



# Connecting our Region

FAYETTE COUNTY

JESSAMINE COUNTY



WILMORE

LEXINGTON

NICHOLASVILLE

## Lexington Area Bicycle & Pedestrian Master Plan

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## ACKNOWLEDGMENTS

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The Lexington Area Metropolitan Planning Organization and project staff would like to thank the region's citizens, elected officials, and professional staff who supported this effort.

In particular, we are indebted to the Project Steering Committee for their commitment and expertise, as well as to the people who provided their time and vision for a walking- and bicycling-friendly region.

*Prepared for:*



*Prepared by:*



# Executive Summary

An overview of the content of the Lexington Area  
Bicycle and Pedestrian Master Plan.



# Our Vision

“The Greater Lexington Area envisions a network of high quality walkways and bikeways that connects communities and fosters economic growth and regional collaboration. People of all ages and abilities will have access to comfortable and convenient walking and biking routes, resulting in true mobility choice, improved economic opportunity, and healthier lifestyles. Across the region, a culture of safety and respect is cultivated for people traveling by foot or bike, whether for transportation or recreation.”

## How Do We Get There?

The goals outlined below build upon the vision statement, relate to key themes from local plans, and expand upon national best practices.



### **Enhance Connectivity**

Create connected walkable and bikable streets that allow people of all ages and abilities to safely and conveniently get where they want to go.



### **Improve Health**

Enhance access to active transportation and outdoor recreation for health and wellness.



### **Encourage Economic Growth**

Recognize the economic benefits of walkable and bicycle-friendly communities, and capitalize on increased property values and opportunities for redevelopment.



### **Increase Safety**

Address the safety of the transportation system for the most vulnerable users and aim for zero bicycle and pedestrian fatalities and serious injuries.



### **Promote Equity**

Ensure that walking and bicycling infrastructure is provided in the areas with the greatest need and prioritize these modes as equitable forms of transportation.



### **Increase Mobility**

Provide active transportation choices that support healthy, safe, and walkable/bikable neighborhoods, whether rural, urban or suburban.

# The Value Of Walkable And Bicycle-Friendly Communities



## Health and Environmental Benefits

A Charlotte, NC study found that residents who switched to more walking and biking for their commute weighed an average of 6.5 pounds less than those who continued to drive to work.

The average bike commuter reduces their annual carbon emissions by 128 pounds.



## Economic Benefits

Property assessments within one block of the eight-mile Indianapolis Trail have increased 148% since it opened in 2008, an increase of \$1 billion in assessed property value.

Building sidewalk and bicycle facilities creates 36% more jobs than constructing highways.



## Accessibility and Mobility Benefits

30% of all trips we make are for a distance of two miles or less—a distance that can easily be covered by a 10 minute bike ride or a 30 minute walk.



## Safety Benefits

Speed limits less than 25 MPH greatly increase pedestrian survival rate if hit by a car, and the presence of sidewalks can reduce pedestrian crash rates by 86%.

Even relatively small improvements, like pedestrian refuge islands, can reduce crash rates by 56%.

# What We Heard

As part of the community engagement process, an advisory committee comprised of both Jessamine and Fayette County representatives was formed to give strategic direction to the plan and network improvements.

The project team also coordinated closely with other planning processes, such as the Lexington Parks and Recreation Master Plan Update and the 'On the Table' community input event. Issues around cycling and walking were important themes raised during these community meetings.

The graphic below demonstrates the various ways public input was collected. The maps on pages 11 and 12 highlight the corridors that people identified on the on-line interactive map that are most in need of improvement.



## We Heard that Walking & Biking in Fayette County is...

- Difficult and dangerous due to driver behavior (fast speeds, inattention, failure to yield at intersections)
- Important for transportation and recreation
- Improving with more recent bike lanes and projects like the Legacy Trail and the Town Branch Trail

## We Heard that Walking & Biking in Fayette County should...

- Connect people to commercial centers, such as New Circle Road and Nicholasville Road
- Provide safe pedestrian and bicycle crossings at intersections
- Include facilities like wider sidewalks that are accessible for all users, including people in wheelchairs or pushing strollers
- Have more bike lanes connecting neighborhoods with existing shared use trails

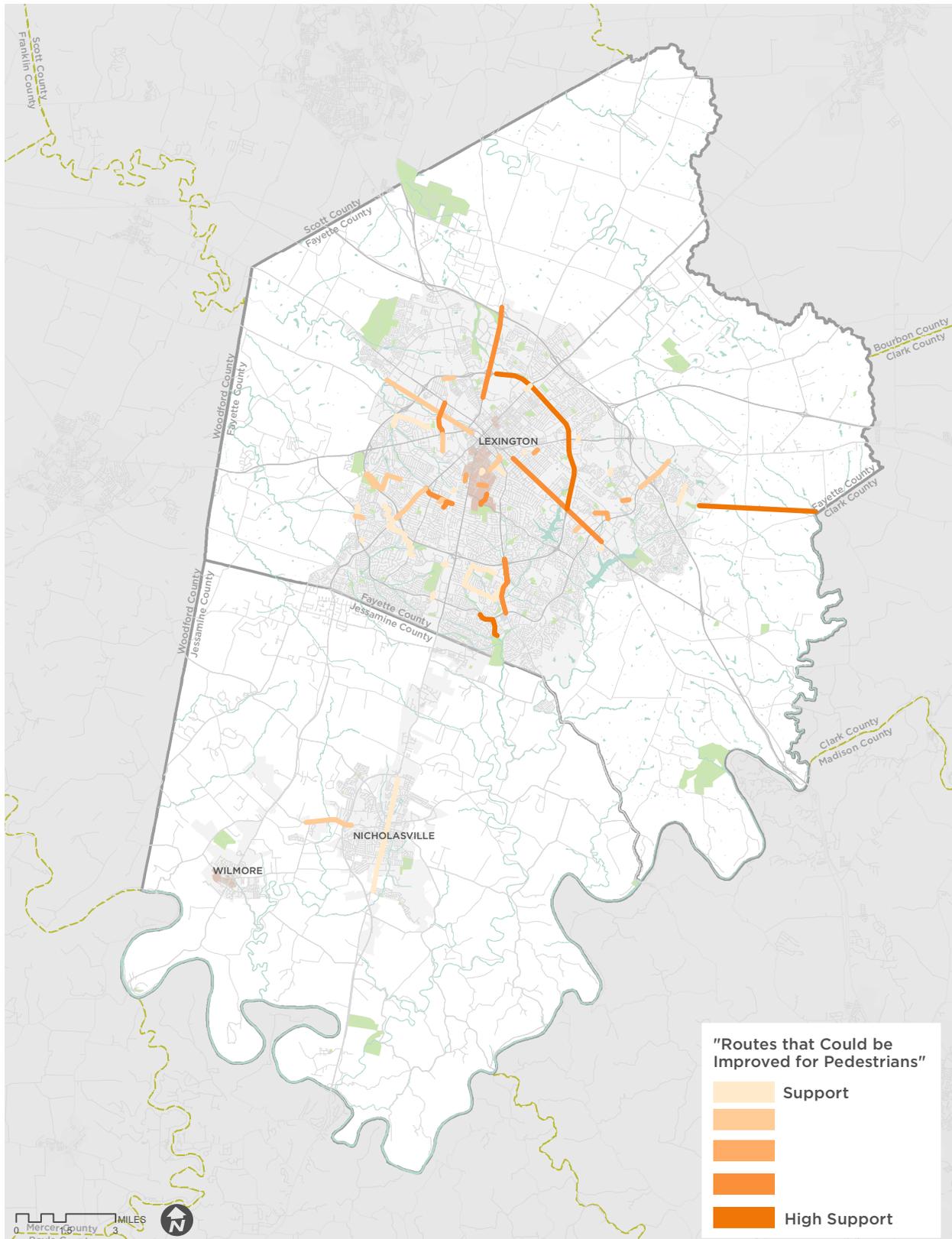
## We Heard that Walking & Biking in Jessamine County is...

- Difficult because there are few sidewalks, and they are not well connected
- Dangerous on narrow rural roads
- Lacking bikeway connections between Lexington, Wilmore, and Nicholasville

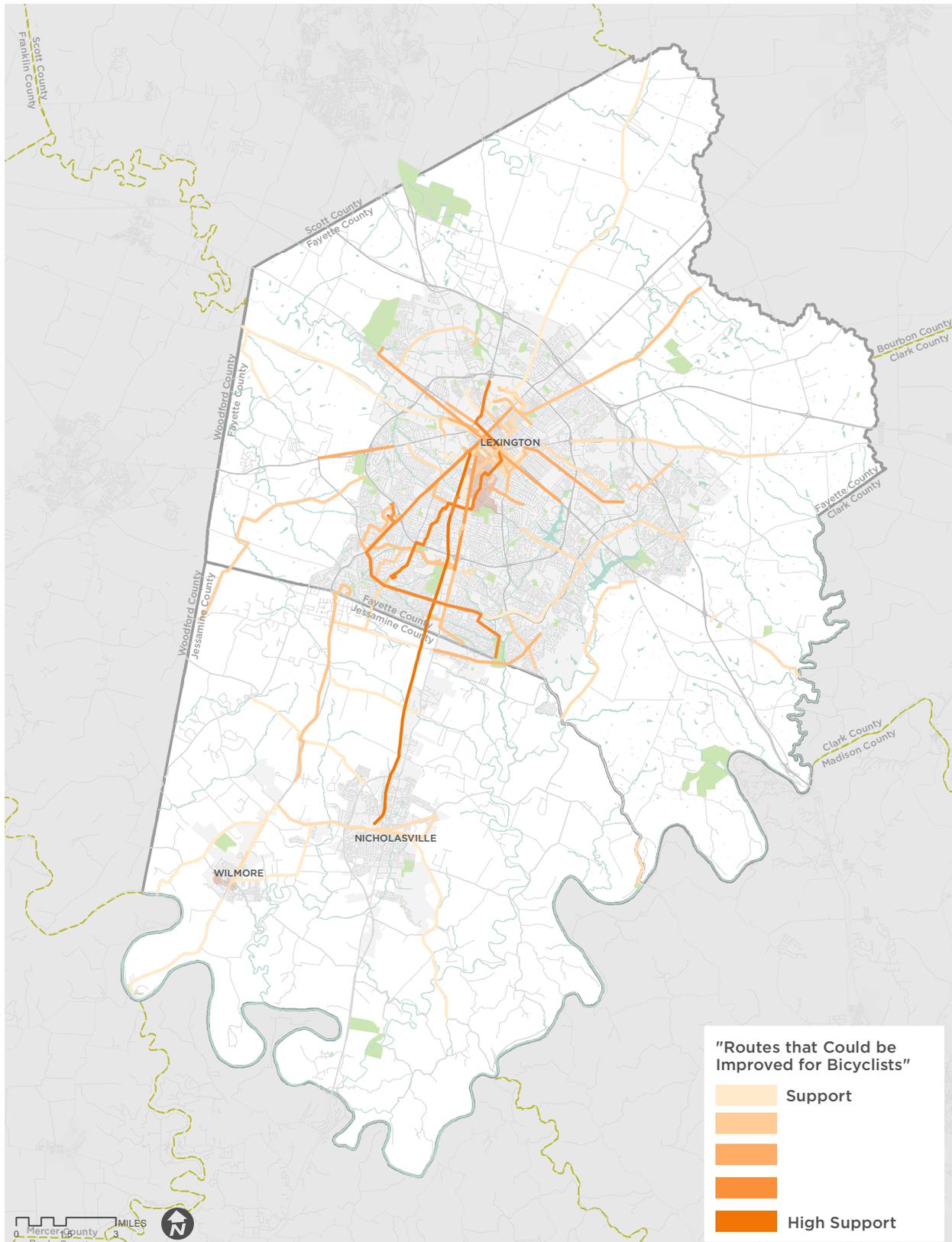
## We Heard that Walking & Biking in Jessamine County should...

- Be a way for children to get to school
- Connect existing shared use trails
- Provide a way for residents and visitors to explore surrounding farmland
- Focus on pedestrian improvements on Main Street in Wilmore and Nicholasville

# Where We Heard Pedestrian Improvements Are Most Needed



# Where We Heard Bikeway Improvements Are Most Needed



# Designing Bikeways For All Users

The last decade has seen an increase in investment in bicycle infrastructure locally and across the United States. One key realization is shaping how bicycle investments are made:

## Different Cyclists Have Different Needs

Although some bicyclists will ride on any road, regardless of available bikeway “strong and fearless”, a much larger portion of the population would ride, but only where there is a high-quality bikeway “interested but concerned.” Understanding this concept has led us to design more low-stress bikeways that provide the high-quality experience the majority of cyclists desire.

The chart on this page shows a “typical” distribution of bicyclists while also capturing the general type of experience they prefer.



# Developing The Bikeway Network

The proposed bike network was developed with the goal of creating a network of well-connected, low-stress facilities. Biking needs to be a safe, convenient, and pleasant form of transportation for the broadest array of people. Aligning with the vision of this plan of creating safe and comfortable bikeways, this low-stress network would be appropriate for people of all ages and abilities.

The network is organized into three main categories: major bikeways (mainline routes), minor bikeways (feeder routes) and local bikeways (first/last mile connections).

Bike lanes, trails, and low-speed neighborhood bikeways all make biking more comfortable. However, perception of safety is largely driven by factors like vehicle speeds and traffic volumes. Not all routes are the same and therefore design flexibility is essential to building a low-stress network. The network approach developed as part of this plan sets the parameters for the bikeway network but the project design process will determine the ultimate cross-section for each project using national best practices and engineering judgment.

## MAJOR BIKEWAY: MAINLINE ROUTES



## MINOR BIKEWAY: FEEDER ROUTES



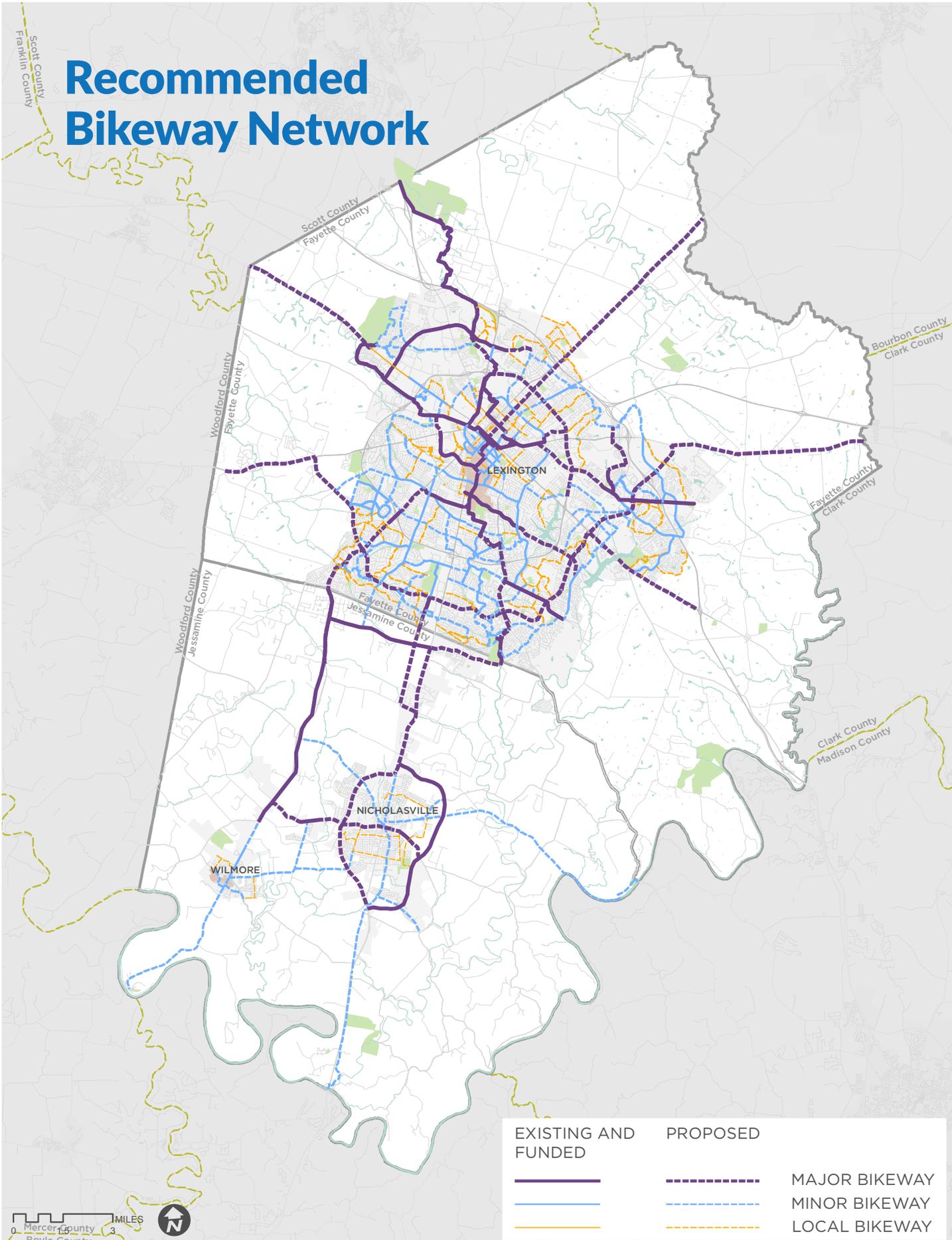
## LOCAL BIKEWAY: FIRST/LAST MILE



### PROPOSED MILEAGE SUMMARY

FAYETTE		JESSAMINE
69 miles	Major Bikeways	28 miles
75 miles	Minor Bikeways	40 miles
74 miles	Local Bikeways	11 miles
<b>218 miles</b>	<b>TOTAL</b>	<b>79 miles</b>

# Recommended Bikeway Network



EXISTING AND FUNDED	PROPOSED	
		MAJOR BIKEWAY
		MINOR BIKEWAY
		LOCAL BIKEWAY

# Identifying Pedestrian Projects

Similar to the development of the proposed bikeway network, the proposed sidewalk network is the result of public input and review of existing conditions. The proposed sidewalk network aims to provide a safe and comfortable experience for users of all ages and abilities. The approach to developing the pedestrian network intends to concentrate resources in areas where improvements are most needed and where people are most likely to walk.

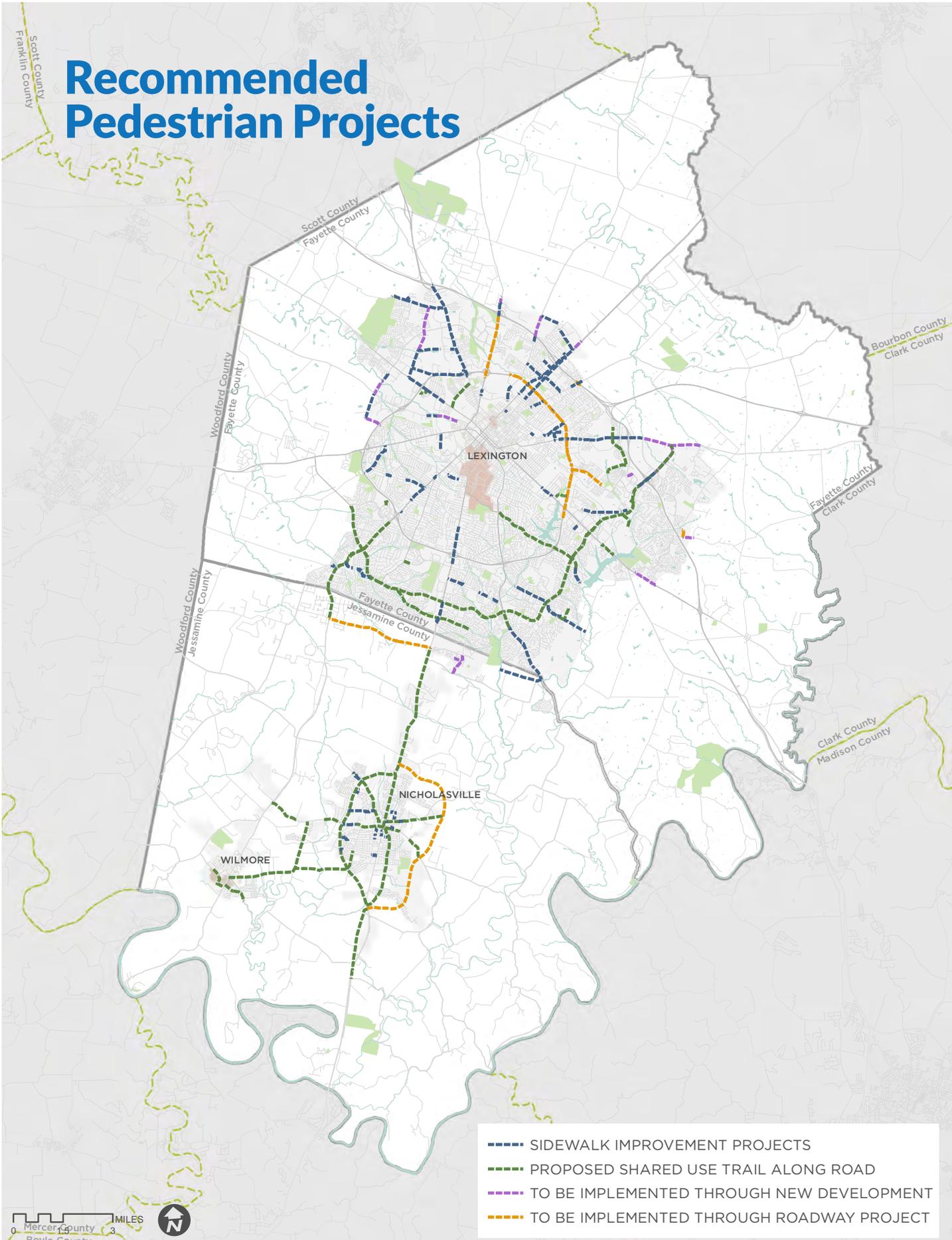
Full implementation of all missing sidewalk segments across both Fayette and Jessamine counties will take many years. With limited funding available, a focused, prioritized approach is necessary. The 3-step process described to the right was used to identify missing sidewalk segments that reflect areas with the greatest need.

Streets classified as a major arterial, minor arterial, or collector street are given priority in this plan due to their regional context and the increased safety risk these corridors pose to pedestrians (higher traffic volumes with higher speeds).



PROPOSED MILEAGE SUMMARY		
FAYETTE		JESSAMINE
71 miles	Sidewalk	8 miles
32 miles	Shared Use Trails	28 miles
<b>103 miles</b>	<b>TOTAL</b>	<b>36 miles</b>

# Recommended Pedestrian Projects



- SIDEWALK IMPROVEMENT PROJECTS
- PROPOSED SHARED USE TRAIL ALONG ROAD
- TO BE IMPLEMENTED THROUGH NEW DEVELOPMENT
- TO BE IMPLEMENTED THROUGH ROADWAY PROJECT

# Framework: Policies & Programs

While infrastructure – roads, sidewalks, crossings, bikeways – are critical for improving walking and bicycling, it takes a comprehensive effort to make communities that are truly pedestrian and bicycle-friendly. This plan’s framework builds upon existing resources and community spirit to make walking and bicycling safe, comfortable, and common forms of transportation in Fayette County and Jessamine County.



## POLICIES



## PROGRAMS

### SHORT TERM

- Develop a Tactical Urbanism Policy
- Develop a Bike Parking Program
- Update Existing Sidewalk, Bikeway, and Trail Maintenance Policies
- Conduct a Bike Share Assessment

- Organize a Safety Campaign Task Force
- Expand Education and Encouragement Programs
- Re-brand and Redevelop the Bike Map
- Develop Process for Citizens to Report Sidewalk Access Issues
- Implement a Safety Campaign
- Expand Bike Month Activities

### MID TERM

- Improve Bike and Pedestrian Access in Construction Zones
- Update the Sidewalk Repair Program
- Reduce Speed Limits on Residential and Collector Streets

- Host an Annual ConnectLex Workshop
- Establish a Safe Routes to School Program
- Complete a Vision Zero Action Plan

### LONG TERM

- Evaluate Program Staffing Needs for Plan Implementation
- Develop an In-House Trail Maintenance Crew

- Develop a Transportation Demand Management Action Plan

# Framework: Design & Evaluation (Cont.)



## DESIGN



## EVALUATION

SHORT TERM

- Host a Low-Cost Sidewalk Design and Implementation Workshop
- Conduct an Annual Priority Bikeway Scoping to Determine Desired Facility Type
- Complete a Bicycle Boulevard (Local Bikeway) Assessment
- Update the Traffic Calming Program
- Facilitate a Study Visit to an Aspirational City
- Adopt Bikeway Design Standards
- Host a NACTO (National Association of City Transportation Officials) Bikeway Design Training Workshop

- Identify a Program Funding Strategy
- Establish a Bicycle/Pedestrian Count Program
- Develop a Public Relations Strategy
- Develop an Interactive Program Website

MID TERM

- Develop a Bicycle Wayfinding and Branding Plan
- Develop Sidewalk Design Standards
- Complete a Safe Routes to School Prioritization Exercise

- Update Traffic Impact Study Regulations
- Coordinate with Lextran to Improve Pedestrian Access to Transit Stops
- Apply for Walk Friendly Community Status

LONG TERM

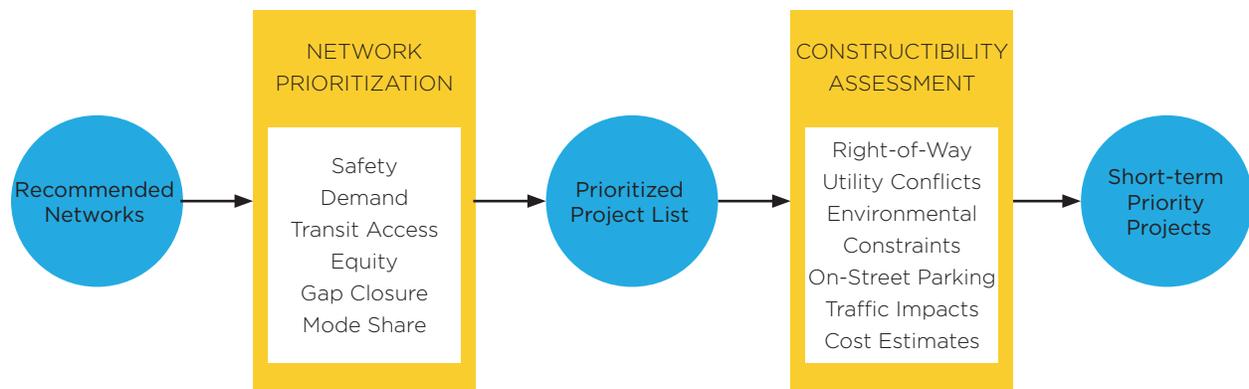
- Develop Public Art in the Right-of-Way design standards and guidelines

- Conduct a Health and Economic Impact Assessment

# Developing A Strategy

Implementation of the Bicycle and Pedestrian Master Plan will require leadership and dedication to facility and program development on the part of a variety of agencies. Equally critical, and perhaps more challenging, will be securing a dedicated annual funding source. This can be done through strategic collaboration with regional and state agencies, the private sector, non-profit organizations and Fayette County and Jessamine County residents. The graphic below highlights the project list development process.

The maps to the right sort projects into short-term, mid-term and long-term priorities for both counties. Key projects within the short-term list identified in both counties are listed below.\*



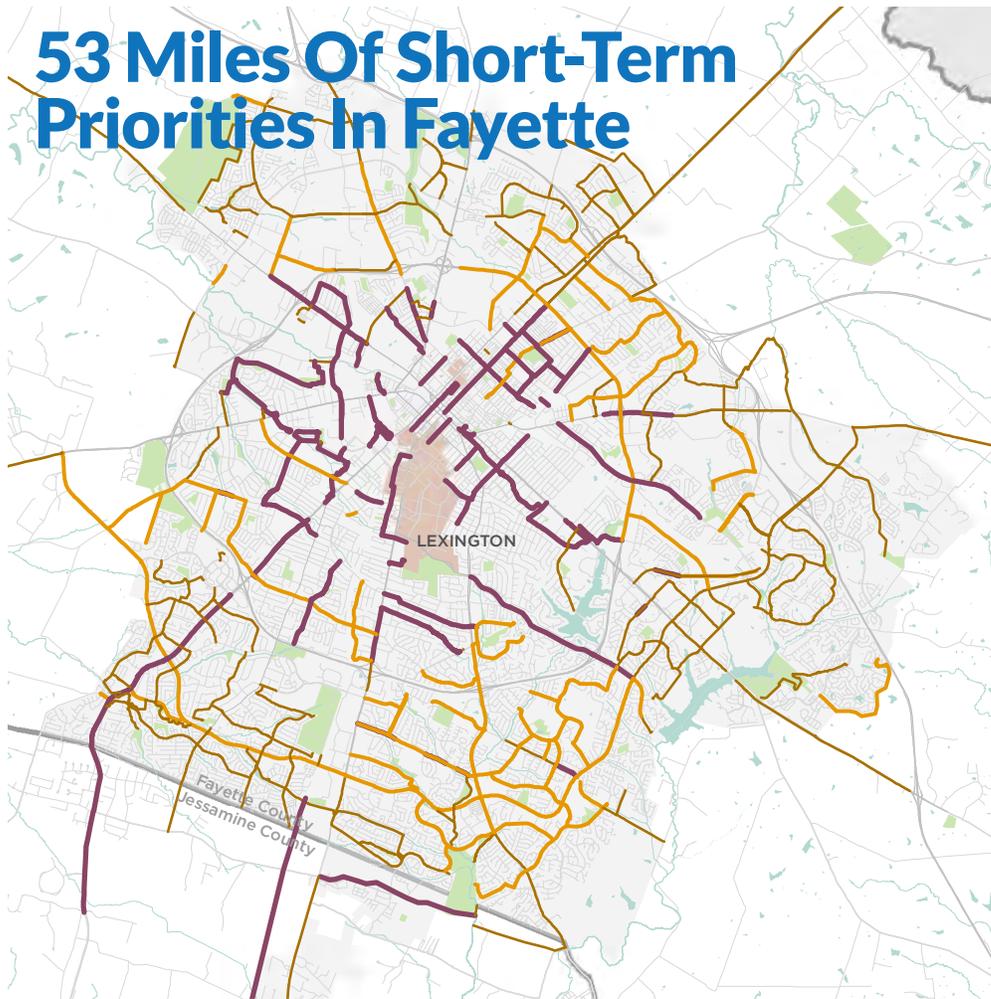
## Fayette County Key Projects

- **North Limestone Bike/Ped Improvements** from Vine Street to New Circle Rd.
- **Town Branch Commons Corridor Access Points** (Martin Luther King Boulevard)
- **Tates Creek Road Sidewalk Gaps and Shared Use Trail**
- **Alumni Drive Shared Use Trail** from Tates Creek Road to Squires Trail
- **Old Vine St/ Central Ave Bicycle Boulevard**
- **Liberty Road Shared Use Trail** from Liberty Elementary to Winchester Rd.

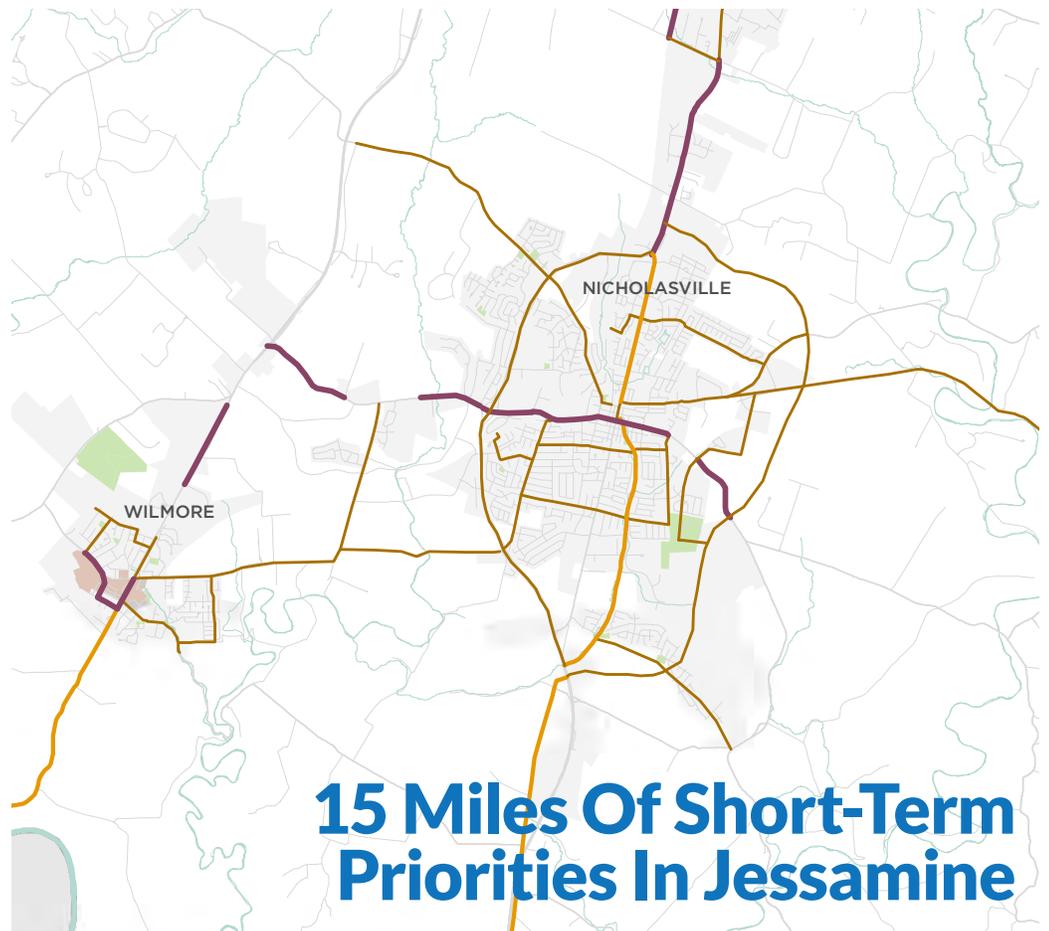
## Jessamine County Key Projects

- **Lexington Road (29) Shared Use Trail Gap** from Wilmore “Y” (US68) to Veterans Drive
- **US68 Road Shared Use Trail** from Old Higbee Mill Road (Fayette County) to Golf Club Drive
- **East Brannon Road Shared Use Trail** from Nicholasville Road to Grey Oak Lane
- **Nicholasville Road (Hwy 27) Shared Use Trail** along the utility corridor from existing trail (Fayette County near Waveland Museum Land) to Catnip Hill Road/Vince Road
- **Wimore Road (29) Shared Use Trail** from Harrodsburg Rd to Downtown Nicholasville

# 53 Miles Of Short-Term Priorities In Fayette



- SHORT-TERM
- MID-TERM
- LONG-TERM



# 15 Miles Of Short-Term Priorities In Jessamine



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# Chapter 1: Introduction

The purpose of the Lexington Area Bicycle and  
Pedestrian Master Plan.



# About The ConnectLex Plan

The Lexington Area Metropolitan Planning Organization (MPO) is the intergovernmental planning agency for Fayette and Jessamine Counties. Collectively, the MPO sets policies and allocates federal transportation dollars to local municipalities and counties.

ConnectLex is the bicycle and pedestrian master plan for the Lexington Area MPO. This plan builds on past efforts and creates a new vision for walking and biking in the region. The plan will be used by the MPO and local governments to prioritize, fund, and implement high-quality infrastructure, high-impact programs, and supportive policies for walking and biking.

## An Update to the 2007 Plan

ConnectLex is an update to the 2007 Bicycle & Pedestrian Master Plan. The 2007 Plan provided a blueprint for making Fayette County and Jessamine County more walkable and bikable and included a means to prioritize projects across the large two-county region.

A lot has changed in the bicycle and pedestrian planning and design industry since 2007! This includes:

**Separated bikeways** and **bike share** have transformed the way cities and Americans think about bike commuting;

**Placemaking** best practices encourage our decision makers to implement livable streets that are designed for users of all ages and abilities;

**Transit Access** is more important than ever as communities are improving frequencies and introducing high-capacity transit; and

**Mobility Options** are especially important to the fastest growing age groups in the region, the Boomer generation and Millennials.

# The Plan's Vision

“The Greater Lexington Area will have a **network of high quality walkways and bikeways** that **connects communities** and fosters economic growth and regional collaboration. **People of all ages and abilities** will have access to comfortable and convenient walking and biking routes, resulting in true **mobility choice, improved economic opportunity, and healthier lifestyles**. Across the region, a culture of **safety and respect** is cultivated for people traveling by foot or bike, whether for transportation or recreation.”

## How To Get There

The goals outlined below build upon the vision statement, relate to key themes from local plans, and expand upon national best practices.



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Create connected walkable and bikable streets that allow people of all ages and abilities to safely and conveniently get where they want to go.



### **Improve Health**

Enhance access to active transportation and outdoor recreation for health and wellness.



### **Encourage Economic Growth**

Recognize the economic benefits of walkable and bicycle-friendly communities, and capitalize on increased property values.



### **Increase Safety**

Address the safety of the transportation system for the most vulnerable users and aim for zero bicycle and pedestrian fatalities and serious injuries.



### **Promote Equity**

Ensure that walking and bicycling infrastructure is provided in the areas with the greatest need.



### **Increase Mobility**

Provide active transportation choices that support healthy, safe, and walkable/bikable neighborhoods, whether rural, urban or suburban.

# The Value Of Walkable And Bicycle-Friendly Communities



## Health and Environmental Benefits



RESIDENTS WHO SWITCH TO **MORE WALKING AND BIKING** FOR THEIR COMMUTE WEIGH AN AVERAGE OF **6.5 POUNDS LESS** THAN THOSE WHO CONTINUE TO DRIVE TO WORK.

Source: MacDonald, J.M., Stokes, R.J., Cohen, D.A., Kofner, A., & G.K. Ridgeway. (2010). The effect of light rail transit on body mass index and physical activity. *American Journal of Preventive Medicine* 39(2): 105-112.



REPLACING AUTOMOBILE TRIPS WITH BIKING/WALKING TRIPS IMPROVES AIR QUALITY AND **DECREASES PUBLIC HEALTH CONCERNS SUCH AS ASTHMA.**

Sources: Frank, L., et al. (2006). Many pathways from land use to health: Associations between neighborhood walkability and active transportation, body mass index, and air quality. *Journal of the American Planning Association*, 72, 75-8.; Friedman, M., et al. (2001) Impact of Changes in Transportation and Commuting Behaviors During the 1996 Summer Olympic Games in Atlanta on Air Quality and Childhood Asthma. *Journal of the American Medical Association*, 285(7): 897



**THE AVERAGE BIKE COMMUTER REDUCES THEIR ANNUAL CARBON EMISSIONS BY 128 POUNDS.**

Sources: European Cyclists' Federations. (2016). *Cycle More Often 2 Cool Down the Planet!* Quantifying CO2 savings of cycling.



