

Greene County Master Trails Plan

APRIL 2021



GREENE COUNTY
PARKS & TRAILS



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Introduction

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Introduction

The Greene County Master Trails Plan (MTP) lays the foundation for a unified approach to develop a safe and connected trail network. It is a long-range vision of what the network will look like in 2040 placed within the context of the region and the state while considering locally developed plans. The MTP plays an integral part of a strategic planning effort at the county level initiated by the Regional Planning and Coordinating Commission (RPCCC) of Greene County in collaboration with Greene County Parks & Trails (GCP&T). This chapter describes the Plan’s purpose and structure and examines the benefits associated with active transportation.

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Expanding the trail system

Greene County already has an established system of trails with four major trails converging at the Xenia Station, centrally located in the county. The trails that cross Greene County are part of the nation's largest network of paved trails. Regional trails include Creekside, Xenia-Jamestown Connector, and the Little Miami Scenic and Prairie Grass, both part of the statewide Ohio to Erie trail.

These major trails, as well as local bikeways and sidewalks help connect residents and visitors to everyday destinations such as neighborhoods, schools, and work as well as major destinations, such as parks. The existing network builds a solid foundation for the expansion of the network, especially between some cities and villages that currently are not connected via bicycle facilities. Greene County sees thousands of bicyclists every year on their trails, with a daily average up to 281 bicyclists on it's busiest trail.¹

More people are walking and biking for everyday needs and there is an increased recognition in the benefits of active transportation. In addition to existing high ridership in the County there has been an increased interest in biking and walking during the COVID-19 pandemic. Expanding the trail network will have both health and economic benefits.

Benefits

Active transportation can provide many community benefits, even beyond personal mobility, such as public health, economic development, quality of life, and environmental quality. In order to obtain these benefits it is important to invest in the infrastructure and programs that support active transportation.

Quality of Life

Comfortable and accessible bicycling and walking provide a host of quality of life benefits. They increase the number of travel options for everyone and can lead to a sense of independence in seniors, young people, and others who cannot or choose not to drive. Providing a high-quality active transportation network is important for Greene County residents who do not have full access to a vehicle.

Active transportation options are associated with inviting places for people to live and work.² Bicyclists often report greater satisfaction with their commute than people who drive to work.³ In communities that have invested in bicycling and walking infrastructure, bicyclists and pedestrian commuters report the highest levels of “commute well-being,” which is a measure of commute-based stress, confidence in arrival time, boredom or enthusiasm, excitement, pleasure, and ease of trip.

Physical Health

According to the U.S. Health and Human Services Department's (USHHS) Physical Activity Guidelines for Americans, 150 minutes of moderate-intensity aerobic activity (for example, brisk walking) each week reduces the risk of many chronic diseases and other adverse health outcomes.⁴ For young people ages 6–17 the USHHS recommends participating in at least 60 minutes of physical activity every day. Engaging in physical activity beyond these amounts can impart additional health benefits.

Being overweight increases an individual's risk for many chronic diseases, including hypertension, diabetes, osteoarthritis, cardiovascular disease and stroke, gallbladder disease, arthritis, sleep disturbances, mental health issues, breathing problems, and certain cancers.⁵ Increased opportunity for recreation and destination-oriented trips using active modes of travel are key to reducing obesity and, by extension, the risk for developing chronic diseases.

Mental Health

Physical activity, including walking and bicycling, can help prevent or treat some mental health conditions. Physical activity reduces depression, can improve the quality of sleep, and has been shown to improve cognitive function for older adults.⁶ Active transportation can also improve social conditions in communities, which contributes to positive mental well-being

among residents. While there may be many reasons people feel socially isolated, land-use and transportation systems designed around the automobile can exacerbate these feelings. Car dependence reinforces solitary lifestyles and reduces opportunities for positive social interaction in public spaces.⁷

Economic Development

There is broad consensus across the country, and in Ohio, that investing in active transportation produces a positive return on investment for host communities. This is especially true when it comes to trails, which serve as major regional attractions for recreational riders. Trail-based tourism is an economic boon for many small communities, supporting local businesses, creating jobs, and increasing property values.⁸ Building on Greene County's regional and statewide trail connections could support economic growth. For example, annual trail tourism spending along the Great Allegheny Passage in Maryland and Pennsylvania exceeds \$40 million. It has resulted in 54 new or expanded businesses, 83 jobs, and \$7.5 million in local wages every year.⁹ Another study found that customers who walked or biked to local stores spent as much or more than those who drove over the course of a month, often because they visited more often or stopped on impulse when walking past.¹⁰ Businesses such as bicycle shops are also needed to support a strong bicycling community, providing opportunities for new entrepreneurial activity.

Environmental Quality

Support for bicycling and walking comes in part from concerns about greenhouse gas emissions, stormwater runoff from highway facilities, and other environmental implications of widespread personal vehicle use.¹¹ Shifting to bicycling and walking trips and concentrating development in dense walkable and bikeable communities can reduce transportation-based emissions and sprawling land use that impacts the natural environment.¹²

Exhaust from automobiles increases local air pollution, which can cause or trigger respiratory and cardiovascular problems. People with sensitivities to air pollution, including older adults, children, and those with diseases such as asthma or congestive heart disease, are more likely to be affected by contact with pollution from particulate matter, which includes pollutants from automobile exhaust.^{13 14} Multiple studies have found that low-income, minority communities bear the greatest burden of auto-related emissions due to proximity to high-volume roads.^{15 16 17} Reducing the number of vehicles on the road can reduce air pollution and improve air quality.¹⁸ Researchers have proposed that increasing the supply of active transportation facilities (e.g., sidewalks, bike paths, etc.) can help reduce exposure to harmful pollutants.¹⁹

Planning Process and Document Structure

The Plan was created under the leadership of RPCC, GCP&T, and an Oversight Committee to ensure it represents a variety of interests and stakeholders. The process to develop the Plan began early 2020 with an assessment of existing conditions and a review of other relevant plans and studies. Public input and a technical analysis provided a foundation for recommendations and prioritization of those recommendations. Finally, guidance for implementation was developed. The document is organized into the following sections:

- » Introduction
- » Vision and Goals
- » Existing Conditions
- » Recommendations
- » Implementation

Project Milestones





Vision and Goals

2

Vision and Goals

During the kicking off meeting on February 21, 2020 the Oversight Committee discussed expected goals and potential objectives of the plan. Based on the discussion, the goals and objectives fell within seven broad categories listed below.

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Goals

Connectivity

- » Connect the existing and proposed trails network to multiple jurisdictions and downtown commercial centers within each jurisdiction.
- » Develop a network that has **local** (neighborhoods), **regional** (parks, multiple jurisdictions), **state** (Ohio-to-Erie trail, State Bike Routes 1, 20, and 23), and **nationwide** (US Bike Routes 21 and 50, Great American Rail Trail) connections.
- » Tie the existing trails network into on-road bicycle facility infrastructure, especially in downtown commercial centers.

Safety & Accessibility

- » Create a trail network that is accessible for all ages and abilities, such as off-road trails, separated/protected bike lanes, and bicycle boulevards.
- » Support Complete Streets by encouraging jurisdictions to adopt Complete Streets

Policies or consider a complete streets approach in roadway projects.

Programming & Awareness

- » Build momentum and advertise Greene County Trails as being part of the Nation’s largest paved trail network as well as being part of major statewide and nationwide trail networks.
- » Emphasize the trail system as a destination.

Economic Benefits

- » Engage local and regional chambers of commerce to help advertise the trail network and encourage trail users to support local businesses.
- » Engage local business owners to help build support for on-road protected bicycle facilities to connect trails to downtown commercial centers.
- » Encourage local business to become bike friendly and explore creating or expanding



Bicycle and/or Trail Benefits programs that provide discounts to participants who bike to local businesses.

- » Encourage trail orientated development, such as restaurants and other destinations along trails geared toward supporting trail tourism.

Wayfinding

- » Use wayfinding to encourage trail users to visit various city and town centers as well as major parks and other destinations.

Funding

- » Explore multiple funding sources to support expanding the trail network as well as programming and advertising trails, including local, regional, statewide, and federal sources.
- » Develop partnerships between the individual jurisdictions, county, and MPO to help leverage funding and expand the trail network.

Maintenance

- » Support the creation of cohesive maintenance plan for all Greene County Trails.





Existing Conditions

3

Existing Conditions

This chapter examines several elements of Greene County's existing trails network. It presents a demographic profile of the County, a plan and policy review summarizing existing trail, active transportation, and related efforts to date. An infrastructure analysis provides an overview of the transportation system, describing the roadway network, traffic volumes, crash data, and an inventory of trail and bicycle facilities.

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Demographics

Greene County is located east of Dayton, OH has an overall population just over 168,900 with Beavercreek being the largest city (46,942), followed by Fairborn (33,462), and Xenia (26,534). Other cities and villages include: Bellbrook (7,212), Cedarville (4,075), Yellow Springs (3,872), Spring Valley (543), Bowersville (350), and Clifton (116).

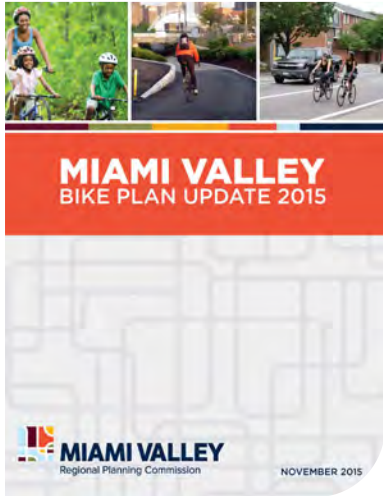
The median household income of the County is \$67,394, approximately 20 percent higher than the state median household income. On average residents spend 20.7 minutes traveling to and from work with 83 percent driving alone, 6 percent carpooling, 5 percent working from home, and 3 percent walking. One percent take public transit and less than one percent bicycle to work.

The majority of the population is white (86 percent) followed by black (7 percent), and two or more races (4 percent). 94 percent of residents speak English with the second most spoken language being Spanish (4 percent).²⁰

Existing Plans

The plans for the following jurisdictions/regions were reviewed:

- » Miami Valley Regional Planning Commission (MVRPC)
- » Greene County
- » Individual Jurisdictions:
 - City of Beavercreek
 - City of Bellbrook
 - City of Fairborn
 - Sugarcreek Township
 - City of Xenia
 - Village of Yellow Springs



Miami Valley Regional Planning Commission (MVRPC) Bike Plan Update 2015

Proposed Projects (within Greene County)
High Priority Projects:

- » **Shared-use Path:** Grange Hall Rd./ National Rd. between Kauffman Ave. and Indian Ripple Rd

- » **Three Counties Trail:** Between Wright Brothers (Huffman Prairie) Bikeway and Haddix Rd.
- » **Shared-use Path:** Shakertown Rd. between County Line Rd. and U.S. 35/Factory Rd.
- » **Shared-use Path:** South Street and Xenia Dr.
 - **Bike lanes:** Xenia Dr. between path and Yellow Springs-Fairfield Rd
 - **Widen/add shoulders:** Black Lane, Armstrong Rd., W Enon Rd., N Enon Rd., and Yellow Springs-Fairfield Rd. to the Little Miami Scenic Trail.
- » **Buffered bike lane:** Detroit Street (take Little Miami Trail off sidewalk for 4 of the 6 blocks)
- » **Bicycle and Pedestrian Bridge:** Over South Detroit Street from the Xenia Station property to the east side of US 68 to serve the Ohio-to-Erie Trail and the Jamestown Connector.

Long Range Transportation Plan Bikeways:

- » Bellbrook-Fairborn Connector (multiple segments)
- » Wright Brothers-Huffman Prairie Trail
- » Fairborn-Yellow Springs-Cedarville Connector (multiple segments)
- » Bowersville-Jamestown-Selma Connector (multiple segments)
- » Germantown-Bowersville Connector (multiple segments)

Key Takeaways:

MVRPC covers Greene, Miami, and Montgomery Counties as well as northern parts of Warren

County. The Plan has three overarching themes:

- » Broadening focus from trails to on-street infrastructure and complete streets;
- » User comfort and safety are critical to increasing bicycle mode share; and
- » A comprehensive approach will enhance the implementation of this 2015 Update.

The Plan also identifies several recommended policies:

- » Support balanced federal funding for non-motorized transportation;
- » Fill the gaps and complete the streets;
- » Go above and beyond minimum standards;
- » Include bike and pedestrian infrastructure in local plans; and
- » Promote the nation's largest paved trail network.

MVRPC has also developed a Complete Streets (CS) Policy that requires that all projects funded through regionally-controlled federal funds must accommodate all roadway users. If the project does not accommodate all roadway users they must apply and be granted an exception to the CS Policy to proceed.

Perspective 2040

Perspectives 2040 is a land use planning policy document spearheaded by the Regional Planning and Coordinating Commission of Greene County (RPCC). The policy will guide development in the county over the next 20 years. Although the policy is in its initial phase of development, Perspective

2040's steering committee has identified the improvement or addition of trails as one of the opportunities for the plan.

Beavercreek Thoroughfare Plan Update 2019

The Beavercreek Thoroughfare plan considers the City's 5-Year Capital Improvement Plan, Miami Valley Regional Planning Council (MVRPC) Long Rang Plan, and MVRPC's Transportation Improvement Plan to create a composite map of bicycle facilities. The map was used to identify gaps and future improvements. In previous plans the focus was on off-street facilities, while this plan calls for attention to on-street facilities to create a more complete network. An additional 17.42 miles of sidepaths are proposed to be added to the 22.03 miles of existing shared use paths in Beavercreek.



City of Bellbrook Comprehensive Plan

The City of Bellbrook's Transportation Component in their Comprehensive Plan identifies several

additional multiuse path segments as well as adopting a Complete Streets Policy. The multiuse paths mostly converge in the Downtown area and connect to adjacent neighborhoods and parks or other green areas in support of the Downtown revitalization initiative. Several sidewalk improvements are also included in the plan in the Downtown area and along Linda and Belleview Dr. New crosswalks are also proposed, notably along Franklin Street.

Fairborn Comprehensive Land Use Plan Update 2016 and Fairborn Thoroughfare Plan

The Plan divides Fairborn into four distinct districts: Downtown District, Central District, University District, and East District. Within the Central District runs the Huffman Prairie Bikeway, a regional bike trail. The plan calls to make strong connections from residences to the trail, by enhancing the adjacent roadway, Kauffman Road, and adding commercial uses.

The Bikeway Plan was updated in February 2020 and includes several proposed separated use paths, bike lanes, and signed shared roadways. Relevant proposed signed shared roadways to the MTP include: Dayton-Yellow Springs Rd, Yellow Springs-Fairfield Rd, and West Enon Rd. A signed shared roadway already exists on Armstrong Rd and North Enon Rd.

Sugarcreek Township 2013 Long-Range Land Use Plan

The plan identifies road, bicycle, and pedestrian

improvements as a challenge due to multiple agencies being involved. The MVRPC's Bike Plan identifies two major projects in Sugarcreek Township: a north/south trail between Bellbrook Park and existing trails along Dayton-Xenia Road and east/west trail along State Route 725 from Wilmington Pike east to the Little Miami Scenic River Trail.

A School Travel Plan was completed in 2009 that identifies walking and biking improvements around schools in Bellbrook Sugarcreek School District. From 2009 to 2014, ODOT provided funding for five priority projects, all of which included 10' multi-use paths connecting schools with surrounding trails and neighborhood streets. The success of these various connections was such that Sugarcreek Township has developed plans for an 8.3-mile pathway, named Michael E. Pittman Community Trail, that will incorporate the multi-use paths and loop around Sugarcreek Township and the City of Bellbrook.



X-Plan: Xenia's Comprehensive Plan

Adopted in 2013, X-Plan is an integrated development plan meant to guide zoning, land use and development in Xenia for the next 20 years. The plan identified that the four regional bike paths converging into Xenia (Ohio-to-Erie Trail, Creekside Trail, Little Miami Scenic Trail, and Jamestown Connector) are great assets that lack neighborhood connectivity. The plan includes the objective to "Create a Community-Oriented Bike and Pedestrian Path System". Several actions support this objective, including the development of a bicycle and pedestrian master plan, updates to development and zoning standards to improve the connectivity of facilities and the implementation of wayfinding signage. The plan also identifies potential corridors where new bicycle facilities could be implemented.

Play Xenia Recreation Needs Assessment and Action Plan 2015

Play Xenia follows from X-Plan, which called for the creation of a recreation master plan. Play Xenia addresses biking indirectly, identifying it mostly as a tourism opportunity that can also serve local residents. It highlights some of the initiatives that are already noted in X-Plan, such as marketing the bike paths, doing trail-oriented events, improving bike-ability in downtown and recruiting bike-oriented businesses.

Yellow Springs Active Transportation Plan (ATP) 2019

Yellow Springs' ATP aims to improve mobility

for all its residents, while keeping older adults using assistive devices top of mind through the planning. The plan includes both regional projects that connect the Village to surrounding amenities and communities, and local projects within the Village. Regional infrastructure recommendations include three new trails: one from Little Miami Scenic Trail to Young's Jersey Dairy, one along SR 343 from Xenia Avenue to Clifton and another from Enon Road to Agraria. A sidewalk on Polecat Road is also proposed as a connection from the Village to Ellis Park.

Yellow Springs Complete Streets Policy 2017

The key outcome sought out in the Yellow Springs Complete Streets Policy is to ensure current and projected users of the public right-of-way are able to safely and conveniently reach their destinations regardless of their physical ability or mode of transportation. The policy does not dictate specific designs, but encourages the use of recognized Complete Streets guidance. Performance measures listed in the policy provide an indication of the importance of active transportation as a desired outcome of the implementation of the policy. Some of the measures include linear feet of new and repaired ADA compliant sidewalks and curb ramps, rate of children walking, biking or rolling to school and number of off-street and on-street bicycle routes.

Existing Infrastructure

Greene County has an established system of trails. The statewide Ohio to Erie Trail runs from Northeast to Southwest through the county connecting major cities, Columbus and Cincinnati, as well as Cedarville, Xenia, and Spring Valley in Greene County. Beavercreek and Xenia are connected via the Creekside Trail while the Little Miami Scenic Trail connects Yellow Springs to Xenia. Xenia and Jamestown are connected via the Xenia to Jamestown Connector.

Individual cities and villages have networks of trails, on-road bicycle facilities, and sidewalks for pedestrians (see Maps 13-18 for existing and proposed infrastructure).

Proposed routes shown in Map 1 are from an exercise completed by RPCC, GCP&T, and stakeholders prior to this process. This planning process builds on the foundation of the proposed routes by evaluating them further, considering alternatives, and gaining public input.

Map 1. Greene County Existing and Previously Proposed Facilities

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Bikeways

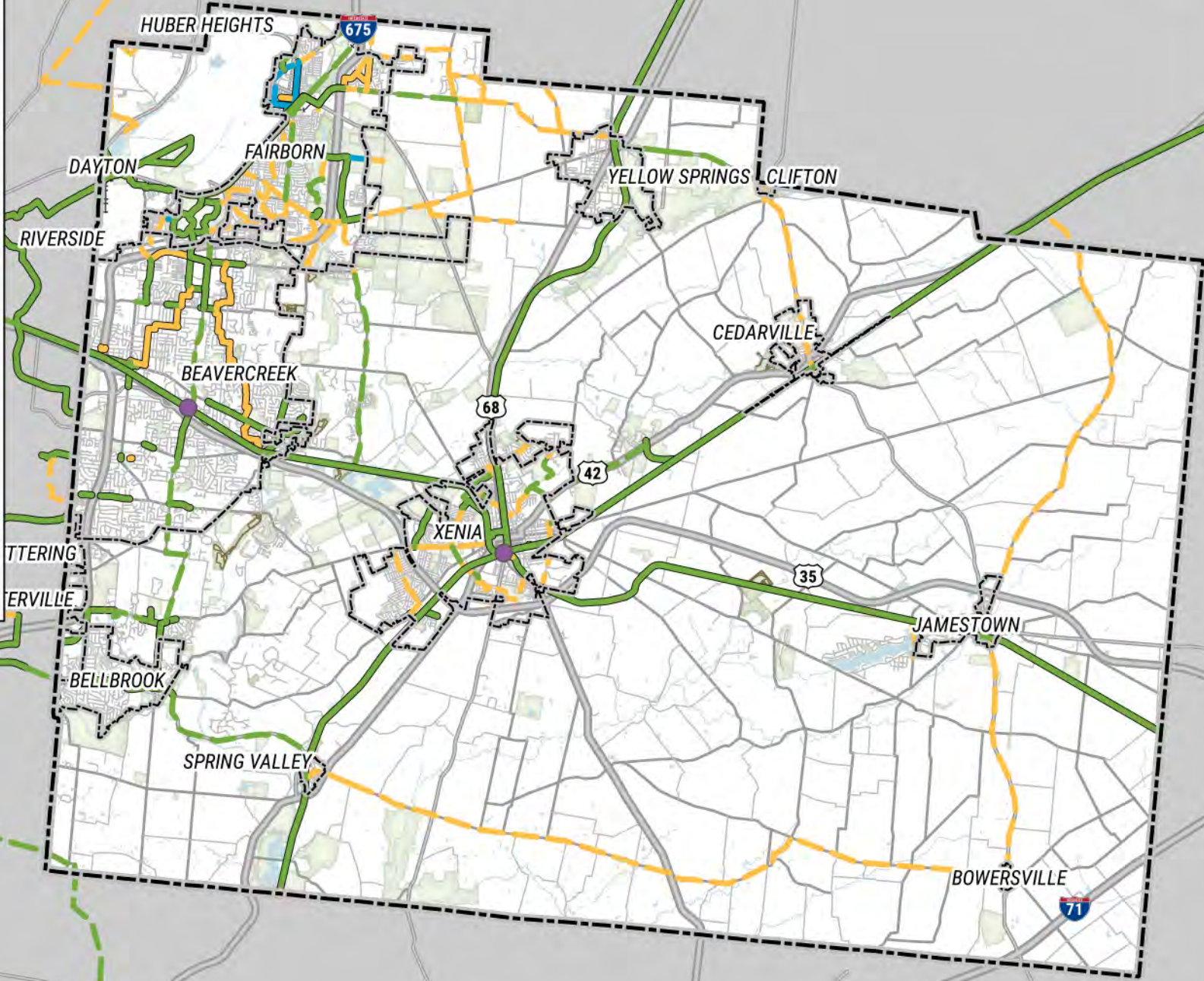
- Regional Bikeway Hubs
- Path - Existing
- - Path - Proposed
- Route - Existing
- - Route - Proposed
- Bike Lane - Existing
- - Bike Lane - Proposed

Boundaries

- ▭ Greene County
- ▭ Cities

Environmental

- Trails
- Hydrology
- Railways
- Regional Open Spaces



Needs Analysis

Lower-income and communities of color are typically the most dependent on active transportation and transit. As part of the statewide active transportation plan, Walk.Bike.Ohio, ODOT did a needs analysis and a demand analysis for walking and biking at the census tract level. Areas of high need and high demand should be prioritized for bicycle and pedestrian improvements, because it is likely that the residents in these areas rely more heavily on active transportation options for getting around. Several indicators were taken into account in ODOT's analyses to define need including:

- » Need Indicators: Minority Groups, Youth, Older Adults, Poverty, No High School Diploma, Limited English Proficiency, and No Access to a Motor Vehicle.²¹

For Greene County, this analysis shows the highest need for walking and biking is close to the downtown core of both Xenia and Fairborn. There is also a high need north of Xenia between Xenia and Yellow Springs and in some areas in Beavercreek, Yellow Springs, and Bellbrook.

