIDTH AND DRIVE ACCESS

Appropriate lane width is essential for bicycling safety and comfort. Generally, the minimum operational space needed by a bicyclist is 4 feet and the preferred operational space is 5 feet. Minimum safe passing clearance is 3 feet<sup>1</sup>. Accordingly, it has been suggested that a road lane should be at least 14 feet wide to be considered as a wide outside lane<sup>2</sup>, and that paved shoulders or bike lanes should be at least 5 feet wide<sup>3</sup>. Currently, there are no bike lanes installed in the Morgantown area.

Figure 10 shows the current road lane width condition in the area, where streets are grouped into nine categories based on configuration and dimension. Figure 10 assesses the frequency of driveway points and adjacent land use types for each selected street. Distinctions have been made among streets in commercial, residential, downtown, and campus areas. These maps are intended to identify opportunities for establishing a bicycle network that is compatible with the existing road condition and land use types.

<sup>1</sup> The American Association of State Highway and Transportation Officials, *Guide to Bicycle Facilities, 4<sup>th</sup> Edition*, 3-2

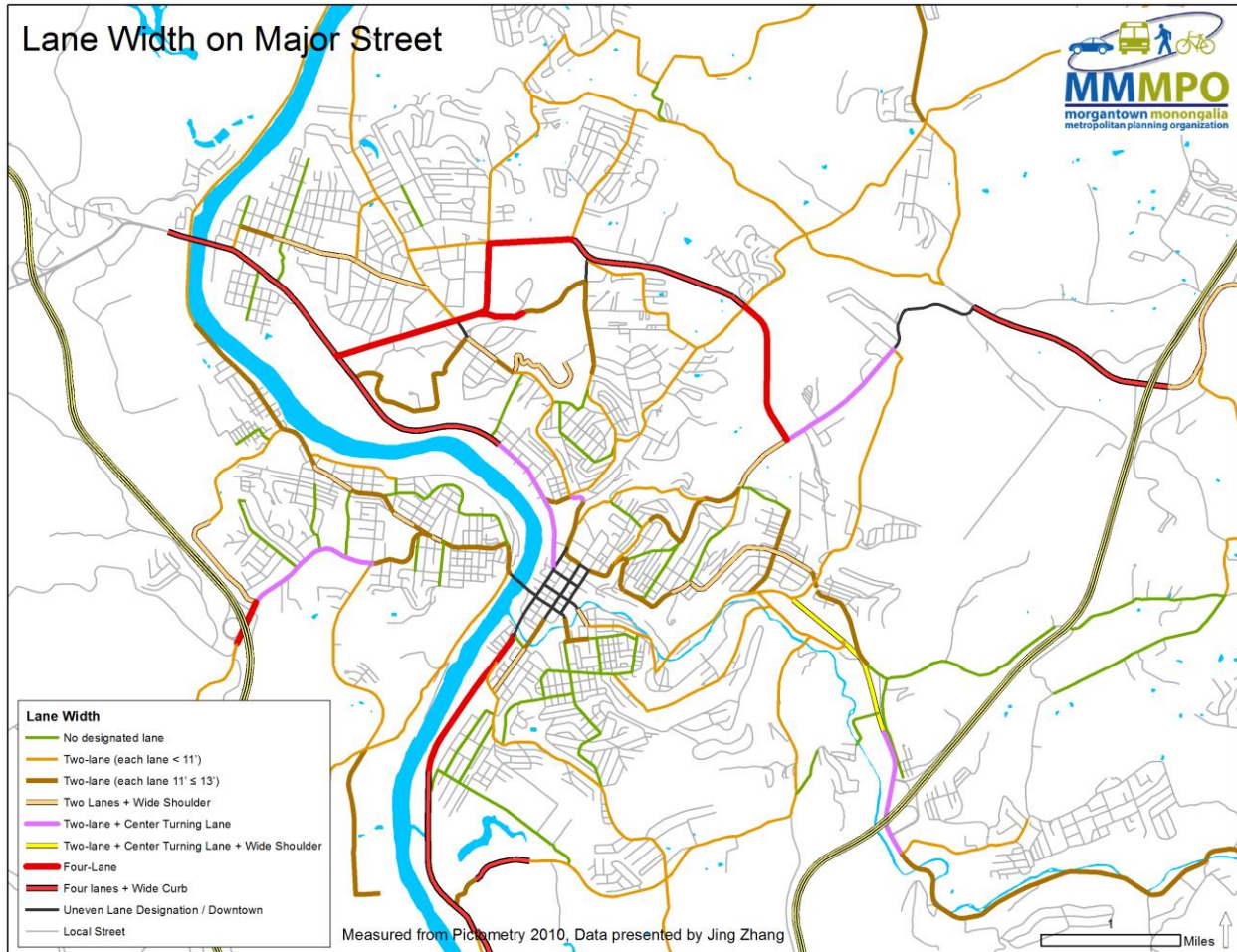
<sup>2</sup> *Guide to Bicycle Facilities, 4<sup>th</sup> Edition*, 4-3