## Economic Benefits



**PROPERTY ASSESSMENTS** WITHIN ONE BLOCK OF THE EIGHT-MILE INDIANAPOLIS TRAIL HAVE **INCREASED 148%** SINCE IT OPENED IN 2008, AN INCREASE OF **\$1BILLION** IN ASSESSED PROPERTY VALUE.

Source: IU Public Policy Institute, Cultural Trail Issue Brief 15-C23: Reasons to Love the Indianapolis Cultural Trail: A Legacy of Gene and Marilyn Glick. <http://policyinstitute.iu.edu>



HOUSES IN HIGHLY **WALKABLE NEIGHBORHOODS** HAVE **PROPERTY VALUES \$4,000 TO \$34,000 HIGHER** THAN HOUSES IN AREAS WITH **AVERAGE WALKABILITY**.

**BUILDING SIDEWALK AND BICYCLE FACILITIES** CREATES **36% MORE JOBS** THAN BUILDING HIGHWAYS AND **ALMOST 100% MORE JOBS** THAN PAVEMENT IMPROVEMENTS.

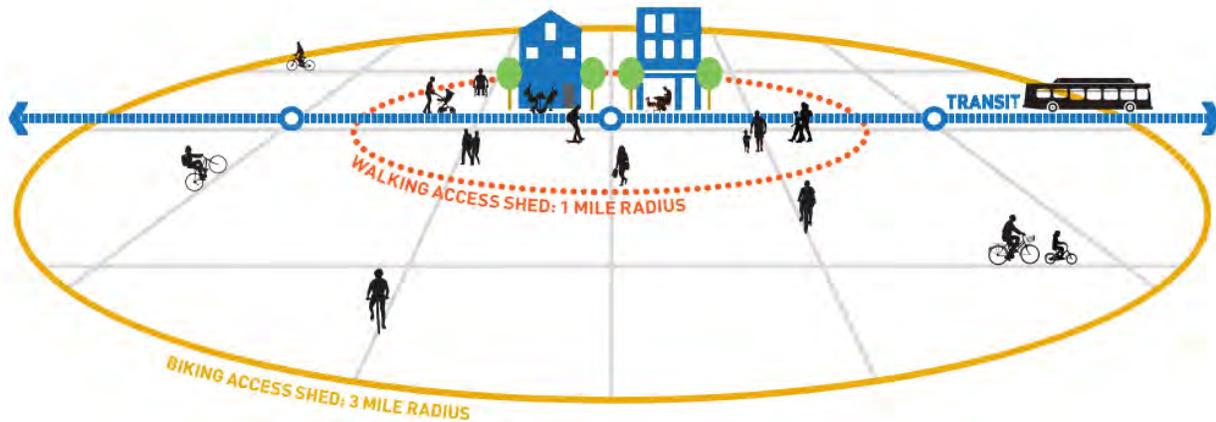
Sources: Cortright, J. (2009). Walking the Walk: How Walkability Raises Housing Values in U.S Cities. CEO for Cities; American Association of State Highway and Transportation Officials (AASHTO) Average Direct Jobs by Project Type (2012); Job in terms of full-time equivalents (FTE).



## Accessibility and Mobility Benefits

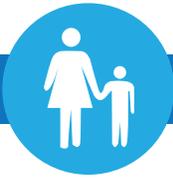
### TRAVEL SHEDS

ON AVERAGE, 30% OF ALL TRIPS WE MAKE ARE FOR A DISTANCE OF TWO MILES OR LESS—A DISTANCE THAT CAN EASILY BE COVERED BY A 10 MINUTE BIKE RIDE OR A 30 MINUTE WALK.



### COMPLETE STREETS DESIGN RESULTS IN INCREASED MOBILITY OPTIONS





## Safety Benefits

### SPEED + SURVIVABILITY IN CRASHES

A pedestrian hit by a vehicle traveling at  
**25 MPH**



has an **89%** chance of survival

A pedestrian hit by a vehicle traveling at  
**35 MPH**



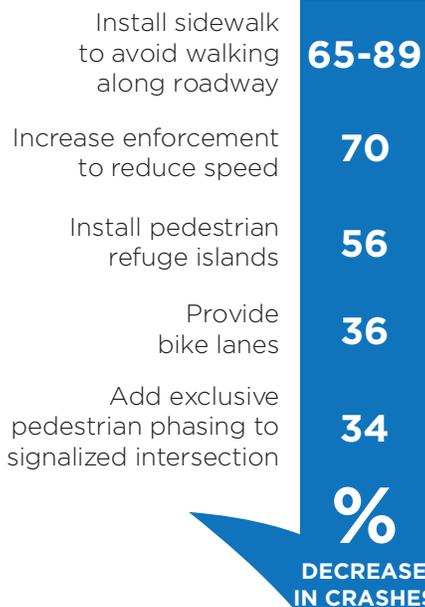
has a **68%** chance of survival

A pedestrian hit by a vehicle traveling at  
**45 MPH**



has a **35%** chance of survival

Source: Rosén, E., & Sander, U. (2009). Pedestrian fatality risk as a function of car impact speed. *Accident Analysis & Prevention*, 41(3), 536-542.



### CRASH REDUCTION FACTORS

Source: Federal Highway Administration. (2008). "Desktop reference for crash reduction factors."

# Chapter 2: Current State of Walking and Biking

The existing state of walking and biking in the Lexington area with a series of analyses conducted to understand areas of need in the study area.



# Existing Conditions Analysis

An existing conditions analysis was performed to better understand bicyclist and pedestrian trends and issues. The following pages feature different types of analyses that were conducted to take a closer look at current walking and biking conditions in the Lexington region. Results of these analyses illustrate areas where improvements to safety and connectivity could be made.

The chart below provides an overview of the analyses conducted and how they relate to existing conditions in the region.

Type of Analysis...	To Understand...
Review of Current Bikeway Network	Opportunities and barriers to bicycle travel
Review of Current Pedestrian Network	Opportunities and barriers to pedestrian travel
Bicycle and Pedestrian Crashes	Where bicycle and pedestrian crashes are occurring and any trends or patterns related to where the crashes occur
Mode Share Analysis	Where people are currently walking and biking
Demand Analysis	Expected pedestrian and bicyclist activity
Equity Analysis	Where there are concentrations of higher need populations

# Walkway + Bikeway Types And Mileage In The Region

2,103 miles of existing facilities



**39 miles**  
bike lanes



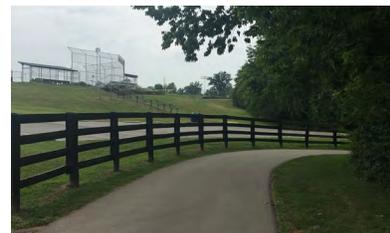
**5 miles**  
sharrows



**9 miles**  
buffered bike lanes



**30 miles**  
shared use trail  
+ **16 miles**  
funded but  
unbuilt shared  
use trail



**2,004 miles**  
sidewalk



# Biking In Fayette County Today...

## Opportunities

In downtown Lexington, the dense street grid provides alternatives to high-traffic and high-speed corridors. Where they have been installed, green pavement markings, buffered bike lanes, and shared-use trails provide low-stress bikeways for users of all ages and abilities. The University of Kentucky and other key downtown destinations attract cyclists from across the county and increase the likelihood of bicycle commuting trips.



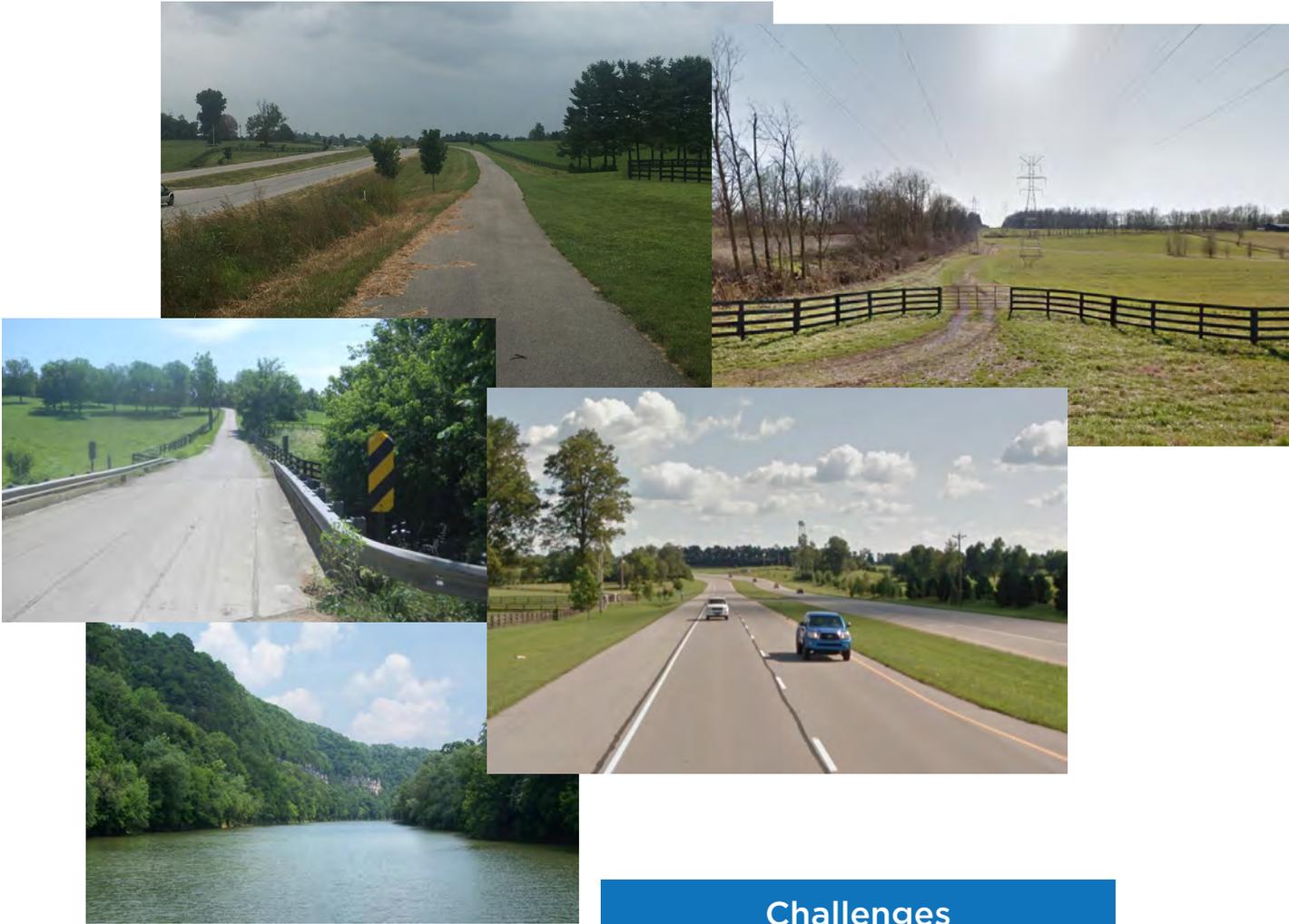
## Challenges

Narrow roadways and limited right-of-way make it challenging to implement separated bikeways. High traffic corridors, such as Man O' War Boulevard and New Circle Road, are intimidating to all but the strong and fearless type of cyclist. Gaps in the bikeway network make it difficult to choose biking as a safe and efficient commute choice. Lack of bikeways through intersections pose a significant safety risk.

# Biking In Jessamine County Today...

## Opportunities

The rural setting and natural resources like the Kentucky River provide prime opportunities for long-distance bike riding and bicycle tourism. Opportunities for shared use trails along rail lines, utility corridors, and riparian corridors exist throughout the county.



## Challenges

The land use patterns throughout the county and rural and suburban setting make it difficult for biking to be a viable form of transportation for longer distances. Cyclists have a hard time avoiding high-speed and high-volume roadways to reach key destinations. There isn't a direct and safe route for riders of all ages and abilities to commute between counties, especially with challenging corridors like Highway 27 and 68.

# Walking In Fayette County Today...

## Opportunities

Many streets within the Urban Service Boundary have sidewalks on at least one side of the street. Recent efforts to bring more awareness at intersections include artistic crosswalks, rapid-flashing beacons, high-visibility crosswalks, and educational campaigns. In addition, street trees, wayfinding signs, and transit amenities help to increase walkability.



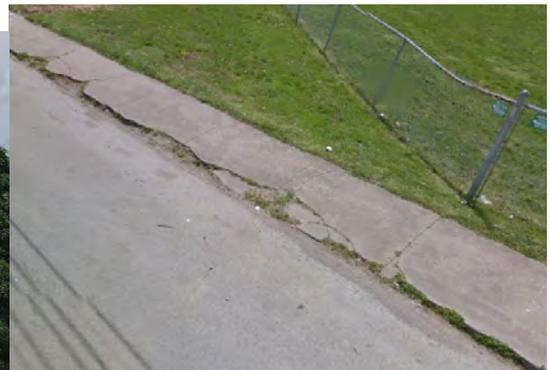
## Challenges

While sidewalks may be present, many of them don't meet today's ADA standards due to narrow widths or lack of curb ramps meeting ADA specifications. While street lights and trees increase pedestrian comfort, when space is limited, they can become obstacles. Long crossing times and intimidating intersections, particularly along arterials, make it difficult for pedestrians to access key destinations across the county.

# Walking In Jessamine County Today...

## Opportunities

Downtown Nicholasville and Wilmore serve as the primary pedestrian destinations and most downtown streets have existing sidewalks. The future Nicholasville Bypass will include a shared use trail and Centennial Park boasts an active trail network.



## Challenges

Aging infrastructure and damaged sidewalks can create safety hazards and prevent people from having safe access. Lack of street trees or separation between street traffic can make it uncomfortable for pedestrians. High speed limits in neighborhoods and commercial zones increase the risk of serious injury to pedestrians.

# Safety Snapshot



**1,006**

PEDESTRIAN-INVOLVED COLLISIONS  
FROM 2012 TO 2016

**29**

PEOPLE WERE KILLED WHILE  
WALKING DURING THIS PERIOD

TOP 5 UNSAFE CORRIDORS:

**SOUTH BROADWAY, LEXINGTON**

**NORTH BROADWAY, LEXINGTON**

**MAIN STREET, LEXINGTON**

**SOUTH LIMESTONE, LEXINGTON**

**MAIN STREET, NICHOLASVILLE**



**420**

BICYCLE-INVOLVED COLLISIONS  
FROM 2012 TO 2016

**4**

PEOPLE WERE KILLED WHILE  
BICYCLING DURING THIS PERIOD

TOP 5 UNSAFE CORRIDORS:

**EUCLID AVENUE, LEXINGTON**

**ROSE STREET, LEXINGTON**

**SOUTH LIMESTONE, LEXINGTON**

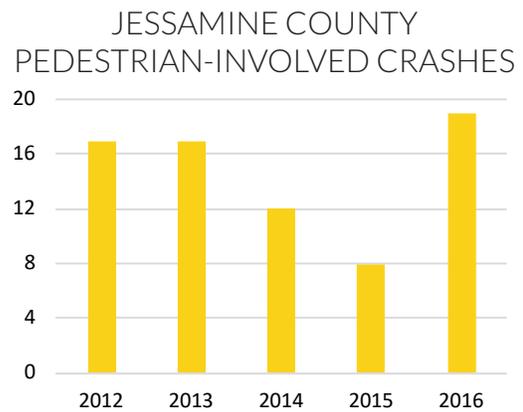
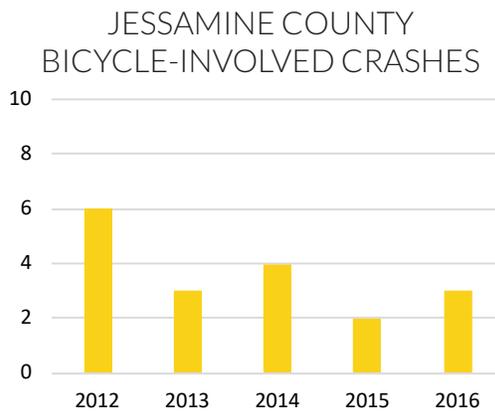
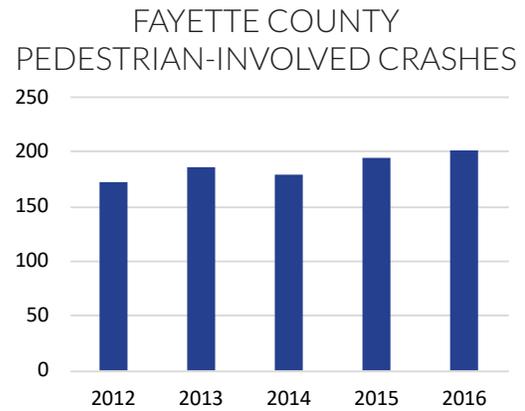
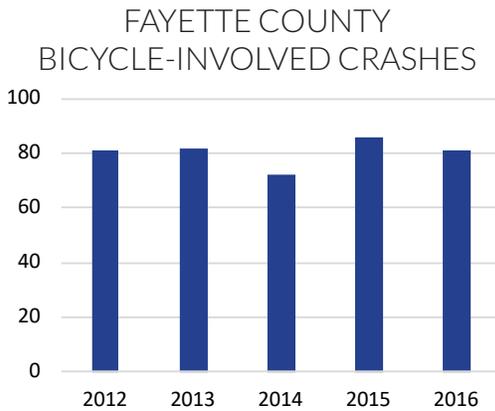
**NICHOLASVILLE ROAD, LEXINGTON**

**MAIN STREET, NICHOLASVILLE**

# Bike And Pedestrian Crash Analysis

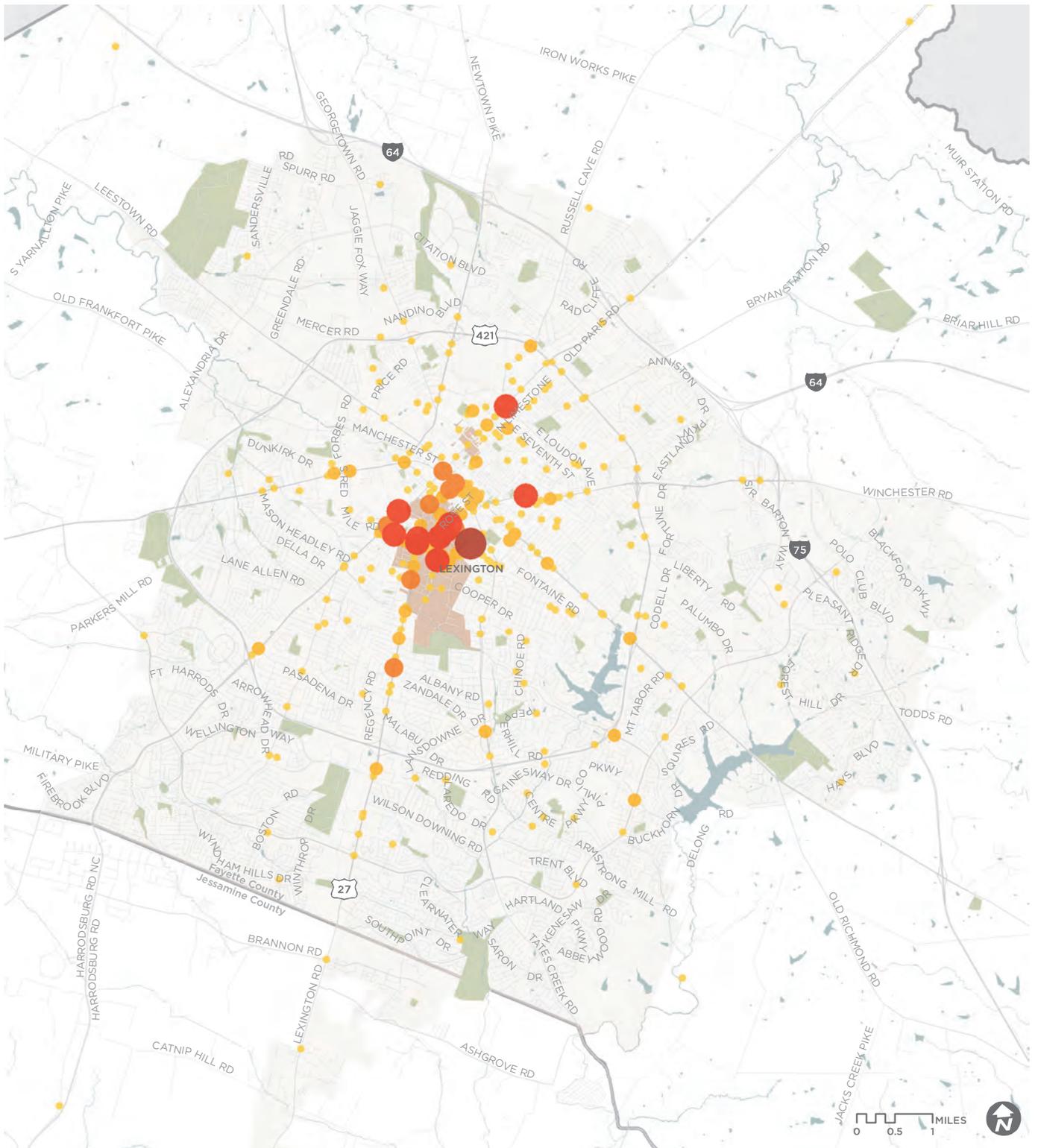
*“Lexington needs to consider safe ways to offer walking and cycling.”*

- LEXINGTON RESIDENT

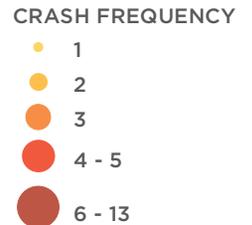


## Key Takeaway

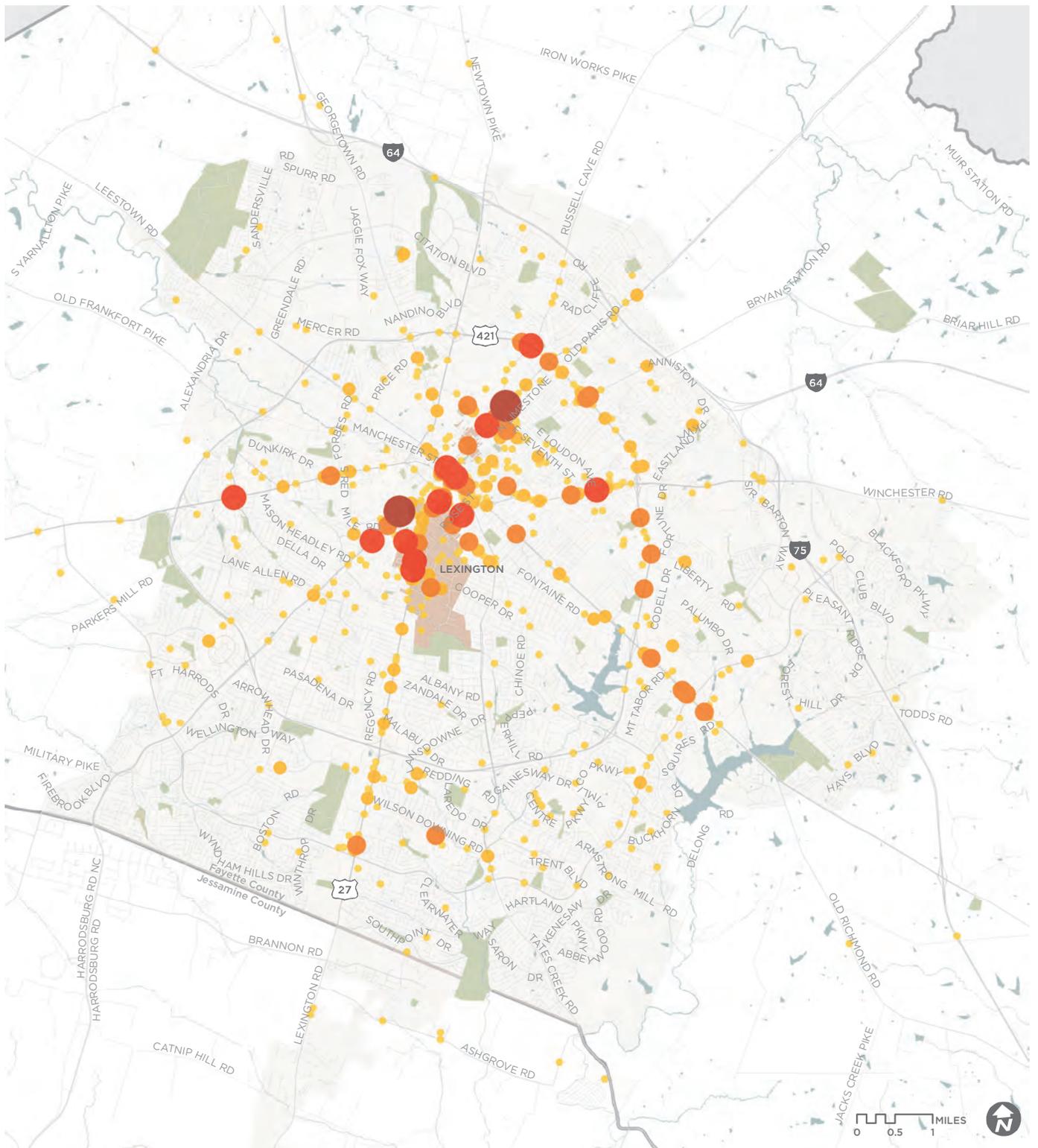
Year after year, crash rates are steady for bikes. The majority of walking and biking crashes occur on major roadways and arterials. Crashes are concentrated at intersections where multiple roadways converge.



## BIKE CRASH ANALYSIS Fayette County 2012 - 2016



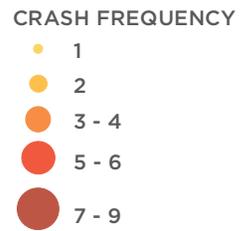


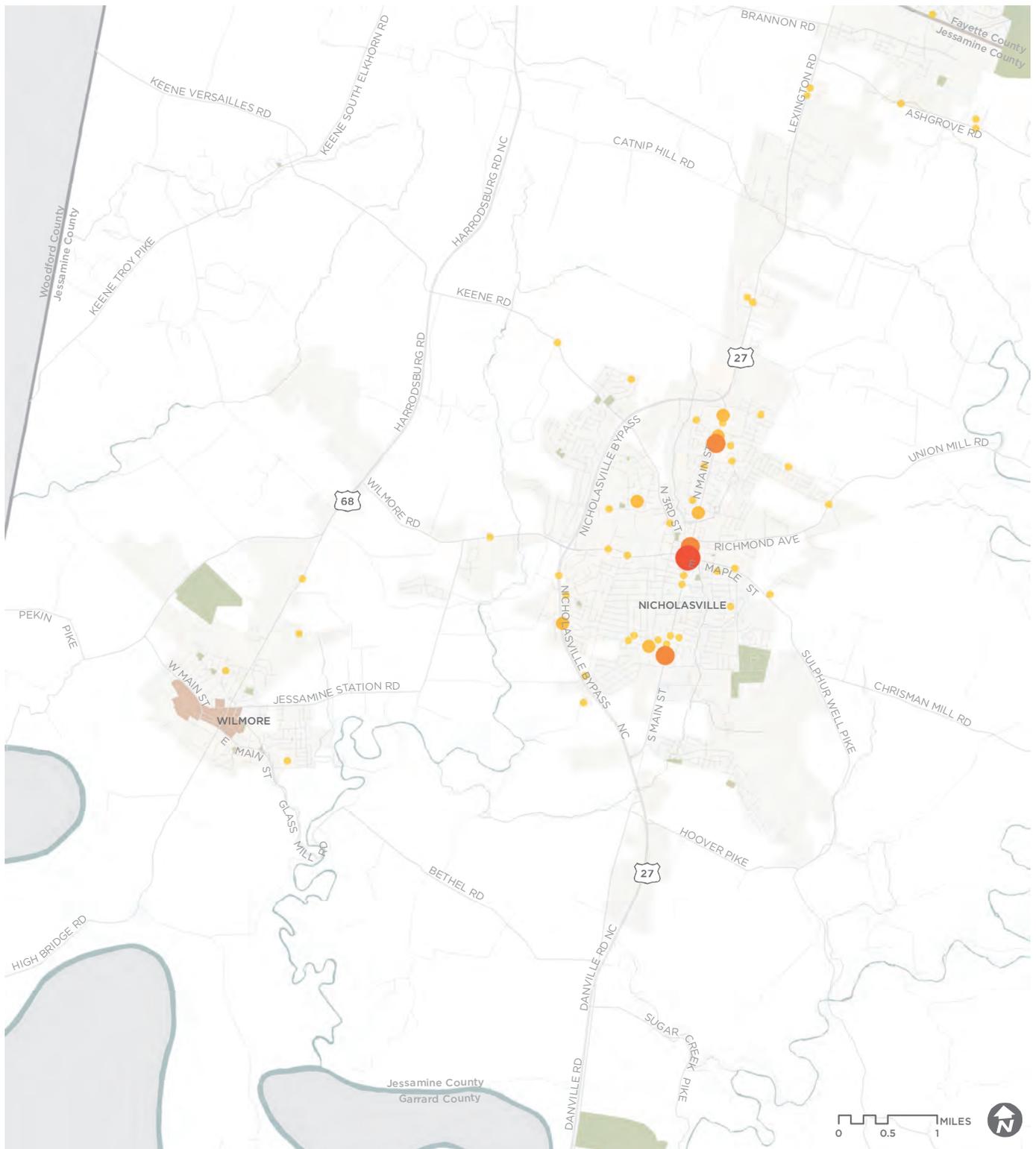


# PEDESTRIAN CRASH ANALYSIS

## Fayette County

### 2012 - 2016





# PEDESTRIAN CRASH ANALYSIS

## Jessamine County

### 2012 - 2016

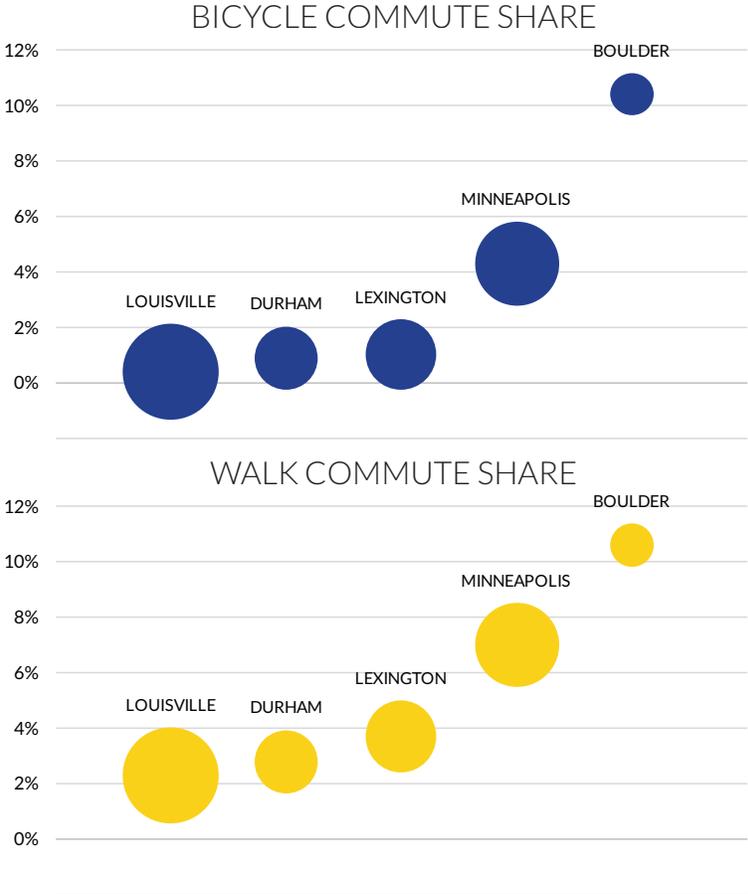
#### CRASH FREQUENCY



# Mode Share Analysis

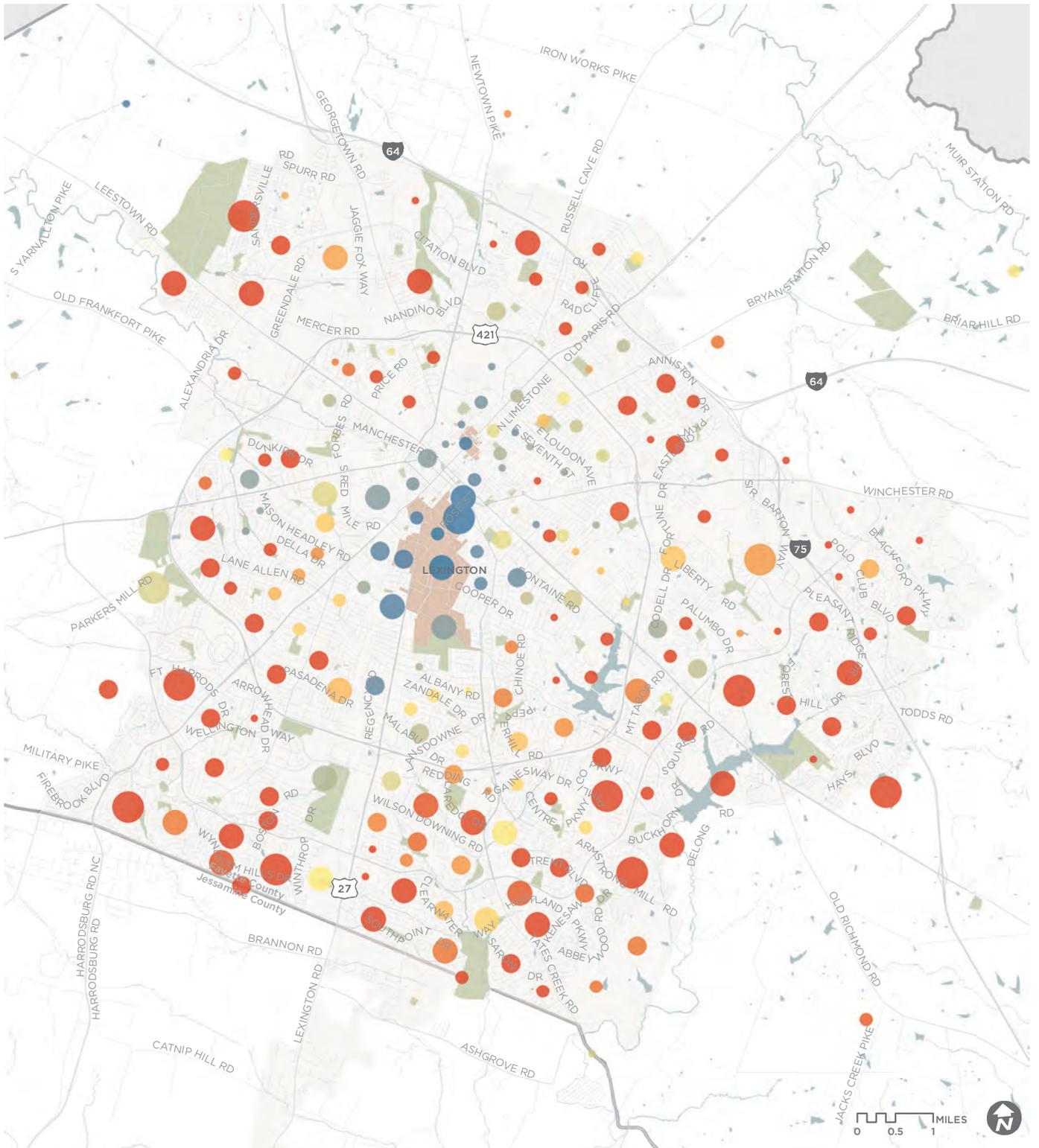
The 2015 American Community Survey found that 1% of commuters in Lexington bike to work and 4% of commuters walk to work. The charts below show the active commute mode shares for Lexington compared to two peer cities (Louisville, KY and Durham, NC), and two aspirational cities (Minneapolis, MN and Boulder, CO). The size of the dot indicates the total number of commuters in each city.

The map on the following page shows the active mode share of commuters in Fayette County, based on Census block group data. This analysis provides insight into the locations where people are currently biking and walking.

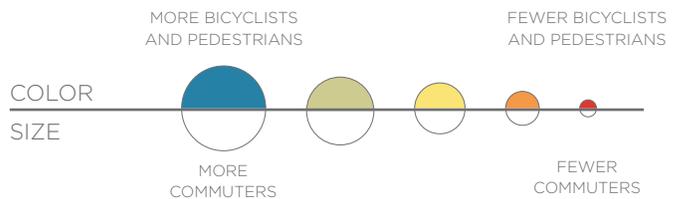


## Key Takeaway

The core downtown area and the University of Kentucky have the highest portion of active commuters, with the share of active mode commuters decreasing as distance from downtown increases.



## MODE SHARE ANALYSIS Fayette County



Note: As evidenced by the large blue circles on the map, there is greater bicycle and pedestrian activity around downtown Lexington and the University of Kentucky than in the rest of Fayette County.

# Demand Analysis

A non-motorized demand analysis was completed for Fayette and Jessamine Counties to determine areas of expected pedestrian and bicyclist activity. The areas of high demand are focused within the urban areas of the region, where residential and commercial density are highest. The downtown core and the University of Kentucky have particularly high demand.

The map on the following page shows the composite demand in the region, which was calculated based on a combination of the following factors:



### WHERE PEOPLE PLAY

Trails and parks are attractors and generators of walking and biking activity.



### WHERE PEOPLE SHOP

Retail shopping areas are attractors for walking and biking. Places where people can complete errands, such as banks, are also generators of walking and bicycling trips.



### WHERE PEOPLE LIVE

People are likely to walk near their homes for recreation or to visit nearby friends and family.



### WHERE PEOPLE WORK

Higher densities of workers translates to higher propensity for people to walk or bike.