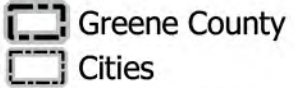
Map 2. Greene County Active Transportation Need Analysis

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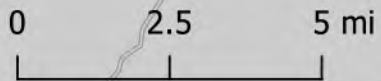
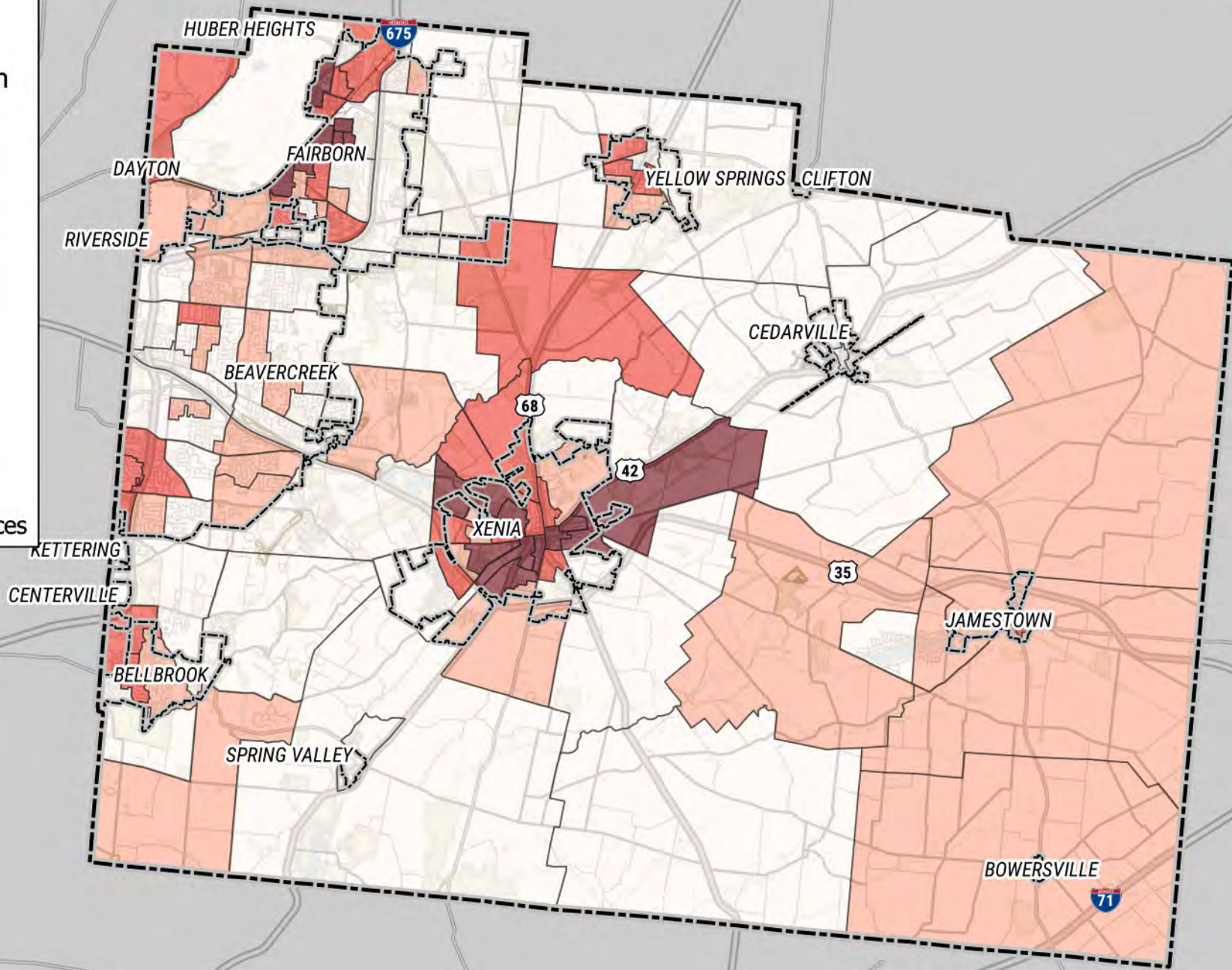
Active Transportation Need



Boundaries



Environmental



Demand Analysis

Several indicators were taken into account in ODOT's analyses to define Demand including:

- » Demand Indicators: Employment Density, Population Density, Walk/Bike Commute Mode, Park Density, Presence of Colleges/University, Retail Employment Density, and People at or Below 200% of the Federal Poverty Line.²²

Overall, Demand is concentrated in the north and northwest portions of the County, with the highest concentrations in Yellow Springs, Fairborn, and Beavercreek. Xenia also has a relatively high demand for walking and biking.

When considering both need and demand within the county, the highest concentration of need and demand is in the Northwest and central areas of the County.

Map 3. Greene County Active Transportation Demand Analysis

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Active Transportation Demand

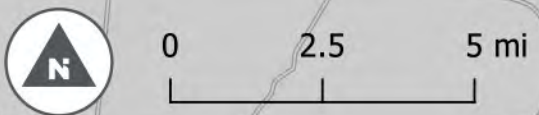
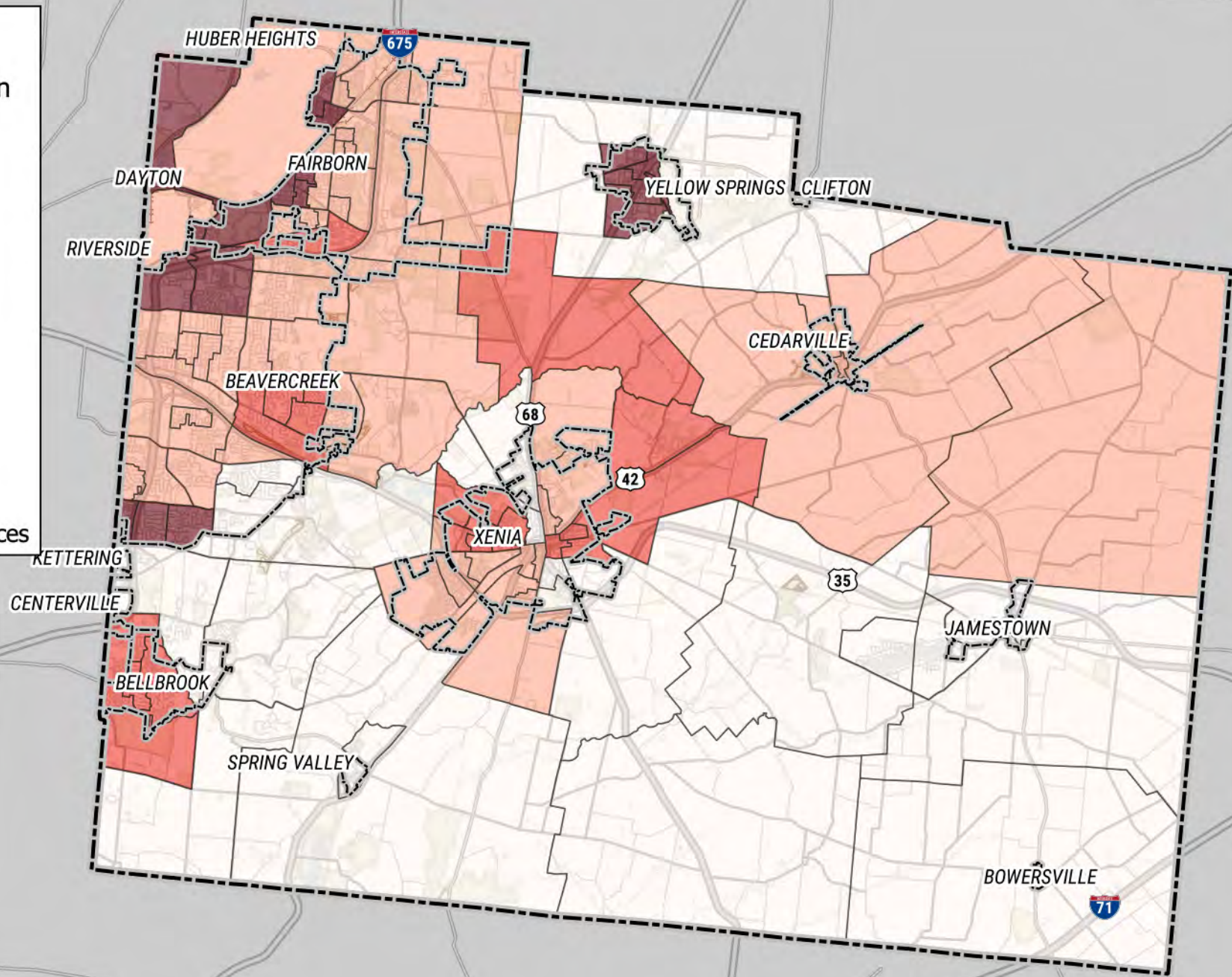
- Low
- High

Boundaries

- Greene County
- Cities

Environmental

- Trails
- Hydrology
- Railways
- Regional Open Spaces



Volume - Average Annual Daily Traffic (AADT)

AADT information was available for the major roadways in Greene County. The yellow and green highlighted roads have higher volumes, while the blue and purple highlighted roads have lower volumes (>5,000 AADT). In general lower volume/speed roads are more comfortable to bike on and therefore conducive to mixed facilities (shared lanes or bicycle boulevards), while higher volume/speed roads are less comfortable to bike on and need more separated facilities (separated bike lanes, shared use paths, or sidepaths) to accommodate bicyclists of all ages and abilities. As expected, state routes have some of the highest volumes, while roadways in downtowns and surrounding neighborhoods typically have low traffic volumes. More information on selecting facility types by volume/speed is provided in the Recommendations chapter.

Map 4. Greene County Volume

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AADT

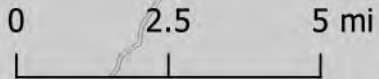
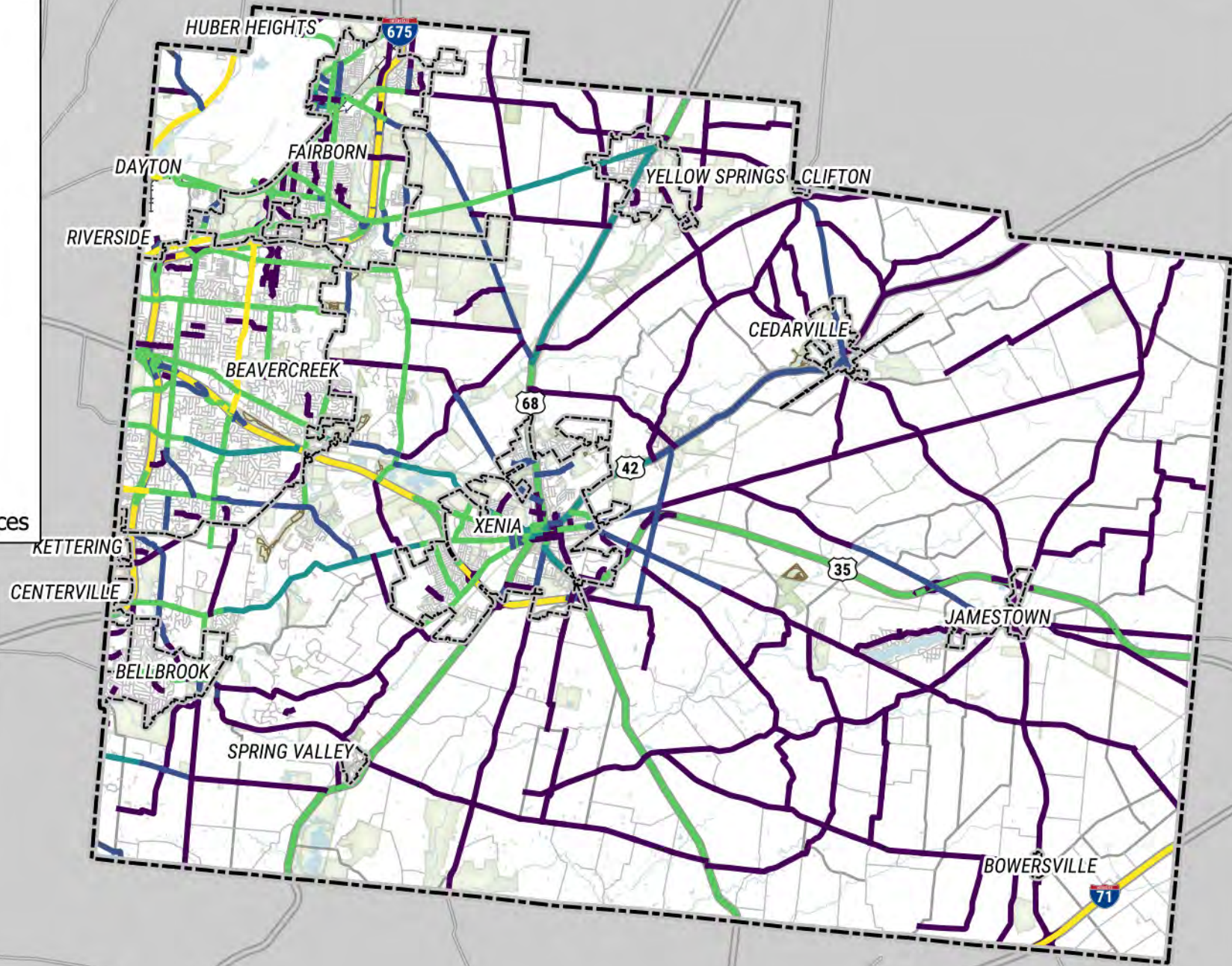
- 0 - 3,000
- 3,000 - 5,000
- 5,000 - 6,000
- 6,000 - 20,000
- 20,000 +

Boundaries

- Greene County
- Cities

Environmental

- Trails
- Hydrology
- Railways
- Regional Open Spaces



Speed Limit

Speed data was available for most major roads in Greene County. The darker the line, the higher the speed. Many of the roadways between cities and villages have speeds of 45mph to 55mph. Higher speed and higher volume roadways are not conducive to on-street bicycle facilities, especially if trying to accommodate all ages and abilities. Separated facilities, such as sidepaths are more appropriate for higher speed roadways.

Map 5. Greene County Speed Limit

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Speed (mph)

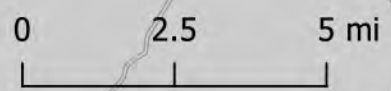
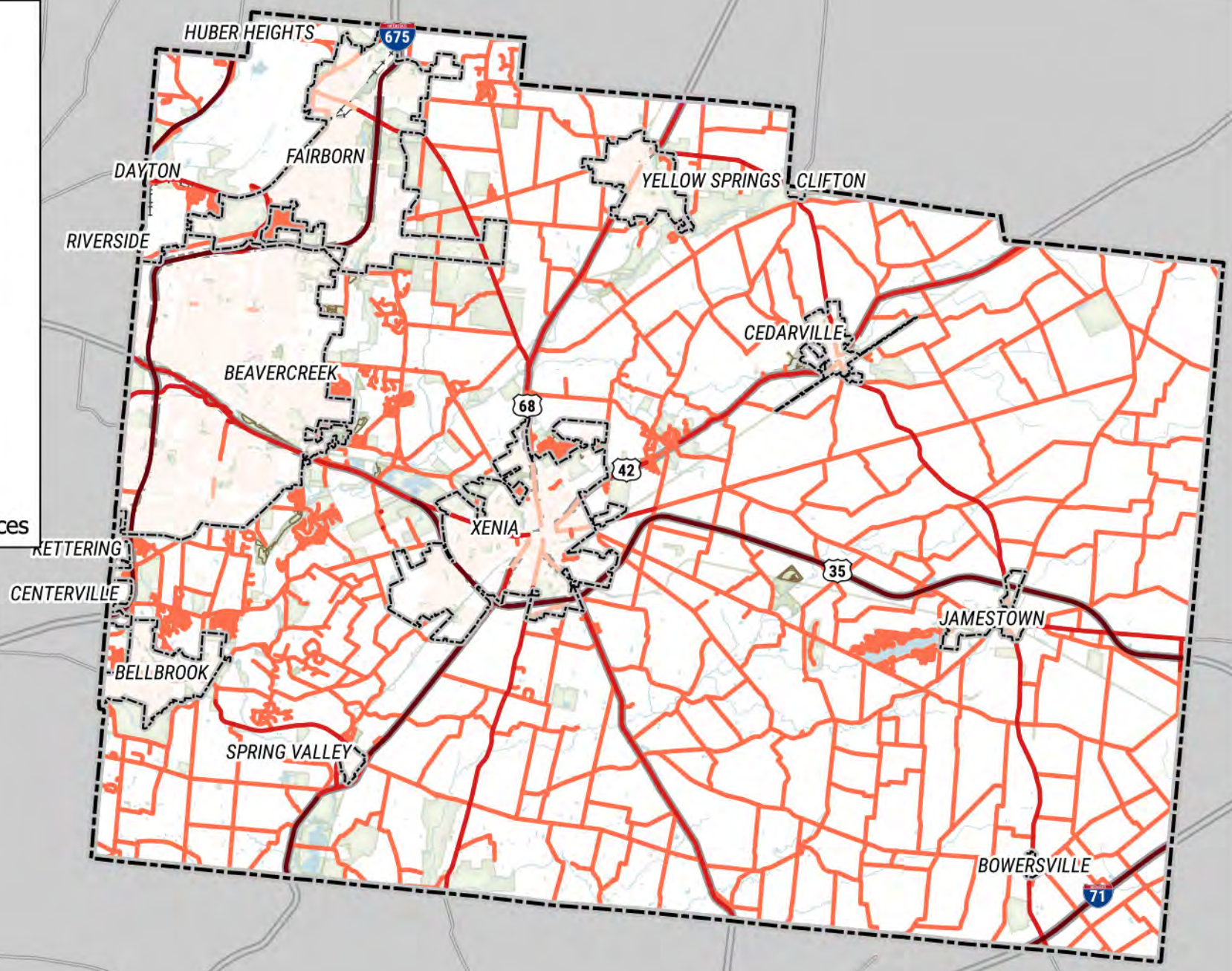
- 0 - 25
- 25 - 35
- 35 - 45
- 45 - 55
- 55 - 70

Boundaries

- Greene County
- Cities

Environmental

- Trails
- Hydrology
- Railways
- Regional Open Spaces



Crash Analysis

Bicycle and pedestrian crashes from 2014-2018 are shown in Map 6. Most crashes are concentrated in individual cities and villages, such as Fairborn, Xenia, and Beavercreek. There are fewer crashes on roadways between cities and villages. As shown in the Volume (Map 4) and Speed Limit (Map 5) maps, roadways between villages and cities have higher posted speeds and higher volumes, so they likely have much lower bicyclists and pedestrians using them to travel. As mentioned previously, higher speed, higher volume roads are not conducive to mixed traffic and separated facilities should be considered for bicyclists and pedestrians. More information on facility selection can be found in the Recommendations chapter.

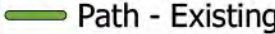
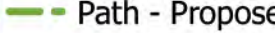

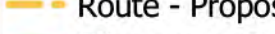
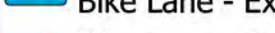

Map 6. Greene County Crashes 2014-2018

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

Crash Events 2014-2018

-  Pedestrian Crash
-  Bicycle Crash

Bikeways

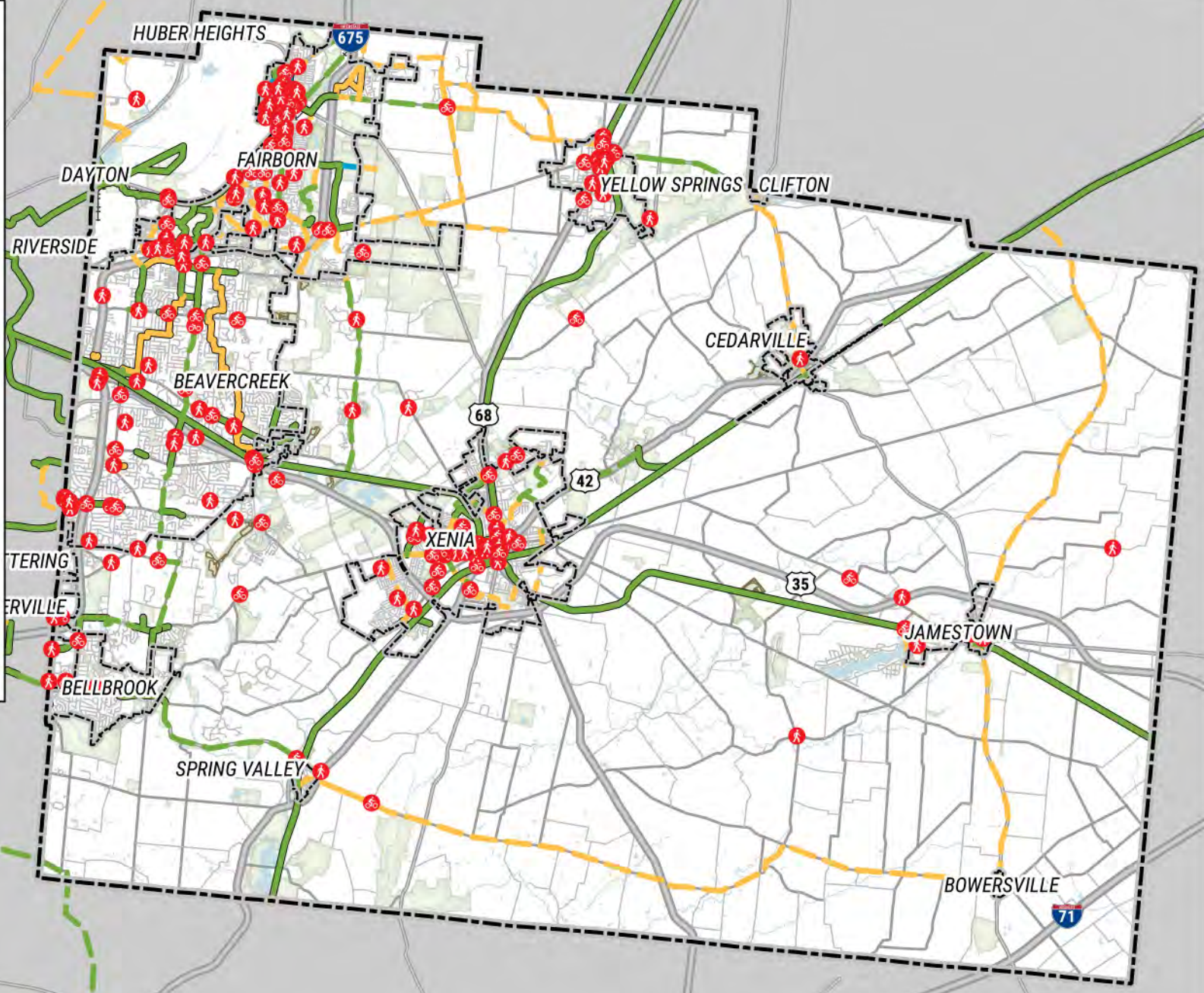
-  Path - Existing
-  Path - Proposed
-  Route - Existing
-  Route - Proposed
-  Bike Lane - Existing
-  Bike Lane - Proposed

Boundaries

-  Greene County
-  Cities

Environmental

-  Trails
-  Hydrology
-  Railways
-  Regional Open Spaces



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Community Engagement Summary

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Community Engagement Summary

Community engagement was an essential tool in the plan development process. Involving the public helped build trust in the Plan and improved the overall quality of the findings. Public input was collected through several methods: Oversight Committee meetings, online maps and surveys.

Oversight Committee Meetings

An Oversight Committee directed the strategic planning process and development of the network. The committee was comprised of representatives from across the county (for a full list see the Acknowledgments page). The Committee met at several key milestones throughout plan development including:

- » **Kick-off Meeting**
- » **Draft Recommendations**
- » **Priority Recommendations**

Opportunities & Constraints: Community Input

There were two online platforms for the public to provide input on how they currently bike and walk around Greene County and what barriers may prevent them from biking and walking.

- » 202 completed or partially completed an Online Public Survey from mid-April-May 2020

- » 69 people filled out comments on an online map (Map 7) from late May 2020 to end of June 2020

Online Public Survey 1

Based on the online public survey most people participate in bicycling, walking/hiking, running/jogging, or walking their pet on the trails. The top reasons for using the trails were recreation, exercise, travel to shopping/appointments or other non-recreational purposes (Figure 1). When trail riders were asked if they would use streets or roads for bicycling 45 percent responded no or only when bikeways are present (Figure 2). Also, top responses for accessing downtown centers from a trail were shared use paths or separated bike lanes (Figure 3).

Online Map

The online map allowed people to identify current routes they use for biking/walking, barriers to walking/biking, and places/destinations throughout the county. There was a clustering of barriers identified in Xenia, including multiple intersections that respondents felt were difficult

to cross. Critical connections that were identified included:

- » Bellbrook to Spring Valley (to Xenia)
- » Bellbrook to Trebein
- » Connecting Wetlands (Proposed Spotted Turtle Trail)
- » Creekside Trail to Fairborn (Trebein Rd)
- » Fairborn to Yellow Springs
- » Yellow Springs – Clifton
- » Clifton to Cedarville

Draft Recommendations & Prioritization: Community Input

Online Public Survey 2

The draft network recommendations were developed based on stakeholder and public input, an existing conditions analysis, and related planning efforts. Public input was collected from August 24 to September 13, 2020. In addition to

Figure 1. What activities do you participate in on Greene County Trails? (check all that apply)

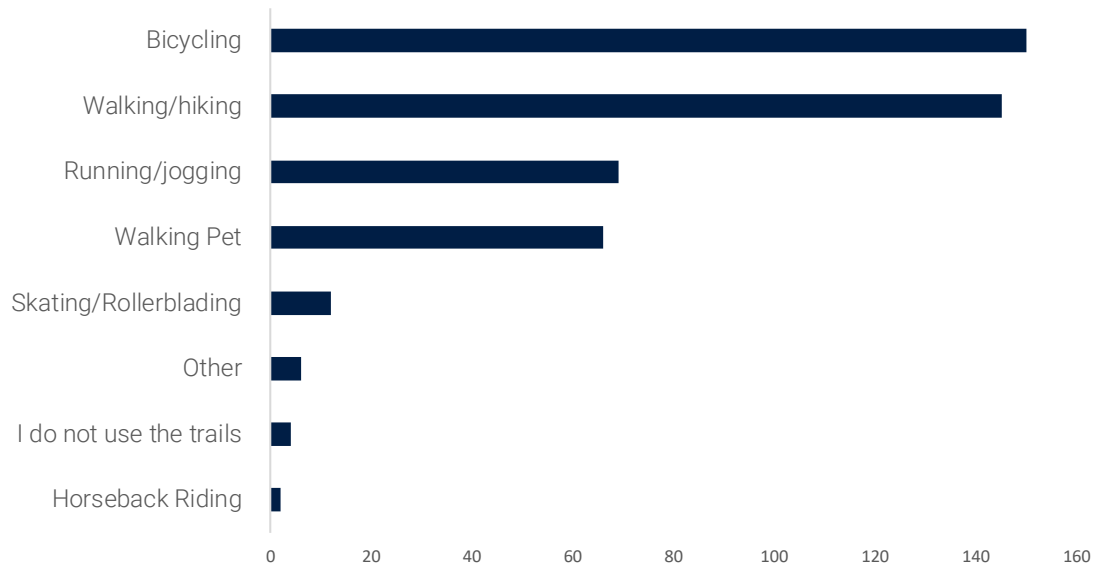


Figure 2. If you use the trails for bicycling do you also bike on streets and roads?