<sup>3</sup> *Guide to Bicycle Facilities, 4<sup>th</sup> Edition*, 4-14

It can be found that:

- Most streets in the Morgantown area have two-lanes with each lane being less than 11 feet wide.
- Commercial access is mostly located on the University Ave corridor, Earl L Core Rd corridor, WV 705 corridor, Holland-Fairmont Ave corridor, and Morgantown downtown area.

Figure 10: Lane Width on Major Streets



## NON-MOTORIZED CRASHES

As of this writing (March 2014), few bicycle crashes have been reported. bicycle crashes are under-reported.

## BICYCLING POPULATION

Although no statistics are available for the number of commuting bicyclists, the bicycling community in the Morgantown area is vibrant<sup>1</sup>. Based on the community survey from the Transportation Demand Management

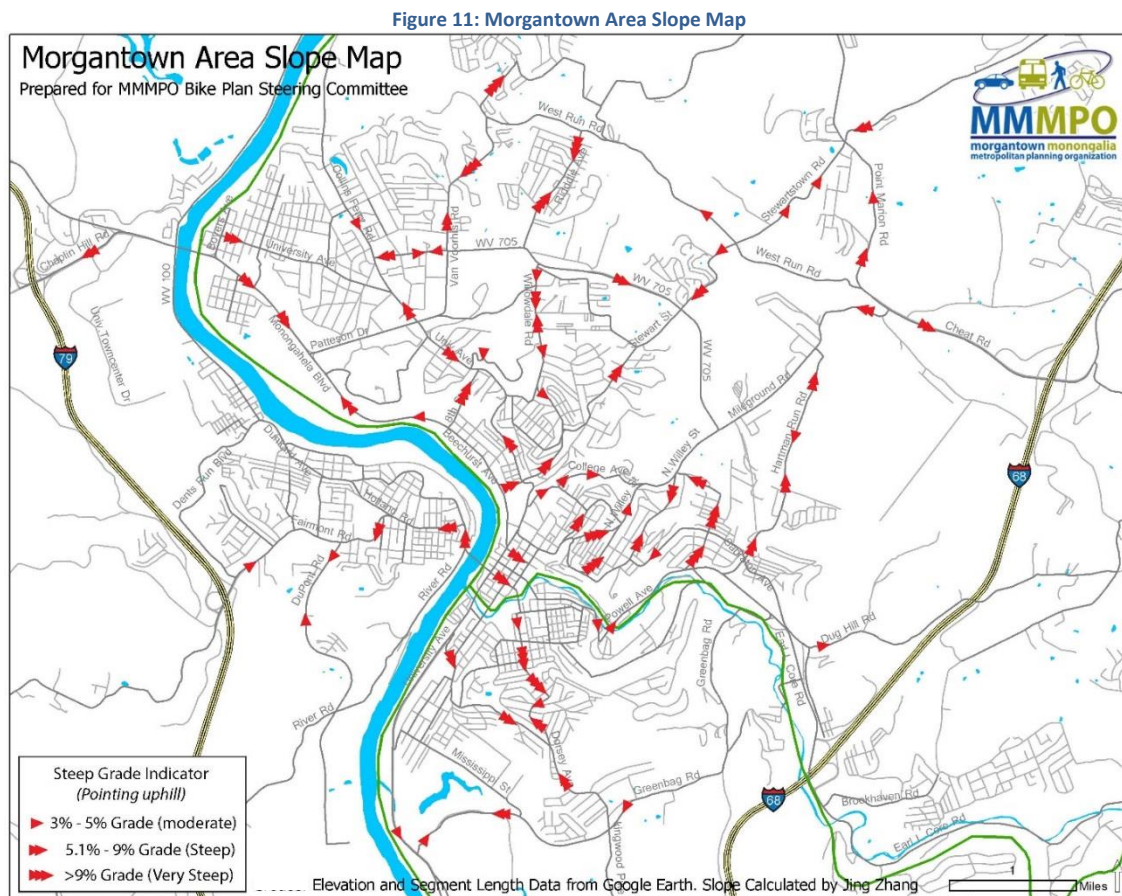
<sup>1</sup> Morgantown Municipal Bicycle Board, *Greater Morgantown Bicycle Plan*, January, 2012, 36

Feasibility Study Report, 3% of WVU employees use bicycles for commuting. Further, 22.1% WVU employees and 24.3% WVU students have indicated their willingness to use the bicycle as an alternative transportation mode<sup>1</sup>.