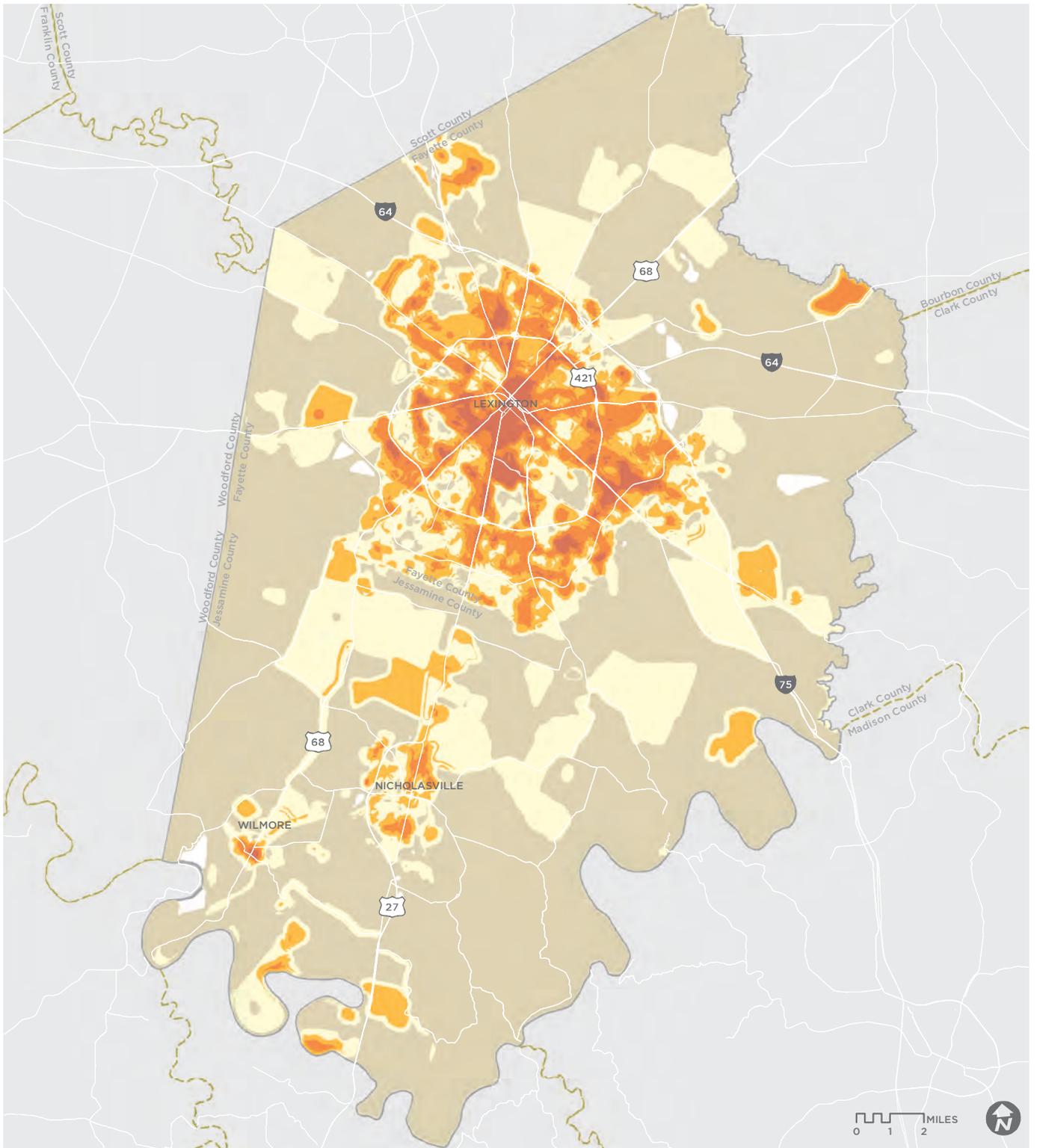
### WHERE PEOPLE LEARN

Schools are a significant source of walking and biking by populations that either cannot drive because they are not old enough or are more likely to walk or bike for economic reasons.

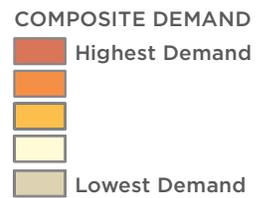


### WHERE PEOPLE ACCESS TRANSIT

All transit trips start or end with a walking trip.



## DEMAND ANALYSIS Fayette County and Jessamine County



# Equity Analysis

Transportation facilities are essential components in creating communities of opportunity and reducing the disproportionate economic and health burdens on communities of concern. Often, traditionally vulnerable populations, such as children, older adults, people of color, people with limited English proficiency, and low-income individuals rely heavily on affordable transportation options, specifically walking, biking, and transit.

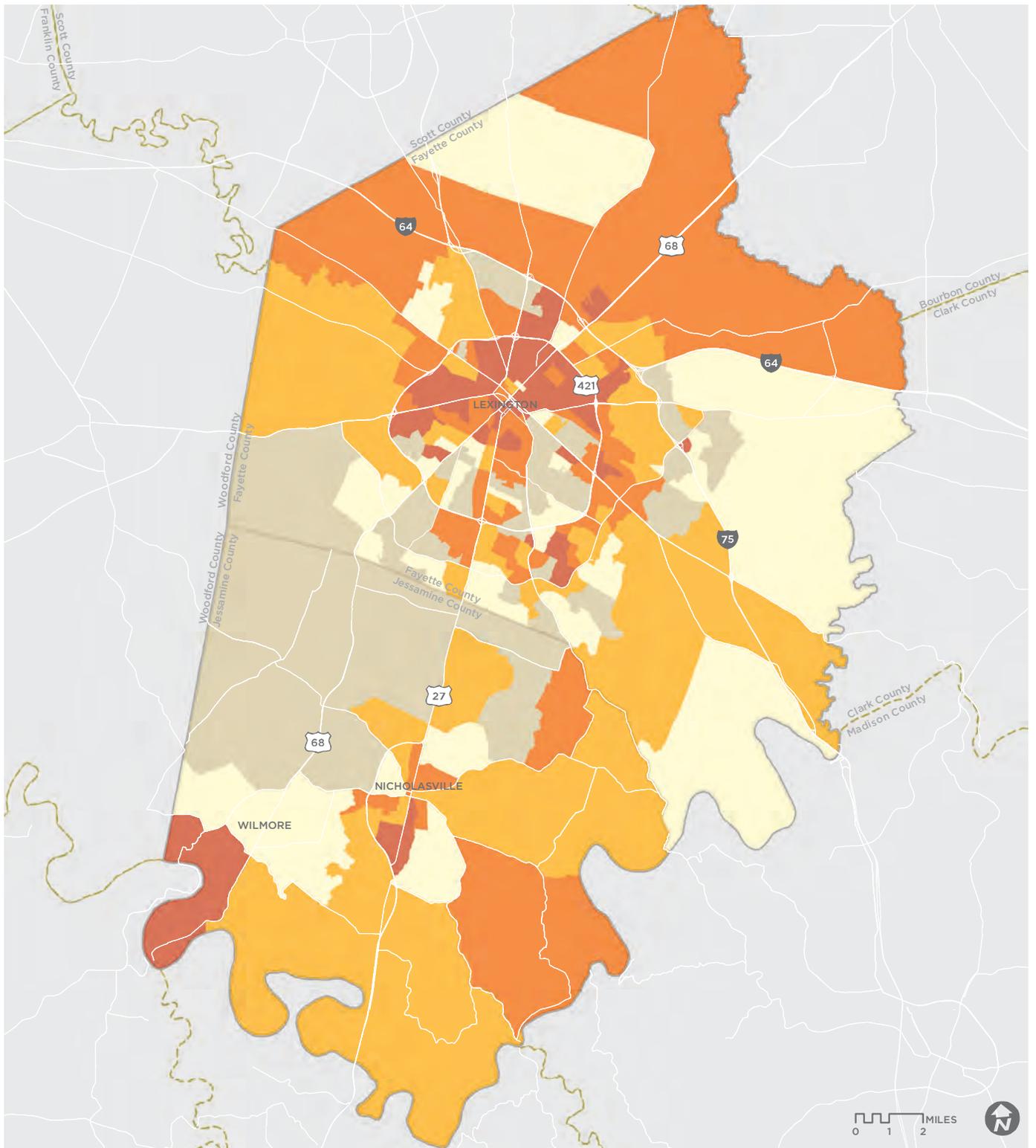
The project team conducted an equity analysis using existing demographic information from the US Census Bureau. All data was obtained from the 2015 American Community Survey 5-year estimates and analysis was conducted at the census block group level for Fayette and Jessamine Counties.

The analysis scored the study area using the following economic and demographic indicators:

- **Vehicle Access:** Households with no access to a vehicle
- **Educational Attainment:** Population with no high school diploma or equivalent
- **Income:** Individuals of working age who are living at or below 200% of the Federal Poverty Level (FPL)
- **Limited English Proficiency (LEP):** Percentage of the population that identifies as not speaking English well or at all
- **Race:** Percentage of the population that identifies as non-white

## Key Takeaway

Areas of higher need include the northern portions within the Lexington Urban Service Boundary, other dispersed areas of Lexington, and the southern portion of Nicholasville.



## EQUITY ANALYSIS Fayette County and Jessamine County



# Chapter 3: What We Heard

Outreach efforts made throughout the planning process and summary of the input received.

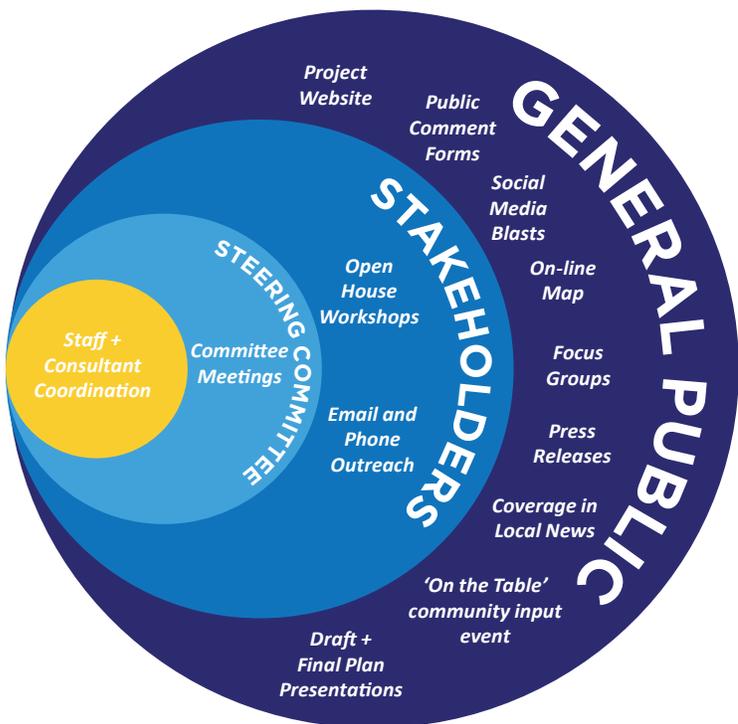


# What We Heard

As part of the community engagement process, an advisory committee comprising of both Jessamine and Fayette County representatives was formed to give strategic direction to the plan and network improvements.

The project team also coordinated closely with the public outreach of other planning processes, such as the Lexington Parks and Recreation Master Plan and the 'On the Table'. Issues around bicycling and walking were important themes raised during these community meetings.

The graphic below demonstrates the various ways public input was collected. The maps on pages 3-6 through 3-9 highlight the corridors that people identified on the on-line interactive map that are most in need of improvement.



## We heard that walking & biking in Fayette is...

- Difficult and dangerous due to driver behavior (fast speeds, inattention, failure to yield at intersections)
- Important for transportation and recreation
- Improving with more recent bike lanes and projects like the Legacy Trail and the Town Branch Trail

## We heard that walking & biking in Fayette should...

- Connect people to commercial centers, such as New Circle Road and Nicholasville Road
- Provide safe pedestrian and bicycle crossings at intersections
- Include facilities like wider sidewalks that are accessible for all users, including people in wheelchairs or pushing strollers
- Have more bike lanes connecting neighborhoods with existing shared use trails

## We heard that walking & biking in Jessamine is...

- Difficult because there are few sidewalks, and they are not well connected
- Dangerous on narrow rural roads
- Lacking bikeway connections between Lexington, Wilmore, and Nicholasville

## We heard that walking & biking in Jessamine should...

- Be a way for children to get to school
- Connect existing shared use trails
- Provide a way for residents and visitors to explore surrounding farmland
- Focus on pedestrian improvements on Main Street in Wilmore and Nicholasville



## Outreach Events

- ConnectLex Open House on May 16th, 2017 allowed participants to provide input and meet with the project team
- Five focus group discussions allowed key stakeholders to provide input on the following topics: economic development, education, programs, trails, transit, and safety
- An active steering committee and BPAC provided key input and oversight throughout the planning process.

# What We Heard...

I would love to see wide, stroller accessible sidewalks throughout downtown, buffered bike lanes on key roads that lead to desirable places, and a network of bike lines or shared use trails that connect Lexington's park system.

If I had one wish, it's that there could be an education campaign for drivers to keep their eyes out for pedestrians and cyclists.

Cleaning and maintenance of existing bike lanes and trails should be prioritized. Cleaning should be proactive on heavily used lanes. This is a chronic problem.

There is virtually no way to start in the city center of Lexington and bike out of town without being in heavy traffic on roads with high speed limits.

I am an experienced cyclist and would NOT recommend Lexington proper as an attractive place for bicycle commuting, especially for someone new to cycling.

I love riding my bike on the Legacy Trail, and I hope more trails are finished sooner rather than later.

I live only five minutes from my office and would love to bike or walk to work and to hang out in places close to my neighborhood.

Please develop sidewalks, paths, and trails so that ALL can enjoy, including those who use wheelchairs, walkers, strollers, and bikes. Please find ways to prioritize foot, bike, and wheelchair safety.

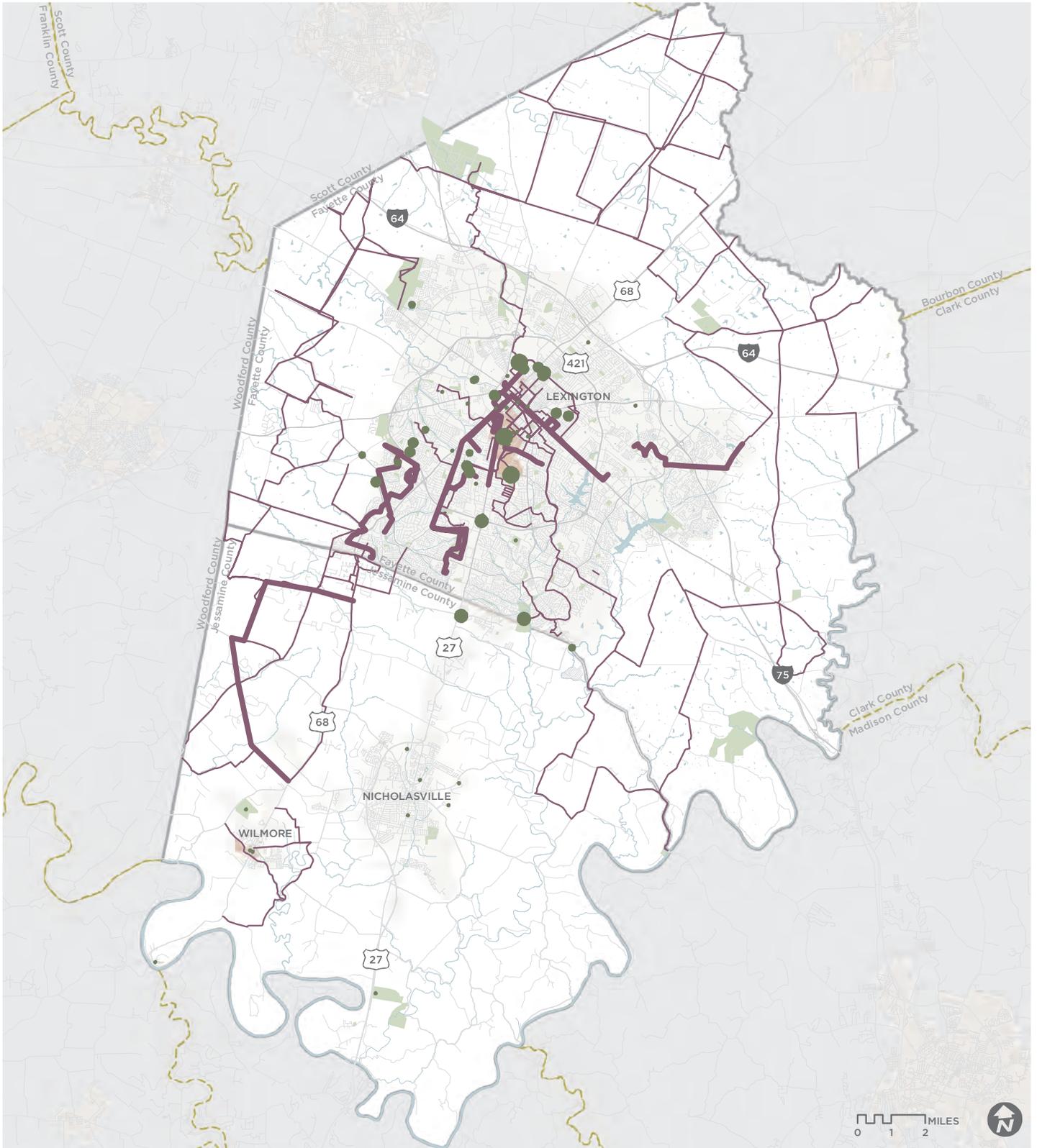
Far and away the most important improvements are CONNECTIONS. No one will walk/bike even if they'd like to if they can't get where they want to go.

I bike commute to work every single day and feel somewhat comfortable biking around certain parts of town. However, I rarely feel it is sufficiently safe for my children to bike. More needs to be done to improve the overall safety and infrastructure.

Reducing neighborhood speed limits would have a tremendous positive impact to bikers and pedestrians, especially with the number of distracted drivers traveling through these neighborhoods. Our family walks and bikes almost daily, and it is with constant alertness and care that we move through the neighborhood (and worry for your children).

There has been significant improvement over the past several years. I believe a public education campaign could have a very positive impact on the overall acceptance of and participation in a vibrant pedestrian and cycling culture here.

I would like for Lexington to be in the top tier of bike-friendly cities!



# BIKE ASSETS

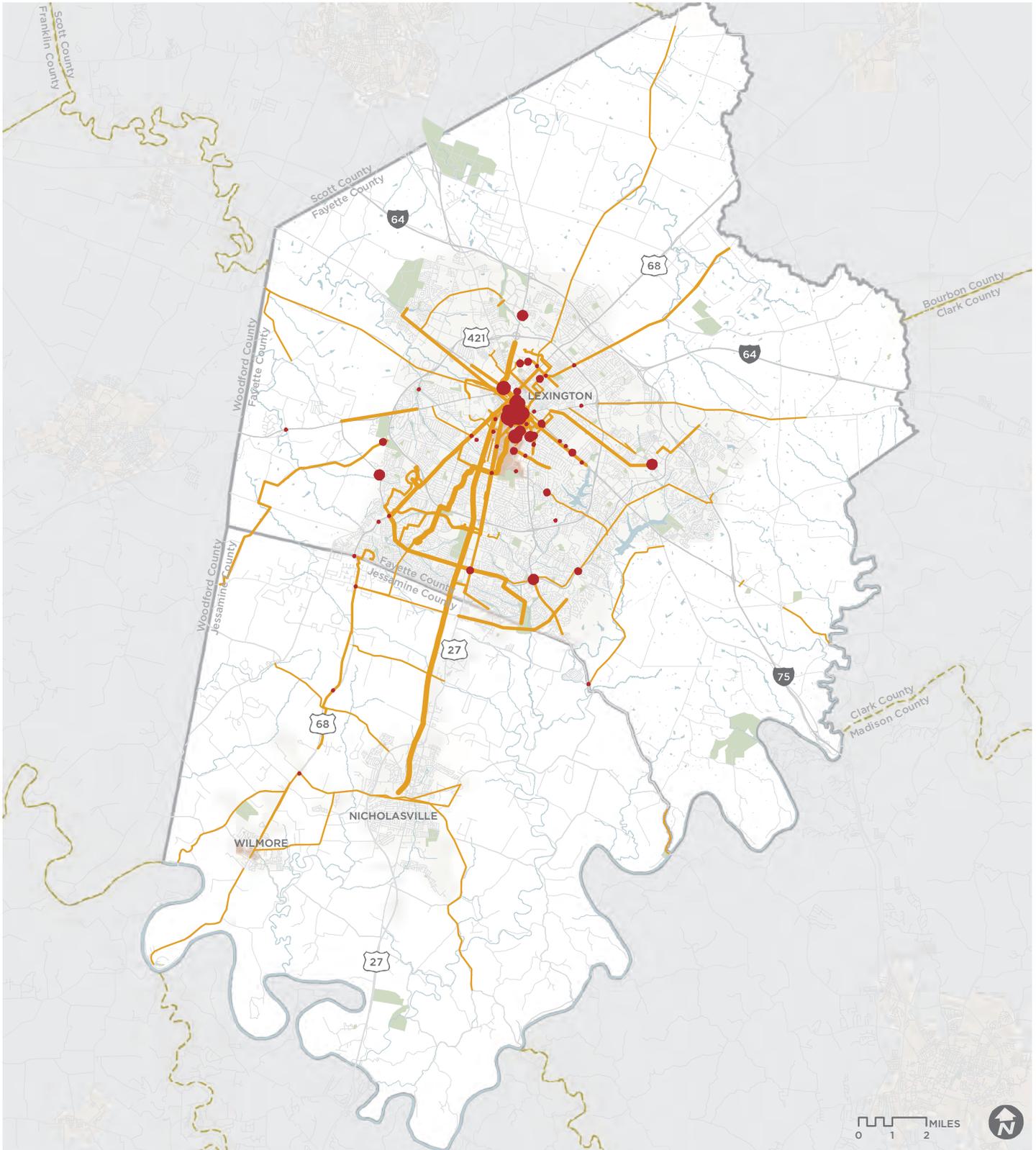
## Where People are Currently Biking and Key Destinations

### BIKE ROUTES | LIKE AND USE

- Support
- Support
- Support
- High Support

### KEY DESTINATIONS

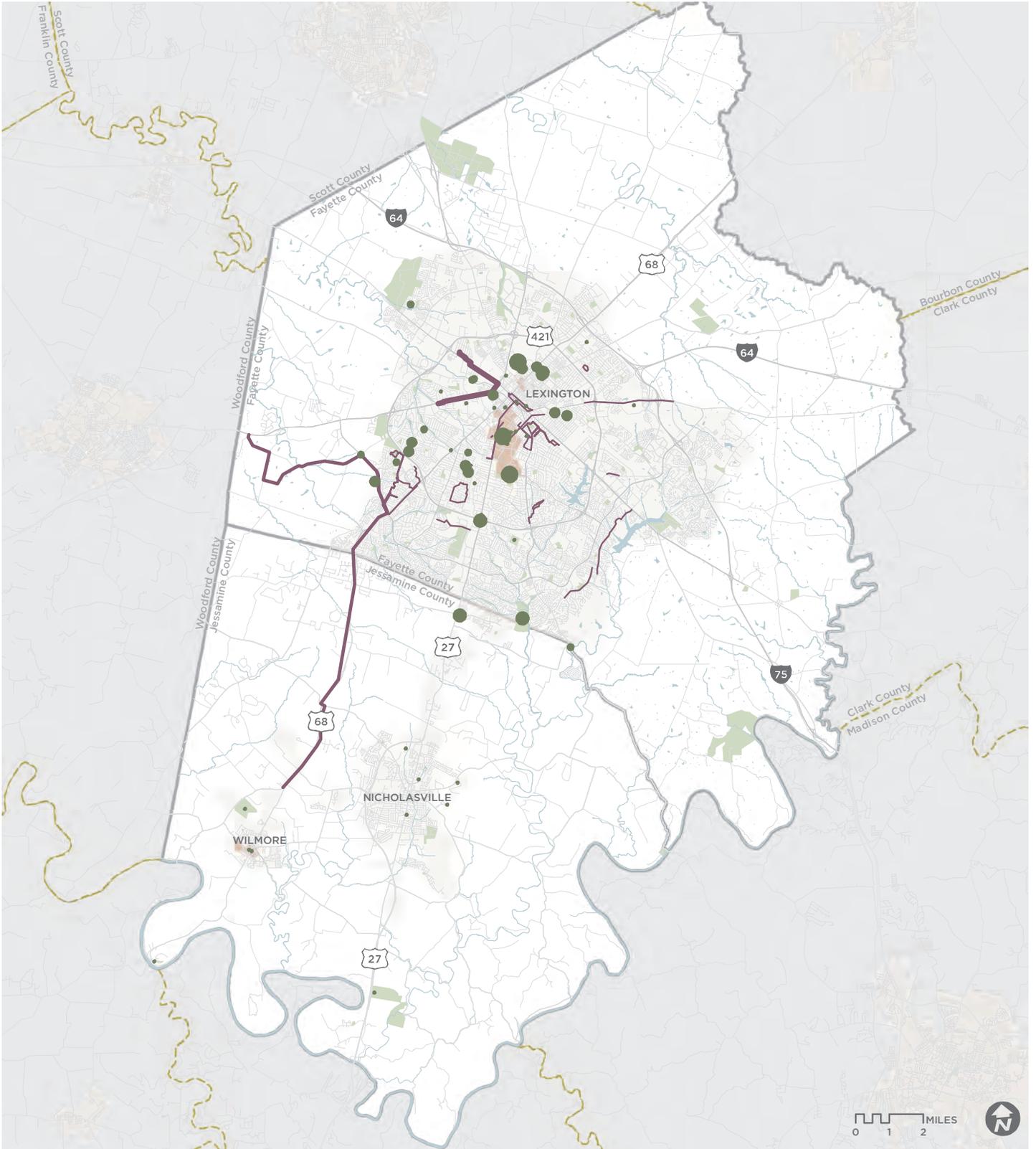
- Support
- Support
- High Support
- High Support



# BIKE NEEDS

## Where We Heard Bike Improvements are Most Needed

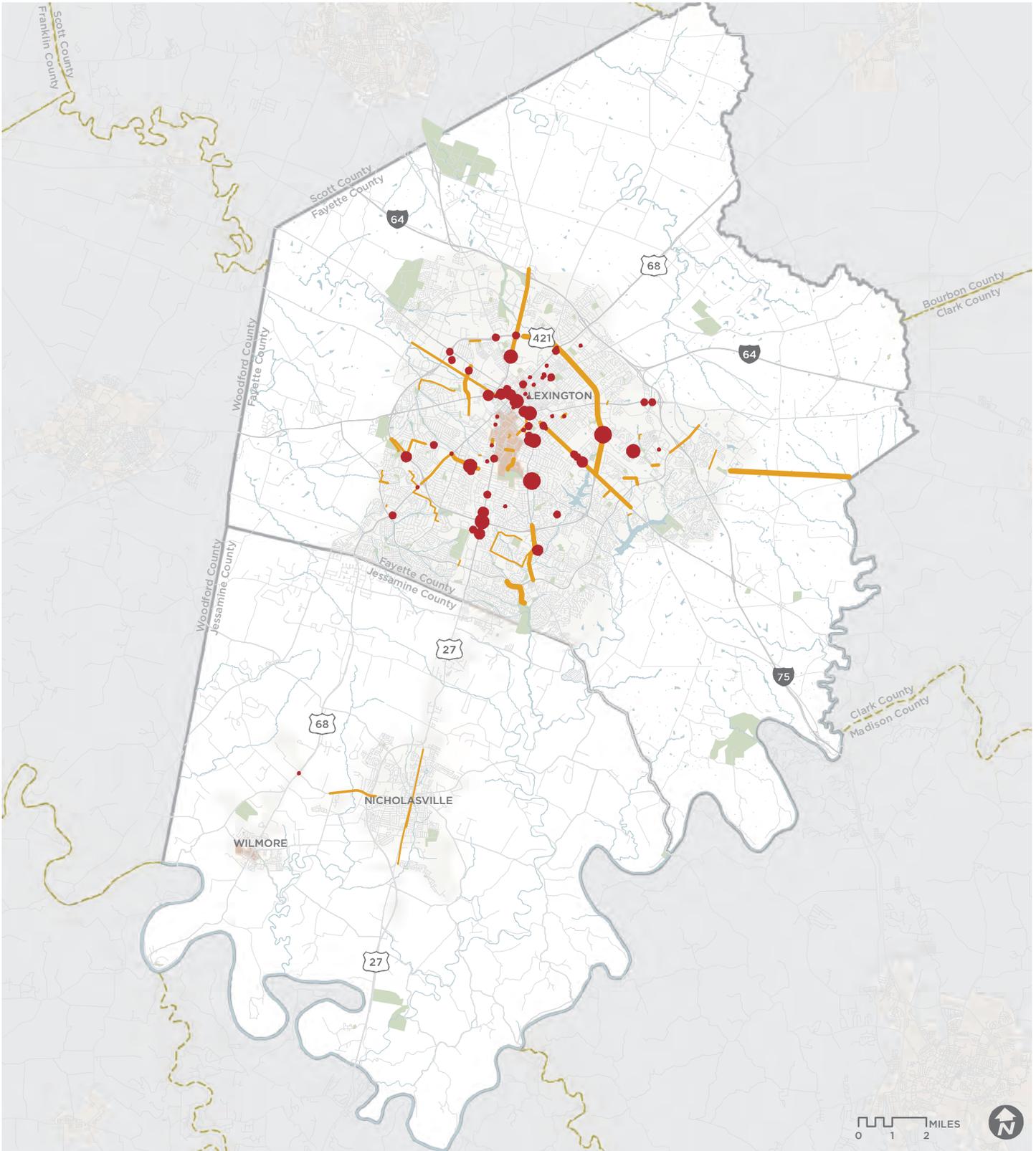
<b>ROUTES THAT COULD BE IMPROVED</b>	<b>BARRIERS TO BIKING</b>
Support	Support
Support	Support
Support	Support
High Support	High Support



# PEDESTRIAN ASSETS

## Where People are Currently Walking and Key Destinations

- | PEDESTRIAN ROUTES   LIKE AND USE | KEY DESTINATIONS |
|----------------------------------|------------------|
| Support                          | Support          |
| High Support                     | High Support     |
| High Support                     | High Support     |



# PEDESTRIAN NEEDS

## Where We Heard Pedestrian Improvements are Most Needed

- | ROUTES THAT COULD BE IMPROVED | BARRIERS TO WALKING |
|-------------------------------|---------------------|
| Support                       | Support             |
| High Support                  | High Support        |
| High Support                  | High Support        |

# Chapter 4: Recommendations

Non-infrastructure recommendations to educate, encourage, and expand the existing biking and walking culture.



# Introduction

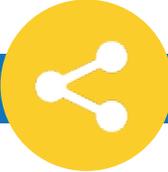
While transportation infrastructure – roads, sidewalks, crossings, bikeways – are critical for improving walking and bicycling, other components must also be used to create communities that are truly walking- and bicycling-friendly. This plan incorporates these strategies to make walking and bicycling safe, comfortable, and common forms of transportation. By building on the region’s existing resources and community spirit, the Lexington MPO can lead the way to a more livable, multi-modal future.

Non-infrastructure recommendations are organized according to four distinct categories:



**Policies**

Policies add political backing and institutionalize recommendations and design guidelines into city codes. Policies may be specific to infrastructure elements such as pedestrian routing in construction zones, or may be broad and include multiple municipal departments, such as Complete Streets Policies that may include design guidelines and evaluation metrics.



**Programs**

Programs can engage the broader community to encourage more people to walk and bike, educate community members on rights and responsibilities, and enforce traffic laws to improve safety for all modes.



**Design**

Design Guidelines are based on best practices in facility design and create clear and uniform regional standards for walkways and bikeways. The guidelines provide an explanation of facility types and direction for implementing the infrastructure recommendations.



**Evaluation**

Evaluation assesses facility usage and user perceptions, as well as the progress of implementing infrastructure, program, and policy recommendations. Progress may measure benefits for safety, the economy, health, and the environment.

# Key Stakeholders

The Lexington Bicycle and Pedestrian Master Plan is a collaborative effort between regional and local governments. This includes Fayette and Jessamine Counties and local municipalities such as Lexington, Nicholasville, and Wilmore, which are instrumental in the plan’s development and implementation.

While the MPO and its agency and jurisdictional partners are responsible for infrastructure projects, community programs and the non-infrastructure recommendations listed here can be supported and championed by outside partners such as nonprofits, advocacy groups, foundations, private sector businesses, and interested citizens.

## Potential Partner Organizations

- BLUEGRASS CYCLING CLUB
- BIKE LEXINGTON
- VISIT LEX
- THE UNIVERSITY OF KENTUCKY
- FAYETTE COUNTY SCHOOLS
- JESSAMINE COUNTY SCHOOLS
- THE YMCA OF CENTRAL KENTUCKY
- THE NATURE CONSERVANCY - KENTUCKY CHAPTER
- THE LEXINGTON ART LEAGUE
- DOWNTOWN LEXINGTON PARTNERSHIP
- DOWNTOWN LEXINGTON MANAGEMENT DISTRICT
- LEXINGTON DOWNTOWN DEVELOPMENT AUTHORITY
- NICHOLASVILLE NOW!
- KENTUCKY MAINSTREET PROGRAM
- LEXINGTON-FAYETTE COUNTY HEALTH DEPARTMENT
- JESSAMINE COUNTY HEALTH DEPARTMENT
- BROKE SPOKE COMMUNITY BIKE SHOP
- LEXTRAN



# Framework: Policies & Programs



## POLICIES



## PROGRAMS

SHORT TERM

- Develop a Tactical Urbanism Policy
- Develop a Bike Parking Program
- Update Existing Sidewalk, Bikeway, and Trail Maintenance Policies
- Conduct a Bike Share Assessment

- Organize a Safety Campaign Task Force
- Expand Education and Encouragement Programs
- Re-brand and Redevelop the Bike Map
- Develop Process for Citizens to Report Sidewalk Access Issues
- Implement a Safety Campaign
- Expand Bike Month Activities

MID TERM

- Improve Bike and Pedestrian Access in Construction Zones
- Update the Sidewalk Repair Program
- Reduce Speed Limits on Residential and Collector Streets

- Host an Annual ConnectLex Workshop
- Establish a Safe Routes to School Program
- Complete a Vision Zero Action Plan

LONG TERM

- Evaluate Program Staffing Needs for Plan Implementation
- Develop an In-House Trail Maintenance Crew

- Develop a Transportation Demand Management Action Plan

# Framework: Design & Evaluation (Cont.)



## DESIGN



## EVALUATION

SHORT TERM

- Host a Low-Cost Sidewalk Design and Implementation Workshop
- Conduct an Annual Priority Bikeway Scoping to Determine Desired Facility Type
- Complete a Bicycle Boulevard (Local Bikeway) Assessment
- Update the Traffic Calming Program
- Facilitate a Study Visit to an Aspirational City
- Adopt Bikeway Design Standards
- Host a NACTO (National Association of City Transportation Officials) Bikeway Design Training Workshop

- Identify a Program Funding Strategy
- Establish a Bicycle/Pedestrian Count Program
- Develop a Public Relations Strategy
- Develop an Interactive Program Website

MID TERM

- Develop a Bicycle Wayfinding and Branding Plan
- Develop Sidewalk Design Standards
- Complete a Safe Routes to School Prioritization Exercise

- Update Traffic Impact Study Regulations
- Coordinate with Lextran to Improve Pedestrian Access to Transit Stops
- Apply for Walk Friendly Community Status

LONG TERM

- Develop Public Art in the Right-of-Way design standards and guidelines

- Conduct a Health and Economic Impact Assessment



## Policy Spotlight

Policies provide the directive to implement facilities and improve safety and accessibility for people on foot and bike through ordinances, laws, and standards. Policies may also address methods for cutting red-tape and can encourage creative ways to efficiently implement effective projects.

### Spotlight Recommendation

#### SPEED MANAGEMENT

The safety of the streets for people on foot and bike is impacted by the speed of vehicles. A combination of traffic calming, policies to reduce speed limits, and enforcement can reduce speeds and encourage more people to use active transportation.

Examples of traffic calming include Neighborhood greenways or Bicycle Boulevards, which are low-volume, low-speed streets modified to enhance safety for walking and biking by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications.

Traffic conditions on neighborhood greenways should be monitored to provide guidance on when and where treatments should be implemented. When motor vehicle speeds and volumes exceed the preferred limits, additional treatments should be considered.

#### BENEFITS

Streets signed at 25 mph or less decrease the risk and severity of crashes for all modes.

Neighborhood greenways parallel to commercial streets improve access for “interested but concerned” bicyclists and complement bike lanes on major roadways.

#### RESOURCES

Ewing, Reid and Brown, Steven. U.S. Traffic Calming Manual. 2009.

NACTO. Urban Street Design Guide. 2013. Alta Planning + Design and IBPI. Bicycle Boulevard Planning and Design Handbook. 2009.

### BRING IT TO LEXINGTON!

#### STRATEGY

Set policies to reduce speed limits on residential and local collector streets to less than 25 mph. Speed limits on Neighborhood greenways should be set lower - between 15 and 20 mph. Assess pedestrian and bicycle crash data, demand, and feasibility to identify 5 pilot projects. Set goals and work with stakeholders to implement each project.

#### KEY STAKEHOLDERS

Public Health Departments  
Neighborhood Associations  
Public Works and Planning  
Departments  
Police Departments

## Example: Seattle Vision for Safe Streets

Seattle is often recognized as one of the safest cities in the country, seeing a 30% decline in traffic fatalities even as their population grows. Despite this fact, collisions take the lives of around 20 people and cause injury to nearly 150 each year. Vision Zero is Seattle's strategy for ending traffic deaths and serious injuries by 2030.

Seattle's Vision Zero Plan calls for street designs that emphasize safety, predictability, and the potential for human error, coupled with targeted education and data-driven enforcement. Some of Seattle's key implementation strategies include:

**SeaStat**, a Seattle Police Department program which uses data to allocate police resources, to continually monitor collision trends and to deploy enforcement appropriately.

**Seattle Police Department's Traffic Collision Investigation Squad** and SDOT engineers review the factors that contribute to each serious collision that occurs to learn as much as possible from each incident.

**20 MPH Zones**, mainly located close to schools and parks, and lowered speed limits on busier arterial streets.  
Coupling **Corridor Safety Improvements** with **Enforcement** to reduce speed, impairment, and distraction.

Supporting engineering work through **targeted public outreach and enforcement through education** programs



like Safe Routes to School, Be Super Safe, Pedestrian Safety for Seniors, and the overarching Vision Zero campaign.

Seattle is using Washington State's Target Zero program as a model for its Vision Zero campaign, as traffic fatalities have dropped 40 percent across the state since the first version of Target Zero was launched in 2000.

Through partnerships with the Washington Traffic Safety Commission, the Washington State Department of Transportation, and the Washington State Patrol, Seattle experienced collision reductions thanks to Vision Zero-style tactics employed on busy urban corridors. The City has attempted to build on these successes in its Vision Zero implementation, and has already seen collisions and speeds reduced in some corridors.



## Program Spotlight

Programs are an important component of a bicycle and pedestrian plan, as they provide the framework for Education, Encouragement, and Enforcement. They also help enhance the culture of walking and biking and support the safety of recommended facilities.

Programs can be implemented quickly and with minimal investment. Successful programmatic efforts are flexible and can demonstrate sustainable long-term infrastructure improvements.

### Spotlight Recommendation

#### OUTREACH AND COMMUNICATION THROUGH MAPPING

Local maps and guides are an effective way to encourage more people to bike. The existing Lexington bike map includes bike routes differentiated by facility type, along with information on rights and responsibilities. The map contains useful information that can be updated and converted into a more user-friendly, interactive on-line version. The map can be updated to reflect existing and planned bike infrastructure, with the ability to comment on proposed bikeways and report existing safety issues.