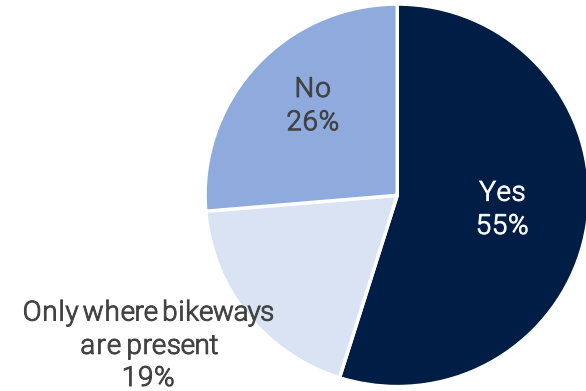
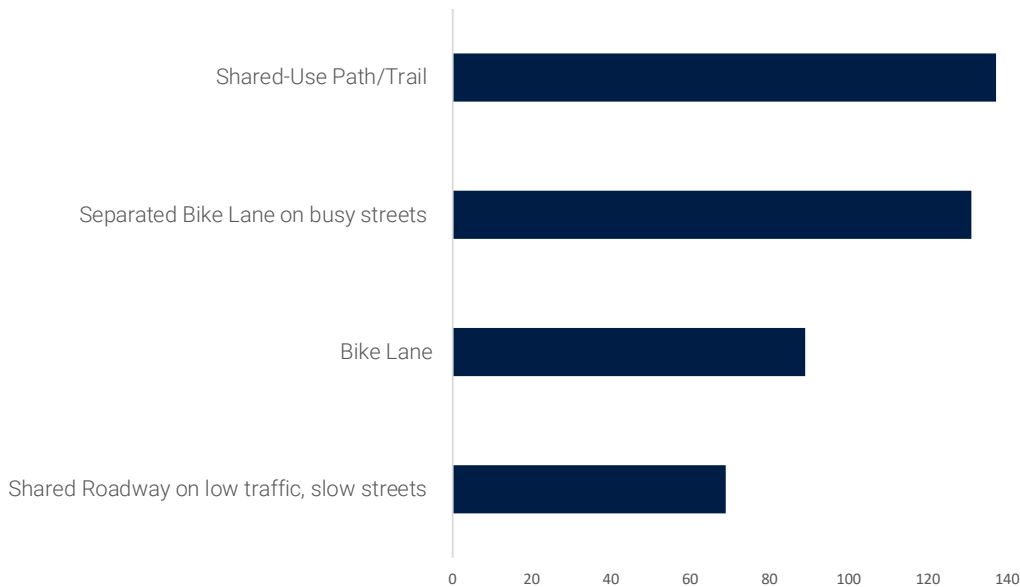




Figure 3. To access downtown centers from a trail, would you feel comfortable using the following types of on-street or off-street bikeways?









Map 7. Greene County Public Input

LEGEND



Public Comments

-  Barriers
-  Bike+Walking Routes
-  Places+Destinations

Bikeways

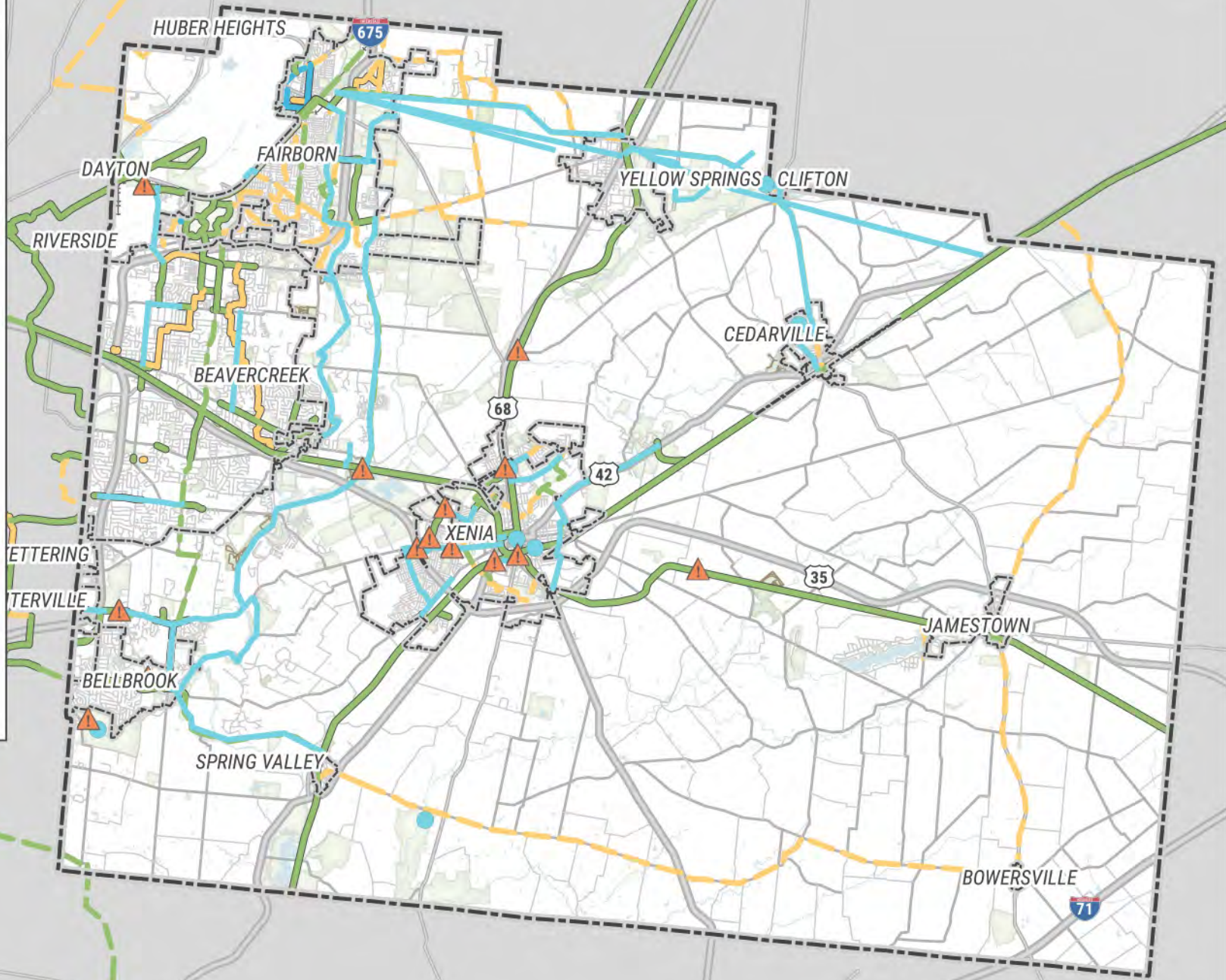
-  Path - Existing
-  Path - Proposed
-  Route - Existing
-  Route - Proposed
-  Bike Lane - Existing
-  Bike Lane - Proposed

Boundaries

-  Greene County
-  Cities

Environmental

-  Trails
-  Hydrology
-  Railways
-  Regional Open Spaces

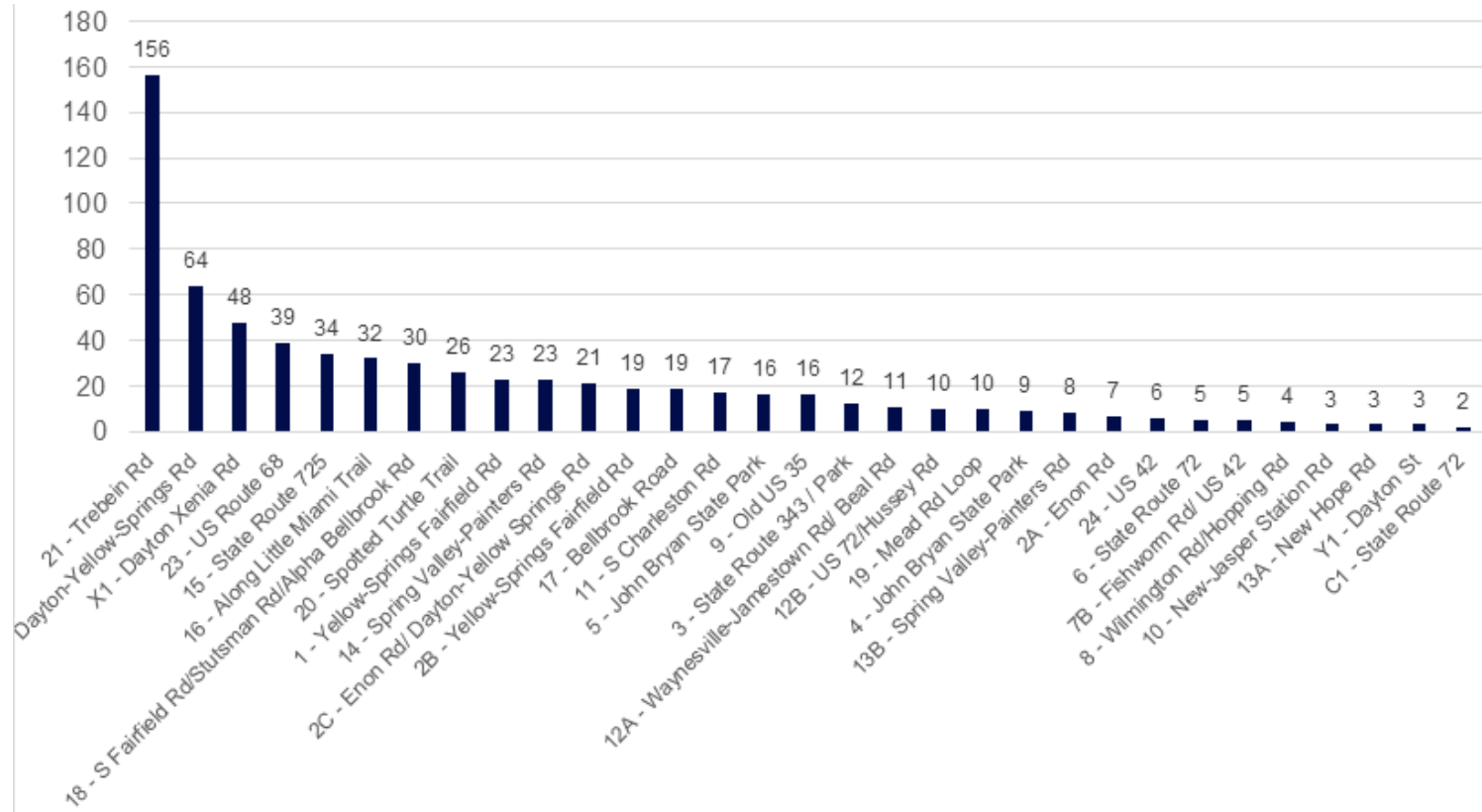


filling the survey out online, there were multiple pop-up events where people could fill out paper surveys. Pop-up events included a tent with posters of the draft network and surveys at five locations, sandwich boards directing people to take the survey at three locations, and survey stations at six libraries. Over 215 complete responses to the survey were received, along with several more partial responses. 243 respondents answered at least one question. Overall, the survey results were positive. Respondents appreciate the work being done to expand the network in Greene County and are supportive of the projects.

Key Takeaways:

- » Project #21 on Trebein Rd received overwhelming support and is considered a priority by many respondents.
 - » Generally, projects on the west side of the county received more support (connections to Fairborn, Bellbrook, Yellow Springs) while the less populated eastern side projects were less likely to be identified as a priority for implementation. It is also important to note that majority of respondents live on the west side of the county.
 - » Between alternatives 2A, 2B, 2C, there is clear support for option 2C along Enon Rd/Dayton-
- Yellow Springs Rd.
 - » Between alternatives 7A and 7B, there is overwhelming support for option 7B along Fishworm Rd/US42
 - » Between alternatives 8/9/10 and 11, opinions are split, with a small advantage to the 8/9/10 option. The directness, potential for higher use, and lower cost are reasons mentioned for preferring this alternative, while those that preferred alternative 11 cited safety and more scenic route.
 - » Between alternatives 12A/13A and 12B/13B, there is clear support for option 12B/13B using sidepaths.

Figure 4. Number of times project selected as top three.





Recommendations

Recommendations

This plan makes recommendations that will promote and support active transportation through a combination of infrastructure projects, policies, and programs. Infrastructure recommendations refer to physical, built projects that will change how roadways are configured to provide space for all roadway users. Policy and program recommendations aim to re-prioritize walking and bicycling and to change the culture around active transportation and help increase its use through engagement, education, encouragement, and evaluation.

.....

Infrastructure

Recommendations are divided into linear and spot improvements (Map 8). Linear recommendations include infrastructure on roads (bike lanes), adjacent to roads (sidepaths), or off road (shared use paths, trails). Spot improvements include recommendations such as crossing and intersection enhancements. The following section describes the process for selecting bicycle and pedestrian facility types followed by specific facility types proposed for Greene County.

Bicycle Facility Recommendations

Local infrastructure and routes will help riders of varying abilities access daily destinations such as schools, grocery stores, parks, and work. The bicycle recommendations in this plan are informed by national guidance on bikeway planning, while also recognizing and responding to the unique bicycling needs in Greene County.

Design Users

There are several important factors to consider during bicycle facility selection, but the final decision depends in large part on the types of bicyclists that are expected on a particular route.

Understanding which types of bicyclists feel comfortable using a given facility is key to building a safe, convenient, and well-used network.

Bicyclists are most commonly classified according to their comfort level, bicycling skill and experience, age, and trip purpose. These characteristics can be used to develop generalized profiles of various bicycle users and trips, also known as “design users,” which inform bicycle facility design. Comfort, skill, and age may affect bicyclist behavior and preference for different types of bicycle facilities. Selecting a design user profile is often the first step in assessing a street’s



compatibility for bicycling. The design user profile should be used to select a preferred type of bikeway treatment for different contexts.

People who bicycle are influenced by their relative comfort operating with or near motor vehicle traffic. Many people are interested in bicycling for transportation, but are dissuaded by the potential for stressful interactions with motor vehicles. Of adults who have stated an interest in bicycling, research has identified three types of potential and existing bicyclists,²³ which are explained in the sidebar and shown in Figure 5. Children were not included in the research and require special consideration in the design of bicycle facilities.

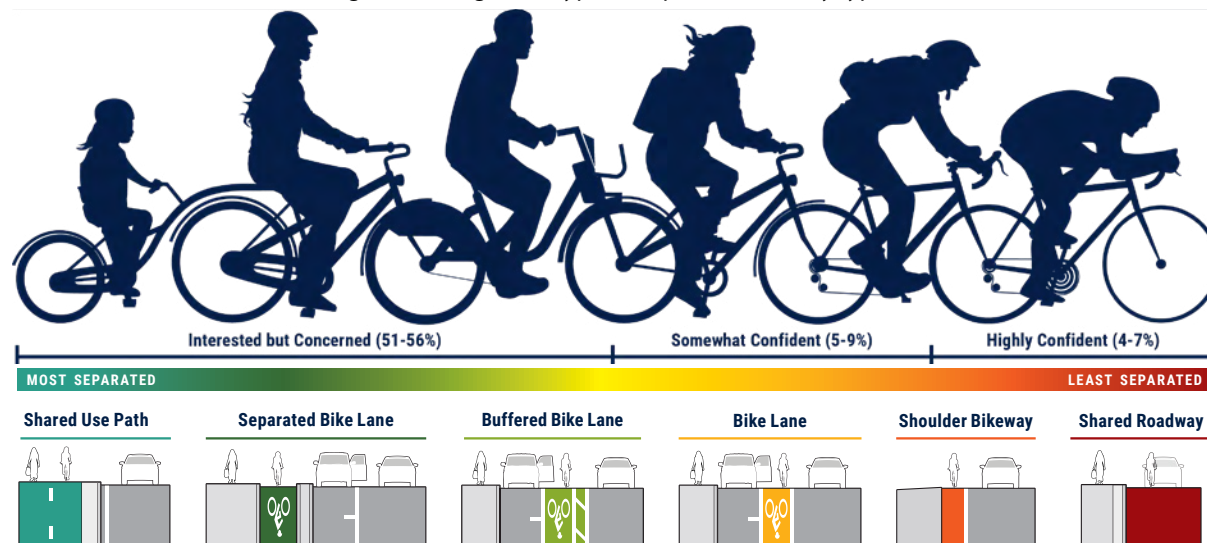
Network Rationale and Facility Selection Methodology

Bicycle networks should be continuous, connect seamlessly across jurisdictional boundaries,

and provide access to destinations. Anywhere a person would want to drive for utilitarian purposes, such as commuting or running errands, is a potential destination for bicycling. As such, planning connected low-stress bicycle networks is not achieved by simply avoiding motor vehicle traffic. Rather, planners should identify solutions for lowering stress along higher traffic corridors so that bicycling can be a viable transportation option for the majority of the population.

The bicycle network recommendations made in this plan considered the “interested but concerned” rider as the design user for most recommendations. After potential routes were identified, recommended facility types were selected by following guidance from the Federal Highway Administration (FHWA)’s Bikeway Selection Guide.²⁴ Figure 10 is excerpted from those guidelines.

Figure 5. Design user types and preferred facility types



Design User Profiles

Highly Confident Bicyclist (~4-7%)

- » Smallest group.
- » Prefer direct routes and will operate in mixed traffic, even on roadways with higher motor vehicle operating speeds and volumes.
- » Many also enjoy separated bikeways.
- » May avoid bikeways perceived to be less safe, too crowded with slower moving users, or requiring deviation from their preferred route.

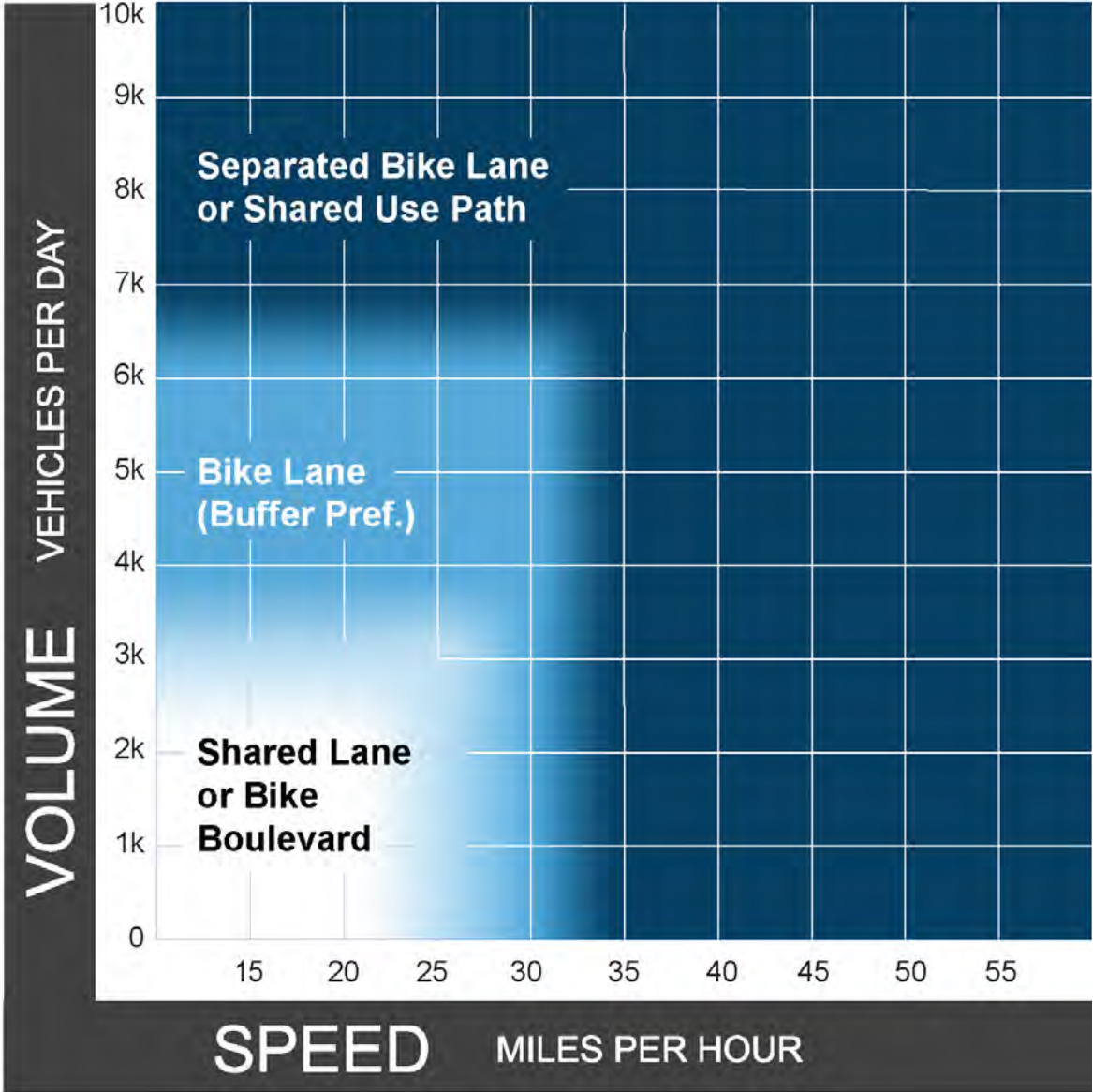
Somewhat Confident Bicyclist (~5-9%)

- » Comfortable on most types of facilities.
- » Lower tolerance for traffic stress, prefer striped or separated bike lanes on major streets and low-volume residential streets.
- » Willing to tolerate higher levels of traffic stress for short distances.

Interested but Concerned Bicyclist (~51-56%)

- » Largest group.
- » Lowest tolerance for traffic stress.
- » Avoid bicycling except with access to networks of separated bikeways or very low-volume streets with safe roadway crossings, which suppresses cycling.
- » Tends to bicycle for recreation but not transportation.
- » Generally the recommended design user profile to maximize potential for bicycling.

Figure 6. Urban Bicycle Facility Selection Matrix

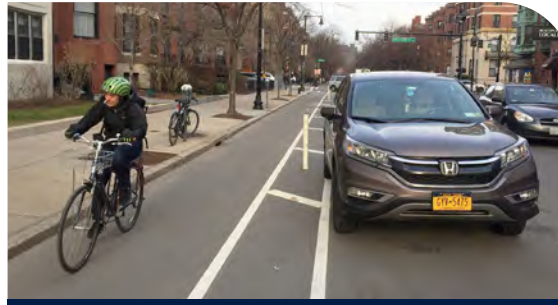


Source: FHWA 2019

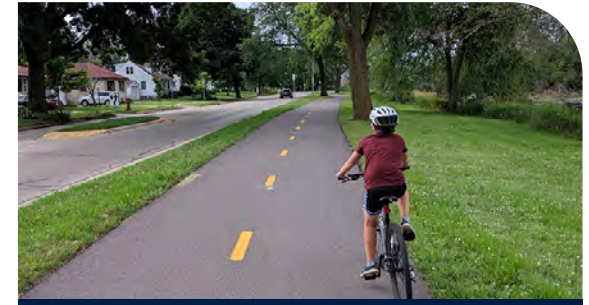
Table 1. Facility Toolkit



Bicycle Boulevard (Shared Lane Markings)



Separated Bicycle Lane



Shared Use Path and Sidepath

Description Intended Users Context Posted Speed Limit Motor Vehicle Traffic Volume Other Considerations	<p>Where traffic volumes and speeds are low, many bicyclists can comfortably share lanes with motor vehicles. Shared lane markings and signs are added to inform people driving that bicyclists may operate in the lane and where to expect bicyclists. Wayfinding signage and traffic calming can help increase user comfort and prioritize bicycle travel.</p>	<p>One- or two-way facilities within the roadway and physically separated from adjacent travel lanes with vertical elements such as a curb, flex posts or on-street parking. Such facilities reduce the risk of injury and can increase bicycle ridership due to perceived and actual safety and comfort.</p>	<p>Typically designed as two-way facilities physically separated from motor vehicle traffic and used by bicyclists, pedestrians, and other non-motorized users, shared use paths provide a low-stress and comfortable travel environment for users of all confidence levels. They are used for recreational opportunities in addition to transportation. Shared use paths that run parallel to roads are referred to as sidepaths.</p>
Intended Users	Bicyclists	Bicyclists	Bicyclists and Pedestrians
Context	Urban and Urban Periphery	Urban	Urban and Rural
Posted Speed Limit	25 mph or lower (preferred) 35 mph or lower (acceptable)	Any speed (typically 30 mph or higher)	Urban: Any speed (typically 30 mph or higher) Rural: Any speed (typically 55 mph or higher)
Motor Vehicle Traffic Volume	3,000 ADT or lower (preferred) 5,000 ADT or lower (acceptable)	Any volume (typically 15,000 ADT or greater)	Urban: Any volume (typically 15,000 ADT or greater) Rural: Any volume (typically 6,500 ADT or greater).
Other Considerations	<p>May be used in conjunction with wide outside lanes. Explore opportunities to provide parallel facilities for less confident bicyclists. Where motor vehicles are allowed to park along shared lanes, place markings to reduce potential conflicts with opening car doors.</p> <p>On low speed (<25 mph) low traffic (<3,000 ADT) streets, traffic calming and diversion can be used to slow traffic or create a bicycle boulevard.</p>	<p>Intersection designs should promote visibility of bicyclists and raise awareness of potential conflicts. Separation may be provided through temporary measures such as planters or removable bollards as an interim and low-cost design.</p>	<p>Sidepaths should be at least 10 feet wide (wider where higher bicycle and pedestrian traffic is expected, e.g., urban areas). Special consideration must be given to the design of roadway crossings to increase visibility, clearly indicate right-of-way, and reduce crashes. Alternative accommodations should be sought when there are many intersections and commercial driveway crossings per mile.</p>

Infrastructure Recommendations

Recommendations are separated into linear and spot improvements that respond to the existing conditions analysis and community input. As discussed in the existing conditions section, Greene County has an established system of trails including the Ohio to Erie, Creekside, Little Miami Scenic Trail, and Xenia to Jamestown connector trails. Existing trails all meet in Xenia at the Xenia Station Bicycle Hub.