## NATURAL ENVIRONMENT

Hilly topography has often been cited as a major challenge of bicycling in the Morgantown area. Therefore, to designate an effective and safe bicycling network it is imperative to understand where steep slopes are located and how to mitigate the difficulty caused by them.

Figure 11, the Morgantown Area Slope Map, documents the degree of slope for each selected street segment. Slopes are grouped into three levels: moderate slope (3%-5%), steep slope (5%-9%), and very steep slope (above 9%).



<sup>1</sup> Morgantown Monongalia MPO, *Transportation Demand Management Feasibility Planning Study*, 2010, 15



### 3.3 CONCLUSION

Based on the assessment of the existing bicycling environment in the study area, it is recognized that bicycling can be a viable transportation option in the Morgantown area, although challenges and constraints exist. The area's opportunities and challenges are summarized in Table 5:

Table 5: Opportunities and Challenges

Opportunities	Challenges
<ul style="list-style-type: none"><li>• Transportation policies support the development of bicycling as an alternative mode of transportation.</li><li>• Land use plans encourage compact growth at locations that benefit bicycling development.</li><li>• Demographic composition suggests that there is an existing as well as potential bicycling population.</li><li>• A well-constructed trail system connects many neighborhoods.</li><li>• Most streets in the Morgantown area have posted speed limits less than 35 MPH.</li></ul>	<ul style="list-style-type: none"><li>• Most streets in the Morgantown area are narrow and hilly.</li><li>• Motorists frequently drive in a manner that is unsafe to bicyclists.</li><li>• Motorists and bicyclists do not stop for stop signs or yield right of way to bicyclists.</li><li>• Improvements to the education, the enforcement, and the trail and road infrastructure.</li></ul>

### 3. VISION, GOALS, AND OBJECTIVES

The vision of this plan is both bold and achievable. It embodies the community’s highest values and should inspire people to see beyond the current reality. The Plan’s vision is that:

*As a practical transportation option, people ride bicycles in a safe and pleasant environment to commute to work, to attend schools, to run errands, to visit neighbors, to go to local stores, to transport children, and to get exercise.*

The Plan has two tangible and measureable aims, which are:

Aim I: Improving bicycle safety

Aim II: Increasing bicycle ridership

Progress towards four specific objectives will increase the extent to which these aims are achieved. The four objectives are:

Objective #1: Bicyclists ride safely.

Objective #2: Motorists drive in a bicycling-friendly manner.

Objective #3: Bicyclists have access to a well maintained, safe and effective network of bicycle routes.

Objective #4: Bicyclists have access to an informative bicycle data system.

Measures used to evaluate the progression to accomplish the objectives and goals are shown in Table 6.

**Table 6: Performance Measures**

	Measures	Source/Conduct Agency	Frequency
Aim I	Number and rate of bicyclist fatalities and injuries	WV DOT, Law Enforcement Agencies, MPO	Annually
Aim I, II	Bicyclist Survey	MMMPO	Annually
Aim I, II	Bicycle ridership on transit vehicles	Mountain Line Transit Authority, MMMPO	Annually
	Percentage of trips to work made by bicycling	American Community Survey (U.S. Census Bureau)	Annually
	Percentage of the completion of the regional bicycling network	MMMPO	Annually
Aim I and II	Quantity and quality of bicycle related data made available to the public	MMMPO	Annually

## 4. NON-INFRASTRUCTURE RECOMMENDATIONS

Recommendations are categorized into Four Es, which are education, encouragement, enforcement, and evaluation.

Each recommendation is placed under one of the categories and is meant to accomplish one or more objective as suggested in the previous chapter. This chapter describes non-infrastructure recommendations: education, encouragement, enforcement, and evaluation.

### 4.1 EDUCATION

Education programs offer various channels for people to get the skills and confidence to ride. They are also attempts to evoke the awareness of cycling as a viable mode of transportation.

The education recommendations are shown in the table below.

**Table 7: Education Recommendations**

<b>Strategy</b>	<b>Objective Nexus</b>	<b>Description</b>
Media Marketing	#1, #2, #3, #4	Increase the use of media to inform of the benefits of bicycling, bicycle rules and safety, bicycle programs, and the investment in cycling facilities.
Educational Materials Distribution	#1, #2	Produce and distribute materials on cycling regulations, benefit, and safety.
Driver's Education	#2	Advocate for integrating bicycle safety laws into the driver's education/licensing process.
Enforcement Personnel Education	#2	Advocate for education of law enforcement personnel in bicycle safety enforcement.
Bicycle Education Program	#1, #2, #3	Develop a comprehensive bicycle education program to create a united bicycle education effort and to monitor and evaluate its performance.

### 4.2 ENCOURAGEMENT

Encouragement program focus on two aspects: administrative/policy efforts and community-wide encouragement. They are designed to enforce the bicycle accommodation in the project planning and design process. They are also to cultivate a cycling culture which encourage community member to ride bicycle safely and comfortably.

The encouragement recommendations are shown in the table below.

**Table 8: Encouragement Recommendations**

Strategy	Objective Nexus	Description
Project Integration	#1, #3	Integrate appropriate bicycle and pedestrian accommodation in all roadway design and transportation project.
Plan Coordination	#3	Coordinate to ensure that state, county and local jurisdictions understand and implement components of the regional bicycle network in their jurisdiction.
AASHTO Guide	#1, #3	Advocate for the use of AASHTO Guide for the Development of Bicycle Facilities for the design of bicycle facilities.
Incentives for Bicycling	#3	Assisting application for incentives that benefit bicycle commuting.
Bicycle to School	#1,#3	Improve opportunities to safely bicycle to schools as a part of “Safe Routes to School” program.
Bicycle Map and Data	#1, #2, #3, #4	Distribute and regularly update cycling related maps and data through internet and print.
Bicycle Events	#3	Initiate and participate in events and programs that encourage bicycling.

#### 4.3 ENFORCEMENT

Enforcement programs emphasize on the legal and respectful use of the transportation network, by educating both motorists and bicyclists about the rules and responsibilities of the road. Recommendations of this category also cover other two topics: bicycling legislation and land use regulations.

The enforcement recommendations are shown in the table below.

**Table 9: Enforcement Recommendations**

Strategy	Objective Nexus	Description
Bicycling Law	#1, #2	Advocate for the enforcement of bicycle laws and regulations among motorists and bicyclists.
Legislation for Bicycling	#1, #2	Advocate for legislation that improves the bicycle environment.
Land Use Regulation	#1, #3	Advocate for land use regulations that improve the environment for bicycles.

#### 4.4 EVALUATION

Evaluation programs measure how well the objectives outlined in the plan are met and advise how the plan should be updated through the time.

The evaluation recommendations are shown in the table below.

**Table 10: Evaluation Recommendations**

Strategy	Objective Nexus	Description
Bicycle Monitoring Program	#1, #2, #3, #4	Develop and maintain a bicycle monitoring program to measure bicycle crashes and bicycle-related citations.
Bicycle Count and Survey Program	#1, #2, #3, #4	Develop and maintain a bicycle count and survey program to measure bicycle use.
Bicycle Plan Review	#1, #2, #3, #4	The MPO Bicycle Plan Steering Committee reviews the Plan and its implementation process annually, after adoption of the Plan

#### 4.5 NON-INFRASTRUCTURE IMPROVEMENT IMPLEMENTATION

The non-infrastructure recommendations of this plan are designed for implementation as a part of the MPO Long Range Transportation Plan. While some programs fall within the governing authority of the Morgantown Monongalia MPO, many programs fall under the banner of outside agencies, private sector partners, and nonprofit organizations. Because of that, project partners have been identified for each non-infrastructure recommendation.

**Table 11: Non-Infrastructure Improvement Implementation**

<b>Strategy</b>	<b>Category</b>	<b>MPO Action</b>	<b>Project Partners</b>
Media Marketing	Education	Assist	All Interested/related Entities
Educational Materials Distribution	Education	Assist	City/County, Bike Shops, Transit, Media entities, School/University, Bicycle-related Non-profit Organizations, Employers
Driver's Education	Education	Assist	DMV, Law Enforcement Agencies
Enforcement Personnel Education	Education	Assist	City/ County, Law Enforcement Agencies
Bicycle Education Program	Education	Assist	All Interested/related Entities
Project Integration	Encouragement	Advocate	DOH
Plan Coordination	Encouragement	Advocate	DOH, City/County, Transit, School/University
AASHTO Guide	Encouragement	Advocate	DOH
Incentives for Bicycling	Encouragement	Assist	Employers, City/County, Schools
Bicycle to School	Encouragement	Advocate	Schools and All Interested/related Entities
Bicycle Map and Data	Encouragement	Implement	City/County, DOH
Bicycle Events	Encouragement	Participate	City/County, Bicycle-related Non-profit Organizations
Bicycling Law	Enforcement	Advocate	Law Enforcement Agencies
Legislation for Bicycling	Enforcement	Advocate	Legislative Bodies
Land Use Regulation	Enforcement	Advocate	City/County
Bicycle Monitoring Program	Evaluation	Develop, Maintain	City/County
Bicycle Count and Survey Program	Evaluation	Develop, Maintain	City/County, School, Employer, Bicycle-related Non-profit Organizations
Bicycle Plan Review	Evaluation	Develop, Maintain	MPO Bicycle Plan Steering Committee

## 5. REGIONAL BICYCLE TRANSPORTATION NETWORK

The Regional Bicycle Transportation Network (Network) is composed of a connected, comprehensive system of bicycle routes in the study area. This chapter introduces the bicycling network system proposed in the Bicycle Plan.

All roadways should be accessible to bicyclists, except where bicycle travel is specifically prohibited by law. Construction of new roads or modification of existing roads should be done in a manner that preserves or increases their accessibility by bicyclists. However, technical and financial realities mean that not all roads can be immediately optimized for bicycling. Thus, choices must be made regarding which improvements receive priority, and what level of accommodation each roadway can achieve<sup>1</sup>. In a sense, this network and the recommendations for its improvement represent a set of those choices made to improve the overall bicycling environment in the area.

### 5.1 NETWORK PLANNING PROCESS AND PRINCIPLES

The process for designating the regional bicycle transportation network included extensive consultation with and recommendations from local active bicyclists, elected officials, and planning professionals. Consideration was also given to proposed transportation projects and land use development in current transportation and land use plans. In general, the network reflects the input from following resources:

-- MPO Bike Plan Steering Committee

The committee is comprised of local advanced bicyclists, certified bicycling instructors and engineering/planning professionals.

-- Commuter Map/Rideability Map (Greater Morgantown Bicycle Plan)

Developed and adopted by the Morgantown Bicycle Board, this map shows bicycle rideability on selected streets in the Morgantown area.

-- MPO Bike Plan Open House

Two open houses have been hosted. The first was on November 6, 2013 at Marilla Park, and the second was on Jan 30, 2014 at Morgantown Public Safety Building. During those events, citizens and WVU students voiced their concerns and opinions on creating an effective bicycling network to serve communities in the area. Thirty-two persons attended these events, including five WVU students.

-- Suggestions from Elected Officials and the Public

MPO staff met elected officials and the public on several occasions, discussing how the bicycle plan can best serve the neighborhoods across the region.

-- Survey Input

An online survey was conducted in October and November, 2013, covering topics such as bicycling destinations, infrastructure deficiencies, and preferred improvements. To date there have been 47 responses to the survey.

-- Adopted Plans

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<sup>1</sup> American Association of State Highway and Transportation Officials, *Guide for the Development of Bicycle Facilities 2012, 4<sup>th</sup> Edition*, 2-12

Adopted plans considered in the process include: MPO Long Range Transportation Plan, Greater Morgantown Bicycle Plan, City of Morgantown Comprehensive Plan, Town of Star City Comprehensive Plan, Monongalia County Comprehensive Plan, and Statewide Trail Plan.

-- Existing Road Conditions

The Existing Conditions Chapter documents elements that influence bicycle rideability. Those elements include speed limits, traffic volume, street topography, and lane width.

The regional bicycle transportation network is developed under four guiding principles, which state that the network should

- Facilitate safe and continuous bicycle trips connecting neighborhoods and regional destinations.
- Reflect established and proposed land use development.
- Catalyze economic development.
- Integrate regional priorities adopted in transportation and land use plans.
- Overcome constraints and physical barriers in the existing road system.