An on-line, user-friendly map could also allow residents to report sidewalk maintenance concerns or ADA access issues.

#### BENEFITS

Mobile apps and on-line bike maps will allow users to:

- Have easy access to a continually-updated Lexington Bike Map on their mobile devices.
- Easily report pedestrian or bike safety issues using a mobile device.
- Zoom into a specific area of the city to identify a bike route of their choosing.

#### RESOURCES/EXAMPLES

Raleigh, NC on-line bike map: <http://maps.raleighnc.gov/bikemap/>

San Diego regional bike map: <http://www.icommutesd.com/Bike/BikeMap.aspx>

#### BRING IT TO LEXINGTON!

##### STRATEGY

Re-brand and re-develop the Lexington Bike Map and include crowd-sourcing resources and interactive on-line maps. Incorporate a clear process for citizens to report sidewalk access issues or sidewalks that don't meet ADA standards. Communication strategies may include interactive maps and coordination with the 311 call center.

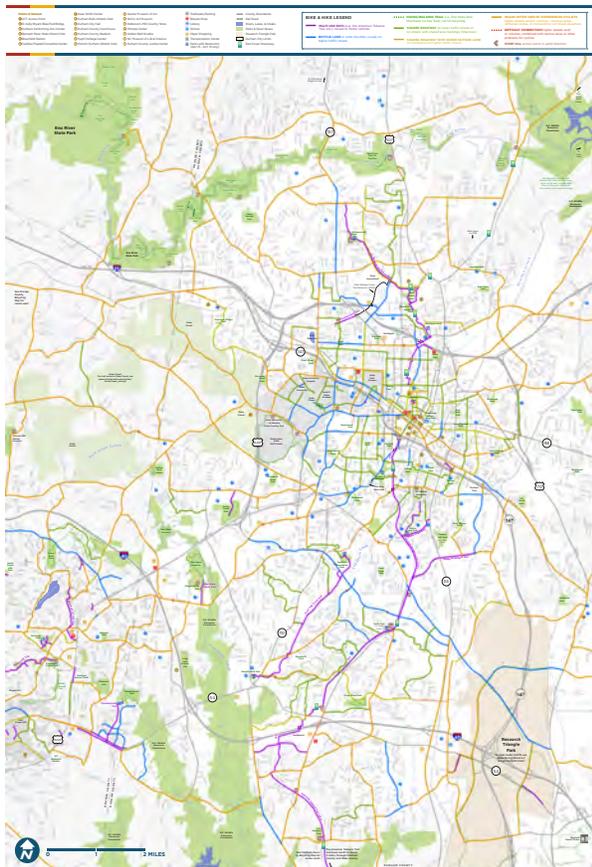
##### KEY STAKEHOLDERS

Jessamine County Trail Association  
Local cities and counties  
Lextran  
Universities and colleges

## Example: Municipal + University Bike & Ped Maps

### DURHAM BIKE & HIKE MAP

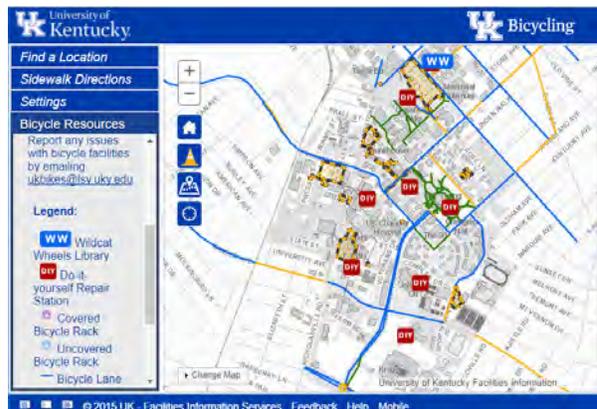
This user-friendly map depicts the best routes for bicycling and hiking in Durham, and features information about bicycle safety, transit options, and local destinations. The map was well received by the community with more than 20,000 maps printed and in circulation since 2010. An update to the bike map is currently under development, and includes information on local amenities such as the East Coast Greenway, additional destinations, walking & hiking trails, and information on the level of experience that is appropriate for various bike routes.



The Durham Bike & Hike Map

### UNIVERSITY OF KENTUCKY INTERACTIVE BIKE AND PEDESTRIAN MAP

The University of Kentucky's online, interactive bicycle and pedestrian map is a resource for students, visitors, and employees of the University. This map includes bicycle-friendly routes in and around campus, shared sidewalks, shared use trails, bicycle racks, bicycle repair stations, and major destinations to guide employees, students, and visitors to sustainable transportation options for reaching campus destinations.



The University of Kentucky online, interactive bicycle and pedestrian map.



## Design Spotlight

A high-quality bikeway and walkway network requires design guidelines that are clear and based on best practices. A comprehensive list of recommendations is summarized on page 4-6 and 4-7.

### Spotlight Recommendation

#### **PRIORITY BIKEWAY IMPLEMENTATION**

Many bikeway projects can be accomplished through simple restriping. However, projects that require signal changes or major alterations to the roadway, such as reducing the number of traffic lanes, often take much longer between initial planning and implementation.

Four key steps are essential for quick and strategic implementation:

- 1. Constructibility Audit:** Review project feasibility by accounting for right-of-way impacts, design constraints, environmental factors, and a detailed cost analysis.
- 2. Coordination:** Evaluate existing plans, priorities, potential development, and identify all stakeholders along the corridors.
- 3. Collaboration:** Involve individual stakeholders such as elected officials, advocates, neighborhood leaders, and business owners to understand their priorities and concerns.
- 4. Design:** Hold an interactive multi-day charrette with internal staff and stakeholders to identify 1) a plan that fits existing constraints, and 2) the ultimate vision.

### **BRING IT TO LEXINGTON!**

#### **STRATEGY**

Conduct an annual Priority Bikeway Scoping plan for major or minor bikeway projects that would require removal of traffic lanes or changes to a signal plan. This rapid-fire style scoping process will identify projects, determine the ultimate cross-section, provide a public engagement process, refine cost estimates, and select an implementation strategy.

#### **KEY STAKEHOLDERS**

Local cities and counties  
Lexington MPO  
Public Works and Planning  
Departments  
KYTC

## Example: Denver rapid implementation project

In April 2016, a new commuter rail opened in Denver, connecting Union Station — a historic train station that now serves as a retail destination and transit facility — and Denver International Airport.

In anticipation of the new commuter rail opening, Denver Public Works executed a rapid implementation project to improve the pedestrian environment in front of Union Station and reduce conflict between the varying converging uses.

“We heard from constituents that there were bike parking challenges and bike access challenges and that it was hard to cross streets in that area,” explained project manager Riley LaMie. “So what we did was a rapid implementation project to make changes within six months (prior to the opening of the rail line and the anticipated influx of ridership). We had a consultant on board within a month, did a design charrette with internal staff and hosted a public meeting within the first month, and workshopped through different solutions with mobility issues and station access. We had something designed and installed by April.”

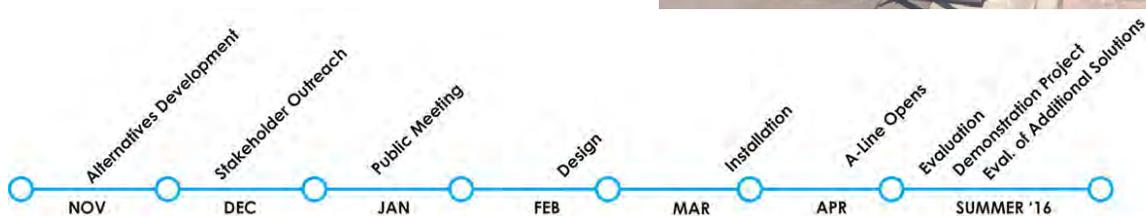
The adopted improvements included:

- Installed temporary bulb-outs and bollards to prevent illegal parking,

increase visibility of the intersection, and shorten pedestrian crossing distance.

- Installed a vehicular wayfinding system to direct vehicles to designated passenger pick-up and drop-off spaces.
- Adjusted the curb lane to be less confusing and accommodated bicycle parking through a city-installed bicycle corral.
- Worked with B-cycle, Denver’s bike sharing system, to install a station below the curb on Wynkoop Street.
- Increased car sharing space.

“To be able to do this in such a small time frame was really cool,” LaMie reflected. “There are now so many transportation options at the station.”





## Evaluation Spotlight

Evaluation sets the bar for improving walking and biking in Fayette and Jessamine Counties, and is critical for assessing and understanding whether the goals of the plan are being achieved over time.

Recommendations for evaluation methods vary from broad-based Walk-Friendly and Bike-Friendly Community programming to tracking the health and economic benefits of the Legacy Trail.

- Help quantify the benefits of walking and biking.
- Make active transportation projects more competitive for funding opportunities.

### RESOURCES

National Bicycle and Pedestrian Documentation Project: <http://bikepeddocumentation.org/>  
Pedestrian and Bicycle Information Center: [http://www.pedbikeinfo.org/training/webinars\\_PBIC\\_LC\\_022117.cfm](http://www.pedbikeinfo.org/training/webinars_PBIC_LC_022117.cfm)

### Spotlight Recommendation

#### BIKE AND PEDESTRIAN COUNTS

Counts can be conducted manually or with automatic sensors. Automatic pedestrian and bike counting technology has advanced rapidly in recent years. In-pavement sensors, computer vision, infrared beams, radar, and tube counters can all detect people who walk and bike. However, devices vary considerably in terms of cost, accuracy, data collection, and ease of deployment. It is important to choose counting devices that are best suited for the type of data needed (short term or long term) and the site characteristics where counts will take place.

#### BENEFITS

Better data on pedestrian and cyclist travel will:

- Help to determine where investments are most needed.

### BRING IT TO LEXINGTON!

#### STRATEGY

Seek funding for a bicycle and pedestrian counts program and assign staff to manage the counts program. Determine locations for pedestrian and bicycle counts. Determine schedule for recurring counts. Regularly review counts data to evaluate trends in bicycle and pedestrian travel.

#### KEY STAKEHOLDERS

Local cities and counties  
Lexington MPO  
Public Works and Planning  
Departments

## Example: Automated Count Technology

The wireless tech-revolution that has occurred over the past 10-15 years has ushered in new tools to facilitate non-motorized data collection. As these products scale up, their prices fall, creating a marketplace that is changing the way we can monitor traffic. These tools are highlighted below and represents a snapshot of the current technology available.



Active Infrared



Passive Infrared  
(Source: ecocounter.com)



Pneumatic Tubes



Inductive Loops



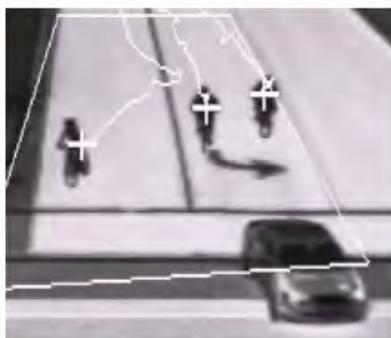
Magnetometer. (Source: trafxx.net)



Piezoelectric Strips/Tubes



Radar Sensors (Source: Twitter user Dongho Chang, Traffic Engineer, Seattle Department of Transportation)



Thermal Imaging (Source: Popular Mechanics)



Video Imaging (Source: Iteris)

# Maintenance

## WHY IT'S IMPORTANT

Just as road and highway facilities are monitored and maintained to ensure safe and dependable use, the same commitment to maintenance should be made for active transportation facilities. Proper maintenance of the existing and expanded bicycle and pedestrian network is as integral to the initial planning and development of the overall network.

Appropriate and on-going maintenance of bike lanes, sidewalks, and trails leads to safe, comfortable, reliable, and accessible facilities for all active transport users. Preventative maintenance of sidewalks and bike lanes can often be incorporated into routine roadway maintenance and can serve to reduce hazards for users and facility life cycle costs.

Furthermore, continual upkeep of active transportation facilities improves community aesthetic and demonstrates an investment and dedication by local government to bicycle and pedestrian transportation.



Maintenance is important for the safety of bike lanes (left) and crosswalks (right).

## Key Principles

Similar to streets, the active transportation network, consisting of sidewalks, bikeways and shared-use trails in Lexington should be viewed and maintained as a public resource, serving generations to come. The following guiding principles will help assure the preservation of a high-quality system:

- 1. Develop a management plan** that is reviewed and updated annually with tasks, operational policies, standards, and routine and remedial maintenance goals.
- 2. Maintain quality control** and conduct regular inspections.
- 3. Include field crews, police and fire/rescue personnel** in both the design review and ongoing management process.
- 4. Maintain an effective, responsive public feedback system** and promote public participation.



## Snow & Ice Removal

### MADISON, WI

With over 50 miles of off-road shared-use trails and 130 miles of bike lanes, it is no surprise that Madison has developed a comprehensive procedures guide for snow and ice control on bicycle and pedestrian facilities during the winter months.

The following points from the Madison Plan provide some guidance for the Lexington Area:

- Madison's Public Works Streets Division maintains city-owned sidewalks and school/handicap crosswalks during regular business hours during snow emergencies.
- Madison's Parks and City Engineering Divisions maintain off-road city bike paths starting at 4:00am during/after a snow emergency on weekdays so that the paths are clear.
- On-street bike lanes that occur on a salt route are cleared as much as possible during snow events and then receive a second plowing to ensure snow is removed as close to the curb as possible. On-street bike lanes that are not on salt routes are plowed after general plowing is complete.
- The city of Madison has 180 pieces of equipment to employ during snow events – 90 private contractors and 90 city-owned and operated plows. Each operator has a map of which streets to plow by priority.
- Crosswalk snow removal includes 8 crews across the city, who work for 3 consecutive nights to begin crosswalk snow removal.

## Staffing

### RALEIGH, NC

Raleigh, NC is home to a 120-mile trail paved trail network. This system has developed over time and increases in the trail network have resulted in dedicated resources towards the maintenance and rehabilitation of its facilities.

Ultimately, the system requires fifteen staffers to maintain and restore the trails after major events, and to sweep and perform routine tasks. Having an in-house maintenance crew increases the cities ability to maintain access of their greenway network, allows for faster response times to critical maintenance needs, and reduces total maintenance costs.

## Equipment

### DENVER, CO

Denver has purchased equipment specifically for bikeway maintenance totaling approximately \$230,000 (\$130,000 for a sweeper unit and \$100,000 for a snow removal unit fully equipped with a plow, broom, bucket, snow blower, and liquid deicer tank).



# What Does Maintenance Include?

Routine maintenance tasks include those that should be addressed on a regular basis to keep all network facilities in good, usable condition. Maintenance tasks should be conducted more frequently on greenway, bike, and pedestrian facilities where use is the most concentrated. The table below includes typical maintenance activities associated with bicycle and pedestrian networks.

Type of Maintenance	Frequency	Notes
Sweeping and trash pickup	Prioritize by facility usage; routine scheduled activity	Shared-use trails typically require the greatest amount of effort in landscaping
Tree and shrub trimming		
Landscaping (edging, mowing, weed, and invasive species control)		
Check, update, and repair signage	Check annually Repair every 5-10 years	All signs should be checked after major weather events
Facility repair (potholes, erosion, etc.)	Repair as needed Prioritize by facility usage	In instances of limited resources, create prioritization scenarios
Pavement resurfacing and edges, or facility reconstruction	Remedial activities can vary widely depending on surface type, usage, and proper construction	Estimated life-cycle In years: Granular Stone: 7-10 Asphalt: 7-15 Concrete: 20+ Boardwalk: 7-10 Bridge/Underpass: 100+
Drainage upgrades and inventory	Year-long program, replacement every 20+ years of culverts, bridges, retaining walls, and stormwater control devices	Professional design and construction should be used for all hardened surfaces
Snow and ice removal	Seasonal	Responsibilities for clearing vary widely from one facility to another. Clear communication and coordination is key to ensuring successful clearing after snow events
Maintenance management plan	Updated annually for operations and maintenance cost planning; highly used facilities should consider annual operations and maintenance plans	As new facilities are constructed, budgets or dedicated man hours should also increase as maintaining agencies take on new facilities

# Maintenance Recommendations

The action steps below provide guidance for improving and maintaining both existing and future bicycle and pedestrian facilities.

Implementation of these recommendations will require coordination across multiple departments, including local public works, state road crews, and parks and recreation agencies.

## Action Steps

- Include bicycle and pedestrian projects in the local Capital Improvement Program (CIP), increasing consistent year-to-year funding levels.
- Fund bicycle and pedestrian facility maintenance and consider funding additional maintenance equipment needed to adequately maintain a low-stress bikeway system.
- To increase readiness for grant funding, develop preliminary plans (30% construction drawings) for priority bicycle and pedestrian projects.
- Leverage private development investment by requiring bicycle and pedestrian facility implementation as part of high-density and large-scale development.
- Consider a cost-share program for sidewalk maintenance to ensure sidewalk repair is implemented equitably.

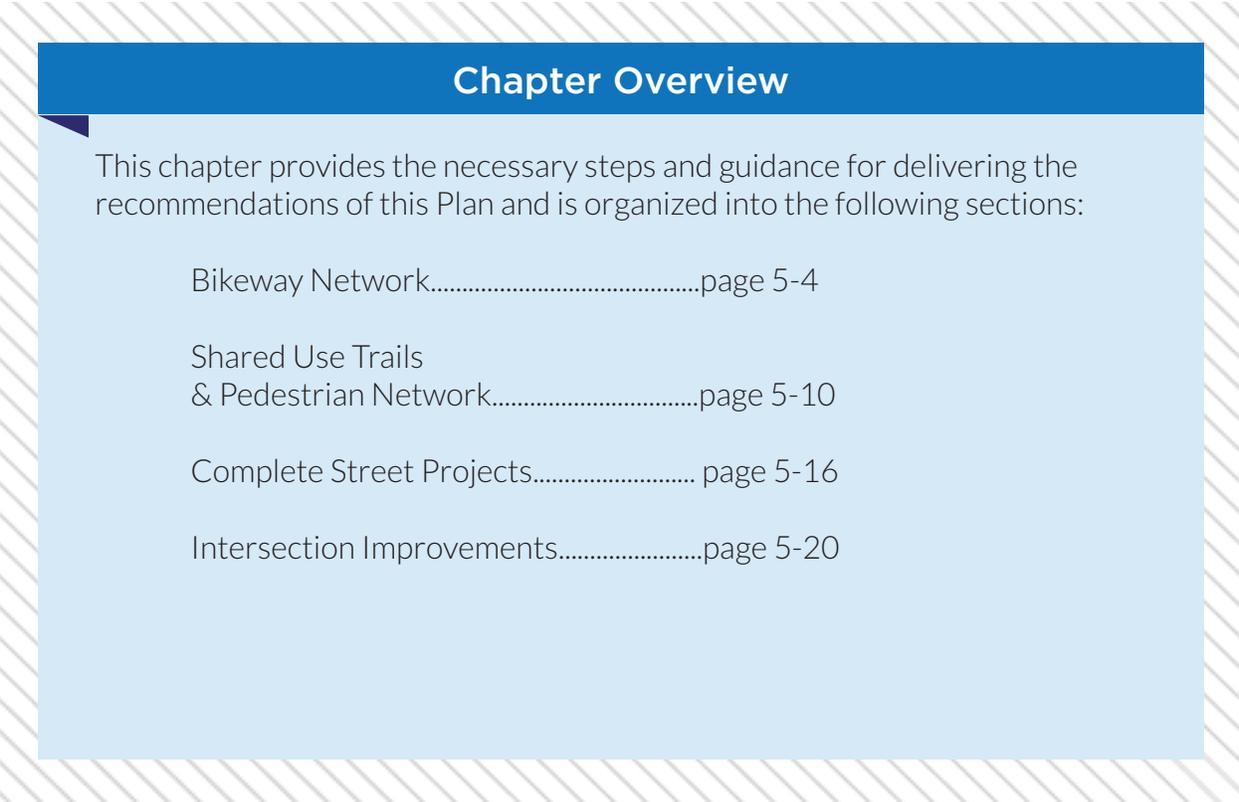
# Chapter 5: Developing the Networks

The process to develop new infrastructure recommendations for a connected bikeway, trail, and sidewalk network.



# Introduction

Developing the bikeway, trail and pedestrian recommendations was a multi-step process involving ongoing dialogue with various stakeholders. Network recommendations were informed by both quantitative findings and a qualitative understanding of the Lexington MPO region.



**Chapter Overview**

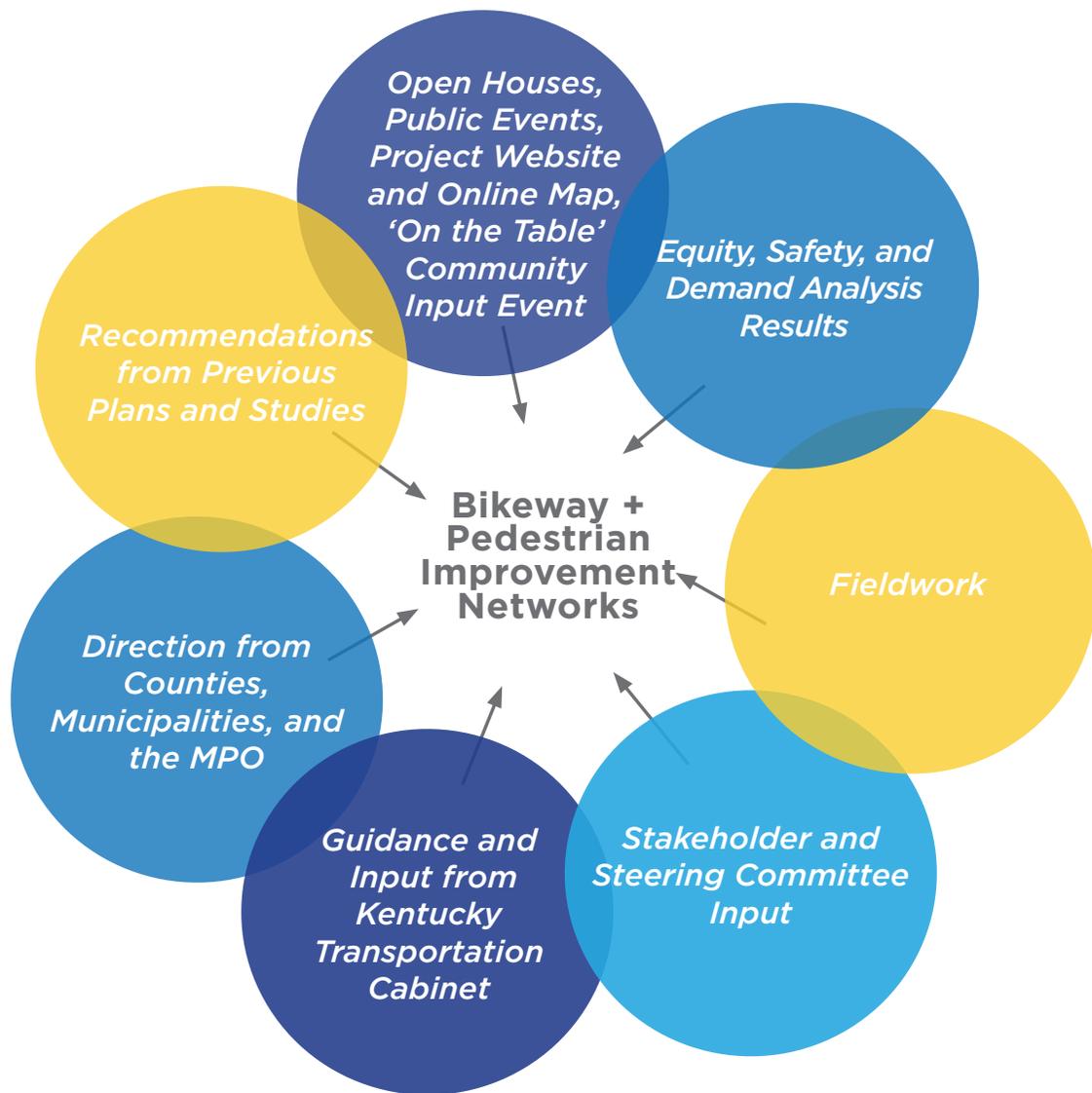
This chapter provides the necessary steps and guidance for delivering the recommendations of this Plan and is organized into the following sections:

- Bikeway Network.....page 5-4
- Shared Use Trails  
& Pedestrian Network.....page 5-10
- Complete Street Projects..... page 5-16
- Intersection Improvements.....page 5-20

# Our Approach

The proposed network seeks to:

- Reflect our vision + goals
- Address the needs of all ages and abilities
- Balance the transportation system for all roadway users
- Integrate seamlessly with future development and land uses



# Designing Bikeways For All Users

The last decade has seen tremendous investment in bicycle infrastructure locally and across the United States. However, one key realization is now shaping how bicycle investments are made.

## Different Cyclists Have Different Needs

Although some bicyclists will ride on any road, regardless of an available bikeway (“strong and fearless”), a much larger portion of the population will ride only where there is a high-quality bikeway (“interested but concerned” population). Understanding this concept has led us to design more low-stress bikeways that provide the high-quality experience the majority of cyclists desire.

The chart on this page shows a “typical” distribution of bicyclists while also capturing the general type of experience they prefer.



# Bikeways With A Broad Appeal

Bike lanes, trails, and low speed neighborhood greenways all make biking more comfortable. Improvements to street, highway, and rail crossings can help drivers learn to expect bicyclists in these locations and create a safer, more comfortable routes for bicyclists.

The bikeways and road crossing treatments described below are designed to appeal to many types of riders, creating bikeways that ‘interested but concerned’ bicyclists are willing to use.



## Trails and Separated Bikeways

Shared use trails and separated bikeways separate bicyclists from automobiles and improve overall safety. Separated bikeways are especially useful on roads with higher speeds or traffic volumes. The Legacy Trail is one example of a shared use trail in Lexington, and there many successful trails in the region.



## Bicycle Boulevards

In residential neighborhoods, bicycle boulevards—also known as neighborhood greenways—improve travel for bicyclists while calming traffic and greening neighborhoods. Bicycle boulevards are shared by automobiles and bicycles, but at speeds that make travel more comfortable for bicyclists.



## Separated Crossings

For major infrastructure—such as freeways, expressways, and train tracks—separated under- or overcrossings provide an opportunity for bicyclists to safely connect across barriers. Many bike commuters must cross New Circle Road each day, improved crossings are needed to build a high-quality network.



## At-Grade Crossings

One persistent challenge to building high-quality routes is accommodating bicyclists at intersections. Providing protected intersections or, even just marked crossings, can help make motorists more aware of bicyclists. Oakland, California used this type of treatment as part of its Telegraph Avenue protected bike lanes to mark intersection crossings.

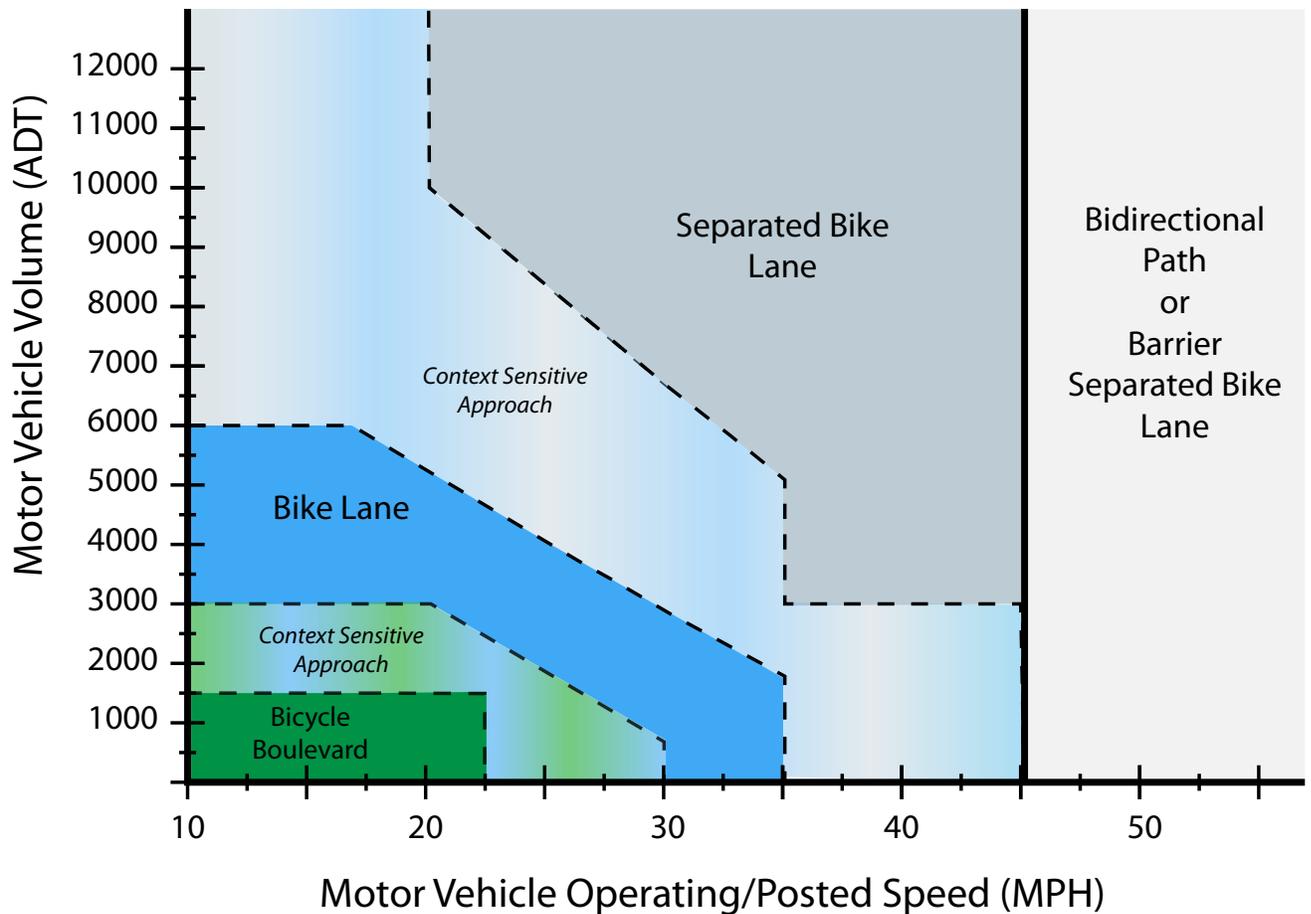
# Choosing The Right Facility Type

Selecting the best bikeway facility type for a given roadway can be challenging since the selection must balance traffic conditions, land use context, and implementation cost. For general guidance, the graphic below highlights the relationship between facility type and roadway speed and volume situations.

Selecting a bikeway type is not a prescriptive process and other factors need to be considered beyond speed and volume. For instance, the types of traffic (transit,

truck traffic, taxi zones, etc), on-street parking, available roadway or roadside space, intersection density, and surrounding land use all play a role in determining the best low-stress facility type.

Once a facility type is identified, the reference table on page 5-5 provides additional high-level information regarding the design and implementation for each facility type.



# Context Sensitive Approach

Bikeway facility type	Street type/ Speed/ Volume	Design specifications	Implementation strategies
<b>Bicycle Boulevard</b> 	<ul style="list-style-type: none"> <li>Local</li> <li>Residential collector</li> </ul>	<ul style="list-style-type: none"> <li>Identification signage and pavement markings</li> <li>85th percentile speed &lt;25 mph</li> <li>ADT &lt;3000</li> <li>Crossing treatments at local streets, avenues and boulevards</li> </ul>	<ul style="list-style-type: none"> <li>Use access management and speed reduction tools to achieve desired motor vehicle volumes and speeds.</li> </ul>
<b>Shared Roadway</b> 	<ul style="list-style-type: none"> <li>Local</li> <li>Commercial Main Street</li> </ul>	<ul style="list-style-type: none"> <li>Works best on streets with speeds of 30 mph or lower. May be used on streets up to 35 mph</li> <li>Minimum placement of shared lane marking is 11 feet from curb where on-street parking is present (4 feet from edge of curb with no parking)</li> </ul>	<ul style="list-style-type: none"> <li>Shared lane markings pair well with Bikes May Use Full Lane (R4-11) signs.</li> <li>Modifications to signal timing help induce a bicycle-friendly travel speed for all users</li> </ul>
<b>On-Street Bike Lane</b> 	<ul style="list-style-type: none"> <li>Local</li> <li>Collector</li> <li>Commercial Main Street</li> </ul>	<ul style="list-style-type: none"> <li>6'- 7' preferred bike lane width</li> <li>5' minimum bike lane width (when adjacent to parking)</li> </ul>	<ul style="list-style-type: none"> <li>Lane narrowing</li> <li>Travel lane reconfiguration</li> <li>Parking lane reconfiguration</li> </ul>
<b>Buffered Bike Lane</b> 	<ul style="list-style-type: none"> <li>Collector</li> <li>Commercial Main Street</li> <li>Arterial</li> </ul>	<ul style="list-style-type: none"> <li>5' minimum bicycle travel area</li> <li>18" minimum buffer area</li> </ul>	<ul style="list-style-type: none"> <li>Lane narrowing</li> <li>Travel lane reconfiguration</li> <li>Parking lane reconfiguration</li> </ul>
<b>One-Way Separated Bike Lane</b> 	<ul style="list-style-type: none"> <li>Collector</li> <li>Commercial Main Street</li> <li>Arterial</li> </ul>	<ul style="list-style-type: none"> <li>7' travel area</li> <li>3' or wider buffer</li> <li>18" minimum buffer adjacent to travel lanes</li> <li>3' minimum buffer adjacent to parking lanes</li> </ul>	<ul style="list-style-type: none"> <li>Lane narrowing</li> <li>Travel lane reconfiguration</li> <li>Parking lane reconfiguration</li> <li>Curb reconstruction</li> </ul>
<b>Two-Way Separated Bike Lane</b> 	<ul style="list-style-type: none"> <li>Collector</li> <li>Commercial Main Street</li> <li>Arterial</li> </ul>	<ul style="list-style-type: none"> <li>12' preferred operating width</li> <li>10' minimum travel width (8' width in constrained conditions)</li> <li>3' minimum buffer adjacent to parking lanes</li> </ul>	<ul style="list-style-type: none"> <li>Lane narrowing</li> <li>Travel lane reconfiguration</li> <li>Parking lane reconfiguration</li> <li>Curb reconstruction</li> </ul>

# Developing the Bikeway Network

The proposed bike network was developed with the goal of creating a network of well-connected, low-stress facilities. Biking needs to be a safe, convenient, and pleasant form of transportation for the broadest array of people. Aligning with the vision of this plan of creating safe and comfortable bikeways, this low-stress network would be appropriate for people of all ages and abilities.

The network is organized into three main categories: major bikeways (mainline routes), minor bikeways (feeder routes), and local bikeways (first/last mile connections).

Bike lanes, trails, and low-speed neighborhood bikeways all make biking more comfortable. However, perception of safety is largely driven by factors like vehicle speeds and traffic volumes. Not all routes are the same and therefore design flexibility is essential to building a low-stress network. The network approach developed as part of this plan sets the parameters for the bikeway network but the project design process will determine the ultimate cross-section for each project using national best practices and engineering judgment.

## MAJOR BIKEWAY: MAINLINE ROUTES



## MINOR BIKEWAY: FEEDER ROUTES



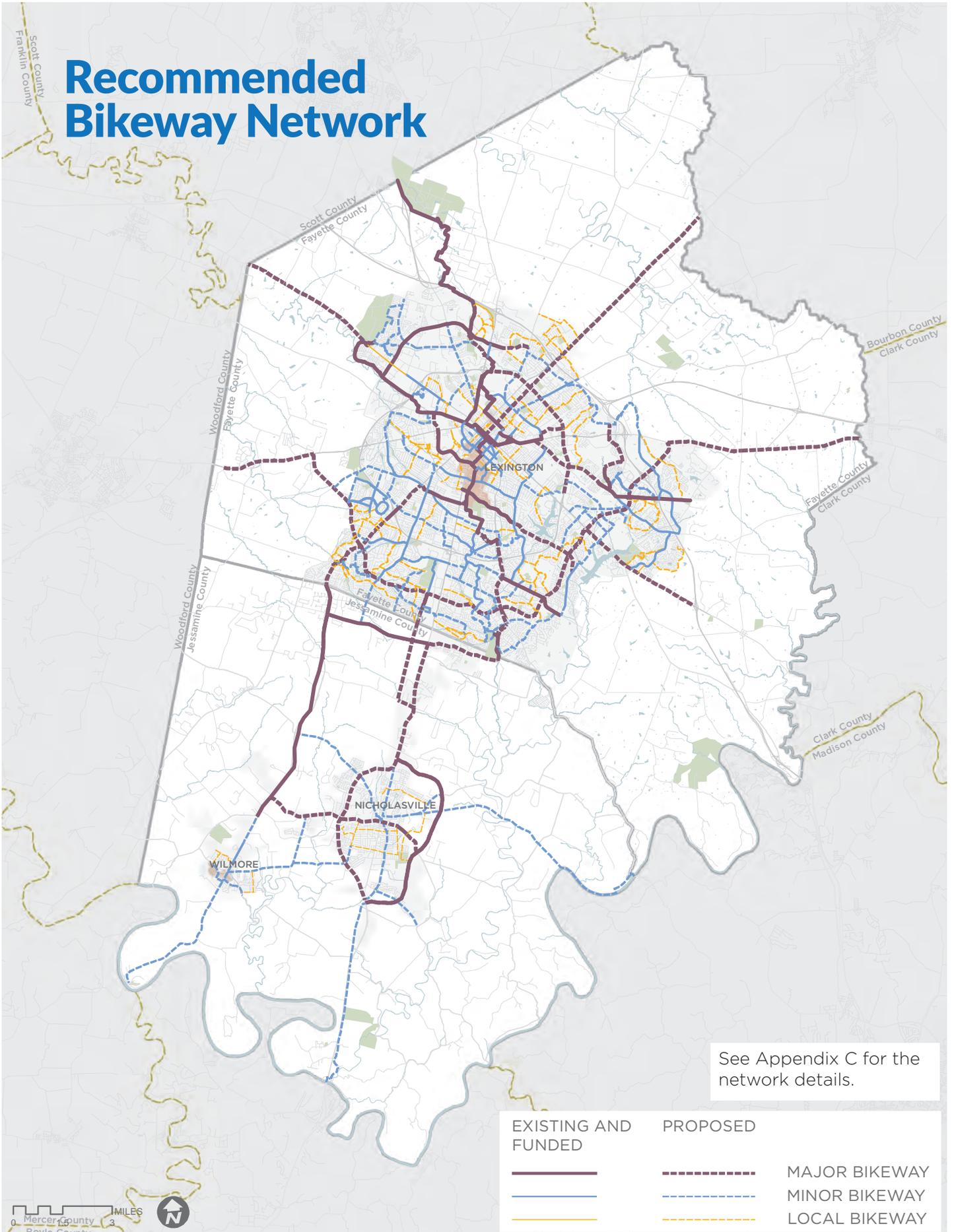
## LOCAL BIKEWAY: FIRST/LAST MILE



### PROPOSED MILEAGE SUMMARY

FAYETTE		JESSAMINE
69 miles	Major Bikeways	28 miles
75 miles	Minor Bikeways	40 miles
74 miles	Local Bikeways	11 miles
<b>218 miles</b>	<b>TOTAL</b>	<b>79 miles</b>

# Recommended Bikeway Network



See Appendix C for the network details.

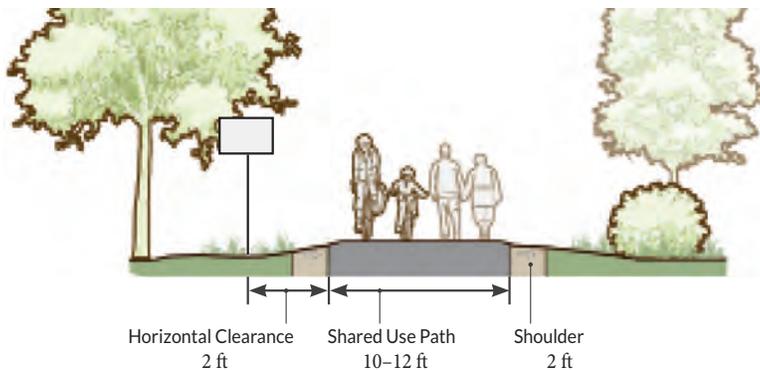
EXISTING AND FUNDED	PROPOSED	
		MAJOR BIKEWAY
		MINOR BIKEWAY
		LOCAL BIKEWAY



# Shared Use Trail (Off-Road)

A shared use trail that is off-road provides a travel area separate from motorized traffic for bicyclists, pedestrians, skaters, wheelchair users, joggers, and other users. Shared use trails can provide a low-stress experience for a variety of users using the network for transportation or recreation.

Off-road trails follow utility corridors, railroad alignments (both active and abandoned), and greenway/stream corridors.



## Width

The geometric design of shared use trails should support the speed and volume of expected user types.

- 10 ft - 12ft width is recommended in most situations and will be adequate for moderate to heavy use.
- A 2 ft shoulder should be provided on each side of the path, kept clear of vertical elements or obstructions.

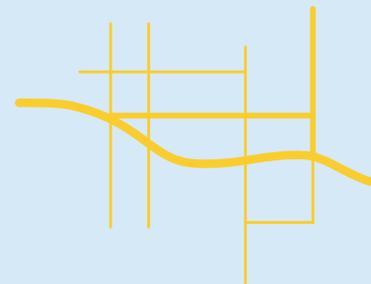
## Application

### Speed and Volume

Paths operating in independent corridors are fully separated from traffic. Facility provision is based on opportunity and connectivity rather than roadway context. In some cases, an independent corridor may offer similar connectivity and access to destinations as a nearby roadway.

### Network

Serves connections independently of the street network. May function as a network alternative road and highway connections.



### Land Use

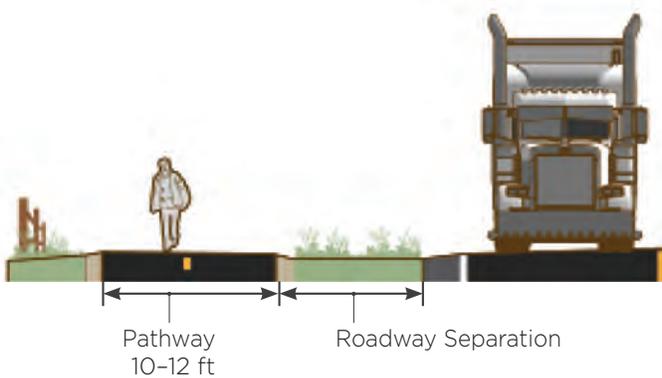
Generally appropriate outside of built-up areas, and also as a corridor connection within urban areas.



# Shared Use Trail (Along the Roadway)

A shared use trail along the roadway is a bidirectional path located immediately adjacent and parallel to a roadway. These trails can offer a high-quality experience for users of all ages and abilities as compared to on-roadway facilities in heavy traffic environments, allow for reduced roadway crossing distances, and maintain rural and small town community character.

A shared use trail along the roadway can encourage bicycling and walking in areas where high-volume and high-speed motor vehicle traffic would otherwise discourage it.



## Roadway Separation

Separation from the roadway should be informed by the speed and configuration of the adjacent roadway and available right-of-way and engineering judgment.

- Preferred minimum separation width is 6.5ft. Minimum separation is 5ft.
- Separation narrower than 5ft is not recommended without the use of a physical barrier.
- Special consideration at intersections and driveways.

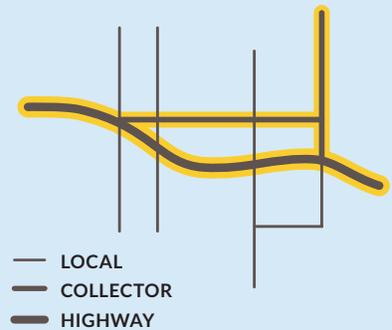
## Application

### Speed and Volume

For use on roads with high volumes, and moderate-to high-speed motor vehicle traffic. Roads with few driveways are preferred to reduce potential conflict points.

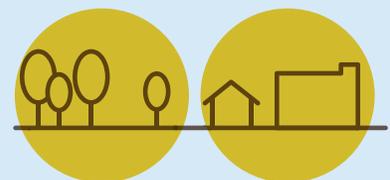
### Network

For use on arterial links on the regional or local biking and walking network.



### Land Use

For use inside of built-up areas to provide a dedicated space for pedestrians and bicyclists.



# Identifying Pedestrian Projects

Similar to the development of the proposed bikeway network, the proposed sidewalk network is the result of extensive public input and review of existing conditions. The proposed sidewalk network aims to provide a safe and comfortable experience for users of all ages and abilities. The approach to developing the pedestrian network intends to concentrate resources in areas where improvements are most needed and where people are most likely to walk.

Full implementation of all missing sidewalk segments across both Fayette and Jessamine counties will take many years. With limited funding available, a focused, prioritized approach is necessary. The 3-step process described to the right was used to identify missing sidewalk segments that reflect areas with the greatest need.

Streets classified as a major arterial, minor arterial, or collector street are given priority in this plan due to their regional context and the increased safety risk these corridors pose to pedestrians (higher traffic volumes with higher speeds).

## PROPOSED MILEAGE SUMMARY

### FAYETTE

71 miles Sidewalk  
32 miles Shared Use Trails

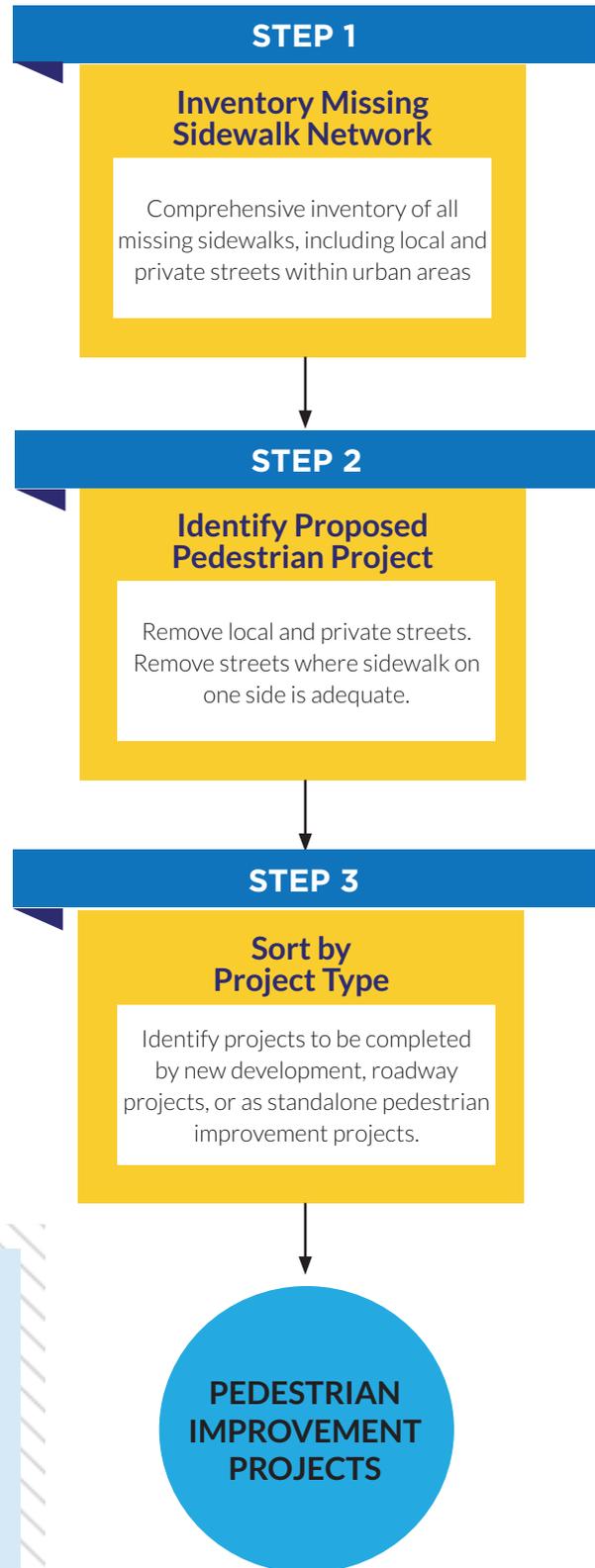
### JESSAMINE

8 miles  
28 miles

**103 miles**

**TOTAL**

**36 miles**



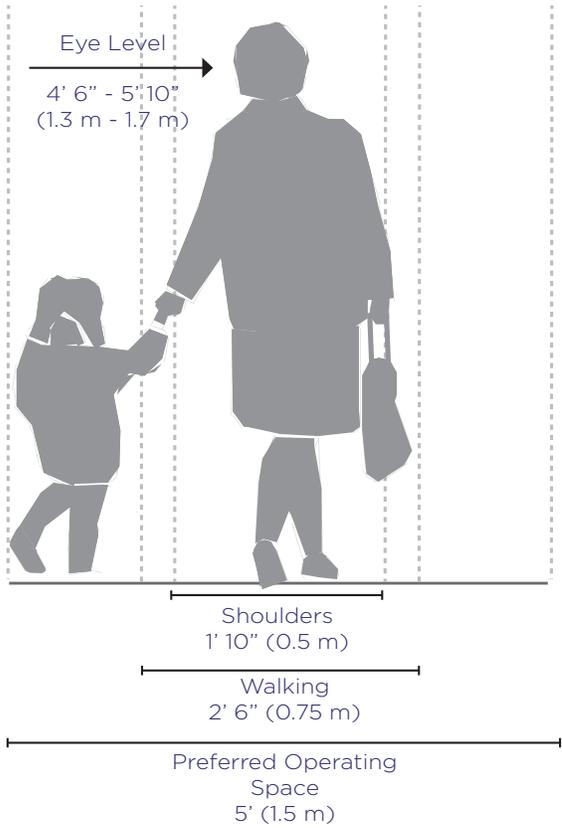
# Designing Streets for All Ages

## Types of Pedestrians

The transportation network should accommodate pedestrians with a variety of needs, abilities, and possible impairments. Age is one major factor that affects pedestrians' physical characteristics, walking speed, and environmental perception. Children have low eye height and walk at slower speeds than adults. Older adults walk more slowly and may require assistant devices to help with their walking stability, sight, and hearing. The table below summarizes common pedestrian characteristics for various age groups.

The Manual on Uniform Traffic Control Devices (MUTCD) recommends a normal walking speed of 3.5 feet per second when calculating the pedestrian clearance interval at traffic signals. The walking speed can drop to 3 feet per second for areas with older populations and persons with mobility impairments. The transportation system should accommodate these users to the greatest extent possible.

AGE	CHARACTERISTICS
<b>0-4</b>	Learning to walk Requires constant adult supervision Developing peripheral vision and depth perception
<b>5-8</b>	Increasing independence, but still requires supervision Poor depth perception
<b>9-13</b>	Susceptible to "darting out" in roadways Insufficient judgment Sense of invulnerability
<b>14-18</b>	Improved awareness of traffic environment Insufficient judgment
<b>19-40</b>	Active, aware of traffic environment
<b>41-65</b>	Slowing of reflexes
<b>65+</b>	Difficulty crossing street Vision loss Difficulty hearing vehicles approaching from behind



Source: AASHTO. *Guide for the Planning, Design, and Operation of Pedestrian Facilities, Exhibit 2-1. 2004.*

# Crossing Treatment Selection

The specific type of treatment at a crossing may range from a simple marked crosswalk to a full traffic signal or grade separated crossing. Before a marked crosswalk is installed, appropriate selection of crossing treatments should be evaluated in an engineering study, which should consider number of lanes, presence of a median, distance from adjacent signalized intersections, pedestrian volumes and delays, average daily traffic (ADT), speed limit, geometry of the location, possible consolidation of crossing points, availability of street lighting, and other appropriate factors.

PEDESTRIAN CROSSING CONTEXTUAL GUIDANCE At unsignalized locations		Local Streets 15-25 mph			Collector Streets 25-30 mph			Arterial Streets 30-45 mph						
		2 lane	3 lane		2 lane with median refuge	3 lane		2 lane with median refuge	3 lane		4 lane with median refuge	5 lane	6 lane	6 lane with median refuge
FACILITY TYPE														
1	Crosswalk Only (high visibility)	✓	✓	EJ	EJ	X	EJ	EJ	X	X	X	X	X	X
2	Crosswalk with warning signage and yield lines	EJ	✓	✓	✓	✓	EJ	EJ	EJ	X	X	X	X	X
3	Active Warning Beacon (RRFB)	X	EJ	✓	✓	✓	✓	✓	✓	X	✓	X	X	X
4	Hybrid Beacon	X	X	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓	✓	✓
5	Full Traffic Signal	X	X	EJ	EJ	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓
6	Grade separation	X	X	EJ	EJ	EJ	X	EJ	EJ	✓	✓	✓	✓	✓

LEGEND	
Most Desirable	✓
Engineering Judgement	EJ
Not Recommended	X

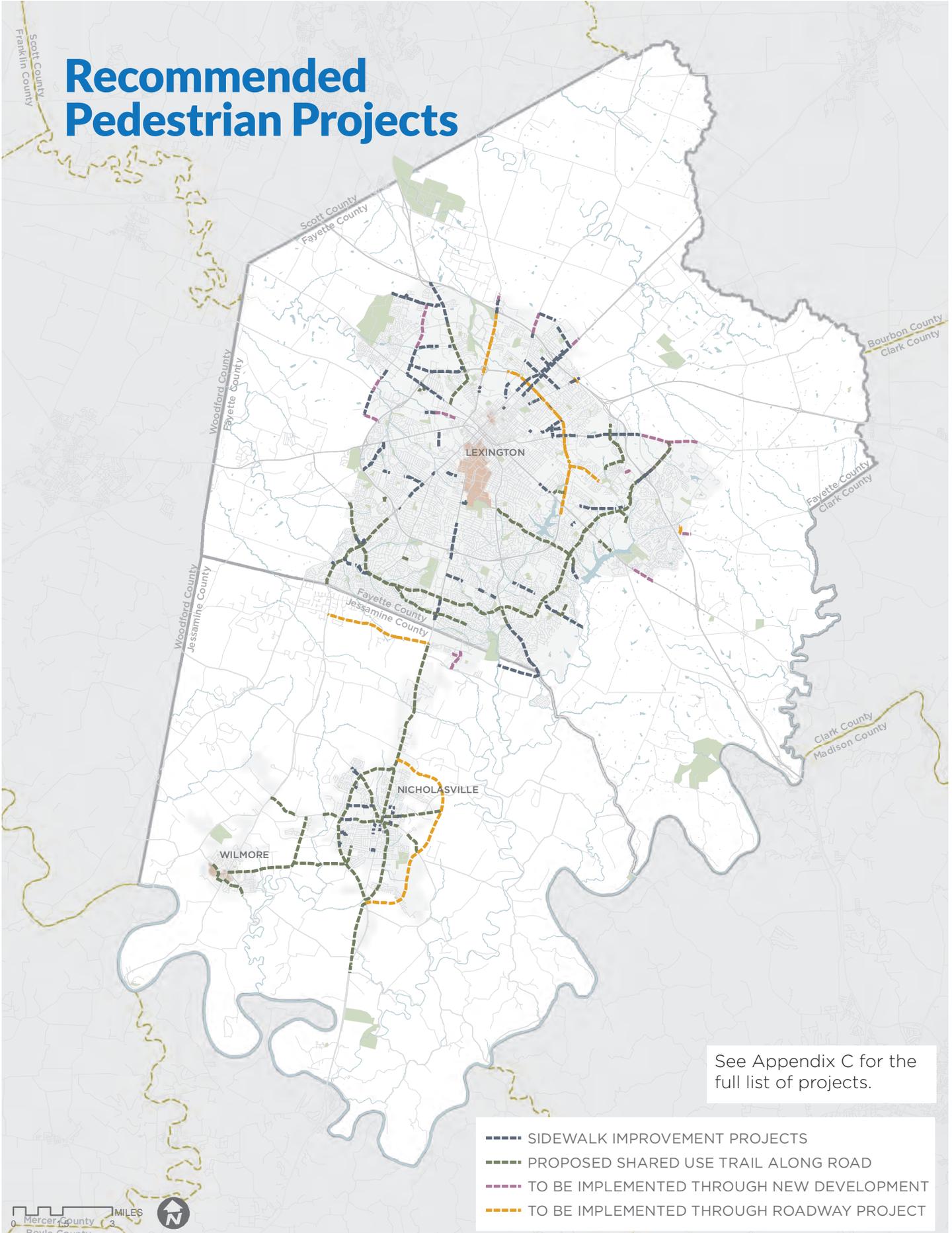


## Midblock Crossings

Midblock crossings can provide legal crossings at locations where pedestrians want to travel, and can be safer than crossings at intersections because traffic is only moving in two directions. Locations where midblock crossings should be considered include:

- Long blocks (longer than 600 ft) with destinations on both sides of the street;
- Locations with heavy pedestrian traffic, such as schools or shopping centers; and
- Midblock transit stops, where transit riders must cross the street on one leg of their journey.

# Recommended Pedestrian Projects



See Appendix C for the full list of projects.

- SIDEWALK IMPROVEMENT PROJECTS
- PROPOSED SHARED USE TRAIL ALONG ROAD
- TO BE IMPLEMENTED THROUGH NEW DEVELOPMENT
- TO BE IMPLEMENTED THROUGH ROADWAY PROJECT



# Complete Street Projects

A complete street is a public or private street that is designed with street-fronting land uses, slow travel speeds, and pedestrian-oriented design features. Several of the complete street recommendations on page 5-18 are often a portion of a larger, county road or State-owned highway and may need to balance competing needs and objectives.

The six elements described to the right highlight key principals of a complete street and page 5-17 provides a general overview of supporting policies.



## Flexible Design

Complete Streets streets can be constrained spaces, with more demand for roadway design features than there is typically space to accommodate. Decisions should be informed by local context and reflect the community vision.



## Multimodal Design

Multimodal networks provide mobility Comacce all users and modes of travel. Complete streets become connections between modes, as motorists become pedestrians and pedestrians become transit users.



## Placemaking

Complete streets can strengthen community identity by creating enhanced aesthetics, spaces for civic activities, and creating conditions to attract and retain business. Successful places foster improved community cohesion and participation in public life.



## Incrementalism

Small projects can make a big difference. Opportunities such as roadway resurfacing or enhancements associated with individual development projects can be the first step in a gradual transformation. Corridor studies can also help the community set a vision and identify feasible alternatives.



## Environmental Sustainability

Street trees and other vegetation can support a pleasant environment and are a key component of stormwater.

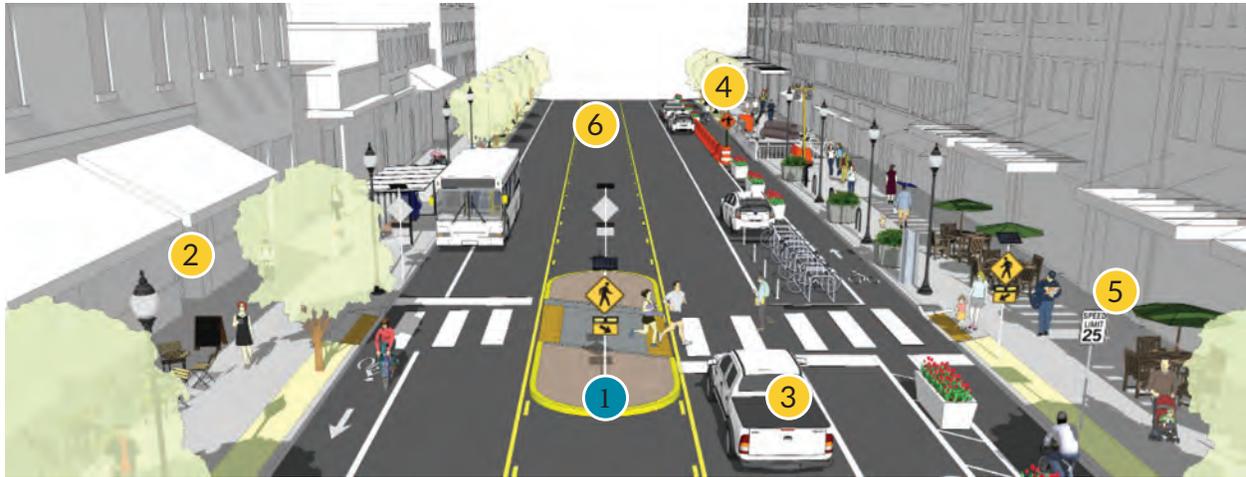


## Compactness

No one mode or use should dominate the street. Providing compact, well delineated zones for each user to create a sense of belonging.

# Policies to Support Complete Streets

There are many elements that make a street complete and it's not always a one size fits all approach. Rather, complete street principals are context sensitive and require engineering judgment. However, the elements described below highlight key complete street elements that should be considered along recommended complete street projects.



## 1 Adopt a Vision Zero Strategy

Vision Zero is the concept that no loss of life is acceptable on our roadways. Jurisdictions across the nation and across the world are adopting Vision Zero policies to eliminate preventable traffic deaths.

## 2 Update Land use and Development Codes

Local codes that encourage or require short block lengths, mixed use developments with street-fronting retail, and a connected network of streets with high-quality sidewalks form the bedrock of livable communities.

## 3 Rethink Parking Requirements

Parking policy reform includes better management of existing parking, pricing that reflects demand, lowering parking requirements for commercial and residential development, and bike parking minimums.

## 4 Create Safe Walkways and Bikeways in Construction Zones

Walkways in construction zones should be routed on the same side of the street, run on or parallel to the closed sidewalk, and must comply with the Americans with Disabilities Act and the Manual on Uniform Traffic Control Devices.

## 5 Establish Speed Reduction Policies

Traffic speed disproportionately threatens people walking and biking so speed should be managed through speed limit enforcement and traffic calming where appropriate.

## 6 Adopt a Complete Street Policy

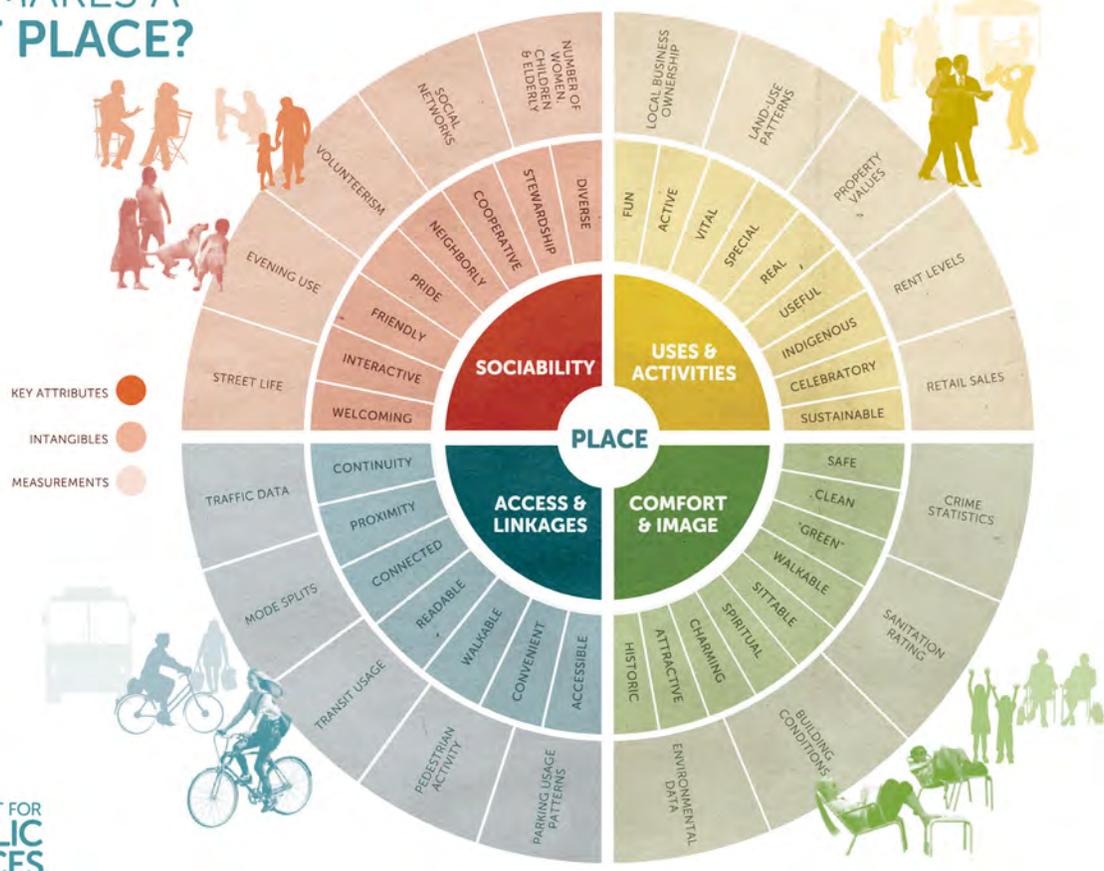
A complete street policy asserts that all new street projects should accommodate all people who use the street, whether traveling on foot, bike, transit, or car.

# Identifying Potential Complete Street Projects

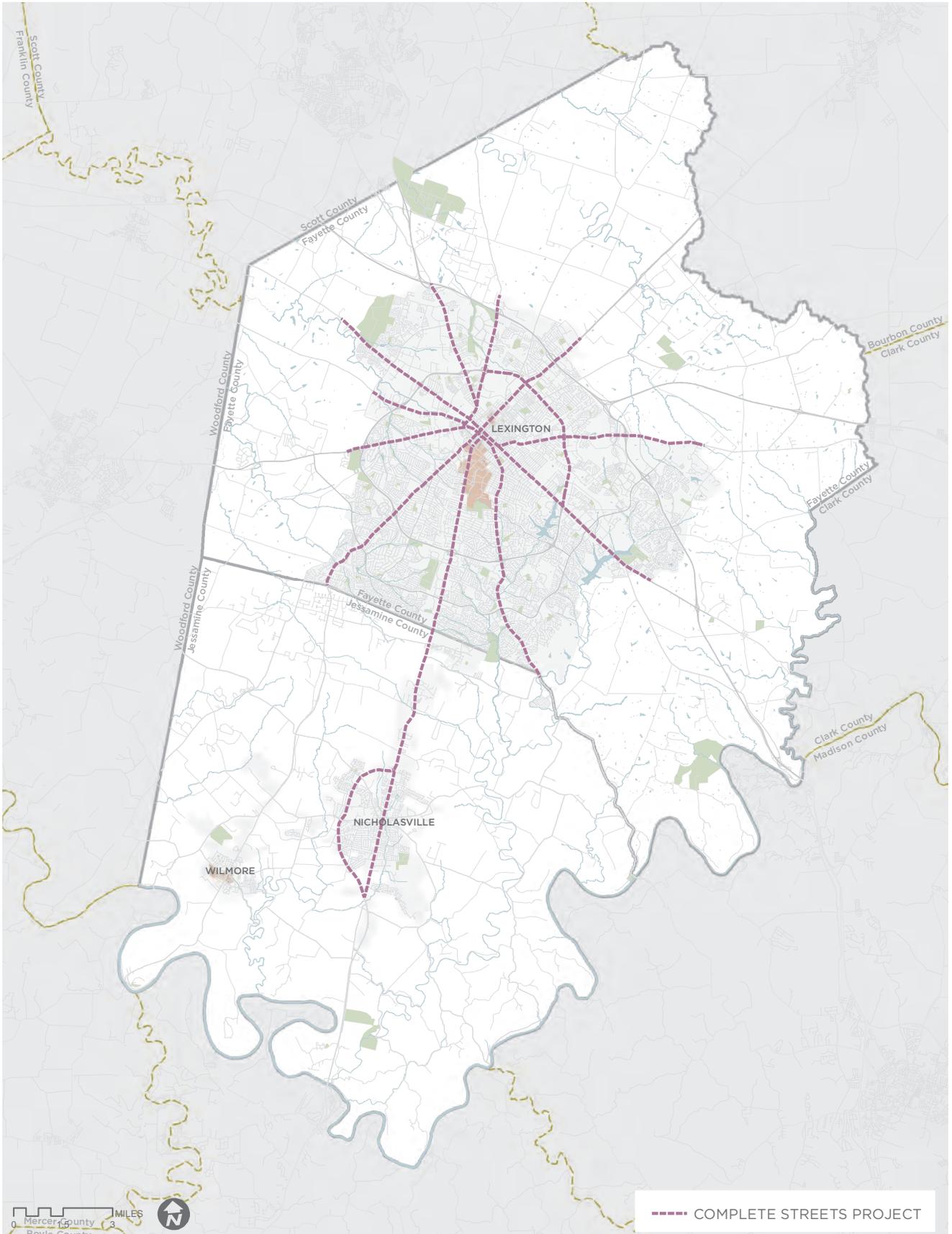
The Complete Street projects identified on page 5-19 were primarily selected because their existing road design currently serves only high-speed, high-volume traffic. However, fixing their design to accommodate other modes adequately will require a high investment of funding to retrofit. Many of these projects can benefit from arterial-level traffic calming (such as refuge islands, lane reductions, bicycle facilities, sidewalks, transit stop safety features and accommodations, placemaking, landscaping, lighting, etc.)

While there are many considerations that factor into the design of a Complete Street, placemaking is an important consideration to facilitate a livable design approach that fosters social interaction and improves the community's quality of life.

## WHAT MAKES A GREAT PLACE?



Project for Public Spaces has developed several tools to support placemaking including The Place Diagram that helps communities understand and identify key attributes of a place. Source: [http://www.reference/what\\_is\\_placemaking/](http://www.reference/what_is_placemaking/).



Bikeway Network

Trails & Pedestrian Network

Complete Streets

Intersections

# Intersection Improvements

Intersections are an important part of the bicycle and pedestrian network. Intersections have high potential conflict between pedestrians, bicyclists, and vehicles. However, intersections can be designed to help reduce these conflicts, making them safer for all users. Based on input from the public and the existing conditions analyses, several proposed intersection improvement projects have been identified in Fayette County and Jessamine County. These locations are shown on the maps on page 5-22 and 5-23.

The following guidelines should be considered when designing intersection improvements for pedestrians and bicyclists:

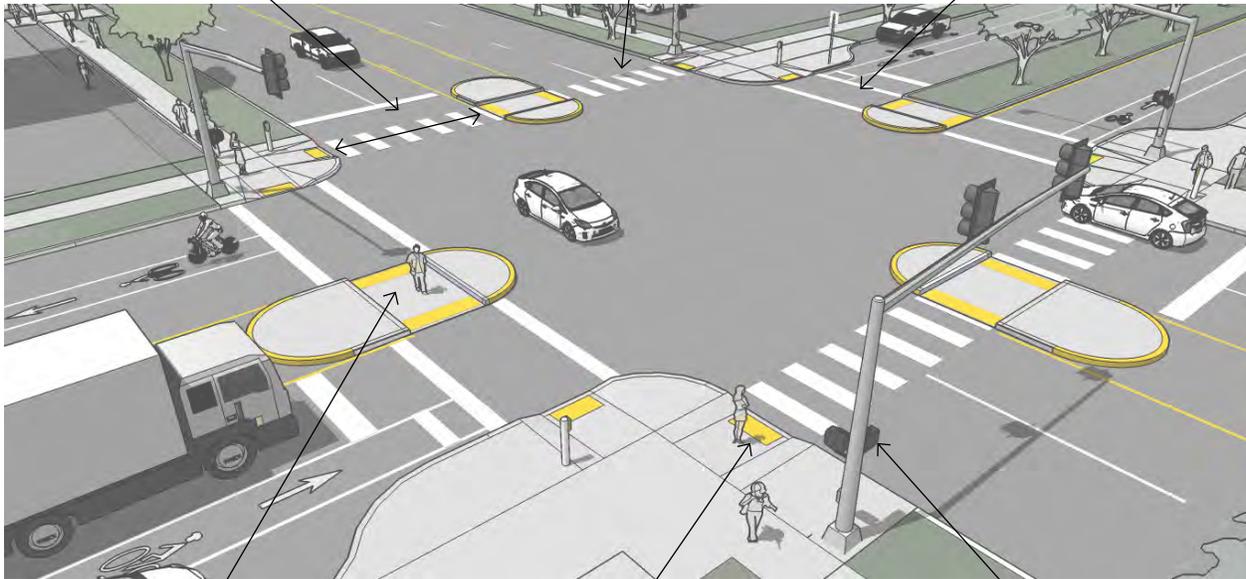
## PEDESTRIAN INTERSECTION DESIGN GUIDELINES

The diagram below highlights best practices for pedestrian facility design at intersections.

The crosswalk should be located to align as closely as possible with the through pedestrian zone of the sidewalk corridor.

Continental markings provide additional visibility.

Parallel markings are the most basic crosswalk marking type.



Median refuge islands increase visibility and allow pedestrians to cross one direction of traffic at a time.

ADA compliant curb ramps allow all users to transition from the street to a sidewalk. Perpendicular curb ramps are preferred to diagonal curb ramps.

The use of a Leading Pedestrian Interval (LPI) to provide additional traffic-protected crossing time to pedestrians should be considered.

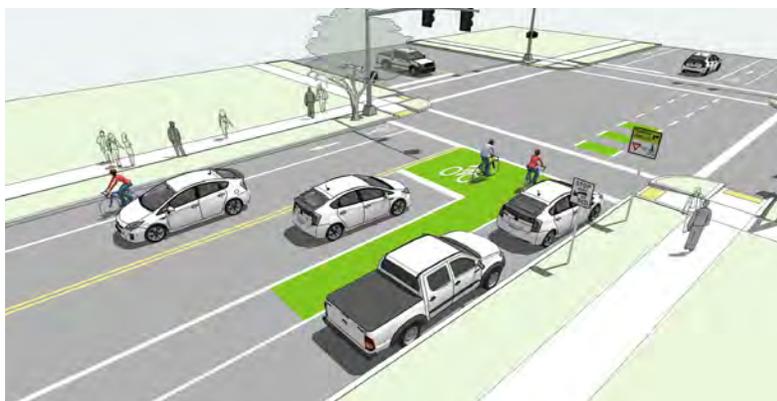
## BICYCLE INTERSECTION DESIGN GUIDELINES

The design of bicycle facilities is dependent on the surrounding context and environment. Examples of best practice bikeway intersections treatments and their typical applications are provided below.



### Intersection Crossing Markings

Bicycle pavement markings through intersections guide bicycles on a safe and direct path through the intersection and provide a clear boundary between the paths of through bicyclists and vehicles in the adjacent lane. Typical applications include streets with conventional, buffered, or separated bike lanes, and streets with high volumes of adjacent traffic.



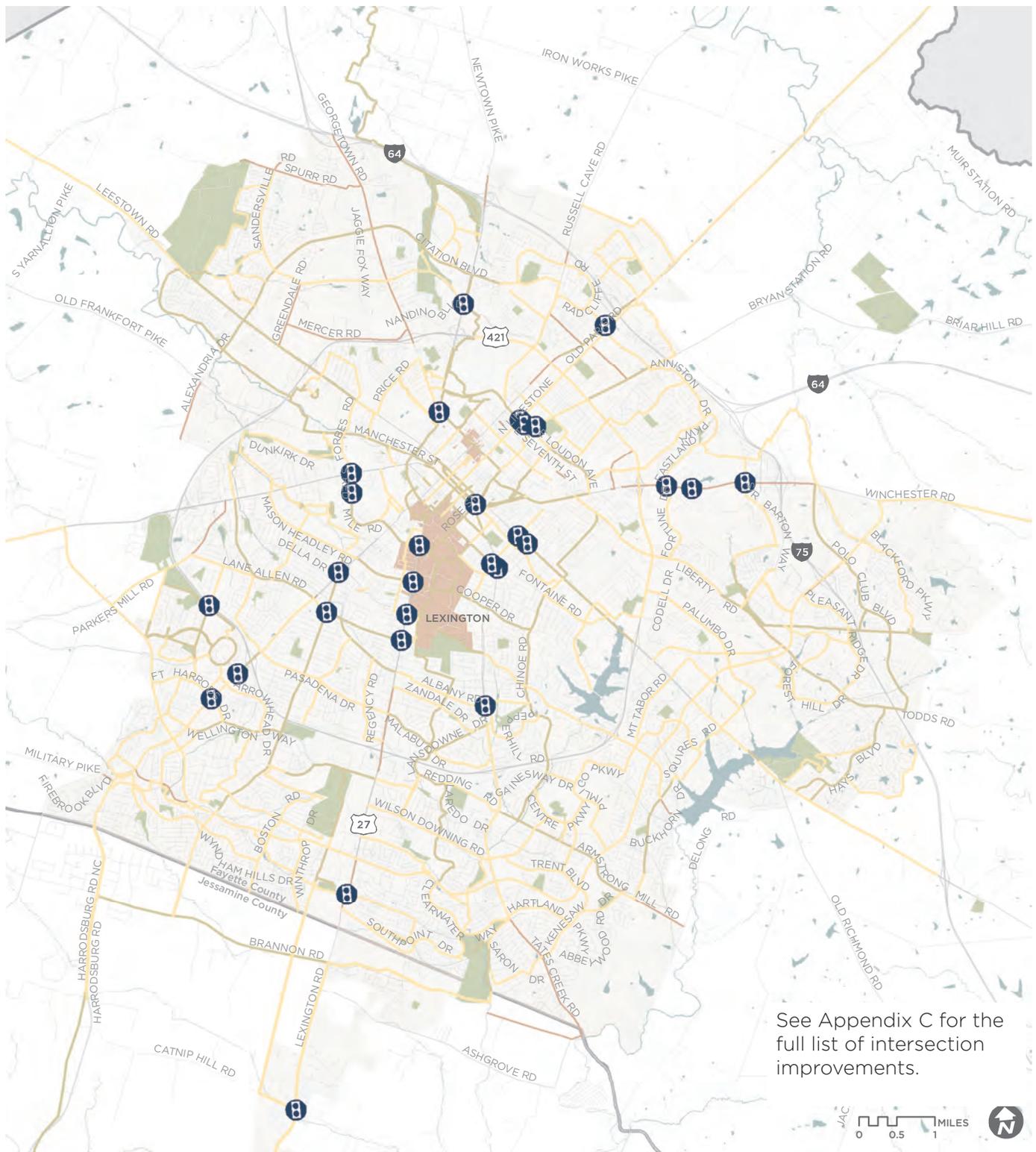
### Bike Box

A bike box is a designated area located at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible space to get in front of queuing traffic during the red signal phase. Motor vehicles must queue behind the white stop line are the rear of the bike box. On a green signal, all bicyclists can quickly clear the intersection. Typical applications include at signalized intersections with high bicycle and vehicle volumes.



### Protected Intersection

A protected intersection maintains physical separation within the intersection to define the turning paths of motor vehicles, slow vehicle turning speed, and offer a comfortable place for people bicycling to wait at a red signal. Typical applications include streets with separated bikeways, and where two separated bikeways intersect, and areas where it is desirable to create a safety island for pedestrians.



See Appendix C for the full list of intersection improvements.



-  INTERSECTION IMPROVEMENT
-  PROPOSED SIDEWALK NETWORK
-  PROPOSED BIKEWAY NETWORK
-  EXISTING AND FUNDED BIKEWAY NETWORK



## INTERSECTION IMPROVEMENTS Fayette County



See Appendix C for the full list of intersection improvements.



## INTERSECTION IMPROVEMENTS Jessamine County

-  INTERSECTION IMPROVEMENTS
-  PROPOSED SIDEWALK NETWORK
-  PROPOSED BIKEWAY NETWORK
-  EXISTING AND FUNDED BIKEWAY NETWORK

# Chapter 6: Identifying Priorities

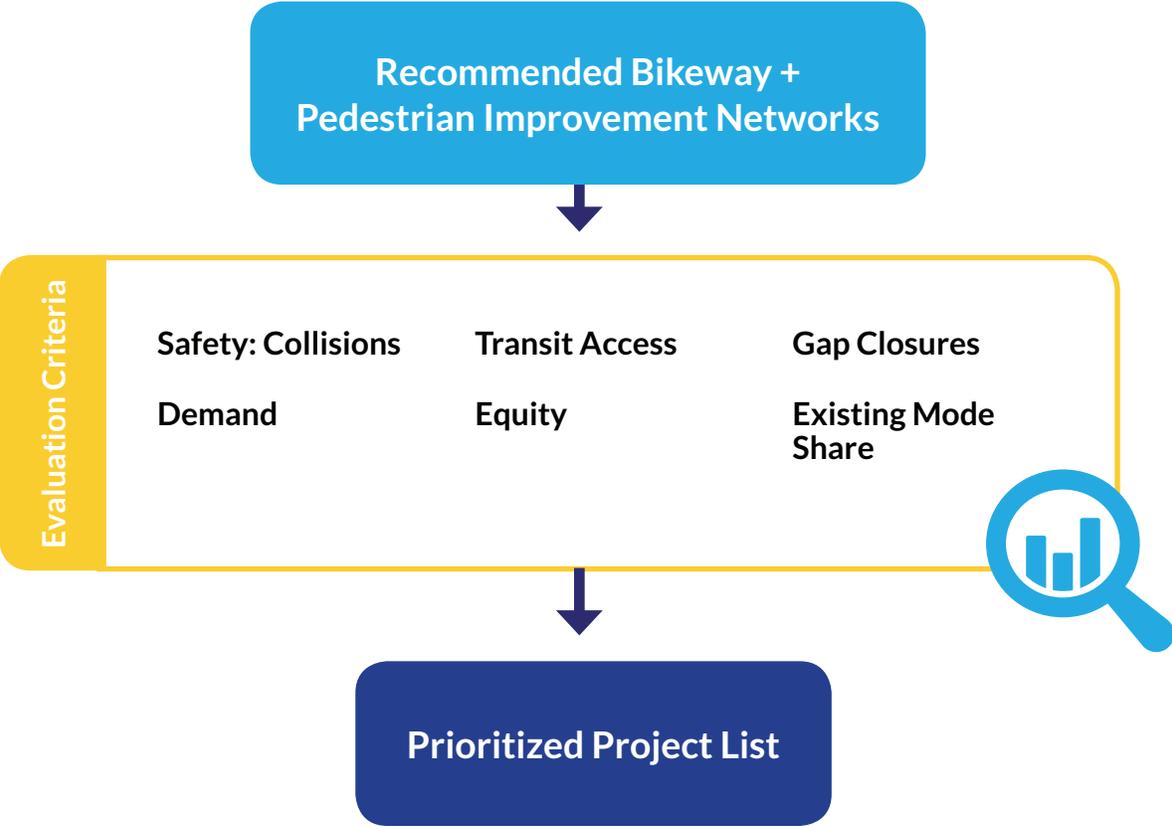
Data driven prioritization and  
strategic project development.



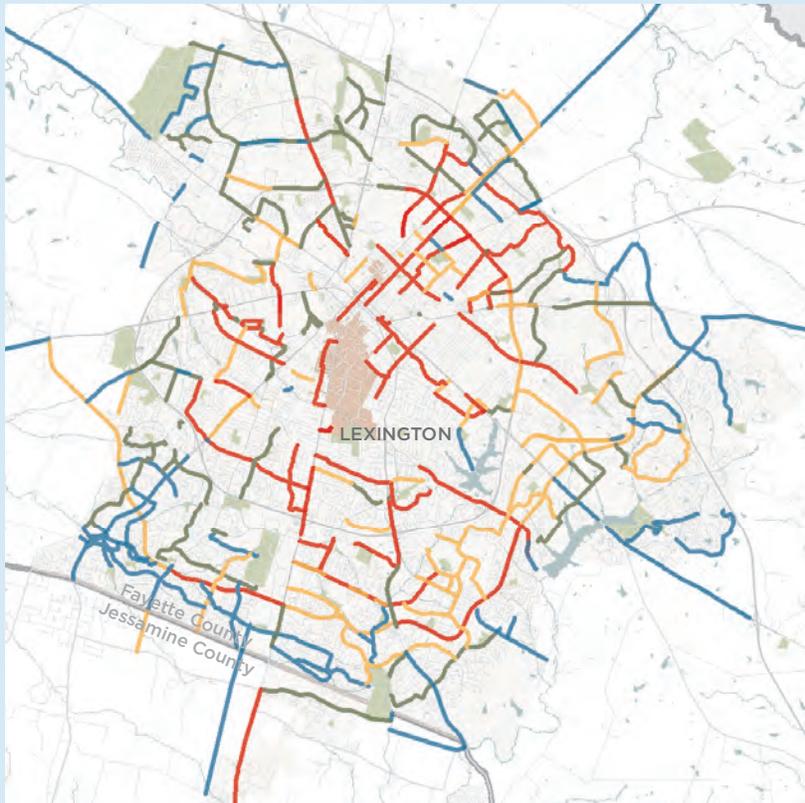
# Prioritization Methodology

This plan is designed to serve as a short-term call to action document that identifies projects located in areas with the highest demand and the greatest need. Full implementation of the recommended bikeways and pedestrian improvements will take many years and require a significant amount of investment.

In order to identify high priority projects, it was essential to develop a process for selecting an equitable and realistic prioritization methodology in order to develop short-term priority projects (see Chapter 7). The specific evaluation criteria are highlighted in the graphic below. The results, shown on page 6-3, groups projects into four priority tiers based on their score alone.



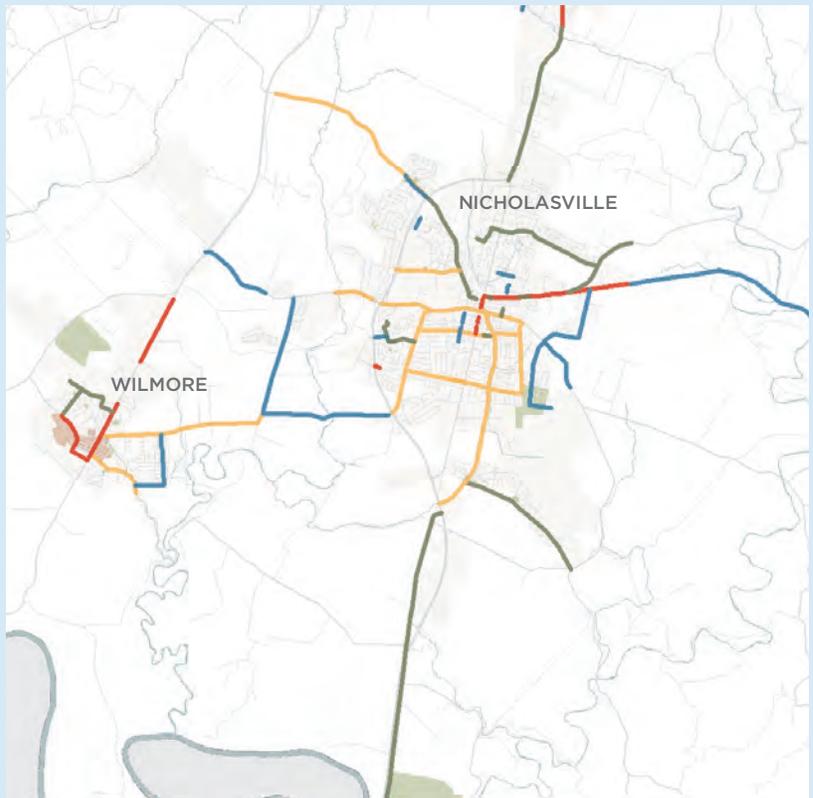
# Prioritization Results



PRIORITY TIERS

- TIER 1
- TIER 2
- TIER 3
- TIER 4

Fayette County

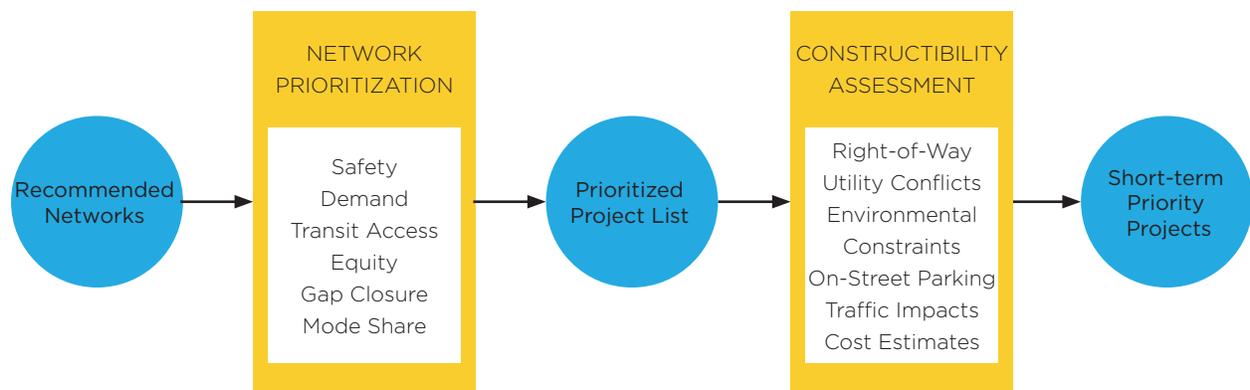


Jessamine County

# Developing a Strategy

Implementation of the Bicycle and Pedestrian Master Plan will require leadership and dedication to facility and program development on the part of a variety of agencies. Equally critical, and perhaps more challenging, will be securing a dedicated annual funding source. This can be done through strategic collaboration with regional and state agencies, the private sector, non-profit organizations, and Fayette County and Jessamine County residents. The graphic below highlights the project list development process.

The maps to the right and following pages sort projects into short-term, mid-term, and long-term priorities for both counties. Key projects within the short-term list identified in both counties are listed below.

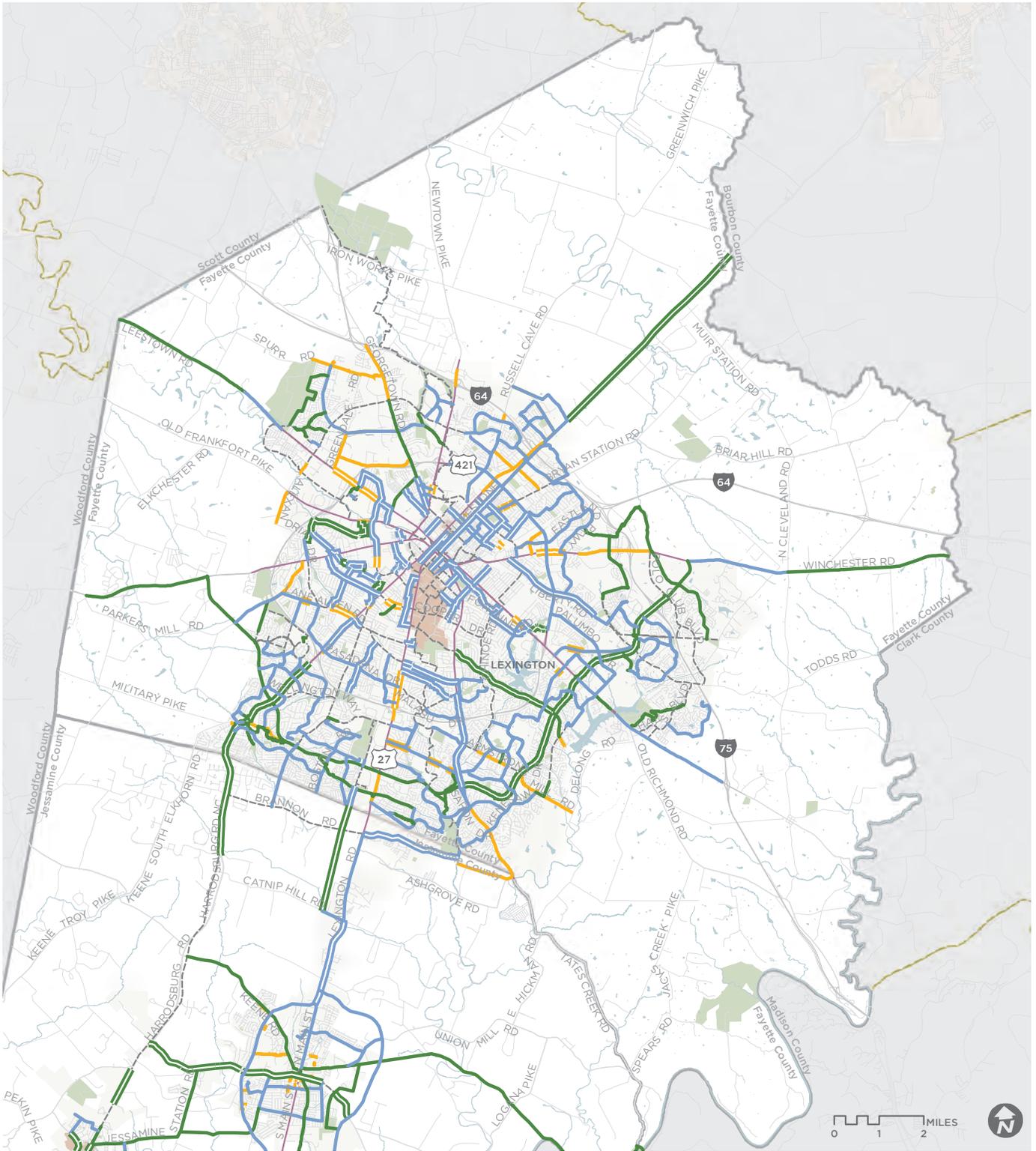


## Fayette County Key Projects

- **North Limestone Bike/Ped Improvements** from Vine Street to New Circle Rd.
- **Town Branch Commons Corridor Access Points** (Martin Luther King Boulevard)
- **Tates Creek Road Sidewalk Gaps and Shared Use Trail**
- **Alumni Drive Shared Use Trail** from Tates Creek Road to Squires Trail
- **Old Vine St/ Central Ave Bicycle Boulevard**
- **Liberty Road Shared Use Trail** from Liberty Elementary to Winchester Rd.

## Jessamine County Key Projects

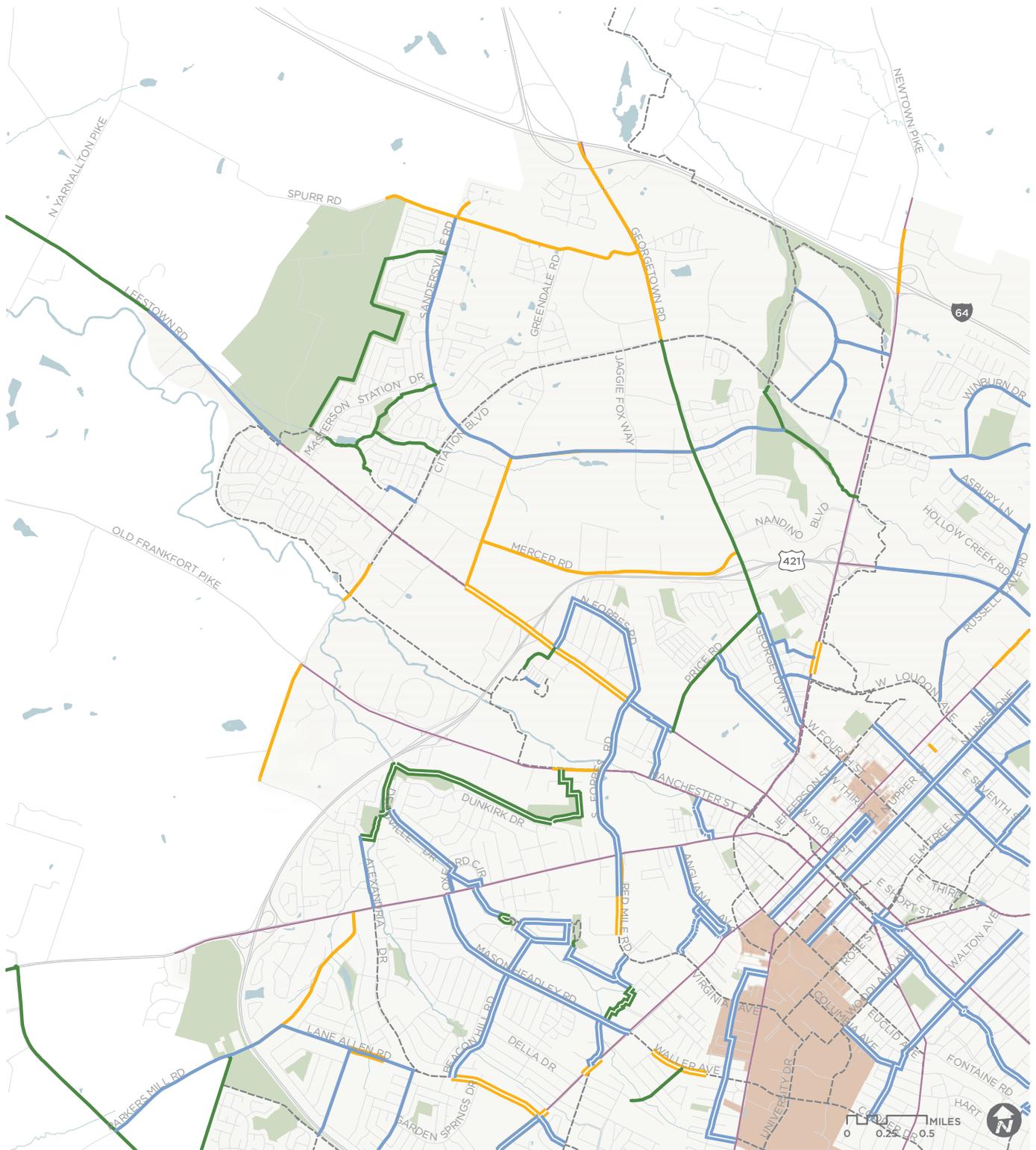
- **Lexington Road (29) Shared Use Trail Gap** from Wilmore “Y” (US68) to Veterans Drive
- **US68 Road Shared Use Trail** from Old Higbee Mill Road (Fayette County) to Golf Club Drive
- **East Brannon Road Shared Use Trail** from Nicholasville Road to Grey Oak Lane
- **Nicholasville Road (Hwy 27) Shared Use Trail** along the utility corridor from existing trail (Fayette County near Waveland Museum Land) to Catnip Hill Road/Vince Road
- **Wimore Road (29) Shared Use Trail** from Harrodsburg Rd to Downtown Nicholasville



## NETWORK PRIORITIES Fayette County

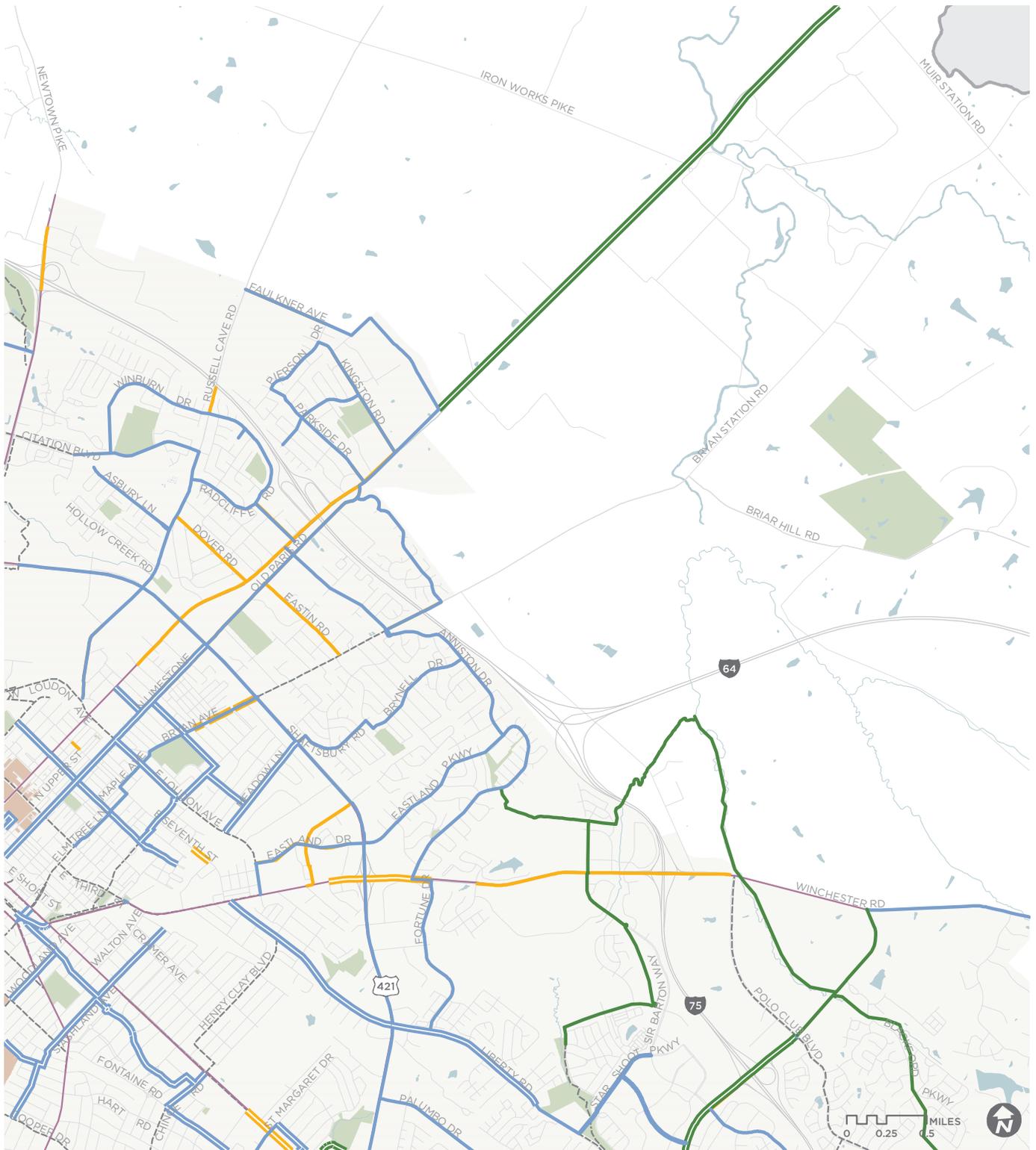
- | SHORT-TERM | MID- AND LONG-TERM |                                    |
|------------|--------------------|------------------------------------|
|            |                    | BIKWAY PROJECT                     |
|            |                    | SHARED USE TRAIL PROJECT           |
|            |                    | PEDESTRIAN IMPROVEMENT PROJECT     |
|            |                    | COMPLETE STREET PROJECT            |
|            |                    | EXISTING AND FUNDED BIKWAY NETWORK |

More detailed views of Lexington are presented on the following pages: Northwest quadrant (page 6), Northeast quadrant (page 7), Southwest quadrant (page 8), and Southeast quadrant (page 9).



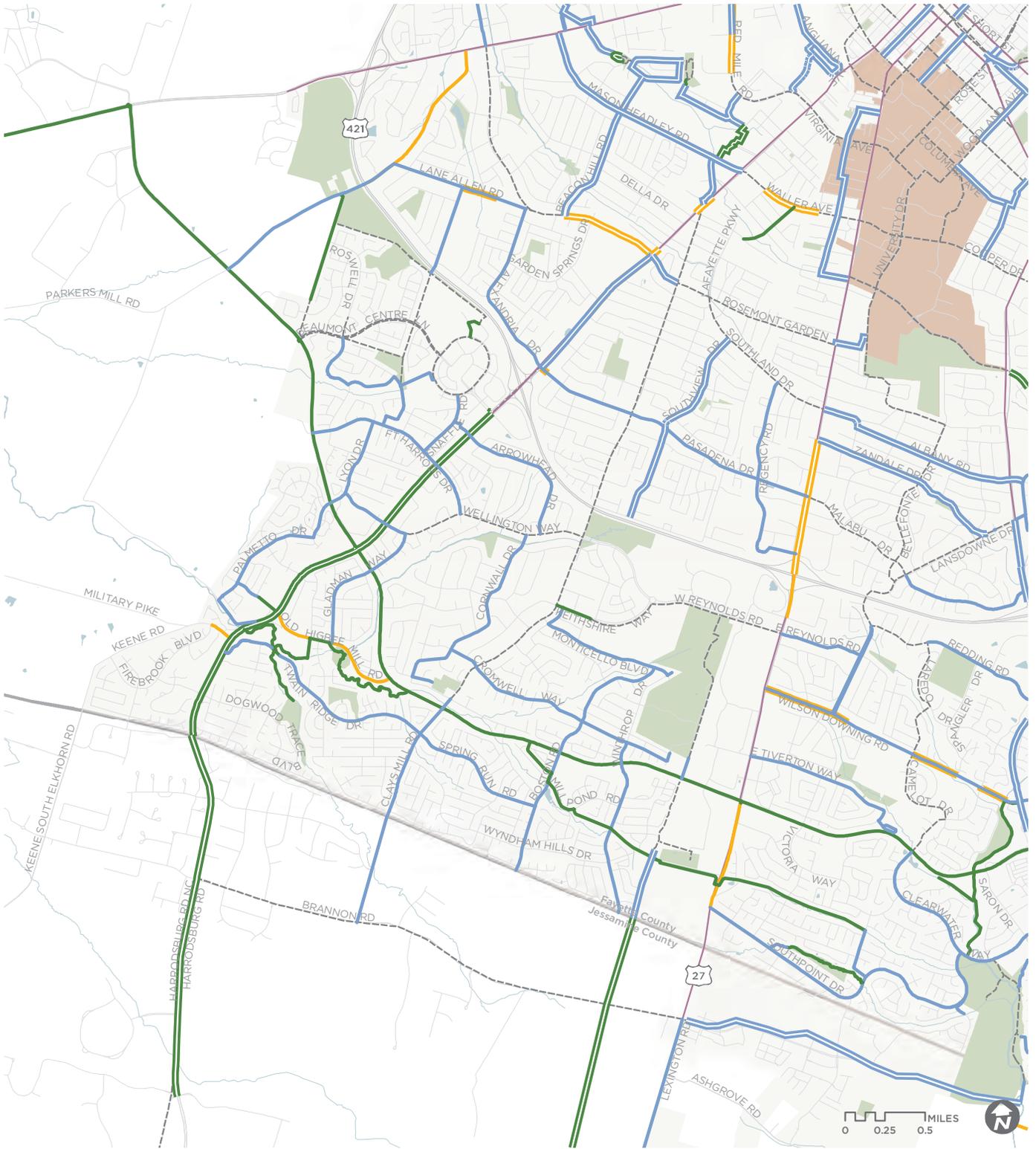
## NETWORK PRIORITIES Northwest Lexington

- | SHORT-TERM   | MID- AND LONG-TERM  |                                    |
|--|---|------------------------------------|
|  |  | BIKWAY PROJECT                     |
|  |  | SHARED USE TRAIL PROJECT           |
|  |  | PEDESTRIAN IMPROVEMENT PROJECT     |
|  |  | COMPLETE STREET PROJECT            |
|  |  | EXISTING AND FUNDED BIKWAY NETWORK |



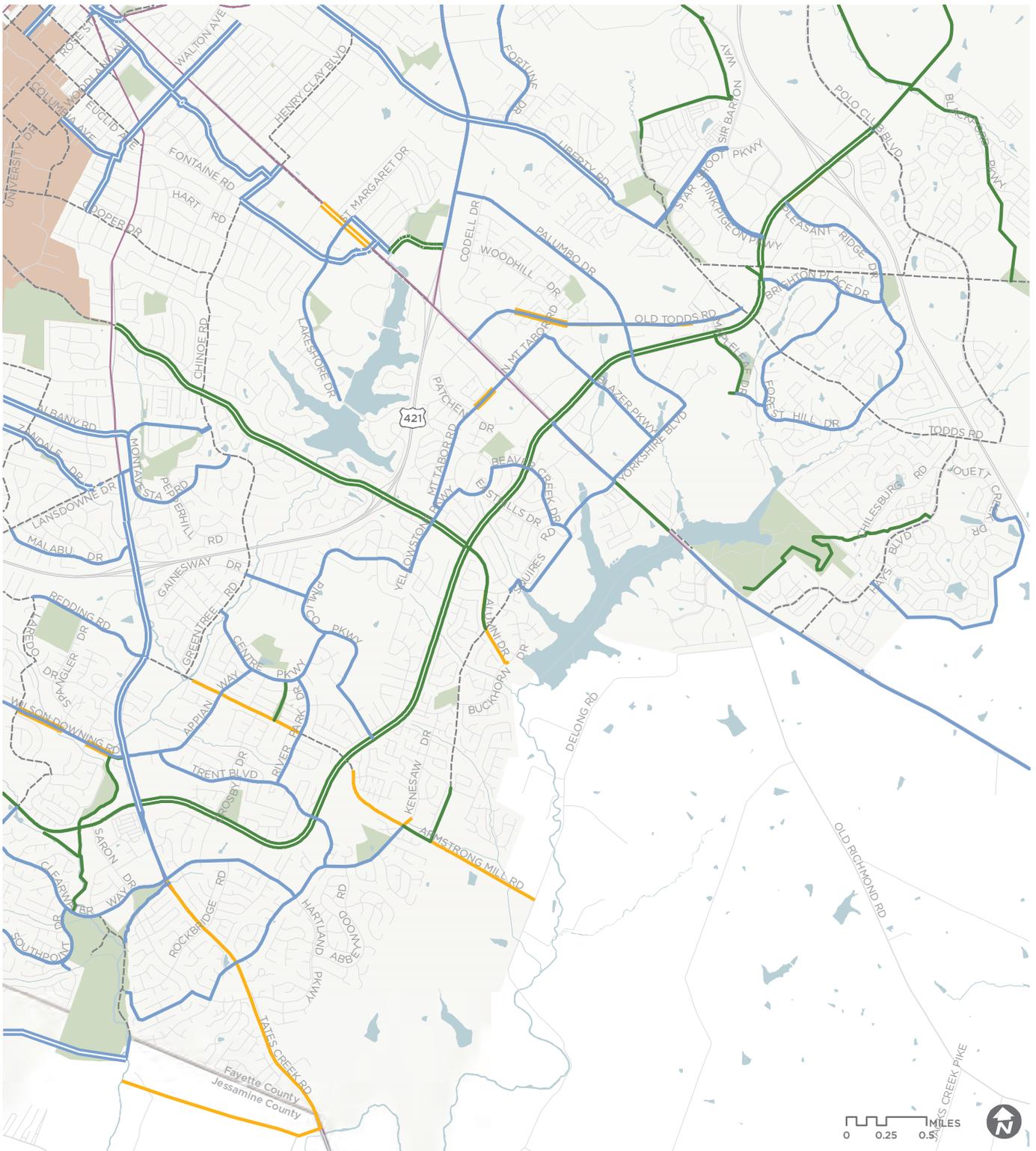
## NETWORK PRIORITIES Northeast Lexington

- | SHORT-TERM | MID- AND LONG-TERM |                                    |
|------------|--------------------|------------------------------------|
|            |                    | BIKWAY PROJECT                     |
|            |                    | SHARED USE TRAIL PROJECT           |
|            |                    | PEDESTRIAN IMPROVEMENT PROJECT     |
|            |                    | COMPLETE STREET PROJECT            |
|            |                    | EXISTING AND FUNDED BIKWAY NETWORK |



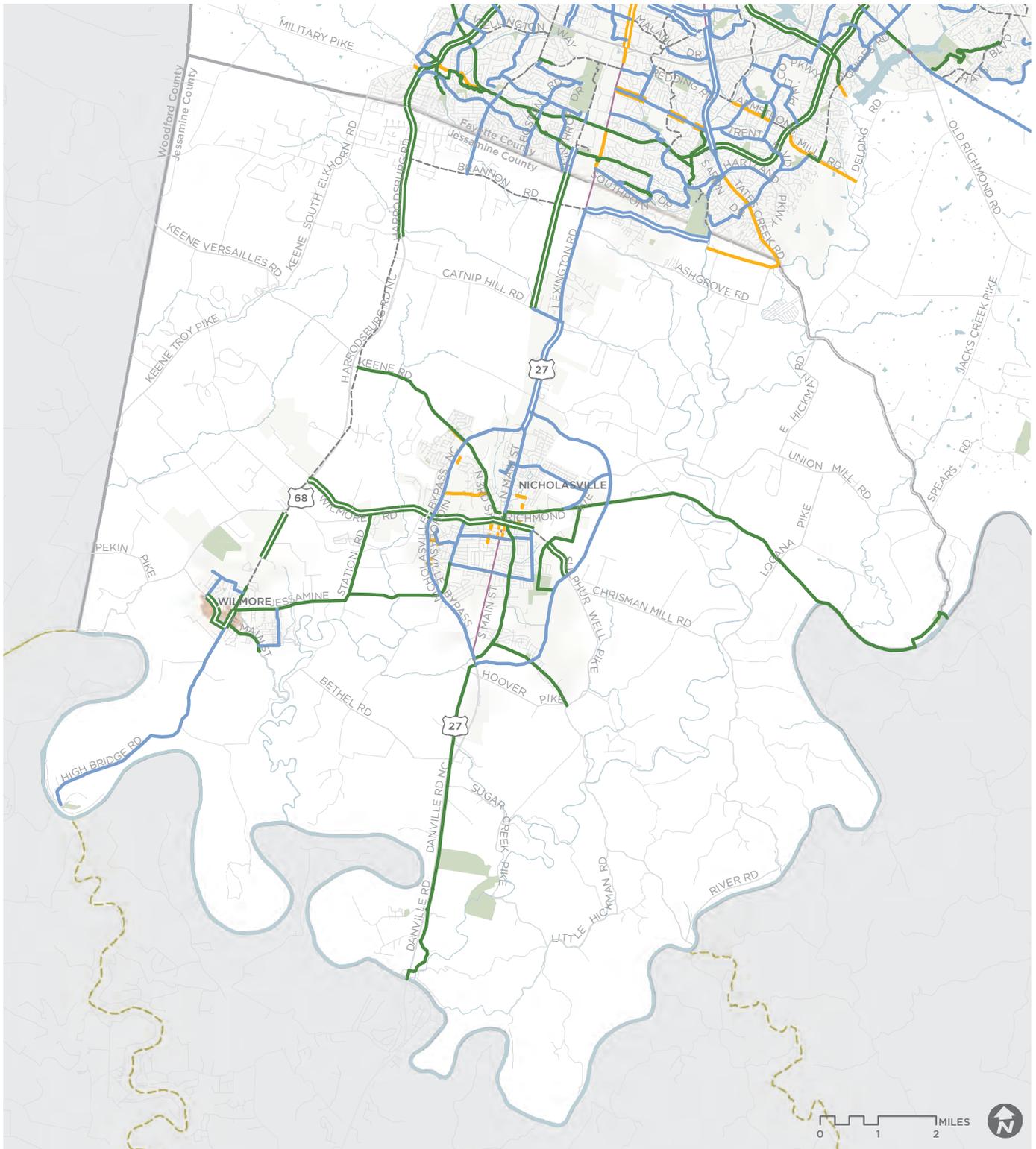
## NETWORK PRIORITIES Southwest Lexington

- | SHORT-TERM | MID- AND LONG-TERM |                                    |
|------------|--------------------|------------------------------------|
|            |                    | BIKWAY PROJECT                     |
|            |                    | SHARED USE TRAIL PROJECT           |
|            |                    | PEDESTRIAN IMPROVEMENT PROJECT     |
|            |                    | COMPLETE STREET PROJECT            |
|            |                    | EXISTING AND FUNDED BIKWAY NETWORK |



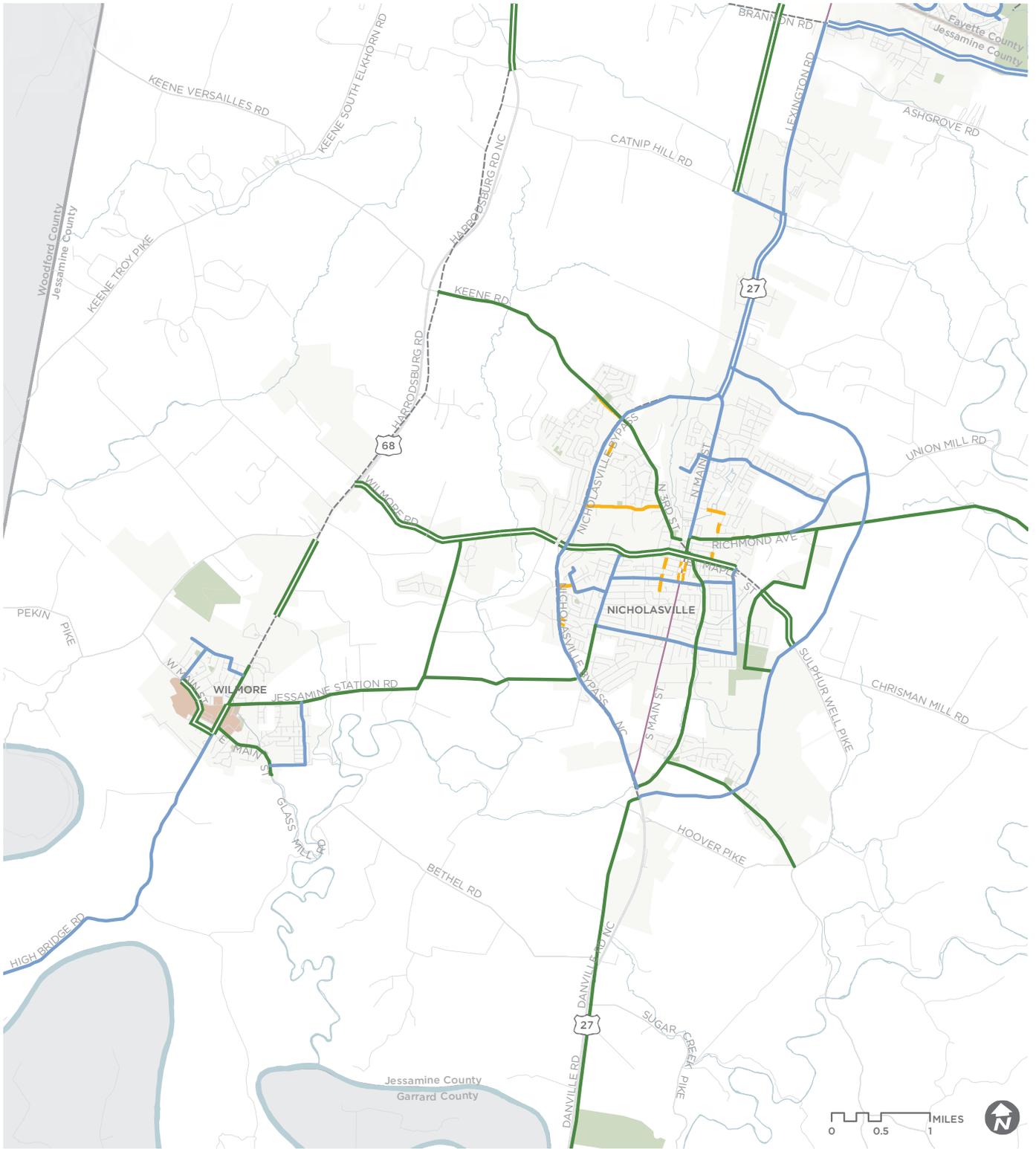
## NETWORK PRIORITIES Southeast Lexington

- | SHORT-TERM | MID- AND LONG-TERM |                                    |
|------------|--------------------|------------------------------------|
|            |                    | BIKWAY PROJECT                     |
|            |                    | SHARED USE TRAIL PROJECT           |
|            |                    | PEDESTRIAN IMPROVEMENT PROJECT     |
|            |                    | COMPLETE STREET PROJECT            |
|            |                    | EXISTING AND FUNDED BIKWAY NETWORK |



## NETWORK PRIORITIES Jessamine County

- | SHORT-TERM | MID- AND LONG-TERM |                                    |
|------------|--------------------|------------------------------------|
|            |                    | BIKWAY PROJECT                     |
|            |                    | SHARED USE TRAIL PROJECT           |
|            |                    | PEDESTRIAN IMPROVEMENT PROJECT     |
|            |                    |                                    |
|            |                    | EXISTING AND FUNDED BIKWAY NETWORK |



## NETWORK PRIORITIES

### Wilmore and Nicholasville

- | SHORT-TERM | MID- AND LONG-TERM |                                   |
|------------|--------------------|-----------------------------------|
|            |                    | BIWAY PROJECT                     |
|            |                    | SHARED USE TRAIL PROJECT          |
|            |                    | PEDESTRIAN IMPROVEMENT PROJECT    |
|            |                    | COMPLETE STREET PROJECT           |
|            |                    | EXISTING AND FUNDED BIWAY NETWORK |

# Cost Estimate Summary

Typical unit cost estimates were developed for the bicycle and pedestrian improvement projects. Estimates include construction, design, right-of-way, and utilities where applicable, and assumes a two-way separated bikeway.

Unit cost estimates are detailed in the table on the following page. Construction costs were estimated based on recent capital improvement project costs and national unit prices. Additional costs were extrapolated by percentage:

- Design = 15%
- Right-of-Way = 50%
- Utilities = 10%
- Construction Administration = 12%

These estimates are for planning purposes only. Detailed costing will be needed as part of the implementation of each individual project during the project development and design phase.



Sidewalk construction to fill gaps in the pedestrian network on West Loudon Avenue. Source: Lexington Area MPO.

## Behind the Numbers

### Bikeway Cost Estimates

The cost estimates shown include design, right-of-way, utilities, construction, and construction administration. Each individual bikeway segment cost will vary due to several elements including, but not limited to, existing pavement condition, pavement type, drainage basin, existing and proposed signals, and the details of bikeway design including elements like traffic calming for bike boulevards and vertical separation for separated bikeways.

### Sidewalk Cost Estimates

The estimated unit costs for sidewalks include construction, design, construction administration, and a 20% contingency, assuming that projects will be within the public right-of-way with only minor utility impacts. These planning-level cost estimates do not account for right-of-way acquisitions or significant drainage improvements.

## Planning Level Cost Estimates Per Linear Foot by Facility Type

	CONSTRUCTION	DESIGN	RIGHT-OF-WAY	UTILITIES	CONSTRUCTION ADMINISTRATION	20% CONTINGENCY	MAINTENANCE	TOTAL COST PER
<b>OFF-ROAD GREENWAY</b>	\$247.00	\$37.05	\$123.50	\$24.70	\$29.64	56.81	5%	\$541.79
<b>ON-ROAD GREENWAY</b>	\$144.00	\$21.60	\$72.00	\$14.40	\$17.28	\$33.12	5%	\$315.86
<b>BIKE BOULEVARD (STRIPING AND SPEED CONTROL)</b>	\$28.41	\$4.26	--	\$2.84	\$3.41	\$6.53	3.5%	\$46.82
<b>BUFFERED OR STRIPED BIKE LANES WITH GREEN MARKINGS</b>	\$10.00	\$1.50	--	--	\$1.20	\$2.30	2%	\$15.25
<b>STRIPED BIKE LANE</b>	\$5.00	\$0.75	--	--	\$0.60	\$1.15	3.5%	\$7.72
<b>NEIGHBORWAY STRIPING</b>	\$2.00	\$0.30	--	--	\$0.24	\$0.46	3.5%	\$3.09
<b>RURAL BIKE ROUTE</b>	\$1.00	\$0.15	--	--	\$0.12	\$0.23	--	\$1.50
<b>SIDEWALK</b>	\$50.00	\$7.50	--	--	\$6.00	\$11.50	3.5%	\$76.91

# Chapter 7: Making it Happen

Funding strategies and key action steps to  
implement the recommendations in this plan.



# How Do we Make it Happen?

The infrastructure, policy, and program recommendations in previous chapters provide strategies for making Fayette and Jessamine Counties more bicycle and pedestrian friendly. The purpose of this chapter is to provide guidance and action steps for implementing the recommendations.

Implementing the recommendations within this plan will require leadership and dedication to bicycle and pedestrian facility development on the part of a variety of groups and agencies. Equally critical, and perhaps more challenging, will be meeting the need for a recurring source of revenue. Even small amounts of local funding could be very useful and beneficial when matched with outside sources.

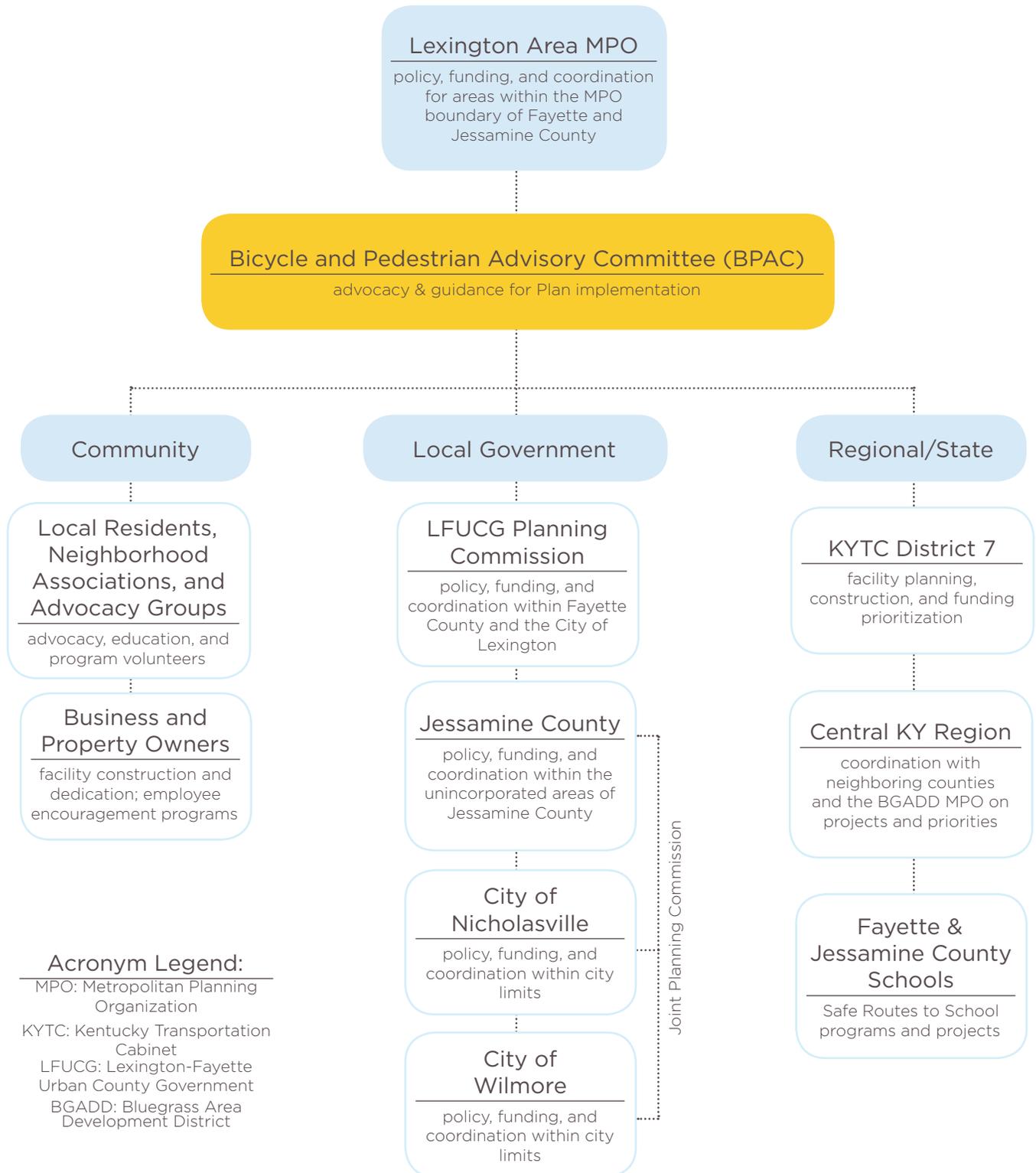
Most importantly, the MPO and its local partners need not accomplish the recommendations of this plan by acting alone; success will be realized through collaboration with regional and state agencies, the private sector, and non-profit organizations. The org chart on page 7-3 provides a general description of potential partners and their roles in implementation.

### Chapter Overview

This chapter provides the necessary steps and guidance for delivering the recommendations of this Plan and is organized into the following sections:

- Performance Measures.....page 7-4
- Funding Strategy.....page 7-6
- Bikeway Program  
Funding Overview.....page 7-8
- Pedestrian Improvements  
Funding Overview.....page 7-12
- Project Implementation +  
Priority Project Cutsheets.....page 7-14

# Roles for Implementation



# Performance Measures

Performance measures are critical for assessing and understanding whether the goals of the plan are being achieved over time. While these measures focus on evaluating progress over the long-term, data should be collected on a regular basis to track interim progress (5 years). Frequent tracking will provide the Lexington Area MPO and its partners with feedback on whether policy adjustments are needed to progress beyond the current baseline.

The performance measures outlined below are generally outcome based and focus on achieving policy objectives. The intent of outcome-based performance measures is to prioritize investments that best progress the objectives of the plan.

The key to meeting these measures will be data collection. Relevant data will need to be collected both now and in the future in order to effectively determine the outcomes of the performance measures.

Performance Measure	Baseline Measurement	Performance Target
Number of bicyclists and pedestrians counted at locations throughout both Counties	Quarterly counts and daily counts at counter locations	Increase walk and bike mode share average by 10% in Fayette County between 2018 and 2023
		Increase walk and bike mode share by 5% average in Jessamine County between 2018 and 2023
Bicycle and pedestrian collision rates	Average of 2015, 2016, and 2017 rates	Reduce bicycle and pedestrian collision rates by half (50%) between 2018 and 2023
Percentage of bikeway, trail and pedestrian improvement network completed	Total miles of existing low-stress bikeways and sidewalks complete of the priority network	Short-term priority projects constructed or funded by 2023
Percentage of intersections that are bicycle-friendly and pedestrian-friendly	2017 percentage (conduct an inventory of intersections along corridors with high collision rates across MPO)	15% of intersection improved by 2023
Percentage of households within ¼ mile of an all ages and abilities bikeway facility	2017 percentage (calculate based on network complete in 2017)	Increase by 50% of households in Lexington USB by 2023
		Increase by 25% of households in Nicholasville and Wilmore by 2023

# Bike-Friendly and Walk-Friendly Community Assessments

Walk and bike friendly community assessments recognize existing successes in communities that promote walking and biking, and provide a framework for communities trying to achieve higher walking and bicycling rates.

Both programs incorporate assessments in their score card that help a community gauge where they are excelling and where they are falling short.

Comprehensive pedestrian and bicycle plans should address all five E's to effectively advance walking and biking activities in a community. Communities seeking status as WFC and BFC's must make relevant advances in each of the Five E's.

In 2015, Lexington-Fayette County was again recognized as a bronze-level bicycle friendly community, four businesses have achieved silver-level bicycle friendly business status, and the University of Kentucky is listed as a silver-level bicycle friendly university. There are currently no recognized bicycle-friendly community or business in Jessamine County. Neither county has applied for walk-friendly community status to-date.

## WALK-FRIENDLY COMMUNITIES

The Walk Friendly Community (WFC) program is a national initiative led by the Pedestrian and Bicycle Information Center (PBIC) intended to encourage communities to improve their local walking environments.

- Review best practices and existing designated WFCs at: [www.walkfriendly.org](http://www.walkfriendly.org)
- Download the WFC assessment tool at: [http://www.walkfriendly.org/WFC\\_Assessment\\_Tool\\_Sept2012.pdf](http://www.walkfriendly.org/WFC_Assessment_Tool_Sept2012.pdf)
- Submit the application on-line by either June 15 or December 15

## BICYCLE-FRIENDLY COMMUNITIES

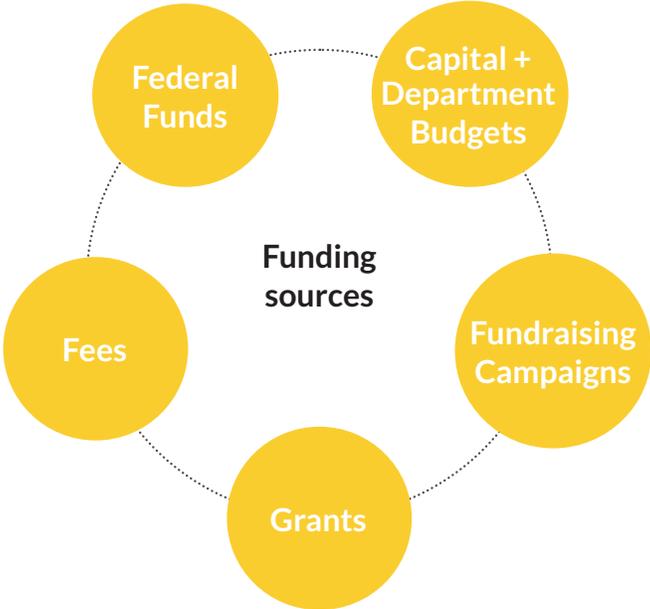
The Bicycle Friendly Community (BFC) program led by the League of American Bicyclists is intended to assist communities in making bicycling a viable transportation option.

- Go to [www.bikeleague.org/community](http://www.bikeleague.org/community)
- In Lexington, a team should be assembled to evaluate previous League feedback and monitor progress to determine when to apply for Silver status
- Nicholasville and Wilmore should apply to evaluate current status
- Check the website [www.bikeleague.org](http://www.bikeleague.org) for the next submission deadline and submit the application on-line

# Funding Sources

In order to achieve the goals of this plan, the Lexington Area MPO and its local partners will need to fund improvements from a variety of funding sources and partners. Funding sources will need to be opportunistic and consistent in order to implement this plan. Five primary funding sources make up the core funding strategy for this plan:

- **Federal Funds.** There are several federal funding programs that can be used for walking and biking projects that are administered by the Kentucky Transportation Cabinet (KYTC) to the Lexington Area MPO or local jurisdictions. Safety funds, transportation alternatives (TA), Congestion Mitigation and Air Quality Improvement Program (CMAQ) funds, and Federal Surface Transportation Program (SLX) funds are possible federal funding opportunities.
- **Capital & Department Budgets.** Local jurisdictions can use the concepts and policies presented in this Plan to implement it through regularly scheduled capital projects, such as streetscape projects, street resurfacing, or new public or private property construction. Departments like Public Works or Parks and Recreation can use their maintenance resources and staff to support programs and infrastructure maintenance.
- **Fees.** User fees or development impact fees provide an opportunity to generate revenue to fund infrastructure projects, such as sidewalk and trail construction, as well as programs, such as bicycle education classes.
- **Grants.** Competitive grants through public agencies or through private or non-profit foundations can generate additional resources for projects and programs.
- **Fundraising Campaigns.** Fundraising through neighborhood groups, advocacy groups, or even crowd-funding can help generate additional resources for projects and programs.



# Funding Sources by Budget Size and Project Timeline

Given the constant change in funding availability at local, state, and federal levels, it is difficult to know what financial resources will be available at different time frames during the implementation of this plan. The following table highlights funding options to consider for projects of various sizes.

Small Budget - Short Term	Small Budget - Long Term	Large Budget - Short Term	Large Budget - Long Term
<ul style="list-style-type: none"> <li>• Neighborhood Associations</li> <li>• Business Improvement Districts</li> <li>• Crowdsourcing</li> <li>• Non-Profit Grants</li> <li>• Impact Fees</li> <li>• Infrastructure</li> <li>• Kentucky Office of Highway Safety</li> <li>• Lexington MainStreet Program</li> <li>• Dedicated local tax sources</li> <li>• Local health departments</li> <li>• Foundation grants</li> <li>• Individual donors</li> </ul>	<ul style="list-style-type: none"> <li>• Federal Transportation Funds (FAST Act programs)</li> <li>• HUD and EPA funds</li> <li>• Capital Improvement budget funds</li> <li>• Kentucky Transportation Cabinet</li> <li>• Kentucky Department for Local Government:               <ul style="list-style-type: none"> <li>• Recreational Trails Program</li> <li>• Community Development Block Grant (CDBG)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Foundation grants</li> <li>• Individual donors</li> <li>• Community Improvement Districts</li> <li>• Public-Private Partnerships</li> <li>• Infrastructure bonds</li> <li>• Dedicated local tax sources</li> </ul>	<ul style="list-style-type: none"> <li>• Federal Transportation Funds</li> </ul>

# Bikeway Program Funding Overview

Peer and aspirational cities across the country have shown that a broad based approach to bikeway investment funding for low-stress infrastructure can simultaneously realize marked increases in bicycle use and safety.

It’s important to remember that the ConnectLex Plan does not set funding allocations. Instead, the plan identifies the priority projects and the annual budgets are approved by elected officials within each local jurisdiction.

The total cost summaries highlighted below use planning-level cost estimates with an additional 20% contingency added. Cost estimates will be further refined once projects enter the preliminary engineering phase.

Bikeway Short-Term Priorities			
	Number of Projects	Total Bikeway Length (Miles)	Total Bikeway Cost Estimate
Fayette County	41	31	\$5.4M

Shared Use Trail Short-Term Priorities			
	Number of Projects	Total Bikeway Length (Miles)	Total Bikeway Cost Estimate
Fayette County	8	25	\$31M
Jessamine County	12	11	\$25.1M

## Peer Funding Spotlight

- The City of Raleigh, NC received a \$1.1 million federal Congestion Mitigation and Air Quality (CMAQ) grant to install 27 miles of on-road bikeways (striping only). The grant required a \$225,000 local contribution.
- Louisville’s FY17 executive budget included \$500,000 for bicycle infrastructure and \$63,500 for a bike share project (local grant match).

## KEY ACTION STEPS

- Include bicycle projects in the local Capital Improvement Program (CIP), increasing consistent year-to-year funding levels.
- Fund bicycle facility maintenance and consider funding additional maintenance equipment needed to adequately maintain a low-stress bikeway system.
- To increase readiness for grant funding, develop preliminary plans (30% construction drawings) for priority bicycle projects.
- Leverage private development investment by requiring bicycle facility implementation as part of high-density and large-scale development.

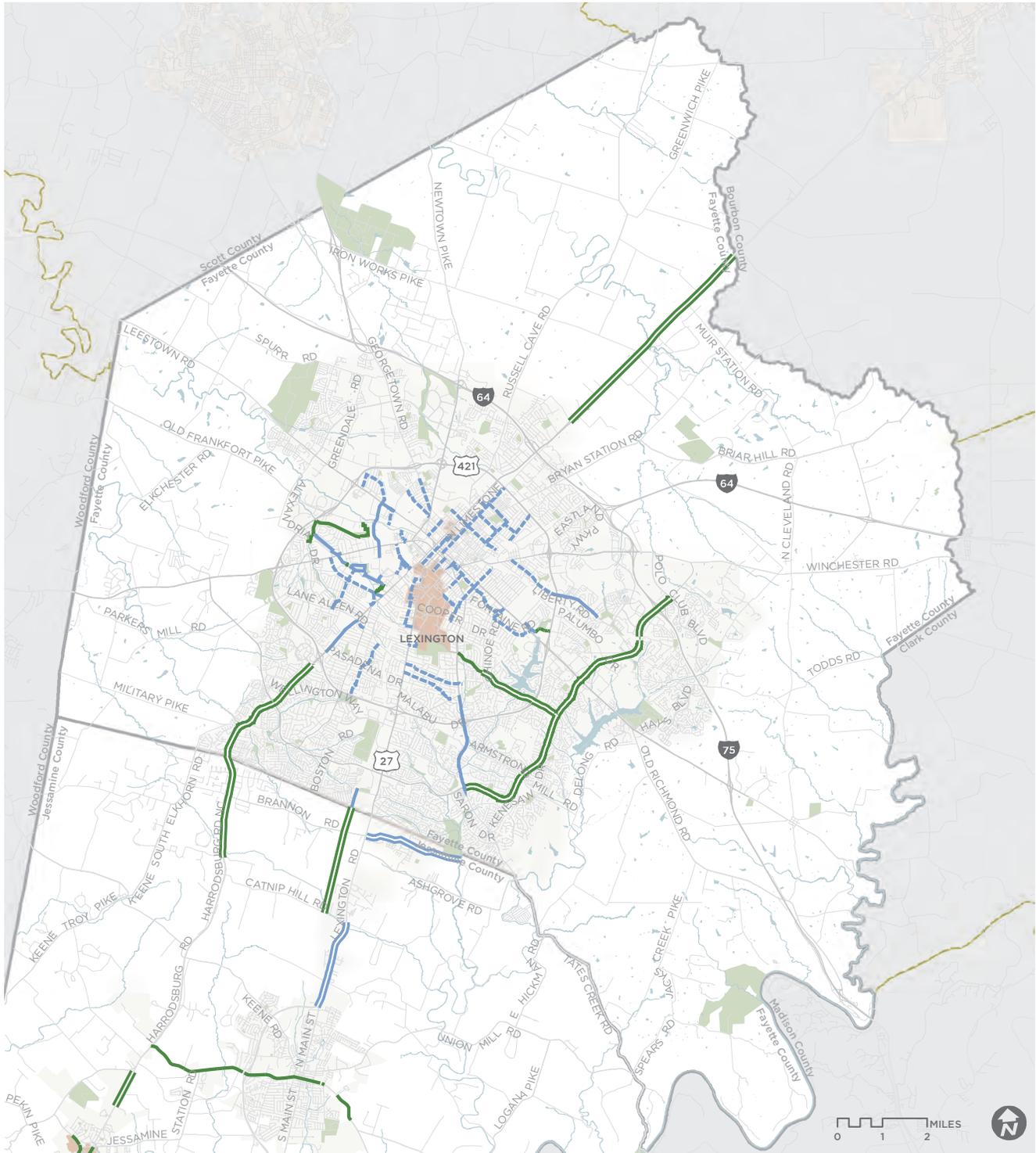
# Bikeway Program Funding Scenarios

Fayette County Bikeway Funding Scenarios		
Total Cost of Short-Term Projects and Mileage	Spending and Miles Per Year	Payoff Horizon in Years for Short-Term Priorities
\$5.4M (31 Miles)	\$250,000 (1.5 Miles)	22
	\$500,000 (3 Miles)	11
	\$1.1 Million (6 Miles)	5

Fayette County Shared Use Trail Funding Scenarios		
Total Cost of Short-Term Projects and Mileage	Spending and Miles Per Year	Payoff Horizon in Years for Short-Term Priorities
\$31M (25 Miles)	\$1 Million (0.8 Miles)	31
	\$2 Million (1.5 Miles)	16
	\$6.5 Million (5 Miles)	5

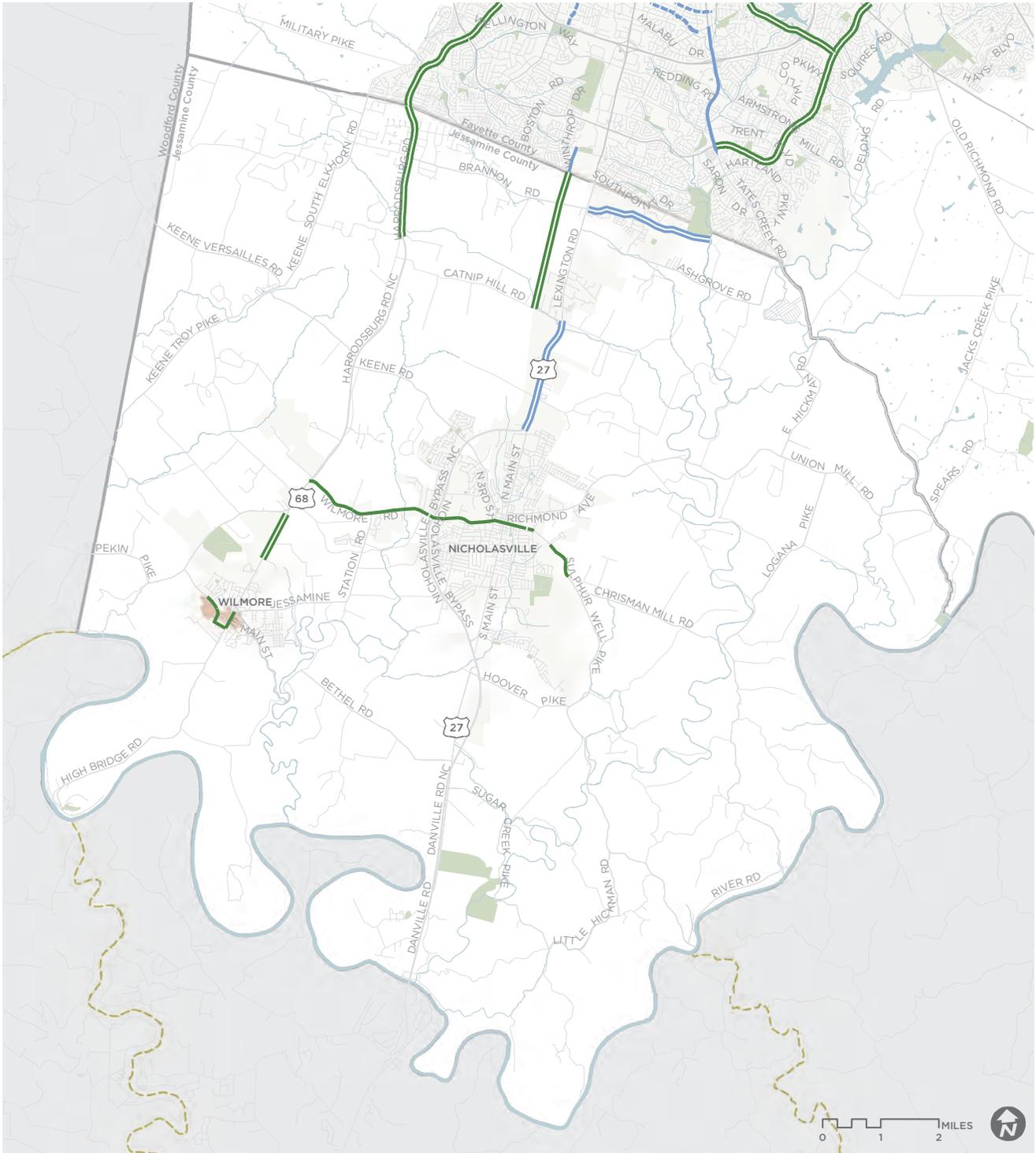
Jessamine County Bikeway Funding Scenarios		
Total Cost of Short-Term Projects and Mileage	Spending and Miles Per Year	Payoff Horizon in Years for Short-Term Priorities
\$25.1M (11 Miles)	\$1 Million (0.5 Miles)	25
	\$2 Million (0.8 Miles)	13
	\$5 Million (2.2 Miles)	5

Note: The average cost for shared use trails in Jessamine County is higher then in Fayette County due to limited right-of-way conditions and drainage constraints along roadways.



## SHORT-TERM BIKEWAY AND SHARED USE TRAIL PROJECTS Fayette County





## SHORT-TERM BIKEWAY AND SHARED USE TRAIL PROJECTS Jessamine County



# Pedestrian Improvement Program Funding Overview

While there is existing sidewalk infrastructure in both Fayette County and Jessamine County, especially in the downtown centers, there are several streets without sidewalks. Retrofitting streets with sidewalks can have significant drainage, right-of-way, and construction costs.

## Jessamine County Pedestrian Improvements

Due to the existing sidewalk network and the aggressive shared use trail recommendations in Jessamine County, there are no short-term standalone pedestrian improvement projects recommended in Jessamine County. A full list of recommended pedestrian improvement projects in Jessamine County can be found in Appendix C.

## Fayette County Pedestrian Improvements

Fayette County has significant need for new sidewalk improvements within the Urban Service Boundary make vital neighborhood connections, increase access to transit, and provide safe access along high-speed and high volume corridors.

The total cost summaries highlighted below use planning-level cost estimates with an additional 20% contingency added. Cost estimates will be further refined once projects enter the preliminary engineering phase.

Pedestrian Improvement Short-Term Priorities			
	Number of Projects	Total Sidewalk Length	Total Sidewalk Cost Estimate
Fayette County	23	9 Miles	\$3.6M

## PEER FUNDING SPOTLIGHT

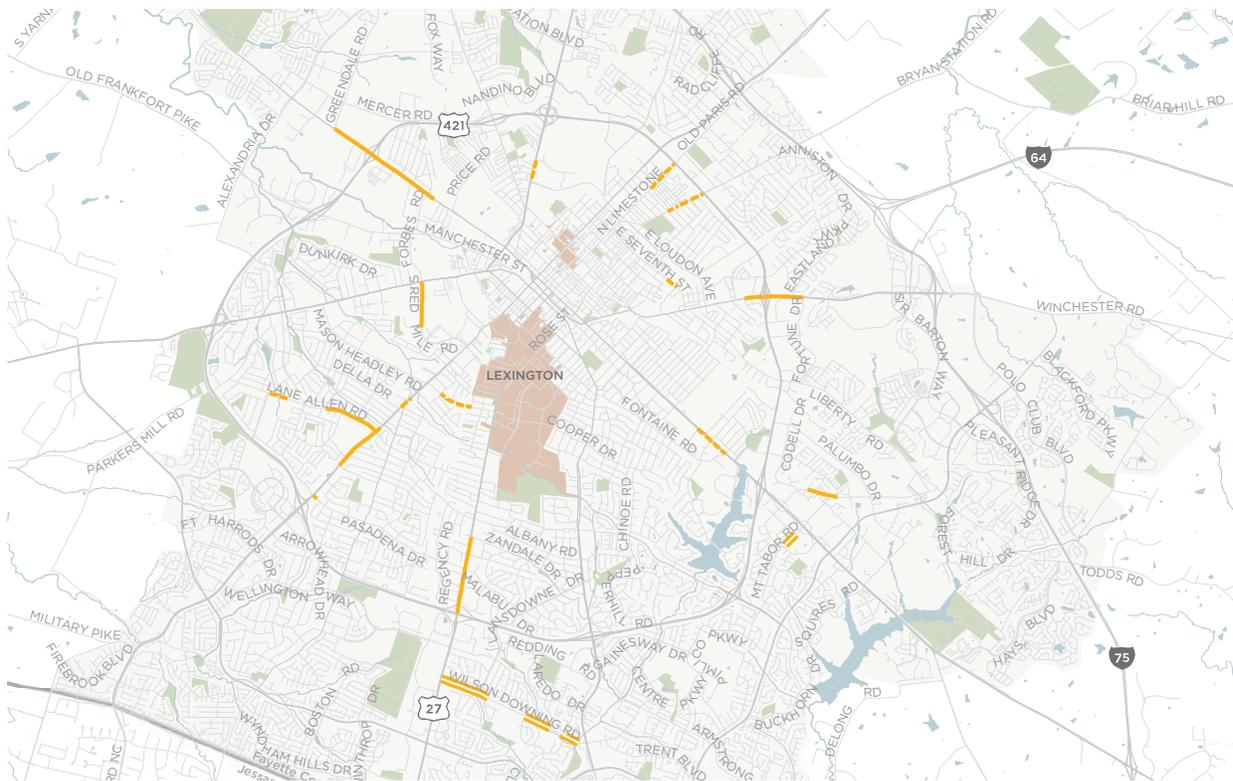
- In 2015, Seattle residents voted to approve a nine-year, \$930 million Levy to Seattle, which provides funds for sidewalk maintenance and repair, transit improvements, and Vision Zero safety investments for walking.
- The FY17 CIP in Memphis, TN allocated \$500,000 from general obligation bonds for sidewalk improvements and \$2.5M for ADA improvements.

## KEY ACTION STEPS

- Include pedestrian improvement projects in the local Capital Improvement Program (CIP), increasing consistent year-to-year funding levels.
- Evaluate and rethink a cost-share program for sidewalk maintenance to ensure sidewalk repair is implemented equitably.
- To increase readiness for grant funding, develop preliminary plans (30% construction drawings) for priority sidewalk projects.
- Leverage private development investment by requiring pedestrian improvements as part of development.

# Pedestrian Improvement Program Funding Scenarios

Fayette County Pedestrian Improvement Funding Scenarios		
Total Cost of Short-Term Projects and Mileage	Spending and Miles Per Year	Payoff Horizon in Years for Short-Term Priorities
\$3.6M (9 Miles)	\$250,000 (0.6 Miles)	14
	\$500,000 (1.3 Miles)	7
	\$700,000 (1.8 Miles)	5



## SHORT-TERM PEDESTRIAN IMPROVEMENT PROJECTS Fayette County

- ▬▬▬ HIGH COST
- ▬▬▬ MODERATE COST
- - - - - LOW COST

# Project Implementation Flow Chart

This plan recommends the creation of a more integrated and strategic Project Delivery Process to be used by all jurisdictions, especially in regard to public engagement and project evaluation.

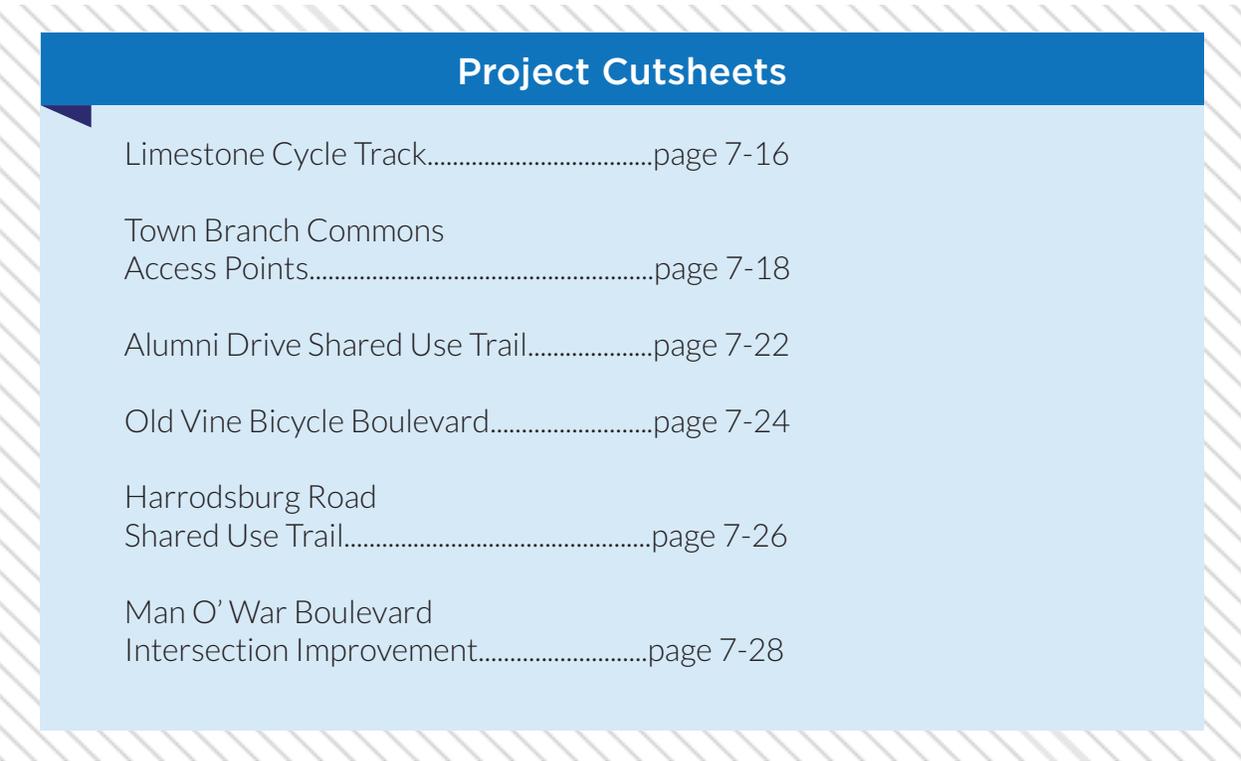
Consistency is critical to provide the public a general understanding of how a project will be developed, designed, and implemented.



