Rockingham County
Bicycle and Pedestrian Plan

Adopted ___, 2016

This Page Intentionally Left Blank

Rockingham County Board of Supervisors

William B. Kyger, Jr., Chair, District 4

Pablo Cuevas—District 1

Frederick E. Eberly—District 2

Rick Chandler—District 3

Michael A. Breeden—District 5

Planning Commission

Brent Trumbo—District 1

Rodney Burkholder—District 2

William Loomis—District 3

David Rees—District 4

Steven Pence—District 5

Plan Documentation

Rockingham County Bicycle Advisory Committee

Travis Layman, Chair

Rich Harris, Vice-Chair

Brian F. Bauer

Jason Burch

Cindy Ferek

Corrie Green

Kim Sandum

Denise Martin

Erin Yancey

Sandra Parks

Seth Berkey

Preparers

Kevin McDermott, CSPDC
Ann Cundy, CSPDC
Rhonda Cooper, Rockingham County
James May, Rockingham County

Contents

Executive Summary 1
Introduction 1
Public Involvement 1
Vision, Goals, Objectives, and Strategies 2
Evaluation and Prioritization 3
Development of a Study Network 3
Identification of Routes 3
Proposed Facilities 4
Project Prioritization 4
Recommendations 5
Pedestrian Improvements 5
Wayfinding/Regional Bike Route System 5
Priority Focus Areas 6
System-Wide Recommendations 7
Foreword 8
1 Introduction 10
1.1 Purpose of the Plan 10
1.2 Benefits to Investing in the Pedestrian and Bicyclist Network 10
1.3 Relationship to Other Planning Documents 14
1.4 Design of the Plan 15
2 Public Involvement 16
2.1 Rockingham Bicycle Advisory Committee 16
2.2 Online Public Opinion Poll 16
2.3 Interactive Online Mapping Tool (Wikimaps) 17
2.4 Stakeholder Workshop 21
2.5 Public Meeting 22
3 Vision, Goals, Objectives, and Strategies 23
3.1 Engineering 23
3.2 Education 24

3.3 Encouragement 26
3.4 Enforcement 27
3.5 Evaluation 28
4 Facility Toolkit 30
4.1 Bicycle Facilities 30
4.2 Pedestrian Facilities 36
4.3 Funding Opportunities 38
5 Evaluation and Prioritization 40
5.1 Phase 1: Development of a Study Network 40
5.2 Phase 2: Identification of Routes 44
5.3 Phase 3: Proposed Facilities 51
5.4 Phase 4: Project Prioritization 52
6 Recommendations 54
6.1 Prioritized Facilities 54
6.2 Pedestrian Improvements 55
6.3 Wayfinding/Regional Bike Route System 61
6.4 Priority Focus Areas 64
6.5 System-Wide Recommendations 74
Appendix A: List of Acronyms 77
Appendix B: Public Survey Results 78
Appendix C: Stakeholder Workshop 79

Executive Summary

Introduction

Across the country, rates of bicycling and walking have increased, creating greater demand for bicycle and pedestrian facilities. Rockingham County experiences this increase firsthand with visitors to the region as well as increased ridership among local residents. The Rockingham County Bicycle and Pedestrian Plan proposes a course of action to improve the non-motorized transportation network by offering residents and visitors safer, more comfortable, and more convenient options for walking and bicycling to key destinations throughout the region.

The County benefits in multiple ways from having a well-connected and accessible bicycle and pedestrian network including:

- Safety benefits for school students, commuters, and other non-drivers;
- Health and environmental benefits;
- Improved livability, especially regarding mobility impaired residents;
- Increased tourism; and
- Economic benefits.

Public Involvement

Throughout the planning process the study team sought the input of Rockingham County residents to help determine existing conditions, identify needs, and propose solutions to improve the walking and bicycling environment throughout the County.

Primarily, the study team solicited the input of the Rockingham Bicycle Advisory Committee (RBAC), eleven citizens appointed to represent the public's interests in matters related to bicycling and walking. In addition, the study team developed two tools to gather input from the general public.

Early in the development of this plan, the study team used an online survey to capture public attitudes and opinions on walking and biking in the Harrisonburg-Rockingham region. The survey asked respondents to describe their bicycling and walking habits and to identify any barriers that may prevent them from walking or biking more. This survey provided valuable information on several metrics, including the level of demand for walking and bicycling facilities, what type of person would use such facilities, and where such facilities would be most impactful.

The study team then deployed an interactive online mapping tool, called a Wikimap, to collect additional public comment. The tool allowed users to draw points and lines. Points identified specific origins or destinations for walking or bicycling trips and locations where spot improvements may be needed. Lines denoted routes that people like to bike or walk and routes that needed improvements. In addition, users could provide comments or suggestions in a text box attached to each point or line and "like" comments made by others. Intensive marketing of the tool resulted in 155 unique users submitting over 400 comments.

The majority of comments in the County centered on three major corridors: Spotswood Trail (US 33), from the Harrisonburg city line to Resort Drive; John Wayland Highway (SR 42), from the Harrisonburg city line to the Bridgewater town line; and Mount Clinton Pike (SR 763) from the Harrisonburg city line to Singers Glen Road (SR 763). These areas correspond to the Priority Focus Areas discussed in **Chapter 6**. Other comments identified rural roads as primarily recreational routes with lower traffic volumes; however, high vehicle speeds and the narrow and winding character of these roads make them uncomfortable for both drivers and bicyclists. In addition to the comments on roads, the map results show a significant amount of interest in shared-use path opportunities for connecting destinations throughout the region. These comments suggest an unmet desire for off-road facilities that provide both longer distance connections between municipalities, as well as shorter connections between local destinations.

After the survey and wikimap had closed, the RBAC co-hosted a Stakeholders Workshop, consisting of a formal presentation followed by an open house, to review the results of the survey and the recommendations made on the map. Attendees visited stations where they reviewed maps focusing on different portions of the region. These maps showed the initial recommendations for facility improvements. Attendees voted for the corridor(s) they considered the most important to target for bicycle and pedestrian improvements.

Vision, Goals, Objectives, and Strategies

The following vision for the Rockingham County Bicycle and Pedestrian Plan, developed collaboratively by the RBAC, guided the formation of this plan.

> **Rockingham County will become a place where pedestrians and bicyclists can safely and conveniently reach key destinations for work, play, and everything in between.**

To achieve this vision, the RBAC adopted the "five Es" strategy, focusing on Engineering, Education, Encouragement, Enforcement, and Evaluation to institute a successful bicycle and pedestrian program. This plan supports each "E" with a corresponding goal. The five Goals relate to each "E":

- **Engineering:** Implement and maintain a non-motorized transportation network for users of all comfort levels through collaboration with the Virginia Department of Transportation (VDOT), the private sector, the City and Towns, and across all the County departments.
- **Education:** Promote bicycle and pedestrian safety education through the implementation of programs for bicyclists, pedestrians, and motorists, by coordinating with appropriate committees, schools, advocacy groups, and other organizations.
- **Encouragement:** Foster a walking and bicycling culture through programs and events that encourage businesses, schools, families, and individuals to increase the number of trips they make on foot or by bike; continue promoting the region as a prime destination for pedestrian and bicycle tourism.
- **Enforcement:** Improve traffic safety for all modes through collaboration with the public, VDOT, law enforcement agencies, public safety providers, and appropriate non-governmental organizations.

- **Evaluation:** Sustain the momentum of this plan and evaluate progress toward these goals.

To achieve these goals, the RBAC also developed measurable objectives which define specific milestones necessary to reach a goal. Following each objective is a menu of strategies that can be employed to help meet the objective. These objectives and strategies can be found in **Chapter 3** along with additional details related to the goals.

Evaluation and Prioritization

A fully developed bicycle network provides connections between destinations that are safe and comfortable for bicyclists with a wide range of abilities. The pedestrian network, on the other hand, focuses on small areas of high demand that benefit most from improved pedestrian infrastructure.

Development of a Study Network

To design these networks, the study team initially identified a list of recommendations for facility improvements. Using existing and programmed bicycle and pedestrian infrastructure as well as planned and proposed projects, the study team identified routes for recommendations. This data was supplemented with recommended routes provided by local and regional websites and input gathered from the public involvement phases of this planning process. This provided a set of routes where previous studies had identified needs: connections between existing infrastructures and facilities where bicyclists or pedestrians were currently riding or walking.

Input from the RBAC helped identify areas most likely to generate or attract pedestrian or bicycle trips. The study team also conducted a field review of the major corridors to capture basic information such as width, character, speed limits, traffic levels, and other details that might impact recommendations. The RBAC also suggested a set of corridors and routes that provide connections to recreation, population, and employment centers; had high levels of vehicular, bicycle, and pedestrian traffic; and were located along major transportation corridors. The balance of the county was examined on a general level to anticipate future needs as the County develops, to address the needs of rural residents, and to identify corridors with high numbers of recreational bicyclists. Potential corridors that could be utilized for off-road connections or greenways were also identified. From this information, the study team developed and mapped a study network for review by County staff and the RBAC which, once finalized, became the basis for the next phase of evaluation, the identification of specific routes for improvement. **Figure 3** in **Chapter 5** displays the Study Network

Identification of Routes

In order to identify the specific routes for improvements or new facilities, the study team used a demand analysis Heat Map to present a detailed picture of the demand for bicycle and pedestrian facilities in the City, County, and Towns. Using attractors and generators of pedestrian or bicycle activity identified by the RBAC, staff, and the public, the study team created a weighted Heat Map. By overlaying the Study Network onto the weighted Heat Map, routes that provide connections both between and within “hot” areas were identified. Then the study team assessed each route for needed infrastructure improvements. This analysis identified routes that both provide connections within and

between the regional "hot" areas and also are in need of some type of improvement. These routes were then moved on to the next phase, in which the specific infrastructure improvement recommendation was selected. **Figure 5** in **Chapter 5** displays the Identified Routes visually.

Proposed Facilities

The detailed factors of the Identified Routes were then examined to determine the appropriate facility to provide the desired safety and service for the bicycle or pedestrian user. The study team based all recommendations for facility improvements on the safety of the roadway, the constraints to development, and consistency with existing facilities. The study team reviewed all of this information in light of the improvement types discussed in the facility toolkit and assigned a recommended improvement type to each of the proposed facilities.

The study team first determined the safety level of the roadway for bicyclists and pedestrians by examining the speed and traffic volume. Next, the study team created a qualitative constraint rating to assess the right-of-way or physical constraints that would need to be addressed in order to construct improvements. These ratings help to identify what type of improvement is possible for the route. Finally, the study team reviewed the map of identified routes in conjunction with the existing bicycle and pedestrian accommodations to ensure consistency in the system. Other criteria that were considered during designation of improvement type include traffic signals and stops, current bicycle and pedestrian use, and aesthetic considerations.

Project Prioritization

Staff and the RBAC then instructed the study team to evaluate all recommendations through a quantitative approach. In doing so the study team took into account the data collected, the initial recommendations, and all comments received on those recommendations. Project prioritization was accomplished through a quantifiable scoring process that resulted in a ranked list of facilities. The Project Prioritization was based on four general factors that each project was scored on:

- Proximity- the relative distance between the route and the nearby attractors or generators of bicycle and pedestrian activity such as residential development, employment, shopping, schools, community centers, and other important destinations.
- Connectivity- an assessment of how each project links to the system of bicycle and pedestrian facilities
- Safety assessment identifies roadways with high speeds and high traffic volumes which present a danger to bicyclists and pedestrians and should be placed at a higher priority for improvements
- Feasibility- Feasibility was factored in because currently the county has very few facilities for bicyclists or pedestrians; therefore, modest improvements that begin to offer these facilities should be prioritized over taking on larger more complex and expensive projects that would likely not be completed for many years. Feasibility has been scored by two measures: constraints, based on the previously developed constraint rating, and estimated costs of the improvements.

Based on the total scores, projects were assigned to one of three priority levels: 1st Priority, 2nd Priority, or Vision.

Recommendations

A total of 56 individual projects were identified. Eighteen projects have been termed 1st Priority, nineteen projects have been termed 2nd Priority, and nineteen projects have been termed Vision. In **Chapter 6**, **Table 3** lists the prioritized facilities and **Figure 6** displays them in a County map.

Pedestrian Improvements

Sidewalks are generally recommended for all minor collectors and local/neighborhood streets in the developed areas of the County, but not for more rural roads where the surrounding land uses are principally agricultural or low-density residential. In order to advance this principle of providing context-appropriate multimodal transportation facilities, the County's Zoning Ordinance requires new roads and existing roads, adjoining new development, that are constructed in the designated urban and suburban areas of the County include sidewalks.

Yet retrofitting existing roads with sidewalks where no new development is occurring can be challenging because of the impacts to adjacent properties and the costs involved. As a result of these challenges, recommendations for retrofitting existing roads in the County have been kept to a minimum. The greatest priority should be given to sidewalks that would connect a neighborhood with key pedestrian corridors, such as existing or proposed shared use paths; and sidewalks that would connect existing neighborhoods with nearby schools. While sidewalk projects were not evaluated using the aforementioned project prioritization process, and thus are not included in Table 3 (pp. 59-62) or the Recommended Facilities maps, the four projects described below are included here and on p. 58 of the Plan to highlight their critical importance as connectors to existing facilities.

- **R-40, Lawyer Road from US 33 Spotswood Trail to Peak View Elementary School -** Sidewalks connecting the school to the nearby residential area as part of a Safe Routes to School program.
- **R-44, Shen Lake Drive from Port Republic Road to Massanetta Springs Road -** Sidewalks would provide a connection for pedestrians to the proposed shared-use path on Port Republic Road and enhance connectivity within the Shen Lake Community.
- **R-59B, Erickson Avenue from Flint Avenue to Garbers Church Road -** This would extend the existing sidewalk to provide improved connectivity for pedestrians from the school and into Harrisonburg.
- **Segment of R-39B in the Community of Port Republic -** A pedestrian path along Port Republic Road would connect Main St to Jacksons Way and an existing park and boat ramp. Additional recommended facilities include pedestrian crossings of Port Republic Road at Main and Water Streets.

Wayfinding/Regional Bike Route System

A broader planning effort for a regional bike route system is recommended. However, this plan makes some specific recommendations for wayfinding routes where a connection would be provided to a major bicycle generator or destination, when the provision of signage would improve the safety of

bicyclists; and when the conditions of the route can be considered generally safe for the average user. The routes recommended for a Wayfinding System are listed in **Chapter 6**, **Table 4**.

Priority Focus Areas

Following is a brief description of the potential improvements to address Priority Focus Areas. All potential alignments that would rely on easements or fee-simple purchases of private lands are entirely conceptual and should be pursued only if and when the property owner is willing:

- **Connections from Communities West of Harrisonburg into the City –** The Belmont area is a fairly dense residential community located just to the west of Harrisonburg and is connected to the City by US 33 (Rawley Pike) and Erickson Avenue. An SRTS funded project to add bicycle and pedestrian facilities at the nearby Mountain View Elementary School was recently completed. These factors make this an ideal location where additional pedestrian and bicycle improvements could provide more travel options and improve safety.

  Three projects are recommended in this plan to create the needed connections in this area:

  a. A bike lane on R-60A (US 33 from the Harrisonburg City Line to Belmont Drive) would connect to the existing bike lane on US 33 between Belmont Drive and Erickson Ave.
  b. Replacing the existing sharrows on Erickson Avenue with bike lanes is recommended for route R-59A from US 33 to Flint Avenue. This improvement would tie in to R-59B on Erickson Ave from Flint Avenue to the Harrisonburg City Line where a climbing lane on the northeast side of the roadway is recommended to allow bicyclists to safely make the ascent from Garbers Church Road to Nutmeg Court.
  c. Sharrows are proposed on the downhill southwest side of the roadway. These recommended improvements are displayed on **Figure 7** in **Chapter 6**.

- **Connections along the US 33 Corridor between Harrisonburg and Massanutten -** The US 33 Corridor east of Harrisonburg is a heavily traveled corridor, important for its connections to recreation areas and residential and commercial/business areas. Between the city line and the community of McGaheysville there are no parallel roadways that offer travelers options to make these connections. The US 33 Corridor is made up of numerous segments and adjacent roadways, all of which have different sets of constraints and opportunities associated with them and therefore, different recommendations for improvements. The primary recommendation in this plan is for a shared-use path adjacent to the north side of US 33 from the Stone Spring Road to Penn Laird Drive (R-18). This is displayed on **Figure 8** of **Chapter 6.**

  Development of a wayfinding system is also recommended for the US 33 east corridor because of the broad connections it makes between the City of Harrisonburg, the Town of Elkton, Shenandoah National Park, and Massanutten Resort/Community and the presence of numerous schools and the new Albert Long Park. The wayfinding system would utilize parallel roads along with strategic improvements on US 33 that will allow bicyclists to navigate the corridor in a safe environment.

- **Cooks Creek Greenway Trail -** The proposed Cooks Creek Greenway Trail follow Cooks Creek from the Cooks Creek Arboretum in Bridgewater north through Dayton to US 33 west of the Belmont neighborhood. Facilities that separate bicyclists and walkers from motor vehicles provide a level of safety for users that is unmatched by on-street facilities and overwhelming feedback from the public, stakeholders, and committees has shown that development of shared-use paths and greenways should be a focus of the bicycle and pedestrian system in the region.

  The northern two segments of the Cooks Creek Greenway, identified as G-8 and G-5, were identified as first priorities during the scoring process. These scores reflect their safety benefits and proximity to employment, housing, parks, schools, and town centers. These Greenways are displayed on **Figure 9** in **Chapter 6**.

System-Wide Recommendations

General recommendations include marked crosswalks, pedestrian signals, traffic signal detection, curb-cuts and ADA compliance reviews, and bicycle parking and end of trip facilities.

Foreword

The Rockingham County Bicycle and Pedestrian Plan represents four years of concerted effort to improve safety and convenience for non-motorized travel throughout Rockingham County. In 2011 the Board of Supervisors appointed eleven citizens to the newly formed Rockingham Bicycle Advisory Committee (RBAC). The RBAC immediately began drafting an annual work plan and presented it to the Board of Supervisors for adoption on July 11, 2012. The work plan established a set of objectives organized into five categories. Rather than develop their own categories, they chose the categories used by the League of American Bicyclists to evaluate the bicycle friendliness of communities across America under its Bicycle Friendly Community Program. These categories, known as the 5 Es – engineering, education, encouragement, enforcement, and evaluation and planning – serve to focus the attention of advocates and policy makers and increase the impact of individual efforts.

The work plan also includes a time horizon function, assigning objectives to Year 1, Year 2, and Future Years. While the RBAC members agreed that preparing a Countywide Bicycle Plan is one of its highest priorities, they understood that the commencement of work on this plan was dependent upon significant resources being in place. For that reason, the Countywide Bicycle Plan was designated as a project for Future Year; however, if funding sources for a Bicycle Plan were identified, the RBAC members encouraged the Board of Supervisors to accelerate the commencement of the Countywide Bicycle Plan. Two years after the adoption of the work plan, the development of a County Bicycle and Pedestrian Plan became exponentially more feasible as the Harrisonburg-Rockingham Metropolitan Planning Organization (HRMPO) began its own bicycle and pedestrian plan, creating the opportunity to complete the two plans concurrently.

The concurrent development of the two plans allowed the study team, consisting of the RBAC, County staff, staff from the Central Shenandoah Planning District Commission (CSPDC), and consultants, to coordinate efforts. Several members of the RBAC also serve on the HRMPO Bicycle Advisory Subcommittee with representatives from the City of Harrisonburg Bicycle Advisory Subcommittee and the HRMPO Technical Advisory Committee. The overlap of personnel also allowed the planning processes to run simultaneously. During the Public Involvement activities, staff collected comments and information on areas of the County within and outside of the HRMPO boundaries. Also, as staff developed the Visions, Goals, and Strategies, the use of the same categorization system, the 5 Es, helped the study team avoid any conflict between the two plans. However, while these two plans support one another, they stand as separate documents for different populations. The HRMPO plan serves only a portion of the County as well as the City of Harrisonburg, and the Towns of Bridgewater, Dayton, and Mt. Crawford. ***The Rockingham County Bicycle and Pedestrian Plan*** serves the entirety of Rockingham County, without the Towns.

From the beginning, the study team, sought to ensure that this plan recognize the opinions of the Rockingham community. The study team initiated multiple outreach efforts both on-line and in person; hundreds of citizens from across the County made their voices heard. As the primary source for this plan, the opinions of the citizens of Rockingham County provided the initial design of the bicycle and

pedestrian network. Staff then analyzed each requested route through a quantitative scoring system, including speed of traffic and width of roadway, to determine the most appropriate facility improvements. This dual-pronged approach allowed the study team to develop a regional network for bicycle and pedestrian travel while recognizing the complexity of building a network from the ground up.

Staff then assigned each facility improvement to one of three levels of prioritization: First Priority Projects, Second Priority Projects, and Vision Projects. Facility improvement projects were assigned to a prioritization level based upon the potential for use, the relative safety of the existing road way, and the relative difficulty of completing the project. Some roadways require only limited improvements, while others require significant design applications to improve safety for motorists and non-motorists alike. Each recommendation should be viewed as a preferred option. Where the recommended action may not be feasible, a minimal improvement would be better than no improvement at all. However, in future iterations of this plan, roadways with sub-optimal improvements may retain their original recommendations and will be scored for prioritization. The priority ranking should not be construed as a chronological list; if funding for a Second Priority Project becomes available it should move forward regardless of how many projects have higher scores. The rankings are based upon the best information available at the time of analysis. As development throughout the County continues and as more projects are completed, these scores will change.

It should also be noted that **THIS IS ONLY A PLAN**. Nothing in this plan requires the construction of any project or allocates any funds to any project listed. This plan presents the best information collected by the CSPDC, County staff, and the RBAC and proposes bicycle and pedestrian facilities that will improve safety and convenience for all travelers. With new information, the details of this plan will change. As projects are completed and traffic patterns change, Vision Priorities can become First or Second Priorities, new projects will be identified that improve network connections, and proposed projects may no longer appear necessary. As project scores change, this plan will require annual updates and monitoring; as facts change, so should the plan. This is the first attempt by Rockingham County to develop a Bicycle and Pedestrian Network. This will not be the last.

1 Introduction

1.1 Purpose of the Plan

Throughout the past two decades, rates of bicycling and walking have increased across the country, creating greater demand for bicycle and pedestrian facilities. With natural amenities, such as the Shenandoah National Park, the George Washington National Forest, a plethora of scenic roads, and a comfortable climate for outdoor recreation, Rockingham County has been recognized multiple times as a destination for bicyclists of all kinds. These accolades include:

- Recognition with a 2013 Honorable Mention by the League of American Bicyclist's Bicycle Friendly Community Program.
- The Harrisonburg-Rockingham region's recognition as a bronze-level Ride Center by the International Mountain Bicycling Association (IMBA).
- "Top Ten Cycling Destinations," (Harrisonburg) Virginia Living magazine, June 2013
- "Best Biking Community," (Harrisonburg) Blue Ridge Outdoors magazine, December 2012
- "Top Mountain Biking Mecca," (Harrisonburg) Blue Ridge Outdoors magazine, November 2012

With the development of the Rockingham County Bicycle and Pedestrian Plan, Rockingham County intends to capitalize on these achievements and proposes a course of action to improve the non-motorized transportation network for even greater success, offering residents and visitors safer, more comfortable, and more convenient options for walking and bicycling to key destinations throughout the region for recreation and for transportation.

1.2 Benefits to Investing in the Pedestrian and Bicyclist Network

The County benefits in multiple ways from having a well-connected and accessible bicycle and pedestrian network, encouraging more people to walk or bike for transportation or for recreation. These include but are not limited to the following:

1.2.1 Safety

All users, including motorists, benefit from network improvements that increase safety of bicyclists and pedestrians. Strategies that calm traffic and improve visibility reduce crashes and potential conflicts between modes.

School Students

Safe Routes to School (SRTS) programs encourage school children to walk and to bike to school by improving the pedestrian and bicycle routes near schools. At Mountain View Elementary School, the County improved the intersection of Rawley Pike (US 33) and Erickson Drive with signalized crosswalks and added sidewalks and bike lanes nearby to encourage children as they walk or bike to school. Beyond the benefit of reducing trips on roadways and costs of busing, allowing children to safely walk and bike to school may increase their chances of success in school. An increasing body of research shows that regular participation in physical activity and higher levels of physical fitness have been linked to

improved academic performance and brain function, including attention and memory.[1] According to the Centers for Disease Control, regular physical activity may promote improved attention, cognitive skills, and memory.[2] Implementing more SRTS programs, as well as constructing an interconnected pedestrian and bicyclist network, can provide the option for many more students to walk or bike to school. In addition, improving the pedestrian and bicyclist network surrounding James Madison University (JMU), Eastern Mennonite University (EMU), and Bridgewater College will allow the many students and staff at those growing colleges, who live in the County, to be able to choose non-motorized modes of transportation to get to campus.

Non-drivers

Many residents of Rockingham County do not own automobiles. This includes children, college students, and low-income residents who must rely on walking, cycling, or transit as their only option for traveling. Pedestrian and bicyclist network improvements provide additional benefits to the Old Order Mennonite community. As a population, the Old Order Mennonites rely exclusively on non-motorized transportation to travel around the region; infrastructure improvements, such as wider shoulders or paved shared-use paths, facilitate walking and biking as well as travel by horse-drawn buggies.

Commuters

Typically, walking is considered a viable mode of transportation within a ½ mile of a destination; bicycling is considered a viable mode within two miles of a destination[3]. Numerous County residents live within bicycling or walking distance of employment centers and other key destinations; however, under current conditions many find it difficult to walk or bike due to the lack of suitable accommodations. While some people will always drive, improving the pedestrian and bicycling network would offer County residents their choice of commuting options. If more people used these non-motorized modes of transportation for their commute, an additional benefit could be the reduction of the number of vehicles on the road.

1.2.2 Health benefits

Regular physical activity is part of a healthy lifestyle. The Surgeon General recommends between 30-60 minutes of moderate exercise per day to prevent obesity, heart disease, and other diseases commonly associated with a sedentary lifestyle. Biking has also been shown to increase levels of productivity and reduce sick days. One specific study conducted between 2007 and 2008 aimed to find the relationship between commuting to work and sickness. The researchers found that those who rode a bicycle to work

[1] Safe Routes to School National Partnership, "Academic Performance and Attendance," Safe Routes to School National Partnership, http://saferoutespartnership.org/resources/academic-research/the-relationship-between-physical-activity-weight-and-academic-achievement (accessed October 20, 2015).
[2] Centers for Disease Control and Prevention. The association between school based physical activity, including physical education, and academic performance, (Atlanta, GA: U.S. Department of Health and Human Services, July 2010).
[3] Earl G. Bossard, *Envisioning Neighborhoods with Transit-Oriented Development Potential, (San Jose, CA: Mineta Transportation Institute, May 2002).*

reported less sick days than other workers[4]. An improved pedestrian and bicycling environment will provide additional opportunity and incentive for area residents to incorporate physical activity into their daily lives, preventing illness and disease.

Environment

Unlike automobile traffic, bicycling and walking don't contribute to noise or air pollution; rather, they contribute to the environmental health of the community. Bicycling and pedestrian infrastructure improvements can also be integrated into projects that enhance the streetscape and landscape of an area.

1.2.3 Improved livability

Residents enjoy living in areas with access to bicycling and walking facilities, as reflected in studies that have compared property values in places with high walkability to places with low walkability. For example, a 2012 Brookings Institution study of the metropolitan Washington, DC, area found that places with good walkability (as measured by the "Walk Score" index created by www.walkscore.com) found that homes in highly walkable areas command $300/month more in residential rents and $81/square foot more in residential property values as compared to areas with low walkability scores[5]. Similar benefits were found for commercial rents, office rents, and retail sales. Large, highly visible projects such as greenways and shared-use paths can capture the attention of residents and visitors and improve their satisfaction with the community.

In addition, a walking and bicycling culture serves as an important asset to businesses trying to recruit and retain the 21st century workforce. According to the 2015 Community and Transportation Preferences Survey, the Millennial Generation, aged 18 to 34, prefer walking as a mode of transportation to driving by a margin of twelve percentage points. The Baby Boomer Generation prefers walking by only two percentage points. This survey also found that while Generation Xers bicycle more than any other generation, Millennials walk and bicycle for transportation rather than for exercise.[6]

Mobility-impaired Individuals

Certain types of pedestrian and bicycling network improvements – including sidewalks, shared-use paths, curb cuts, and crosswalk/pedestrian signal improvements – can go a long way in providing more options and a better quality of life for mobility-impaired individuals. This allows them to more fully participate in society and can also reduce their reliance on expensive paratransit services. The country's mobility-impaired population is expected to increase in future years as baby boomers continue to age.

---

[4] Ingrid J. M. Hendriksen, Monique Simmons, Francisca Galindor Garre, and Vincent H. Hildebrandt, "The association between commuter cycling and sickness absence," *Preventive Medicine* 51, no. 2 (august 2010): 132-135.

[5] Leinberger, Christopher B. and Mariela Alfonzo, *Walk this Way: The Economic Promise of Walkable Places in Metropolitan Washington, D.C.*, (Washington, DC: The Brookings Institution, May 2012).

[6] National Associations of Realtors & Portland State University, *2015 Community and Transportation Preferences Survey,* (Washington, DC: National Association of Realtors, July 2015).

1.2.4 Tourism

With a network of scenic roads for on-road cycling providing dramatic views of the surrounding mountains; a growing network of mountain biking trails at Massanutten Resort, George Washington National Forest, and other parks for off-road cycling; and over fifteen annual signature bicycling events in the Harrisonburg-Rockingham region, Rockingham County is a bicycle-tourist destination. Major population centers, including Washington, D.C. and Richmond, provide an endless pool of potential visitors looking to leave the city behind for a while. By improving the pedestrian and bicyclist network and promoting Rockingham County as a bicycle-tourist destination, the region could attract even more visitors with the desire to travel between the surrounding rural areas and the more urban areas at the core of the region.

1.2.5 Economic benefits

A comprehensive pedestrian and bicycling network contributes to economic growth and will bring monetary benefits to the citizens of Rockingham County. First, investments in pedestrian and bicycling infrastructure help citizens and the region save money. Walking and bicycling cost significantly less to the user than motorized modes of travel;[7] the average annual cost of automobile ownership is $8,220 while annual bicycle ownership costs $308 per year.[8] Moreover, the costs associated with bicycle and pedestrian infrastructure construction and maintenance are generally less than the costs associated with constructing and maintaining automobile infrastructure.

Secondly, residents who regularly use active transportation modes are in better health, resulting in significant health care cost savings, particularly for obesity- and heart-related diseases.[9] If one in ten adult Virginians started a walking program, obesity healthcare cost savings could be as much as $85 million per year.[10]

Third, a well-connected pedestrian and bicycling network increases property value. Homes with above average levels of walkability command a $4,000-$34,000 increased property value premium over houses with just average levels of walkability in the typical metropolitan area.[11] One study in Delaware showed that properties within 164 feet of a bike path increased in value by at least $8,800.[12] These increases in property value stem from the improved access to an enhanced pedestrian and bicycle network.

Fourth, an interconnected pedestrian and bicycling network promotes the local economy. A user-survey of West Virginia's Greenbrier River Trail, a 78-mile rail trail operated by West Virginia State Park system,

---

[7] Todd Litman, *Evaluating Active Transport Benefits and Costs: Guide to Valuing Walking and Cycling Improvements and Encouragement Programs,* (Victoria, BC: Victoria Transport Policy Institute, 2013).
[8] The League of American Bicyclists and the Sierra Club, *The New Majority: Pedaling Towards Equity,* (Washington, DC: League of American Wheelmen, May 2013).
[9] Alliance for Biking and Walking, *Bicycling and Walking in the United States: 2012 Benchmarking Report,* (Washington, DC: Alliance for Biking & Walking, 2012).
[10] Ibid.
[11] Joe Cortright, *Walking the Walk: How Walkability Raises Home Values in US Cities*, (Washington, DC: CEOs for Cities, August 2009).
[12] David Racca and Amardeep Dhanju, *Property Value/Desirability Effects of Bike Paths Adjacent to Residential Areas*, (Newark, DE: Delaware Center for Transportation, 2006).

showed that nearly 40% of out-of-state visitors spent more than $500 during their trip to the area. Tourists spend money in the hospitality industry, including restaurants and hotels, in new businesses that specifically cater to bicyclist and pedestrians, and in existing retail establishments that define the character of the place.[13] Additionally, streets with bicycle infrastructure generally have fewer commercial vacancies than comparable streets without bicycle facilities.[14] More subtly, businesses that can be accessed by non-motorized modes enjoy increased sales from local consumers who feel safer and more comfortable.[15] Increasingly, communities recognize walkability, bikeability, and ample outdoor recreational opportunities attract businesses and retain skilled workers. Investing in and promoting these resources can help to attract the coveted 21st century workforce.

1.3 Relationship to Other Planning Documents

The study team did extensive reviews of previous planning documents in the development of this plan. These documents include:

- **Harrisonburg-Rockingham Metropolitan Planning Organization (HRMPO) Bicycle & Pedestrian Plan (expected 2016 approval) –** This plan is currently in development.
- **Harrisonburg Bicycle & Pedestrian Plan (2010) –** This plan (adopted in July 2010 and last amended in 2011) was developed by City staff with support from the City's Bicycle & Pedestrian Subcommittee. An update of this plan is currently underway.
- **Central Shenandoah Valley Bicycle Plan (2005) –** This plan was developed by the Central Shenandoah Planning District Commission (CSPDC), which is the regional planning agency for Rockingham, Augusta, Rockbridge, Bath, and Highland Counties, as well as the Cities and Towns within those Counties.
- **Virginia Outdoor Plan (2013) –** The Central Shenandoah Recreational Planning Region identified in this plan includes the counties of Augusta, Bath, Highland, Rockbridge, and Rockingham, as well as the Cities and Towns within these Counties. The plan proposes several recreational trails and greenways to connect population centers, such as Harrisonburg and Bridgewater, with protected natural areas, such as the Shenandoah National Park and the George Washington National Forest.
- **Comprehensive Plans –** The Rockingham County Comprehensive Plan serves as a long-term guide for future transportation, land use, and public works issues in Rockingham County. During the development of the Bicycle & Pedestrian Plan, staff reviewed the County and Town Comprehensive Plans to determine how transportation-related issues and, in particular, bicycle and pedestrian facilities, have been addressed. By State Code, Comprehensive Plans must be reviewed at least every five years. The recommendations of this plan should be incorporated into the Comprehensive Plan updates for Rockingham County and for each Town.

---

[13] Lynne March, *Economic Impacts of Walking and Bicycling in Sonoma County,* (Santa Rosa, CA: Sonoma County Transportation Authority, January 2013).
[14] New York City Department of Transportation, *Measuring the Street: New Metrics for 21st Century Streets,* (New York City, NY: New York City Department of Transportation 2012).
[15] Lynn March, *Economic Impacts of Walking and Bicycling in Sonoma County.*

- **Zoning and subdivision ordinances –** In October 2014, Rockingham County adopted a revised zoning ordinance. At that time, the County also updated the subdivision ordinance. Several zoning districts now require new developments to include pedestrian and bicycle facilities.

1.4 Design of the Plan

The League of American Bicyclists established the 5 E methodology, a holistic approach to evaluating the level of "bicycle friendliness" in a community. The 5 E approach has become the industry standard for bicycle and pedestrian plans, used by communities across the country. This plan follows this comprehensive approach and, as such, addresses the 5 Es of improving the County's pedestrian and bicyclist environment:

- **Engineering—**improving the physical pedestrian and bicyclist network
- **Encouragement—**developing programs to encourage residents and visitors to consider walking and bicycling as an alternative to driving
- **Education—**educating citizens on the benefits of walking and cycling, educating bicyclists and pedestrians on safe riding and walking techniques, and educating motorists on the rules of the road as it relates to pedestrians and bicyclists
- **Enforcement—**identifying initiatives that local and state police can take to enforce proper behavior by motorists, pedestrians, and bicyclists so that all users can properly share the transportation network
- **Evaluation—**evaluating the progress the county is making on the goals of this plan, and periodically updating the plan every few years in response to changing conditions and to reflect the progress the region has made

2 Public Involvement

2.1 Rockingham Bicycle Advisory Committee

The Rockingham County Board of Supervisors formed the Rockingham Bicycle Advisory Committee (RBAC) as a permanent committee in 2011 to advise the Board in the promotion and planning of bicycle and other non-motorized transportation programs and facilities in Rockingham County. The committee, comprised of eleven citizens, remained actively involved throughout the development of this plan.

2.2 Online Public Opinion Poll

Early in the development of this plan, an online survey, using the SurveyMonkey platform, captured public attitudes and opinions on walking and biking in the Harrisonburg-Rockingham region. The survey was heavily advertised in the local media, on locality websites and Facebook pages, and through outreach by RBAC members to multiple stakeholders in the region.

Between March 1 and March 29, 2013, over 1000 people responded to the survey – an overwhelming success. Of the respondents, 63% lived in Harrisonburg, 22% lived in Rockingham County, 7% lived in various Towns, and the remaining 8% lived outside of the Harrisonburg-Rockingham area.

29. Which of the following is a factor in your decision not to have your school children walk or bike to school more often? (please select up to three)

	Response Percent	Response Count
Too far	62.3%	129
Amount of traffic on route	56.0%	116
Speed of traffic on route	44.4%	92
Weather conditions	15.5%	32
Lack of crossing guards	11.6%	24
Challenging crossings	24.2%	50
Lack of sidewalks or separated paths	42.5%	88
Concerned about violence or crime	8.2%	17
Prefer that my child ride the bus	7.2%	15
Prefer to drive my child to school	6.8%	14
I don't find anything unpleasant or uncomfortable about having my schoolchildren walk or bike to school	4.8%	10
	answered question	207

The survey asked respondents to provide basic identifying information (place of residence, place of employment, age, sex, etc.). Respondents were then asked to describe their bicycling and walking habits and to identify any barriers that may prevent them from walking or biking more. Finally, respondents were asked whether they have children that walk or bike to school and other questions to determine how much of an impact walking and bicycling has on their friends and families. This survey provided valuable information on the level of demand for walking and bicycling facilities, what type of person would use the facilities, and where the facilities would be most impactful.

Some salient results include:

- Have you bicycled in the Harrisonburg/Rockingham Region within the last two years?
  - 63%—yes

  - 37%—no
- On average, how many days per month do you make trips using your Bike? (note – Respondents who answered "no" to the previous question were not asked this question)
  - 13%— more than 25 days per month
  - 20%—16-24 days per month
  - 20%—9-15 days per month
  - 25%—1-8 days per month
  - 22%—sporadic, less than once per month
- What do you like about bicycling in the Harrisonburg/Rockingham region? (The top five responses are shown below. Respondents could select multiple options; therefore, percentages do not total 100.)
  - 36%—within bicycling distance of many important destinations
  - 33%—feel like I am helping the environment
  - 26%—it is a quick way to get around
  - 25%—the network of on-street bicycle facilities
  - 18%—road surfaces are well maintained
- Which of the following factors make it difficult or unpleasant to walk in the Harrisonburg/Rockingham region (The top seven responses are shown below. Respondents could select up to three options; therefore, percentages do not total 100.)
  - 44%—not enough sidewalks or many gaps in the sidewalk network
  - 30%—places I need to go are beyond walking distance
  - 25%—drivers not yielding or stopping for pedestrians stopping at corners
  - 20%—speeding traffic
  - 18%—heavy traffic
  - 15%—inadequate lighting/too dark
  - 13%— worries about personal security (vulnerability to crime)

A complete summary of the survey is available in **Appendix B**.

2.3 Interactive Online Mapping Tool (Wikimaps)

Following the completion of the on-line survey, staff deployed an interactive online mapping tool, called a Wikimap, to collect additional public comment. Users registered through Facebook or with their email address, and posted their comments and suggestions directly onto a map of the Harrisonburg-Rockingham County area. The tool allowed users to draw points and lines on a map: lines denoted routes that people like to bike or walk and routes that needed improvements; points denoted specific origins or destinations for walking or bicycling trips and locations where spot improvements may be needed. In addition, users could provide comments or suggestions in a text box attached to each point or line; users could also "like" comments made by others.

Staff promoted the tool with a direct link on the project website, on locality websites, on Facebook pages, and through outreach by RBAC members to multiple other stakeholders in the region.

Participants of the online survey who requested to be added to the mailing list for continued involvement in the project also received an email with the link to the Wikimap tool. The 155 unique users submitted over 400 comments between April 19 and June 28, 2013. The comments, points, and lines identified routes for further study, as described below. While the mapping tool covered all of Harrisonburg and Rockingham County, the majority of the comments were concentrated in the HRMPO region. A map of the responses is included in **Figure 1**.

As with many public involvement mechanisms, most of the input came from a small number of users; the top five users were responsible for just over 50% of the input on the map. It is likely that these users are frequent walkers or bikers in the Harrisonburg-Rockingham region and, as a result, have a good amount of specialized knowledge to share via the map. Other users may have determined that their opinions were already represented by input on the map and so chose not to add their feedback. On average, each use provided three comments; the majority of users provided one comment. Totals of input in the various available categories are displayed in **Table 1.**

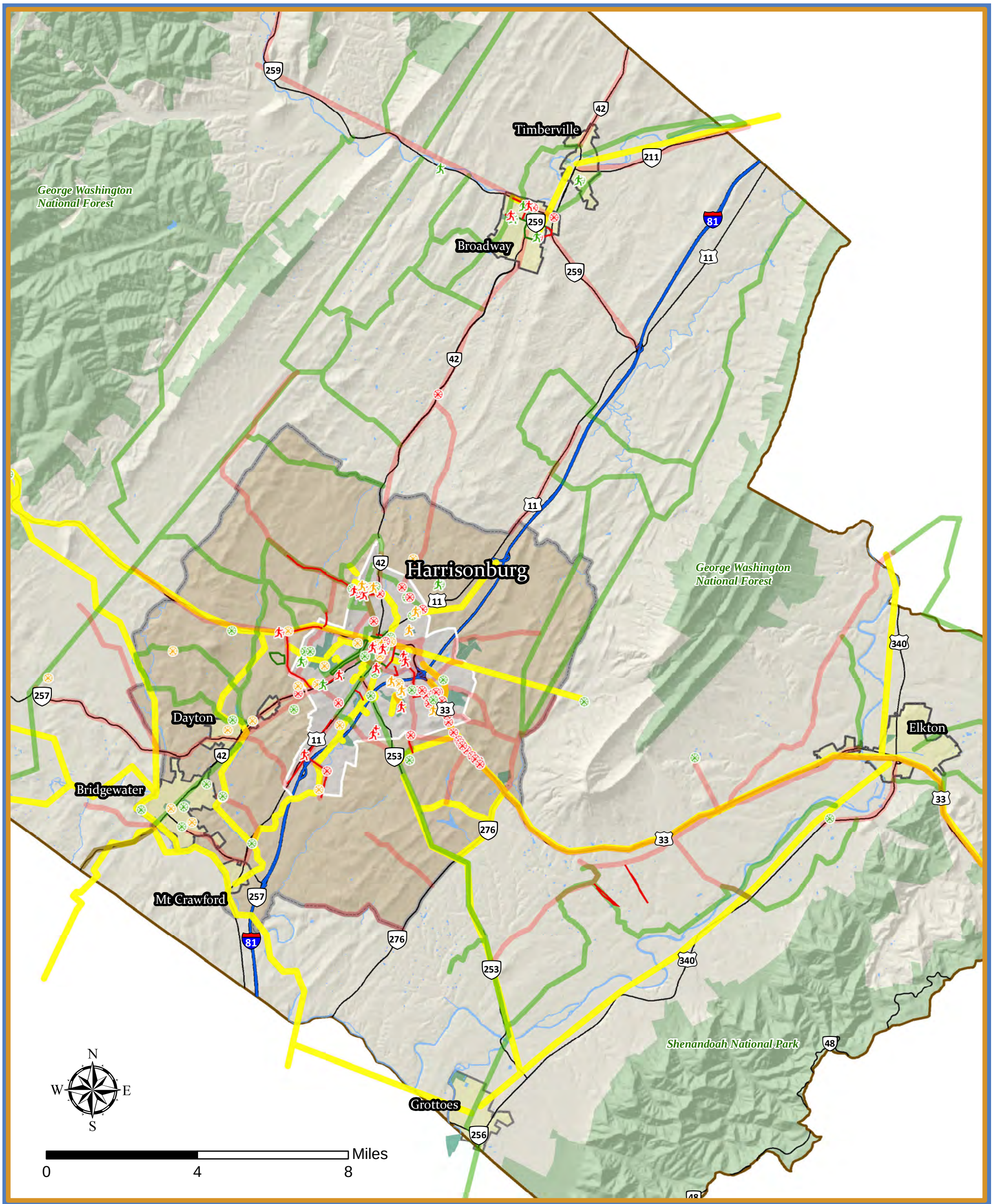
Table 1. Total Wikimap Comments by Category

Road needs bike improvement	92	Place to which I bike	25
Off-road connection needed	61	Difficult pedestrian crossing	18
Route I like to ride	56	Route I like to walk	13
Difficult bike intersection	46	Place to which I would like to walk	8
Place to which I would like to bike	40	Place to which I walk	9
Road needs pedestrian improvement	28		

The majority of comments in the County centered on three major corridors: Spotswood Trail (US 33), from the Harrisonburg city line to Resort Drive leading to the Massanutten Resort; John Wayland Highway (SR 42), from the Harrisonburg city line to the Bridgewater town line; and Mount Clinton Pike (SR 763) from the Harrisonburg city line to Singers Glen Road (SR 763, Mount Clinton Pike becomes SR 765). Spotswood Trail received the largest number of comments. An initial comment noted that a safe bicycling connection between these destinations is needed. That comment was “liked” by six other users and five users commented on the comment, creating a thread. One user also suggested a shared-use path in this corridor all the way from Harrisonburg to Skyline Drive; this comment was “liked” by two other users. One user’s comment summarizes the others’: “The entire stretch of 33 from here [University Blvd] east is way too dangerous to use. Fix this, please.”

John Wayland Highway (SR 42) received favorable comments that noted the wide shoulders which accommodate buggies and bicycles. Conversely, a number of comments noted the lack of accommodation north of Dayton into Harrisonburg, especially from Walmart to the City Line. Another user noted that all of the intersections along this stretch are dangerous for bicyclists and pedestrians.

This Page Intentionally Left Blank



Rockingham County Bike/Ped Plan - Wiki Data

- HRMPO Boundary
- Towns
- Local Parks
- Public Lands

Ped Points

- Difficult ped x-ing
- Place I walk to
- Place I would like to walk to

Bike Points

- Difficult bike intersection
- Place I bike to
- Place I would like to bike to

- Road needs ped improvement
- Route I like to walk
- Road needs bike improvement
- Route I like to ride
- Off-road connection needed

Data Source(s):
Commonwealth of VA, USGS, VDEM, McCormick & Taylor, Rockingham County, City of Harrisonburg.

Celebrating 45 Years
CSPDC
Central Shenandoah Planning District Commission

Map prepared and produced by Central Shenandoah PDC (RH).
Map to be used for planning purposes only.
No warranty expressed or implied is made or assumed in concerns to accuracy, completeness, reliability, or usefulness of any information depicted in maps provided or produced by the CSPDC.
June 12, 2015

This Page Intentionally Left Blank

Many users commented on the lack of bicycle and pedestrian accommodations along Mount Clinton Pike west of Route 42. Local runners (both adults and school teams) use this stretch of road. Eastern Mennonite University is a major pedestrian and bicycle traffic generator, with one user noting that at all crossings of Mt. Clinton Pike, drivers do not appear to respect pedestrians in crosswalks. Additionally, improvements to this road would offer residents in the Singers Glen area greater access to commercial and recreational opportunities in Harrisonburg.

Comments on other roads in the more rural areas focused on the twisting and narrow nature of roads that makes them dangerous for bicyclists and pedestrians. These roads have lower traffic volume, but vehicles travel at high speeds. This, combined with the narrow and winding character often found on these roads, creates uncomfortable situations for both drivers and bicyclists. These are primarily recreational routes according to the comments, but it appears that even experienced road riders feel uncomfortable.

In addition to the comments on roads, the map results show a significant amount of interest in shared-use path opportunities for connecting destinations throughout the region. In addition to the proposed shared-use path along Spotswood Trail, several other shared-use path comments centered on providing alternatives to the high-traffic streets that already connect destinations. These comments suggest an unmet desire for off-road facilities that provide both longer distance connections between municipalities, as well as shorter connections between local destinations, such as neighborhoods and parks.

2.4 Stakeholder Workshop

The RBAC co-hosted a Stakeholders Workshop in Harrisonburg on July 30, 2013. Led by the study team, a total of 25 stakeholders attended, including several RBAC members. This meeting, organized as a combined stakeholders meeting for both the HRMPO Bicycle & Pedestrian Plan and the Rockingham County Bicycle & Pedestrian Plan which are being developed concurrently, consisted of a formal presentation followed by an open house. The presentation covered the following:

- Project description
- Goals, objectives, and strategies
- Project activities to date
- Toolkit of potential improvements
- Project schedule

Following the presentation, attendees visited five stations set up around the room and reviewed large scale maps, each one focusing on a different portion of the Harrisonburg-Rockingham region. These maps showed the initial

recommendations for facility improvements based upon the first two stages of public involvement. Participants were given three stickers at each station to vote for the corridor(s) they considered the most important to target for bicycle/pedestrian improvements in this plan. This feedback helped inform the first draft of the prioritization of the network.

2.5 Public Meeting

The County jointly hosted a Public Open House with the HRMPO on September 7, 2016 to share the process and recommendations for both Plans. The Open House took place in the Rockingham County Office Building in the Fire and Rescue Training Room. A total of 35 people attended. Staff presented the planning process and maps of the recommended projects, and made a brief presentation to attendees halfway through the two-hour event. Comments received at the Open House and during the public comment period are listed in **Appendix D.**

3 Vision, Goals, Objectives, and Strategies

"Rockingham County will become a place where pedestrians and bicyclists can safely and conveniently reach key destinations for work, play, and everything in between."

The vision for the Rockingham County Bicycle and Pedestrian Plan, developed collaboratively by the RBAC, guided the formation of this plan. This is the future of bicycling and walking in Rockingham County. To achieve this vision, the RBAC adopted the 5 Es strategy, made popular by the League of American Bicyclists. Each E represents a pillar of a successful bicycle and pedestrian program. These 5 Es are:

- **E**ngineering
- **E**ducation
- **E**ncouragement
- **E**nforcement
- **E**valuation

All five pillars must be addressed to ensure Rockingham County's transportation network becomes and remains responsive to walking and bicycling for both recreation and transportation. This plan supports each E with a corresponding Goal. Goals describe in broad terms what the county wants to achieve through the bicycle and pedestrian program. Goals are realistic and achievable in the long-term, but abstract and programmatic in scope. To achieve these goals, the RBAC also developed a set of objectives for each. Objectives define the specific milestones necessary for reaching a goal and identify the sequence in which they must be completed. Objectives are concrete and measurable and provide a path toward achieving the stated Goals. Each Goal below has numbered Objectives following it.

Following each objective is a menu of Strategies that can be employed throughout the County when opportunities arise. Many Strategies do not specifically fall within the purview of the County's government but may fall within the programs operated by other public or non-governmental organizations, such as local bicycle advocacy groups, healthcare providers, or regional organizations. The RBAC plays a key role in promoting these Strategies and recommending when the County can be involved through different departments.

3.1 Engineering

Engineering comprises the planning, design, and installation of the physical infrastructure that most people associate with a bike and pedestrian plan.

Implement and maintain a non-motorized transportation network for users of all comfort levels through collaboration with the Virginia Department of Transportation (VDOT), the private sector, the City and Towns, and across all the County departments.

1. Build the non-motorized transportation network presented in the Recommended Facilities and Priorities section of this plan as funding permits.
   a. Encourage VDOT to add pedestrian, bicycle, and buggy accommodations on new road projects where existing or future demand for these facilities exist.
   b. Work with VDOT and the HRMPO to identify bicycle and pedestrian facilities recommended in this plan, or others that may be appropriate for inclusion in planned transportation projects and assist in planning for those facilities.
   c. Continue to review land use and site plans with the support of non-motorized accommodations in mind. This includes requirements for sidewalks and other pedestrian/bicyclist improvements as a part of new developments in urbanized areas, inclusion of sidewalks in subdivision street design guides, and adherence to thresholds for bicycle parking standards.
2. Annually evaluate recommendations for facilities in order to identify potential projects eligible for state, federal, and non-governmental grant programs.
   a. Use VDOT's Policy for Integrating Bicycle & Pedestrian Accommodations and the Bicycle and Pedestrian Accommodation Decision Process to assist in the development of appropriate bicycle and pedestrian infrastructure. Encourage use of these policies and this Rockingham County Bicycle and Pedestrian Plan during the planning phase of transportation projects.
   b. Work with VDOT, the CSPDC, and the HRMPO to identify and apply for grant opportunities to plan, design, and construct non-motorized facilities.
3. Establish facility maintenance protocols in collaboration with VDOT and Towns that clearly identify roles and responsibilities related to the non-motorized accommodations.
   a. Develop a process to assist in the review of annual maintenance and paving projects to identify potential locations for shoulder widening and restriping of lanes to accommodate pedestrians or bicyclists.
   b. Reach out to Town Managers, Councils, and Commissions for coordination of projects and programs to improve bicycle and pedestrian accommodations and safety.

3.2 Education

Education includes identifying existing safe routes for bicyclists and pedestrians; teaching community members to walk, bike, and drive safely; and sharing methods to handle potentially dangerous situations. This "E" is closely tied to Encouragement and Enforcement strategies. Police departments have a major role in pedestrian, bicyclist, and driver safety education; however, the message is even more effective when it is reinforced by schools, parents, elected officials, public health educators, business owners, chambers of commerce, and neighbors.

Promote bicycle and pedestrian safety education through the implementation of programs for bicyclists, pedestrians, and motorists, by coordinating with appropriate committees, schools, advocacy groups, and other organizations.

1. Seek training and workshop opportunities appropriate for staff, RBAC Committee members, or citizens. These may relate to all stages of bicycle and pedestrian planning and development (i.e. tourism, economic development, engineering, land use, recreation).
   a. Hold educational sessions for agency, County and Town staff, law enforcement officials, and local advocates who will work on the implementation of recommendations in this plan. On a statewide level, the University of Virginia's Transportation Training Academy offers multiple workshops on transportation planning and design for bicycle and pedestrian facilities. Other key resources are webinars offered by the Association of Pedestrian and Bicycling Professionals.
   b. Educate bicyclists and pedestrians on safe riding and walking techniques. On a national level, the Ride Smart campaign of the League of American Bicyclists (LAB) offers a wealth of information on safe bicycling and, through the LAB, individuals have the opportunity to train to become certified bicycle safety instructors.
2. Accommodate, support, and promote events and programs such as Bike to School Day and International Walk to School Day or others that teach children about bicycle and pedestrian safety and confident cycling as well as awareness of pedestrians and bicyclists.
   a. Support the local high school physical education and driver education programs by helping the teachers to organize bike rodeos, duathlons, bike driving course challenges, and bike Olympics for their students. Students would participate in these events during their physical education classes.
   b. Work with schools to continue to encourage the use of the SRTS program.
3. Continue to partner with advocacy groups to promote bicycle and pedestrian safety education for adults, children, and families.
   a. Facilitate a program with schools where teachers instruct students on bicycle, pedestrian, and motorist safety and rules of the road and distribute bike helmets, bicycle headlights/taillights, reflective items, other safety gear, and educational handouts.
   b. Sponsor booths at local festivals and special events where literature regarding safe walking and riding can be distributed. This could also be used as an opportunity to give away low-cost safety devices such as blinking lights for bicycles and reflective strips that walkers and joggers can wear to improve their visibility.
   c. Develop a campaign to educate and inform county residents, for whom English is not the primary language, on bicycle and pedestrian safety and resources.
   d. Partner with local advocacy groups to provide youth safety campaigns. Examples include using International Walk to School Day as an opportunity to teach school children about the health benefits of walking and to train them on safe methods for walking and bicycling, as well as providing youth bicycle safety education programs and bicycle rodeos.

3.3 Encouragement

Encouragement and Education complement each other. Encouragement combines and further builds on the results of the other Es to improve knowledge, facilities, and enforcement; to encourage more people to walk or ride safely; and, most importantly, to build interest and enthusiasm that helps grow a local biking culture and promote walkability.

Foster a walking and bicycling culture through programs and events that encourage businesses, schools, families, and individuals to increase the number of trips they make on foot or by bike; continue promoting the region as a prime destination for pedestrian and bicycle tourism.

1. Promote walking and biking as pleasant, comfortable, and healthy modes of travel that engage people in the community.
   a. Develop community events such as Cyclovia or other bicycle and pedestrian celebrations that would close streets to vehicles for a specified time.
   b. Promote local bicycling clubs and bicycling events, Bike to Work Day, Bike Month, social rides, mountain bicycling competitions, or local running events such as 5Ks, 10Ks, and marathons.
   c. Provide incentives for students to walk and bike to school, such as mile counters, reflective bracelets, and keychains.
   d. Provide information and links relative to walking and biking on the county website. The region has already made substantial progress through its "Bike the Valley" website, run by the CSPDC. This website includes information on recommended on-road and off-road recreational routes, tips on safe riding, and links to local bicycling resources such as local bicycling clubs and shops.
   e. Encourage community-based youth recreation programs to consider policies that promote shorter (bikeable or walkable) trips for families to attend events etc.
2. Promote Rockingham County as a destination for recreational walking, hiking, running, and riding.
   a. Create a system of bicycle- and pedestrian-oriented wayfinding signs
   b. Market the County and Towns as "Active Vacation Destinations" with increasing numbers of amenities.
   c. Develop bicycle tourism maps. As previously noted, this region has become a popular destination for bicycle tourism, with visitors coming to enjoy the region's beautiful scenery, scenic rural roads, and expansive network of mountain biking trails. Visitors who specifically ask about local bicycling routes could be provided maps showing popular regional bicycle tourism destinations, existing paved and unpaved trails, and roads with existing bicycle facilities or recommended bicycling routes. While this plan includes long-term recommendations for most of these arterial roadways, in the short term maps can help tourists plan trips that take advantage of the built network and promote a positive impression of the region.

3. Encourage local employers to incentivize walking and biking for commuting purposes with programs that reward their employees.
   a. Provide information about bicycle commuting, rewards programs for employees who commute by bicycle, and providing areas for bicycle parking, showers, or locker rooms.
   b. Continue sponsoring Bike to Work Day and Bike to School Day.
4. Seek out and celebrate national recognition as Bicycle Friendly and Walk Friendly Communities.
   a. Continue to apply for progressively higher recognition from the LAB Bicycle Friendly America program and encourage local businesses to apply for recognition also.
   b. Encourage Towns to apply for higher levels of LAB Bicycle-Friendly Communities certification.
   c. Encourage Towns and Communities to apply to be Walk Friendly Communities, a recognition program developed to encourage towns and cities to support safer walking environments (walkfriendly.org).

3.4 Enforcement

Enforcement strategies involve working to reduce unsafe behaviors and to ensure a safe environment and roads for all users, bicyclists, walkers, and drivers. Enforcement is closely tied to education, as law enforcement officers have an important role to play in educating members of the community on the rules of the road for pedestrians, bicyclists, and motorists. This is particularly true when law enforcement officers speak to school children and demonstrate safe walking and bicycling techniques such as wearing bicycle helmets and looking before crossing streets.

Improve traffic safety for all modes through collaboration with the public, VDOT, law enforcement agencies, public safety providers, and appropriate non-governmental organizations.

1. Provide bicycle and pedestrian law education for law enforcement officers and those cited for moving violations related to safety for bicyclists and pedestrians.
   a. Regularly meet with local law enforcement officers to discuss ongoing enforcement issues and ensure awareness of laws that affect bicyclists and pedestrians.
   b. Encourage the enforcement of the state's law requiring a three-foot minimum distance when passing bicyclists.
   c. Dedicate additional funding to enforcement of laws related to biking, walking and driver behavior around bicyclists and pedestrians.
2. Coordinate with local law enforcement, advocacy groups, and elected officials to reduce instances of unsafe or illegal behaviors by motorists, pedestrians, and bicyclists.
   a. Implement a progressive educational/ticketing campaign where police officers give verbal or written warnings to pedestrians, bicyclists, and motorists observed behaving unsafely. This could be coupled with providing the offending individual with educational materials about the rules of the road related to walking and bicycling.
   b. Conduct other types of educational/enforcement campaigns such as distracted driver campaigns and "Keep Kids Alive – Drive 25" campaigns near schools.

   c. Encourage local elected officials to pursue changes to Virginia state law to strengthen and update bicycling and walking laws.
   d. Advocate changes to the law that promote additional safety for all users such as requiring motorists to stop for, rather than yield to, pedestrians
3. Improve safety by identifying and removing impediments to bicycling and walking.
   a. Develop and promote a resource where people can report issues on the ground such as debris, potholes, non-working street lights, and impediments on trails, pedestrian signals, etc.
   b. Encourage citizens to shovel sidewalks fronting their property after snow events. Some localities institute ordinances requiring property owners to shovel sidewalks. However, a regulation would require enforcement and many citizens in the county may not support a regulation related to this. Enforcement is required to ensure this happens. Towns should consider adopting, and enforcing, similar ordinances.

3.5 Evaluation

Evaluation involves monitoring progress made towards achieving the goals and recommendations of the other four Es. Evaluation can examine the physical network (e.g. miles of new bicycle lanes built, number of traffic signals retrofitted), as well as the resulting patterns of use (e.g. number of bicyclists and pedestrians on the road, crash statistics), and the number of people reached through activities and events. Many of the strategies discussed under evaluation are included in the annual work plan of the RBAC.

Sustain the momentum of this plan and evaluate progress toward these goals.

1. Ensure the RBAC's ability to achieve the goals identified in its creation.
   a. The RBAC should oversee the implementation of the plan and monitor the progress of infrastructure and other improvements.
   b. Periodically update this plan in response to changing conditions and to reflect the progress that has been made.
2. Continue to network with regional stakeholders regarding bicycle and pedestrian issues, using forums such as joint meetings with the JMU Bicycle and Pedestrian Advisory Committee and Harrisonburg Bicycle Subcommittee, the HRMPO Technical Advisory Committee, as well as at the annual Harrisonburg and Rockingham Bike-Walk Summit.
   a. Periodically update a list of stakeholders with representatives of advocacy groups, agencies, and other relevant committees that would benefit or play a role in the plan's implementation.
   b. Coordinate with agencies to identify public and private resources to address bicycle, pedestrian, and buggy needs
3. Monitor safety trends and provide detailed safety evaluations of any locations where there are increased numbers of bicycle-related, buggy-related, or pedestrian-related crashes.
   a. The County should continue to cooperatively participate in the National Bicycle and Pedestrian Documentation Project. This data collection (which started in 2012) will allow the

region to develop a fuller picture of trends in bicycling and walking, as well as providing a metric by which to compare the region against other similar regions across the country.

b. Develop and promote a resource where law enforcement can submit crash data and reports, and where people can report near-misses and other incidents.
c. Annually review data collected on crashes, near misses, and data from other sources, to identify safety concerns involving pedestrians, bicyclists, and buggies and recommend solutions.
d. VDOT and the County should develop a program for auditing existing facilities and developing a program for retrofitting existing sidewalks to meet current Americans with Disabilities Act (ADA) standards.

4. Engage in further studies, planning processes, and program development that further the bicycle-related and pedestrian-related goals of the County.
   a. Develop a Greenway Plan to further explore potential Greenway routes throughout the county, including design strategies and funding options.

4 Facility Toolkit

A variety of facility options exist to improve the bicycle and pedestrian network in Rockingham County. The following toolkit, from which the County can pull when evaluating potential infrastructure improvements, was developed based on national best practices. The RBAC used this toolkit to develop the comprehensive recommendations for facilities and the prioritization put forth in this Plan. This is a list of options; however, it is by no means a complete list. The County should remain open to other creative solutions when standard techniques do not appropriately solve a particular issue.

The design of these facilities should be implemented in accordance with local codes and design standards along with the following:

- American Association of State Highway and Transportation Officials (AASHTO), Guide for the Development of Bicycle Facilities, 4th edition, 2012
- AASHTO, Guide for the Planning Design, and Operation of Pedestrian Facilities, 1st edition, 2004
- The Urban Bikeway Design Guide developed by the National Association of City Transportation Officials (NACTO)
- NACTO, Urban Street Design Guide
- VDOT, Policy for Integrating Bicycle and Pedestrian Accommodations
- VDOT, 2011 Virginia Supplement to the Manual on Uniform Traffic Control Devices (MUTCD)
- VDOT, 2005 Road Design Manual, Section A-5
- VDOT, 2008 Road & Bridge Standards
- VDOT, Structure & Bridge Manual, Vol. V, Part 2, Chap. 6 (Geometrics)
- United States Department of Transportation Policy Statement on Bicycle & Pedestrian Accommodation Regulations and Recommendations
- Federal Highway Administration (FHWA), Memorandum, Bicycle & Pedestrian Facility Design Flexibility
- Association of Pedestrian and Bicycle Professionals (APBP), Bicycle Parking Guidelines, 2nd Edition (2010)
- FHWA, Separated Bike Lane Planning & Design Guide,
- FHWA, 2009 MUTCD
- 2010 ADA Standards for Accessible Design & Guidance,
- Public Rights-of-Way Access Advisory Committee, Special Report: Accessible Public Rights-of-Way Planning and Design for Alterations, 2007

4.1 Bicycle Facilities

The following types of bicycle facilities and treatments are recommended in this plan:

4.1.1 Shared-use Path

Where space and right-of-way are available, shared-use paths have the greatest potential to increase the number of pedestrian and bicycle trips in a community. The safety benefits of shared-use paths go

far beyond those offered by any other potential improvement type and should be seen as a major focus of any region's bicycle and pedestrian system.

A shared-use path, sometimes also referred to as a multi-use trail or a greenway when incorporated into a linear park or open space, is a path separated from the road and not open to motor vehicle traffic (except emergency service providers and maintenance vehicles). They serve both bicyclists and pedestrians including wheelchair users, as well as in-line skaters and joggers. Shared-use paths often attract high numbers of pedestrians and bicyclists, especially those who would otherwise not make a trip on foot or by bike along a busy corridor or in traffic with motor vehicles.

Shared-use paths are at least ten feet wide with two-foot shoulders. Wider (12-14 foot) trails should be considered where possible, particularly in areas with high volumes of users. Where unusual constraints prohibit a wider trail and lower volumes of users are expected, shared-use paths can be narrowed to no less than eight feet for short sections of trail. Narrower paths should only be considered where bicyclist and pedestrian volumes are expected to be low even during peak hours; where the horizontal and vertical alignment provides frequent passing and resting opportunities; and where the path won't be regularly subjected to maintenance vehicle operations that could cause pavement edge damage. Typically, local, regional, or statewide agency or volunteer groups provide maintenance for shared-use paths, which should include prompt plowing following a snow fall.

Port Republic Road Sidepath

Sidepath

A shared-use path parallel to a road is called a sidepath. Sidepaths require at least five feet of separation form the vehicular travel way. Examples in this region include the recently-constructed paths parallel to Linda Lane and Port Republic Road. Due to the high potential for conflict between drivers and bicyclists at intersections and driveways, sidepaths should be considered only for roads that have few crossing intersections or driveways.

Rails Trails

Other popular locations for a shared-use path include former railroad alignments (Rails-to-Trails) or current railroad alignments (Rails-with-Trails). Railroads connect population and economic centers in the most direct and efficient course. Generally, the ideal conditions for a railway – long, straight, and flat – are the same ideal conditions for a shared-use path. Additionally, rail trails can provide scenic views as they run past rivers and mountains, forming a linear park. In Rockbridge County, the Chesapeake & Ohio Railroad line that connected Buena Vista with Lexington has been converted to the Chessie Nature Trail, a seven mile shared-use path with scenic views of the mountains, surrounding farmland, and the Maury River. Allegheny County offers a 10.7 mile trek along the Jackson River Scenic Trail, formerly the Hot

Springs Branch of the Chesapeake and Ohio Railway, which connects Natural Well to Intervale, just north of Covington.

Where a railroad line is still in operation, a shared-use path may be permissible if the right-of-way has sufficient width. The Burke VRE Trail within the Pohick Stream Valley Park in Fairfax County provides pedestrian and bicycling opportunities that parallel the Virginia Railway Express route, connecting residents to commercial outlets. Where sufficient right-of-way exists, a Rail-with-Trail provides scenic vistas, direct routes to destinations, and a greater separation from automobile traffic.

Greenways

Greenways are linear natural areas, often following streams or rivers, which can include shared-use paths or other active transportation opportunities. They connect recreational facilities, historic sites, and cultural features with population centers. They also serve as parks unto themselves. As natural areas, they can offer hiking, bicycling, horseback riding, and other recreational opportunities. Areas suited for greenway development typically are existing trails, ridgelines, abandoned railways, utility corridors, scenic roads, and river/stream corridors. In some situations, greenways following a river can provide access to blueways, water systems used for canoeing, kayaking, and fishing, among other activities.

Beyond recreational opportunities and transportation alternatives, greenways offer even greater potential benefits. Communities seeking ways to enhance and protect their natural resources, strengthen the local economy, and enhance the quality of life for residents often look to greenways as a potential solution. Greenways offer communities a way to integrate housing, education, employment, transportation, tourism, and recreation into a comprehensive system that links people with natural areas, parks, neighborhoods, schools, and commercial areas. By attracting a greater number of users, greenways have the potential to promote community development and serve as a tourist attraction.

The Bluestone Trail in Harrisonburg, a recently opened example of a shared-use path and greenway, already sees high use and popularity locally. The trail is currently one mile in length with plans to extend it already progressing. As The Bluestone Trail approaches the City-County line, the County should explore development of a comprehensive Greenways Plan to identify all the potential alignments, funding opportunities, and design specifications in detail.

4.1.2 Bicycle Lanes

A bicycle lane designates an on-road travel lane for bicyclists with signage, pavement-striping, and symbols. Striped bicycle lanes should be a minimum of four feet wide (excluding the gutter pan) on roads with a gutter pan, five feet wide on roads without gutter pans, and wider where adjacent to streets with on-street parking. Generally, bicycle lanes carry bicyclists in the same direction as adjacent motor traffic along both sides of the road (except for one-way streets). In some cases, contra-flow bike lanes, where bicyclists travel against traffic, make necessary connections in a bicycle network.

Typical Bicycle Lane

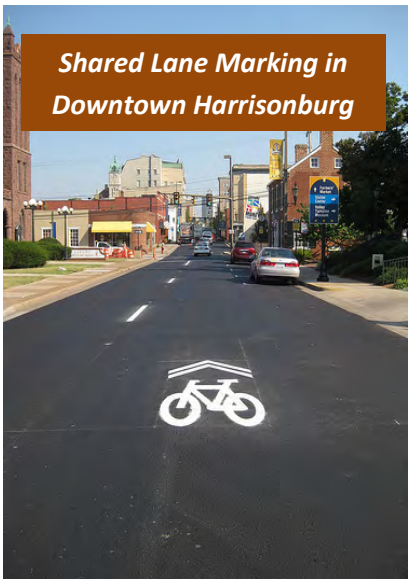
Bicycle lanes are typically considered most appropriate on urban or suburban roads with a posted speed of at least 25 mph and Average Daily Traffic (ADT) counts greater than 3,000 vehicles. The bicycle lanes along Harpine Highway (SR 42), with an average speed and ADT well above these minimums, connect the City of Harrisonburg the Town of Broadway. Due to the heavy traffic and relatively high speeds, planners and designers must make a careful assessment of where to place bicycle lanes when passing through intersections or adjacent to on-street parking. Bicyclists may need to leave a bike lane to make a left turn, pass other bicyclists, or avoid obstacles and debris in the lane. Design of bicycle lanes should avoid stormwater inlets in the lane, except those that are designed not to catch the wheel of the bicycle, and should also be designed to avoid crossing railroad tracks at acute angles.

Road Diet/Lane Diet

Some roads may achieve bicycle lanes with simple restriping. Two separate but similar strategies are a lane diet (reducing the width of the travel lanes) and road diet (restriping the road to reduce the number of vehicular lanes). Road diets and lane diets could also involve reconfiguring or eliminating on-street parking. Reducing the number of lanes often means lower design speeds for motor vehicles as well, thereby reducing the number of rear-end collisions.

Road Diet before and after in Reston, VA

4.1.3 Sharrows



Where bicycle lanes are desirable but not possible due to physical constraints, such as in downtown urban areas (for example the Court Square area of downtown Harrisonburg) where widening the road is simply not feasible, shared lane markings, also known as sharrows, may be used. Sharrows are only intended for roads with a speed limit of 35 mph or less and should typically be placed immediately downstream of intersections and at intervals of no greater than 250 feet. In addition to alerting motorists to the potential presence of bicyclists, and thereby reinforcing their legitimacy on the road, sharrows aid bicyclists in proper lane positioning. It is a common misperception among bicyclists and motorists alike that bicyclists must hug the far right edge of the travel lane, when in reality it is often safer for bicyclists to ride more towards the middle of the lane. This increases the visibility of the bicyclist and discourages motorists from trying to pass the bicyclist at a very close distance without waiting for a gap in oncoming traffic. Positioning takes on particular importance when there is adjacent on-street parking. Sharrows encourage bicyclists to place themselves far enough away from parked cars that they are not at risk of being "doored" when a motorist opens a car door into the path of a bicyclist.

4.1.4 Climbing Lane

For roads with a steep hill and only enough width for a bicycle lane on one side of the street, a climbing lane may be an appropriate treatment. Climbing lanes are implemented by having a bicycle lane for the uphill direction and a shared lane marking on the downhill direction. The intention of the treatment is to allow bicyclists safe clearance as their speeds slow going up the hill.

4.1.5 Intersections and Signals

Intersections present three distinct problems for bicyclists when traveling in bicycle lanes and in shared lanes. First, if an in-ground loop detector controls the signal interval, bicyclists do not have sufficient mass to activate the detector. As signals are upgraded or funding is available, they should be made sensitive enough to detect bicycles. Second, drivers making right turns may not be aware of the bicyclist in the bicycle lane, causing a "right hook" collision. Placing the bike lane to the left of the right turn bay solves this problem. Finally, to further define the bicyclist's space in traffic bike lanes and sharrows should extend through an intersection. Dotted line extensions mark the bicyclist space through the crossing, while chevrons or green paint can also be used to raise bicyclist's visibility in the intersection.

4.1.6 Paved Striped Shoulder (Widened Shoulder)

Rural roads, most of which have open drainage systems (no shoulder), benefit from a paved striped shoulder more than from a dedicated bicycle lane. Though similar to bicycle lanes, paved striped shoulders are not explicitly signed and striped as bicycle facilities. Generally recommended on higher-volume rural roads (above 3000 vehicles per day), where most bicyclists would not feel comfortable sharing the road with motorists, shoulders provide a designated area for bicyclists to travel without

impeding traffic approaching from behind. Paved shoulders also provide safety benefits to motorists by reducing the risk of collisions with bicyclists and providing additional space to utilize in emergencies.

Ideally, shoulders should have at least four feet of paved width in order to provide adequate accommodations for bicyclists. However, in the interest of providing some safety benefit to bicyclists in cases where a four-foot shoulder is not possible, it is recommended that through its typical maintenance programs VDOT strive to provide whatever shoulder is possible, working within available right-of-way and budget constraints. On larger construction or reconstruction projects a four-foot shoulder should be pursued.

Striped shoulders should be kept free of inlets and other obstructions. On roads with rumble strips, the rumble strips should be designed to be bicycle-friendly (VDOT RS-5 standards). These bicycle-friendly rumble strips provide periodic breaks in the rumble strips (approximately every 50 feet) so that bicyclists do not have to dismount to transition from the shoulder to the road (for example when a bicyclist is approaching an intersection intending to turn left).

Wide shoulder being used by buggy and cyclists

4.1.7 Bicycle/Buggy Lane

In rural areas of the county with high concentrations of Old Order Mennonites, bicycle/buggy lanes may be recommended. These are eight- to ten-foot paved lanes on the outer edge of roadways that allow use by buggies as well as bicycles. VDOT has approved and developed a specific sign for use on bicycle/buggy lanes in the Commonwealth that should be used in such cases. Currently underway is an extension of the bicycle/buggy lane along John Wayland Highway (SR 42) to connect the Town of Bridgewater, through the Town of Dayton, to the City of Harrisonburg, providing increased mobility and connectivity for the Old Order Mennonite community as well as other bicyclists in the region.

4.1.8 Wayfinding System

In select cases bicyclists can be served by simply using the travel lanes with motor vehicles. However, identifying these routes through signage can help inform bicyclists as to which roadways provide the preferred route to certain destinations, and can indicate to motorists that bicyclists should be expected.

Wayfinding signs are appropriate on routes that provide a primary connection to a destination or that follow a particularly popular recreation route. This treatment applies to roads most bicyclists would be comfortable riding under the existing conditions. Many of the lower-volume two-lane roads in the region offer picturesque views and breathtaking vistas; widening these roads to provide shoulders could detract from their scenic nature. On roads with low to medium levels of motor vehicle traffic, where constraints present a barrier to construction of a facility, this option can provide additional comfort to

bicyclists for a small cost. Bicyclists' comfort level is generally based on the traffic volumes, speeds, and truck volumes on the road, as well as terrain.

In previous years, it has been common in Virginia and elsewhere to post a yellow diamond-shaped bicycle sign with a "Share the Road" plaque below it; however, due to the somewhat ambiguous nature of these signs, bicycle advocates and planners have recently suggested reducing their use. Bicycle destination/wayfinding signs can serve a similar purpose to the "Share the Road" signs: both make drivers and other bicyclists aware that there is likelihood that bicyclists will be present. This plan recommends the County coordinate with other jurisdictions in the region to pursue a region-wide network of bicycle wayfinding signs. This coordinated network will make the region more welcoming to visitors and will improve safety by focusing bicyclists onto roads where awareness by motorists is higher.

4.2 Pedestrian Facilities

Pedestrian facilities are an essential component of the transportation system. Pedestrian activity requires adequate pedestrian facilities. Pedestrians must be considered in every transportation design decision; whether this means explicitly excluding pedestrians from a roadway or incorporating pedestrian activity into the design of the system. Pedestrian facilities directly improve the quality of the transportation system in two ways. First, pedestrian facilities attract pedestrians. Generally, people refuse to walk in response to the lack of incentive or encouragement. Given the choice, some may choose to walk rather than drive. In many areas, this choice is not available. Second, pedestrian facilities increase safety. Where pedestrian facilities have not been provided, pedestrians may be forced to contend with the automobile on the street. Facilities that separate the pedestrian from the automobile lower the risk of fatal incidents and double the overall safety of the roadway.[16] A well designed facility attracts pedestrians and discourages dangerous interaction with motorists. The seven attributes of a well-designed pedestrian facility, according the AASHTO, are:

- **Accessibility** – A network of sidewalks should be accessible to all users and meet ADA requirements.
- **Adequate Width** – Two people should be able to walk side-by-side and pass a third person comfortably, and different walking speeds should be possible. In areas of intense pedestrian use, sidewalks should be wider to accommodate the greater volume of walkers.
- **Safety** – Design features of the sidewalk should allow pedestrians to have a sense of security and predictability. Sidewalk users should not feel they are at risk due to the presence of adjacent traffic.
- **Continuity** – Walking routes should be obvious and should not require pedestrians to travel out of their way unnecessarily.
- **Landscaping** – Plantings and street trees within the roadside area should contribute to the overall psychological and visual comfort of sidewalk users, without providing hiding places for attackers.

[16] American Association of State Highway and Transportation Officials, AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, 1st Edition, (Washington, DC: AASHTO, 2004) pg 54.

- **Social Space** – Sidewalks should be more than area to travel; they should provide places for people to interact. There should be places for standing, visiting, and sitting. The sidewalk area should be a place where adults and children can safely participate in public life.
- **Quality of Place** – Sidewalks should contribute to the character of neighborhoods and business districts and strengthen their identity.[17]

4.2.1 Sidewalks

When designing pedestrian facilities, planners must be cognizant of pedestrians who may have difficulty walking for any sustained period of time. This includes individuals who require the use of wheelchairs, scooters, walking aids or prostheses. Generally, there individuals require additional time for crossing streets and additional space for navigating corners or curbs. Hard, smooth surfaces provide the optimum stability and support for these individuals.

The Rockingham County Zoning Ordinance defines sidewalks as consisting of three distinct zones. The pedestrian zone provides a clear, unencumbered path of no less than five feet in width for the movement of pedestrian traffic. The frontage zone provides a minimum of two feet in width between the pedestrian zone and any building or structure. In suburban areas, the front yard serves as the frontage zone, and far exceeds the minimum two feet. Finally, the buffer zone provides a minimum of three feet in width between the pedestrian zone and the street. These zones provide comfort for pedestrians and safety from automobiles.

The Zoning Ordinance requires pedestrian accommodations along both sides of every street in Compact Areas, which include the more urbanized and mixed-use developments in the County. For the Suburban Areas, the Zoning Ordinance requires pedestrian accommodations along at least one side of every street. In Rural Areas, the Zoning Ordinance requires pedestrian accommodations only in certain areas where employees walk to and from their vehicles. As a general rule, sidewalks should be installed on both sides of every street where people live, work, go to school, or may desire to walk to other key pedestrian attractions; however, they are not considered as necessary in more rural areas with sparser density unless they are located within developed neighborhoods.

Sidewalks should be designed to meet all ADA and VDOT standards wherever possible. This includes providing a five-foot minimum width, and ideally should include a four-foot buffer space between the sidewalk and the back of the curb, which exceeds the minimum requirement of the Zoning Ordinance. ADA-compliant curb ramps should be installed at all intersection crossings. Pedestrian signals and marked crosswalks should be provided at all signalized intersection crossings where there is sidewalk on both sides of the intersection. Sidewalks are just one component of making an area a pedestrian-friendly area. Other amenities, such as street trees, pedestrian-scale lighting, and street furniture significantly improve sidewalks and encourage people to walk.

[17] ibid, pg 54-55.

4.2.2 Shared-use Paths

As discussed above, shared-use paths include at least three different types depending upon the area. Paved sidepaths, allow multiple modes of travel to interact at various speeds, including joggers, dog-walkers, and people with baby strollers, as well as bicyclists and skateboarders. Sidepaths generally run alongside a roadway but separate users of the path from vehicles through vegetation and increased spacing. In rural or low-density suburban areas, sidepaths wind through open fields alongside roadways or deviating from them to approach major points of interest. In this bucolic setting, nature serves as a buffer between the vehicle zone and the pedestrian zone with a row of trees, a ditch or a swale, or simply a large greenway. Greenways and rail trails can be paved or unpaved, depending upon the level of use and nature of the surrounding area.

4.3 Funding Opportunities

All of the recommended improvements to the County's bicycle and pedestrian network will require funding. The development of this Plan is an important first step in getting specific projects on a locality's Capital Improvements Plans and/or the state's Six-Year Improvement Plan, which are the plans that identify specific projects as budget priorities.

Some specific sources of funding are:

- **Building Bicycle/Pedestrian Accommodations into Other Projects –** The most cost-effective way to build bicycle and pedestrian infrastructure is to adopt a policy of including bicycle and pedestrian accommodations into other roadway improvements projects. This could include major roadway projects, as well as incorporating bicycle lanes, where appropriate, when restriping/repaving projects are scheduled.

- **Rockingham County Capital Improvement Program –**This program will continue to be updated with new projects that can include bicycle and pedestrian facilities. This program identifies projects as funding priorities and recommends timing and funding schedules.

- **Revenue Sharing –** This state-funded program allows the County and Towns to apply for state gas-tax revenue that would be earmarked to specific projects. This funding can be applied to a wide variety of projects, including new roadways, expansion/widening of existing roadways, improvements to existing pedestrian/bicycle facilities, or construction of new bicycling/walking facilities. Revenue Sharing projects typically require a local match, with the locality providing up to 50% of the project costs and the state providing the remainder.

- **Transportation Alternatives Program (TAP) –** This federally-funded program became effective October 2012 as a part of the federal transportation-funding legislation, "Moving Ahead for Progress in the 21st Century" (MAP-21). The TAP program combines several programs that used to be considered separate stand-alone programs, including the Transportation Enhancement, Recreational Trails, and SRTS programs.

The TAP program funding is available for a wide variety of projects. With respect to bicycle and pedestrian infrastructure, it can be used to fund the development of Safe Routes to School bicycle/pedestrian network improvements or other types of improvements to the bicycle and pedestrian network.

In Virginia, TAP projects are typically administered by the localities or by the local MPO with VDOT oversight. The VDOT website on the TAP program is a great source for additional information about this program: (http://www.virginiadot.org/business/prenhancegrants.asp).

- **Highway Safety Improvement Program (HSIP) –** The Federal HSIP program emphasizes a data-driven strategic approach to improving highway safety. A highway safety improvement project corrects or improves hazardous road locations or addresses a highway safety problem, including those involving bicyclist or pedestrian movements.

  In Virginia, HSIP projects are typically administered directly by VDOT, or by localities, with VDOT oversight. The VDOT website on the HSIP program is a great source for additional information about this program: (http://www.virginiadot.org/business/ted_app_pro.asp).

- **Private Funding –** With state and federal transportation dollars becoming more scarce, it is increasingly important to recognize the role that key area stakeholders and local nonprofit groups can play in securing money to pay for bicycle and pedestrian network improvements. Non-profit organizations can be especially helpful in securing funding for on-going maintenance. Possible sources of private funds could include local cycling clubs, community health advocates, downtown redevelopment groups, major local employers, and local universities.

5 Evaluation and Prioritization

The overarching goal of developing the bicycle network is to create connections among destinations that will be safe and comfortable for a wide range of bicyclists' abilities. The goal of the pedestrian network, however, is to focus on small areas of high demand that would benefit most from improved sidewalk, crosswalk, and other infrastructure. The recommended facilities and the prioritization of those recommendations in this Plan helps Rockingham County achieve both of these goals.

The development of the recommendations and priorities for this Plan followed a recursive process that began with a qualitative approach to define the study area and ended with a quantitative approach to refine the recommendations and priorities. The study team initially performed an analysis that identified a list of recommendations for facility improvements. Staff and the RBAC then instructed the study team to evaluate all recommendations through a quantitative approach. In doing so the study team took into account the data collected, the initial recommendations and all comments received on those recommendations. This resulted in some duplication of efforts in the two phases but also provided improved assessments at each level of analysis. This Plan developed through four phases:

- **Phase 1 –** Development of a Study Network
- **Phase 2 –** Initial Route Identification
- **Phase 3 –** Proposed Facility
- **Phase 4 –** Project Prioritization

5.1 Phase 1: Development of a Study Network

To develop the study network, the study team used both qualitative and quantitative techniques to identify and analyze routes for recommendations. The initial process included the public involvement as described in Chapter 2 of the Plan; public Input from the initial online survey, the online wikimap, and the stakeholder meeting were all performed early in the process and information from these efforts informed each subsequent step of the process.

The study team used data collected on the existing and programmed bicycle and pedestrian infrastructure in the County, City, and Towns as well as existing bicycle and pedestrian plans or proposed projects. These were supplemented with various recommended routes provided by local and regional websites, and input gathered from the public involvement phases of this planning process. This data provided routes where previous studies had identified needs, where connections between existing infrastructures were needed, and where bicyclists or pedestrians were currently riding or walking.

5.1.1 Demand Analysis

Input gathered from the RBAC meetings helped develop an initial demand analysis map that identified those areas of the region that are most likely to generate or attract pedestrian or bicycle trips. The study team coded select locations as either attractors or generators of pedestrian or bicycle activity. Attractors included schools, major shopping destinations, and major employment centers. Generators included areas of high residential density. The study team weighted these locations with input from the

RBAC, giving them greater significance in the final analysis. Each type of land use was also assigned a radius of influence ranging from ¼ mile or ¾ mile based on an assessment of how far pedestrians or bicyclists would travel to access the given location. These weighted geographies were layered upon each other to create a "heat-map" where the "hottest" areas are those that scored highly because they contain multiple attractors or generators. **Figure 2** displays the Qualitative Phase Heat-map.

As might be expected, the urban core of the region generates the most heat; however, the map also illustrates other key corridors including the Bridgewater-Dayton-Harrisonburg corridor and the US 33 corridor east of Harrisonburg.

5.1.2 Field Review

The study team then conducted a field review of the major corridors that aligned with the heat map to capture basic information about each road. The study team recorded curb-to-curb widths, pavement widths, roadway configuration, character, speed limits, and any notable land uses or existing facilities that might impact recommendations.

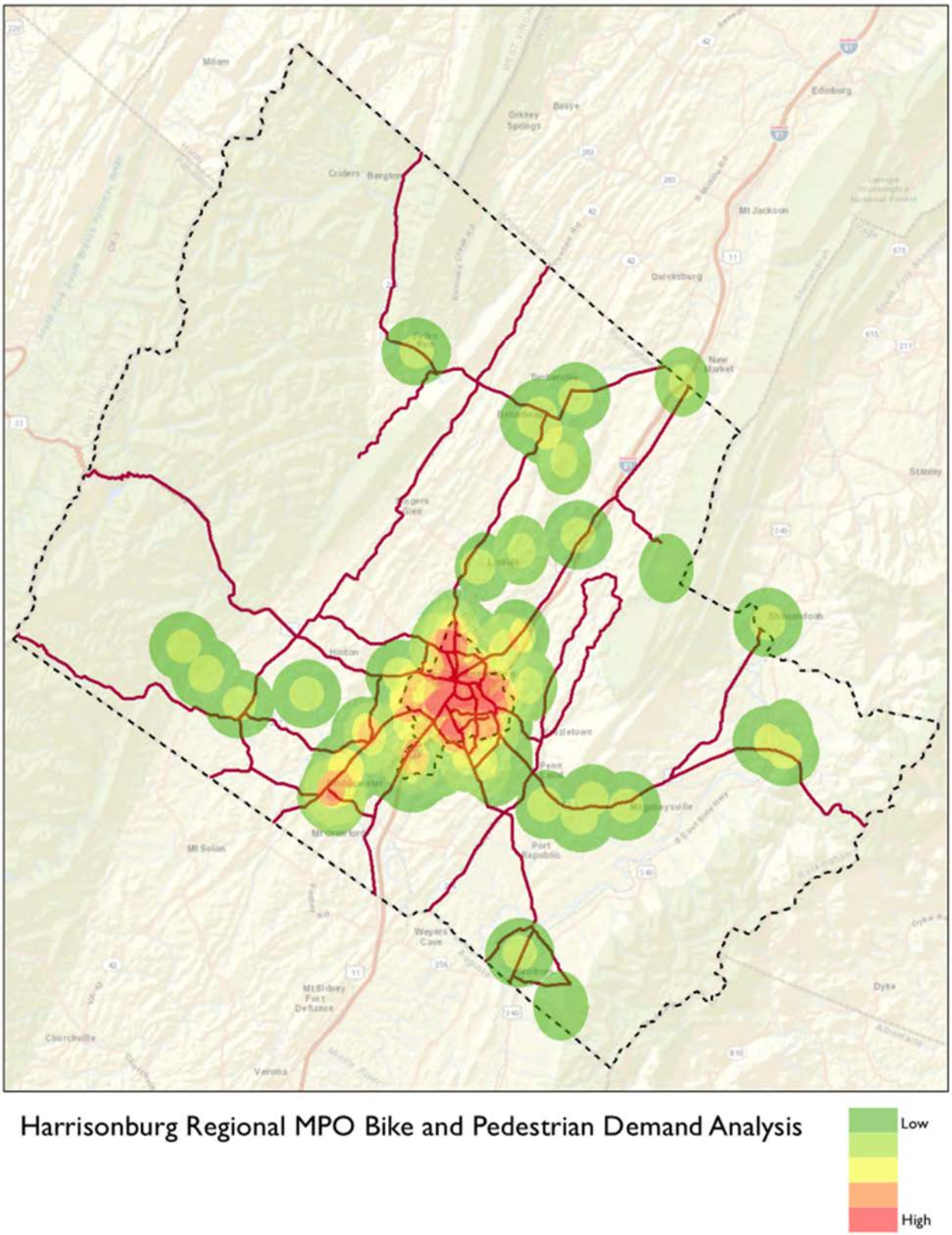
The *curb-to-curb* and *roadway widths* define the constraints within which on-road recommendations can be made. Bicycle and pedestrian facilities require roadway space that may need to be reallocated to fit those facilities. In some cases, pavement widening or right-of-way acquisition may also be necessary.

Some recommendations may impact *Roadway configuration* and *width of lanes*. Implementation of this type of recommendation often requires further traffic study to understand how current and future traffic levels would be impacted by a potential lane removal.

Motor vehicle travel speeds greatly impact comfort level in cases where bicyclists must share road space with moving automobiles or pedestrians are walking near automobiles. For this reason, speed limit data also informs recommendations.

The study team also identified *notable destinations* not identified in the demand analysis that may spur bicycle or pedestrian traffic. The team also noted *existing facilities* such as buffer strips between the road and sidewalk, parking lanes, and crosswalks. Finally, the team described the character of the road itself, whether it was hilly or twisting; this can have a large impact on all vehicles' speeds and ability to see other road users.

Figure 2. Initial Heat-map



Most of the field evaluation was done via car; however, the study team arranged for a bicycle-based field view focused on the Port Republic Road corridor south of Neff Avenue, Peach Grove Avenue, and the residential neighborhood between Port Republic Road and Reservoir Street just south of the City/County line. This field evaluation provided a valuable opportunity for the study team, staff, and committee members to view the differing conditions (good and bad) that bicyclists and pedestrians currently experience in the region.

5.1.3 Average Daily Traffic Evaluation

After completing the field review, the team reviewed existing data about ADT on roads within the study network. ADT is an important piece of information in determining what bicycle facility is appropriate for a given roadway. Closer to the Towns and the City, and in high-demand areas identified in the demand analysis map, the team recommended facilities that made network connections and focused, as much as possible, on roads with lower ADT and lower speed limits. In outlying areas, many locations where only one road to connect origins to destinations; the team recommended facilities for these roads, even with high speed limits and high ADT. The team focused pedestrian infrastructure recommendations on an identified set of areas within the region, seeking to fill gaps in existing infrastructure and connect high-demand areas.

5.1.4 Consistency Evaluation

The study team reviewed this network for consistency of facility recommendations. Bicyclists, and other road users, prefer a consistent facility for the length of a given road since it creates an expectation of where bicyclists will be on the road. Where a route begins with a bicycle lane, users would prefer to remain in a bicycle lane rather than transition to a shared-use path or other facility; however, when the character of the route changes, such as entering a town from a more rural context or leaving a roadway for a greenway, design and construction of facilities may change.

5.1.5 Public Involvement and Committee Review

The study team presented the preliminary set of network recommendations to community stakeholders at a meeting on July 30, 2013. Attendees prioritized corridors in the region and identified areas that needed but lacked recommendations for facilities. Using the feedback from this meeting, the study team reevaluated the proposed recommendations, incorporated the new recommendations identified at the stakeholder meeting, and developed a prioritization of all proposed facilities. This list of recommendations and prioritizations only addressed roadways, and established a baseline for the expansion of the study network in the next stage of Phase 1.

5.1.6 Corridor Evaluation

Direct input was then gathered from the RBAC during meetings to provide a set of corridors and routes throughout the county where infrastructure improvements should be focused. The identified corridors included the Harrisonburg to Broadway/Timberville Corridor, the Harrisonburg to Dayton/Bridgewater/Mt Crawford Corridor, the US 33 East Corridor and the Port Republic Road Corridor. These corridors were identified because of the connections to major recreation destinations, population, and employment centers; the high levels of vehicular, bicycle, and pedestrian traffic; and

their locations along major transportation corridors where development tends to focus. Additionally the balance of the county outside of these corridors was examined on a more general level to anticipate future needs as the county develops while addressing the needs of more rural county residents, and to identify corridors that see high numbers of recreational bicyclists.

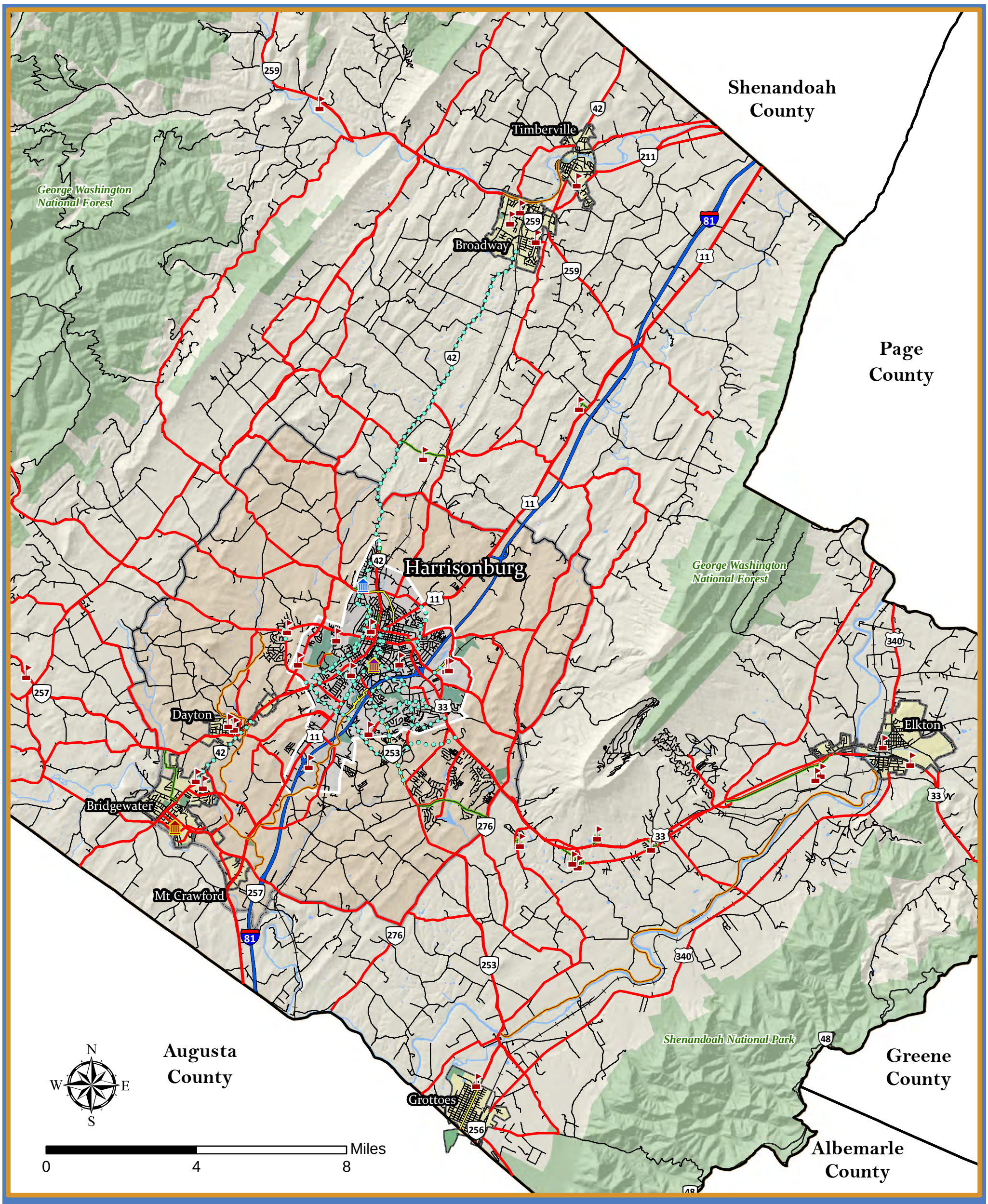
Greenways were also evaluated at this stage in order to identify potential corridors that could be utilized for off-road connections. Suitable locations for greenways include existing parks and trails, ridgelines, railways, utility corridors, scenic roads, and river/stream corridors. Rockingham County is graced with beautiful mountains, wooded landscapes, rivers, large tracts of open space and thousands of acres of National Forest and state-maintained land, which offer exceptional opportunities to develop or extend greenways for walking and bicycling.

In order to identify potential corridors a Geographic Information System (GIS) program was used to map floodplains, railroad corridors, and utility corridors. These areas were focused on because they may be more easily acquired and developed as a greenway by local government as a result of their lower desirability for residential or commercial development. While Rockingham County has many potential areas for a greenway, three areas stood out for their potential connections to population centers and proximity to corridors with identified needs for bicycle and pedestrian facilities. The first potential greenway is a loop connecting the existing Bluestone Trail in Harrisonburg, south along Blacks Run to Monger Park, and joining Cooks Creek north to Dayton then on to US 33. The second potential greenway would follow the South River and the South Fork of the Shenandoah River, connecting Elkton and Grottoes. The third potential greenway would follow the North fork of the Shenandoah River through the Broadway area, providing connections to the existing and future Linville Creek Greenway.

The study team collected all of the data from the various stages of Phase 1 in GIS format and mapped it all for review by County staff and the RBAC. All of these routes combined collectively formed the Study Network, as shown in **Figure 3**.

5.2 Phase 2: Identification of Routes

During Phase 2, the study team parsed the Study Network into two distinct groups, recommending specific routes for facility improvements while recognizing others as important routes to be the subject of future studies for network expansion, such as a wayfinding system or recreational routes. To define these two groups, the team returned to the Heat Map created at the beginning of Phase 1 during the demand analysis. The refinement of the demand analysis process resulted in a more detailed and deeper picture of the demand for bicycle and pedestrian facilities in the County and the Towns. The resultant map quantified those areas of the County most likely to generate or attract pedestrian or bicycle trips.



Rockingham County Bike/Ped Plan - Study Network

- Railroads
- HRMPO Boundary
- Towns
- Local Parks
- Public Lands
- Public School
- BC
- EMU
- JMU
- Existing Bike Facilities
- Existing Shared Use Paths
- Pedestrian Study Network
- Shared Use Path Study Network
- Bicycle Study Network

Data Source(s):
Commonwealth of VA, USGS, VDEM, McCormick & Taylor, Rockingham County, City of Harrisonburg.

CSPDC
Central Shenandoah Planning District Commission

Map prepared and produced by Central Shenandoah PDC (RH).
Map to be used for planning purposes only.
No warranty expressed or implied is made or assumed in concerns to accuracy, completeness, reliability, or usefulness of any information depicted in maps provided or produced by the CSPDC.
May 13, 2015

This Page Intentionally Left Blank

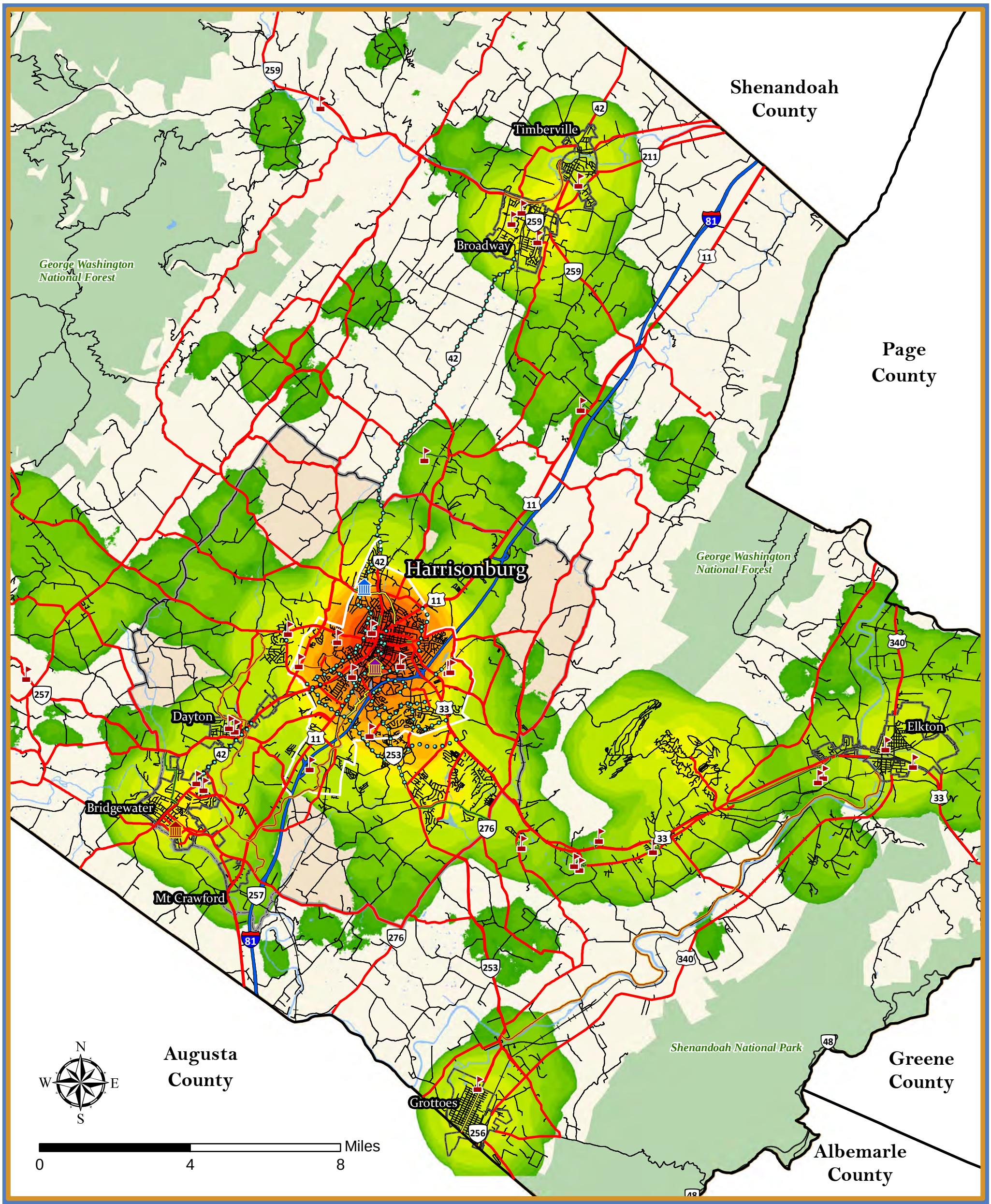
Using the same attractors and generators of pedestrian or bicycle activity from Phase 1, the study team created a "weighted" Heat Map with input from the RBAC, staff, and the public. Following is a list of the data points that were analyzed to develop the "weighted" Heat Map:

- Primary/Secondary Schools
- Harrisonburg Downtown Business District
- Massanutten Resort
- Population Density Based On Residential Structures
- Town Centers of the Seven Towns in Rockingham County
- Community Centers & Libraries
- HDPT Transit Transfer Centers
- Eastern Mennonite University
- James Madison University
- Parks
- US 33 and Skyline Drive
- Wikimap points[18]
- Hospital
- Major Employers
- Major Shopping Centers
- Bridgewater College

By overlaying the Study Network onto the "weighted" Heat Map, the study team identified routes that provide connections both between and within "hot" areas (see **Figure 4**). Then, using information gathered from the initial field review and comments received through public and committee input, the study team assessed each route for needed infrastructure improvements. This analysis identified routes that both provide connections within and between the regional "hot" areas and also are in need of some type of improvement. These routes were then moved on to Phase 3, in which the specific infrastructure improvement recommendation was selected. The remaining routes from the study network were not evaluated for this Plan, but should be reviewed in the future when the plan is updated or for possible inclusion in a future plan. **Table 2** provides a list of all initial Identified Routes recommended to advance to the next level of assessment. **Figure 5** displays the Identified Routes visually.

[18] Wikimap points were gathered from the public input phase through the online wikimap program as described in section 5.1.

This Page Intentionally Left Blank



Rockingham County Bike/Ped Plan - Study Network & Heat Map

- Railroads
- HRMPO Boundary
- Towns
- Local Parks
- Public Lands
- Public School
- BC
- EMU
- JMU
- Existing Bike Facilities
- Existing Shared Use Paths
- Pedestrian Study Network
- Shared Use Path Study Network
- Bicycle Study Network

Heat Mapping
High Density
Low Density

Data Source(s):
Commonwealth of VA, USGS, VDEM, McCormick & Taylor, Rockingham County, City of Harrisonburg.

Celebrating 45+ Years
CSPDC
Central Shenandoah Planning District Commission

Map prepared and produced by Central Shenandoah PDC (RH).
Map to be used for planning purposes only.
No warranty expressed or implied is made or assumed in concerns to accuracy, completeness, reliability, or usefulness of any information depicted in maps provided or produced by the CSPDC.
May 13, 2015

This Page Intentionally Left Blank

Table 2. Identified Routes

Project ID	Route	From	To
G-2	Blacks Run Greenway	Rockingham County Line	Cooks Creek
G-3	Cooks Creek Greenway South	Blacks Run	Rockingham County Line
G-4	Cooks Creek Greenway Middle	Proposed Don Litten Parkway	Blacks Run
G-5	Cooks Creek Greenway North	Proposed Don Litten Parkway	W Mosby Rd
G-8	Cooks Creek Greenway Extension	W Mosby Rd	
R-1	Brocks Gap Rd (SR 259)	Turleytown Rd	Broadway Town Line
R-2	Spar Mine Rd	Broadway Town Line	Timberville Town Line
R-3	Evergreen Valley Rd	Timberville Town Line	Rockingham County Line
R-4	Timber Way (SR 42)	Broadway Town Line	Timberville Town Line
R-5	Mayland Rd (SR 259)	Broadway Town Line	N Valley Pike (US 11)
R-6	N Valley Pike (US 11)	Mayland Rd (SR 259)	Harrisonburg City Line
R-7	Daphna Rd	Bretheren Rd	Lacey Spring Rd
R-8	Lacey Spring Rd	Daphna Rd	Simmers Valley Rd
R-8B	Harpine Hwy	Wengers Mill Rd	Wengers Mill Rd
R-9	Simmers Valley Rd	Lacey Spring Rd	Longs Pump Rd
R-10	Longs Pump Rd	Simmers Valley Rd	Kratzer Rd
R-11	Kratzer Rd	Harpine Hwy (SR 42)	Harrisonburg City Line
R-12	Linville Edom Rd	Harpine Hwy (SR 42)	Kratzer Rd
R-13	Buttermilk Creek Rd	Harpine Hwy (SR 42)	Kratzer Rd
R-14	Gravels Rd	Kratzer Rd	N Valley Pike (US 11)
R-15	Old Furnace Rd	Smithland Rd	Indian Trail Rd
R-16	Keezletown Rd	Harrisonburg City Line	Indian Trail Rd
R-17	Indian Trail Rd	Old Furnace Rd	Spotswood Trl (US 33)
R-18	Spotswood Trl (US 33)	Harrisonburg City Line	Penn Laird Dr
R-19	Penn Laird Dr	Spotswood Trl (US 33) (western intersection)	Spotswood Trl (US 33) (eastern intersection)
R-20	Spotswood Trl (US 33)	Penn Laird Dr	Penn Laird Dr
R-21	Spotswood Trl (US 33)	Mountain Grove Rd (western intersection)	McGaheysille Rd (western intersection)
R-22	Mountain Grove Rd	Spotswood Trl (US 33)	McGaheysvilleRd
R-23	Spotswood Trl (US 33)	McGaheysvilleRd (western intersection)	Mountain Grove Rd (eastern intersection)
R-24	Slate Rd	Spotswood Trl (US 33)	McGaheysvilleRd
R-25	McGaheysvilleRd	Spotswood Trl (US 33)	Piano Ln
R-26	Spotswood Trl (US 33)	Mountain Grove Rd	McGaheysvilleRd
R-27	Spotswood Trl (US 33)	McGaheysvilleRd	Rockingham Pike
R-28	Spotswood Trl (US 33)	Rockingham Pike	Rockingham Pike
R-29	Rockingham Pike	Spotswood Trl (US 33) (western intersection)	Spotswood Trl (US 33) (eastern intersection)
R-30	Spotswood Trl (US 33)	Rockingham Pike	Elkton Town Line
R-31	Resort Dr	Spotswood Trl (US 33)	Massanutten Dr
R-32	East Point Rd	Spotswood Trl (US 33)	Rockingham County Line

Table 2. Identified Routes

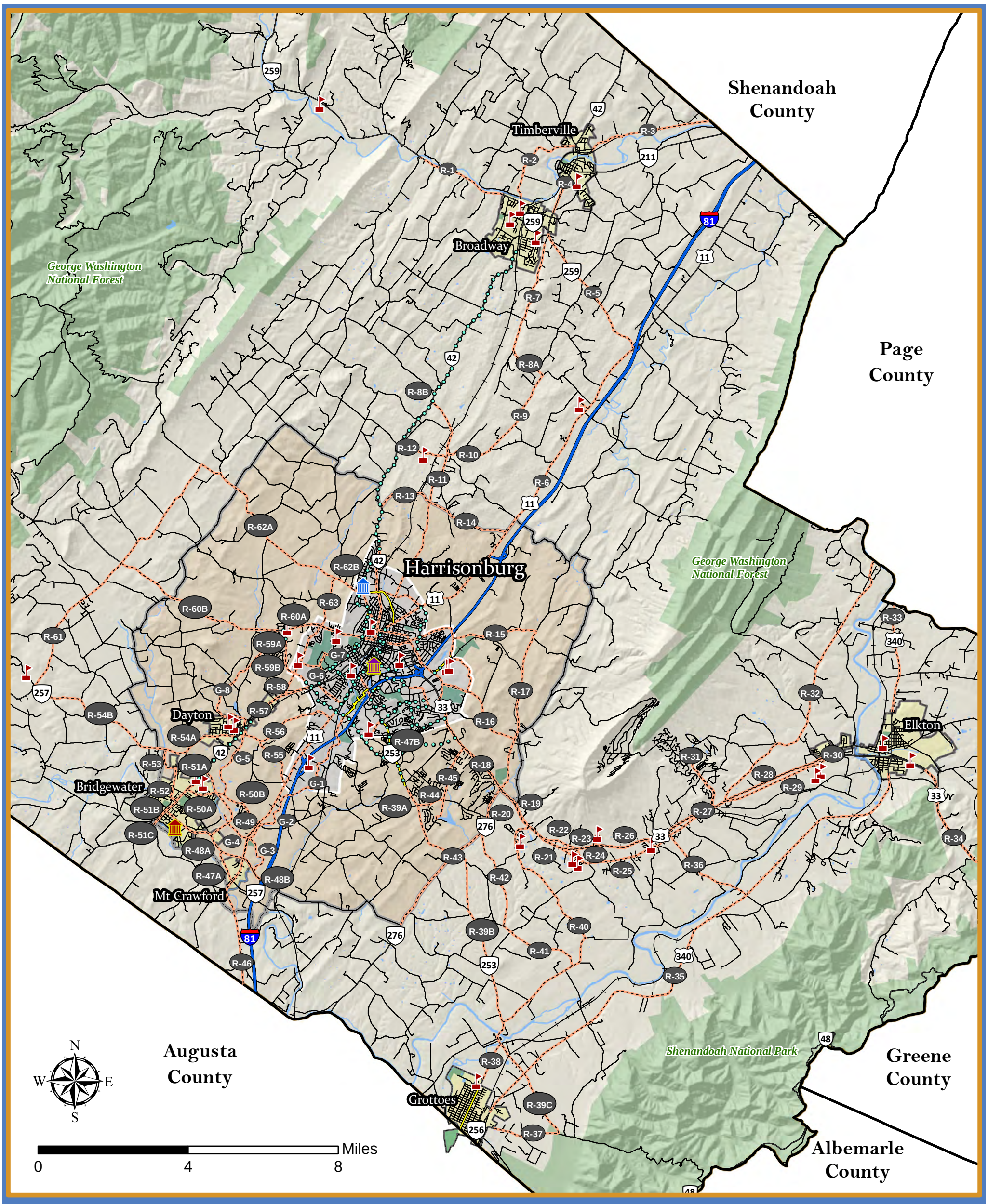
Project ID	Route	From	To
R-33	N East Side Hwy (US 340)	Elkton Town Line	Rockingham County Line
R-34	Spotswood Trl (US 33)	Elkton Town Line	Rockingham County Line
R-35	S East Side Hwy (US 340)	Elkton Town Line	Grottoes Town Line
R-36	Island Ford Rd	McGaheysvilleRd	S East Side Hwy (US 340)
R-37	Browns Gap Rd	Grottoes Town Line	Port Republic Rd
R-38	South River Rd	Port Republic Rd	Grottoes Town Line
R-39A	Port Republic Rd	Stone Spring Rd	Shen Lake Dr
R-39B	Port Republic Rd	Shen Lake Drive	US 340
R-39C	Port Republic Rd	US 340	Browns Gap Rd
R-40	Lawyer Rd	Spotswood Trl (US 33)	Port Republic Rd
R-41	Goods Mill Rd	Oak Shade Rd	Lawyer Rd
R-42	Oak Shade Rd	Cross Keys Rd (SR 276)	Goods Mill Rd
R-43	Cross Keys Rd (SR 276)	Spotswood Trl (US 33)	Freiden's Church Rd
R-44	Shen Lake Dr	Port Republic Rd	Massanetta Springs Rd
R-45	Massanetta Springs Rd	Spotswood Trl (US 33)	Izaak Walton Dr
R-46	S Valley Pike (US 11)	Harrisonburg City Line	Rockingham County Line
R-47A	Old Bridgewater Rd	Dinkel Ave (SR 257)	S Valley Pike (US 11)
R-47B	Reservoir St	Harrisonburg City Line	Stone Spring Rd
R-48A	Dinkel Ave (SR 257)	Main St/John Wayland Hwy (SR 42)	I-81
R-48B	Dinkel Ave (SR 257)	Bridgewater Town Line	I-81
R-49	Proposed Don Litten Parkway	Main St/John Wayland Hwy (SR 42)	Dinkel Ave (SR 257)
R-50A	Oakwood Dr	Main St/John Wayland Hwy (SR 42)	S Valley Pike (US 11)
R-50B	Oakwood Dr	Bridgewater Town Line	S Valley Pike (US 11)
R-51A	Main St/John Wayland Hwy (SR 42)	Proposed Don Litten Parkway	Rockingham County Line
R-51B	Main St/John Wayland Hwy (SR 42)	Oakwood Drive	East Riverside Drive
R-52	North River Rd	Main St/John Wayland Hwy (SR 42)	Dry River Rd
R-53	Dry River Rd	North River Rd	Ottobine Rd/Mason St (SR 257)
R-54A	Ottobine Rd/Mason St (SR 257)	Main St/John Wayland Hwy (SR 42)	Dry River Rd
R-54B	Ottobine Rd (SR 257)	Dry River Rd	Clover Hill Rd
R-55	Pike Church Rd	Harrisonburg City Line	W Mosby Rd
R-56	W Mosby Rd	Harrisonburg City Line	Main St/John Wayland Hwy (SR 42)
R-57	John Wayland Hwy (SR 42)	Harrisonburg City Line	Eberly Rd
R-58	Garbers Church Rd	Erickson Ave	Main St/John Wayland Hwy (SR 42)
R-59A	Erickson Ave	Rawley Pike (US 33)	Flint Ave
R-59B	Erickson Ave	Flint Ave	Garbers Church Rd
R-60A	Rawley Pike (US 33)	Harrisonburg City Line	Belmont Dr

Table 2. Identified Routes

Project ID	Route	From	To
R-60B	Rawley Pike (US 33)	Belmont Drive	Clover Hill Rd
R-61	Clover Hill Rd	Ottobine Rd/Mason St (SR 257)	Mt Clinton Pike/Singers Glen Rd
R-62A	Mt Clinton Pike/Singers Glen Rd	Clover Hill Rd	Switchboard Rd
R-62B	Mt Clinton Pike/Singers Glen Rd	Switchboard Rd	Harrisonburg City Line
R-63	Switchboard Rd	Mt Clinton Pike/Singers Glen Rd	Harrisonburg City Line

Note: Greenway numbering is not sequential to be consistent with numbering system used within the HRMPO Bicycle and Pedestrian Plan which contains additional Greenway Segments located within the City of Harrisonburg and not identified in this plan.

This Page Intentionally Left Blank



Rockingham County Bike/Ped Plan - Identified Routes

- Railroads
- HRMPO Boundary
- Towns
- Local Parks
- Public Lands
- Public School
- BC
- EMU
- JMU
- Existing Bike Facilities
- Existing Shared Use Paths
- All Identified Routes

Data Source(s):
Commonwealth of VA, USGS, VDEM, McCormick & Taylor, Rockingham County, City of Harrisonburg.

Celebrating 45+ Years
CSPDC
Central Shenandoah Planning District Commission

Map prepared and produced by Central Shenandoah PDC (RH).
Map to be used for planning purposes only.
No warranty expressed or implied is made or assumed in concerns to accuracy, completeness, reliability, or usefulness of any information depicted in maps provided or produced by the CSPDC.
May 13, 2015

This Page Intentionally Left Blank

5.3 Phase 3: Proposed Facilities

Phase 3 examines detailed factors of the Identified Routes to determine the appropriate facility to provide the desired safety and service for the bicycle or pedestrian user. The study team based all recommendations for facility improvements on the safety level of the roadway, the constraints to development, and the consistency with existing facilities. The study team collated and reviewed all of this information in light of the improvement types discussed in Chapter 4, and assigned a recommended improvement type to each of the proposed facilities.

5.3.1 Safety

First, the study team determined the safety level of the roadway for bicyclists and pedestrians by examining the speed of traffic and the level of traffic identified from VDOT Statewide Planning System (SPS) data acquired in 2013. The Identified Routes often contain multiple segments with different speed limits. For simplicity, routes with multiple speed limits would be assigned the average of the speed limits without regard to the length of the segmented speed limit.

Second, the study team assigned each Identified Route a score based on the ADT. To score the ADT, the study team standardized the ADT by dividing it by the number of through lanes to get an average daily volume per lane. Routes with higher ADT and higher speed limits should be the focus of a higher level of improvements that would better protect bicycle and pedestrian users.

5.3.2 Constraints

Next, the study team created a qualitative constraint rating to assess the right-of-way or physical constraints that would need to be addressed in order to provide the average amount of space needed to construct improvements. These ratings are based on review of aerial and online imagery, field visits, and information provided from the public and committee. The Team developed a 5-point rating system and scored each route qualitatively based on identified physical and right-of-way constraints, on average, over the entire route. Constraints include adjacent terrain, presence of bridges, existing shoulder and lane/pavement width, and frequency of structures or other developments near the roadway. A 5 means little to no constraints and 1 means a high level of constraints that could result in extremely high construction costs.

5.3.3 Consistency

The study team reviewed the map of identified routes in conjunction with the existing bicycle and pedestrian accommodations to ensure connectivity. This review also considered many of the region's important generators and attractors spatially to ensure bicyclist and pedestrian needs are being met. Other criteria that were considered during designation of improvement type include traffic signals and stops, current bicycle and pedestrian use, and aesthetic considerations.

Review of facilities in conjunction with the data and selection of improvement type also resulted in a recommendation of no improvement on a number of the Identified Routes. In some cases the study team made a near-term and a long-term recommendation, particularly where a project with a low priority rating, as determined in the next Phase, could benefit from a short-term solution.

5.4 Phase 4: Project Prioritization

To assess project prioritization, the study team created a quantifiable scoring process that resulted in a ranked list of facilities. The Project Prioritization was based on four general factors: Proximity, Connectivity, Safety, and Feasibility; with each factor worth a total of ten points for a total score of 40 points. Based on the total scores, projects were assigned to one of three priority levels: 1st Priority, 2nd Priority, or Vision.

5.4.1 Proximity

Proximity refers to the relative distance between the route and the nearby attractors or generators of bicycle and pedestrian activity such as residential development, employment, shopping, schools, community centers, and other important destinations throughout the County. The proposed facility received points based on its proximity to any of the identified locations. The study team assigned each of the following location points based on the potential bicycle and pedestrian traffic it could attract or generate.

100 – James Madison University

45 - Bridgewater College

40 - Elkton, Grottoes, Mt. Crawford, Bridgewater, Dayton, Broadway, and Timberville Town Centers

30 - Primary/Secondary Schools

30 - Massanutten Resort

20 - US 33 and Skyline Drive

20 - HDPT Transit Transfer Centers

20 - Community Centers & Libraries

1 - Residence

75 - Harrisonburg Downtown Business District

45 – Eastern Mennonite University

30 - Parks

25 - Hospital

25 - Shopping Centers

20 - Major employers

15 - Commercial Structures

5 - Wikimap points: Place I Would Like to Bike/Walk To

The study team ran a proximity analysis in GIS to identify the number of structures and associated points located within a quarter of a mile of each route identified in Phase 2. A quarter of a mile correlates to a five-minute walk for the average person, or what is known as a walkshed; therefore, this proximity analysis estimates the number of pedestrians each location could attract or generate. The same analysis was then run for a half mile which correlates to a five-minute bicycle ride for the average rider, or what is known as a bikeshed; this allowed the study team to estimate the number of bicyclist each location could attract or generate. For example, a route running from the hospital to Albert Long Park would receive 25 points for the proximity of the hospital, 30 points for the proximity of the park, and one point for each residence. Each route received a walkshed score and a bikeshed score. The walkshed score and bikeshed score were then summed together, effectively giving twice the points for those generators within the quarter-mile radius. This provided the total score for each route.

All projects were then organized from highest to lowest and then categorized into ten roughly equal brackets with the lowest scoring tenth receiving one point and the highest scoring tenth receiving ten points.

5.4.2 Connectivity

Connectivity is an assessment of how each project links to the system of bicycle and pedestrian facilities both within and adjacent to the County. The connectivity assessment also incorporates previous planning efforts as the existing and proposed facilities both reflect the identified needs from previous plans. Points are awarded as follows:

- 10 – Project links to existing facilities at each end and one or more existing facilities within its length
- 8 – Project links to two or more existing facilities
- 6 – Project links to one existing facility and one or more Recommended Facilities
- 4 – Project links to Recommended Facilities at each end and one or more Recommended Facilities within its length
- 2 – Project links to 2 or more Recommended Facilities
- 0 – Project links to one or no existing or Recommended Facilities

5.4.3 Safety

Roadways with high speeds and high ADT present a danger to bicyclists and pedestrians. These roadways should be placed at a higher priority for improvements to remove the potential for crashes before they occur. As in Phase 3, Safety is measured by both speed of traffic and level of traffic. Depending upon the average speed derived in Phase 3, each route was assigned a score as follows:

- 55 and over – 5 points
- 45 to 50 – 4 points
- 35 to 40 – 3 points
- 25 to 30 – 2 points
- 20 and below – 1 points

Similarly, using the ADT per lane deduced in Phase 3, routes were evenly distributed into one of five brackets. The score assigned was based on the bracket the route fell in. The scoring was defined as follows with the numbers representing the average annual daily traffic per lane:

- 4237 to 8481 vehicles – 5 points
- 2825 to 4236 vehicles – 4 points
- 1931 to 2824 vehicles – 3 points
- 1093 to 1930 vehicles – 2 points
- 208 to 1092 vehicles – 1 point

5.4.4 Feasibility

The county currently has very few facilities for bicyclists or pedestrians; therefore, modest improvements that begin to offer these facilities should be prioritized over taking on larger more

complex and expensive projects that would likely not be completed for many years. To promote the more immediate projects over the large-scale, but no less necessary, projects, a feasibility rating has been incorporated into the prioritization process. Feasibility has been scored by two separate but related measures: constraints and costs.

In order to assess constraints the Constraint Rating used in Phase 3 has been included in the scoring for the prioritization. The Cost Score is based on a planning level cost estimate. As such, this number relies on the cost of a type of facility multiplied by the length of the facility; it is extremely generalized. The cost estimates do not provide a specific cost but allow a comparison between and against each project. To generate the cost score, the 56 County projects (where a physical improvement beyond signage was recommended) were ranked from most to least expensive. These were then divided into five sets, with the least expensive projects receiving five points and the most expensive projects receiving one point. The sum of these two scores provided the overall feasibility score.

6 Recommendations

6.1 Prioritized Facilities

The methodology presented in Chapter 5 describes the process by which a quantitative scoring system was used to develop a prioritized list of improvements for bicycle and pedestrian facilities in the County. This approach results in a regional network for bicycle and pedestrian travel while recognizing the complexity of building a network from the ground up.

These facility improvements were assigned to one of three levels of prioritization: First Priority Projects, Second Priority Projects, and Vision Projects. Facility improvement projects were prioritized based upon the potential for use, the relative safety of the existing roadway, and the relative difficulty of completing the project. Some roadways require only limited improvements, while others require significant design applications to improve safety for motorists and non-motorists alike. Each recommendation should be viewed as a preferred option.

The priority ranking should not be construed as a chronological list of improvements in the order they will be completed; if funding for a Second Priority Project becomes available it should move forward regardless of how many projects have higher scores. The rankings are based upon the best information available at the time of analysis. As development throughout the County continues and as more projects are completed, these scores will change.

The scores from the four Project Prioritization Factors – Proximity, Connectivity, Safety, and Feasibility – were summed and the list of the projects ranked by the total score. A total of 56 individual projects were identified and have been divided generally evenly between the three priority categories. In order to avoid having projects with the same prioritization score fall within different priority categories eighteen projects have been termed 1st Priority, nineteen projects have been termed 2nd Priority, and nineteen projects have been termed Vision. **Table 3** displays the project list in priority order and **Figure 6** displays the recommended improvement types and priorities.