Proposed recommendations focus on connecting cities and villages via bicycle facilities for all ages and abilities, mostly via sidepaths. For example, priority connections include a sidepath from Beavercreek to Fairborn and a sidepath from Fairborn to Yellow Springs. This also creates loops that could be completed by bicyclists, for example from Fairborn to Yellow Springs to Xenia to Beavercreek and back to Fairborn. A long-term goal is to have a countywide, outer loop that connects all villages and cities (Figure 7).

Individual cities and villages have existing and proposed trails, on-road bicycle facilities, and sidewalks. This section includes overall countywide network maps as well as individual city and village proposed network maps.

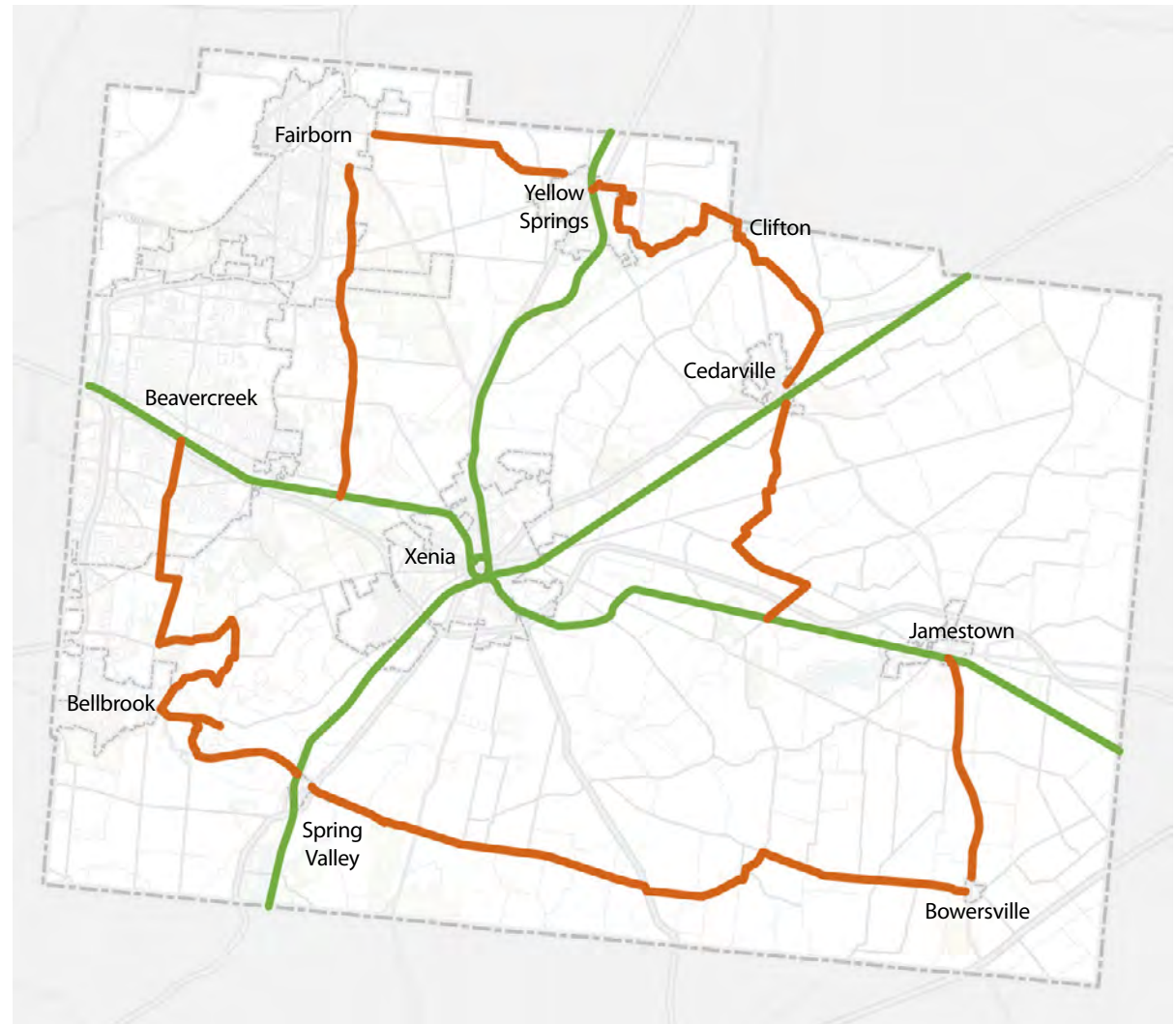


Figure 7. Diagram of Trail Recommendations*

*See following pages for maps with more detailed alignment recommendations

Map 8. Network Recommendations

LEGEND

Existing

- On-Street Route
- Bike Lane
- Sidepath/Trail

Recommendations

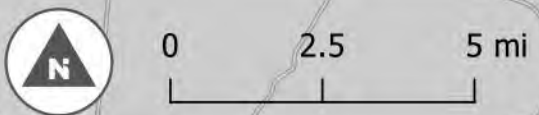
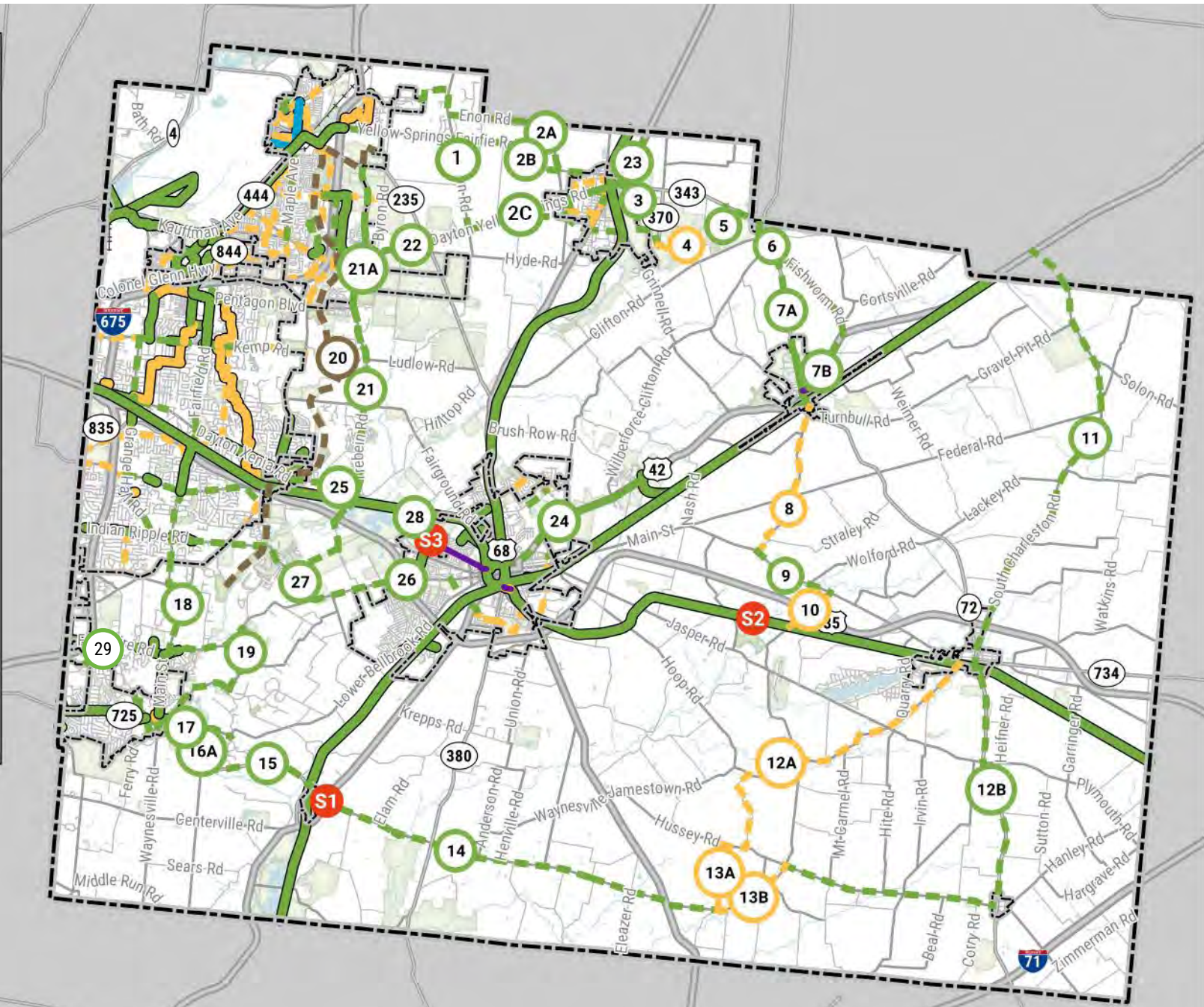
- On-Street Route
- Bike Lane
- Separated Bike Lane
- Sidepath/Trail
- Unpaved Walking Trail
- Spot Recommendations

Boundaries

- Greene County
- Cities

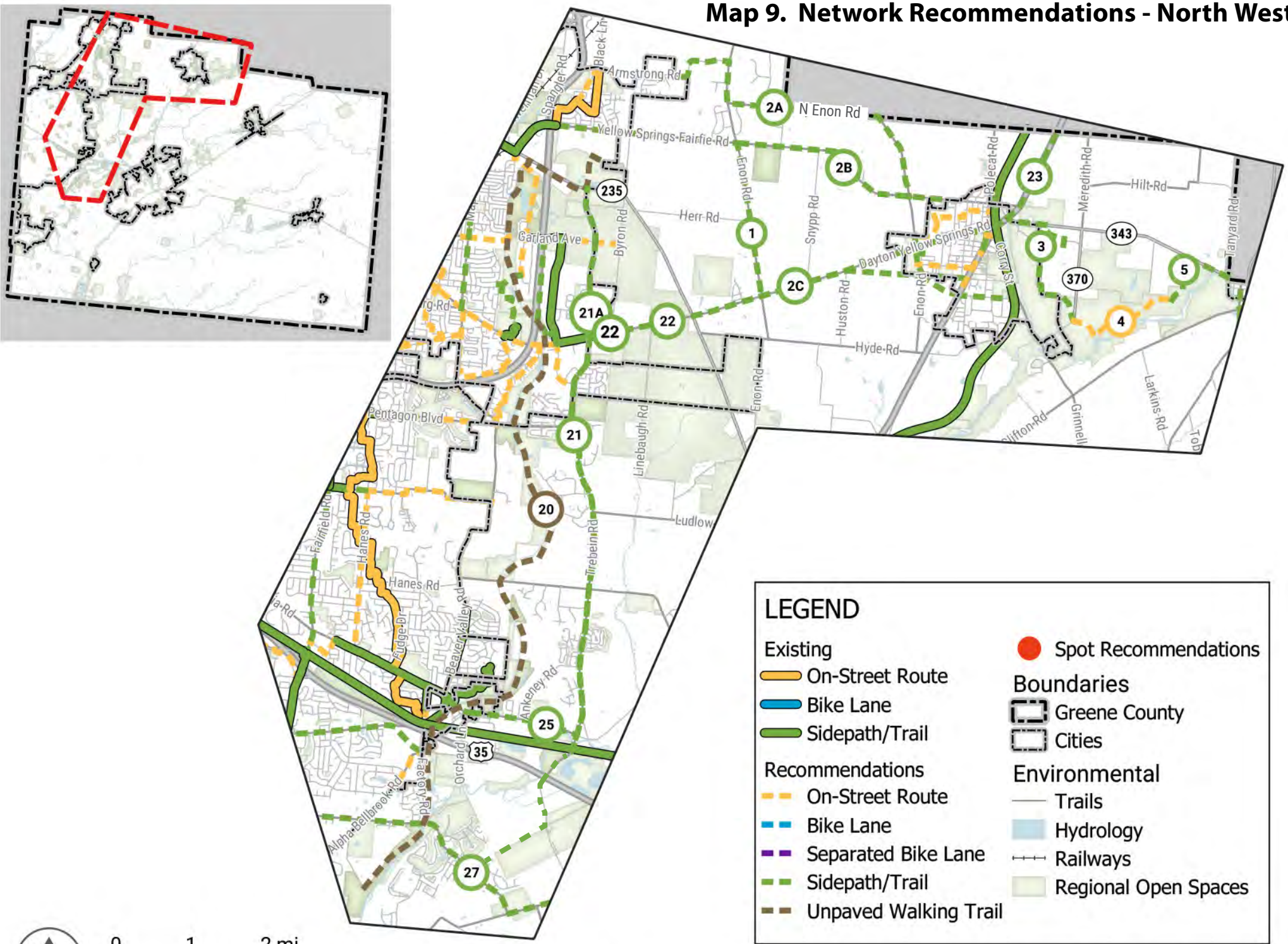
Environmental

- Trails
- Hydrology
- Railways
- Regional Open Spaces



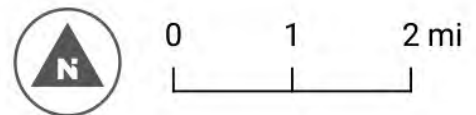
This preliminary concept is for planning purposes only. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing recommendations contained herein.

Map 9. Network Recommendations - North West



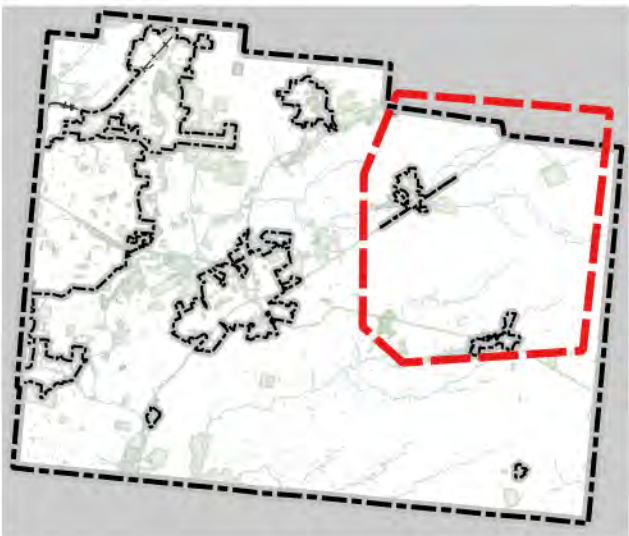
LEGEND

Existing	● Spot Recommendations
On-Street Route	Boundaries
Bike Lane	Greene County
Sidepath/Trail	Cities
Recommendations	Environmental
On-Street Route	Trails
Bike Lane	Hydrology
Separated Bike Lane	Railways
Sidepath/Trail	Regional Open Spaces
Unpaved Walking Trail	



This preliminary concept is for planning purposes only. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing recommendations contained herein.

Map 10. Network Recommendations - North East



LEGEND

Existing

- On-Street Route
- Bike Lane
- Sidepath/Trail

Recommendations

- On-Street Route
- Bike Lane
- Separated Bike Lane
- Sidepath/Trail
- Unpaved Walking Trail
- Spot Recommendations

Boundaries

- Greene County
- Cities

Environmental

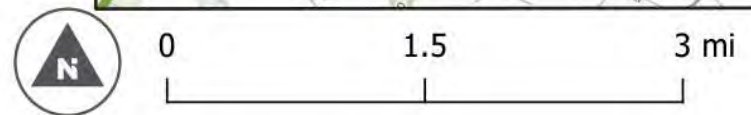
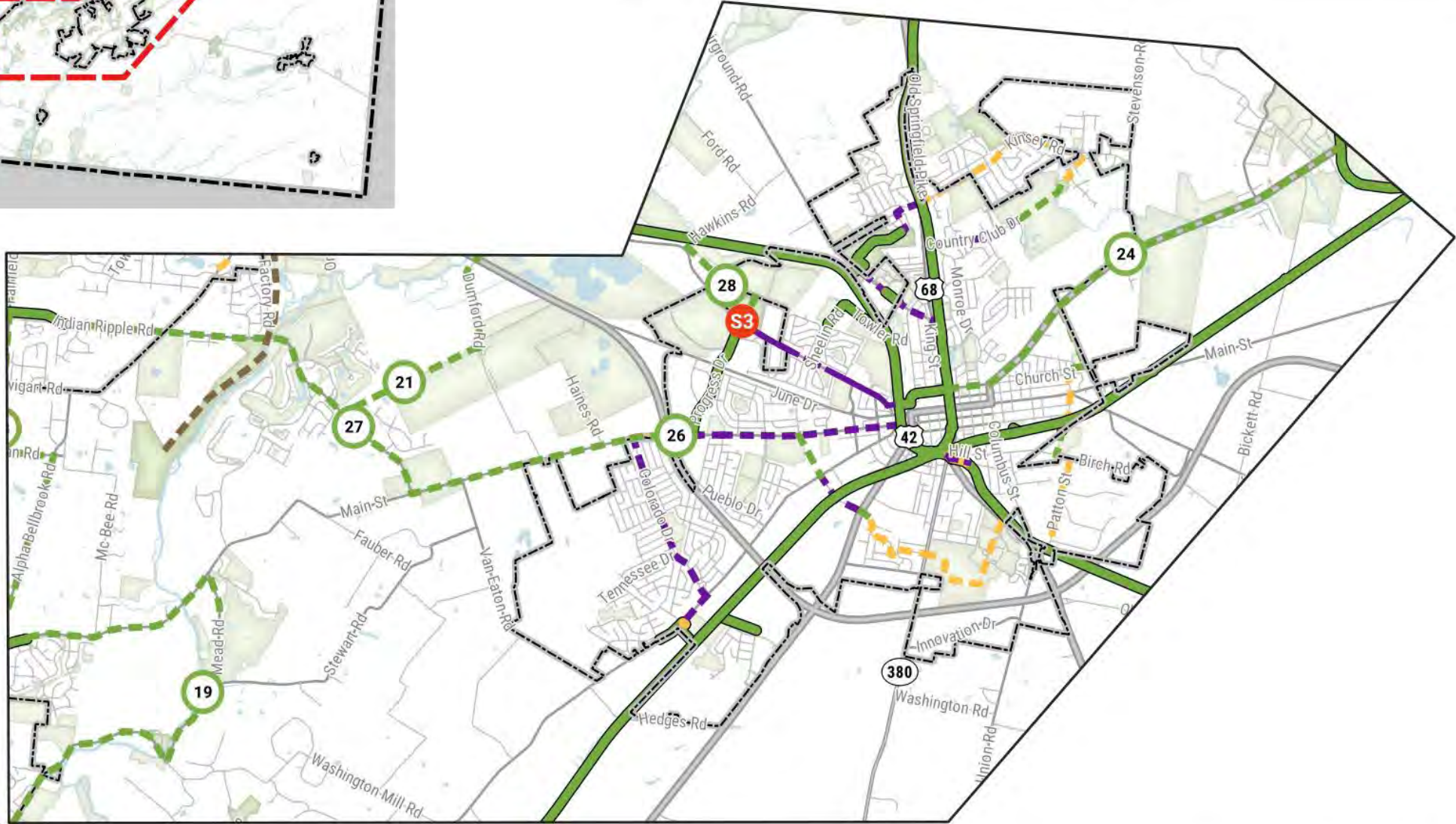
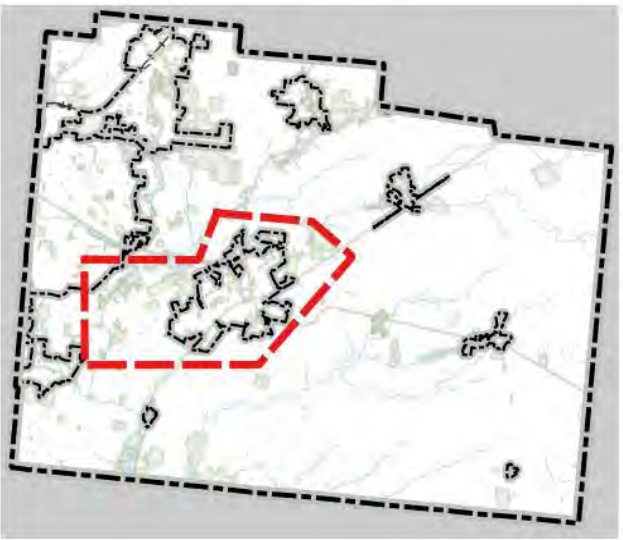
- Trails
- Hydrology
- Railways
- Regional Open Spaces

This preliminary concept is for planning purposes only. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing recommendations contained herein.

Map 11. Network Recommendations - Central

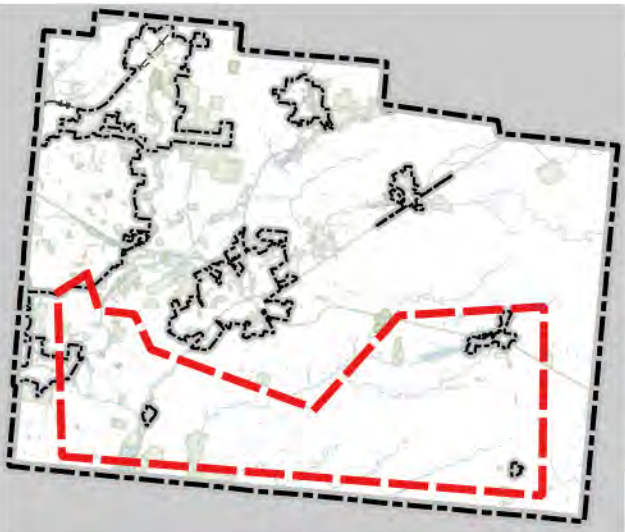
LEGEND

- | | | |
|-----------------------|-----------------------|------------------------|
| Existing | Recommendations | ● Spot Recommendations |
| On-Street Route | On-Street Route | Spot Recommendations |
| Bike Lane | Bike Lane | Boundaries |
| Sidepath/Trail | Separated Bike Lane | Greene County |
| Sidepath/Trail | Sidepath/Trail | Cities |
| Unpaved Walking Trail | Unpaved Walking Trail | |



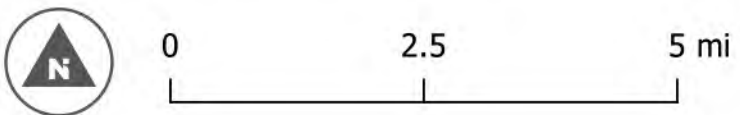
This preliminary concept is for planning purposes only. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing recommendations contained herein.

Map 12. Network Recommendations - South



LEGEND

Existing	● Spot Recommendations
On-Street Route	Boundaries
Bike Lane	Greene County
Sidepath/Trail	Cities
Recommendations	Environmental
On-Street Route	Trails
Bike Lane	Hydrology
Separated Bike Lane	Railways
Sidepath/Trail	Regional Open Spaces
Unpaved Walking Trail	



This preliminary concept is for planning purposes only. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing recommendations contained herein.