# Project Cutsheets

The following pages offer detailed information on each of the selected priority projects, including individual project maps. These sheets were designed based on the types of information required by potential funding partners, and feature the following information:

- Project length
- Facility Types
- Jurisdiction
- Trip Generators
- ROW needs
- Traffic Volumes (AADTs)
- Projected Future Traffic Volumes
- Estimated Construction Costs
- Estimated Land Acquisition Costs
- Annotated Map of Project Corridor

A graphic with a blue header and a light blue body, set against a background of diagonal hatching. The header contains the title 'Project Cutsheets'. The body lists six project entries with their corresponding page ranges.

Project Cutsheets	
Limestone Cycle Track.....	page 7-16
Town Branch Commons Access Points.....	page 7-18
Alumni Drive Shared Use Trail.....	page 7-22
Old Vine Bicycle Boulevard.....	page 7-24
Harrodsburg Road Shared Use Trail.....	page 7-26
Man O' War Boulevard Intersection Improvement.....	page 7-28

# Limestone Cycle Track

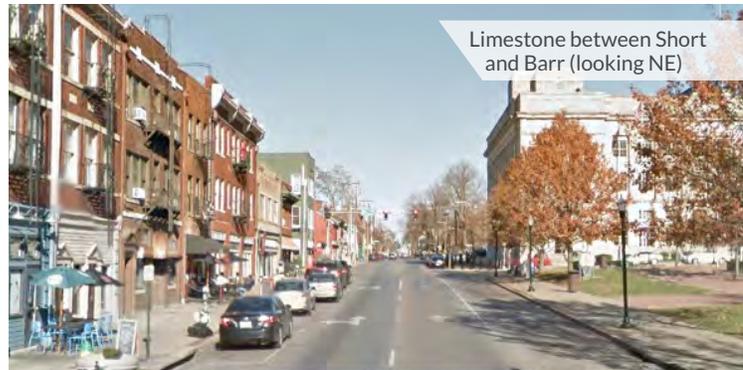


An all ages and abilities bikeway through the heart of downtown Lexington.

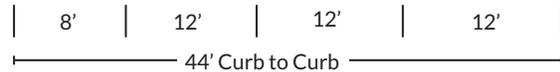
## About this project

- Two-way separated bike lane from Vine St to Loudon Ave
- Would provide connections to Town Branch Commons, Phoenix Park, the Central Library, and the Fayette County Courthouse
- Opportunity to re-purpose underutilized vehicle and parking lanes to create a low-stress bicycle facility

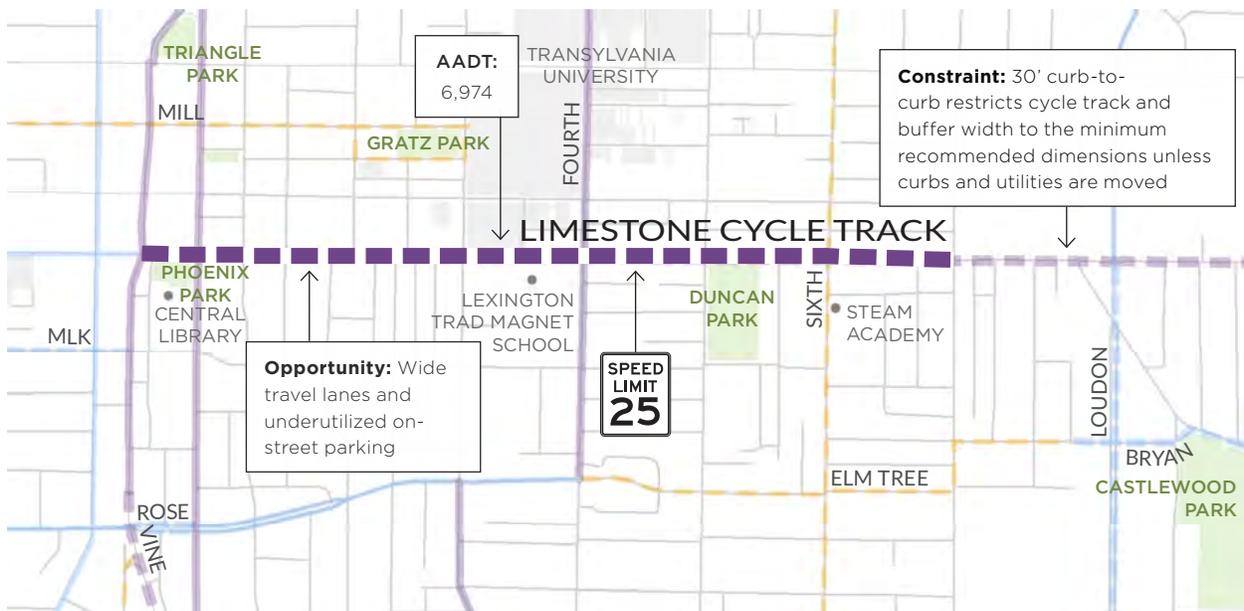
## Existing Conditions



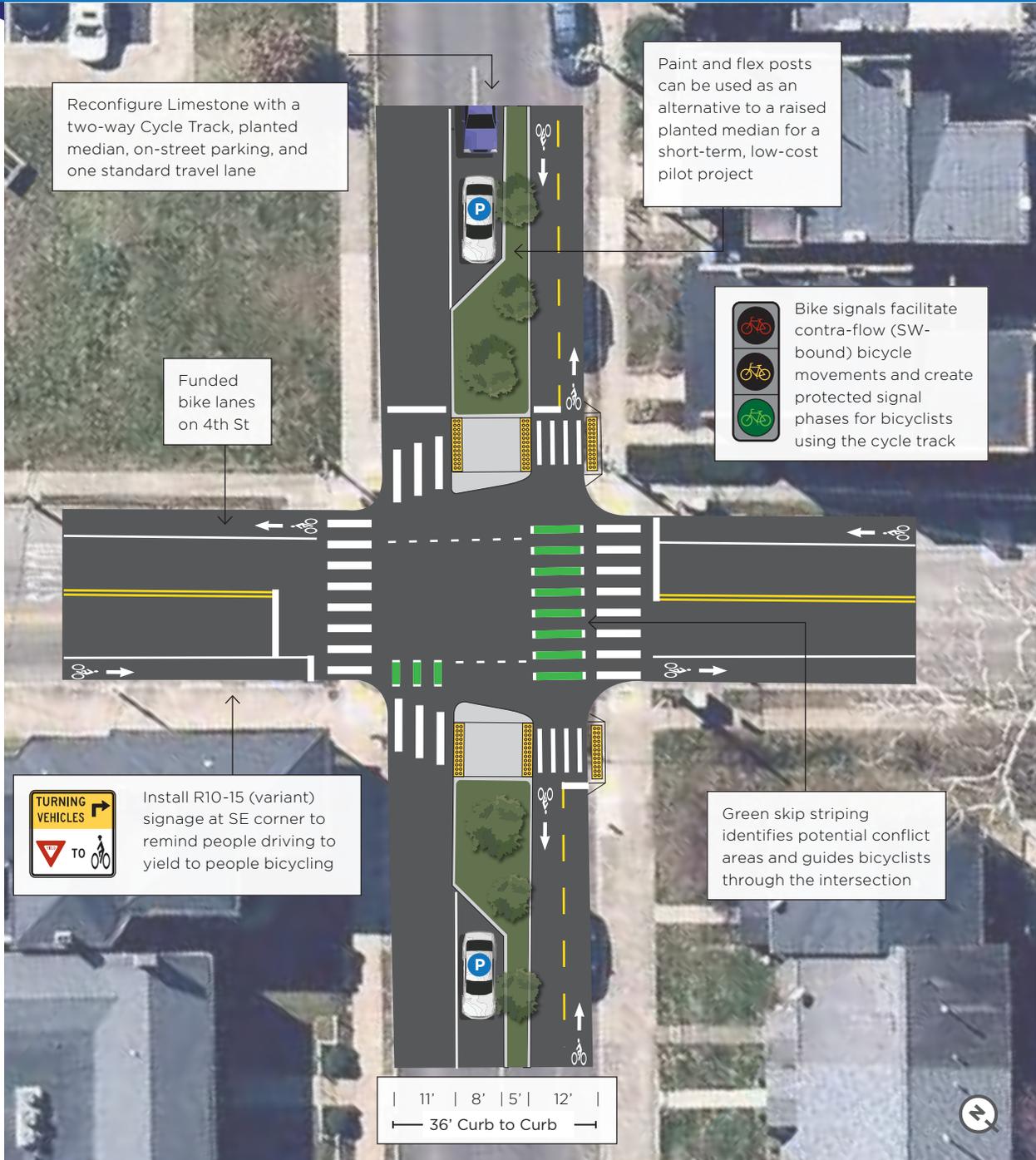
Limestone between Short and Barr (looking NE)



## Opportunities + Constraints



# Proposed Improvements: N Limestone at 4th St



Priority Score: **100**



Estimated Cost:  
**\$100,000**

# Town Branch Commons Access Points



Improving connections to one of the region's signature active transportation and recreation projects.

## About this project

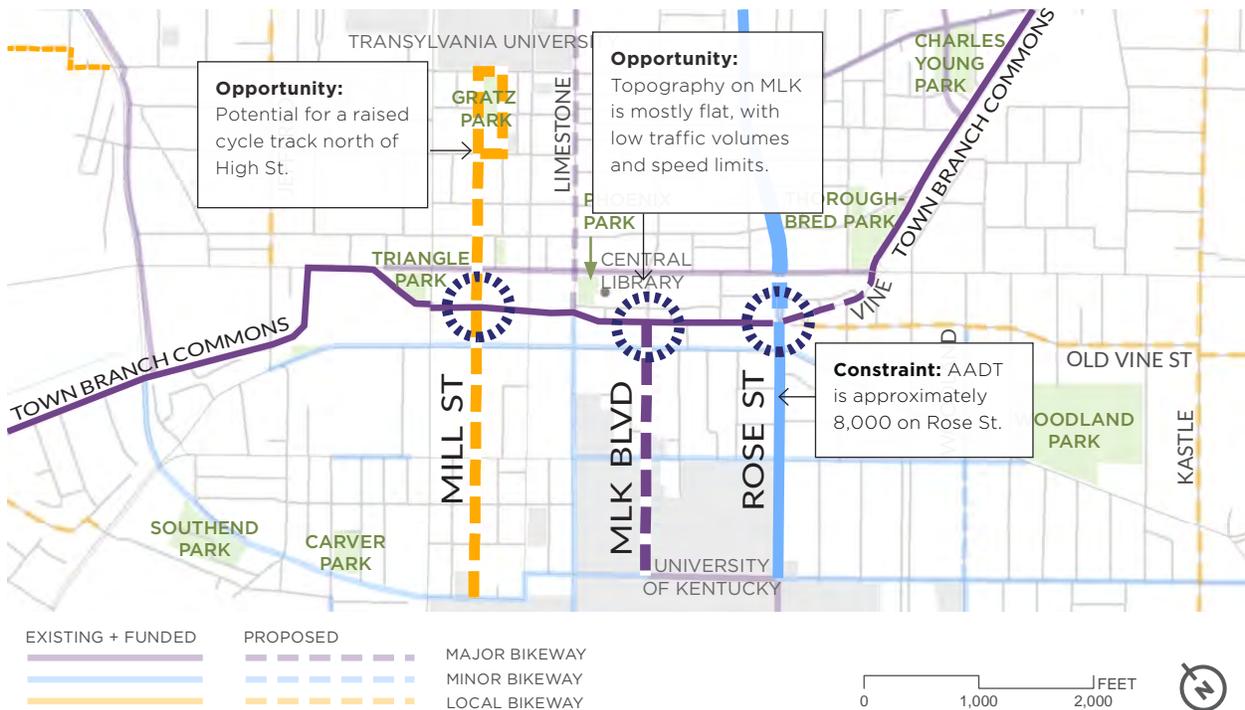
- Improvements at three key north-south connections to Town Branch Commons
- Leverages existing funding to advance the active transportation system
- Prioritize low-stress facility connections for users of all ages and abilities

## Existing Conditions

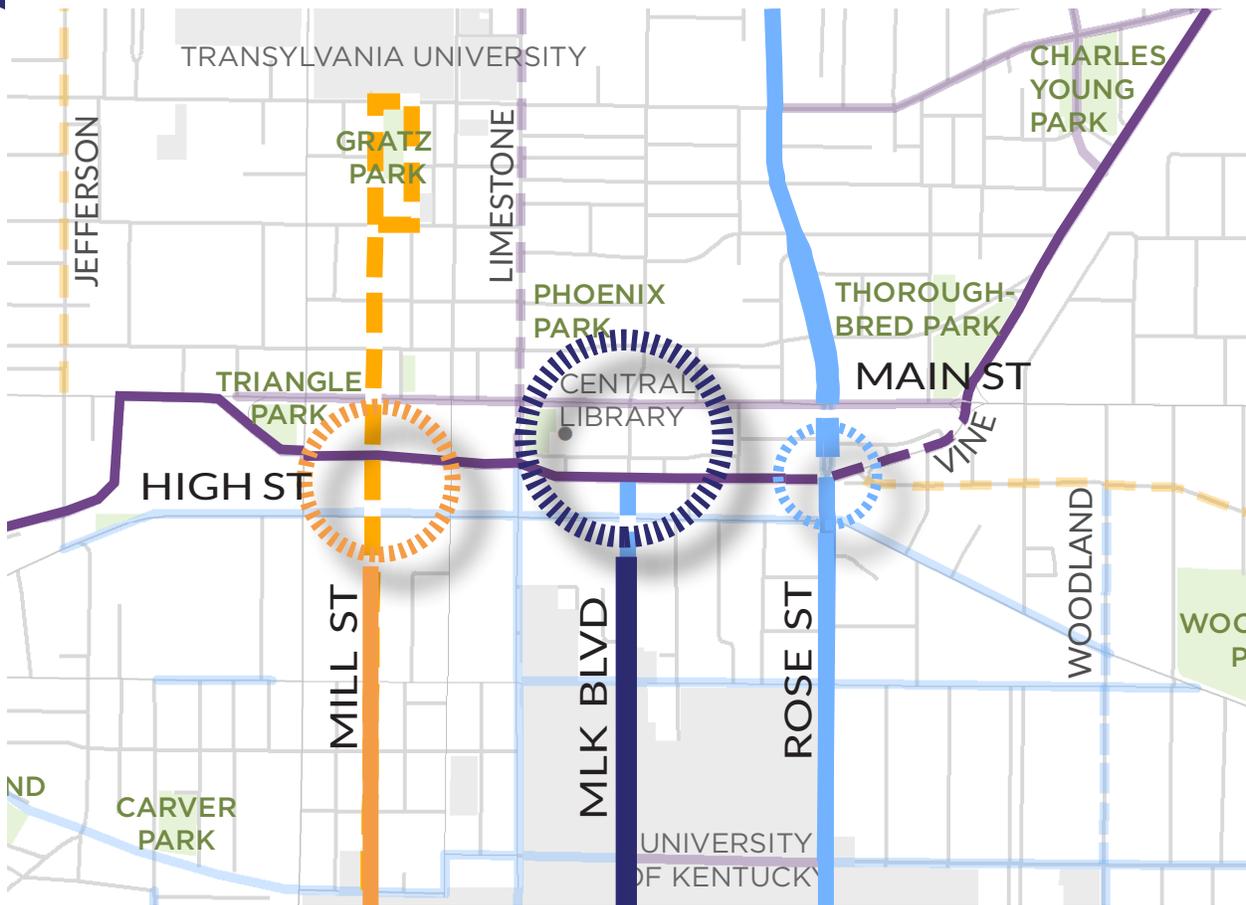


Providing a connection from MLK to Town Branch Commons (on Vine St) requires overcoming a significant grade change from the MLK overcrossing.

## Opportunities + Constraints



## Proposed Improvements: Town Branch Commons Access Prioritization



2.

A raised cycle track along Mill Street, between Vine Street and High Street is recommended. While this serves an important connection, the steep grade makes it challenging.

1.

The alley next to MLK Boulevard between Main Street and the town branch commons is recommended as the primary connector between the two universities and Town Branch Commons.

3.

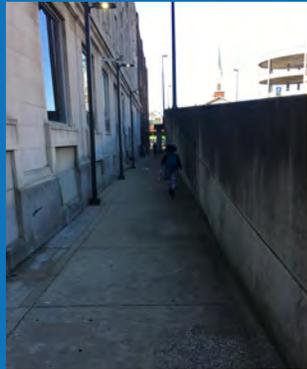
Rose Street is to have shared-lane markings, as a third route option for those accessing Town Branch Commons.

# Town Branch Commons Access Points (continued)



Improving connections to one of the region's signature active transportation and recreation projects.

## Proposed Improvement: Alley connection at MLK and Main



BEFORE



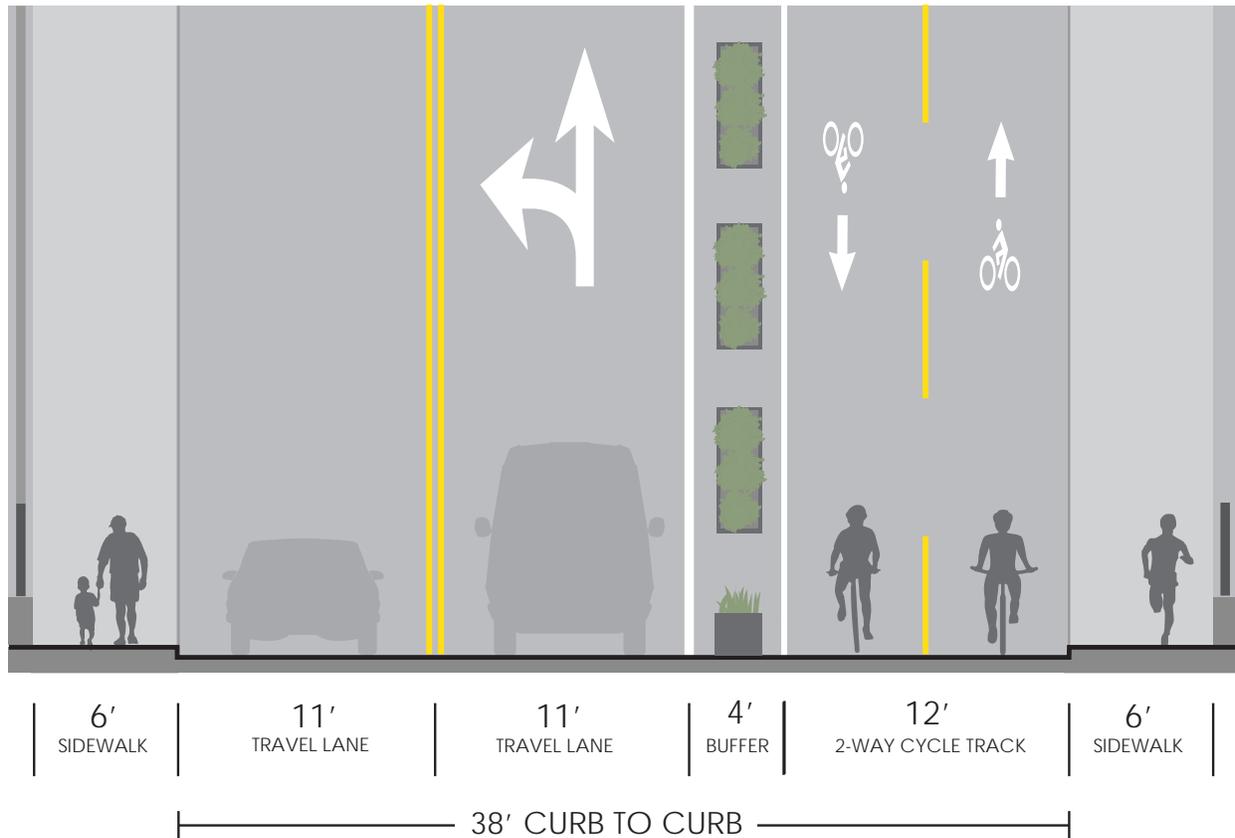
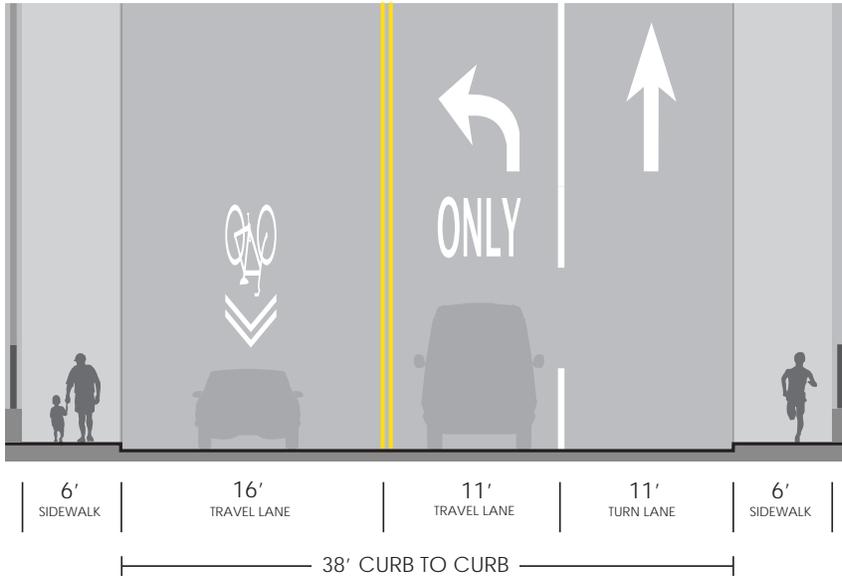
MLK Blvd Priority Score: **100**



Estimated Cost:

**\$127,900**

# Martin Luther King Blvd between High Street and Main Street



# Alumni Drive Shared Use Trail

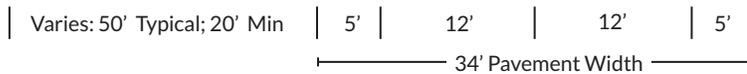


A wide off-street trail with a landscaped buffer along Alumni Drive.

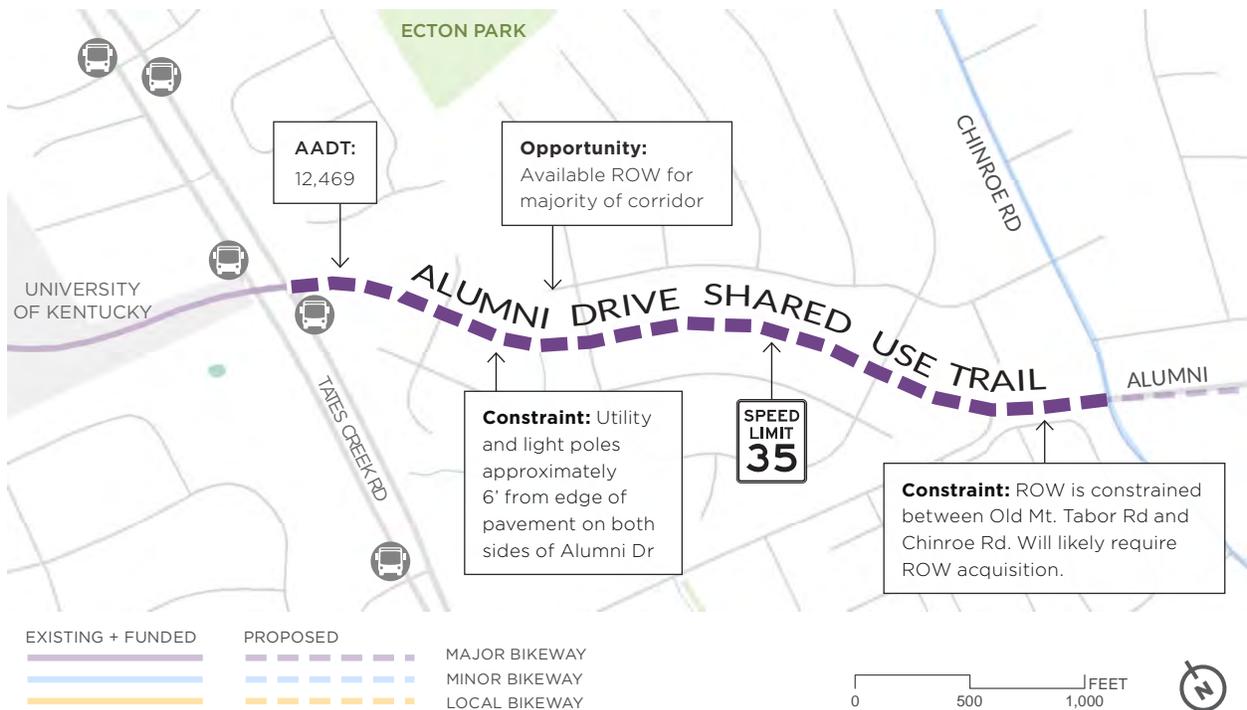
## About this project

- 12' paved shared use trail from Tates Creek Rd to Chinroe Rd
- Connects to existing trail and bike lanes on University of Kentucky campus
- Provides active transportation connection to Lextran Route #3 along Tates Creek Rd

## Existing Conditions



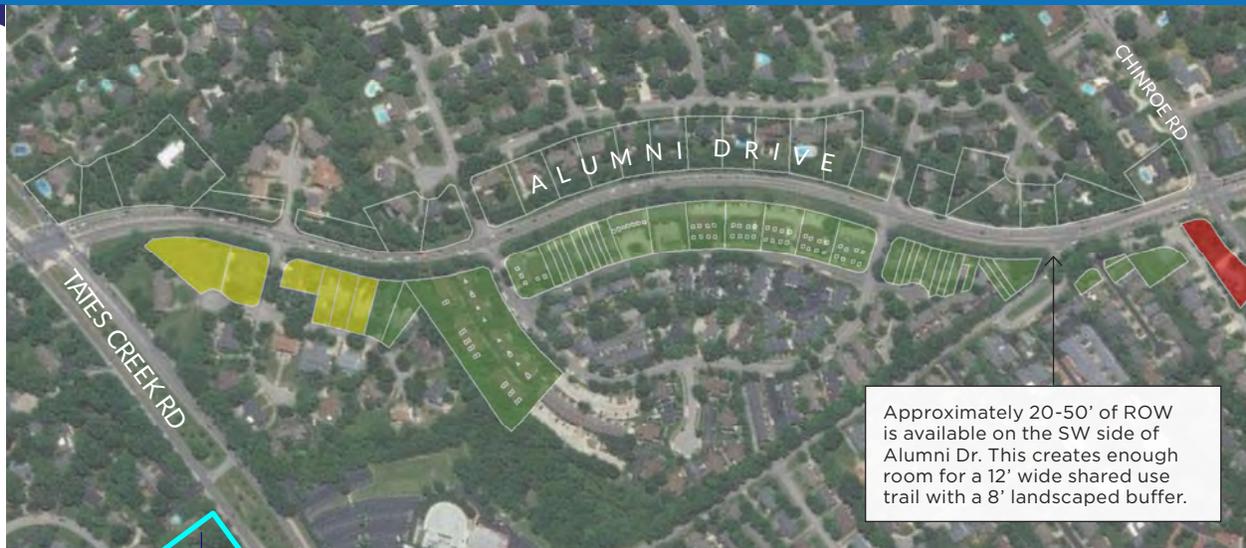
## Opportunities + Constraints



## Proposed Improvements: Alumni Dr near Turkey Foot Rd



## Right-of-Way Analysis



- Property lines about 50 feet from edge of roadway
- Property lines between 50 and 20 feet from edge of roadway
- Property lines are less than 20 feet from edge of roadway



**Priority Score: 90**



**Estimated Cost:  
\$1,425,000**

# Old Vine Bicycle Boulevard



A low-stress shared roadway, with traffic calming elements to prioritize people on bike.

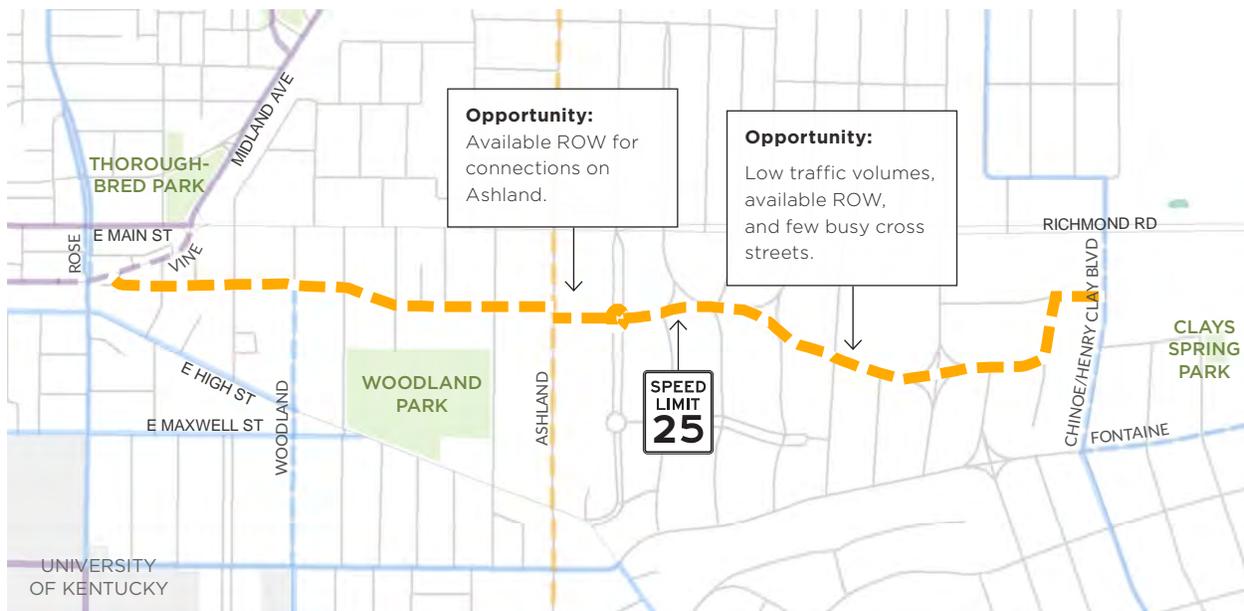
## About this project

- Will provide comfortable and safe connectivity on Central Ave, Ashland Ave, and Fincastle Rd
- Adjacent destinations include the E. Main St corridor, Woodland Park, and connections to downtown Lexington
- Creates all ages and abilities alternative to E Main St and E High St

## Existing Conditions



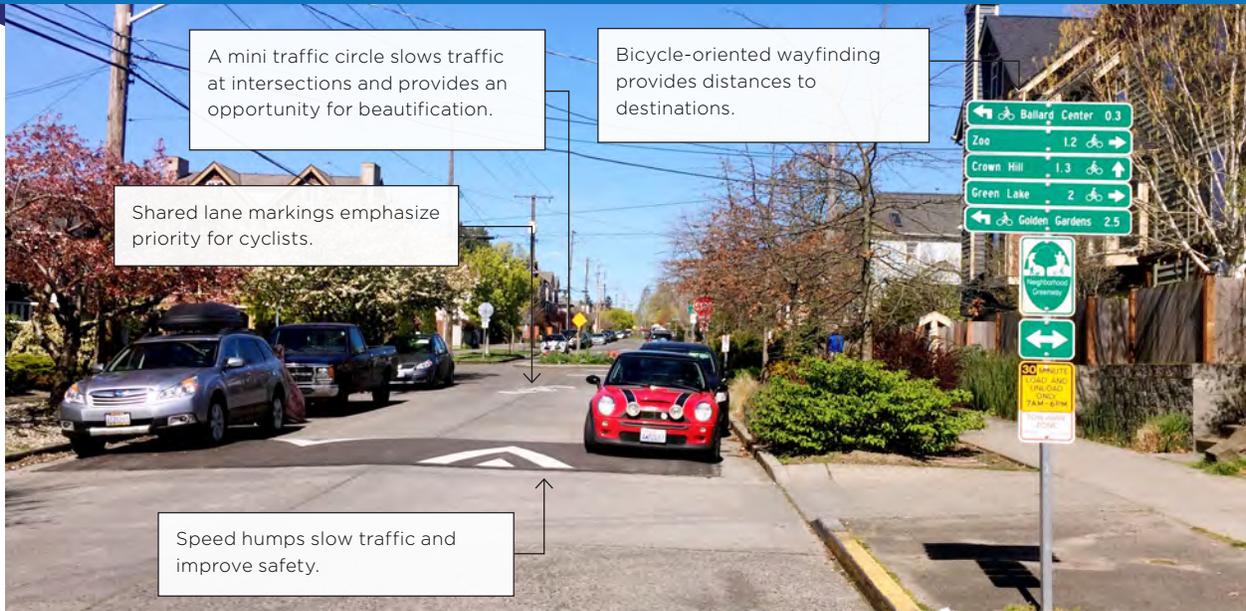
## Opportunities + Constraints



## Proposed Improvements: Ashland between Central and Fincastle



## Precedent: Seattle Bicycle Boulevard



Priority Score: **90**



Estimated Cost:  
**\$136,300**

# Harrodsburg Road Shared-Use Trail



A regional trail connection southwest of Lexington between Jessamine and Fayette County.

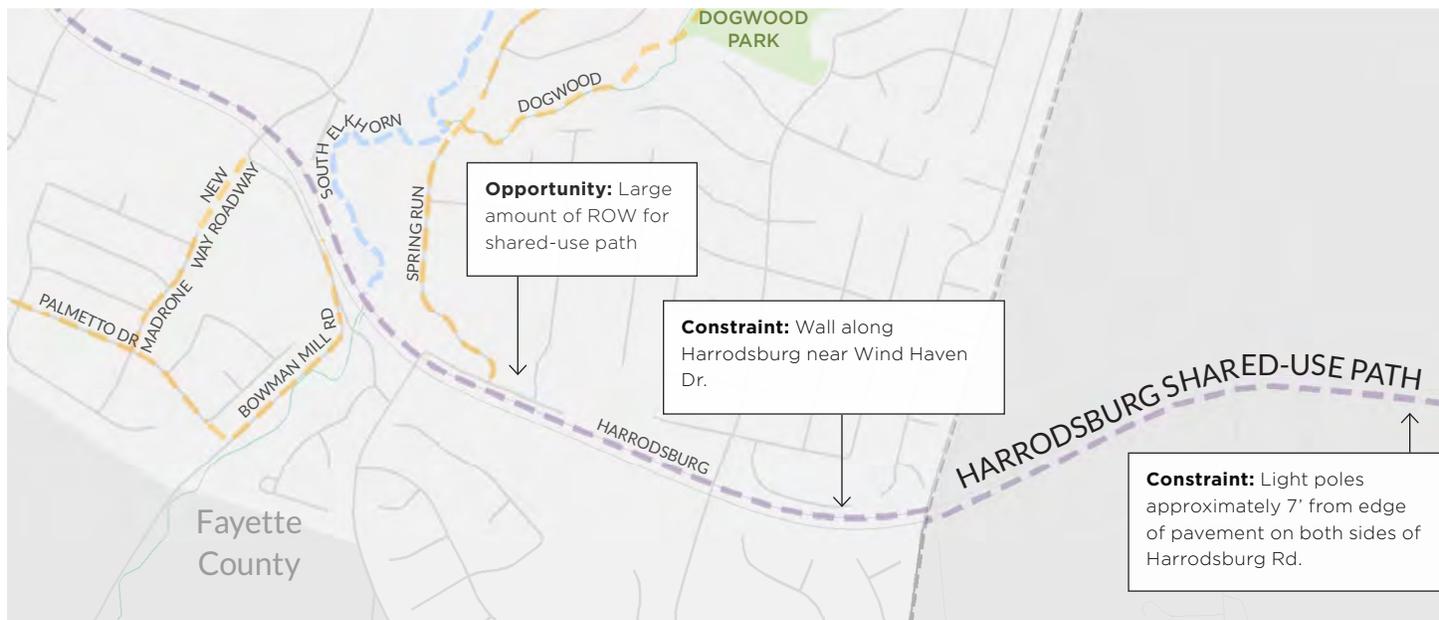
## About this project

- Will create safe walking and biking path through rural, residential, and commercial areas of Jessamine and Fayette Counties, serving as a connection from Lexington to Nicholasville and Wilmore
- Forms continuous 3 1/2 mile recreation and commuter trail along busy arterial road
- Connects to the existing 6-mile trail

## Existing Conditions



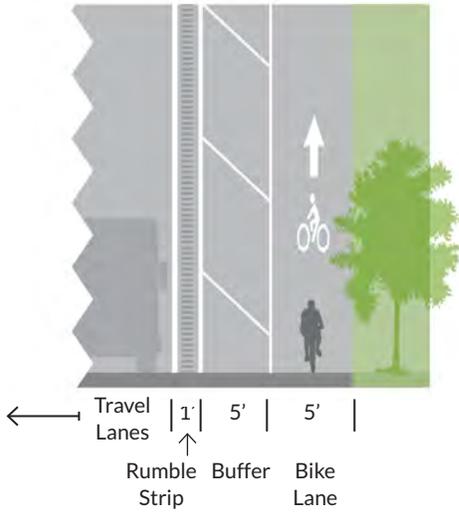
## Opportunities + Constraints



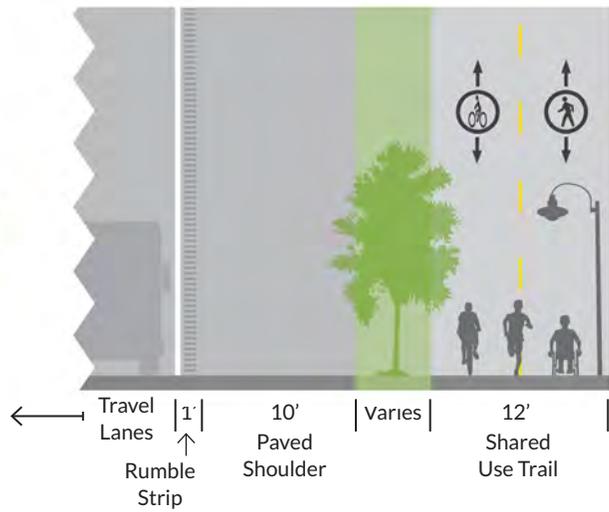
EXISTING + FUNDED	PROPOSED	
		MAJOR BIKEWAY
		MINOR BIKEWAY
		LOCAL BIKEWAY

# Proposed New Cross Sections for Harrodsburg Road

## Short-Term, Low Cost



## Long-Term, High Cost



Priority Score: **30**



Estimated Cost:

(Short-Term): \$264,500  
(Long-Term): \$7,011,800