## 5.2 CORRIDORS AND SUBSYSTEMS

The network consists of corridors and sub-systems. The corridor is defined in terms of serving a travel shed within which trips are focused in a general linear pattern<sup>1</sup>. Comparably, the sub-system refers to a travel shed within which trips are focused in a general grid pattern. The Corridors and subsystems outlined in the network can be further divided into broad study-area and more detailed project-area for analyses in future studies.

The Network consists of ten corridors/subsystems, each of which contains projects recommended to improve the bicycling environment in that area. The name of each project comprises two parts: the corridor/subsystem code and three successive digits numbering projects for each code. The codes are shown in Table 12. Appendix E provides maps for each corridor/subsystem and complete project list.

**Table 12: Corridor/Subsystem Names and Codes**

<b>Corridor/Subsystem Name</b>	<b>Code</b>
University-Mon Blvd Corridor	UMC
WV 705 Corridor	WV705
Van Voorhis-West Run Corridor	VWC
Stewartstown Corridor	STC
Downtown-Cheat Lake Corridor	DCC
Greenbag-Pierpont Corridor	GPC
Feeder Trail System	FTS
South Park-First Ward Subsystem	SFS
Westover-Granville Subsystem	WGS
Inter-County Subsystem	ICS

## 5.3 REGIONAL BICYCLE TRANSPORTATION NETWORK MAP<sup>2</sup>

<sup>1</sup> Institute of Transportation Engineers, *Transportation Planning Handbook, 3<sup>rd</sup> Edition*, 343

<sup>2</sup> High definition maps are available on the MMMPO website: [www.plantgether.org](http://www.plantgether.org). Corridor level maps are provided in Appendix E.

Figure 12: Regional Bicycle Transportation Network (Morgantown Area View)

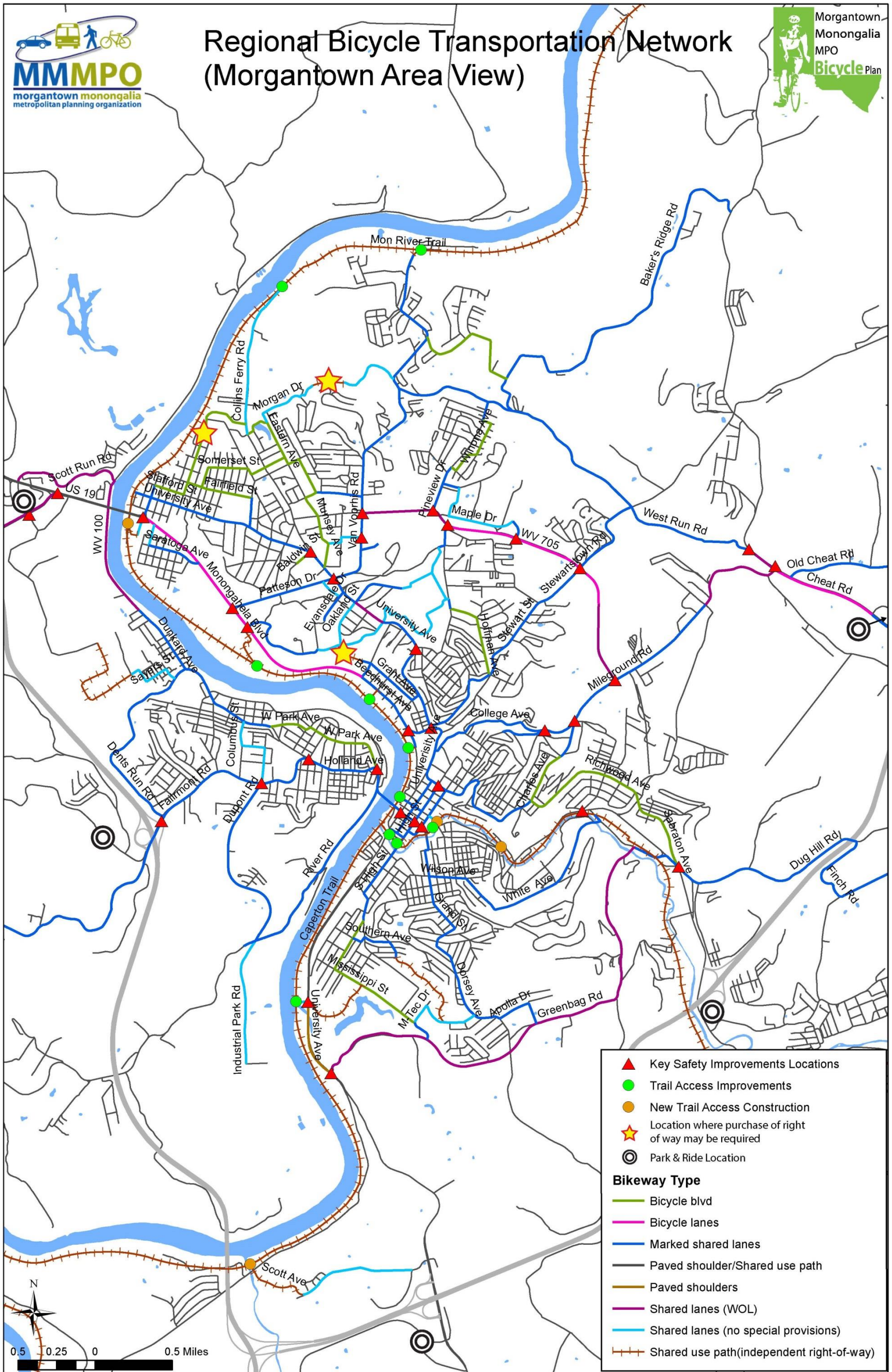
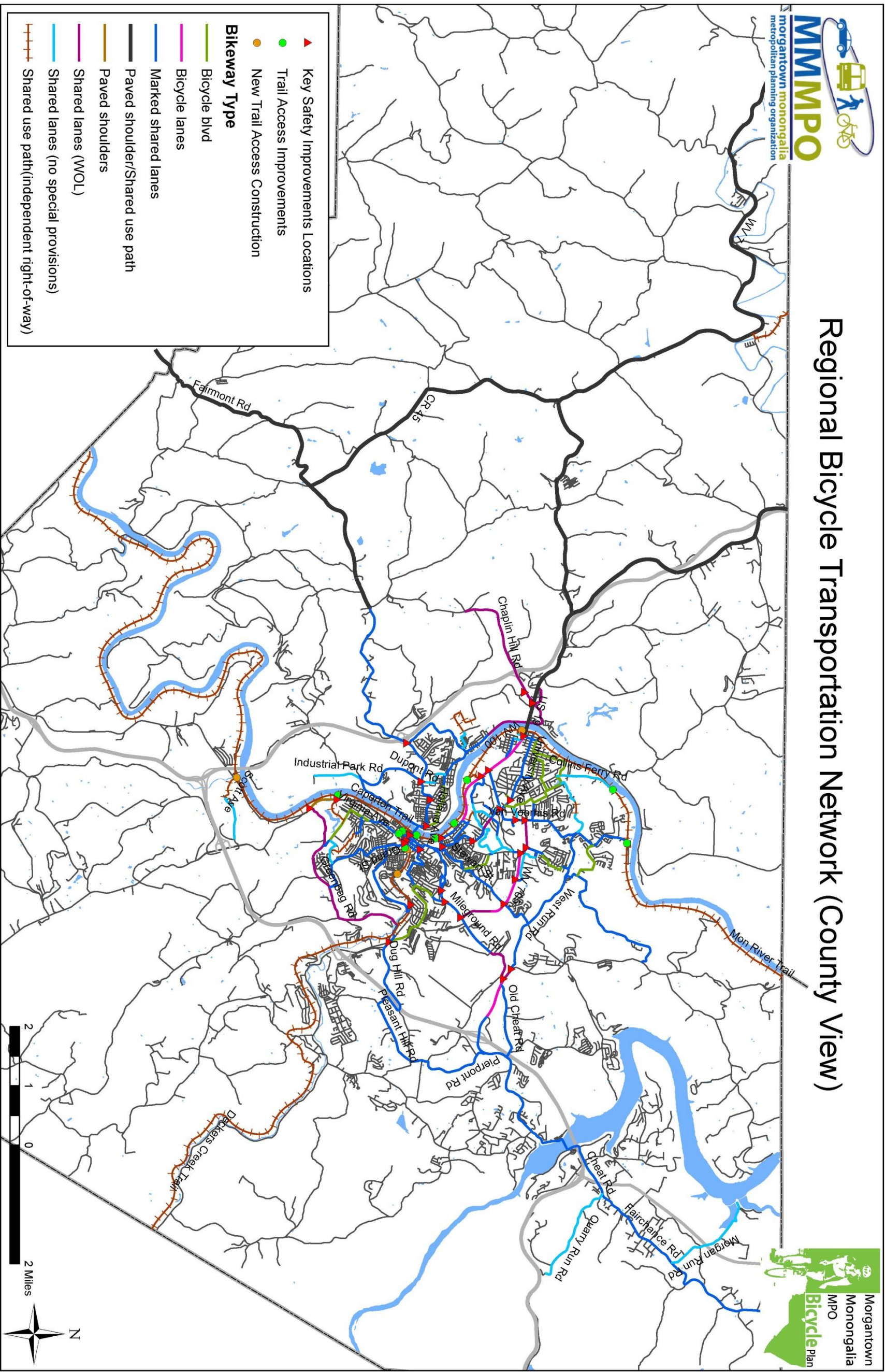




Figure 13: Regional Bicycle Transportation Network (County View)



Regional Bicycle Transportation Network (County View)

### 5.3 IMPLEMENTATION PRINCIPLES AND PRIORITIZATION

This section presents implementation strategies for the recommended projects derived from the regional bicycle network system, and includes a prioritization of recommended projects, based on selected prioritization criteria. Besides roadway improvements, other infrastructure improvements recommended in this plan are bikeway signage, locations of bicycle detection at traffic signals, bicycle parking, and major roadway corridor plans.

Five principles describe the intent about how the infrastructure improvement should be implemented.

Principle 1: Any project, or a part of that project, can proceed, regardless of its priority standing, when the opportunity arises.

Principle 2: Recommendations made in this section are at planning level, which are neither conclusive nor final. Engineering judgment is needed in the implementation stage.

Principle 3: As a project moves forward to implementation, a neighborhood-level study is recommended to update the project with its concurrent conditions.

Principle 4: When a project involves WVU right of way or private property, it is necessary to partner with those entities.

Priority criteria are summarized in the table below:

Table 13: Prioritization Criteria

Criteria	Score	Multiplier	Total <sup>1</sup>	Description
Ease of Implementation	3	5.0	15	Be constructed with little or no changes to the existing roadway
	2	5.0	10	Be constructed with minor alterations to the existing roadway
	1	5.0	5	Be constructed with major alternations to the existing roadway
On a Primary Bike Way	3	4.0	12	Be on a designated primary bikeway
	1	4.0	4	Does not directly or indirectly connect to a designated primary bikeway
Network Gaps	3	4.0	12	Involves major safety issues and fills a network gap
	2	4.0	8	Fills a network gap
	1	4.0	4	Does not fill a network gap
Coordination with a planned project	3	3.0	9	Coordinates with a LRTP Tier 1 project or current ongoing projects
	2	3.0	6	Coordinates with a planned project other than a LRTP Tier 1 Project.
	1	3.0	3	Does not directly or indirectly coordinate with a planned project.

Projects are prioritized by the score they receive through the application of the criteria. Table 14 and Table 15 summarize project information and scoring details for the top five projects. Figure 14 illustrates the locations for those five projects. The complete list for all prioritized projects is provided in the Appendix E.

<sup>1</sup> The maximum total score is 48.

It is estimated that the top 5 projects could be accomplished in 8 months with less than \$100,000.

**Table 14: The Top Five Prioritized Projects**

Priority	Project ID	Project Location	Bikeway Type
1	UMC001	Mon Blvd from Boyers Ave to Patteson Dr	Bicycle Lane (Climbing Lane)
1	UMC002	Mon Blvd from 8th St to Patteson Dr	Bicycle Lane (Climbing Lane)
1	FTS009	Trail Connection to White Park and Greenbag Rd	Access Improvement, Paved Shoulders)
4	UMC019	University Ave from Riverview Dr to Campus Dr	Marked Shared Lane
5	VWC001	Van Voorhis Rd from WV 705 to West Run Rd	Marked Shared Lane

**Table 15: Scoring Details for the Top Five Prioritized Projects**

Priority	Project ID	Scoring				
		Ease of Implementation	On a Primary Bikeway	Network Gap	Coordination with a planned project	Total Score
1	UMC001	15 (out of 15)	12 (out of 12)	12 (out of 12)	9 (out of 9)	48
1	UMC002	15 (out of 15)	12 (out of 12)	12 (out of 12)	9 (out of 9)	48
1	FTS009	15 (out of 15)	12 (out of 12)	12 (out of 12)	9 (out of 9)	48
4	UMC019	15 (out of 15)	12 (out of 12)	12 (out of 12)	6 (out of 9)	45
5	VWC001	10 (out of 15)	12 (out of 12)	12 (out of 12)	9 (out of 9)	43

Figure 14: Top Five Prioritized Projects Map