Table 2. Recommendations

Map ID	Priority (HIGH, MED, LOW)	Facility Type	Location	Extents	Description	Funding
1	LOW	Sidepath/Trail	Yellow-Springs Fairfield Rd/Enon Rd	Byron Rd to Enon Rd	Existing paved shoulder varies, 55mph, need separated shared use path from roadway.	COTF, RTP, GSCP, TA, HSIP
2A	LOW	Sidepath/Trail	Enon Rd	Armstrong Rd to Yellow-Springs Fairfield Rd	Option: North option to connect Fairborn to Yellow Springs	COTF, RTP, GSCP, TA, HSIP
2B	LOW	Sidepath/Trail	Yellow-Springs Fairfield Rd	Enon Rd to Ridgecrest Drive	Option: Middle option to connect Fairborn to Yellow Springs	COTF, RTP, GSCP, TA, HSIP
2C	MEDIUM	Sidepath/Trail	Dayton-Yellow Springs Rd	Yellow-Springs Fairfield Rd to Enon Rd	Option: South option to connect Fairborn to Yellow Springs (connects into existing infrastructure in Fairborn)	COTF, RTP, GSCP, TA, HSIP
3	MEDIUM	Sidepath/Trail	State Route 343 / Park	Little Miami Scenic Trail to John Bryan State Park	Shared use path adjacent to roadway, then through park to connect Yellow Springs to Clifton	COTF, RTP, GSCP, TA, HSIP
4	MEDIUM	Shared Lane	John Bryan State Park		Shared lane on low volume park roadway	Local, TA, HSIP
5	MEDIUM	Sidepath/Trail	John Bryan State Park	John Bryan State Park to State Route 343	Shared use path through park to connect Yellow Springs to Clifton	COTF, RTP, GSCP, TA, HSIP
6	LOW	Sidepath/Trail	State Route 72	North St to River Rd to Fishworm Rd	High speeds, narrow shoulder, a lot of truck traffic, shared use path adjacent to roadway needed.	COTF, RTP, GSCP, TA, HSIP
7A	LOW	Sidepath/Trail	State Route 72	Fishworm Rd to Varsity Dr	Option 1: High speeds, narrow shoulder, a lot of truck traffic, shared use path adjacent to roadway needed.	COTF, RTP, GSCP, TA, HSIP
7B	LOW	Sidepath/Trail	Fishworm Rd/ US 42	State Route 72 to E North St	Option 2: Fishworm Rd appears to have more space for shared use path adjacent to roadway.	COTF, RTP, GSCP, TA, HSIP
8	LOW	Shared Lane	Wilmington Rd/ Hopping Rd	Main St (Rte 72) to Old US 35	Shared lane markings and wayfinding to connect Cedarville to Jamestown or Xenia via the Xenia-Jamestown Trail. (Note 8, 9, 10 could be an alternative to 11, may not need both routes)	Local, TA, HSIP
9	LOW	Sidepath/Trail	Old US 35	Hopping Rd to New-Jasper-Station Rd	Sidepath to continue connection from Cedarville to Jamestown or Xenia via the Xenia-Jamestown Trail. (Note 8, 9, 10 could be an alternative to 11, may not need both routes)	COTF, RTP, GSCP, TA, HSIP

Note: Unincorporated projects include projects that are partially incorporated.

Funding Source Acronyms	TA: Transportation Alternatives Program
COTF: Clean Ohio Trails Fund	HSIP: Highway Safety Improvement Program
RTP: Recreational Trails Program	SRTS: Safe Routes to School
GSCP: Green Space Conservation Program	See Chapter 6 for full details on funding opportunities.

Table 2.Recommendations

Map ID	Priority (HIGH, MED, LOW)	Facility Type	Location	Extents	Description	Funding
10	LOW	Shared Lane	New-Jasper Station Rd	Old US 35 to Creekside Trail	Shared lane markings and wayfinding to connect Cedarville to Jamestown or Xenia via the Xenia-Jamestown Trail. (Note 8, 9, 10 could be an alternative to 11, may not need both routes)	Local, TA, HSIP
11	LOW	Sidepath/Trail	S Charleston Rd	Greeneview Dr to Creekside Trail	Sidepath along road to connect Jamestown to north of Cedarville (Note 11 may not be necessary if using 8, 9,10 as connection as an alternative)	COTF, RTP, GSCP, TA, HSIP
12A	LOW	Sidepath/Trail and Shared Lane	Waynesville-Jamestown Rd/ Beal Rd	Xenia-Jamestown Trail to Hussey Rd	Option 12A allows for some shared lane on lower volume/speed roads, but doesn't connect to Bowersville	Local, TA, HSIP
12B	LOW	Sidepath/Trail	US 72/Hussey Rd	Xenia-Jamestown Trail to North St/ Hussey Rd	Option 12B needs to be a sidepath due to high speeds, connects to Bowersville	TA, HSIP
13A	LOW	Shared Lane	New Hope Rd	Hussey Rd to Spring-Valley Painters Rd	Option 13A allows for some shared lane on lower volume/speed roads, but doesn't connect to Bowersville	Local, TA, HSIP
13B	LOW	Sidepath/Trail	Spring Valley-Painters Rd	Hussey Rd to Spring-Valley Painters Rd	Option 13B needs to be a sidepath due to high speeds, connects to Bowersville	TA, HSIP
14	LOW	Sidepath/Trail	Spring Valley-Painters Rd	New Hope Rd to Old US 42	Sidepath to connect Spring Valley to Ceaser Creek State Park and Jamestown/ Bowersville	COTF, RTP, GSCP, TA, HSIP
15	HIGH	Sidepath/Trail	State Route 725	Little Miami Trail to Little Miami River/ River Edge Circle	Connect Spring Valley to Bellbrook via sidepath.	COTF, RTP, GSCP, TA, HSIP
16A	MEDIUM	Sidepath/Trail	Along Little Miami Trail	State Route 725 to Bellbrook Rd	Explore feasibility of trail along the little miami river as an alternative to continuing on 725, since 725 narrows and has a grade change (not enough roadway width for a separated facility)	COTF, RTP, GSCP, TA, HSIP
17	MEDIUM	Sidepath/Trail	Bellbrook Road	Little Miami Dr to Washington Mill Rd	Sidepath along Bellbrook Rd to connect into existing path in Bellbrook.	COTF, RTP, GSCP, TA, HSIP
18	HIGH	Sidepath/Trail	S Fairfield Rd/ Stutsman Rd/Alpha Bellbrook Rd	Upper Bellbrook Rd to Swigart Rd	Connect existing trail just north of Bellbrook to proposed trail/path in Beaver creek.	COTF, RTP, GSCP, TA, HSIP
19	LOW	Sidepath/Trail	Mead Rd Loop	Mead Rd Loop	Sidepath loop just northeast of Bellbrook.	COTF, RTP, GSCP, TA, HSIP
20		Unpaved Walking Trail	Spotted Turtle Trail	Spotted Turtle Trail along wetlands	Proposed walking trail.	GSCP

Note: Unincorporated projects include projects that are partially incorporated.

Funding Source Acronyms	TA: Transportation Alternatives Program
COTF: Clean Ohio Trails Fund	HSIP: Highway Safety Improvement Program
RTP: Recreational Trails Program	SRTS: Safe Routes to School
GSCP: Green Space Conservation Program	See Chapter 6 for full details on funding opportunities.

Table 2.Recommendations

Map ID	Priority (HIGH, MED, LOW)	Facility Type	Location	Extents	Description	Funding
21	HIGH	Sidepath/Trail	Trebein Rd	Indian Ripple Rd to Creekside Trail to New Germany Trebein Rd	Sidepath to connect Indian Ripple Rd to Creekside Trail to Fairborn, several stretches of roadway have relatively flat adjacent landscape. 21A: Option to extend sidepath connection to Oakes Quarry Park.	COTF, RTP, GSCP, TA, HSIP
22	HIGH	Sidepath/Trail	Dayton-Yellow-Springs Rd	Trebein Rd to Enon Rd	Connect existing trail in Fairborn to Yellow Springs.	COTF, RTP, GSCP, TA, HSIP
23	LOW	Sidepath/Trail	US Route 68	Dayton St to Young's Jersey Dairy	Add sidepath to/from Young's Jersey Dairy and Yellow Springs.	COTF, RTP, GSCP, TA, HSIP
24	LOW	Sidepath/Trail	US 42 & E Church St	Little Miami Scenic Trail to Wilberforce Switch Trail	Add sidepath to US 42 to create a loop from proposed trail/path in Xenia to Central State University to Wilberforce Switch Trail to Prairie Grass Trail. Where sidewalks exists expand to shared use path.	COTF, RTP, GSCP, TA, HSIP
25	LOW	Sidepath/Trail	Dayton-Xenia Rd	Rotary Park to Trebein Rd	Extend existing trail to connect to school and future sidepath on Trebein Rd.	COTF, RTP, GSCP, TA, HSIP
26	HIGH	Sidepath/Trail	Upper Bellbrook Road	Progress Drive to Colorado Dr	Connect neighborhood to YMCA and existing trail.	COTF, RTP, GSCP, TA, HSIP
27	MEDIUM	Sidepath/Trail	Upper Bellbrook Rd & Indian Ripple Rd	Colorado Dr to existing trail in Beavercreek	Connect residents to Narrows Reserve Center and Park and Beavercreek.	COTF, RTP, GSCP, TA, HSIP
28	MEDIUM	Sidepath/Trail	Off Street	Dayton -Xenia Rd to Creekside Trail	Connect existing sidepath to Creekside Trail. Exact alignment TBD.	COTF, RTP, GSCP, TA, HSIP
29	MEDIUM	Sidepath/Trail	Clyo Rd/Feedwire Rd	Possum Run Rd to Feedwire Rd and Little Sugarcreek Rd to Roger Scott Dr	Add sidepath to connect commercial areas and residents and close path gaps along Feedwire Rd.	COTF, RTP, GSCP, TA, HSIP

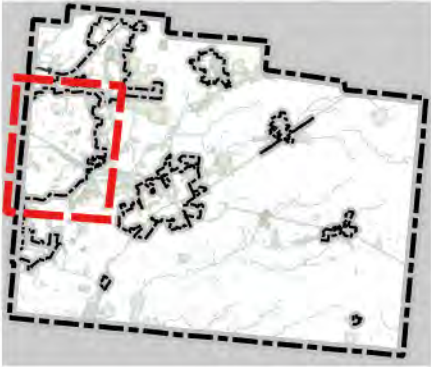
Note: Unincorporated projects include projects that are partially incorporated.

Funding Source Acronyms COTF: Clean Ohio Trails Fund RTP: Recreational Trails Program GSCP: Green Space Conservation Program	TA: Transportation Alternatives Program HSIP: Highway Safety Improvement Program SRTS: Safe Routes to School See Chapter 6 for full details on funding opportunities.
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Table 2.Recommendations

Map ID	Priority (HIGH, MED, LOW)	Facility Type	Location	Extents	Description	Funding
S1		Intersection Enhancement	US 42 & Spring Valley Paintersville Rd		When trail is extended from Spring Valley east along W Spring Valley Paintersville Rd the intersection will need to be enhanced to accommodate trail traffic.	
S2		Trail connection from Xenia to Jamestown Connector to Ceaser Ford Park	Caesar Ford Park		Xenia to Jamestown Connector currently runs through Caesar Ford Park, but does not have a good connection to get to park amenities.	
S3		Pedestrian Signal and High Visibility Crosswalk	Dayton-Xenia Rd & Progress Dr		Currently no pedestrian signal/crossing from trail to park.	

Map 13. Beaver Creek Recommendations



LEGEND

Existing

- On-Street Route
- Bike Lane
- Sidepath/Trail

Recommendations

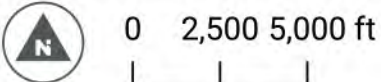
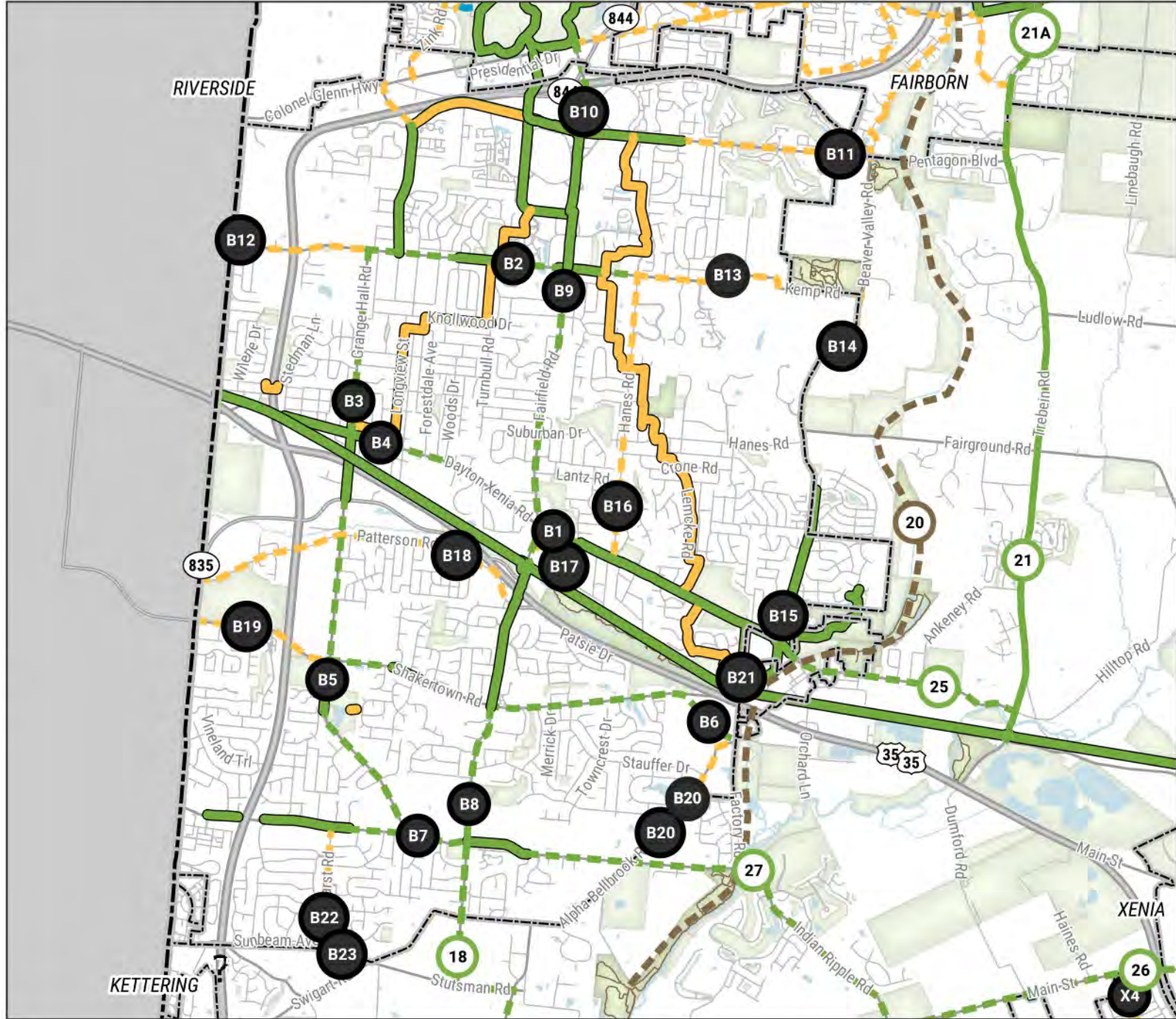
- On-Street Route
- Bike Lane
- Separated Bike Lane
- Sidepath/Trail
- Unpaved Walking Trail
- Spot Recommendations

Boundaries

- Greene County
- Cities

Environmental

- Trails
- Hydrology
- Railways
- Regional Open Spaces



This preliminary concept is for planning purposes only. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing recommendations contained herein.

Table 4. Beaver Creek Recommendations*

Map ID	Facility Type	Location	Extents	Description
B1	Sidepath/Trail or Separated Bike Lane	Dayton Xenia Rd	N Fairfield Rd to Meadow Bridge Dr	Expand sidewalk to shared use path to connect end of existing trail to commercial area and future proposed multimodal connection on N Fairfield Rd. Could consider separated bike lanes if removing on-street parking is feasible.
B2	Sidepath/Trail	Kemp Rd Sidepath	Hanes Rd to Grange Hall Rd (West)	Sidepaths to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B3	Sidepath/Trail	Grange Hall Rd	Kemp Rd to Shakertown Rd	Sidepaths to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B4	Sidepath/Trail	Dayton-Xenia Rd	East Lynn Dr to Woods Dr	Sidepaths to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B5	Sidepath/Trail	Grange Hall Rd	Kensington Glenn to Indian Ripple Rd	Sidepaths to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B6	Sidepath/Trail	Shakertown Rd	Factory Rd to County Line Rd	Sidepaths to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B7	Sidepath/Trail	Indian Ripple Rd	Factory Rd to Darst Rd	Sidepaths to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B8	Sidepath/Trail	N Fairfield Rd	Shakertown Rd to Swigart Rd	Sidepaths to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B9	Sidepath/Trail	N Fairfield Rd	Kemp Rd to US 35	Sidepaths to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B10	Sidepath/Trail	N Fairfield Rd	Pentagon Blvd to Colonel Glenn Hwy	Sidepaths to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B11	On-Street Route	New Germany Trebein Rd	Cross Country Dr to Beaver Valley Rd	On-street bicycle facility to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B12	On-Street Route	Kemp Rd	Grange Hall Rd to Entrada Dr	On-street bicycle facility to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B13	On-Street Route	Kemp Rd	Hanes Rd to Beaver Valley Rd	On-street bicycle facility to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B14	On-Street Route	Beaver Valley Rd	Kemp Rd to Bandit Trl	On-street bicycle facility to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B15	On-Street Route	Beaver Valley Rd	Hazel Dr to Beaver Valley Rd	On-street bicycle facility to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B16	On-Street Route	Hanes Rd	Kemp Rd to Dayton-Xenia Rd	On-street bicycle facility to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B17	On-Street Route	Beaver Vu Dr/ Meadow Bridge Dr	N Fairfield Rd to Dayton-Xenia Rd	On-street bicycle facility to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B18	On-Street Route	E Patterson Rd	N Fairfield Rd to County Line Rd	On-street bicycle facility to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B19	On-Street Route	Shakertown Rd	Grange Hall Rd to County Line Rd	On-street bicycle facility to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B20	On-Street Route	N Alpha Bellbrook Rd	Indian Ripple Rd to Shakertown Rd	On-street bicycle facility to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B21	On-Street Route	Factory Rd	Factory Rd to US 35	On-street bicycle facility to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B22	On-Street Route	Darst Rd	Indian Ripple Rd to Sunbeam Ave	On-street bicycle facility to be included in future construction projects (Beaver Creek Thoroughfare Plan)
B23	On-Street Route	Swigart Rd	Sunbeam Ave to Swigart Dr	On-street bicycle facility to be included in future construction projects (Beaver Creek Thoroughfare Plan)

*The [Beaver Creek Thoroughfare Plan Update](#) was completed in 2019. The Greene County Master Trails Plan considered projects identified in the Thoroughfare Plan when proposing regional connections throughout the county. For Signed Neighborhood Connectors see the Thoroughfare Plan.

Map 14. Bellbrook Recommendations



LEGEND

Existing

- On-Street Route (Orange line)
- Bike Lane (Blue line)
- Sidepath/Trail (Green line)

Recommendations

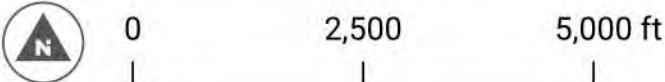
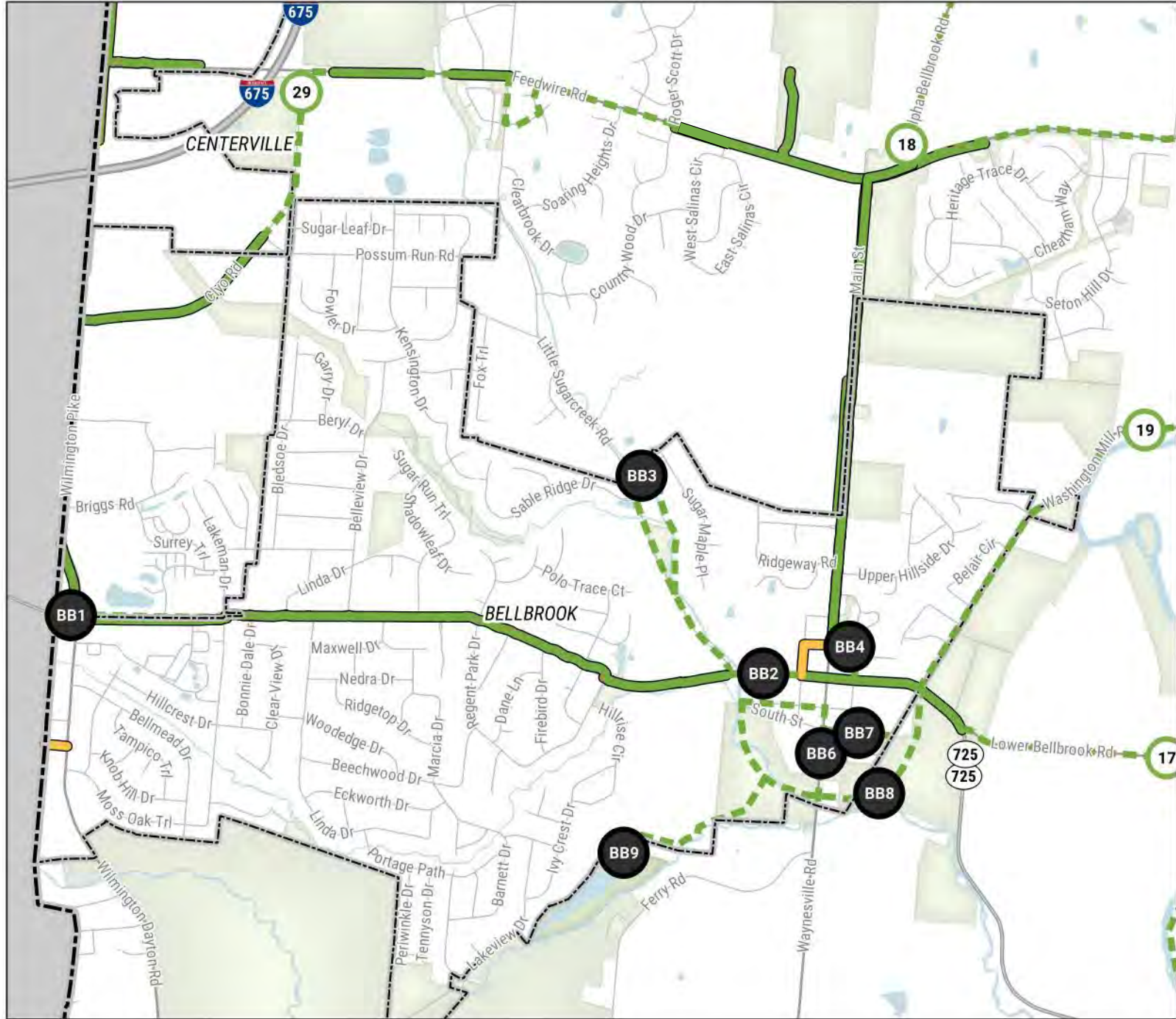
- On-Street Route (Dashed orange line)
- Bike Lane (Dashed blue line)
- Separated Bike Lane (Purple line)
- Sidepath/Trail (Dashed green line)
- Unpaved Walking Trail (Brown line)
- Spot Recommendations (Red circle)

Boundaries

- Greene County (Dashed black line)
- Cities (Dotted black line)

Environmental

- Trails (Thin grey line)
- Hydrology (Light blue shaded area)
- Railways (Black line with cross-ticks)
- Regional Open Spaces (Light green shaded area)



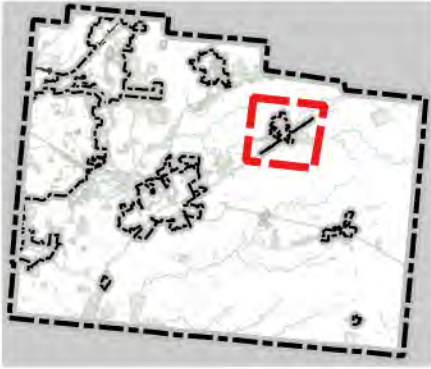
This preliminary concept is for planning purposes only. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing recommendations contained herein.

Table 5. Bellbrook Recommendations*

Map ID	Facility Type	Location	Extents	Description
BB1	Sidepath/Trail	SR 725	Extending from proposed BB8 connection to Sugarcreek Reserve.	Existing multiuse path with varying topography.
BB2	Sidepath/Trail	SR 725		
BB3	Sidepath/Trail	Little Sugarcreek Rd/Off-Street	Continues along Little Sugarcreek from Dots to connect with the park.	Dirt path that follows part of an easement area.
BB4	Sidepath/Trail	N West St/W Walnut St/N East St	From intersection of N. West and Franklin continuing until the intersection of N. Main and N. West St.	Add sidewalk along N. West St. to provide safer route to businesses in downtown.
BB5	Sidepath/Trail	W Maple St	From the intersection of Main St. and W. Maple until the western terminus of Maple St.	Partial section for connecting local parks with downtown and each other.
BB6	Sidepath/Trail	S Main St	From the intersection of South St. and Main to the intersection of Maple St. and Main St.	Partial section for connecting local parks with downtown and each other.
BB7	Sidepath/Trail	E South St	From the intersection of Main St. and South St. continuing on to Sackett Wright Park.	Partial section for connecting local parks with downtown and each other.
BB8	Sidepath/Trail	Off-Street	"From the current sidewalk ending at Washington Mill Road around the south end of Bellbrook, looping back up to South and Maple Streets with connection to Sackett Wright Park.	Multiuse path.
BB9	Sidepath/Trail	Off-Street	Extending from proposed BB8 connection to Sugarcreek Reserve.	Multiuse path to help connect local parks.

