

CHAPTER 3. EXISTING CONDITIONS

3.1. INTRODUCTION

This chapter provides a review and assessment of existing bicycle facilities in the Miami Valley region. The chapter first defines various bicycle infrastructure types, including on- and off-street facilities. A discussion of the existing bikeway system follows with a review of facilities in each of the four counties included in this Plan. This chapter also reviews other bicycle infrastructure components, including signage, end-of-trip facilities, and multi-modal connections. The text also briefly summarizes existing programmatic efforts to encourage bicycling. Finally, this chapter concludes with a discussion of overall opportunities and constraints facing bikeway network development in the Miami Valley.

3.2. BICYCLE INFRASTRUCTURE OVERVIEW

According to AASHTO's (American Association of State Highway and Transportation Officials) *Guide for the Development of Bicycle Facilities* (1999), there are several types of "bikeways." Bikeways are distinguished as preferential roadways accommodating bicycle travel. Accommodation can take the form of bicycle route designation or bicycle lane striping. Shared use paths (also referred to as "multi-use paths" and "trails"), are separated from a roadway for use by cyclists, pedestrians, in-line skaters, runners, and other non-motorized users.

Because bicyclists are legally allowed on most roads in Ohio, the Miami Valley's entire roadway network is effectively the region's on-street bicycle network, regardless of whether or not signage or markings are present on a given street. The designation of certain roads as striped bike lanes or signed bike routes is not intended to imply that these are the only roadways intended for bicycle use, or that bicyclists should not be riding on other streets. Rather, the designation of a network of on-street bikeways recognizes that certain roadways are optimal bicycle routes, for reasons such as directness or access to important destinations, and allows MVRPC and local agencies to then focus resources on building out this primary network. The following sections describe bikeway facilities in greater detail.

3.2.1. Shared Use Paths

Shared use paths (also referred to as "multi-use paths" and "trails") are used by various non-motorized users, including pedestrians, cyclists, in-skaters, and runners (see Figure 5). Shared use paths are typically paved (asphalt or

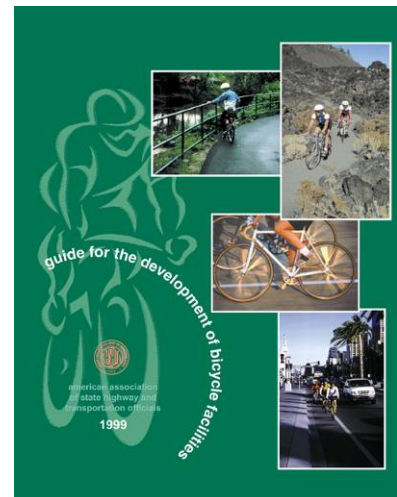


Figure 5. The Little Miami Scenic Trail in Xenia is an example of a shared use path

concrete) but may also consist of an unpaved smooth surface as long as it meets Americans with Disabilities Act (ADA) standards.

In general, shared use paths are desirable for slower-speed recreational cycling, particularly by families and children. However, they are also used extensively by commuters for at least part of their commute in the Miami Valley. Given the potential mix of users, there is potential for conflicts on heavily-used paths, necessitating lower bicycle speeds in these areas. Shared use paths are preferred for corridors where few intersections or crossings exist, to reduce the potential for conflicts with motor vehicles. Paths located immediately adjacent to roadways, often referred to as “sidepaths” or “sidewalk bikeways,” are undesirable due to the numerous potential conflicts with motor vehicles turning on or off of side streets and driveways. The AASHTO *Guide for the Development of Bicycle Facilities* discourages their use.

3.2.2. Bicycle/Pedestrian Overcrossings and Undercrossings

Bicycle/pedestrian overcrossings and undercrossings provide critical non-motorized system links by joining areas separated by any number of barriers. Overcrossings and undercrossings address real or perceived safety issues by providing users a formalized means for traversing “problem areas” such as deep canyons, waterways or major transportation corridors (see Figure 6). In most cases, these structures are built in response to user demand for safe crossings where they previously did not exist. For instance, an overcrossing or undercrossing may be appropriate where moderate to high pedestrian/bicycle demand exists to cross a freeway in a specific location, or where a flood control channel separates a neighborhood from a nearby bicyclist destination. These facilities also overcome barriers posed by railroads, and are appropriate in areas where frequent or high-speed trains would create at-grade crossing safety issues, and in areas where trains frequently stop and block a desired pedestrian or bicycle crossing point. They may also be an appropriate response to railroad and other agency policies prohibiting new at-grade railroad crossings, as well as efforts to close existing at-grade crossings for efficiency, safety, and liability reasons.



Figure 6. Pedestrian/bicycle bridge crossing Holes Creek along SR 741 in Montgomery County

Overcrossings and undercrossings also respond to user needs where existing at-grade crossing opportunities exist but are undesirable for any number of reasons. In some cases, high vehicle speeds and heavy traffic volumes might indicate a need for a grade-separated crossing. Hazardous pedestrian/bicycle crossing conditions (e.g., few or no gaps in the traffic stream, conflicts between motorists and bicyclists/pedestrians at intersections, etc.) could also create the need for an overcrossing or undercrossing.

3.2.3. Bike Lanes

Designated exclusively for bicycle travel, bike lanes are separated from vehicle travel lanes with striping and also include pavement stencils (see Figure 7). Bike lanes are most appropriate on Arterial and Collector streets where



Figure 7. Example of a bike lane on a major street

higher traffic volumes and speeds indicate a need for greater separation.

Bike lanes help to define the road space for bicyclists and motorists, reduce the chance that motorists will stray into the cyclist's path, discourage bicyclists from riding on the sidewalk (to avoid conflicts with pedestrians), and remind motorists that cyclists have a right use to the road. One key consideration in designing bike lanes in an urban setting is to ensure that a bike lane and adjacent parking lane are wide enough so that cyclists have enough room to avoid a suddenly opened vehicle door.

3.2.4. Shoulder Bikeways

Typically found in rural areas, shoulder bikeways are paved roadways with striped shoulders wide enough for bicycle travel. Shoulder bikeways often, but not always, include signage alerting motorists to expect bicycle travel along the roadway. Shoulder bikeways also accommodate pedestrians in rural areas.

3.2.5. Shared Roadways

The most common type of bikeway, shared roadways accommodate vehicles and bicycles in the same travel lane (see Figure 8). The most suitable roadways for shared vehicle/bicycle use are those with low posted speeds (25 MPH or less) or low traffic volumes (3,000 ADT or less). These facilities may include traffic-calming devices to reduce vehicle speeds while limiting conflicts between motorists and bicyclists. A common practice includes signing shared roadways with bicycle route signs, directional arrows and other wayfinding information.

On streets with low traffic volumes and speeds, striped bike lanes may not be needed at all. This is based on the potential for serious conflicts being so low that the cost of installing bike lanes may not be warranted. On these types of low-traffic neighborhood streets, designated and signed shared roadways can serve as important connectors to schools and recreation areas such as parks. Shared roadways may also be desirable on certain commute routes where installing bike lanes is not possible, provided that appropriate signage is installed to alert motorists to the presence of bicycles on the roadway.