6.2 Pedestrian Improvements

Sidewalks are generally recommended for all minor collectors and local/neighborhood streets in the developed areas of the County, but not for more rural roads where the surrounding land uses are principally agricultural or low-density residential. In order to advance this principle of providing context-appropriate multimodal transportation facilities, the County's Zoning Ordinance requires new roads and existing roads, adjoining new development, that are constructed in the designated urban and suburban areas of the County include sidewalks.

Yet retrofitting existing roads with sidewalks where no new development is occurring can be challenging because of the impacts to adjacent properties and the costs involved. As a result of these challenges, recommendations for retrofitting existing roads in the County have been kept to a minimum. The greatest priority should be given to sidewalks that would connect a neighborhood with key pedestrian corridors, such as existing or proposed shared use paths; and sidewalks that would connect existing neighborhoods with nearby schools. While sidewalk projects were not evaluated using the aforementioned project prioritization process, and thus are not included in Table 3 (pp. 59-62) or the Recommended Facilities maps, the four projects described below are included here and on p. 58 of the Plan to highlight their critical importance as connectors to existing facilities.

.

This Page Intentionally Left Blank

Table 3. Prioritized Bicycle Project List

Project ID	Route	From	To	Length (mi.)	Recommendation	Project Prioritization							Priority Ranking
						Proximity 1 - 10	Connectivity 0 - 10	Safety Score		Feasibility Score		Total Score	
								Speed limit 1 - 5	ADT Score 1 - 5	Cost Score 1 - 5	Constraint 1 - 5		
1st Priority													
R-47B	Reservoir St	Harrisonburg City Line	Stone Spring Rd	0.55	Bike Lane	10.00	8.00	3.00	4.00	5.00	3.00	33.00	1
R-6	N Valley Pike (US 11)	Mayland Rd (SR 259)	Harrisonburg City Line	9.12	Wide Shoulder	10.00	6.00	4.50	4.00	2.00	4.00	30.50	2
R-56	W Mosby Rd	Harrisonburg City Line	Main St/John Wayland Hwy (SR 42)	2.13	Wide Shoulder	9.00	6.00	4.00	3.50	4.00	3.50	30.00	3
R-60A	Rawley Pike (US 33)	Harrisonburg City Line	Belmont Dr	0.67	Bike Lane	8.00	6.00	4.00	4.00	5.00	2.50	29.50	4
R-18	Spotswood Trl (US 33)	Harrisonburg City Line	Penn Laird Dr	2.82	Shared-Use Path	9.00	6.00	4.50	5.00	1.00	3.00	28.50	5
R-59A	Erickson Ave	Rawley Pike (US 33)	Flint Ave	0.36	Bike Lane	7.00	6.00	3.00	4.00	5.00	3.00	28.00	6
G-8	Cooks Creek Greenway Extension	W Mosby Rd	Rawley Pike (US 33)	4.12	Shared Use Path	10.00	6.00	5.00	5.00	1.00	1.00	28.00	6
R-60B	Rawley Pike (US 33)	Belmont Drive	Clover Hill Rd	4.73	Wide Shoulder	8.00	6.00	4.00	4.00	3.00	2.75	27.75	8
R-59B	Erickson Ave	Flint Ave	Garbers Church Rd	0.72	Climbing Lane/Sharrows	7.00	6.00	3.00	4.00	5.00	2.50	27.50	9
R-8B	Harpine Hwy (SR 42)	Wengers Mill Rd	Wengers Mill Rd	0.10	Bike Lane	1.00	10.00	5.00	3.00	5.00	3.00	27.00	10
R-39A	Port Republic Rd	Boyers Rd	Shen Lake Dr	0.56	Shared-Use Path	5.00	6.00	5.00	4.00	1.00	5.00	26.00	11
R-39B	Port Republic Rd	Shen Lake Drive	S East Side Hwy (US 340)	8.34	Wide Shoulder	6.00	6.00	4.00	5.00	2.00	3.00	26.00	11
R-54A	Ottobine Rd/Mason St (SR 257)	John Wayland Hwy (SR 42)	Dry River Rd	2.06	Bicycle/Buggy Lane	9.00	6.00	4.00	2.00	2.00	3.00	26.00	11
R-57	John Wayland Hwy (SR 42)	Harrisonburg City Line	Eberly Rd	2.97	Bicycle/Buggy Lane	9.00	4.00	4.00	4.00	2.00	3.00	26.00	11
R-26	Spotswood Trl (US 33)	Mountain Grove Rd	Piano Lane/ McGaheysville Rd	3.46	Shared-Use Path	8.00	4.00	5.00	5.00	1.00	2.50	25.50	15
R-46	S Valley Pike (US 11)	Harrisonburg City Line	Rockingham County Line	6.82	Wide Shoulder	7.00	6.00	5.00	5.00	1.00	1.00	25.00	16

Table 3. Prioritized Bicycle Project List

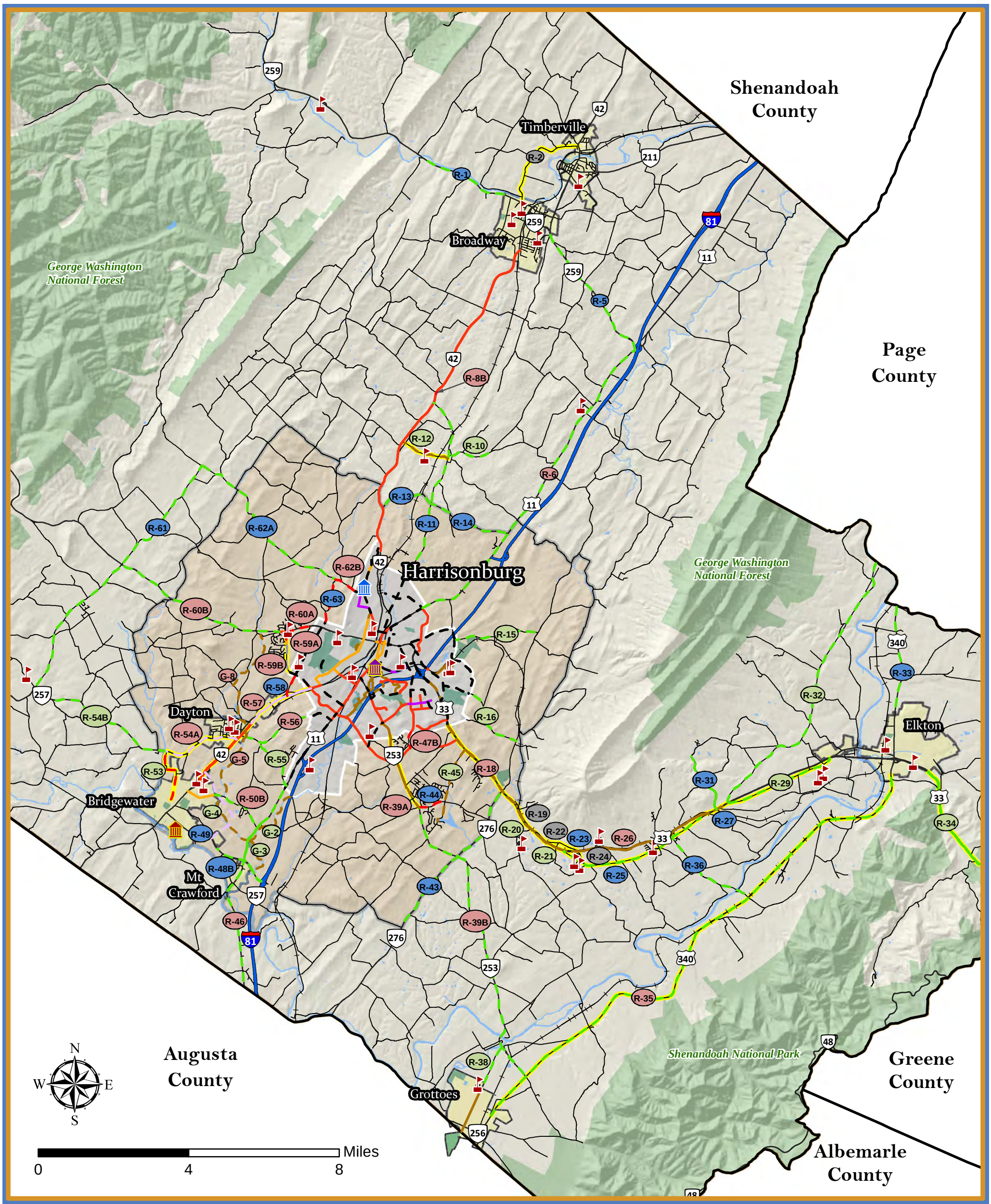
Project ID	Route	From	To	Length (mi.)	Recommendation	Project Prioritization							Priority Ranking
						Proximity 1 - 10	Connectivity 0 - 10	Safety Score		Feasibility Score		Total Score	
								Speed limit 1 - 5	ADT Score 1 - 5	Cost Score 1 - 5	Constraint 1 - 5		
G-5	Cooks Creek Greenway North	Proposed Don Litten Parkway	W Mosby Rd	1.93	Shared Use Path	7.00	4.00	4.50	4.00	3.00	2.50	25.00	16
R-62B	Mt Clinton Pike	Switchboard Rd	Harrisonburg City Line	0.58	Bike Lane	8.00	2.00	5.00	1.50	5.00	2.50	24.00	18
R-50B	Oakwood Dr	Bridgewater Town Line	S Valley Pike (US 11)	1.53	Wide Shoulder	6.00	6.00	2.00	2.00	5.00	3.00	24.00	18
R-35	S East Side Hwy (US 340)	Elkton Town Line	Grottoes Town Line	15.04	Wide Shoulder	10.00	2.00	4.50	2.00	2.00	3.50	24.00	18
2nd Priority													
R-31	Resort Dr	Spotswood Trl (US 33)	Massanutten Dr	2.78	Wide Shoulder	9.00	4.00	3.00	2.00	3.00	2.50	23.50	21
R-25	McGaheysvilleRd	Spotswood Trl (US 33)	Piano Ln	4.14	Wide Shoulder	9.00	0.00	3.50	3.00	4.00	4.00	23.50	21
R-48B	Dinkel Ave (SR 257)	Bridgewater Town Line	I-81	2.27	Wide Shoulder	2.00	4.00	4.00	4.50	4.00	4.50	23.00	23
R-11	Kratzer Rd	Harpine Hwy (SR 42)	Harrisonburg City Line	5.08	Wide Shoulder	6.00	6.00	3.50	1.50	3.00	3.00	23.00	23
R-61	Clover Hill Rd/Whitmore Shop Rd	Ottobine Rd (SR 257)	Singers Glen Rd	7.66	Wide Shoulder	7.00	4.00	4.00	1.50	3.00	3.50	23.00	23
R-44	Shen Lake Dr	Port Republic Rd	Massanetta Springs Rd	0.74	Bike Lane	4.00	0.00	5.00	5.00	4.00	4.00	22.00	26
R-14	Gravels Rd	Kratzer Rd	N Valley Pike (US 11)	2.26	Wide Shoulder	2.00	4.00	5.00	5.00	3.00	3.00	22.00	26
R-1	Brocks Gap Rd (SR 259)	Turleytown Rd	Broadway Town Line	2.36	Wide Shoulder	3.00	4.00	5.00	5.00	2.00	3.00	22.00	26
R-43	Cross Keys Rd (SR 276)	Spotswood Trl (US 33)	Freidens Church Rd	4.61	Wide Shoulder	8.00	2.00	3.00	3.00	4.00	2.00	22.00	26
R-23	Spotswood Trl (US 33)	McGaheysvilleRd	Spotswood Trl (US 33)	0.36	Shared-Use Path	5.00	4.00	3.00	2.00	4.00	4.00	22.00	26
R-27	Spotswood Trl (US 33)	Piano Ln	Rockingham Pike	0.87	Shared-Use Path	5.00	2.00	5.00	3.00	3.00	4.00	22.00	26
R-49	Proposed Don Litten Parkway	John Wayland Hwy (SR 42)	Dinkel Ave (SR 257)	2.26	Bicycle/Buggy Lane	8.00	6.00	3.00	1.50	1.00	2.00	21.50	32

Table 3. Prioritized Bicycle Project List

Project ID	Route	From	To	Length (mi.)	Recommendation	Project Prioritization							Priority Ranking
						Proximity 1 - 10	Connectivity 0 - 10	Safety Score		Feasibility Score		Total Score	
								Speed limit 1 - 5	ADT Score 1 - 5	Cost Score 1 - 5	Constraint 1 - 5		
R-58	Garbers Church Rd	Erickson Ave	John Wayland Hwy (SR 42)	0.56	Bike Lane	5.00	0.00	5.00	4.00	4.00	3.00	21.00	33
R-13	Buttermilk Creek Rd	Harpine Hwy (SR 42)	Kratzer Rd	1.56	Wide Shoulder	3.00	4.00	3.00	2.00	5.00	4.00	21.00	33
R-63	Switchboard Rd	Mt Clinton Pike	Harrisonburg City Line	1.21	Bike Lane	1.00	6.00	3.00	1.00	5.00	5.00	21.00	33
R-33	N East Side Hwy (US 340)	Elkton Town Line	Rockingham County Line	2.90	Wide Shoulder	6.00	0.00	4.00	4.00	3.00	4.00	21.00	33
R-5	Mayland Rd (SR 259)	Broadway Town Line	N Valley Pike (US 11)	3.94	Wide Shoulder	6.00	2.00	4.00	2.00	4.00	3.00	21.00	33
R-36	Island Ford Rd	McGaheysville Rd	S East Side Hwy (US 340)	2.67	Wide Shoulder	4.00	2.00	4.50	2.00	4.00	4.00	20.50	38
R-62A	Mt Clinton Pike/Singers Glen Rd	Whitmore Shop Rd	Switchboard Rd	5.03	Wide Shoulder	5.00	2.00	5.00	3.00	3.00	2.50	20.50	38
Vision													
R-54B	Ottobine Rd (SR 257)	Dry River Rd	Clover Hill Rd	4.18	Wide Shoulder	3.00	6.00	5.00	1.00	1.00	4.00	20.00	40
R-32	East Point Rd	Spotswood Trl (US 33)	Rockingham County Line	8.01	Wide Shoulder	3.00	2.00	5.00	5.00	2.00	3.00	20.00	40
R-21	Spotswood Trl (US 33)	Mountain Grove Rd	Mountain Grove Rd	0.68	Shared-Use Path	1.00	4.00	5.00	5.00	2.00	3.00	20.00	40
R-20	Spotswood Trl (US 33)	Penn Laird Dr	Penn Laird Dr	1.13	Shared-Use Path	7.00	0.00	5.00	2.50	2.00	3.50	20.00	40
R-12	Linville Edom Rd	Harpine Hwy (SR 42)	Kratzer Rd	1.23	Shared-Use Path	4.00	4.00	4.00	2.00	3.00	3.00	20.00	40
R-38	South River Rd	Port Republic Rd	Grottoes Town Line	1.05	Wide Shoulder	4.00	0.00	4.00	2.00	5.00	4.50	19.50	45
R-15	Old Furnace Rd	Smithland Rd	Indian Trail Rd	2.23	Wide Shoulder	5.00	2.00	4.00	1.00	4.00	3.50	19.50	45
R-45	Massanetta Springs Rd	Spotswood Trl (US 33)	Izaak Walton Dr	2.13	Shared-Use Path	10.00	2.00	2.00	1.50	1.00	2.50	19.00	47
R-53	Dry River Rd	Bridgewater Town Line	Ottobine Rd (SR 257)	1.56	Bike Lane	10.00	0.00	2.00	1.50	3.00	2.25	18.75	48

Table 3. Prioritized Bicycle Project List

Project ID	Route	From	To	Length (mi.)	Recommendation	Project Prioritization							Priority Ranking
						Proximity 1 - 10	Connectivity 0 - 10	Safety Score		Feasibility Score		Total Score	
								Speed limit 1 - 5	ADT Score 1 - 5	Cost Score 1 - 5	Constraint 1 - 5		
G-4	Cooks Creek Greenway Middle	Proposed Don Litten Parkway	Blacks Run	1.00	Shared Use Path	2.00	2.00	5.00	5.00	2.00	1.00	17.00	49
R-10	Longs Pump Rd	Simmers Valley Rd	Kratzer Rd	1.22	Wide Shoulder	2.00	0.00	5.00	1.50	5.00	3.00	16.50	50
R-16	Keezletown Rd	Harrisonburg City Line	Indian Trail Rd	1.91	Wide Shoulder	6.00	0.00	3.00	1.00	4.00	2.50	16.50	50
R-29	Rockingham Pike	Spotswood Trl (US 33)	Spotswood Trl (US 33)	2.98	Wide Shoulder	4.00	0.00	4.50	2.00	3.00	3.00	16.50	50
R-34	Spotswood Trl (US 33)	Elkton Town Line	Rockingham County Line	5.30	Wide Shoulder	3.00	2.00	2.00	1.50	4.00	4.00	16.50	50
R-55	Pike Church Rd	Harrisonburg City Line	W Mosby Rd	1.31	Wide Shoulder	2.00	0.00	4.00	2.00	5.00	3.25	16.25	54
G-3	Cooks Creek Greenway South	Blacks Run	Harrisonburg City Line	1.20	Shared Use Path	1.00	2.00	5.00	5.00	1.00	1.00	15.00	55
G-2	Blacks Run Greenway	Harrisonburg City Line	Cooks Creek	1.90	Shared Use Path	1.00	2.00	5.00	5.00	1.00	1.00	15.00	55



Rockingham County Bike/Ped Plan - Recommended Facilities

- HRMPO Boundary
- Towns
- Local Parks
- Public Lands
- Public School
- BC
- EMU
- JMU

Existing Bike/Ped Facilities

- Bike Lane
- Sharrows
- Shared-use Path
- Share the Road

Recommended Facilities

- Bicycle/Buggy Lane
- Bike Lane
- Climbing Lane/Sharrows
- Shared-Use
- Wide Shoulder
- Wayfinding

- R-35 First Priority
- R-43 Second Priority
- R-21 Vision Projects
- R-2 Not Prioritized

Data Source(s):
Commonwealth of VA, USGS, VDEM, McCormick & Taylor, Rockingham County, City of Harrisonburg.

CSPDC
Central Shenandoah Planning District Commission

Map prepared and produced by Central Shenandoah PDC (RH).
Map to be used for planning purposes only.
No warranty expressed or implied is made or assumed in concerns to accuracy, completeness, reliability, or usefulness of any information depicted in maps provided or produced by the CSPDC.
February 23, 2016

This Page Intentionally Left Blank

- **R-40, Lawyer Road from US 33 Spotswood Trail to Peak View Elementary School -** Sidewalks connecting the school to the nearby residential area as part of a Safe Routes to School program.
- **R-44, Shen Lake Drive from Port Republic Road to Massanetta Springs Road -** Sidewalks would provide a connection for pedestrians to the proposed shared-use path on Port Republic Road and enhance connectivity within the Shen Lake Community.
- **R-59B, Erickson Avenue from Flint Avenue to Garbers Church Road -** This would extend the existing sidewalk to provide improved connectivity for pedestrians from the school and into Harrisonburg.
- **Segment of R-39B in the Community of Port Republic -** A pedestrian path along Port Republic Road would connect Main St to Jacksons Way and an existing park and boat ramp. Additional recommended facilities include pedestrian crossings of Port Republic Road at Main and Water Streets.

6.3 Wayfinding/Regional Bike Route System

A regional bike route system will require a broader planning effort than what is presented in this plan. However, this plan makes some recommendations for wayfinding routes where all of the following conditions are met:

- a connection would be provided to a major bicycle generator or destination; and
- when the provision of signage would improve the safety of bicyclists; and
- the conditions of the route, either prior to any improvement or following improvements as specified, can be considered generally safe for the average user based on a qualitative assessment evaluating roadway geometry, daily traffic levels, and traffic speeds.

The routes in **Table 4** are identified as those that would benefit from bicycle wayfinding signage. These are displayed in **Figure 6** above.

Table 4. Wayfinding Route Recommendations

Project ID	Route	From	To	Facility Recommendation	Comments
R-2	Spar Mine Road	Broadway Town Line	Timberville Town Line	None	Provides connections between Broadway and Timberville on a generally safe* route.
R-12	Linville Edom Road	Harpine Highway (SR 42)	Kratzer Road	Shared-Use Path	Provides connections to Linville Edom Elementary School and SR 42 bike lane; however, would require construction of the recommended facility.
R-18	Spotswood Trl (US 33)	Harrisonburg City Line	Penn Laird Drive	Shared-Use Path	Making use of a combination of roadways parallel to US 33 that are generally safe* and segments of completed facility recommendations, an alternative to US 33 would provide connections from Harrisonburg to Elkton and all points between. See **Section 6.3** for additional details.
R-19	Penn Laird Drive	Spotswood Trl (US 33)	Spotswood Trl (US 33)	None	
R-20	Spotswood Trl (US 33)	Penn Laird Drive	Mountain Grove Road	Shared-Use Path	
R-21	Spotswood Trl (US 33)	Mountain Grove Road	Mountain Grove Road	Shared-Use Path	
R-22	Mountain Grove Road	Spotswood Trl (US 33)	Slate Road	None	
R-24	Slate Road	Spotswood Trl (US 33)	McGaheysvilleRoad	None	
R-25	McGaheysvilleRd	Spotswood Trl (US 33)	Piano Lane	Wide Shoulder	
R-27	Spotswood Trl (US 33)	Piano Ln	Rockingham Pike	Shared-Use Path	
R-29	Rockingham Pike	Spotswood Trl (US 33)	Spotswood Trl (US 33)	Wide Shoulder	
R-34	Spotswood Trl (US 33)	Elkton Town Line	Skyline Drive	Wide Shoulder	Provides connections between Elkton and Skyline Drive; however, would require construction of the recommended facility.
R-35	S East Side Highway (US 340)	Elkton Town Line	Grottoes Town Line	Wide Shoulder	Provides connections between Elkton and Grottoes; however, would require construction of the recommended facility.

Table 4. Wayfinding Route Recommendations

Project ID	Route	From	To	Facility Recommendation	Comments
R-39A + Port Republic Road existing Shared-Use Path	Port Republic Road	Harrisonburg City Line	Shen Lake Drive	Shared-Use Path	With the inclusion of signage on the existing shared-use path and following construction of the recommended facility this would provide connections between the Shen Lake Community, Sentara RMH, the City, JMU, and Skyline Drive.
R-53	Dry River Road	North River Road	Ottobine Rd/Mason Street (SR 257)	Bike Lane	The combination of these two facilities provides connections between Dayton and Bridgewater on generally safe* routes.
R-54A	Ottobine Road/Mason Street (SR 257)	John Wayland Hwy (SR 42)	Dry River Rd	Bicycle/Buggy Lane	
R-57 + SR 42 existing Bicycle/Buggy Lane	John Wayland Highway (SR 42)	Harrisonburg City Line	Eberly Road	Bicycle/Buggy Lane	With the inclusion of signage on the existing SR 42 bicycle/buggy lane and following construction of the recommended facility this would provide connections between Harrisonburg, Dayton, and Bridgewater.
R-59A	Erickson Avenue	Rawley Pike (US 33)	Flint Avenue	Bike Lane	The combination of these two facilities following construction of the recommended facility would provide connections between Harrisonburg, and the Belmont neighborhood including Mountain View E.S.
R-59B	Erickson Avenue	Flint Avenue	Garbers Church Road	Climbing Lane/Sharrows	

*qualitative assessment based on roadway geometry, daily traffic levels, and traffic speeds

6.4 Priority Focus Areas

Based on the prioritization process, current efforts underway, and input from the RBAC, a number of corridors and/or projects clearly stand out as potential focus areas for the near term. These include:

- Connections from communities west of Harrisonburg into the City
- Connections along the US 33 Corridor between Harrisonburg and Massanutten
- Development of the Cooks Creek Greenway Trail from the west side of the Belmont neighborhood through Dayton and into Bridgewater

Following is a detailed description of the potential improvements to address these Priority Focus Areas. All potential alignments that would rely on easements or fee-simple purchases of private lands are entirely conceptual and should be pursued only if and when the property owner is willing.

Cost estimates are provided for facility improvements recommended in the Priority Focus Areas. These cost estimates are 2016 costs for design and construction only, not right-of-way. The costs have been adapted from the VDOT Planning Cost Estimating System (PCES) Version 5 and other local sources of general construction estimates for bicycle facilities. A range has been provided to account for site specific conditions found in each recommendation. These estimates are for informational purposes only. They are intended to provide a general idea of the potential costs involved with each project. Prior to any grant application a more detailed evaluation of the potential costs should be conducted to insure accurate expectations of costs.

Connections from Communities West of Harrisonburg into the City

The Belmont neighborhood and surrounding communities are located just to the west of the Harrisonburg City Line and approximately two and a half miles from downtown Harrisonburg. The 2010 Census shows that 3,735 people lived in the two Census Block Groups that make up this area, most of them living in the Belmont neighborhood itself. The primary transportation connections in the area are US 33 (Rawley Pike) and Erickson Avenue with few other options connecting it to Harrisonburg.

Mountain View Elementary School is located on the north side of US 33 adjacent to the Belmont neighborhood. In 2013, a Safe Routes to School funded project was completed which added bike lanes and sidewalks on US 33 between Belmont Drive and Erickson Avenue and sharrows and a sidewalk on Erickson Avenue between US 33 and Flint Avenue. Pedestrian crossing improvements were also completed at the Erickson Avenue/US 33 intersection.

The Belmont neighborhood contains a relatively large population in a fairly dense community. Its proximity to the city, to which many of these residents travel frequently, makes this an ideal location where pedestrian and bicycle improvements could provide additional travel options to many people and improve safety for those who currently bike or walk along the local roads.

The two roadways that connect this community to the more developed areas in the city and along SR 42 (John Wayland Highway) are US 33 and Erickson Avenue, both of which are relatively high volume roadways with high travel speeds. As mentioned, existing facilities are on these roadways near their

intersection; however, they do not make a connection into the city at this time. Harrisonburg has completed improvements at the Stone Spring Road /Erickson Ave/Garbers Church Road intersection within the city Line.

Projects recommended in this plan that would create the needed connections include R-60A, R-59A, and R-59B which were all ranked as first priorities. Following is a description of the recommended improvements which are displayed on **Figure 7**:

- **R-60A – US 33 from the Harrisonburg City Line (approximately Rorrer Circle) to Belmont Drive** is recommended for a bike lane along its entire length. This would connect to the newly constructed bike lane on eastbound US 33 between Belmont Drive and Erickson Ave. US 33 is currently a two-lane roadway with approximately 12- to 14-foot lanes and a 45 mph speed limit. Public right-of-way is approximately 60 feet in this area providing enough space within the right-of-way to add a five-foot paved bike lane in each direction. Some constraints exist along the route including private driveways and utilities. Preliminary cost estimates to construct bike lanes in this segment are approximately $250,000-$450,000.

- **R-59A – Erickson Avenue from US 33 to Flint Avenue** currently has sharrows on both the north and southbound lanes and a sidewalk on the west side of the roadway. The pavement width is approximately 32 feet including two 12-foot lanes and a parking lane on the west side of the roadway. Public right-of-way is variable through this stretch of Erickson Avenue; therefore, a portion of it would allow additional pavement width to include widening for five-foot bike lanes in each direction but would require acquisition of additional right-of-way for the remainder of it. In addition to right-of-way concerns, other constraints include a drainage ditch and topographic impediments along the east side of the roadway. Preliminary cost estimates to construct bike lanes in this segment are approximately $160,000-$270,000.

- **R-59B – Erickson Ave from Flint Avenue to the Harrisonburg City Line** is recommended for a climbing lane on the northeast side of the roadway to allow bicyclists to safely make the ascent from Garbers Church Road to Nutmeg Court. Sharrows are proposed on the southwest side of the roadway as it is a downhill section and many bicyclists would feel comfortable traveling with or adjacent to the traffic. The roadway between Nutmeg Court and Garbers Church Road consists of two approximately 12-foot lanes with about 60 feet of public right-of-way available. There are a number of topographic constraints that would need to be dealt with to widen this stretch to accommodate the proposed improvements. The segment between Flint Avenue and Nutmeg Court is similar to the conditions found in R-59A. However, the topographic constraints and right-of-way issues may result in the need to go with sharrows in both directions through this segment. Preliminary cost estimates to construct a climbing lane and sharrows in this segment are approximately $210,000-$430,000

This Page Intentionally Left Blank

Rockingham County Bike/Ped Plan - Belmont Connections

0 0.25 0.5 Miles

- Railroads
- HRMPO Boundary
- Towns
- Local Parks
- Public School

Existing Bike/Ped Facilities

- Bike Lane
- Sharrows
- Shared-use Path
- Share the Road
- Sidewalks

Recommended Facilities

- Bicycle/Buggy Lane
- Bike Lane
- Climbing Lane/Sharrows
- Shared-Use
- Sharrows
- Wide Shoulder
- Harrisonburg Proposed Facilities
- Wayfinding
- Blacks Run/Cooks Creek Greenway

N W E S

Data Source(s):
Commonwealth of VA, USGS, VDEM, McCormick & Taylor, Rockingham County, City of Harrisonburg.

Celebrating 45+ Years
CSPDC
Central Shenandoah Planning District Commission

Map prepared and produced by Central Shenandoah PDC (RH).
Map to be used for planning purposes only.
No warranty expressed or implied is made or assumed in concerns to accuracy, completeness, reliability, or usefulness of any information depicted in maps provided or produced by the CSPDC.
November 2015

This Page Intentionally Left Blank

The ability to secure funding is key to moving these projects forward. Improvements to both US 33 and Erickson Avenue are identified in the HRMPO 2035 Long Range Transportation Plan (LRTP) Vision List which recommends widening each to four lanes from the current two lanes. However, neither roadway was listed in the Constrained Long Range Plan nor are they identified as County priorities. This segment of US 33 is projected to be capacity-deficient by 2035 in the LRTP and, therefore, will likely need improvements at some time in the next 20 years. The County has discussed the need for improvements to Erickson Avenue as a result of the City of Harrisonburg's improvements to Stone Spring Road and the need to tie Erickson into those improvements.

Overall, the potential for road improvements alone to drive the completion of the recommended bicycle and pedestrian improvements at these locations is low. However, it still remains the best option for achieving the recommended improvements as projects tend to advance more rapidly when tied to other roadway improvements and there are often cost savings in addressing all improvements at one time.

Other opportunities for funding these improvements include Transportation Alternative Program Grants under both Safe Routes to School or Transportation Enhancements, Revenue Sharing, or House Bill 2. Working with the HRMPO to get these shown in the next update of the Constrained Long-Range Plan would help to identify them as priorities.

Connections along the US 33 Corridor between Harrisonburg and Massanutten

The US 33 Corridor east of Harrisonburg was identified early on as a corridor in need of bicycle and pedestrian improvements because of the large amount of vehicular, bicycle, and pedestrian traffic utilizing this corridor for recreation and connections to important daily functions. US 33, is a 4-lane divided highway for most of its length east of the city. Between the city line and the community of McGaheysville there are no parallel roadways that offer options for these connections. Right-of-way in the corridor is approximately 180 feet including four 12-foot travel lanes with turn lanes at major crossovers, and a 64-foot median between them. There is approximately 50 feet of right-of-way on the north side of the road and an additional 10 feet on the south side. According to 2010 US Census data, there are 19,970 people living in the block groups that make up the US 33 East Corridor in the county.

Within the City of Harrisonburg, US 33 (East Market Street) is the primary connection from downtown to I-81. East of I-81, US 33 passes through the largest retail area in the city surrounding the Valley Mall before crossing into the county. Between the City of Harrisonburg and the Town of Elkton to the east, US 33 passes through or provides a primary connection to the communities of Massanetta Springs, Penn Laird, McGaheysville, and Massanutten. Additionally, US 33 is the only connecting route to Shenandoah National Park and Greene County from Rockingham County. US 33 also provides access to the new Albert Long Park located at the corner of Indian Trail Road and US 33, five elementary schools, two middle schools, and two high schools.

The entire US 33 Corridor is made up of numerous segments and adjacent roadways, all of which have different sets of constraints and opportunities associated with them. This plan contains specific recommendations to provide bicycle and pedestrian access for each segment and adjacent roadway. In many cases, because of the importance of providing facilities in the corridor and variety of options for

each segment, interim improvements have been identified. Following is a description of the recommended improvements which are displayed on **Figure 8**:

- **R-18 – US 33 from the Harrisonburg City Line to Penn Laird Drive** was the highest scoring project in the US 33 East Corridor. The score reflects the segment's proximity to residential populations, the new Albert Long Park, numerous schools in the vicinity, as well as the potential connections to other facilities that could be made. This segment of US 33 also has speed limits of 45-55 miles/hour and a high vehicular traffic level, making it a particularly dangerous roadway for cyclists and generally unusable for pedestrians.

  The ultimate recommendation for this segment of US 33 is a shared-use path, which, in some sections, will be more aptly described as a side-path because of its location adjacent to the highway. The current right-of-way and constraints in the area make the best location for this facility to be on the north side of the roadway. There are fewer developed properties on the north side of the highway than the south side and by locating the path here the county can take advantage of the connection that would be provided to the new Albert Long Park. Constraints in the segment include a sporadic drainage ditch, some topographic changes, and sections where private right-of-way is in near proximity to the roadway.

  At the time of this plan the City of Harrisonburg has no facilities that extend along US 33 to the county line although they are recommended in the City's 2010 Bicycle and Pedestrian Plan. Until the City and County are able to connect facilities across the City/County Line, the County should focus on the shared-use path segment beginning from Stone Spring Road, which intersects US 33 approximately a half mile east of the county line, to Penn Laird Drive (SR 899). This would result in an approximately 2.4-mile path.

  There is an opportunity to do initial improvements in this segment through shoulder widening adjacent to the roadway. Some segments of the proposed shared-use path will likely work best running directly adjacent to the roadway and by doing initial work to widen the shoulders, this could help advance the work on the future shared-use path. The total cost of constructing a separated shared-use path for the length of this segment is $2,750,000 - $2,940,000. This cost could be reduced by making some portions of the path directly adjacent to the roadway including a barrier separation for safety. The constraints discussed earlier and opportunities presented as a result of the wide median make this a preferred option for this segment.

Rockingham County Bike/Ped Plan US 33 East Recommended

HRMPO Boundary
Local Parks
Public Lands
Public School

Existing Bike/Ped Facilities
- Bike Lane
- Sharrows
- Shared-use Path
- Share the Road

Recommended Facilities
- Bicycle/Buggy Lane
- Bike Lane
- Climbing Lane/Sharrows
- Shared-Use
- Wide Shoulder
- Harrisonburg Proposed Facilities
- Wayfinding

Data Source(s):
Commonwealth of VA, USGS,
VDEM, McCormick & Taylor,
Rockingham County, City of Harrisonburg.

Celebrating 45 Years
CSPDC
Central Shenandoah Planning District Commission

Map prepared and produced by
Central Shenandoah PDC (RH).
Map to be used for planning purposes only.
No warranty expressed or implied is made or
assumed in concerns to accuracy, completeness, reliability, or
usefulness of any information depicted in maps provided or
produced by the CSPDC.
December 2015

This Page Intentionally Left Blank

A potential funding option for this segment of shared-use path could be VDOT's revenue sharing program or through the HB2 funding program. The Transportation Alternatives Program may be another option; however, in order for this project to get funding through it, the segment would likely need to be broken up as the total cost makes it an unlikely candidate for selection. Another option that may help offset the cost would be to work with developers on properties adjacent to US 33 on the north side to include some level of development of the path within their development plans. Most properties lining the north side of US 33 are currently zoned for agricultural uses and, therefore, would require a zoning change if a property owner wanted a higher level of use. As part of any zoning amendment, the county could request right-of-way or assistance with the construction of a shared-use path. US 33 is likely a high-value development area that may see an increase in zoning change requests in the near future.

- **Wayfinding Signage – The US 33 east corridor** would provide a principal connection for bicyclists if improvements could be made to make the corridor a safer facility. Beyond the proposed infrastructure improvements, another method of achieving this is the development of a wayfinding system as described in Chapter 4. The US 33 east corridor would be a good candidate for this type of system because of the broad connections it makes between the City of Harrisonburg, the Town of Elkton, Shenandoah National Park, and Massanutten Resort/Community. Beyond those larger connections the presence of numerous schools and the new Albert Long Park would also be benefitted by the wayfinding system.

Ultimately a shared-use path is recommended for the entire length of US 33 from the city line to Rockingham Pike. The high cost of this path makes it infeasible to complete in the near-term; however, use of parallel roads and strategic improvements on US 33 along with wayfinding signage can provide interim improvements in the corridor that will allow bicyclists in the corridor to navigate most of the distance in a safe environment.

Initially, the county can begin by placing wayfinding signs at each end of McGaheysville Road's intersections with US 33 and again once every ¼ to ½ mile along the route. These signs can direct cyclists to the various schools located along McGaheysville Road and potentially to "US 33 Westbound" and "US 33 Eastbound". It would not be recommended to direct cyclists to any specific points beyond the intersection with US 33 at this time as the facilities are not in place to provide a safe connection. Once R-18 as described above is in place this could also be signed with wayfinding signage to direct riders to the new Albert Long Park and after connections are made to the city, to Harrisonburg. Penn Laird Drive, which connects to R-18 at its western end and is parallel with US 33 for approximately three-quarters of a mile, could also be signed to direct people off of US 33 and to the R-18 facility.

Completion of just two additional segments would form the connection along the entire route of US 33 from Harrisonburg to the Town of Elkton. The first is a portion of segment R-20, which would provide a shared-use path connecting the eastern end of Penn Laird Drive to the western end of Mountain Grove Road. Second, segment R-27 would provide a connection between the east end of McGaheysville Road and the west end of Rockingham Pike. This segment is an

important yet difficult connection because of the crossing of the railroad tracks. US 33 bridges the railroad here and there is a possibility that the existing bridge could be restriped to provide enough space for a protected bike lane but ultimately there is a need for a new bridge to accommodate pedestrians and cyclists. The cost of a new pedestrian bridge would likely be in the range of $750,000 making this a long-term goal. These segments together would provide a safe and comfortable route with wayfinding signs to direct users and reinforce to drivers that there will be bicyclists present.

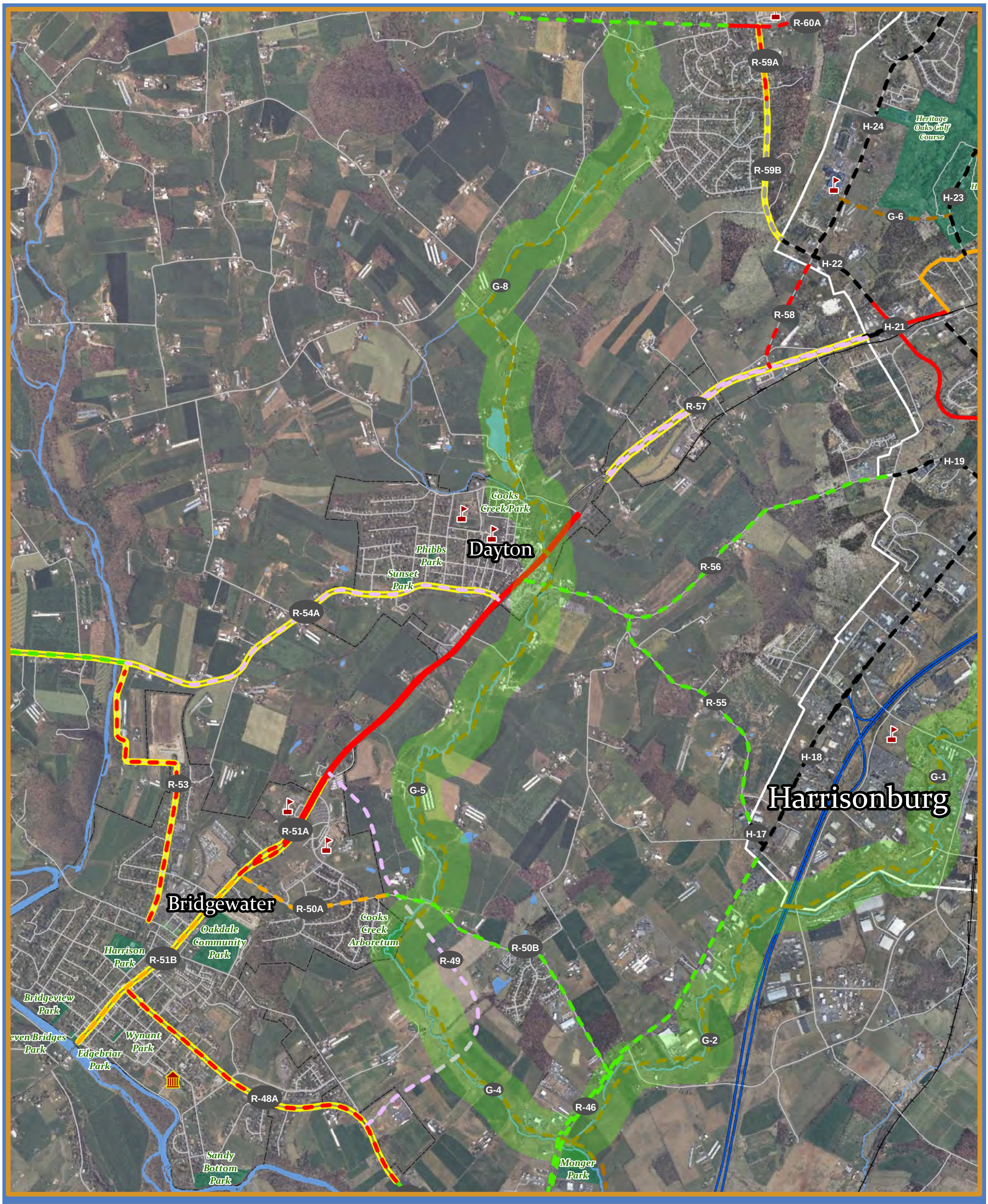
Cooks Creek Greenway Trail

Cooks Creek is a small- to mid-sized perennial stream that runs from near Mt Clinton Pike in central Rockingham County, south through the towns of Dayton and Bridgewater, meeting Blacks Run at Monger Park just north of Mt Crawford. The creek runs predominantly through rural areas of Rockingham County consisting of large parcels zoned for and currently in use as agricultural lands.

The proposed Cooks Creek Greenway Trail consists of numerous segments that follow Cooks Creek from Monger Park north to US 33 west of the Belmont neighborhood. Blacks Run is another proposed greenway that runs from Mongers Park north into the city eventually connecting to the existing Bluestone Trail. Additional plans exist to eventually connect the Bluestone Trail through downtown to the proposed Northend Greenway. The system of greenways and shared-use paths, including some on-street facilities to make small connections, could eventually form a loop that would connect many of the bicycle and pedestrian origins and destinations of the urbanized areas in the region.

As discussed previously, facilities that separate bicyclists and walkers from motor vehicles are highly desired and provide a level of comfort and safety for users that is unmatched by on-street facilities. Overwhelmingly, the feedback from the public, stakeholders, and committees has been that development of shared-use paths and greenways should be a focus of the bicycle and pedestrian system in the region. Greenway trails can offer pedestrians or cyclists a means to travel to work, school, parks, commercial centers, and tourist attractions. Beyond the transportation benefits of greenway trails and shared-use paths, they offer economic and recreational benefits as well.

The northern two segments of the Cooks Creek Greenway, identified as **G-8** and **G-5**, running between US 33 and the Cooks Creek Arboretum in Bridgewater were identified as first priorities during the scoring process. These scores reflect their safety benefits and proximity to employment, housing, parks, schools, and town centers. Following is a description of the recommended improvements which are displayed on **Figure 9.**



Rockingham County Bike/Ped Plan - Blacks Run/Cooks Creek Greenway

Miles
0 0.6 1.2

- Railroads
- HRMPO Boundary
- Towns
- Local Parks
- Public School

Existing Bike/Ped Facilities
- Bike Lane
- Sharrows
- Shared-use Path
- Share the Road

Recommended Facilities
- Bicycle/Buggy Lane
- Bike Lane
- Climbing Lane/Sharrows
- Shared-Use
- Sharrows
- Wide Shoulder
- Harrisonburg Proposed Facilities
- Wayfinding
- Blacks Run/Cooks Creek Greenway 1/8 Mile Buffer

N W E S

Data Source(s):
Commonwealth of VA, USGS, VDEM, McCormick & Taylor, Rockingham County, City of Harrisonburg.

Celebrating 45+ Years
CSPDC
Central Shenandoah Planning District Commission

Map prepared and produced by Central Shenandoah PDC (RH).
Map to be used for planning purposes only.
No warranty expressed or implied is made or assumed in concerns to accuracy, completeness, reliability, or usefulness of any information depicted in maps provided or produced by the CSPDC.
November 2015

This Page Intentionally Left Blank

- **G-8 – Segment of Cooks Creek Greenway** is proposed to begin west of the Belmont neighborhood, south of US 33, and head southward following Cooks Creek or Silver Lake Road through Dayton ending where Cooks Creek meets West Mosby Road on the eastern side of the Town. Opportunities for the alignment of the trail vary throughout the segment. At the northern end the trail could be a part of a greenway adjacent to Cooks Creek. This would only be possible if local landowners are willing to provide easements or if the county and landowners are interested in fee-simple purchases of property. This would allow the greenway trail to either connect into the southwest side of the Belmont neighborhood (which would then provide connections to US 33 and Erickson Ave), or to continue north to Old Thirty-Three Road. Another option for a connection is possible along the private road identified as Sunny Slope if the private landowners are willing to negotiate it.

  Alternatively, the alignment could follow Silver Lake Road as a sidepath the entire way from Silver Lake to Old Thirty Three Road. Right-of-way along Silver Lake Road is entirely prescriptive resulting in very little available space for the path; therefore, additional right-of-way would need to be acquired adjacent to the roadway to accommodate any shared-use path in that location. Acquisition of right-of-way adjacent to the roadway would affect many more landowners than if the alignment were to follow the creek.

  Somewhere north of the intersection of Silver Lake Road and Silling Road it is recommended that the shared-use path begin following the road alignment to avoid traveling further west than necessary and to allow the trail to connect to Silver Lake.

  Silver Lake and the land surrounding it are owned by the City of Harrisonburg although the land is in the County. The Town of Dayton, which sits just to the south of Silver Lake, has expressed interest in developing a formal trail that would circle the lake and connect it to the Town, where many residents currently go for recreational walking. Dayton has opened discussions with local landowners that would be affected by this proposed path. Cooks Creek Park is located on the south side of Cooks Creek inside the Town. Conceptually the Town has examined the idea of the trail crossing Cooks Creek into this park then following the park east to College Street. Once at College Street the trail could then either follow the alignment of Cooks Creek or follow roads to continue around the northeast side of Dayton until it reaches West Mosby Road. Through this portion, very few landowners have property that abuts Cooks Creek, making it viable that right-of-way or easements could be acquired with willing landowners. Preliminary cost estimates to construct a 10-foot shared-use path in this segment are approximately $4,010,000-$4,580,000.

- **G-5 – Segment of Cooks Creek Greenway** continues from West Mosby Road east of Dayton southward to Cooks Creek Arboretum in Bridgewater. This segment passes predominantly through large parcels of agricultural lands and, unlike segment G-8, offers few options to divert to roadways. Between West Mosby Road and the arboretum, Cooks Creek only passes across six individual parcels making the potential for easement acquisitions more possible in the event that local landowners are willing. It should be noted that this segment parallels SR 42 which currently has an existing bicycle/buggy lane. As such, this segment may be slightly less of a

priority to complete than G-8. Preliminary cost estimates to construct a 10-foot shared use path in this segment are approximately $2,040,000-$2,200,000.

The group, Imagine Dayton, continues to work on the proposed Cooks Creek trail system within and surrounding the Dayton area. Other individual advocates are reaching out to additional landowners in the areas north and south of Dayton to gauge interest in greenway development. It is recommended that these groups and individuals continue laying the groundwork for these future greenway segments.

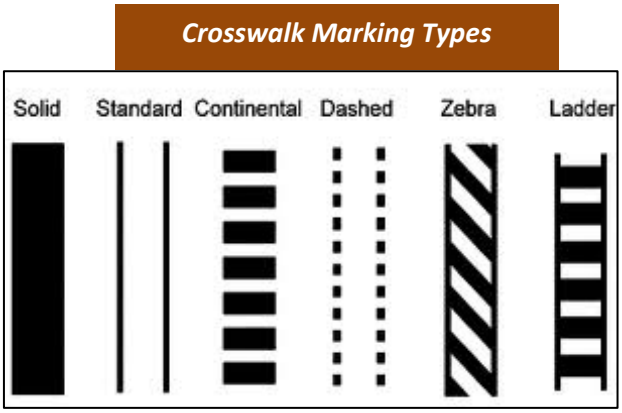
Funding options for these trail segments could include Revenue Sharing, Recreation Trails Grants, or Transportation Alternatives Program Grants. There would be a high cost to fully construct these greenway segments. However, these segments could be broken into smaller more manageable phases to reduce the financial burden in any single year. Further reductions could be made by not paving the trail initially and the use of volunteers to assist in the development.

6.5 System-Wide Recommendations

The following are general recommendations not specific to any one street or road within the County but are in addition to the specific facility treatments that are discussed above. These are suggested design and programming guidelines that can assist the County with implementing the overall network.

- Marked crosswalks – Where feasible, marked crosswalks should be installed. It should be noted that crosswalks are not always advisable at every crossing, especially when done as a stand-alone option not in conjunction with other geometric or signing improvements. Crosswalks installed at improper locations can cause more harm than good by leading pedestrians to be lulled into a false sense of security. For this reason, VDOT policy requires that engineering studies be conducted when installing new crosswalks across roads or legs of an intersection not controlled by a stop sign or a signal. However, crosswalks should be considered at locations where there is an existing or potential demand for pedestrians to cross at that location. This can be done by reviewing the surrounding land use and identifying whether sidewalks are within the area, and whether adjacent properties have the potential to generate pedestrian traffic (retail establishments, hotels, major centers of employment, schools, bus stops, etc.).

  The MUTCD notes that crosswalks should not be installed indiscriminately, particularly where the crosswalks would be across high-volume, high-speed (> 40 mph), and/or multilane approaches. At such locations, crosswalks should be considered in conjunction with other engineering improvements to improve the safety and visibility of pedestrians who will be crossing at that location.



Where higher volumes of pedestrians are expected, the use of higher-visibility crosswalks such as the "continental" style crosswalk is recommended. Although such crosswalks are more expensive to install and to maintain, they command greater driver attention than the more typical parallel white lines.

- Pedestrian signals –Traffic signals located in potentially high pedestrian areas throughout the County should be evaluated by VDOT to identify whether the existing traffic signals could be retrofitted with pedestrian signals and pushbuttons. If a traffic signal is being reconstructed, pedestrian indications should be incorporated into the signal wherever possible. If the signal is located on a road that currently lacks sidewalks, but is located in a developing area where pedestrian generators are nearby, then VDOT should still incorporate pedestrian signals or, at a minimum, provide the wiring and hardware that would allow easy installation of pedestrian signals in the future.

  In addition, older pedestrian signals should be reevaluated. In recent years, the FHWA has changed their default assumption for the walking speed of pedestrians from 4 feet/second to 3.5 feet/second, in recognition of updated research on walking speeds as well as a reaction to an aging population. Many older traffic signals may no longer be providing enough green time for pedestrians to meet current standards. In addition, older pedestrian signal heads may lack the "countdown" feature that has become the standard for all new pedestrian signal heads.

- Traffic signal detection – All traffic signals located on the routes identified in this plan as being a part of the recommended bicycle network should be redesigned to ensure that bicycles can be detected. Some traffic signals rely on a detection methodology (magnetic induction loops embedded in the pavement that detect large metallic masses passing over them) which easily detect cars and trucks but may not detect bicycles or buggies. These loops should be modified, or alternative detection methodologies should be considered, to ensure that bicycles are detected. Even greater consideration needs to be given to traffic signals on SR 42 or at intersections in Bridgewater and Dayton where there are higher concentrations of Old Order Mennonites. Horse and buggies have minimal amounts of metal in them, making them difficult to detect.
- Curb cuts and ADA compliance reviews – Federal and state law requires that all new pedestrian/bicyclist facilities be built to current ADA standards; however, older sidewalks in the county often predate current ADA standards. Common deficiencies include lack of curb cuts, curb cuts that are too steep or too narrow to meet current standards, upheaved or broken sidewalks, and sidewalks that have utility poles or signs that narrow the sidewalk below the minimum four-foot width necessary for most mobility-impaired individuals to pass. VDOT and the County should develop a program for auditing existing facilities and developing a program for retrofitting existing sidewalks to meet current ADA standards.

U-Shaped Bicycle Racks at Red Front Supermarket in Harrisonburg

- Bicycle parking and end-of-trip facilities – Getting bicyclists to

their destination won't encourage cycling if those bicyclists lack a way to securely lock their bicycle when they get to that destination. Well-designed bicycle parking can also reduce bicycle theft, a growing concern in many US cities as the number of bicycles grows.

Bicycle parking can also be an attractive component of a streetscape design. Good bicycle parking racks should allow for a bicycle to be locked at two different points of contact, such as upside-down U-shaped racks[19].

The County should work with area employers to encourage installing bicycle parking and other end-of-trip facilities (e.g. showers and changing areas) on-site. These facilities are of benefit to employers by promoting healthier behavior by employees, reducing the amount of cars in the employee parking lot, and providing another amenity that can help them attract and retain employees.

[19] *Bicycle Parking Guidelines, 2nd Edition* – Association of Pedestrian And Bicycling Professionals, 2010

Appendix A: List of Acronyms

ADT – Average Daily Traffic

SR – State Route

RBAC – Rockingham Bicycle Advisory Committee

US – United States Route

TAP – Transportation Alternatives Program

HSIP – Highway Safety Improvement Program

HRMPO – Harrisonburg-Rockingham Metropolitan Planning Organization

CSPDC – Central Shenandoah Planning District Commission

IMBA – International Mountain Biking Association

SRTS – Safe Routes to School

JMU – James Madison University

LAB – League of American Bicyclists

AASHTO – American Association of State Highway and Transportation Officials

NACTO – National Association of City Transportation Officials

FHWA – Federal Highway Administration

MUTCD – Manual of Uniform Traffic Control Devices

VDOT – Virginia Department of Transportation

APBP – Association of Pedestrian and Bicycle Professionals

MAP-21 – Moving Ahead for Progress in the 21st Century

GIS – Geographic Information System

SPS – Statewide Planning System

PCES – Planning Cost Estimating System

LRTP – Long Range Transportation Plan

ADA – Americans with Disability Act

Appendix B: Public Survey Results

View Summary

Filter Responses | Download Responses | Browse Responses »

PAGE:

1. Where do you live most of the year?

	Response Percent	Response Count
City of Harrisonburg	**63.0%**	**645**
Rockingham County (outside of any the areas listed below)	20.0%	205
Massanutten	2.2%	22
Town of Bridgewater	2.4%	25
Town of Dayton	0.7%	7
Town of Mount Crawford	0.3%	3
Town of Grottoes	0.5%	5
Town of Elkton	0.5%	5
Town of Timberville	0.4%	4
Town of Broadway	2.2%	22
I live outside of the Harrisonburg/Rockingham Region	7.8%	80
	answered question	**1,023**
	skipped question	**1**

2. Where do you work?

	Response Percent	Response Count
City of Harrisonburg	**79.1%**	**808**
Rockingham County (outside of any the areas listed below)	3.7%	38
Massanutten	0.6%	6
Town of Bridgewater	0.9%	9
Town of Dayton	0.5%	5

Town of Mount Crawford	0.3%	3
Town of Grottoes	0.0%	0
Town of Elkton	0.6%	6
Town of Timberville	0.0%	0
Town of Broadway	0.2%	2
I work outside of the Harrisonburg/Rockingham Region	4.7%	48
I am not employed outside of the home	9.5%	97
	answered question	**1,022**
	skipped question	**2**

3. How far is it from your home to your workplace?

	Response Percent	Response Count
< 3 miles	**46.2%**	**472**
3-10 miles	23.1%	236
> 10 miles	21.7%	222
I am not employed outside of the home	8.9%	91
	answered question	**1,021**
	skipped question	**3**

4. Have you bicycled in the Harrisonburg/Rockingham Region within the last 2 years?

	Response Percent	Response Count
Yes	**62.7%**	**641**
No	37.3%	381
	answered question	**1,022**

skipped question	**2**

PAGE:

5. On average, how many days per month do you make trips using your Bike?

	Response Percent	Response Count
> 25 days per month	12.7%	76
16-24	19.6%	117
9-15	20.1%	120
1-8	**25.3%**	**151**
I ride very sporadically, less than once per month on average	22.3%	133
answered question		**597**
skipped question		**427**

6. How often do you bike for the following purposes?

	Never	Occasionally	At least once a week	Several times a week	Rating Count
Commuting to/from work	**37.7% (219)**	29.6% (172)	8.6% (50)	24.1% (140)	581
School	**62.8% (307)**	10.8% (53)	7.8% (38)	18.6% (91)	489
Social gathering	30.0% (164)	**43.2% (236)**	15.8% (86)	11.0% (60)	546
Shopping/errands	36.9% (203)	**37.8% (208)**	17.3% (95)	8.0% (44)	550
Church	**75.8% (376)**	17.9% (89)	4.2% (21)	2.0% (10)	496
Recreation (road cycling)	12.2% (71)	**47.6% (277)**	24.1% (140)	16.2% (94)	582

Recreation (mountain biking)	**48.5% (258)**	32.7% (174)	11.1% (59)	7.7% (41)	532
				answered question	**606**
				skipped question	**418**

7. What are common origins and/or destinations for your bicycle trip?

	Response Percent	Response Count
JMU	35.1%	173
Downtown/Court Square Area	**43.0%**	**212**
EMU	14.4%	71
Bridgewater College	1.8%	9
Massanutten	5.7%	28
	Other (please specify) Show replies	209
	answered question	**493**
	skipped question	**531**

8. How often do you typically ride on the following?

	never	occasionally	often	Rating Count
Share a lane with motor vehicles	6.2% (37)	32.6% (196)	**61.2% (368)**	601
Ride in a striped bicycle lane	12.8% (76)	**51.1% (304)**	36.1% (215)	595
Ride on a paved shoulder	9.2% (54)	**48.6% (287)**	42.2% (249)	590
Ride on the sidewalk	**43.3% (256)**	42.3% (250)	14.4% (85)	591
Ride on a paved path separated from the road (shared use path)	36.3% (211)	**50.8% (295)**	12.9% (75)	581
Ride on unpaved mountain biking	**50.1% (289)**	34.5% (199)	15.4%	577

trails	(89)	
	answered question	**604**
	skipped question	**420**

9. What do you like LIKE about bicycling in the Harrisonburg/Rockingham Region? (Select up to three answers)

	Response Percent	Response Count
The network of paved bicycle paths and trails (off road)	17.1%	99
The network of on-street bicycle facilities (e.g. bike lanes, shared lane markings, paved shoulders)	43.8%	253
The network of paved paths separate from the road (shared use paths)	17.5%	101
I am within bicycling distance of many important destinations	**63.0%**	**364**
The network of mountain biking trails	21.8%	126
Motorists respect bicyclists on the roadways	13.5%	78
Crossing roadways is safe and easy	4.5%	26
Road surfaces are well maintained	31.5%	182
It is a quick way to get around	44.6%	258
I feel like I am helping the environment	57.8%	334
	Other (please specify) Show replies	78
	answered question	**578**
	skipped question	**446**

10. Have you been involved in a crash while riding you bike in the last two years?

	Response	Response

	Percent	Count
Yes	12.0%	72
No	**88.0%**	**530**
	answered question	**602**
	skipped question	**422**

11. If you have been involved in a crash while riding you bike in the last two years please answer the following questions as they pertain to your most recent crash.

	Response Percent	Response Count
Road/intersection where crash happened: Show replies	93.0%	66
Locality where crash happened: Show replies	81.7%	58
Who (or what) was involved in the crash: Show replies	**100.0%**	**71**
	answered question	**71**
	skipped question	**953**

PAGE:

12. How important would the following be in encouraging you to ride your bicycle more often in the Harrisonburg/Rockingham Region more often? Please rank the options below in order of importance. (1 being most important and 9 being least important)

	1	2	3	4	5	6	7	8	9	Rating Average	Rating Count
More or improved bicycle lanes	**50.6% (427)**	30.3% (256)	9.4% (79)	3.8% (32)	2.3% (19)	0.7% (6)	0.8% (7)	0.8% (7)	1.3% (11)	1.94	844
Wider motor vehicle lanes	7.0% (59)	16.2% (137)	**22.7% (192)**	16.9% (143)	10.7% (90)	10.3% (87)	5.8% (49)	3.8% (32)	6.5% (55)	4.20	844
Improved lighting	2.3% (19)	6.6% (56)	12.9% (109)	**18.1% (153)**	**18.1% (153)**	16.5% (139)	12.4% (105)	8.2% (69)	4.9% (41)	5.12	844
Smoother pavement	1.5% (13)	4.4% (37)	10.5% (89)	20.0% (169)	**20.5% (173)**	16.2% (137)	16.1% (136)	8.1% (68)	2.6% (22)	5.23	844

More or improved paved paths separate from the roads (shared use paths)	**28.9% (244)**	25.8% (218)	14.0% (118)	8.5% (72)	10.9% (92)	6.4% (54)	2.7% (23)	1.7% (14)	1.1% (9)	2.91	844
Reduced vehicle speeds	1.3% (11)	3.8% (32)	8.9% (75)	8.1% (68)	11.1% (94)	**23.5% (198)**	21.1% (178)	16.4% (138)	5.9% (50)	5.96	844
Bicycle racks and/or lockers at destinations	3.3% (28)	4.6% (39)	9.5% (80)	11.4% (96)	12.0% (101)	12.8% (108)	**23.6% (199)**	20.6% (174)	2.3% (19)	5.73	844
Showers at destinations	2.0% (17)	2.0% (17)	2.3% (19)	2.1% (18)	3.1% (26)	4.7% (40)	6.4% (54)	22.6% (191)	**54.7% (462)**	7.84	844
Additional educational efforts/signage encouraging drivers to "share the road"	3.1% (26)	6.2% (52)	9.8% (83)	11.0% (93)	11.4% (96)	8.9% (75)	11.0% (93)	17.9% (151)	**20.7% (175)**	6.06	844
									answered question		**844**
									skipped question		**180**

13. Which category of cyclist would you identify with most?

	Response Percent	Response Count
Strong and fearless - I will ride on almost any road, even roads with heavy traffic and/of without bike lanes	21.8%	189
Somewhat confident - I will ride on roads, but usually only on low volume streets or roads with bicycle lanes	**52.8%**	**457**
Not confident - I will generally only ride on paths separate from the road, or not at all.	25.3%	219
	answered question	**865**
	skipped question	**159**

14. On which road(s), if any, would you like to see improvements made with regard to traveling by BIKE in the Harrisonburg/Rockingham Region? Please specify the type(s) of improvement.

	Response Count

Show replies

	595
answered question	**595**
skipped question	**429**

15. Is there a particular issue related to biking in the Harrisonburg/Rockingham Region you would like to see addressed as part of this project?

	Response Count
Show replies	452
answered question	**452**
skipped question	**572**

PAGE:

16. Which factors MOST prevented you from bicycling more often within the past 2 years? (Select all that apply)

	Response Percent	Response Count
I don't own a bicycle	12.9%	99
I own a bicycle but it's not in good riding condition.	9.1%	70
I find it physically difficult to ride.	6.9%	53
I don't feel safe riding a bicycle in traffic.	**54.0%**	**415**
Road surfaces are in poor condition (potholes, cracks, debris, etc.).	13.0%	100
I do not feel personally safe from crime.	5.7%	44
Continuous bicycle facilities do not exist for the trips I would like to take.	19.9%	153
There are gaps in the network of trails and bike lanes.	47.7%	366

It would take me too long to bike to the places I need to go.		26.4%	203
My destination does not offer shower/locker facilities.		10.5%	81
There is insufficient bicycle parking at my destination.		11.5%	88
There is no bicycle route to my destination where I feel safe.		43.5%	334
Time constraints due to schedule demands.		43.4%	333
		Other (please specify) Show replies	119
		answered question	**768**
		skipped question	**256**

17. How often do you walk directly from home to another destination or activity?

	Not at all	3+ times a week	several times a month during nice weather months	less than 10 times a year	Rating Count
To work	**64.7% (510)**	14.8% (117)	11.0% (87)	9.4% (74)	788
To school	**71.8% (505)**	14.7% (103)	8.7% (61)	4.8% (34)	703
For errands	**41.0% (326)**	17.8% (142)	25.6% (204)	15.6% (124)	796
For recreation	15.3% (125)	**37.3% (304)**	36.7% (299)	10.7% (87)	815
For social gatherings	**32.2% (255)**	20.1% (159)	30.1% (238)	17.6% (139)	791
				answered question	**826**
				skipped question	**198**

18. What do you like MOST about walking in the Harrisonburg/Rockingham Region? (select all that apply)

	Response Percent	Response Count
Good network of sidewalks and paths	27.9%	209
I am within walking distance of many important destinations	51.7%	387
Character of the walking environment/lots of interesting things to look at	38.7%	290
Street trees	24.2%	181
It is a great way to get exercise	**80.6%**	**604**
There are adequate marked crosswalks and adequate pedestrian signals at traffic lights	24.6%	184
	Other (please specify) Show replies	49
	answered question	**749**
	skipped question	**275**

19. Which of the following factors make it difficult or unpleasant to walk in the Harrisonburg/Rockingham Region? (select up to three)

	Response Percent	Response Count
Not enough sidewalks or many gaps in the sidewalk network	**55.9%**	**441**
Poor sidewalk surface quality	12.8%	101
Sidewalks are too close to the road	9.6%	76
Sidewalks are too narrow or crowded	10.8%	85
Places I need to go are beyond walking distance	38.3%	302
Heavy traffic	22.6%	178
Speeding traffic	24.8%	196

Drivers not yielding or stopping for pedestrians stopping at corners	31.3%	247
Drivers running red lights	13.4%	106
Intersections are too wide	5.6%	44
Not enough time given to cross intersections	7.2%	57
Inadequate lighting / too dark	18.6%	147
Worries about personal security (vulnerability to crime)	16.9%	133
Lack of facilities on bridges or overpasses	7.5%	59
Unattractive or unappealing streets	8.9%	70
Sidewalks are blocked by construction	4.6%	36
There aren't marked crosswalks where they are needed	12.2%	96
Bicyclists are riding on sidewalks, making walking unsafe	12.4%	98
I don't find anything unpleasant or uncomfortable about walking here	10.9%	86
	answered question	**789**
	skipped question	**235**

20. How important would the following be in encouraging you to WALK in the Harrisonburg/Rockingham Region more often? Please rank the options below in order of importance (1 being most important and 8 being least important)

	1	2	3	4	5	6	7	8	Rating Average	Rating Count
More or improved sidewalks	**45.5% (341)**	24.4% (183)	12.7% (95)	7.3% (55)	5.5% (41)	2.0% (15)	1.5% (11)	1.1% (8)	2.20	749
More or improved paved paths separate from the road	21.0% (157)	**34.5% (258)**	19.7% (147)	10.3% (77)	7.8% (58)	4.4% (33)	1.2% (9)	1.2% (9)	2.73	748
Fewer street/driveway crossings	1.3% (10)	4.1% (31)	16.2% (121)	**19.4% (145)**	15.8% (118)	17.9% (134)	13.2% (99)	12.0% (90)	5.11	748
	3.3%	4.3%	11.2%	16.8%	**19.1%**	14.3%	14.6%	16.3%		

Reduced traffic speeds	(25)	(32)	(84)	(126)	**(143)**	(107)	(109)	(122)	5.27	748
Improved Pedestrian environment (fewer empty lots, more street trees, etc.)	7.6% (57)	7.6% (57)	13.0% (97)	14.4% (108)	**23.2% (174)**	18.2% (136)	9.2% (69)	6.8% (51)	4.63	749
Improved lighting	5.7% (43)	7.2% (54)	7.4% (55)	12.4% (93)	12.4% (93)	**25.8% (193)**	25.1% (188)	3.9% (29)	5.16	748
Improved security	4.8% (36)	6.4% (48)	5.3% (40)	6.3% (47)	5.3% (40)	10.0% (75)	28.4% (213)	**33.4% (250)**	6.12	749
Improved pedestrian accommodations at traffic signals (e.g. enhanced crosswalks, pedestrian signal buttons)	10.5% (79)	11.5% (86)	14.7% (110)	13.1% (98)	10.9% (82)	7.3% (55)	6.7% (50)	**25.2% (189)**	4.77	749
								answered question		**749**
								skipped question		**275**

21. On which road(s) or intersection(s), if any, would you like to see improvements made with regard to pedestrian travel in the Harrisonburg/Rockingham Region? Please specify the type(s) of improvement.

	Response Count
Show replies	394
answered question	**394**
skipped question	**630**

22. Is there a particular issue related to WALKING in the Harrisonburg/Rockingham Region you would like to see addressed as part of this project?

	Response Count
Show replies	284
answered question	**284**
skipped question	**740**

23. What mode of transportation do you TYPICALLY use to reach the following destinations in the Harrisonburg/Rockingham Region?

	Motor Vehicle	Bike	Walk	Public Transit	Buggy	Rating Count
Place of Employment	**73.7% (566)**	20.2% (155)	15.4% (118)	3.5% (27)	0.1% (1)	768
Shopping/Errands	**87.5% (703)**	12.6% (101)	9.7% (78)	3.1% (25)	0.1% (1)	803
Visit friends and neighbors	**67.6% (543)**	19.7% (158)	29.0% (233)	2.0% (16)	0.1% (1)	803
School	**67.3% (372)**	20.6% (114)	21.5% (119)	9.8% (54)	0.4% (2)	553
					answered question	**807**
					skipped question	**217**

24. Do you have children that go to school (excluding home-schooled children) (select all that apply)

	Response Percent	Response Count
Yes - Elementary	15.8%	128
Yes - Junior High/Middle School	10.2%	83
Yes - High School	8.9%	72
No	**74.6%**	**605**
	answered question	**811**
	skipped question	**213**

PAGE:

25. What school do they attend?

	Response Percent	Response Count
Elementary School: Show replies	**60.8%**	**121**

Junior High/Middle School: Show replies	39.2%	78
High School: Show replies	38.2%	76
	answered question	**199**
	skipped question	**825**

26. How often do they bike to school?

	Response Percent	Response Count
Always	3.4%	7
Often	6.3%	13
Occasionally	12.1%	25
Never	**78.3%**	**162**
	answered question	**207**
	skipped question	**817**

27. How often do they walk to school?

	Response Percent	Response Count
Always	4.3%	9
Often	3.9%	8
Occasionally	16.4%	34
Never	**75.4%**	**156**
	answered question	**207**
	skipped question	**817**

28. In your opinion, does your child's school encourage or discourage walking and biking to/from school?

	Response Percent	Response Count
Strongly encourage	2.5%	5
Encourage	18.1%	37
Neither encourage nor discourage	**54.9%**	**112**
Discourage	13.7%	28
Strongly discourage	10.8%	22
	answered question	**204**
	skipped question	**820**

PAGE:

29. Which of the following is a factor in your decision not to have your school children walk or bike to school more often? (please select up to three)

	Response Percent	Response Count
Too far	**62.3%**	**129**
Amount of traffic on route	56.0%	116
Speed of traffic on route	44.4%	92
Weather conditions	15.5%	32
Lack of crossing guards	11.6%	24
Challenging crossings	24.2%	50
Lack of sidewalks or separated paths	42.5%	88
Concerned about violence or crime	8.2%	17
Prefer that my child ride the bus	7.2%	15
Prefer to drive my child to school	6.8%	14
I don't find anything unpleasant or uncomfortable about having my schoolchildren walk or bike to school	4.8%	10
	answered question	**207**

skipped question	**817**

PAGE:

30. What is your gender?

	Response Percent	Response Count
Female	**54.1%**	**442**
Male	44.8%	366
I'd rather not say	1.1%	9
answered question		**817**
skipped question		**207**

31. What is your age?

	Response Percent	Response Count
Under 16	0.1%	1
16-35	**41.4%**	**338**
36-50	30.8%	252
51-70	24.7%	202
> 70	1.6%	13
I'd rather not say	1.3%	11
answered question		**817**
skipped question		**207**

32. Are you a student at any of these colleges?

	Response Percent	Response Count

James Madison University (JMU)	22.9%	177
Eastern Mennonite University (EMU)	1.9%	15
Bridgewater College	0.1%	1
None of the above	**75.1%**	**581**
	answered question	**774**
	skipped question	**250**

33. Please list any other comments you have regarding bicycling and walking in the Harrisonburg/Rockingham Region.

	Response Count
Show replies	282
answered question	**282**
skipped question	**742**

PAGE:

34. If you would like to be a part of the mailing list, please fill out the following information below.

	Response Percent	Response Count
First Name: Show replies	95.9%	187
Last Name: Show replies	93.8%	183
Email address: Show replies	**97.4%**	**190**
Organization: Show replies	50.3%	98
	answered question	**195**
	skipped question	**829**

Appendix C: Public Comment Received

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

improvements needed at Dale Enterprise Cross-road; visibility is poor – due to high bank towards Harrisonburg, church sign hinders visibility from Silver Lake Rd.

Contact Information (Optional):

---

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

-Concerning 33 west of Harrisonburg - Belmont to 613; we need buggy lane wide enough to accomadate a roadway with extra room for safety. Thank you for considering these issues.

Contact Information (Optional):

---

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

Thankyou for addressing the problems! We feel something needs to be done to make safer bike + buggy traffic. Also farm equipment on 33 west from Belmont to 613

Contact Information (Optional):

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

- For Buggey Lane: need at least 8' - to narrow a safty issue.
- Do it right where you do it.
- Maybe contact a couple Horsemen on Buggey Lane:

Contact Information (Optional):

---

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

Great plan - can't wait to see it built.

2 areas of priority for me:

1. Wide shoulders on 33 from Massanetta Springs to Harrisonburg.
2. Shen Lake Dr from Massanetta Springs to Cross Keys Rd.

Contact Information (Optional):

---

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

The plan in its entirety looks great. I am particularly excited to see 33 EAST addressed for it is basicly unaccessable. Look forward to seeing progress take place. Thank you!

Contact Information (Optional):

Joe Bolan

joebolanxyz@gmail.com

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

I heard several comments regarding the need to do something along the 33E coorider for cyclist

Contact Information (Optional):

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

I'm very pleased to see the proposed bike/ped improvements in the county. I hope they are implemented soon! They will be great for community health + safety + will bring in more tourism $. thanks!

Contact Information (Optional):

Ben Sandel

bsandel@verizon.net

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

Thank you for making serious bike/ped plans!

Contact Information (Optional):

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

GREAT START!
I love seeing the attention to an important issue in our community.
Plan is 1st step - but an important one. Thanks.

Contact Information (Optional):

SANDRA PARKS
spark62@mac.com

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

As a biker + walker w/ 3 kids in Harrisonburg public schools, I appreciate all the work that has gone into the bike/ped plan. I hope we can begin to implement the plan ASAP, esp the facilities that provide bike + ped access to SCHOOLS!

Contact Information (Optional):

Ben Sandel
bsandel@verizon.net

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

I really appreciate the focus on widening shoulders on route 11 north of Harrisonburg and on both 33 east and west of the city. These allow for access to a wide network of other roads where connections currently sometimes feel dangerous.

Contact Information (Optional):

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

* REALLY APPRECIATE HAVING WIDE SHOULDERS ADDED WITH ANY NEW ROADS (LIKE RESEVOIR)
* PLS ENCOURAGE "CONNECT OUR SCHOOLS"
* RIDING A BIKE EAST OF HARRISONBURG IS NICE. LEAVE MONTEZUMA/DRY RIVER THE WAY IT IS

Contact Information (Optional):

yogi.gillette@gmail.com

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

I have six grandsons most of them love biking & we would love more trails to get safely into & back out of town. Thanks for great planning & work!

Contact Information (Optional):

tim.cassel@gmail.com

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

Please look into a "rails to trails" option for the railroad that is no longer used going from New Market to Timberville, Broadway and Harrisonburg.

Contact Information (Optional):

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

My family supports increased bike infrastructure in the county!

Contact Information (Optional):

deBrun family
322 Erickson Ave

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

I would like to see a bike/ped path over Mt Clinton pike to Lincolnshire be a top Priority! This is heavily used by ped/Bikes and is a dangerous situation at the top of the Hill

Contact Information (Optional):

MATT Naidelich mwinc@2@yahoo.com

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

A Bike & Buggy lane would be very much appreciated from Belmont to Clover Hill Rd make it wide a possible!

Contact Information (Optional):

Austin Eberly
434-1151

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

Additional attention to Port Republic Road beyond Sentara RMH, would be helpful IMO.

Contact Information (Optional):

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

I am excited to see the City/County planning for Bike infrastructure. As a driver and cyclist. I think it is very important to have a healthy balance and support for different means of transportation.

Contact Information (Optional):

hrmpo

Bicycle & Pedestrian Plans

Comments/Questions/Concerns:

Thanks for your work on this wonderful plan. It's an exciting and important project!

My concern and suggestion relates to the prioritization of the bike lane on Mt. Clinton Pike from EMU →

Contact Information (Optional):

Beth Lehman
MWBL2@yahoo.com

West to Fort Lynn. I suggest the the entire stretch of that road needs to be a top priority due to safety reasons. That stretch of road is heavily used by runners, walkers and bikers including full athletic teams from EMU + EMHS. Please prioritize the Mt. Clinton bike lane out to Fort Lynn

Also Cunningham House