*The [City of Bellbrook Comprehensive Plan](#) was adopted in 2019. The Greene County Master Trails Plan considered projects identified in the City of Bellbrook Comprehensive Plan when proposing regional connections throughout the county.

Map 15. Cedarville Recommendations



LEGEND

Existing

- On-Street Route
- Bike Lane
- Sidepath/Trail

Recommendations

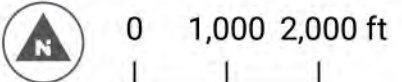
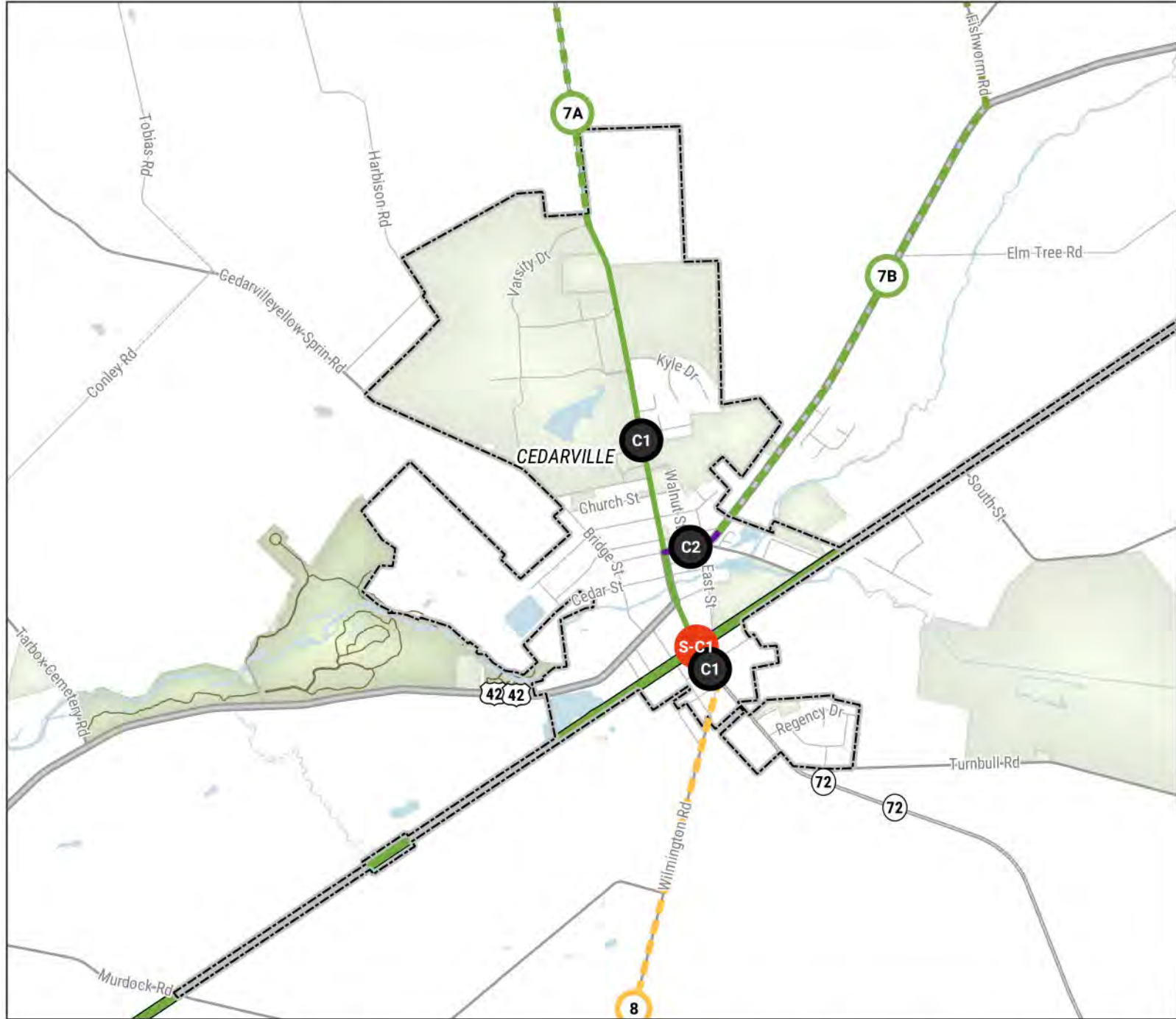
- On-Street Route
- Bike Lane
- Separated Bike Lane
- Sidepath/Trail
- Unpaved Walking Trail
- Spot Recommendations

Boundaries

- Greene County
- Cities

Environmental

- Trails
- Hydrology
- Railways
- Regional Open Spaces

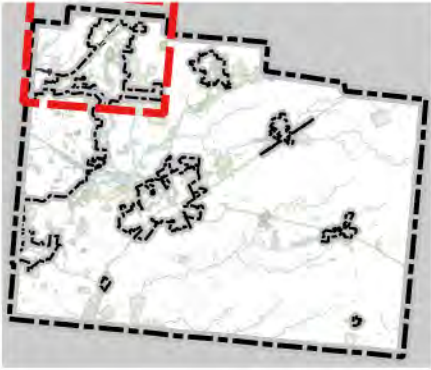


This preliminary concept is for planning purposes only. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing recommendations contained herein.

Table 6. Cedarville Recommendations

Map ID	Facility Type	Location	Extents	Description
C1	Sidepath/Trail or Separated Bike Lane	State Route 72	Varsity Dr to Wilimington Rd	Expand sidewalk to shared use path to connect Clifton to Ohio-to-Erie Trail. Consider seperated bike lanes if removing on-street parking is feasible.
C2	Separated Bike Lane	US Route 42	US Route 72 to North St	Add separated bike lane when entering Cedarville from proposed sidepath to connect to downtown.
S-C1	RRFB	Prairie Grass Trail & S Main St (Route 72)		Truck traffic and faded crosswalk markings make crossing difficult for bicyclists, add RRFB to high visibility crosswalk markings.

Map 16. Fairborn Recommendations



LEGEND

Existing

- On-Street Route
- Bike Lane
- Sidepath/Trail

Recommendations

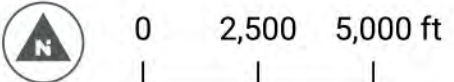
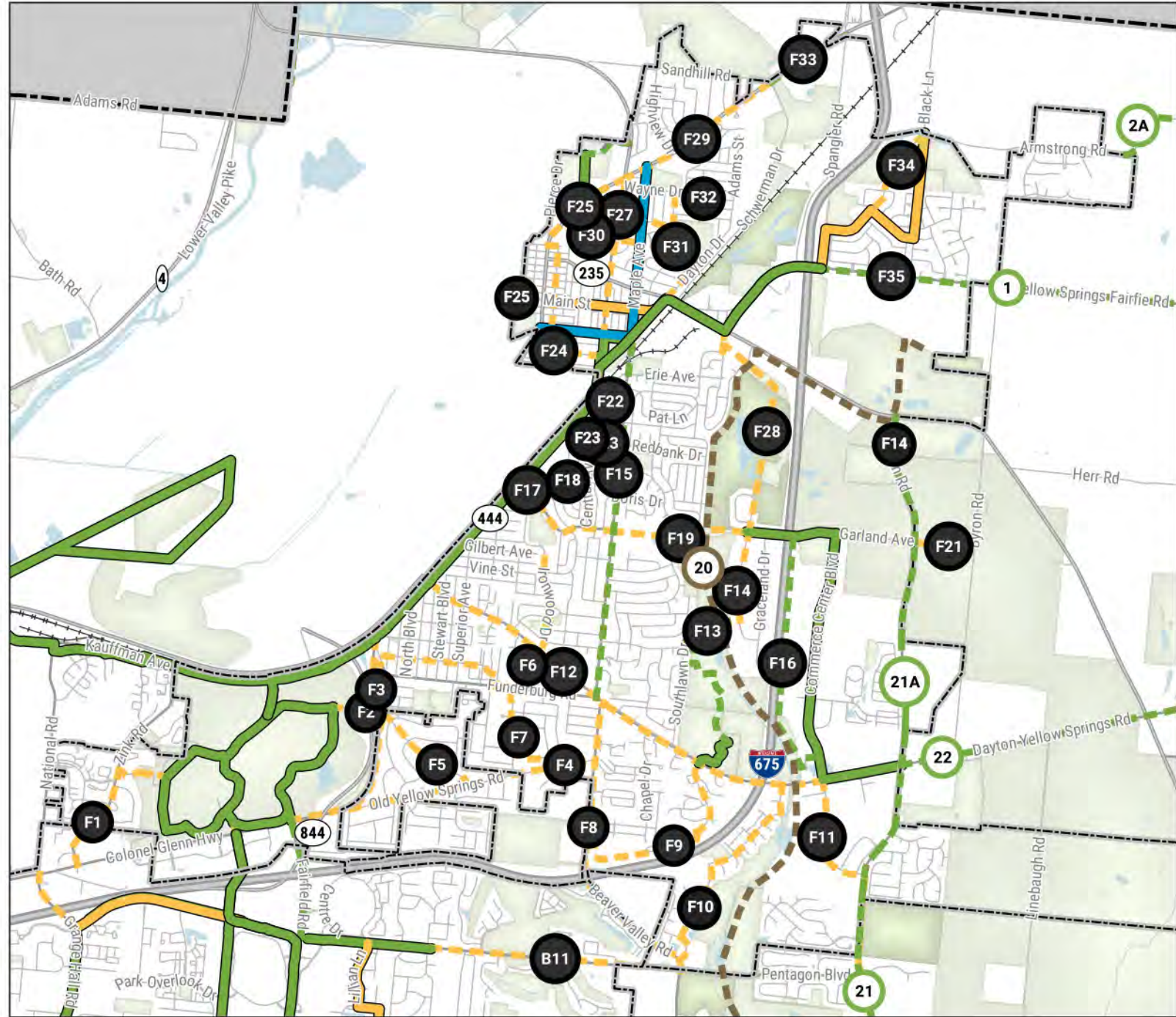
- On-Street Route
- Bike Lane
- Separated Bike Lane
- Sidepath/Trail
- Unpaved Walking Trail
- Spot Recommendations

Boundaries

- Greene County
- Cities

Environmental

- Trails
- Hydrology
- Railways
- Regional Open Spaces



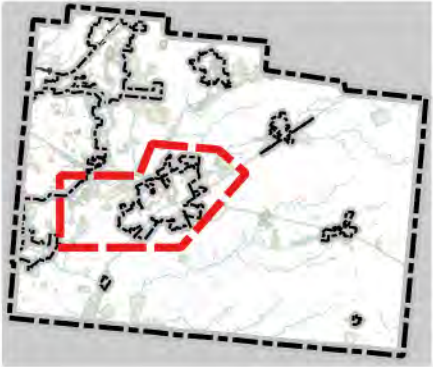
This preliminary concept is for planning purposes only. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing recommendations contained herein.

Table 7. Fairborn Recommendations*

Map ID	Facility Type	Location	Extents	Description
F1	On-Street Route	Zink Rd/Forest Ln	Colonel Glenn to University Blvd	shared road
F2	On-Street Route	University Blvd	Colonel Glenn to Raider Road	shared road
F3	On-Street Route	Colonel Glenn Hwy	University Blvd to Kauffman Ave	shared road
F4	On-Street Route	Old Yellow Springs Rd	Beaver Valley to Colonel Glenn	shared road
F5	On-Street Route	Ravenwood Dr	Colonel Glenn to Old Yellow Springs Rd	shared road
F6	On-Street Route	Orville St	Funderburg Rd to Colonel Glenn	shared road
F7	On-Street Route	Kathy Dr/Triumph Dr/Loretta Ave	Funderburg Rd to Old Yellow Springs Rd	shared road
F8	On-Street Route	Beaver-Valley Rd	Dayton-Yellow Springs Road to New Germany Trebein Road	shared road
F9	On-Street Route	Parks Hills Crossing	Beaver Valley to Park Hills to Dayton Yellow Springs Road	shared road
F10	On-Street Route	Dutch Mill Dr	Gateway Dr to Valle Greene to Cutch Mill to Countryside to autumn Creek to Beaver Valley	shared road
F11	On-Street Route	Commerce Center Blvd		shared road
F12	On-Street Route	Dayton-Yellow Springs Rd	Trebein Road to Kauffman Avenue	separated path
F13	Sidepath/Trail	Off-Street		
F14	On-Street Route	Meadowlands Dr		shared road
F15	Sidepath/Trail	Maple Ave	Dayton to Dayton Yellow Springs	separated path
F16	Sidepath/Trail	Off-Street (parallel to I-675)		separated path
F17	On-Street Route	Garland Ave	Kauffman Avenue to Maple Avenue	shared road
F18	On-Street Route	Ironwood Dr	Dayton Yellow Springs to Garland Ave	shared road
F19	On-Street Route	Off-street?	Maple Ave to E Garland thru easement	No road currently just an easement, off street separated path
F20	On-Street Route	East Garland Ave		Bike lane
F21	On-Street Route	Off-street?	Trebein Road to Byron Road	No current roadway. would match path to the west which is shared roadway
F22	On-Street Route	Powell Ave	Kauffman Ave to Maple Ave	shared road
F23	On-Street Route	Parkwood Dr	Kauffman Ave to Maple Ave	shared road
F24	On-Street Route	Ohio St/Broad St	Central Ave to Wright Ave to Dayton Dr.	shared road
F25	On-Street Route	Broad Street	Dayton Drive to Central Ave	Dedicated Bike lane
F26	On-Street Route	W Main St	Broad Street to Central Ave	shared road
F27	On-Street Route	Central Avenue	Dayton Drive to Broad Street	Shared Road
F28	On-Street Route	Sanctuary Dr	Garland Ave to Xenia Dr	shared road on street and separate path thru park
F29	On-Street Route	N Broad St	Central Ave to Spangler Road	Dedicated Bike Lanes transitioning to separated path
F30	On-Street Route	Hebble Ave	Broad Street to Maple Avenue	shared road
F31	On-Street Route	Whittier Ave/Lincoln Dr	Maple Ave to Lincoln Dr.	shared road
F32	On-Street Route	Swigart Dr		shared road
F33	Sidepath/Trail	Broad St	Sandhill Road to Spangler Road	Separated path north side of road
F34	On-Street Route	Sunnymead Dr/Cottage Court Dr		shared road with a portion being separated path btw. roadways
F35	Sidepath/Trail	Yellow Springs-Fairfield Rd	Spangler to East Corp Line	Separated path

*The [Fairborn Bikeway Plan](#) was created in 2017. The Greene County Master Trails Plan considered projects identified in the Fairborn Bikeway Plan when proposing regional connections throughout the county.

Map 17. Xenia Recommendations



LEGEND

Existing

- On-Street Route
- Bike Lane
- Sidepath/Trail

Recommendations

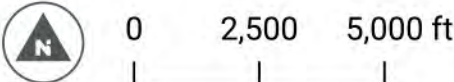
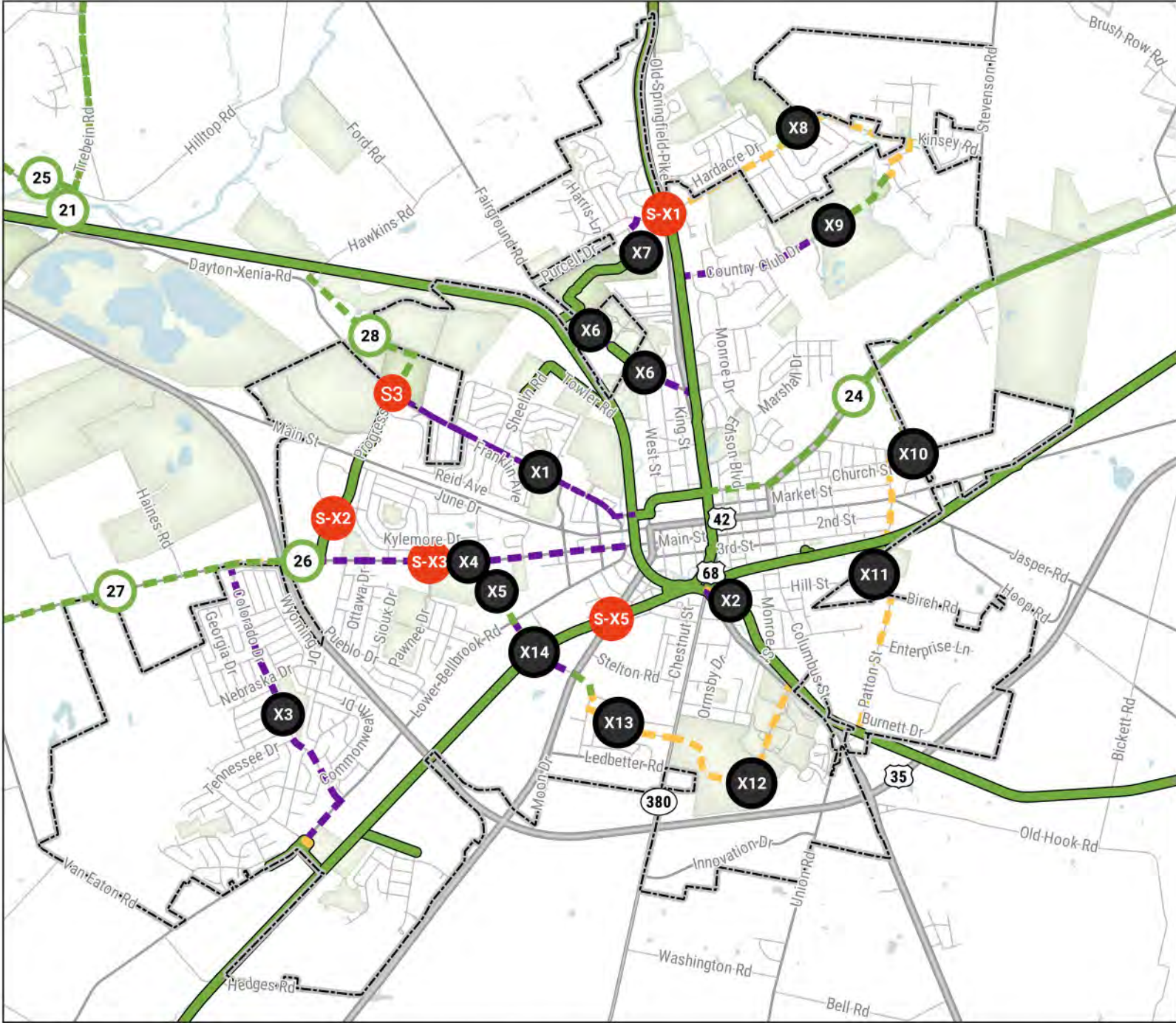
- On-Street Route
- Bike Lane
- Separated Bike Lane
- Sidepath/Trail
- Unpaved Walking Trail
- Spot Recommendations

Boundaries

- Greene County
- Cities

Environmental

- Trails
- Hydrology
- Railways
- Regional Open Spaces



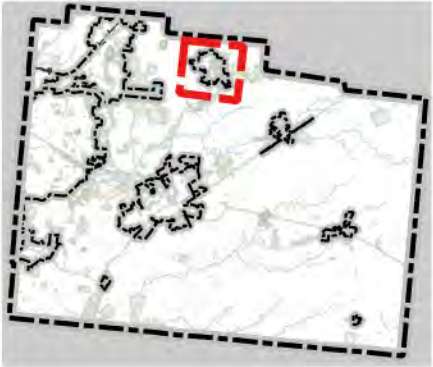
This preliminary concept is for planning purposes only. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing recommendations contained herein.

Table 8. Xenia Recommendations*

Map ID	Facility Type	Location	Extents	Description
X1	Separated Bike Lane/ Path	Dayton Xenia Rd, Dayton Ave, and W Market St	Progress Dr to W. Church St. sidepath	Dayton Ave./W. Market St. may be wide enough for bike lanes; Dayton-Xenia Road from Richard Dr. to Progress Dr. requires sidepath. Connects Progress Dr. trail, Creekside Trail and Little Miami Scenic Trail.
X2	Separated Bike Lane	Washington Street & US 68	Xenia Station to Xenia-Jamestown Connector	Close gap between Xenia Station to trail by adding separated bike lanes on Washington. US 68 alignment TBD, intersection enhancements needed and potential to expand sidewalk to sidepath.
X3	Separated Bike Lane/ Sharrows/ Sidepath	Colorado Dr & Bellbrook Ave	Upper Bellbrook Rd to Berkshire Dr	Bike lanes and/or sharrows on Colorado Dr., path on Bellbrook Ave. Connects southwestern Xenia neighborhoods/REACH Center/Little Miami Scenic Trail/existing sidepath on Bellbrook Ave.
X4	Separated Bike Lane/ Sharrows	W Second St	Progress Dr to Creekside Trail	Connect west side neighborhoods to REACH Center, schools, midtown retail, downtown.
X5	Sidepath/Trail	Future extension of Industrial Blvd	Bellbrook Ave to W Second St	Connect west side neighborhoods to Little Miami Scenic Trail.
X6	Separated Bike Lane/ Sharrows/Sidepath	W Ankeny Mill Rd	Existing bike path to Little Miami Scenic Trail	Connect Fairgrounds/James Ranch with north side neighborhoods and Little Miami Scenic Trail.
X7	Separated Bike Lane/ Sharrows	Alameda Dr/ Hollywood Blvd	Fairgrounds Recreation Center to Little Miami Scenic Trail	Connect Creekside Trail/James Ranch/Fairgrounds/north side neighborhoods with Little Miami Scenic Trail.
X8	On-Street Route	Kinsey Rd	Little Miami Scenic Trail to Highlander Dr	Connect Little Miami Scenic Trail with Sara Lee Arnovitz Preserve, northeast neighborhoods.
X9	Separated Bike Lane/ Sharrows/ Trail	Country Club Drive, WGC Golf Course, Kinsey Road Mound	Little Miami Scenic Trail to Mound Ct	Connect northeast neighborhoods, Mound Preserve, WGC Golf Course, and Little Miami Scenic Trail. Requires bridge over creek. Potential alternative to X8. Requires easement through WGC.
X10	Sharrows/Path	Patton St, Lexington Park, City-owned acreage	Prairie Grass Trail to US-42	Connect East End to Prairie Grass Trail, Bob Evans Fields, CSU/Wilberforce, Col Young Buffalo Soldiers National Monument.
X11	Separated Bike Lane/ Sharrows/Sidepath	Patton St/Birch Rd	Prairie Grass Trail to Jamestown Connector	Connect Industrial Park employers to regional bike paths. Sidepath required only at connection from Patton St to Jamestown Connector underpass.
X12	On-Street Route	Athletes in Action campus	Jamestown Connector to SR-380	Connect southern neighborhoods and Athletes in Action campus to trail system. Uses internal Athletes in Action campus roadways, path and crossing at Dowdell Ave.
X13	On-Street Route/Trail	US-42, Southern neighborhoods	US-42 to SR-380	Connect southern neighborhoods and Athletes in Action campus to trail system using residential streets and easement through property on US-42.
X14	Separated Bike Lanes	Industrial Blvd	US-42 to Bellbrook Ave	Connect southern and western neighborhoods to Little Miami Scenic Trail.
S-X1	High Visibility Crosswalk, Bike Boxes (Bike Loop Detector?)	Detroit St/US Rte 68 & Kinsey St/ Hollywood Blvd		Bicyclists cross US Rte 68 to connect to Spur Trail connected through neighborhood, adding bike boxes and high visibility markings could draw attention to bicyclists crossing intersection.
S-X2	Pedestrian Signal and High Visibility Crosswalk	Hospitality Dr & Progress Dr		Add pedestrian signal/crossing from sidewalk to trail.
S-X3	Pedestrian signal phase, high visibility crosswalk	W 2nd St & Rockwell Dr		Check pedestrian signal and lengthen (or make automatic), add high visibility crosswalk markings to all legs for students crossing street from/to school and neighborhood.
S-X4	RRFB	US 42 & Little Miami Scenic Trail		Add RRFB to crossing to bring awareness to trail crossing.

*The [X-Plan](#) was adopted in 2013. The Greene County Master Trails Plan considered projects identified in the X-Plan when proposing regional connections throughout the county.