Figure 8. Shared roadway with signage



Figure 8a. Nash Road in Greene County

Shared roadway signing may also include “Share the Road” signs at regular intervals along the route.

Most minor collector and local streets in the Miami Valley can be classified as shared roadways, as they can accommodate bicyclists of all ages and currently have little need for dedicated bicycle facilities (e.g., bike lanes). Curb-to-curb widths generally range between 40 and 50 feet, and the typical street cross-section includes two vehicle travel lanes with on-street parking.

In addition, the Miami Valley possesses several hundred miles of rural roads, which welcome cyclists with their beautiful surroundings, gentle terrain, and well-maintained surfaces (see Figure 8a). The County Engineers and rural

municipal engineers are responsible for the development and maintenance of this tremendous cycling asset in the Dayton Region.

3.3. EXISTING BIKEWAYS

The following sections describe existing bikeways in the Miami Valley region, first with a discussion of statewide and regional bikeways followed by an overview of bikeways within each of the four counties covered in this Plan.

As shown on Map 3-1, shared use paths comprise the vast majority of the region's existing bikeway network. The Miami Valley benefits from a comprehensive and generally well-connected trail system that has developed over time. In response to the devastating 1913 floods, the Miami Conservancy District (MCD) was formed and charged with developing a flood control system. The flood control channels along the Great Miami River and other waterway corridors now carry an extensive trail system. In 1978, the MCD developed the first eight-mile trail loop in downtown Dayton, and today, the agency owns and maintains over 40 miles of trails. Several other agencies have also stepped up and developed their portions of the local and regional trail system.

3.3.1. National and Statewide Trails in the Miami Valley

Portions of the Miami Valley's bikeway system serve as elements of designated national trails, described below.

North Country National Scenic Trail

Officially designated in 1980, the North Country National Scenic Trail passes through seven states, including North Dakota, Minnesota, Wisconsin, Michigan, Ohio, Pennsylvania, and New York. Celebrating America's scenic qualities, the trail offers visitors a unique experience of the Great Plains, the shores of Lakes Superior and Michigan, the Ohio countryside, and the Adirondack Mountains. Within the Miami Valley region, the designated North Country Trail route follows portions of the Great Miami River Recreation Trail and the Little Miami Scenic Trail. The North Country Trail would also follow several other proposed bikeways to form a continuous route through the Miami Valley region.



Underground Railroad National Millennium Trail

Traveling over 2,000 miles between Mobile, Alabama and Owen Sound, Ontario, the Underground Railroad National Millennium Trail includes a vast network of routes and interpretive sites explaining the story of slavery and the pursuit of freedom. Ohio's proximity between Kentucky and West Virginia (then slave-owning states) and Canada (slaves' final destination) made the state a crucial pass-through area. Although not following a specific route, the Underground Railroad Trail highlights several historic sites in the Miami Valley, including:



- First free African-American school in Harveysburg
- Wright House Bed and Breakfast in Springboro
- Monroe House in Xenia
- National Afro-American Museum and Cultural Center in Wilberforce
- Martin Delany gravesite in Cedarville

- Antioch University in Yellow Springs
- 17 sites in Springboro

Buckeye Trail

Traversing over 1,440 miles throughout Ohio, the Buckeye Trail calls attention to the nation's rails-to-trails, historic trails, cultural itineraries, recreation paths, waterways, and other alternative transportation corridors. Initially envisioned as a trail linking Cincinnati and Cleveland, the trail has evolved into a large loop following old canals, abandoned railroads, rivers, trails, and rural roads. Within the Miami Valley, the Buckeye Trail follows portions of the Great Miami River Recreation Trail and Little Miami Scenic Trail, and overlaps with portions of the Ohio-to-Erie Trail, described below.

Ohio-to-Erie Trail

Envisioned in the 1990s as an interconnecting trail system linking the Ohio River with Lake Erie, the Ohio-to-Erie Trail follows abandoned railroad corridors and canals through urban and rural areas. When completed, the trail will connect Cincinnati, Columbus and Cleveland. Passing through the Miami Valley, the Ohio-to-Erie Trail overlaps with the Little Miami Scenic Trail south of Xenia in Greene County. North of Xenia, the trail follows the Cedarville and Prairie Grass trails.

3.3.2. Greene County Bikeways

Greene County enjoys an extensive north-south and east-west bikeway system as shown on Map 3-2, with generally good connections within and between neighboring communities. The following sections describe the County's off- and on-street bikeways in greater detail.

Off-Street Bikeways

Shared use paths travel across Greene County, offering bicyclists north-south and east-west connections between communities and neighboring counties. The extensive trail network has resulted from the efforts of county commissioners, the Greene County Park District, local agencies, and other organizations and advocates.

Connecting downtown Fairborn with the Wright Brothers Memorial, the Wright Brothers (Huffman Prairie) Bikeway generally follows Wright Patterson Air Force Base's southern boundary (see Figure 9). Also known as the Kauffman Avenue Bikeway, this corridor also provides a connection to Wright State University, and will eventually connect with a planned extension of the Mad River Recreation Trail in Montgomery County.



Figure 9. Wright Brothers (Huffman Prairie) Bikeway in Fairborn

Roughly paralleling Shawnee Creek, Little Beaver Creek and U.S. 35, the Creekside Recreation Trail connects Xenia, Beavercreek and communities in Montgomery County. The trail passes through urban and suburban areas, as well as wetland areas. This trail provides connections to several regional off-street bikeways, including the Mad River Recreation Trail, Iron Horse Trail, and Little Miami Scenic Trail, among others.

Extending roughly 70 miles between Milford and Springfield, the Little Miami Scenic Trail follows the former Little Miami Railroad through Greene County (see Figure 10). Connecting Xenia with Spring Valley and Yellow Springs, segments of this trail follow the Little Miami Scenic River as it passes through predominantly rural countryside. This trail connects with several other Greene County trails, including the Creekside Recreation Trail, Ohio-to-Erie Trail, and a proposed extension of the Xenia-Jamestown Connector Trail.

The Xenia-Jamestown Connector Trail will ultimately link Xenia with Jamestown and other communities east of Greene County. The existing trail currently terminates near Jasper Road east of Xenia. Extending northeast from Xenia, the Cedarville and Prairie Grass trails connect the communities of Xenia, Cedarville and South Charleston. This trail also serves as part of the Ohio-to-Erie Trail.

Several shared use paths converge at Xenia Station, a replica of a 19th Century telegraph office occupying the site when active railroads converged in town (see Figure 11). The station serves as a popular trail user gathering point, and includes bike racks, bike lockers, railroad exhibits and local information. Operated by the City of Xenia, the station is an easily-recognizable local asset. In Yellow Springs, a replicated train depot also provides similar amenities to the Xenia Station.

Bicyclists on Greene County's bikeway system enjoy grade separated crossings of streets in several locations. In Yellow Springs for instance, the Little Miami Scenic Trail utilizes former railroad trestle bridges to cross major streets. Local agencies and other system users have expressed interest in developing bicycle/pedestrian overcrossings/undercrossings to overcome other major barriers such as Interstate 675.

In-Corridor and Rural Bikeways

Greene County has several low-volume streets serving as shared roadways. Local streets in Beavercreek, Bellbrook, Fairborn and other communities offer excellent bicycling opportunities for riders of varying ages and skills. Xenia's Comprehensive Recreation Plan (a joint project between the City and Greene County) also includes a shared roadway network complementing the community's shared use path system.

Bike lanes and shoulder bikeways exist in limited locations. In Cedarville, bike lanes serve as an on-street segment of the Cedarville/Prairie Grass Trail (see Figure 12). Some



Figure 10. Little Miami Scenic Trail in Yellow Springs



Figure 11. Xenia Station



Figure 12. Bike lane serving as part of Ohio-to-Erie Trail in Cedarville

rural roads provide shoulders to accommodate bicyclists (e.g., portions of Yellow Springs-Fairfield Road). Most shoulders however are only one- to three-feet wide, creating uncomfortable and potentially unsafe riding conditions.

3.3.3. Miami County Bikeways

A coalition of citizens, public agencies and private organizations has worked over the years with the vision of creating a comprehensive bikeway system in Miami County. Created in 2000, the Miami County Bike Task Force includes representatives from each of the County's jurisdictions. The Task Force has worked with the Miami County Park District to develop trails along the Great Miami River, and is also planning internal connections within County parks and smaller villages. Several bikeway elements are currently in place, most notably segments of the Great Miami River Recreation Trail. Depicted on Map 3-3, Miami County's bikeway system is described in greater detail below.

Off-Street Bikeways

Supplementing other existing shared use paths, the Great Miami River Recreation Trail is the centerpiece of Miami County's bikeway system (see Figure 13). Completed segments currently exist in Troy, Piqua, and Concord Township. Several agencies are working to develop a continuous 22-mile long trail corridor through the County, following the Great Miami River and the Miami & Erie Canal. The completed trail would connect several Miami County communities including Huber Heights, Piqua, Tipp City, Troy and Vandalia, and provide access to numerous cultural attractions including the Eldean Covered Bridge and several local and regional parks. The Great Miami River Recreation Trail also extends south through Montgomery and Warren counties.



Figure 13. Great Miami River Recreation Trail in Troy

Piqua, Troy, and Tipp City also enjoy several local paths. The Piqua Activities Trail for Health (PATH) provides an east-west bicycle route across Piqua, and will eventually continue in both directions toward Fletcher and Covington. Other trails in Piqua include the Canal Runs and River's Edge trails providing access to Linear Park and other bicyclist destinations. A small network of local trails in Tipp City and Troy provide non-motorized connections to city parks and other destinations.

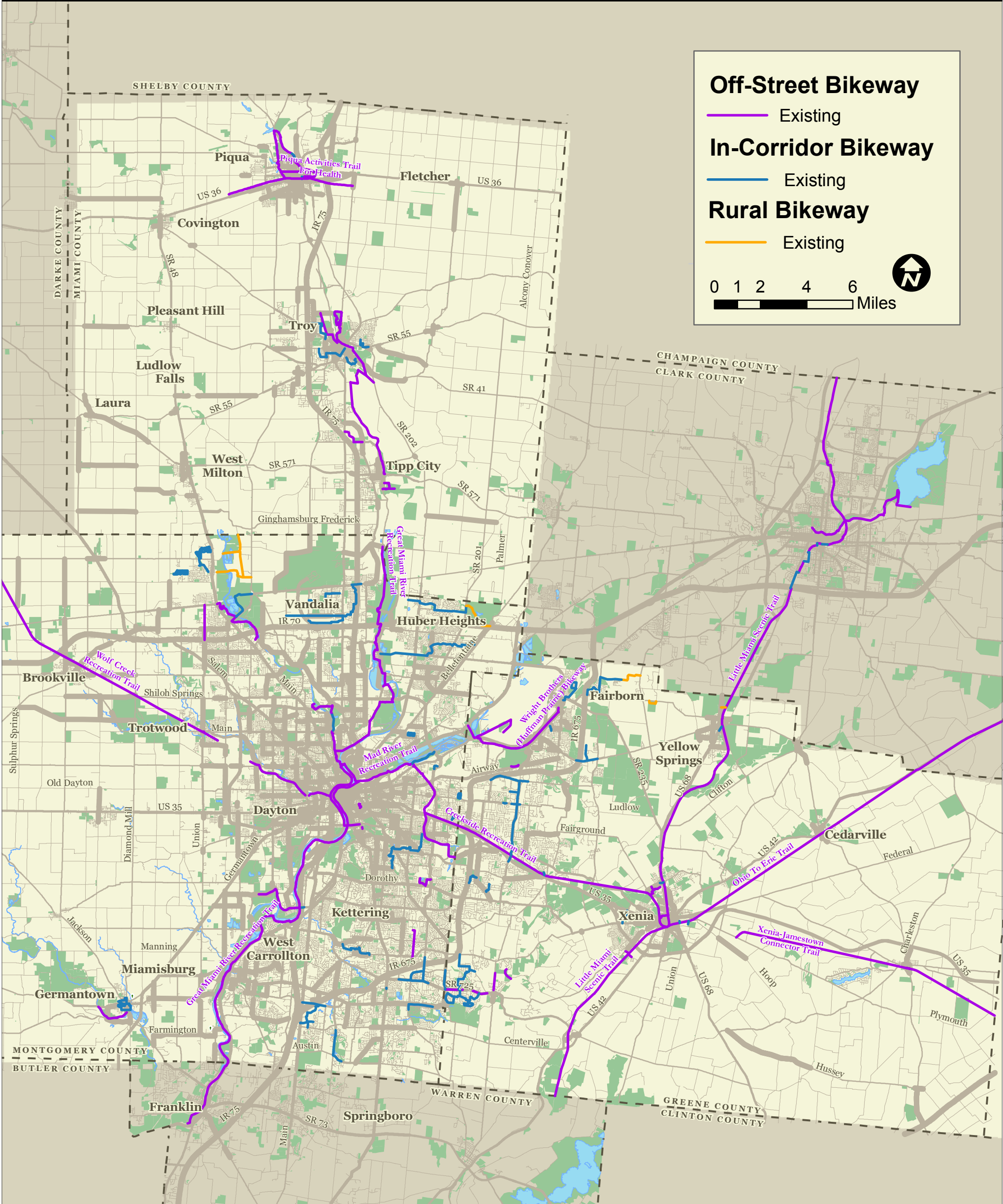
In-Corridor and Rural Bikeways

Many streets in Miami County, particularly low-volume residential streets in urbanized areas, are suitable for bicycle travel. An existing on-street bikeway network exists in several communities, including Troy, Piqua, and some communities along SR 48. Signed shared roadways comprise most on-street bikeways in these communities, while shoulder bikeways exist on some rural roads.

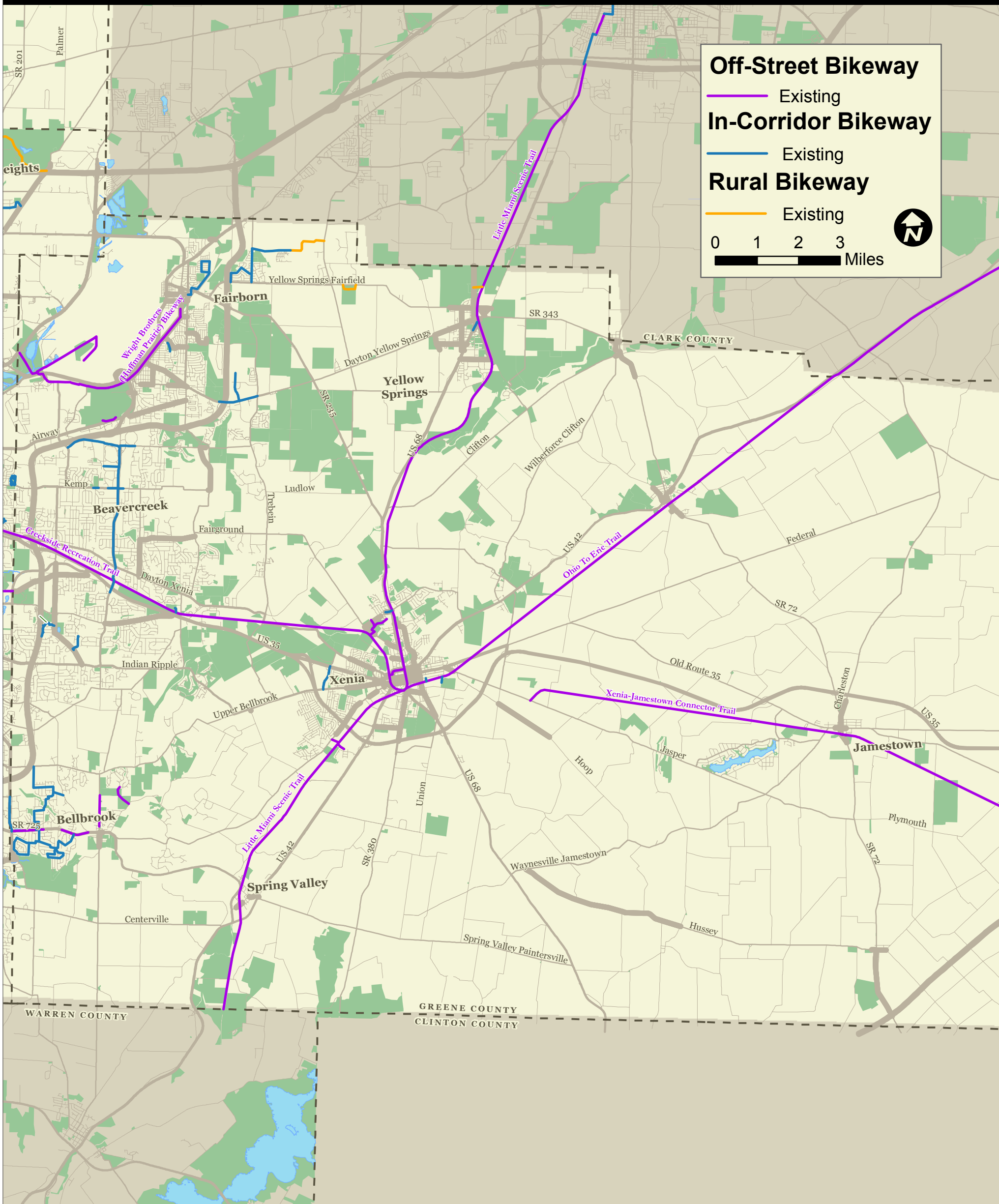
3.3.4. Montgomery and Northern Warren County Bikeways

Although a limited on-street bikeway system exists in Montgomery and Northern Warren counties, the areas enjoy an extensive shared use path system, as shown on Map 3-4. Compared with Greene and Miami counties, Montgomery and Northern Warren counties are generally more urban in character. As a result, bicyclists find often find themselves riding in areas with higher congestion and potential conflicts with motorists.

Miami Valley Comprehensive Local-Regional Bikeways Plan



Miami Valley Comprehensive Local-Regional Bikeways Plan



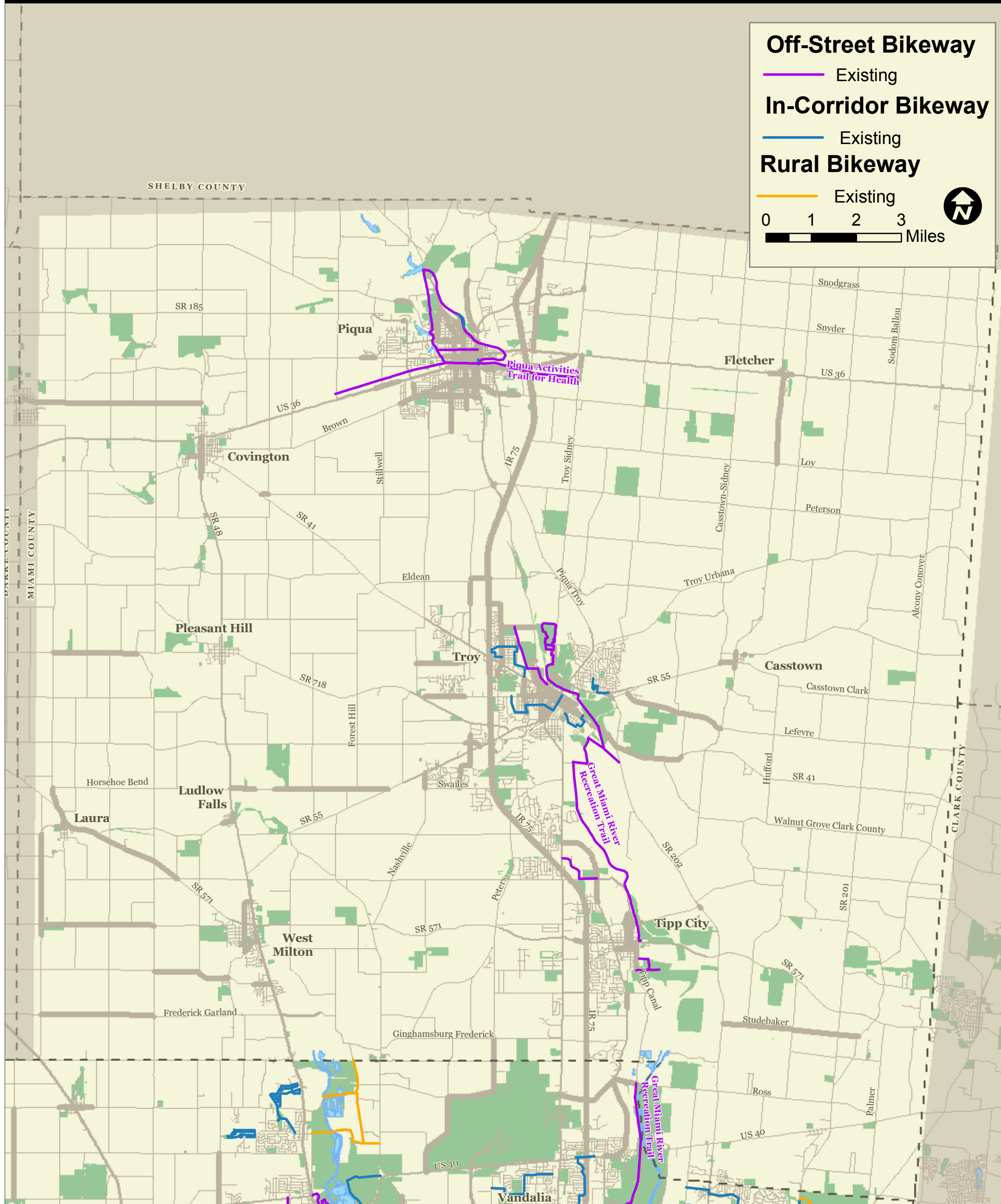
MAP 3-2
Existing Bikeways: Greene County, OH

Miami Valley Comprehensive Local-Regional Bikeways Plan

Data Provided by: MVRPC, State of Ohio, City of Beaver Creek, Clark County
Map Prepared by: Alta Planning+Design, Nov 2008



Miami Valley Comprehensive Local-Regional Bikeways Plan



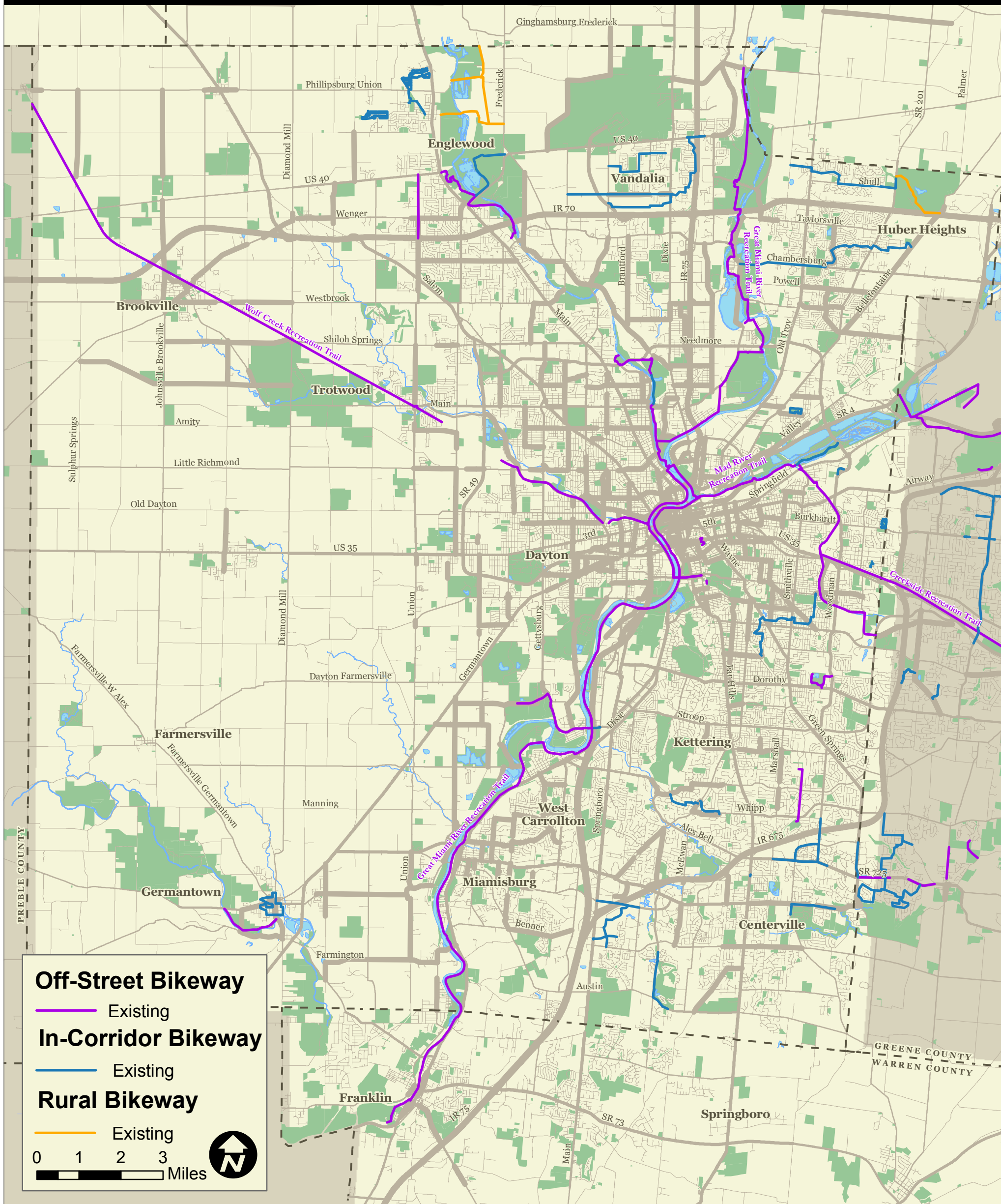
MAP 3-3
Existing Bikeways: Miami County, OH

Miami Valley Comprehensive Local-Regional Bikeways Plan

Data Provided by: MVRPC, State of Ohio, City of Beavercreek, Clark County
Map Prepared by: Alta Planning+Design, Nov 2008



Miami Valley Comprehensive Local-Regional Bikeways Plan



MAP 3-4
Existing Bikeways: Montgomery and Northern Warren Counties, OH

Miami Valley Comprehensive Local-Regional Bikeways Plan

Data Provided by: MVRPC, State of Ohio, City of Beavercreek, Clark County
Map Prepared by: Alta Planning+Design, Nov 2008



Off-Street Bikeways

Montgomery and Northern Warren counties are home to a growing shared use path system over 60 miles long. Radiating from central Dayton, several trails provide bicyclist connections to nearby neighborhoods and surrounding communities. Various agencies, including Five Rivers MetroParks, the MCD, and local agencies own and maintain the vast trail network.

Serving as the primary north-south trail corridor, the Great Miami River Recreation Trail passes through Dayton, Moraine, West Carrollton, Miamisburg and Franklin. The trail's first segment consisted of an eight-mile loop passing through downtown Dayton originally known as the Horace. M. Huffman, Jr., River Corridor Bikeway. The trail connects several bicyclist destinations, including Sinclair Community College, RiverScape MetroPark, Island MetroPark, and several other regional trails. The most recently-completed Great Miami River Recreation Trail segment is a 2006 extension from Crain's Run to Franklin (see Figure 14). A northern extension to Miami County is also underway.

Extending northwest from the Great Miami River Recreation Trail near downtown Dayton, the Wolf Creek Recreation Trail passes by the historic Wright-Dunbar and Aviation Heritage sites. Although the trail is fragmented in some locations, Five Rivers MetroParks will oversee completion of the final Montgomery County segment in 2009. When complete, the Wolf Creek Recreation Trail will provide an uninterrupted bicycle route connecting Dayton, Trotwood, Brookville, Verona, and other destinations in western Montgomery County. The Wolf Creek Recreation Trail segment between downtown Dayton and Wesleyan MetroPark is also known as the Paul Laurence Dunbar Connector.

Segments of the Stillwater Recreation Trail currently exist near Triangle Park, Wegerzyn Gardens MetroPark, and Sinclair Park in Dayton. Farther north in Englewood, a completed segment follows the Stillwater River's western edge near Englewood MetroPark.

Following the Mad River floodplain, the Mad River Recreation Trail extends 2.8 miles east from RiverScape MetroPark (in downtown Dayton) to Eastwood MetroPark. An interim on-street segment follows Springfield Pike toward a planned shared use path extension to the Wright Brothers Memorial and the Wright Brothers (Huffman Prairie) Bikeway. Bicyclists on the Mad River Recreation Trail can also connect to the Creekside Recreation Trail passing through eastern Montgomery County and Greene County.

Completed segments of the Iron Horse Trail exist in Beavercreek, Riverside, and Kettering. This trail (also known as the Kettering Trail) currently extends south from the Creekside Recreation Trail near U.S. 35 in Riverside before passing through northeast Kettering. A planned extension will continue the trail south into Centerville, connecting with several local on- and off-street bikeways in Montgomery County.



Figure 14. Recently-completed section of the Great Miami River Recreation Trail in Franklin



Figure 15. Gayle B. Price, Jr. Bridge

Extending south from Greene County, the Little Miami Scenic Trail follows the Little Miami Scenic River through Corwin in Warren County. The trail continues farther south toward Newtown.

Several other shared use path segments exist throughout Montgomery and Northern Warren counties, including the Twin Creek Trail in Germantown, as well as other paths in Centerville/Washington Township, Englewood, Huber Heights, Miamisburg, and Moraine.

Several bicycle/pedestrian overcrossings serve non-motorized users on the Montgomery and Northern Warren County trail system. Examples include the Gayle B. Price, Jr. Bridge on the Mad River Recreation Trail (see Figure 15), and a bridge over U.S. 35 linking downtown Dayton with the South Park neighborhood.

In-Corridor and Rural Bikeways

Many communities throughout Montgomery and Northern Warren counties benefit from streets that are suitable for bicycling. Although most major streets lack dedicated bicycle facilities, relatively well-connected lower-order streets could sufficiently accommodate riders in some areas (see Figure 16). For instance, well-connected low-volume streets in Dayton's South Park neighborhood provide generally good bicycle access to nearby destinations such as the University of Dayton. Bicyclists experience challenges in other areas where major urban and rural streets lacking bicycle facilities provide the only means for accessing destinations. Several communities (e.g., Centerville/Washington Township) have identified street corridors for future on-street bikeway treatments.



Figure 16. Low-volume residential street south of downtown Dayton

3.4. OTHER BICYCLE FACILITIES

This section describes other physical elements important to the bikeway network, including bikeway signage, end-of-trip facilities (e.g., bike parking), and multi-modal connections.

3.4.1. Bikeway Signage

Implementing a well-designed, attractive, and functional system of network signage greatly enhances bikeway facilities by promoting their presence to both potential and existing users. The ability to navigate through a town or city is informed by landmarks, natural features, and other visual cues. A signage system is a key component of a navigable environment and informs pedestrians, bicyclists, and motorists, while also enhancing the Miami Valley's identity and the individual cities. An effective wayfinding system communicates information clearly and concisely. Placing signs throughout the bikeway system indicating to bicyclists and pedestrians their direction of travel, location of destinations, and the time/distance to those destinations will increase users' comfort and accessibility to the bicycle and pedestrian system. Wayfinding signs are a relatively cost-effective means for improving the walking and bicycling environment.

A variety of signage treatments exist on the Miami Valley's local and regional bikeways. Some off-street bikeways utilize a numbering system originally intended to impart a uniform theme for bikeways across the state. The numbered plaques may or may not include additional wayfinding signs providing directional information for system users, as shown in Figure 17. Interpretive signs also exist along some trails highlighting cultural or historical features. Unique logos have been developed for some trails, which are



Figure 17. Bikeway numbering sign and supplemental wayfinding sign on the Little Miami Scenic Trail



Figure 18. Sign depicting the Ohio-to-Erie Trail logo

commonly posted along the trail as a route reinforcement tool for users (see Figure 18). The Miami Conservancy recently developed a signage concept for trails in Greene, Miami, and Montgomery Counties (see Figure 19). Signs will include trail names and route numbers, supplemented with wayfinding information for nearby destinations and trail amenities.

3.4.2. End-of-Trip Facilities

Described below, end-of-trip facilities include a safe location and appropriate type of bicycle parking, as well as a location to change from bicycling clothing into to work appropriate clothing.

Bicycle Parking

Bicycle parking is an important component in planning bicycle facilities and encouraging people to use their bicycles for everyday transportation. Bicycles are one of the top stolen items in most communities, with components often being stolen even when the bicycle frame is securely locked to a rack. Because many of today's bicycles are often high-cost and valuable items, many people will not use a bicycle unless they are sure that there is secure parking available at their destinations. Bear in mind that many cyclists may use (and even prefer) less "formal" bicycle parking methods, such as simply bringing their bicycle inside their building and storing it in their office. Cyclists with higher-end bicycles (perhaps costing several thousand dollars) are often reluctant to let a bicycle out of their sight at all, and for them the ability to bring a bicycle inside a building is a paramount concern if they are considering whether or not to bicycle to work or to a store.

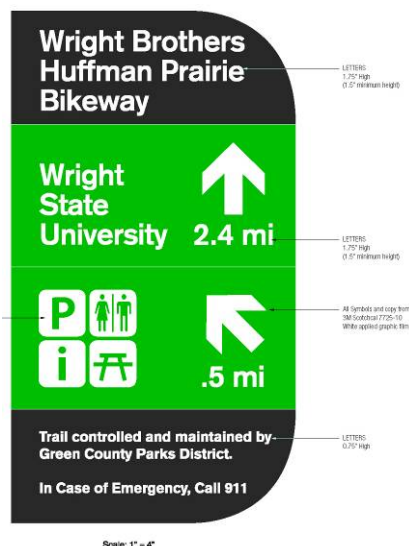


Figure 19. MCD trail signage design

Lack of secure, convenient bicycle parking is a deterrent to bicycle travel. Bicyclists need parking options that can provide security against theft, vandalism, and weather. Like automobile parking, bicycle parking is most effective when it is located close to trip destinations, is easy to access, and is easy to find. Where quality bicycle parking facilities are not provided, determined bicyclists lock their bicycles to street signs, parking meters, lampposts, benches, or trees. These alternatives are undesirable as they are usually not secure, may interfere with pedestrian movement, and can create liability issues or damage street furniture or trees.

Bicycle parking facilities that are conveniently located and adequate in both quantity and quality can help reduce bicycle theft and eliminate inappropriate parking, benefiting everyone. Bicycle parking is highly cost-effective compared to automobile parking, and if credits are given for auto parking, the building owner can benefit as well. Bicycle parking is classified as either short-term or long-term parking, depending on the type of facility.

Bike Racks (Short-Term)

Short-term bicycle parking facilities are best used to accommodate bicycles of visitors, customers, messengers, and others expected to depart within two hours. This parking is provided by bicycle racks, which provide support for the bicycle but do not have locking mechanisms. Racks are relatively low-cost devices that typically hold between two and eight bicycles, allow bicyclists to securely lock their frames and wheels, are secured to the ground, and are located in highly-visible areas. Racks should not be designed to damage the wheels by causing them to bend. Bike racks should be located at schools, commercial locations, and activity centers such as parks, libraries, retail locations, post offices, churches, and civic centers, or anywhere personal or professional business takes place.



Figure 20. Bike racks at the Wright-Dunbar Interpretive Center

Bike Lockers (Long-Term)

Long-term bicycle parking facilities accommodate bicycles of employees, students, residents, and others expected to park more than two hours. This parking is provided in a secure, weather protected manner and location, such as a bicycle locker or a secure area like a “bike corral” that may be accessed only by bicyclists. The “day locker” (e.g., “bike lid,” “e-Locker,” etc.) is a new bicycle locker concept that has gained recent popularity because it requires minimal program administration. These lockers allow for multiple users in the same day, therefore allowing these lockers to function similar to racks.

Limited short- and long-term bike parking is available in most Miami Valley communities. Existing bike parking facilities are typically found at educational institutions (e.g., schools, colleges and universities), government agency offices, and some historical landmarks (see Figure 20). While the University of Dayton and other institutions generally provide ample bike parking, field observations indicate that not enough bike parking is provided in commercial areas. In many cases, major commercial areas lack bike parking altogether.

Changing Facilities

Aside from bicycle parking, other end-of-trip facilities for bicyclists include changing areas, clothes lockers, and showers which allow bicyclists to clean up after riding. In order to best encourage bicycle commuting, these facilities need to be located at places of employment, so that an employee could bicycle in, then shower and change before starting work. Shower and locker facilities may exist in some office buildings and other employment centers in the Miami Valley, but they do not appear to be very common. Health and fitness clubs can offer an alternative place to shower/change for commuter cyclists, but only function for commuter

cyclists if the facilities are located conveniently close to the place of employment. In encouraging the new demographic of riders to try cycle commuting, facilities such as showers, lockers, and bike parking becomes nearly as important as providing the bicycle facilities themselves.

As part of the RiverScape Phase III project in downtown Dayton, Five Rivers MetroParks is developing a bike hub which will include card-accessible, secure bicycle storage facilities. The hub will also include showers, changing facilities, public restrooms, and a food concession area. These facilities will greatly benefit commuter cyclists, and the hub's summer bicycle rentals will also attract recreational riders.

3.4.3. Multi-Modal Connections

Three agencies provide transit service in the Miami Valley region. Greene County's Coordinated Agency Transportation System (Green CATS) provides flexible routing transit service (with route deviations up to $\frac{3}{4}$ mile to accommodate passengers with disabilities), as well as demand-response service. Vans primarily serve Greene County, but travel to destinations outside the county on request. Bike racks were recently added to the agency's van fleet, thereby easing bicycle/transit integration for Greene County residents. In Miami County, demand-response van service is provided by Miami County Transit Service. The agency's fleet currently lacks bike racks.



Figure 21. Bike rack on GDRTA bus

The Greater Dayton Regional Transit Authority (GDRTA) is the Miami Valley region's primary transit provider. Serving about 13 million passengers per year, the agency provides fixed-route bus service throughout Dayton and surrounding communities. All buses are equipped with a bicycle rack on the front of the bus with a capacity for two bicycles (see Figure 21). GDRTA reports that approximately 200 passengers utilize the bike racks each day.

3.5. EDUCATION, ENCOURAGEMENT AND ENFORCEMENT PROGRAMS

Equally important to the physical bikeway network are support programs. Programmatic elements addressing education, encouragement and enforcement contribute to a well-rounded bicycle improvement plan. The following list provides a sample of current programmatic efforts in the Miami Valley, while Chapter 6 provides a more detailed discussion of existing programs.

- Five Rivers MetroParks offers a "Basic Bike Maintenance" class showing simple ways to keep your bike in shape.
- MVRPC, MCD, GDRTA, and Five Rivers MetroParks promote the "Drive Less.Live More." campaign, encouraging residents to seek alternative ways of getting around, including bicycling.
- Several websites provide interactive user-friendly maps of the region's trail system.
- Five Rivers MetroParks sponsors and hosts "Bike for the Health of It" rides, and also promotes bike-to-work events.

- Organizations host annual organized bike rides, including Young’s Ice Cream Charity Bike Tour, Greene Trails Cycling Classic, and the Covered Bridge Bicycling Tour.
- The Ohio Bicycle Federation, Miami Valley Regional Bicycle Council, Dayton Cycling Club and other organizations monitor infrastructure projects and seek opportunities to include top-quality bicycle facilities.
- Five Rivers MetroParks, the Greene County Park District, and Miami County Park District each have volunteer patrols that regularly patrol their respective trail systems.
- The local League of American Bicyclists chapter offers “StreetSmarts Cycling” classes, where participants can learn how to safely operate a bicycle under various conditions, and learn about bicyclists’ rights and responsibilities.
- The Greater Dayton Safe Kids Coalition coordinates organized bike rides and helmet giveaways in an eight-county region.

3.6. OPPORTUNITIES AND CONSTRAINTS

This section provides an assessment of general opportunities and constraints facing bikeway network development. Described below, some elements represent both opportunities and constraints.

3.6.1. Population Growth Trends

According to MVRPC’s Long Range Transportation Plan, the Miami Valley Region has experienced an outward movement of both population and jobs over the past several decades. This movement has generally gravitated along major transportation corridors from Dayton to outlying communities. These trends are expected to continue in future years beyond existing suburbs. By 2030, the region’s population is expected to decline by approximately 0.7 percent, while employment is expected to grow by just over four percent. Greene and Miami counties are expected to continue to grow while Montgomery County is expected to experience some decline in both population and employment. Warren County (including the cities of Franklin and Carlisle) is currently one of the fastest growing counties in the country, and this rapid growth is expected to continue through 2030.

Dynamic settlement patterns in the region have started to stress the existing roadway system, resulting in increased traffic congestion and hazardous conditions for bicyclists and pedestrians, particularly children. This is an excellent opportunity to further develop a comprehensive bicycle network.

3.6.2. Development

Planned new residential and commercial development in the Miami Valley presents many opportunities to incorporate bicycle facilities into projects that are in the planning and design stages. For instance, the planned Carriage Trails subdivision in Huber Heights includes a planned shared use path system. Integrating bicycle facilities into projects adds a relatively small cost to most improvements, compared with the expense of trying to retrofit facilities later. In addition, as communities develop, bicycling will continue to grow as a preferred option for commuting and recreating.

3.6.3. Weather

The weather can be viewed as both an opportunity and constraint, depending on the time of year. The Miami Valley’s climate generally includes mild temperatures and gentle breezes, though occasional cold snaps bring low temperatures while humidity can create uncomfortable conditions in summer months. The temperature rarely rises over 100 degrees, even in summer months, and it is rare when the temperature drops below zero,

even on the coldest days. Typically, the winter temperature rises to above freezing during the day, ensuring snow does not stick to the ground very long. Precipitation largely consists of rain, with the region accumulating two to four inches of rain per month, although occasional icy conditions create a challenging bicyclist environment. Approximately 29 inches of snow fall every year in the area.

3.6.4. Roadway Classifications, Volumes, and Speeds

Heavy traffic volumes and speeds along most of the Miami Valley's major roadways, combined with a lack of bicycle accommodations on most routes, makes bicycling very difficult along many of the region's major streets (see Figure 22). This is made more challenging by the fact that many bicycle trips require some amount of travel along or across an Arterial, due to minimal Collector and Local street system connectivity in some areas.

Bicyclists have same the mobility needs as other transportation system users: they want to travel to the same destinations, and they want to get there quickly, efficiently and safely. These factors make Arterial streets preferred routes for cyclists in the same way they are preferred by motorists: Arterials and Major Collectors provide the most direct routes linking major destinations. In the optimal situation there would be bikeways on all Arterial streets to serve this need. Two U.S. cities – Davis, California and Boulder, Colorado – both have dedicated bicycle lanes on over 90 percent of their Arterial roads, and also experience some of the highest bicycle commute mode shares of any city in the United States (about 20 percent of trips by bike in both cities). However, the existing land use development patterns, limited right-of-way widths, and heavy traffic make it infeasible, and perhaps even unsafe to accommodate bicycles on some major roads in the Miami Valley. As the bikeway network development process moves forward, this will continue to be a challenge – balancing the accessibility and functionality provided by Arterial roads, with the difficulties these roads present in terms of safely and feasibly of adding bicycle facilities.



Figure 22. Bicycling on SR 73 in Springboro is difficult due to a lack of safe and comfortable facilities



Figure 23. The addition of a shoulder on Grange Hall Road in Beaver Creek would improve the bicycling environment

3.6.5. Lack of Roadway Shoulders

In several areas, many roads lack shoulders, thereby creating difficult riding conditions (see Figure 23). These roads could be easily made bicycle friendly by paving the shoulder area.

3.6.6. Regional versus Local Approach

Several agencies own and operate the region's streets and trail system, including the Ohio Department of Transportation, Miami Conservancy District, county parks districts, and local agencies. The relatively high number of agencies could challenge development of a comprehensive bikeway network, as some agencies may express a stronger desire or willingness to implement projects while others take a more reserved

approach. This could potentially result in a fragmented system. However, this Plan presents a tremendous opportunity for MVRPC to serve as the regional bikeway development “champion” and encourage its member communities to fully participate.

3.6.7. Topography and Geography

Bicyclists benefit from relatively flat terrain in the Miami Valley region. Waterways, including the Great Miami River, Little Miami River, Mad River, Stillwater River, and Caesars Creek represent the predominant natural barriers. Identifying safe and comfortable bicyclist crossings of these barriers will enhance the entire bicycle network while increasing connectivity throughout the region.

3.6.8. Freeways and Major Highways

Freeways and major highways challenge bicyclists throughout the Miami Valley. Freeways, including Interstates 70, 75, 675, U.S. 35, and SR 4 offer limited crossing opportunities which can create out-of-direction travel. The region’s major Arterial streets offer more crossing opportunities, but high vehicle speeds and traffic volumes create uncomfortable and potentially unsafe crossing conditions. Examples include U.S. 42 and U.S. 68 in Greene County, SR 725 and SR 741 in Montgomery County, and SR 73 in Warren County. Planning for and creating safe crossings along desired bicycle routes will be necessary in creating a comprehensive bicycle network.

3.6.9. Planned Bikeway Network Improvements

Several Miami Valley jurisdictions are taking a pro-active bikeway network development approach. This Plan builds upon the tremendous previous and on-going bikeway planning in several communities, including Centerville/Washington Township, Beavercreek, Huber Heights, Washington Township, and Xenia. The Miami Conservancy District and Five Rivers MetroParks are also actively pursuing bikeway system expansions. MVRPC’s Short- and Long-Range Transportation Plans also include an extensive list of future bikeway improvement projects. Identifying connections to existing and planned bikeways will enhance connectivity and improve safety on the entire non-motorized system throughout the Miami Valley.



Figure 24. Stairway with wheel gutter

3.6.10. System Connections

Although the Miami Valley benefits from a well-developed trail network, several system gaps remain, including missing links on the Great Miami River Recreation Trail in Miami County, the Iron Horse Trail, Mad River Recreation Trail, Stillwater Recreation Trail, and Wolf Creek Recreation Trail in Montgomery County, and the Xenia-Jamestown Connector Trail in Greene County. Difficult connections to the trail system from surrounding areas also represent a major challenge. In general, the region lacks on-street connections from nearby residential areas and other bicycle trip generators. Areas immediately adjacent to the trails also suffer from difficult connections in some areas. For instance, the Dayton RTA and Cultural Center is located immediately adjacent to the Great Miami River Recreation Trail, but the absence of connecting ramps and stairs complicates bicycle travel in this area. In other areas, “bike stairs” provide good connections to the trail system (see Figure 24).

3.6.11. Intersections

Most intersections on the regional street system lack bicyclist accommodations (e.g., bike lanes, loop detectors, activation buttons, etc.). As most vehicle/bicycle conflicts occur at intersections, these areas should have appropriate treatments to facilitate safe and comfortable non-motorized travel.

3.6.12. Wayfinding Issues

The Miami Valley region would benefit from a comprehensive and unified regional bikeway signage and wayfinding system. Although signage exists on the region's trail system, wayfinding is not apparent at shared use path gaps where the path ends and users are required to use the road. Additional signage on the region's existing and future bikeway network would also help orient users to major bicyclist destinations. MCD has developed a regional trail signage concept scheduled for implementation in 2008.

3.6.13. Presence of Bicycle Advisory Committees and Advocacy Groups

The role of bicycle advisory committees and advocacy groups in the region's bikeway development should not be underestimated. Local groups include the Beavercreek Bikeway Advisory Committee, Dayton Cycling Club and the Vandalia Bicycle Committee. Regional and State committees and advocacy groups include the MVRPC Recreational Trails Committee, Miami County Bike Task Force, Miami Valley RailTrails, Ohio Bicycling Federation, Ohio-to-Erie Trail Fund, and the Midwest branch of the Rails-to-Trails Conservancy.