Map 18. Yellow Springs Recommendations



LEGEND

Existing

- On-Street Route
- Bike Lane
- Sidepath/Trail

Recommendations

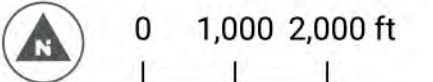
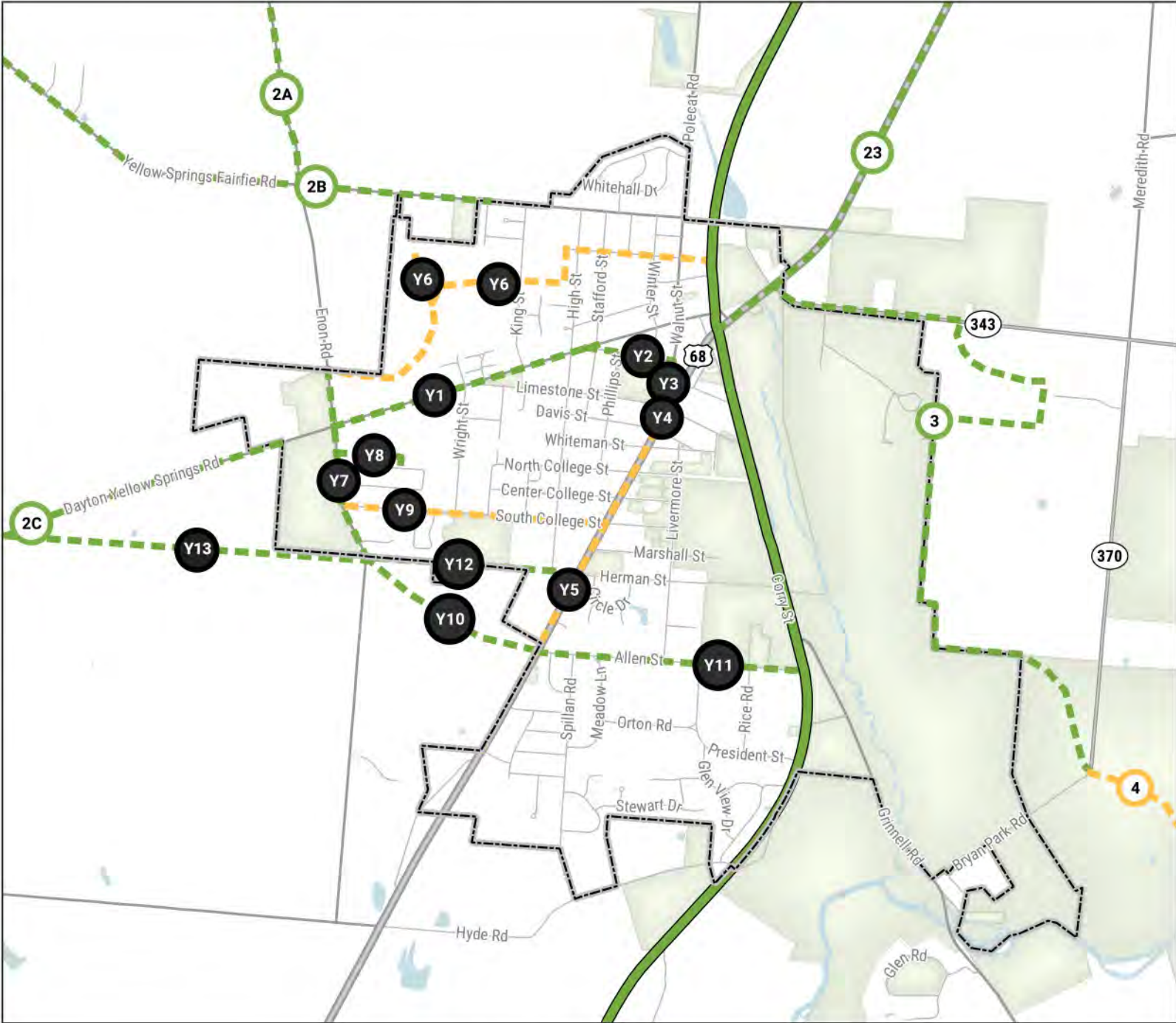
- On-Street Route
- Bike Lane
- Separated Bike Lane
- Sidepath/Trail
- Unpaved Walking Trail
- Spot Recommendations

Boundaries

- Greene County
- Cities

Environmental

- Trails
- Hydrology
- Railways
- Regional Open Spaces



This preliminary concept is for planning purposes only. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing recommendations contained herein.

Table 9. Yellow Springs Recommendations*

Map ID	Facility Type	Location	Extents	Description
Y1	Sidepath/Trail	Dayton St	Enon Rd to Stafford St	Reconstruct existing sidepath
Y2	Sidepath/Trail	Elm Street	Dayton Street to Short Street	
Y3	Sidepath/Trail	Walnut Street	Short Street to Limestone Street	
Y4	Sidepath/Trail	Xenia Avenue	Limestone Street to Davis Street	
Y5	On-Street Route	Xenia Avenue	Davis Street to Kahoe Lane	Two-way separated bike lane on southbound side of Xenia
Y6	On-Street Route	Glass Farm & Pleasant Street	Wright Street to Northern entrance to future Glass Farm site; Enon Rd to LMST	Neighborhood Bikeway
Y7	Sidepath/Trail	Enon Road	Pleasant Street Extended to Herman Street Trail	
Y8	Sidepath/Trail	Utility Corridor	Enon Road to Omar Circle	Connector trail
Y9	On-Street Route	West South College Street	Enon Road to Xenia Avenue	Short-term neighborhood bikeway. Long-term street reconstruction with wider sidewalks.
Y10	Sidepath/Trail	Future Development	Enon Road to Xenia Avenue	Connect Enon Road with Xenia Avenue through future development
Y11	Sidepath/Trail	Allen Street	Xenia Avenue to LMST	Install sidepath on WB side of street
Y12	Sidepath/Trail	Herman Street Trail	Enon Road to High Street	
Y13	Sidepath/Trail	Off-street	Agraria to Enon Rd	Connection to Agraria

*The [Yellow Springs Active Transportation Plan \(ATP\)](#) was created in 2019. The Greene County Master Trails Plan considered projects identified in the Yellow Springs ATP when proposing regional connections throughout the county.

General Infrastructure Recommendations

In addition to location-specific recommendations identified in the maps, there are several general infrastructure recommendations to support the walking and bicycling recommendations on the previous pages. These should be considered when roadways are repaved, signals are replaced, or in conjunction with the implementation of the other facilities recommended in this plan.

1. Install wayfinding signage along new walking and bicycling routes.

Leads: Individual Cities & Villages, MVRPC

There is already some uniform regional wayfinding signs along major trails in Greene County. New regional routes should continue to add wayfinding to direct route users to downtown centers and major destinations, such as parks.

2. Install bike racks and long-term bike parking at bike hubs.

Leads: Individual Cities & Villages

As additional trails are built bicycle parking should be incorporated at major destinations and downtown centers. Cities and villages could consider adopting policies that would support this, such as waiving a set number of vehicular parking spaces (e.g. two) if a bike rack is installed. Bike lockers or on-demand lockers should be considered at major hubs to support multimodal commuting.

Programs and Policies

While infrastructure recommendations can improve safety and encourage more walking and bicycling, these improvements must be supplemented by programs and policies that encourage new people to try active transportation and bring attention to the need for investment. This section proposes several non-infrastructure recommendations for Greene County.

Education

1. Educate residents and decision-makers through experiential rides.

Lead: Individual Cities & Villages, RPCC

Organized group bicycle rides can be a tool to educate new riders on how to ride safely in traffic and can raise the visibility of people bicycling in the community, helping to change attitudes and reduce stigmas. Inviting elected officials and decision makers on rides can also help raise their awareness of the challenges faced by bicyclists.



Encouragement

2. Participate in Walk and Bike to School Day, Bike Month and Bike To Work Day

Lead: Individual Cities & Villages, RPCC, GCP&T, MVRPC

Special events are one type of encouragement activity that provide a way for families to try a new way of getting around. They also highlight school travel issues to local leaders and build political support for SRTS funding. Ohio participates in these events and identifies October of each year as Walk and Bike to School Month, and many cities and villages designate every May as Bike Month. When a majority of the school participates in a special event, it creates a snapshot of what life could look like if every day was a “Walk and Bike to School Day.” Currently, Highland Elementary School has participated in “Walk to School” Day over the past five years. Other schools in the district could organize activities on this day, such as group rides and walks. Cities, villages, and local employers could also organize events for adults during Bike Month and Bike to Work Day, such as organized rides or incentives.

3. Continue providing informational maps and guides.

Lead: MVRPC

MVRPC manages [MiamiValleyTrails.org](https://miamivalleytrails.org) and publishes the Miami Valley Bikeways Guide Maps for visitors and trail users. MVRPC could consider creating additional promotional materials, such as a Greene County Trails “Passport” where participants can mark which trails they have visited.

Economic

4. Expand Greene County as a regional biking destination.

Lead: Individual Cities & Villages, RPCC, GCP&T, MVRPC

Greene County trails are part of the largest paved trail network in the nation. It was identified early on in stakeholder engagement that maximizing on this fact and the economic benefits that can come from Greene County as a bicycle hub is key to this plan. In April 2020, an online survey was conducted to better understand current trail users. Respondents were asked if on their “most recent trip to a trail, did you make any purchases related to your use of the trail (e.g. beverages, food, equipment rental, etc)”. Out of 177 respondents, 24.3 percent stated that they did make a purchase.

The County, cities, and villages could consider encouraging restaurants, and business such as hotels to become bicycle friendly by offering ample bike parking on overnight bike storage at hotels. There are several ways that trails could spur economic development:

- » The County could explore encouraging businesses to create a Bicycle Benefits program that offers discounts to those who travel by bike to their business. The program could be modeled off of or join the existing [Bicycle Benefits](#) program.
- » Greene County cities and villages could join the [Trail Town Program](#), which promotes accessing local businesses, restaurants, and lodging via the trail system. Both Xenia and Yellow Springs are already part of the [Buckeye](#)



[Trail Towns](#) program. The Buckeye Trail also goes through Fairborn and Spring Valley.

- » Trail-oriented development could be encouraged through trailside zoning overlays and promote both public and private investment. Urban Land Institute's report, [Active Transportation and Real Estate, The Next Frontier](#), provides several case studies of trails around the U.S. that have contributed to residential and commercial growth, such as the Indianapolis Cultural Trail.

Evaluation and Planning

5. Conduct regular bicycle and pedestrian counts.

Lead: MVRPC, GCP&T

Greene County already has permanent bicycle counters on all major trails. MVRPC compiles

this information for the region as part of their [Bicycle Counting Program](#). Greene County should continue to track bicycle and pedestrian counts on major trails and could consider collecting additional counts on new trails or trails that do not have a permanent counter using MVRPC's eco-counter that can be borrowed for short term studies.

6. Perform regular plan updates.

Lead: RPCC, GCP&T

Revisiting and updating this Plan on a regular basis (every four-six years) will maintain momentum for active transportation in Greene County. As funding, political, and community circumstances evolve, updating the Plan to reflect such changes will ensure its continued relevance.

Policy

7. Implement Complete Streets policies in cities and villages.

Lead: Individual Cities & Villages

A [Complete Streets policy](#) commits a jurisdiction to planning and designing roadways to be safe and comfortable for all users, not just motor vehicles. This context-sensitive approach to planning and design can help create livable communities and ensure a consistent roadway design approach for people walking and bicycling throughout the city. MVRPC adopted a Complete Streets Policy in 2011, while the local jurisdictions of Yellow Springs and Bellbrook also have Complete Streets Policies. Other cities and villages should consider adopting policies.

8. Adopt a Trail Development Resolution

Lead: Individual Cities & Villages, RPCC

Many local governments use resolutions to require new developments to build or pay for active transportation infrastructure including trails or shared use paths as part of the approval process. It is common for municipal officials to place conditions on the approval of subdivision and land development applications. Through negotiation, a municipality can request the installation of bicycle and pedestrian facilities. This plan identifies the need and location of future trails or shared use paths in Greene County. Greene County should adopt a resolution that will require developers to implement these facilities when land development applications are made.

Communities vary greatly on how these types of requirements are written and implemented. One such example can be found in Prince George's County, Maryland, where developers are required to dedicate land and build pedestrian and bicycle facilities that are on their property or on public right-of-way fronting their property (i.e. streets). While not all development applications are subject to this requirement this subdivision ordinance gives the Planning Board the authority for requiring development to build trail facilities. See language below.

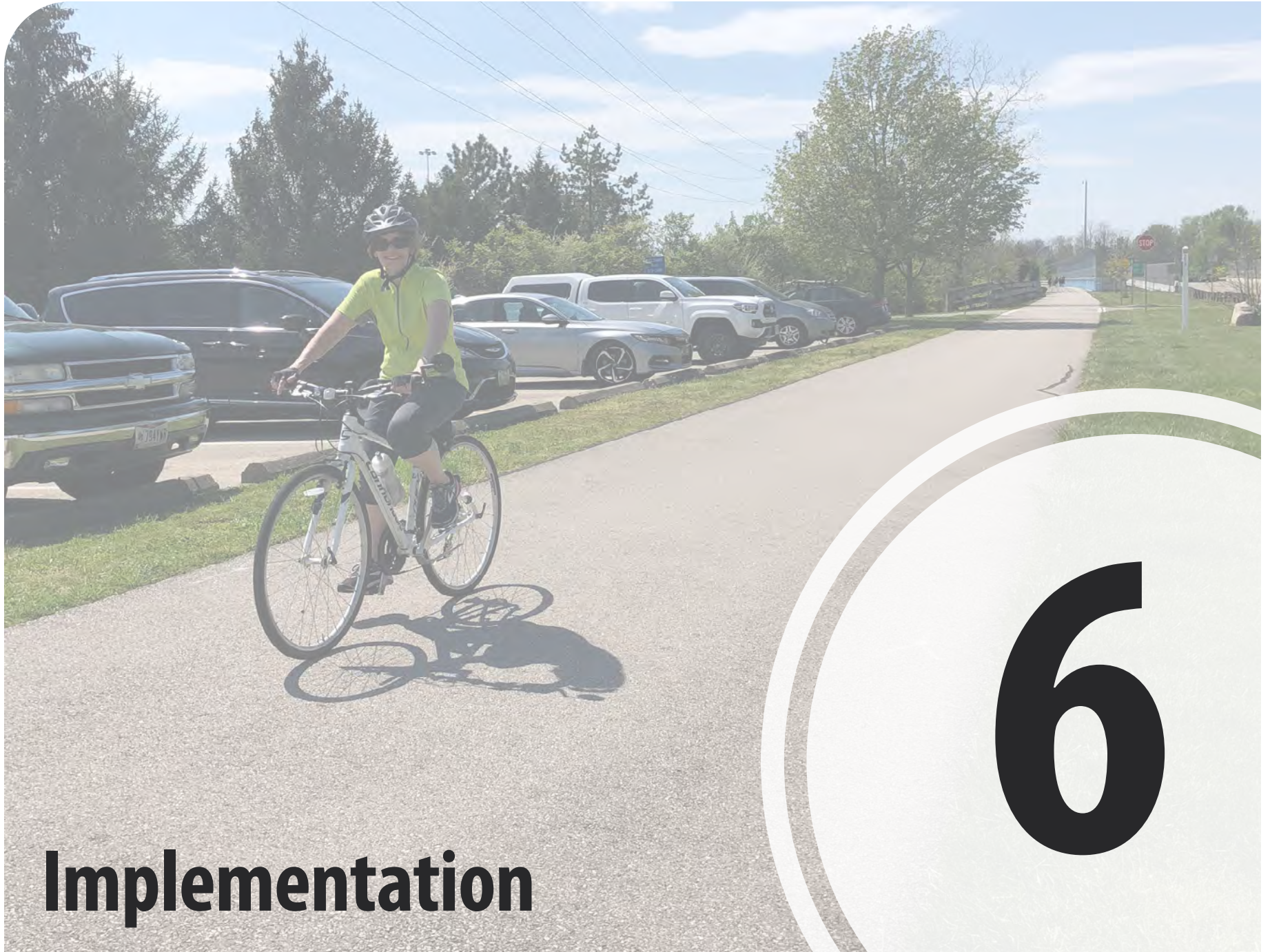
Sample ordinance:

PRINCE GEORGE'S GOUNTY, MD

CODE OF ORDINANCES SECTION 24-123(A)(6):

"Land for bike trails and pedestrian circulation systems shall be shown on the preliminary plan and,

where dedicated or reserved, shown on the final plat when the trails are indicated on a master plan, the County Trails Plan, or where the property abuts an existing or dedicated trail, unless the Board finds that previously proposed trails are no longer warranted."



Implementation

Implementation

This chapter describes major factors involved in implementation including the roles of key stakeholders, funding strategies, the process used to prioritize infrastructure recommendations, and maintenance strategies. The implementation of this plan is a long-term investment in maintaining and expanding trails throughout Greene County.

.....



Funding Strategies

Active transportation projects comprise a fraction of overall transportation network construction and maintenance. While they generally do not serve as many users as highways, bridges, and other critical infrastructure, they can have a substantial positive effect on local economies. Additionally, providing opportunities for active living promotes public health and may reduce the burden on tax-payer funded healthcare systems over time. In this light, active transportation infrastructure is a critical component of a complete transportation network and results in a positive return on investment for communities that fund such projects. Several state and federal funding sources can be used to supplement local funding sources to build out Greene County's trail network and fund related programming efforts (Table 9).

Roles and Responsibilities

Collaboration is the first step towards successful implementation of the Greene County Master Trails Plan. Stakeholders involved in the planning

process will be responsible for varying aspects of the design, funding, construction, maintenance, monitoring, and/or evaluation of the network depending on the project and its jurisdictional boundaries. All projects should be coordinated and pursued collaboratively.

Clean Ohio Trails Funds

Infrastructure recommendations include several shared use path (or trail) projects that could be funded through the [Clean Ohio Trails Fund](#) (COTF). The COTF works to improve outdoor recreational opportunities for Ohioans by funding trails for outdoor pursuits of all kinds. Eligible projects include: Land acquisition for a trail, trail development, trailhead facilities, engineering, and design. Local governments, park and joint recreation districts, conservancy districts, soil and water conservation districts, and non-profit organizations are eligible to receive grants for conservation projects from the COTF. Applicants must provide a 25 percent local match, which can

include contributions of land, labor, or materials. Up to 75 percent matching State of Ohio funds are reimbursed under the COTF. All projects must be completed within 15 months from the date that they are signed into contract.

Recreational Trails Program

The federal [Recreational Trails Program](#) (RTP) provides funds to states to develop and maintain trails and trail-related facilities for both non-motorized and motorized recreational trail uses. In Ohio, the RTP is administered by the Ohio Department of Natural Resources. Eligible projects include: Maintenance and restoration of existing trails, development and rehabilitation of trailside and trailhead facilities and trail linkages for recreational trails, purchase or lease of recreational trail construction and maintenance equipment, construction of new recreational trails, land acquisition for trail construction, operation of educational programs to promote safety and environmental protection as those

Table 10. Primary Active Transportation Funds in Ohio

Funding Source	Distributed By	Eligible Project Examples	Eligible Project Sponsor
<u>Clean Ohio Trails Fund</u>	Ohio Department of Natural Resources (ODNR)	New trail construction Land acquisition for a trail Trail planning/engineering and design (must include construction)	Local governments Park districts Conservancy districts Soil and water conservation districts Non-profits
<u>Recreational Trails Program</u>	ODNR	New recreational trail construction Trail maintenance/restoration Trailside and trailhead facilities Purchase/lease of construction & maintenance equipment Acquisition of easements Educational programs	Local governments State and federal agencies Park districts Conservancy districts Soil and water conservation districts Non-profits
<u>Green Space Conservation Program</u>	Ohio Public Works Commission (OPWC)	Open space acquisition including easements Bike racks Kiosks/Signs Hiking/Biking trails Pedestrian bridges Boardwalks	Local governments Park districts Conservancy districts Soil and water conservation districts Non-profits
<u>Transportation Alternatives</u>	Metropolitan Planning Organization (MPO) - MVRPC	Bicycle & pedestrian facilities Safe routes for non-drivers Conversion & use of abandoned railroad facilities Overlooks & viewing areas	Local governments
<u>Highway Safety Improvement Program</u>	ODOT (Coordinate with local ODOT District to submit a safety study)	Signalization Turn lanes Pavement markings Traffic signals Pedestrian signals/crosswalks Bike lanes/trails Road diets	Local governments
<u>Safe Routes to School</u>	ODOT	Infrastructure Non-Infrastructure School Travel Plan assistance	Local governments (infrastructure) Local governments, school or health district, or non-profit (non-infrastructure)

objectives relate to the use of recreational trails. Eligible applicants can be local governments, state governmental agencies, federal governmental agencies, and non-profits. Up to 80 percent of eligible project costs can be reimbursement under the Recreational Trails Program with a 20 percent local match, which can include contributions of land, labor, or materials. All projects must be completed within 15 months from the date that they are signed into contract.

Green Space Conservation Program

The [Green Space Conservation Program](#) is administered by the Ohio Public Works Commission. Its goals include enhancing eco-tourism and economic development related to outdoor recreation in economically challenged areas and providing pedestrian or bicycle passageways between natural areas and preserves. Applicants must provide a 25 percent local match. Green Space Conservation Program funding can also be used to match federal sources. The program has funded projects such as greenways and acquisition of railroad right-of-way for trail development.

Transportation Alternatives Set-Aside

Transportation Alternatives Set-Aside is one of the most common funding sources of active transportation projects. TA Set-Aside funds for the City of Hamilton would be allocated through [OKI](#). Eligible projects include on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community

improvement activities, and environmental mitigation; recreational trail program projects; and safe routes to school projects.

Highway Safety Improvement Program

Most of Ohio's fatalities, serious injuries, and total crashes occur on local roads, and ODOT recognizes the public safety benefit of engineering improvements in high-crash locations beyond the ODOT network. ODOT works with MPOs and local governments to identify locations with severe safety problems and fund infrastructure improvements in these areas through the [Highway Safety Improvement Program](#) (HSIP) funding. HSIP can cover up to 100 percent of funding for a given project.

Safe Routes to School

[Safe Routes to School](#) (SRTS) projects include traffic calming, enhanced crossing treatments, signal upgrades, sidewalks, and other countermeasures. These treatments are most effective when used in combination with non-infrastructure solutions (i.e. engagement, education, encouragement, and evaluation). Several public schools in Hamilton are located on or near roads with proposed infrastructure improvements as part of this Plan. Proposed infrastructure projects must be located within two miles of a school to qualify. Information on the SRTS program, requirements for funding, and resources on developing School Travel Plans can be found at walk.ohio.gov. SRTS can cover up to 100 percent of funding for a given project up to \$400,000.

Other Funding Resources

ODOT and the Ohio Department of Health developed an [Active Transportation Funding Matrix](#). Communities may use this tool to search for potential funding sources to support infrastructure and non-infrastructure projects that advance walking and bicycling.

Rails to Trails has also pulled together a list of potential funding sources: [Funding](#).



Project Prioritization

The infrastructure recommendations in Chapter 5 are conceptual routes, meant to show the potential of a comprehensive active transportation system in Greene County. The recommendations are planning level in scope and are not necessarily constrained by existing challenges. Funding, land use, property rights, terrain, and other project specific factors may make certain recommendations less practicable than others. Project prioritization uses measurable data to determine which projects are both feasible, given real-world constraints, and align with stakeholders' priorities.

Methodology

As with most municipalities, Greene County has a limited amount of funding with which to build bicycle infrastructure. Because of this, it is important that the projects providing the most benefit be prioritized over others. The prioritization for linear recommendations occurred in two steps.

1

Prioritization Steps

A data-driven process that uses source GIS datasets to score and rank projects based on conditions in their relative locations.	
Variable	Description
Volume (AADT)	Scored as the weighted average AADT value among the street segments which make up a project.
Speed Limits	Scored as the weighted average speed limit among the streets segments which make up a project.
Safety	Scored using nearby crashes and best judgement of safety/importance.
Previously Proposed	Projects receive a point for overlap with another plan (ex: MVRPC Bike Plan Update 2015)
Connections to Existing	Counts the number of connections to other proposed projects. Any other project within 200 feet of a project counts as a connection.
Public Engagement Input	Based on public online survey.
Needs Analysis (Equity)	Based on ODOT's Walk.Bike.Ohio efforts. <ul style="list-style-type: none"> » Indicators: Minority Groups, Youth, Older Adults, Poverty, No High School Diploma, Limited English Proficiency, and No Access to a Motor Vehicle.
Demand Analysis (Equity)	Based on ODOT's Walk.Bike.Ohio efforts. <ul style="list-style-type: none"> » Indicators: Emplacement Density, Population Density, Walk/Bike Commute Mode, Park Density, Presence of Colleges/University, Retail Employment Density, and People at or Below 200% of the Federal Poverty Line.
Cost	Measures relative cost of facility recommendation based on construction cost and prioritizes less-expensive projects. Raking is as follows: <ul style="list-style-type: none"> » Share Lane = 1 pt » Separated Bike Lane = 0.66 pts » Sidepath/Trail = 0.33 pts

2

Input from the client and oversight committee

Weighted Data Driven Priority Score

The final score is calculated as the sum of variables with relative weights applied.

Variable	Category	Weight
Volume (AADT)	Safety	35
Speed Limits		
Safety		
Previously Proposed	Previously Proposed	5
Connections to Existing	Connections	10
Public Engagement Input	Public Engagement	20
Needs Analysis (Equity)	Equity	20
Demand Analysis (Equity)		
Cost	Cost	10

Final Prioritized List of Projects

The Steering Committee, RPCC, and GCP&T will discuss the data driven prioritization score together and propose any desired changes. The Prioritized List of Projects will be updated and finalized to reflected proposed changes.

Implementation Approach

Implementing this plan will take time and significant effort. The following implementation strategy identifies short-, medium-, and long-term plan priorities. While the Oversight Committee has been involved in this planning process, implementation will require working with a larger number of partners, as well as building public support for priority projects. Whenever possible, recommendations in this plan should be incorporated into other roadway projects. Every year the County should re-evaluate the priority list to track which projects have been implemented and to make adjustments as needed.

Short-, mid-, and long-term project phasing

Project phasing is based on the prioritization results. The top five recommendations are classified as high (short-term), the next eight as medium (medium-term), and the remaining as low (long-term) projects.

Short-Term (0-5 Years)

Short-term projects are the most important phase of implementation. Projects that are successfully completed early on in the process in a highly visible area with the potential to serve many users would generate excitement around the Plan and show the County's commitment to expanding active transportation as a valid means of travel. As such, funding, community support, and political will to pursue the recommendations in this Plan will be most important during the first

phase of implementation. Short-term projects include critical connections between Fairborn and Beavercreek (Project 21) and Yellow Springs and Fairborn (Project 22).

Medium-Term (6-10 Years)

Medium-term projects include connections between Bellbrook to Spring Valley and Yellow Springs to Clifton.

Long-Term (> 10 Years)

All remaining Projects

During the last phase of implementation, the completion of lower-priority projects would expand the overall trail network.

Table 11. Short-Term Projects

Map ID	Facility Type	Location	Description
21	Sidepath/Trail	Trebein Rd	Sidepath to connect Creekside Trail to Fairborn, several stretches of roadway have relatively flat adjacent landscape. 21A: Option to extend sidepath connection to Oakes Quarry Park.
22	Sidepath/Trail	Dayton-Yellow-Springs Rd	Connect existing trail in Fairborn to Yellow Springs.
15	Sidepath/Trail	State Route 725	Connect Spring Valley to Bellbrook via sidepath.
18	Sidepath/Trail	S Fairfield Rd/Stutsman Rd/Alpha Bellbrook Rd	Connect existing trail just north of Bellbrook to proposed trail/path in Beaver creek.
26	Sidepath/Trail	Upper Bellbrook Road	Connect neighborhood to YMCA and existing trail.

Table 12. Medium Term Projects

Map ID	Facility Type	Location	Description
17	Sidepath/Trail	Bellbrook Road	Sidepath along Bellbrook Rd to connect into existing path in Bellbrook.
2C	Sidepath/Trail	Dayton-Yellow Springs Rd	Option: South option to connect Fairborn to Yellow Springs (connects into existing infrastructure in Fairborn)
16A	Sidepath/Trail	Along Little Miami Trail	Explore feasibility of trail along the little miami river as an alternative to continuing on 725, since 725 narrows and has a grade change (not enough roadway width for a separated facility)
3	Sidepath/Trail	State Route 343 / Park	Shared use path adjacent to roadway, then through park to connect Yellow Springs to Clifton
4	Shared Lane	John Bryan State Park	Shared lane on low volume park roadway
5	Sidepath/Trail	John Bryan State Park	Shared use path through park to connect Yellow Springs to Clifton
27	Sidepath/Trail	Upper Bellbrook Rd & Indian Ripple Rd	Connect residents to Narrows Reserve Center and Park and Beaver creek.
28	Sidepath/Trail	Off Street	Connect existing sidepath to Creekside Trail. Exact alignment TBD.



Maintenance Strategies

The long-term performance of bicycle and pedestrian networks depends on both the construction of new facilities and an investment in continued maintenance. Maintaining bicycle and pedestrian facilities is critical to ensuring those facilities are accessible, safe, and functional.

Plan for Maintenance

Creating a strong maintenance program begins in the design phase. The agency that will eventually own the completed project should collaborate with partners to determine the infrastructure placement, final design, and life cycle maintenance cost.

Coordination & Responsibility Between Agencies

Many jurisdictions struggle with confusion around which entity, city, village, county, or state, is responsible for the maintenance of trails and other active transportation facilities. Frequently there is no documentation showing who is responsible for maintenance of existing facilities, which can prolong unsafe conditions for trail users. Coordination between the government agencies is key for effective maintenance programs.

Intergovernmental agreements (IGAs) are used to codify the roles and responsibilities of each agency regarding ongoing maintenance. For example, a local government may agree to conduct plowing, mowing, and other maintenance activities on trails in its jurisdiction that were built by another agency.²⁵ Clarifying who is responsible for maintenance costs and operations ensures that maintenance problems are resolved in a timely manner.

Life Cycle Cost

Whenever trails are constructed, maintenance funding is needed. This is often not considered and maintenance is absorbed within existing staff resources and operating budgets. A lack of maintenance can then result in higher long-term costs, with premature replacements required due to a lack of regular maintenance.

For trails, the primary maintenance consideration is pavement preservation. Over the life cycle of a trail, there are different strategies for pavement preservation, and lower-cost preventative maintenance or rehabilitation may defer more costly reconstruction.²⁶ Preventative maintenance includes strategies such as patching, grinding, concrete raising, and panel replacement. The responsibility entity for maintenance should keep consistent records of pavement conditions of trails to track maintenance performed and predict future needs.

Another typical maintenance cost of shared-use paths is plowing in winter.

Maintenance for trails can be funded by [ODNR's Recreational Trails Program](#) (see Table). Trail maintenance funding case studies are provided in [How Communities are Paying to Maintain Trails, Bike Lanes, and Sidewalks](#) report published in 2014 by the Alliance for Biking & Walking and The League of American Bicyclists. Also, in 2020, ODOT published a [Maintenance Overview](#) as part of Walk.Bike.Ohio efforts that provides funding strategy examples, such as cost sharing programs, utilizing municipal borrowing power, assessing repairs at time of property sales, and sliding scale fees. Strategies outlined in Walk.Bike.Ohio are mainly targeted at pedestrian facilities.²⁷

Frequency

The first step to approaching maintenance is to understand how often maintenance should be performed. Many activities, such as signage updates or replacements, are performed as needed, while other tasks such as snow removal are seasonal (see Table 13). Creating a winter maintenance approach is important to encourage year-round travel by walking and biking. One key component of this approach should be identifying priority routes for snow removal. More information on winter maintenance such as types of equipment needed for different facility types and how to consider snow removal in the design of facilities can be found in [Toole Design's Winter Maintenance Resource Guide](#).

Maintenance Activities

Different facility types require different types of strategies to be maintained. Table 14 breaks down maintenance activities and strategies for each by facility type.

Table 13. Maintenance Activity Frequency

Frequency	Maintenance Activity
As Needed	Tree/brush clearing and mowing
	Sign replacement
	Map/signage updates
	Trash removal/litter clean-up
	Replace/repair trail support amenities (parking lots, benches, restrooms, etc.)
	Repair flood damage: silt clean-up, culvert clean-out, etc.
	Patching/minor regrading/concrete panel replacement
	Sweeping
Seasonal	Snow and Ice Control
	Planting/pruning/beautification
	Culvert/drainage cleaning and repair
	Installation/removal of seasonal signage
Yearly	Surface evaluation to determine need for patching/regrading/re-stripping of bicycle facilities
	Evaluate support services to determine need for repair/replacement
	Perform walk audits to assess ADA compliance of facilities
5-year	Repaint or repair trash receptacles, benches, signs, and other trail amenities, if necessary
	Sealcoat asphalt shared use paths
10-year	Resurface/regrade/re-stripe shared use paths
20-year	Assess and replace/reconstruct shared use paths/ sidewalks

Table 14. Maintenance Strategy Recommendations

	Maintenance Activity	Strategy
Shared Use Paths/ Separated Bike Lanes	Pavement Preservation	Develop and implement a comprehensive pavement management system for shared use path network.
	Snow and Ice Control	Design shared-use paths to accommodate existing maintenance vehicles.
	Drainage Cleaning/Repairs	Clear debris from all drainage devices to keep drainage features functioning as intended and minimize trail erosion and environmental damage.
		Check and repair any damage to trails due to drainage issues.
	Sweeping	Implement a routine sweeping schedule to clear shared-use paths of debris.
		Provide trail etiquette guidance and trash receptacles to reduce the need for sweeping.
	Vegetation Management	Implement a routine vegetation management schedule to ensure user safety.
		Trim or remove diseased and hazardous trees along trails.
Preserve and protect vegetation that is colorful and varied, screens adjacent land uses, provides wildlife habitats, and contains prairie, wetland and woodland remnants.		
ADA Requirements	Conduct walk and bike audits to assess accessibility of new, proposed, and existing shared-use paths.	
	Ensure that ADA compliance is incorporated into the design process for new facilities.	
Paved Shoulders/ Bike Lanes	Pavement Markings	Explore approaches to routinely inspect pavement markings for bicycle infrastructure and replace as needed.
		Consider preformed thermoplastic or polymer tape on priority bikeways (identified in this Plan) adjacent to high-volume motor vehicle routes (preformed thermoplastic or polymer tape are more durable than paint and requires less maintenance).
	Snow and Ice Control	Clear all signed or marked shoulder bicycle facilities after snowfall on all state-owned facilities that do not have a maintenance agreement with a local governmental unit in place.
Sweeping	Implement a routine sweeping schedule to clear high-volume routes of debris.	
Bicycle Boulevards/ Shared Lanes	Sign Replacement	Repair or replace damaged or missing signs as soon as possible.
Sidewalks	Pavement Preservation and Repair	Conduct routine inspections of high-volume sidewalks and apply temporary measures to maintain functionality (patching, grinding, mudjacking).
		Consider using public agency staff or hiring contractors for sidewalk repairs, rather than placing responsibility on property owner (property owner can still be financially responsible).
	Snow and Ice Control	Educate the public about sidewalk snow clearance.
		Require sidewalk snow clearance to a width of five feet on all sidewalks.
	Establish required timeframes for snow removal.	
	Implement snow and ice clearing assistance programs for select populations.	



Evaluating Performance

Measuring the performance of active transportation networks is essential to ongoing success. Bicycle and pedestrian counts, crash records, and other data contribute to a business case for continued improvement of and investment in multimodal infrastructure. As recommendations are implemented, the County, Cities, and Villages must be able to measure whether these investments are paying active transportation dividends (i.e. more people walking and bicycling). An affirmative answer reinforces the Plan’s legitimacy, and provides evidence that future investments will also yield positive results. Every year municipalities should track how much of the proposed active transportation network is implemented.

The performance measures in Table 15 provide a framework for how municipalities can begin charting progress towards making walking and bicycling safe, connected and comfortable. Each City and Village should establish baseline targets and revisit these metrics as new plans and priorities occur. Data on these measures should be documented and published for public review annually. A robust performance measures program includes establishing baseline measurements, performance targets, data collection frequency, and data collection and analysis responsibility.

Table 15. Recommended Performance Measures

Active Transportation Infrastructure	Increase miles of pedestrian network built annually – target ___% increase per year.
	Increase miles of bicycle network built annually – target ___% increase per year.
	Increase miles of shared use path built annually – target ___% increase per year.
	Increase amount of bicycle parking facilities annually.
Semi-Annual Pedestrian and Bicycle Counts	After developing a baseline of pedestrian and bicycle activity, aim for year over year increases.
	Update student travel tallies for all schools and identify a baseline percentage of students who walk and bike. Conduct travel tallies annually and measure the change in the number of students walking and bicycling.
Education Programming	Track the number of children and adults who participate in pedestrian and bicycle education programming every year.
	Track public education campaigns and programs that include targeted efforts for students, traditionally underserved populations and other key stakeholders with target outreach goals set for 2025 and 2030.
Safety	Track the number of crashes that occurs every year, including whether bicyclists or pedestrians were involved and the level of severity, if injuries occurred.
	Reduce rate of bicycle/pedestrian and motor vehicle crashes – target ___% decrease per year.
Public Opinion	Conduct an annual active transportation survey to gauge resident comfort and opinion about active transportation in Hamilton

Additional Performance Measure Resources

[Federal Highway Administration: Guidebook for Developing Pedestrian and Bicycle Performance Measures](#)

[Fehr and Peers: Active Transportation Performance Measures](#)

Typical Trail Section

Majority of the recommendations for Greene County include sidepaths/trails. According to [FHWA's Small Town & Rural Design Guide](#) the width of a trail is 12'-14' preferred, 10' minimum, and constrained 8' is acceptable. Separation from the roadway should be 5' minimum of horizontal separation, although if less than 5' a physical/vertical barrier is acceptable.

AASHTO Sections 5.2.1 and 5.2.2 also provide similar guidance on widths and clearances (see Figure 8). According to AASHTO the typical width of a two-directional shared use path is 10'-14', which can be wider in areas with high use and/or diverse user groups. The minimum paved width of a two-directional shared use path is 10'.

A visualization of what a sidepath along Yellow Springs-Fairfield Rd near Twin Towers Park is show on page 74. Other sidepath projects identified in Plan would have a similar approach.

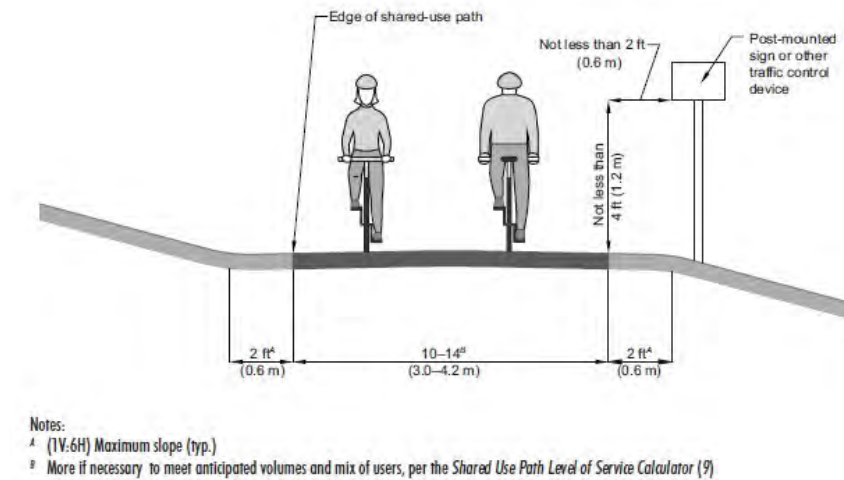


Figure 8. AASHTO (Figure 5-1) Typical Cross Section at Two-Way, Shared Use Path on Independent Right-of-Way; Source: AASHTO Sections 5.2.1



Yellow Springs-Fairfield Rd Existing



Yellow Springs-Fairfield Rd Proposed Sidepath

Priority Project: Trebein Rd

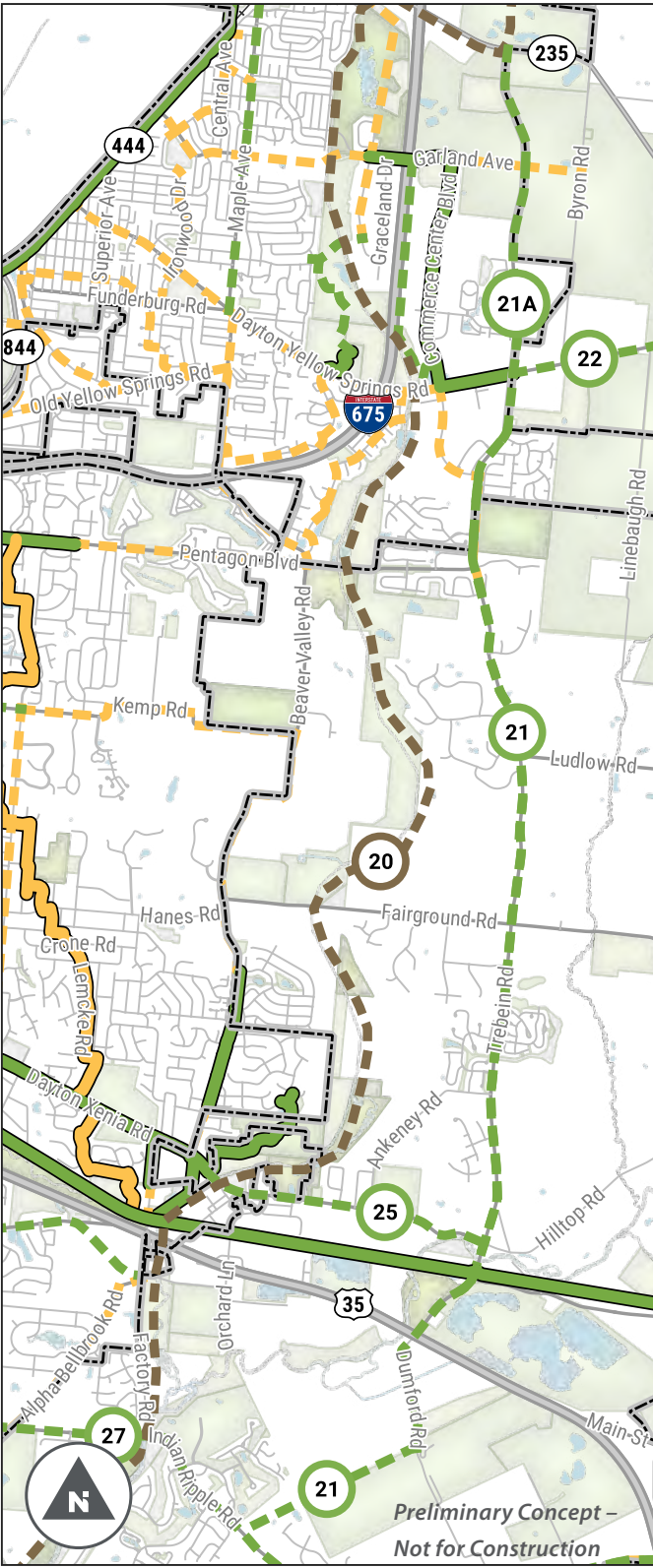
Map ID	Facility Type	Location	Extents	Description
21	Sidepath/ Trail	Trebein Rd	Indian Ripple Rd to Creekside Trail to New Germany Trebein Rd	Sidepath to connect Creekside Trail to Fairborn, several stretches of roadway have relatively flat adjacent landscape. 21A: Option to extend sidepath connection to Oakes Quarry Park.

Site Location

The Trebein Rd connection from Indian Ripple Rd to Oakes Quarry Park was unanimously ranked as the highest priority project through public input. The proposed sidepath/trail would connect multiple parks and the cities of Beavercreek and Fairborn (see map left). A planning level opinion of probable cost based on a sidepath adjacent to the roadway is provided on page 77.

**Notes: Signal changes should be evaluated when roadway is evaluated for expansion. During the planning process it was identified that ROW may be necessary but not included in this estimate.*

**Opinions of probable cost were developed by identifying major pay items and establishing rough quantities to determine a rough order of magnitude cost. Additional pay items have been assigned approximate lump sum prices based on a percentage of the anticipated construction cost; however, these costs can vary widely depending on the exact details and nature of the work. Planning-level cost opinions include a 30% contingency to cover items that are undefined or are typically unknown early in the planning phase of a project. Unit costs were pulled from 2020 ODOT Bid data. Cost opinions do not include permitting, inspection, or construction management; geotechnical investigation, special site remediation, escalation, or the cost for ongoing maintenance. The overall cost opinions are intended to be general and used only for planning purposes. Toole Design Group, LLC makes no guarantees or warranties regarding the cost estimate herein. Construction costs will vary based on the ultimate project scope, actual site conditions and constraints, schedule, and economic conditions at the time of construction.*



Conceptual Design Opinion of Probable Construction*

Item	Units	Unit Cost	Quantity	Cost	Cost Data Source	Assumptions
SIDEPATH	MILE	\$ 226,707.96	9.4	\$2,125,258.29	2020 Item Data (ODOT)	Materials and earthwork
Intersection - One Leg	EA	\$ 7,860.00	13	\$ 102,180.00	See Intersection - One Leg Cost Sheet for Individual Sources	Curb ramps and markings
Intersection - Two Legs	EA	\$ 15,720.00	21	\$ 330,120.00	See Intersection - Two Legs Sheet for Individual Sources	Curb ramps and markings
Pedestrian Signal - One Leg	EA	\$ 5,878.00	5	\$ 29,390.00	See Intersection - Signalized One Leg Sheet for Individual Sources	Estimate assumes that pedestrians signal heads and pushbuttons could be installed without additional signal upgrades.
MAINTAINING TRAFFIC	% Cost	5%		\$ 129,347.41		
EROSION CONTROL	% Cost	5%		\$ 129,347.41		
CLEARING AND GRUBBING	% Cost	5%		\$ 129,347.41		
LANDSCAPING	% Cost	5%		\$ 129,347.41		
DRAINAGE	% Cost	10%		\$ 258,694.83		
ENVIRONMENTAL	% Cost	10%		\$ 258,694.83		
UTILITY RELOCATION	% Cost	5%		\$ 129,347.41		
Construction Subtotal				\$3,751,075.03		

MOBILIZATION	% Construction	5%		\$ 187,553.75
SURVEY AND STAKING	% Construction	5%		\$ 187,553.75
Total Construction Costs:				\$ 375,107.50

Contingency	% Construction		30%	\$1,237,854.76
Engineering Design -PM, Survey, Design	% Construction		25%	\$ 937,768.76

Total Costs				\$6,301,806.04
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Priority Project: Fairborn to Yellow Spring Connection

Site Location

There are multiple possible alignments to connect Fairborn to Yellow Springs (Map 19). All alignments are sidepath/trails along a roadway.

North Alignment

Pros

- » Lowest volume roadway

Cons

- » Most rural connection, least direct connection for residents

Conceptual Design Opinion of Cost*: \$2,860,000

Central Alignment

Pros

- » Medium to low volume roadway
- » Connects to shared use path currently being constructed in Fairborn
- » Connects residents

Cons

- » Constrained ROW

Conceptual Design Opinion of Cost*: \$2,430,000

South Alignment

Pros

- » Connects into existing trail in Fairborn and proposed Mary's Way Bike Trail connecting Yellow Springs
- » Connects commercial and residents
- » Highest ranked alternative in public survey

Cons

- » Highest volume roadway
- » Constrained ROW

Conceptual Design Opinion of Cost*: \$2,460,000

Table 16. Fairborn to Yellow Springs Alignment Options

	Map ID	Facility Type	Location	Extents	Description
NORTH	2A	Sidepath/Trail	Enon Rd	Armstrong Rd to Yellow-Springs Fairfield Rd	North option to connect Fairborn to Yellow Springs
CENTRAL	1	Sidepath/Trail	Yellow-Springs Fairfield Rd/ Enon Rd	Byron Rd to Enon Rd	Existing paved shoulder varies, 55mph, need separated shared use path from roadway.
	2B	Sidepath/Trail	Yellow-Springs Fairfield Rd	Enon Rd to Ridgecrest Drive	Central option to connect Fairborn to Yellow Springs
SOUTH	22	Sidepath/Trail	Dayton-Yellow-Springs Rd	Trebein Rd to Enon Rd	Connect existing trail in Fairborn to Yellow Springs.
	2C	Sidepath/Trail	Dayton-Yellow Springs Rd	Yellow-Springs Fairfield Rd to Enon Rd	South option to connect Fairborn to Yellow Springs (connects into existing infrastructure in Fairborn)

*Opinions of probable cost were developed by identifying major pay items and establishing rough quantities to determine a rough order of magnitude cost. Additional pay items have been assigned approximate lump sum prices based on a percentage of the anticipated construction cost; however, these costs can vary widely depending on the exact details and nature of the work. Planning-level cost opinions include a 30% contingency to cover items that are undefined or are typically unknown early in the planning phase of a project. Unit costs were pulled from 2020 ODOT Bid data. Cost opinions do not include permitting, inspection, or construction management; geotechnical investigation, special site remediation, escalation, or the cost for ongoing maintenance. The overall cost opinions are intended to be general and used only for planning purposes. Toole Design Group, LLC makes no guarantees or warranties regarding the cost estimate herein. Construction costs will vary based on the ultimate project scope, actual site conditions and constraints, schedule, and economic conditions at the time of construction.

Endnotes

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Additional Resources

ODOT

[Bicycle and Pedestrian Resources for Engineers](#)

[Active Transportation Guide: A Reference for Communities](#)

[Active Transportation Guidance](#)

[Ohio Traffic Engineering Manual \(TEM\), Part 9 Bicycle Facilities](#)

[Location and Design \(L&D\) Manual, Sections 300, 400, 600, 700, & 800](#)

[Ohio Manual of Uniform Traffic Control Devices \(OMUTCD\), Part 9: Traffic Controls for Bicycle Facilities](#)

Guidance to inform Pedestrian/Bicycle infrastructure at Railroad Crossings

Multimodal Design Guide (forthcoming)

Other

[FHWA Small Town and Rural Design Guide](#)

[FHWA Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts](#)

[FHWA Bikeway Selection Guide](#)

AASHTO Guide for the Development of Bicycle Facilities (2020 update forthcoming)

AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities