LANCASTER COUNTY

LANCASTER INTER-MUNICIPAL COMMITTEE

CITY OF LANCASTER

# LANCASTER

## ACTIVE TRANSPORTATION PLAN

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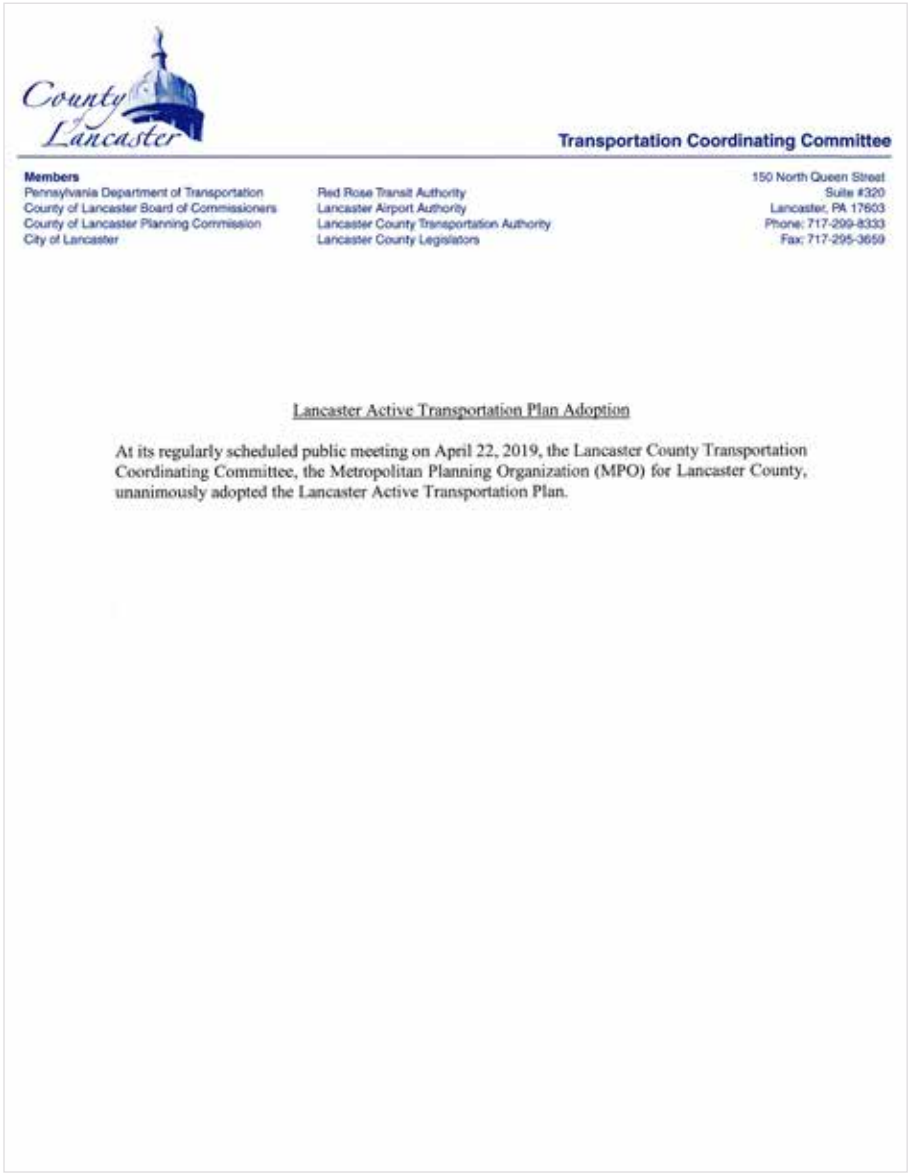
*This project was financed in part by a grant from the Community Conservation Partnerships Program, Keystone Recreation, Park and Conservation Fund, under the administration of the Pennsylvania Department of Conservation and Natural Resources, Bureau of Recreation and Conservation.*

*Funding also provided in part by the Lancaster Inter-Municipal Committee (LIMC), City of Lancaster, the Pennsylvania Department of Transportation, and the U.S. Department of Transportation.*

*April 2019*

# ACKNOWLEDGEMENT OF ADOPTION FROM THE LANCASTER COUNTY TRANSPORTATION COORDINATING COMMITTEE



County Lancaster

**Transportation Coordinating Committee**

**Members**
Pennsylvania Department of Transportation
County of Lancaster Board of Commissioners
County of Lancaster Planning Commission
City of Lancaster
Red Rose Transit Authority
Lancaster Airport Authority
Lancaster County Transportation Authority
Lancaster County Legislators

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Lancaster Active Transportation Plan Adoption

At its regularly scheduled public meeting on April 22, 2019, the Lancaster County Transportation Coordinating Committee, the Metropolitan Planning Organization (MPO) for Lancaster County, unanimously adopted the Lancaster Active Transportation Plan.

## RESOLUTION FROM THE CITY OF LANCASTER

**FILE OF THE CITY CLERK**

**COUNCIL RESOLUTION NO. 18 – 2019**

**INTRODUCED – APRIL 23, 2019**

**ADOPTED BY COUNCIL – APRIL 23, 2019**

**A RESOLUTION OF THE COUNCIL OF THE CITY OF LANCASTER ACCEPTING AND ADOPTING THE LANCASTER ACTIVE TRANSPORTATION PLAN, AFFIRMING THE IMPORTANCE OF ACTIVE TRANSPORTATION AND THE IMPORTANCE OF THE PLAN AS A GUIDING DOCUMENT.**

**WHEREAS**, active transportation is vitally important in an era when 80 percent of Americans do not get the recommended amount of exercise, two-thirds of Americans are overweight or obese and heart disease fostered by inactivity is the number one cause of death; and

**WHEREAS**, national figures show bicyclist fatalities are the highest in 20 years and 42 pedestrians and bicyclists died in Lancaster County accidents between 2012 and 2017, and sidewalks, trails and bicycle facilities will make walking and riding a bicycle safer; and

**WHEREAS**, active transportation helps reduce carbon emissions, which is vitally important in Lancaster County where residents have long been breathing air with unhealthy levels of smog and particle pollution; and

**WHEREAS**, bicycle and pedestrian transportation routes will connect Lancaster City residents to employment in the City and in Lancaster County, which is particularly important to low-income workers without access to reliable automobiles; and

**WHEREAS**, the Lancaster Active Transportation Plan was prepared with the collaboration of the City of Lancaster, County of Lancaster and Lancaster Inter-Municipal Committee to foster a shared vision of active transportation in the Lancaster region; and

**WHEREAS**, the Lancaster Active Transportation Plan was financed in part by a grant from the Community Partnerships Program, Keystone Recreation, Park and Conservation Fund, (BRC-TAG-19-134) under the administration of the Pennsylvania Department of Conservation and Natural Resources, Bureau of Recreation and Conservation, and that grant is now completed, and all expenditures were made in accordance to the grant agreement; and

**WHEREAS**, the Lancaster Active Transportation Plan has proposals for trails, corridors and physical facilities which expand transportation infrastructure, but the plan further has the capacity to expand how residents of the Lancaster region think about transportation; and

**WHEREAS**, the Lancaster Active Transportation Plan will be used to guide future decisions regarding recreation, conservation and non-motorized transportation for years to come.

**NOW, THEREFORE, BE IT RESOLVED**, that the Council of the City of Lancaster accepts and adopts the Lancaster Active Transportation Plan and related materials as a guiding document for making future decisions regarding recreation, conservation and transportation in the City of Lancaster.

Adopted this 23rd day of April 2019, by the Council of the City of Lancaster duly assembled.

Attest:

Danene Sorace, Mayor

Bernard W. Harris Jr., City Clerk

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# INTRODUCTION

# INTRODUCTION

This plan was made possible through the collaborative efforts of Lancaster County, the Lancaster Inter-Municipal Committee (LIMC), and the City of Lancaster. These three entities worked together to develop the vision and goals that act as the foundation of the Active Transportation Plan. This collaboration is crucial to maintaining momentum for implementing action items that will result in improved access and connectivity, enhanced health, environmental preservation, increased safety, and economic opportunity.

The Active Transportation Plan (ATP) has a special focus on connectivity and changing the culture of transportation in the greater Lancaster area. This theme of connectivity stems from physical corridors and expands beyond facilities - it is a special link between the communities, corridors, and landscapes, and the people who call Lancaster home. Each unique and treasured community will benefit from a collaborative process of implementing facilities and programs that will positively impact the lives of residents and visitors for generations to come.

This deep connectivity does not happen by chance. It results from strategic analysis, evaluation, community input, planning, and a continued dedication to collaboration and determination to put this plan into action. The following pages reflect the journey of a community through the process of celebrating existing resources, addressing challenges, and working together to make its vision a reality.

## THIS CHAPTER INCLUDES AN OVERVIEW OF:

# WHAT IS ACTIVE TRANSPORTATION?

Active transportation is a term used to describe transportation that is self-propelled or powered by human energy, such as walking and bicycling. Often referred to as "non-motorized transportation" the term active transportation is preferred because it suggests a stronger connection between transportation choices and healthy lifestyles.

The built environment provides important cues that influence the transportation decisions people make. Features of the built environment include the design of our roads; the provision of sidewalks, trails, and bicycle lanes; the compactness of development; and a mix of land uses. If it is easy and safe to walk and bike to a variety of destinations, people are more likely to choose active transportation.[1]

The following are just a few of the benefits of active transportation:

# WHY ACTIVE TRANSPORTATION IS IMPORTANT

There are many benefits of active transportation that contribute to our quality of life. Infrastructure investments in trails, sidewalks, traffic-calming, and public transit support active travel and increase routine physical activity, which improves health, environmental quality, and livability of communities.

## HEALTH

Public health officials recognize the connection between mental and physical health and the built environment. Many residents view walking and bicycling within their communities as unsafe due to heavy traffic and the lack of sidewalks and bicycle facilities. This can lead to physical inactivity, which is a major contributor to the rise in rates of obesity, diabetes, heart disease, stroke, asthma, and other chronic health conditions in the United States. In Lancaster County, 60% of adults, 40% of teens and 36% of children are overweight or obese.[2] These numbers can be lowered with an active lifestyle that incorporates biking and walking as daily activities.

## SAFETY

The lack of sidewalks and separated bicycle facilities can also make it dangerous for those who walk or bike for transportation purposes. According to PennDOT's Annual Crash Reports 2012–2017, there were 1,142 crashes involving pedestrians and bicyclists in Lancaster County, which resulted in

## Health Benefits of Walking & Biking

**CURRENT U.S. HEALTH STATISTICS**

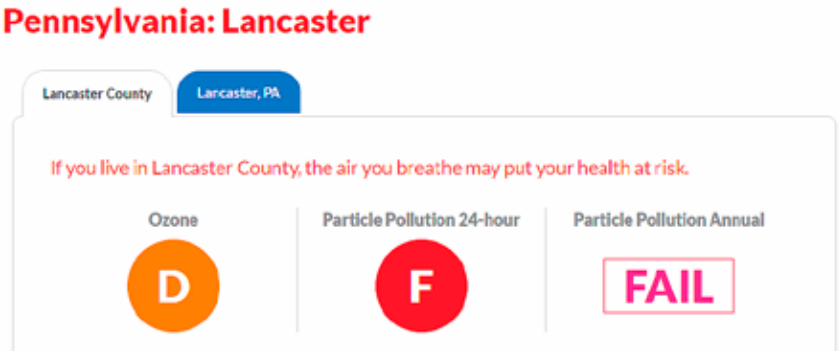
**47%** of Pennsylvanians **DO NOT ACHIEVE** the recommended 150 minutes per week of **MODERATE EXERCISE.**
*(CDC 2017)*

**67%** *or* **⅔** of Pennsylvanians are **OVERWEIGHT OR OBESE.** *
*(CDC 2017)*

**CARDIOVASCULAR DISEASES** are the **#1 CAUSE OF DEATH** in the United States.
*(CDC, 2016 and 2017)*

1 Community Preventive Services Task Force. *Physical Activity: Built Environment Approaches Combining Transportation System Interventions with Land Use and Environmental Design.* December 2016; and Barnett, David W. et al. *Built environmental correlates of older adults' total physical activity and walking: a systemic review and met-analysis.* International Journal of Behavioral Nutrition and Physical Activity (2017).

2 Pennsylvania Department of Health. *Behavioral Risk Factor Surveillance System* (20-26-2016)




42 fatalities.[1] Installation of safe pedestrian facilities, like sidewalks, along with separated bicycle facilities could substantially reduce these numbers.

## ENVIRONMENT

Greenway trail corridors typically contain extensive areas of plant life, open space, and waterways that link fragmented habitats, help protect native species and preserve natural landscapes. This is especially important in Lancaster County where only a small percentage (17%) of the landscape is forested.[2]

From an environmental health standpoint, active transportation helps reduce carbon emissions by providing an alternative to the use of the single passenger automobile. Efforts to reduce air pollution are needed in Lancaster County. A 2018 report by the American Lung Association rated the County's air quality a grade of "D" for High Ozone Days, and a grade of "F" for both Annual and 24-Hour Particle Pollution.[3]

## ECONOMIC OPPORTUNITY

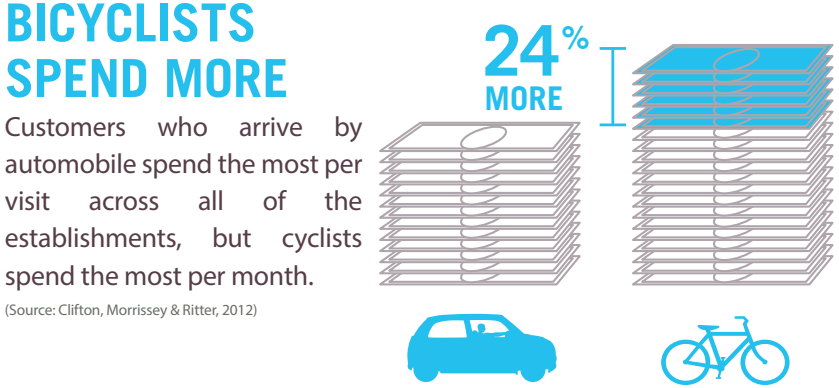
Active transportation can enhance the economic health of our communities through increased bicycle and pedestrian activity and tourism. When visitors use local trails, they spend money on goods and services such as hotels, restaurants, and shops. A 2017 study by the Outdoor Industry Association found that bicycling participants spend $83 billion on 'trip-related' sales (bicycle tourism) and generate $97 billion in retail spending. Bicycle recreation spending also contributes to the creation of 848,000 jobs.[4]

1 Pennsylvania Department of Transportation. *2017 Pennsylvania Crash Facts and Statistics.* https://www.penndot.gov/TravelInPA/Safety/Documents/2017_CFB_linked.pdf

2 2018 Land Use/Land Cover Analysis, Lancaster County GIS Department

3 American Lung Association. *State of the Air 2018.*

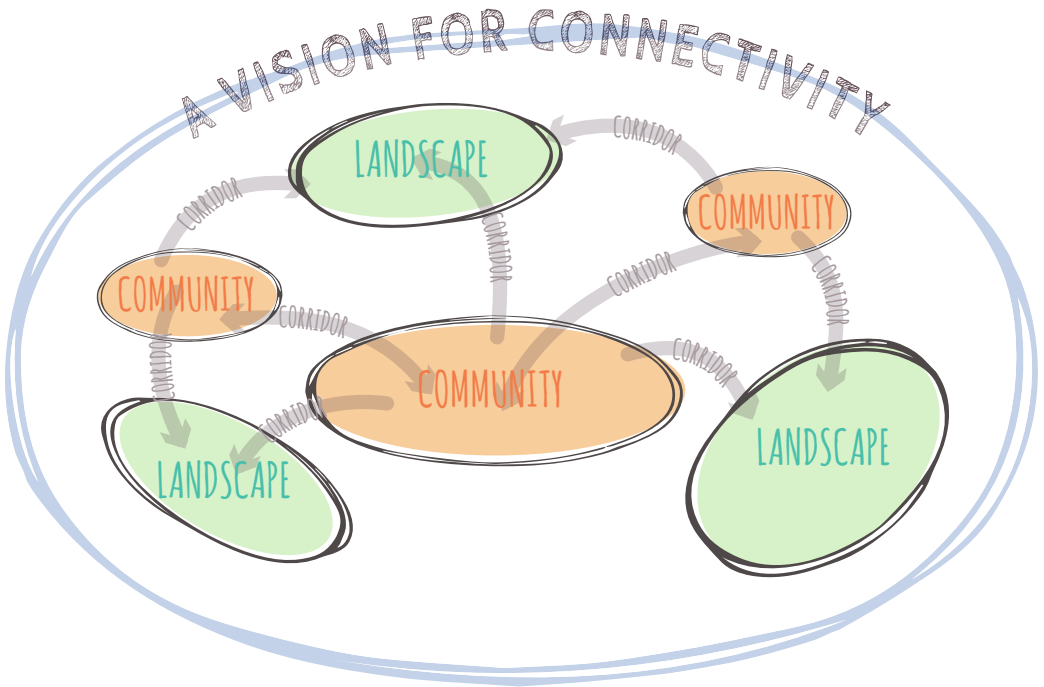
4 Outdoor Industry Association. *The Outdoor Recreation Economy.* 2017.



## IMPROVING ACCESS

Improving access by connecting communities to communities and communities to landscapes with bicycling and pedestrian facilities benefits human health, environmental health, and local economies. Improving access to greenway trails and multimodal pathways means improving the connections between people and businesses, schools, parks and community resources, via a network of bicycle, pedestrian, and transit facilities.

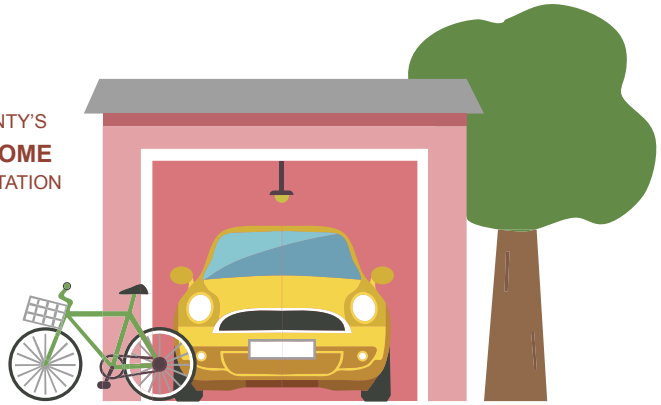
In addition, a well-planned transportation system promotes a diversity of transportation options that provides choices and alternatives to the automobile. This can make mobility safe and accessible to all residents regardless of age, income, and ability. According to the 5 Year Estimates of the 2016 American Community Survey, 9% of the households in Lancaster County do not have access to an automobile. This lack of reliable transportation makes it challenging for low-income workers to obtain and keep jobs.




### HOUSEHOLD VEHICLE OPERATION COSTS

**23%**

OF LANCASTER COUNTY'S
**HOUSEHOLD INCOME**
GOES TO TRANSPORTATION



AAA's ***Your Driving Costs*** determined the average cost to own and operate a new vehicle in 2018 as $8,849 per year.

# WHY PLANNING IS IMPORTANT

Survey responses at the beginning of the planning process indicate that many residents view active travel within their communities as unsafe due to heavy traffic, speeding vehicles, and a scarcity of sidewalks, crosswalks, and bicycle facilities. Investing in pedestrian and bicycle facilities could encourage new active transportation opportunities such as employees walking to work and children biking to school. Safe and convenient facilities for physically active travel can also expand access to transportation networks for people without cars and spur additional investment in infrastructure to increase the comfort of the on-road experience.

However, the type of improvements in the transportation network needed to make walking and biking safer and more comfortable don't just happen. They take careful thought and planning, deliberate action by community leaders, financial investment, adoption of proper regulations, enforcement by local police, education and awareness, and coordination with public works departments and private sector developers.

This plan lays the framework for action by public, private, and non-profit partners in our community to achieve the vision that has been developed for active transportation. It establishes a priority network to focus investment in both on-road and off-road facilities throughout the County, the LIMC region, and the City of Lancaster. It contains policies and programs that will encourage and educate bicyclists, pedestrians, and automobile drivers, foster respect and enhance safety.

# HOW WE PLAN

Street and trail design is one of the most important elements of a thriving and attractive place. Planners and designers often discuss cities as a living body, making street networks the arteries that pump the lifeblood throughout communities. The analogy is a helpful reminder that cities need healthy and active streets in order to stay alive and thrive.

*"Streets have been the places where children first learned about the world, where neighbors met, the social centers of towns and cities."*

*- Donald Appleyard, Professor & Theorist*

Changing conditions require different thinking about where people live and work, how people move around, and how heritage can be protected and celebrated. Walking, bicycling, and using transit should be safe and comfortable options for everyone. In order to provide a connected network, we must have a plan that sets the stage for manageable action items tied to a vision and achievable goals. This plan provides a workbook to accomplish realistic tasks that will improve conditions for all ages and abilities and connect people to the communities and landscapes throughout the Lancaster area.


Photo Credit: Open Streets Lancaster / Michelle Johnson

# WHO WE PLAN FOR

We plan for everyone. The entire network development is tied to active transportation infrastructure and nodes of activity. This plan aims to improve conditions for all ages and abilities, with emphasis placed on creating comfortable spaces for ages 8 through 80. Pedestrian facilities surface in areas where walking is critical to connectivity for all ages and abilities. For the city, we are careful to be context sensitive with facility development - creating more protected bicycle infrastructure near schools, high demand areas, and as connections to trails.

The range of pedestrian abilities is fairly straightforward. The pace of some walkers is naturally slower than others, but we also consider adults pushing strollers and people using wheelchairs in the development of sidewalk connections and trails.

The range of bicycling abilities is commonly described in terms of comfort levels. The most common classification system used to describe biking comfort level was originally developed by Roger Geller, Bicycle Coordinator for the City of Portland. Geller's "Four Types of Transportation Cyclists[1]" classifies the general population of the city into categories of transportation cyclists by their different needs and biking comfort levels given different roadway conditions. Based on Geller's work, the population of a city can be classified into four types of cyclists: "Strong and Fearless," "Enthusiastic and Confident," "Interested but Concerned," and "No Way No How."

*It is important to note that people are categorized into these groups based only on their willingness to travel by bike as a means of transportation. People in the "interested but concerned" group may bike for recreation, but this classification system only refers to biking for transportation.*

| *Type of Cyclist* | *Abilities / Comfort Level* |
|---|---|
| **STRONG AND FEARLESS** **<1%** | This group is willing to ride a bike on any roadway regardless of traffic conditions. Comfortable taking the lane and riding in a vehicular manner on major streets without designated bike facilities. |
| **ENTHUSIASTIC AND CONFIDENT** **5%** | This group consists of people riding bikes who are confident riding in most roadway situations but prefer to have a designated facility. Comfortable riding on major streets with a bike lane. |
| **INTERESTED BUT CONCERNED** **60%** | This group is more cautious and has some inclination towards biking but are held back by concern over sharing the road with cars. Not very comfortable on major streets, even with a striped bike lane, and prefer separated pathways or low traffic neighborhood streets. |
| **NO WAY NO HOW** **35%** | This group comprises residents who simply aren't interested at all in biking, may be physically unable or don't know how to ride a bike, and are unlikely to adopt biking. |

1 Geller, Roger. "Four Types of Cyclists." Portland, Oregon's Office of Transportation. https://www.portlandoregon.gov/transportation/article/264746

# COMPONENTS OF THIS ACTIVE TRANSPORTATION PLAN

This collaborative process was led by the Lancaster County Planning Commission (LCPC), LIMC, and City staff paired with key stakeholders like South Central Transit Authority (SCTA) and two steering committees to create a truly integrated effort to change the culture from an auto-dominated transportation system to one that provides a variety of safe and comfortable modes of travel. Multiple separate planning efforts sparked the idea to craft a single process tied to a vision for regional connectivity. This report is the reflection of that effort. Each section of this plan aims to strategically expand the choices of transportation options in Lancaster County.

CORE COMPONENTS

## LANCASTER COUNTY ATP NETWORK

## LANCASTER CITY BICYCLE NETWORK

## GREENWAY FEASIBILITY

### GREATER LANCASTER HERITAGE PATHWAY / NORTHEAST GREENWAY EXTENSION

### ENGLESIDE GREENWAY FEASIBILITY STUDY

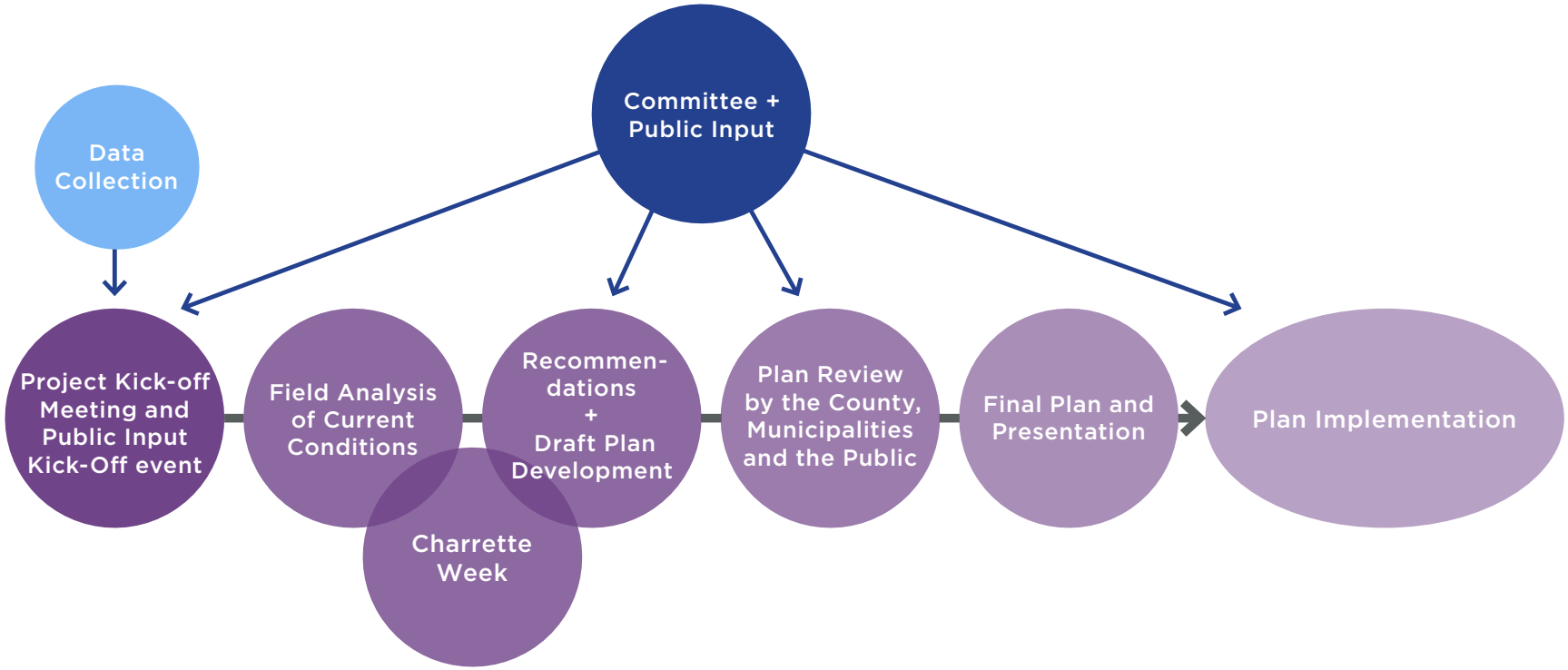
# PLANNING PROCESS

The "Five-Plans-In-One" Lancaster Active Transportation Plan was conceived in December 2015, with robust public input starting in October 2016. The participatory planning process involved over one thousand participants and concluded in the spring of 2019.

The project began with the formation of two steering committees, the Visioning Committee and Technical Advisory Committee, formed of municipal staff, local stakeholders, related active transportation organizations, and citizen volunteers.

The Technical Advisory Committee was formed to guide and review technical elements, such as the greenway feasibility studies, interim deliverables, and final report.

The project team sought public input throughout the planning process via regular website updates, community meetings, an online survey, and focus groups. The diagram below highlights the various stages of the planning process.



# LANCASTER ACTIVE TRANSPORTATION PLAN VISION STATEMENT

Developed before any field explorations or infrastructure recommendations, the vision and goals set the stage for creating active travel opportunities. Active transportation is simply another way of saying ***human-powered*** transportation. Walking and bicycling are ***modes of choice*** and ***modes of necessity*** for daily commuting. These two modes are also forms of recreation that stimulate economies, create a sense of place, and attract new families. The vision statement is the cornerstone for collaboration and action by public and private entities across the County. After careful consideration by the two steering committees and staff, the Lancaster ATP vision statement came to life:

*"Lancaster is a vibrant, diverse, and active community where people of all ages and abilities can move safely and conveniently through an interconnected network of pedestrian, bicycle, and transit facilities that promote healthy living and economic vitality."*

Photo Credit: Open Streets Lancaster / Michelle Johnsen

# LANCASTER ACTIVE TRANSPORTATION PLAN GOALS

With the vision serving as the cornerstone, the goals of the plan provide additional support for crafting policy, programming, and network recommendations that will be layered throughout short-, mid-, and long-term action items of an active transportation system. The goals illustrated below apply to each of the five core components of the plan and will drive current and future decisions.

| | |
|---|---|
| **IMPROVE ACCESS & CONNECTIVITY** | Develop an efficient and flexible transportation system that enhances the livability of our communities by providing alternative ways to travel, improving access to bicycle and pedestrian infrastructure, and connecting people with each other. |
| **ENHANCE HEALTH** | Create opportunities for biking and walking as part of a daily routine to increase physical activity, improve overall community health, and reduce the health risk factors associated with a sedentary lifestyle. |
| **PROTECT THE ENVIRONMENT** | Incorporate active transportation facilities into the design of new and existing communities to reduce traffic-related air and noise pollution, decrease water pollution, and use less land for roads and parking lots. |
| **CREATE ECONOMIC OPPORTUNITY** | Use trails and active transportation infrastructure to revitalize communities and create business opportunities. Connect everyone to economic and educational opportunities through active transportation – particularly those who face barriers related to age, ability, or lack of access to a private automobile. |
| **INCREASE SAFETY** | Ensure that everyone feels safe walking, biking, and riding transit. Reduce conflicts and crashes involving all users, particularly bicyclists and pedestrians. |

# EXISTING CONDITIONS

# INTRODUCTION

One of the goals of active transportation is to create an interconnected transportation network that helps us address the challenges of congestion, obesity, asthma, and air pollution. If we focus on the benefits of creating that kind of network, we'll build more support for bicycle and pedestrian infrastructure and encouragement programs that promote walking and bicycling.

This chapter outlines the existing conditions of active transportation in the County and what the Lancaster community has been doing to study and promote it.

## THIS CHAPTER INCLUDES AN OVERVIEW OF:

# BACKGROUND

Lancaster County has a hub-and-spoke development pattern. The city is located in the center, with several boroughs and villages to the north, east, and west, and to a lesser extent, the south. As the county's population grew, a system of private turnpikes was created to connect the city with these communities. An extensive fixed-rail trolley system augmented this system from the late 19th century until World War II, when the system was dismantled and replaced with buses. In the early 20th century, the "pikes" became public roads, and many of them became state highways.

By the 1950s, Lancaster County also followed the lead of larger cities in building limited-access highway bypasses of major road corridors. The first bypass was built north of the city to take east-west traffic off the old Lincoln Highway (King Street) and connect it with Harrisburg Pike, and later with the City of Harrisburg. Connections were built to carry traffic westward to York City, and northeast to Ephrata and Reading.

While these highways moved cars and trucks more efficiently over longer distances, they cut across the existing road network, reducing the connectivity of the entire system. They also acted as a magnet for automobile traffic, adding to congestion. Today, highway infrastructure has proven to be a major barrier and deterrent to walking and bicycling. Many people who would consider transportation alternatives are discouraged from doing so, because they don't feel safe without driving in a car.

*(right) This bus stop along Route 30 is located on a steep slope that lacks direct sidewalk access and curb ramps, which makes it difficult to access, particularly for people with physical or mobility impairments. Other amenities that may be appropriate at high-volume stops are also absent, such as seating, lighting, or shelter.*

*(far right) Conditions around this limited access highway underpass and associated on/off ramps at Lititz Pike and Route 30 include high traffic volumes and speeds; large intersection crossing distances; and a lack of crosswalks and bicycle facilities. Because the highway creates a physical barrier, pedestrians and bicyclists heading north/south must traverse this underpass.*

A critical issue is the lack of infrastructure to help bicyclists and pedestrians safely cross these highway corridors. It's particularly difficult for bicyclists and pedestrians to travel north and south within the Lancaster metro area, because the most heavily traveled highway corridors cut across the area from east to west.

Although the most urbanized parts of the county — our city and borough downtowns — provide some advantages for bicyclists and pedestrians, they also pose some challenges. There are more connections in these communities, because streets are laid out in a grid pattern, and most of them have sidewalks. At the same time, these communities typically have narrow streets that limit the space available for bicycle and pedestrian infrastructure. Speeding, aggressive driving, and failure to yield at crosswalks is commonplace in our communities.

Lancaster City has the most on-road bicycle facilities, but only a few bike lanes and shared lanes exist — although more are in the works. In the city, two-way streets are generally too narrow for protected bike lanes in both directions without eliminating on-street parking. One-way streets encourage speeding, which makes bicycle novices uncomfortable and pedestrians apprehensive to cross streets at intersections where traffic is turning.

**THE LACK OF CONNECTIONS MAKES IT DIFFICULT AND DISCOURAGING TO TRAVEL ON FOOT OR BY BICYCLE. THIS FACT IS REFLECTED IN THE HEALTH OF THE COUNTY'S RESIDENTS:**

- 60% of Lancaster adults and 36% of its youth (Kindergarten through 6th grade) are overweight or obese.
- 10% of local adults live with diabetes.
- Asthma affects daily activities for 7% of adults and nearly 14% of children.
- Lancaster is ranked 25th among U.S. cities with the worst particle pollution.

*(top) Because most of the county's urban communities lack any type of bicycle facilities, only the most experienced or "fearless" cyclist are willing to ride in traffic.*

*(bottom) The sidewalk along this corridor ends abruptly, leaving pedestrians with no option but to walk along the road, or cross outside of an intersection or crosswalk.*

Suburban areas, especially, lack bicycle and pedestrian infrastructure. For instance, the pikes radiating from Lancaster City are logical corridors for sidewalks and crosswalks, but they generally only exist where a recent land development has required them to be installed. Bicyclists on these pikes typically find inconsistent shoulder widths and numerous curb cuts (driveways and access points) that intimidate all but the most confident riders. Most borough main streets are state routes, which gives those municipalities little say over what happens on their main streets and other key roads.

Other options for traveling around the county – trails and transit – have some limitations. Although some major trail connections are under construction, the countywide network is incomplete. The mass transit system follows the major pikes radiating out from the city, which means that most transfers require traveling into Lancaster City and back out again.

Implementation of this plan has the potential to positively impact community health by providing opportunities to reduce vehicle miles traveled, induce bicycle ridership, promote walking as a means of transportation, and provide clear paths for accessing transit hubs. In addition, throughout the county, lack of ADA compliant access points and facilities such as ramps and audible pedestrian signals on sidewalks are a significant barrier to active transportation for users of all abilities.

*Photo Credit: Google Streetview Image*

*(top) Near major employment and retail center Park City, this segment of Harrisburg Pike lacks sidewalks, crosswalks, and bicycle infrastructure.*

*(middle) The sidewalks along this portion of Route 999 contain multiple vehicular access points, which creates the potential for conflict between motor vehicles and pedestrians.*

*(bottom) This 5-lane corridor lacks crosswalks or other infrastructure designed to help pedestrians or cyclists cross the street. Even when a destination is merely across the street, it may not feel safe to walk or bike without specific signage or infrastructure.*

# EXISTING PLANNING EFFORTS

Active Transportation is not a new concept to the communities of Lancaster. The County, LIMC, and City and their partners have several current initiatives and previous planning efforts on record as well as a foundation of existing facilities, policies, programs and plans that support the creation of places that are safe and comfortable to walk, bike, and access transit.

## COUNTY OF LANCASTER

The Lancaster County Comprehensive Plan, called places2040, has strong policies that encourage the construction of bicycle and pedestrian facilities; multi-use trails; and compact, mixed-use development. In addition, the county has a bicycle and pedestrian plan and a bicycle map outlining bicycle tours, cycling conditions, and a travel time and distance chart.

Both the Lancaster County Planning Commission (LCPC) and the Lancaster Metropolitan Planning Organization (MPO) have adopted official complete streets policies, as have several municipalities in the county. In addition, complete streets have become an important part of LCPC's regular work program, and the staff has developed a guidebook and checklist for municipalities to assist with implementation. The complete streets concept calls for a transportation network that accommodates all users and all modes of transportation. Improvements to implement complete streets include sidewalks, on- and off-road bicycle facilities, and multi-use trails – though not every treatment is appropriate for every road.

**MUNICIPALITIES IN LANCASTER COUNTY WITH ADOPTED COMPLETE STREETS RESOLUTIONS:**

- City of Lancaster
- Lancaster Township
- Columbia Borough
- Elizabethtown Borough

The MPO has allocated its available Transportation Alternatives Funding (TAP) from the state to numerous regional trail projects including two major bridges on the Enola Low Grade Trail: the US 222 overpass and the iconic Safe Harbor Railroad Trestle. It has also created a Smart Growth Transportation funding program to fund projects and studies that are 1) located in the county's growth areas and 2) that improve livability, support smart growth, and build the infrastructure needed to increase walking, biking and the use of transit. In addition, the MPO has formed a Bicycle & Pedestrian Advisory Committee (BPAC) to provide guidance on incorporating bike and pedestrian improvements in major road projects.

## LANCASTER INTERMUNICIPAL COMMITTEE (LIMC)

The Lancaster Intermunicipal Committee (LIMC) has completed several plans that support the development of active transportation facilities in the County. *Growing Together: A Comprehensive Plan for Central Lancaster County* (2006), was an effort by the LIMC to plan together as a region. The Plan recommended that "a planned, interconnected, and safe network of alternative transportation options will be developed to move people and goods." It also called for an improved bicycle and pedestrian system, including crosswalks. *Conestoga Greenways: A River Corridor Conservation Plan* (1999),

called for a cooperative effort to develop a network of on- and off-road greenways along or near sections of the Conestoga River, the Little Conestoga Creek, and the West Branch of the Little Conestoga Creek. The *Regional Park and Open Space Plan* (1993), focused on establishing greenways, enhancing recreation opportunities and preserving the natural and man-made environments for the area's current and future residents.

## CITY OF LANCASTER

In 2015, a downtown *Walkability Analysis* was completed for the City of Lancaster by pedestrian planning expert Jeff Speck. It called for slowing traffic, enhancing pedestrian circulation and safety, expanding on-street parking capacity, and adding bicycling facilities. The City has already implemented many of these recommendations. The City's efforts to improve on-road bicycling facilities include bike lanes on Mulberry Street, Charlotte Street, Hershey Avenue, Prince Street, and College Avenue; bike sharrows on streets throughout the City including Mulberry, Charlotte, James, Lehigh, S Lime, and W Vine Streets, and a bike boulevard on Christian Street. In addition, a bike-share program with Zagster that features stations throughout the city has also been implemented. In 2017, the City also pledged to support the goals of the Paris Climate Agreement, and it has since expanded its greenhouse gas inventory and embarked on a municipal operations climate action plan.

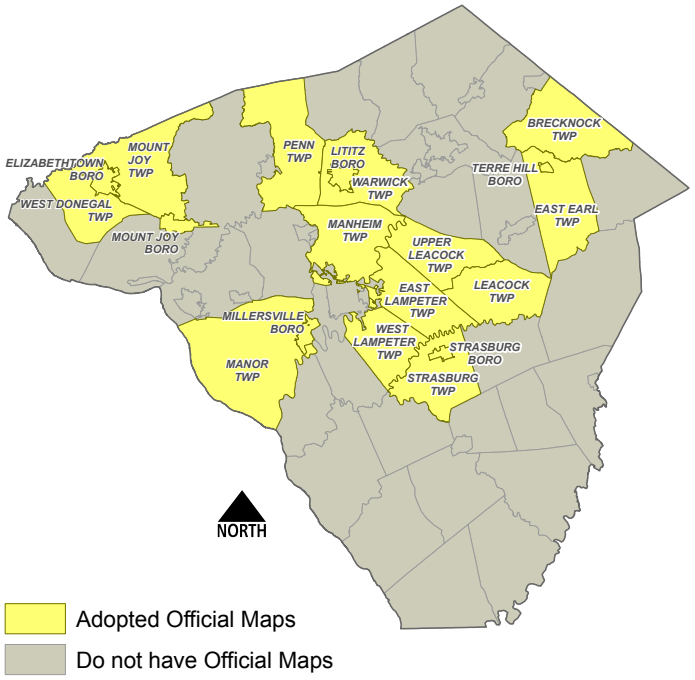
## MUNICIPAL GOVERNMENTS

While most of the county's boroughs have a historic core that is walkable and moderately bikeable, some of these communities have taken additional steps to facilitate active transportation in their communities. Elizabethtown Borough, for example, has added a $1.6 million walking trail that connects its Amtrak rail station, community recreation center, high school, and library.

Marietta Borough has constructed a downtown route that connects the Northwest River Trail to commercial establishments along Front Street. Ephrata and Akron boroughs have taken advantage of the abandoned Reading & Columbia Railroad line to develop a multi-use trail that serves both recreational and transportation needs. Suburban communities such as Warwick and Manheim Townships have developed extensive trail and path systems. Along the heavily traveled US 30 tourism corridor, East

*Green bicycle lane on Prince Street in Lancaster City.*

### MUNICIPALITIES WITH OFFICIAL MAPS




*Municipalities with adopted official maps that could be used to implement the recommendations in this plan.*

Lampeter Township is developing a multi-use trail that will give visitors an opportunity to explore the area without driving, as planned for within the *Route 30 Streetscape Plan*.

Bridgeport Crossroads is a multi-municipal planning initiative by East Lampeter, the City, West Lampeter, and Lancaster Township to improve Bridgeport and surrounding areas by making them more walkable, multimodal, and bike-friendly. A number of goals in the draft plan relate directly to active transportation, including: creating safer and more walkable streets; enhancing bikeways, trails, sidewalks, and crosswalks and access to schools, neighborhoods, and recreational areas; and improving access to public transportation.

Several municipalities have adopted official maps that identify planned future investments such as sidewalks, trails, and transit stops. Official maps are authorized by the Pennsylvania Municipalities Planning Code and are one of the most effective tools a municipality can use to plan for and implement its active transportation network.

## OTHER PARTNERS IN THE COMMUNITY

Lancaster County is fortunate to have several private and nonprofit partners engaged in advocacy, promotion, marketing, education and encouragement programs related to active transportation. In 2007, Penn Medicine Lancaster General Health created a program called "Lighten Up Lancaster County" to raise awareness about the health problems associated with poor nutrition, lack of physical activity, and obesity.

Lancaster Bikes! is a coalition of community partners working to make Lancaster more bicycle friendly through advocacy, education, and outreach. Every year, the Lancaster Recreation Commission sponsors "Open Streets Lancaster," an event where streets become safe, car-free spaces that give people an opportunity to walk, bike, roller blade, shop local goods, participate in spontaneous play, and get to know one another.

The Common Wheel is a nonprofit organization whose mission is to transform the community through the power of bikes. The organization sells repaired and refurbished donated bicycles at low-cost and offers a youth bike workshop and bike mechanics classes for adults. The Lancaster Bicycle Club, an organization that promotes recreational bicycling for all interested cyclists, is also instrumental in advocating for bicycle funding in Lancaster County. These are just some of the programs and support activities that organizations and agencies in Lancaster County are providing.

*(right) Participants enjoy walking and biking at Open Streets Lancaster, even with recumbent bicycles.*

*(bottom) Lancaster youth learn bike maintenance and repair at The Common Wheel.*

*Photo Credits: Michelle Johnsen for Open Streets Lancaster and The Common Wheel*

# EXISTING PLAN REVIEW

To understand the existing planning efforts in Lancaster City and County and provide a basis for new recommendations, 22 plans were reviewed. Many of the plans contained detailed descriptions or graphics of existing conditions or recommendations. The existing conditions discovered during the plan review were key areas of tourism and historical importance, while the recommendations were primarily facility related. A detailed review of the visions, goals, and/or recommendations related to Active Transportation from existing plans can be found in Appendix B.

## TABLE 2.1 - PLANS REVIEWED

| | |
|---|---|
| **Lancaster County and LIMC** | |
| places2040 | 2018 |
| Lancaster County Comprehensive Plan | |
| Balance: the Growth Management Element | 2006 |
| Choices: the Housing Element (Executive Summary & Full Report) | 2006 |
| Tourism: the Strategic Tourism Element | 2005 |
| Connections 2040: The Transportation Element (Executive Summary & Full Report) | 2016 |
| Heritage: the Cultural Heritage Element | 2006 |
| Blueprints: the Water Resources Element | 2012 |
| Greenscapes: the Green Infrastructure Element (Executive Summary & Full Report) | 2009 |
| Lincoln Highway Streetscape Plan Phase 2 | 2015 |
| Lancaster County: MOVING SMARTER: Harrisburg Pike Transportation and Land Use Study | 2008 |
| Lancaster County: Gateways Revitalization Strategy | 2007 |
| Growing Together: A Comprehensive Plan for Central Lancaster County | 2006 |
| Lancaster County Bicycle and Pedestrian Transportation Plan | 2004 |
| **City of Lancaster** | |
| Lancaster, PA Downtown Walkability Analysis | 2015 |
| City of Lancaster Green Infrastructure Plan | 2011 |
| Urban Parks, Recreation and Open Space Plan | 2009 |
| **PennDOT** | |
| Feasibility Study for Harrisburg Pike: Pedestrian Accommodations & Multi-Use Trail (Final Report) | 2012 |

# LINKING THIS PLAN TO PLACES2040

It's important to see the Active Transportation Plan in the context of places2040, the Lancaster County Comprehensive Plan. Although the planning process for places2040 was undertaken separately from the Active Transportation Plan, they overlapped. Based on input from over 8,000 county residents over a 3-year period, places2040 presents five (5) "big ideas" and 26 policies for the county's future. Here they are, together with the policies most relevant to the Active Transportation Plan:

## CREATING GREAT PLACES

- Make our downtowns more vibrant, safe, and attractive
- Design communities that put people first
- Find new and innovative ways to reduce congestion

## CONNECTING PEOPLE, PLACE, & OPPORTUNITY

- Make our downtowns into regional hubs
- Create more places to hike, bike, play, and enjoy nature
- Make it easier for residents and visitors to get around without a car
- Connect housing, jobs, schools, transportation, and other destinations

## TAKING CARE OF WHAT WE HAVE

- Use existing buildings and maintain public infrastructure

## GROWING RESPONSIBLY

- Grow where we're already growing
- Prioritize redevelopment and infill in Urban Growth Areas
- Build more compactly and efficiently

## THINKING BEYOND BOUNDARIES

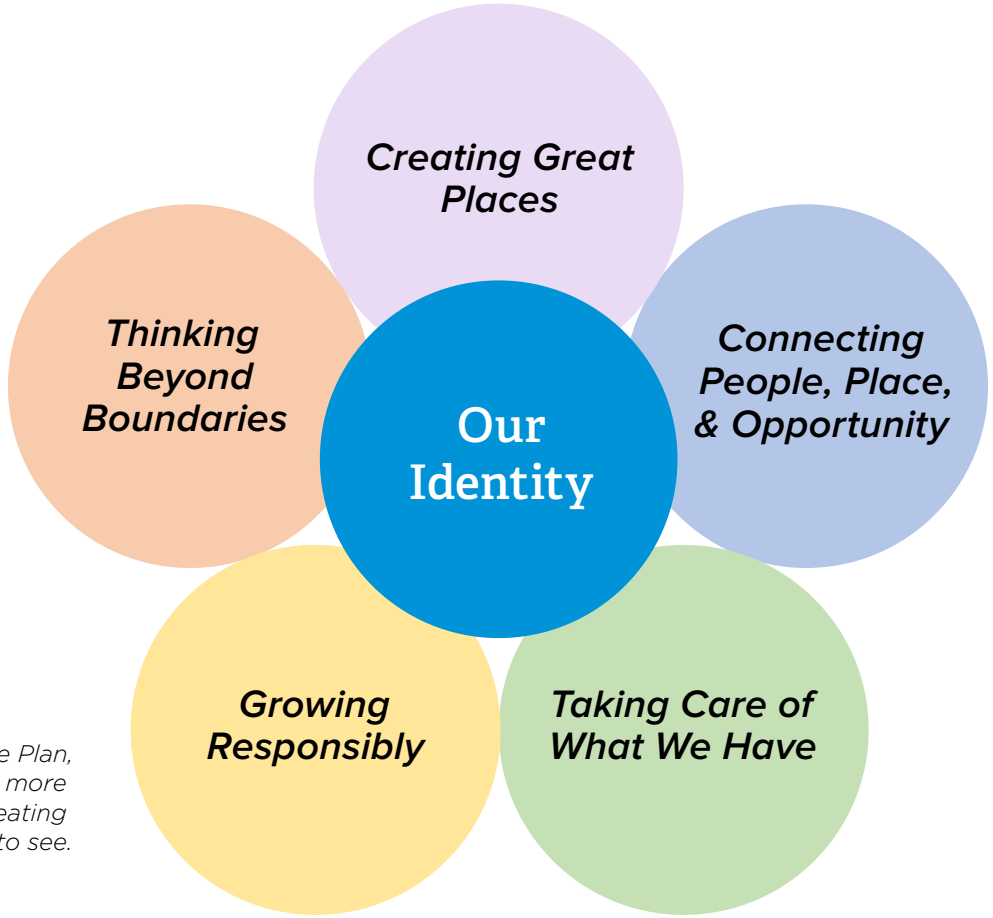
- Integrate place-based thinking into all future planning initiatives
- Break down the traditional silos that limit our effectiveness
- Make planning and regulation more efficient, consistent, and regional
- Keep ourselves accountable for the goals we've set


*The full Places 2040 report is available online at www.places2040.com.*

## CATALYTIC TOOLS & STRATEGIES

Places2040 also identifies seven (7) catalytic tools & strategies (listed below) for implementing these ideas. Many of the goals in the Active Transportation Plan can also be realized by focusing on these tools. Place-based planning and official maps can emphasize the need for transportation connections. Zoning ordinances and complete streets policies can require pedestrian, bicycle, and transit infrastructure. Most importantly, the public, private, and nonprofit sectors need to work together to achieve common goals – and to incentivize these goals through funding and technical support.

- **Practice** place-based planning and analysis
- **Simplify** zoning
- **Utilize** official maps
- **Implement** complete streets
- **Invest** in sufficient infrastructure and public services
- **Collaborate** to implement places2040 policies
- **Align** community resources with these policies




*Places2040, the Lancaster County Comprehensive Plan, identifies five (5) "big ideas" that help to think more holistically about the policies that will guide us in creating the kind of future we all want to see.*

# LINKING DEMOGRAPHICS TO EQUITABLE TRANSPORTATION NETWORKS

The equity analysis model considers demographic factors that can indicate concentrations of vulnerable users whose transportation needs are typically underserved by the existing system, especially by bicycling and walking facilities. Using data from the US Census Bureau and the 2016 American Community Survey, the following socio-economic indicators were used to identify concentrations of vulnerable users in Lancaster County and the City of Lancaster:

- **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
- **Age:** Percentage of the population under 18 years of age and over 65 years of age

The maps on pages 2-13 through 2-15 illustrate the composite results of the inputs described above. These results are only one of several elements used to inform **WHERE** to recommend facilities and **HOW** to prioritize projects to create a more equitable active transportation network.

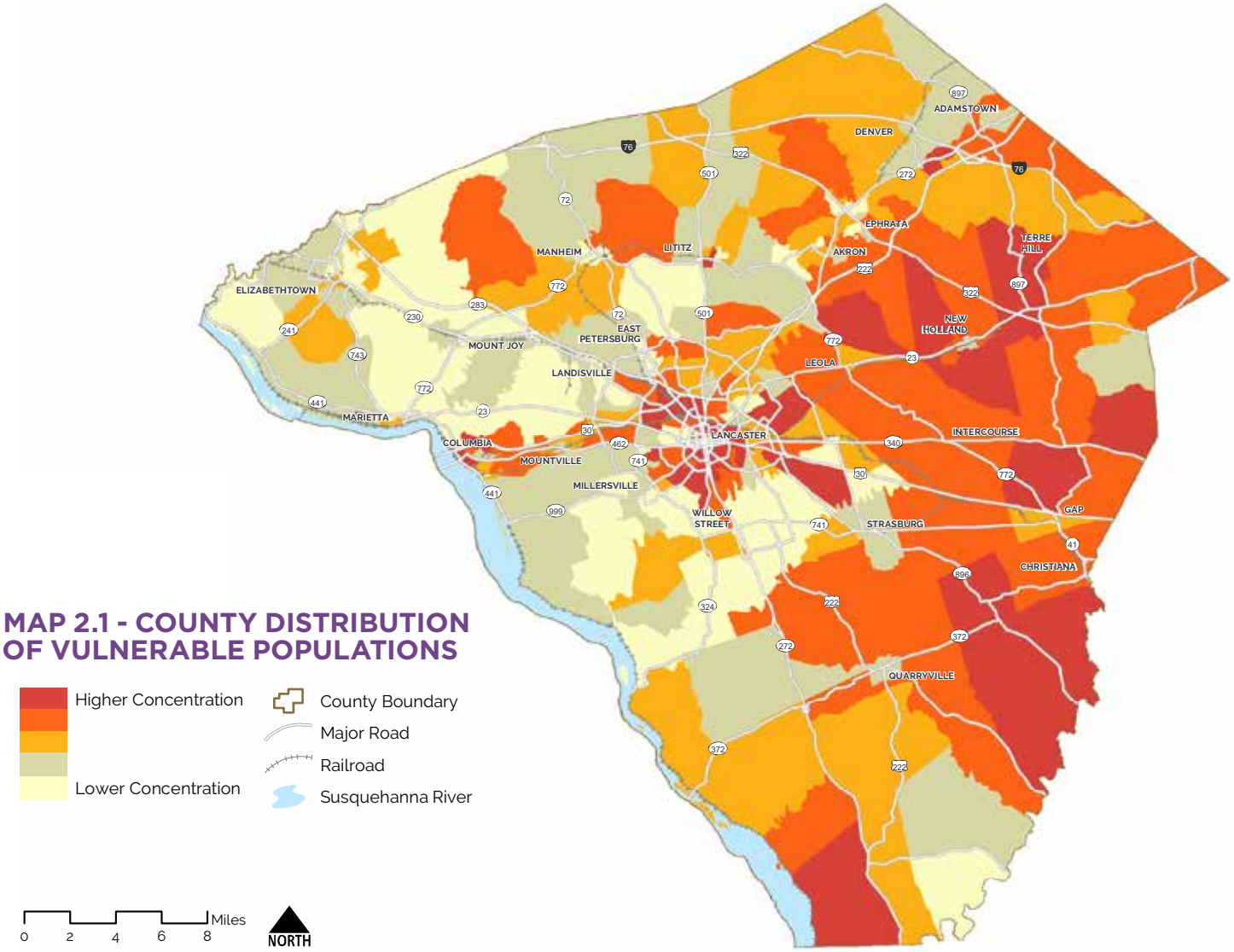
## WHY DO THESE EQUITY MAPS MATTER?

Areas in red indicate where people live within the county who may benefit the most from improved access to a well-connected active transportation network.

Safe walking and bicycling routes help connect children to school, provide options for older adults to remain mobile, and can help connect those without access to a vehicle to necessary services. Active transportation facilities can help connect people to jobs, recreation, healthy sources of food, and education opportunities.

# DEMOGRAPHIC EQUITY COMPOSITE | LANCASTER COUNTY

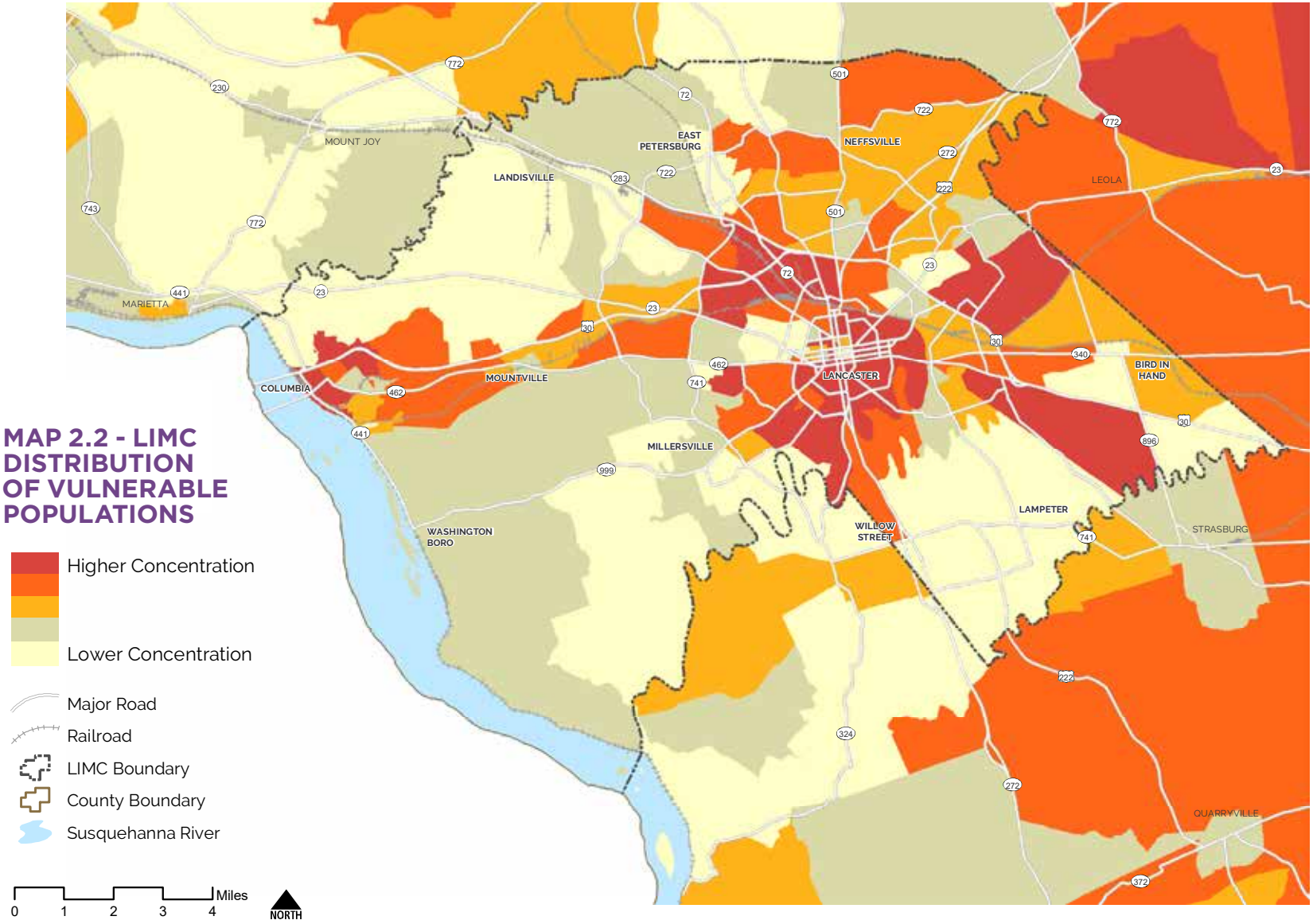
Based on the equity analysis, higher concentrations of vulnerable populations tend to be located within the City of Lancaster and adjacent suburban areas, the boroughs of Lititz and Columbia, eastern municipalities of West Earl, Earl, East Earl, and Terre Hill, and southern/southeastern municipalities of Eden, Colerain, Sadsbury, Salisbury, and Fulton. In understanding these results, it is important to consider the impact that Plain Sect communities may have on the distribution of these equity results, particularly in relation to the greater concentration of Plain Sect communities in the eastern areas of the county.




**MAP 2.1 - COUNTY DISTRIBUTION OF VULNERABLE POPULATIONS**

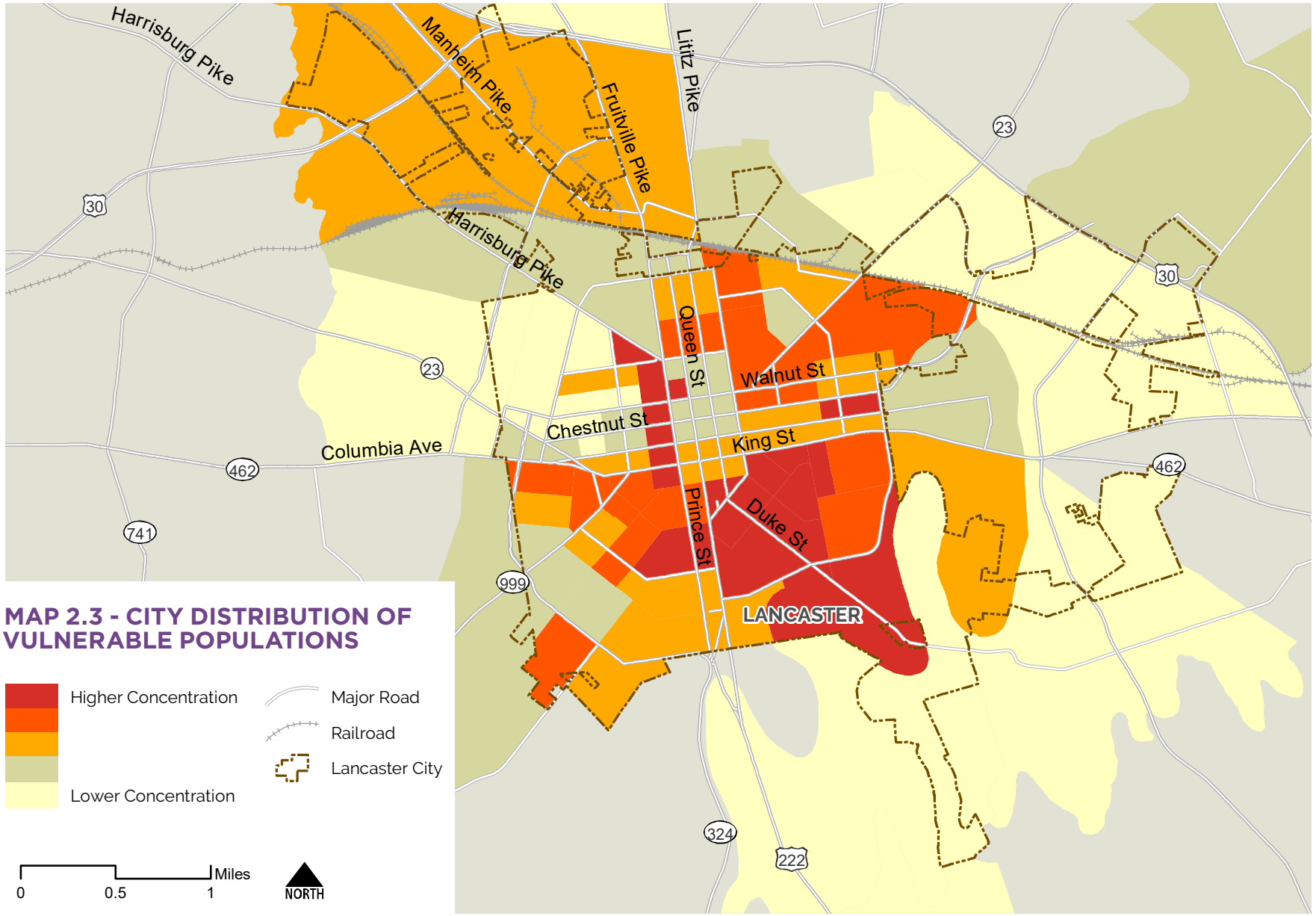
## DEMOGRAPHIC EQUITY COMPOSITE | LIMC

Within the LIMC area, higher concentrations of vulnerable populations considered in this analysis are located within the City of Lancaster and in East Lampeter Township. In addition, parts of Columbia Borough and Lancaster Township contain higher concentrations of vulnerable populations. Proposed facilities should consider connections both within existing communities but also among neighboring communities to increase opportunities for connections to transit, schools, jobs, services, and recreational opportunities.



# DEMOGRAPHIC EQUITY ANALYSIS | CITY OF LANCASTER

Higher concentrations of vulnerable populations considered in this analysis are located throughout Lancaster City, with the greatest concentrations located throughout the south eastern quadrant. High concentrations of vulnerable populations also tend to be located along the major corridors of Prince Street, South Duke Street, and to a lesser extent, East Chestnut Street.



# LANCASTER DEMAND ANALYSIS

The Demand Analysis conducted for Lancaster County identifies origins and destinations that should be connected with a network of bicycle and pedestrian facilities. The results of the Demand Analysis can be used to help identify areas in need of improved and new bicycle, pedestrian, transit, and trail facilities.

The inputs described below were used to develop the composite map shown on the following page.

## WHERE PEOPLE PLAY

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

## WHERE PEOPLE WORK

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

## 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 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 LIVE

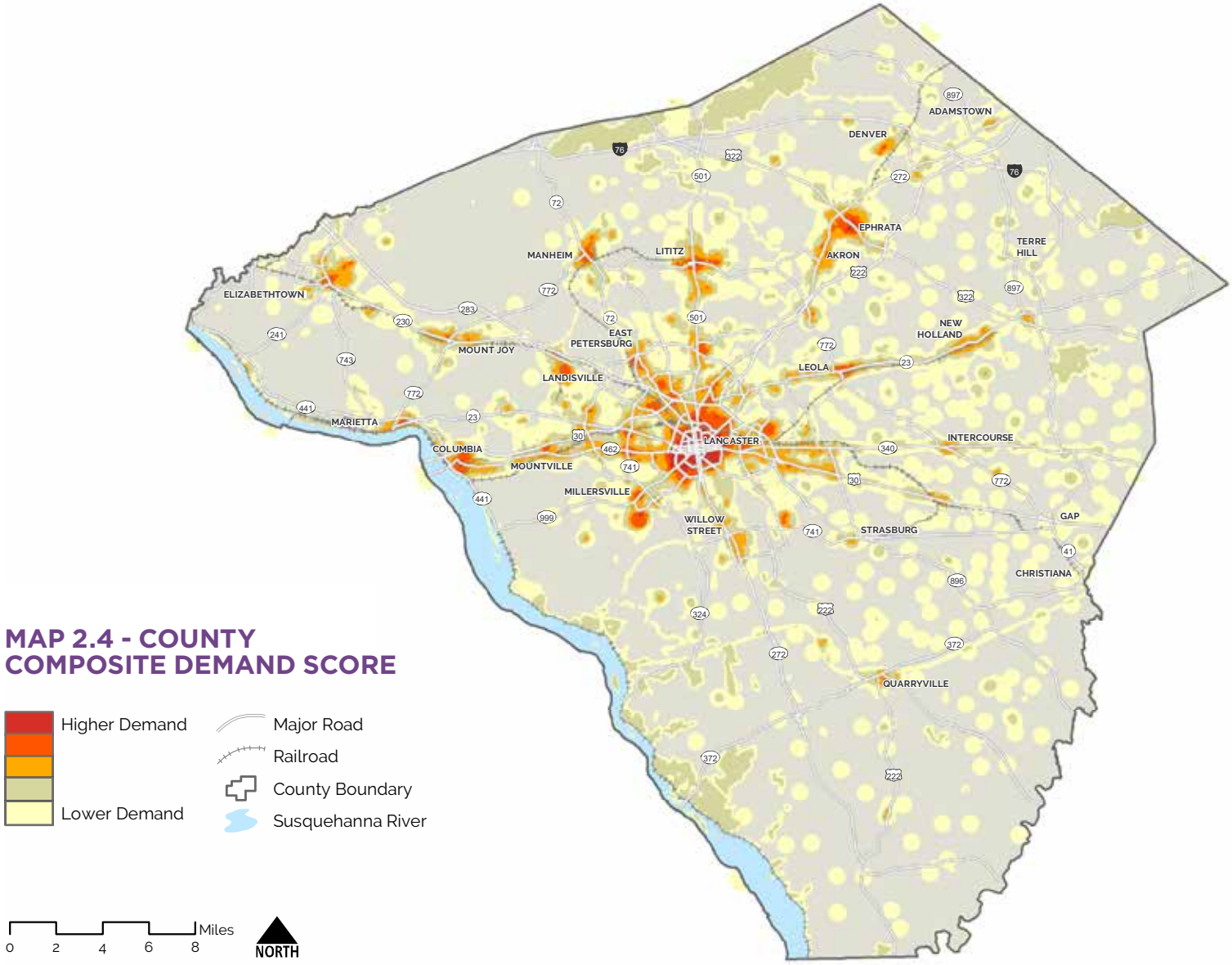
People are likely to walk near their homes for recreation or to visit nearby friends and family.

## WHERE PEOPLE ACCESS TRANSIT

All transit trips start or end with a walking or biking trip.

# DEMAND ANALYSIS | LANCASTER COUNTY

The results of the demand analysis are shown on the map below. Hot spots depict high concentrations of places where people Live, Work, Play, Learn, and Access Transit. High demand areas on this map correlate closely with Lancaster County's Designated Growth Areas.




## MAP 2.4 - COUNTY COMPOSITE DEMAND SCORE

# EXISTING BIKEWAYS + TRAILS

The following maps illustrate the existing bicycle facilities within the three study areas (County, LIMC, City). This analysis helps identify gaps in the network, areas of opportunity, and potential places for facility improvement. Analyzing the routes and facilities at the three different scales also helps visualize opportunities for inter-jurisdictional cooperation leading to a more complete and connected network.

## TABLE 2.2 - EXISTING BIKEWAYS + TRAILS MILEAGE TABLE

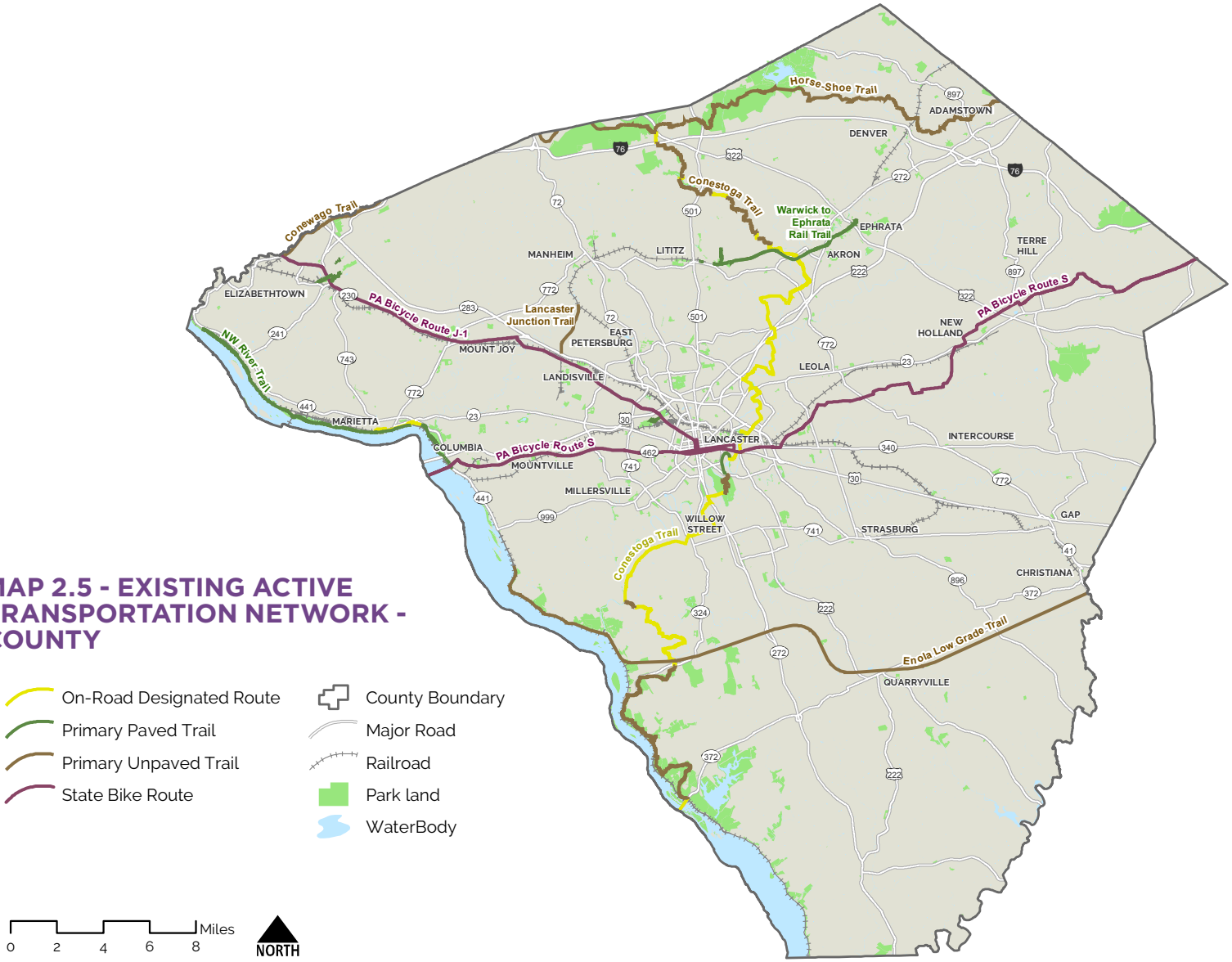
| *Facility Type* | *County Miles* | *LIMC Miles* |
|---|---|---|
| **On Road Designated Route** | 37.1 | 10.9 |
| **Primary Paved Trail** | 23.2 | 4.6 |
| **Primary Unpaved Trail** | 90 | 9.1 |
| **State Bike Routes*** | 65.5 | 32.5 |
| **Total** | **215.8** | **56.5** |

| *Facility Type* | *City Miles* |
|---|---|
| **Minor Separated Bikeway** | 4.1 |
| **Bicycle Boulevard** | 0.9 |
| **Trails** | 2.7 |
| **State Bike Routes*** | 6.2 |
| **Shared Street** | 6.6 |
| | **19.4** |

** While state bike routes have a technical designation through PennDOT, they may not be appropriate to riders of all ages and abilities.*

# EXISTING BIKEWAY AND TRAIL NETWORK | LANCASTER COUNTY

By highlighting only the built trails and state bike routes, it is clear that, while minimal, there are several existing opportunities for active transportation. However, the lack of overall connectivity reduces the network's value as a transportation option for most people. Additionally, the existing on-road routes can largely be considered as "high stress", meaning they likely aren't going to appeal to many potential users because they feel unsafe. This plan will set the stage for multi-jurisdictional collaboration and build upon existing resources to create a well-connected network that serves residents and visitors of all abilities.

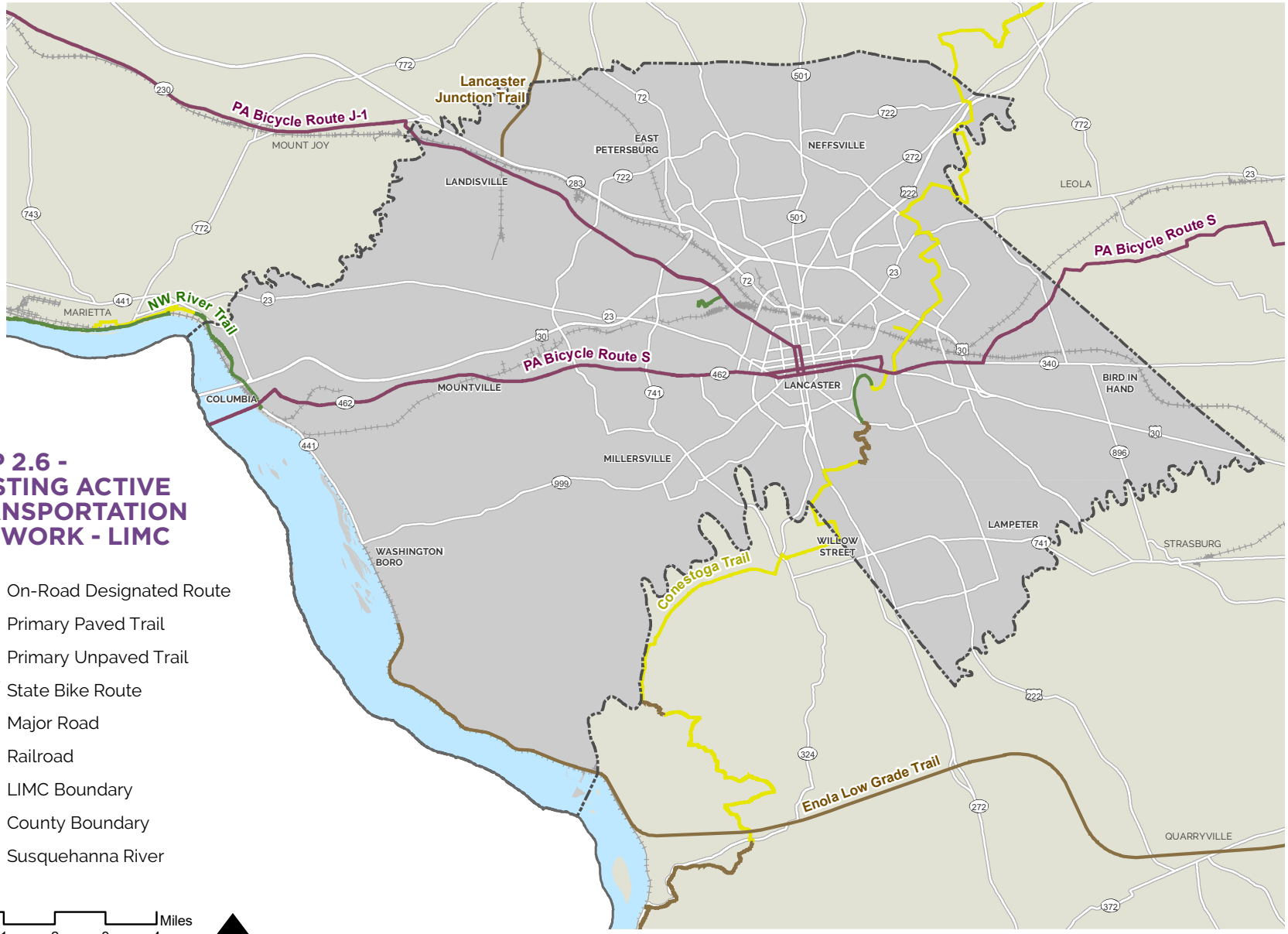



## MAP 2.5 - EXISTING ACTIVE TRANSPORTATION NETWORK - COUNTY

- On-Road Designated Route
- Primary Paved Trail
- Primary Unpaved Trail
- State Bike Route
- County Boundary
- Major Road
- Railroad
- Park land
- WaterBody

# EXISTING BIKEWAY AND TRAIL NETWORK | LIMC

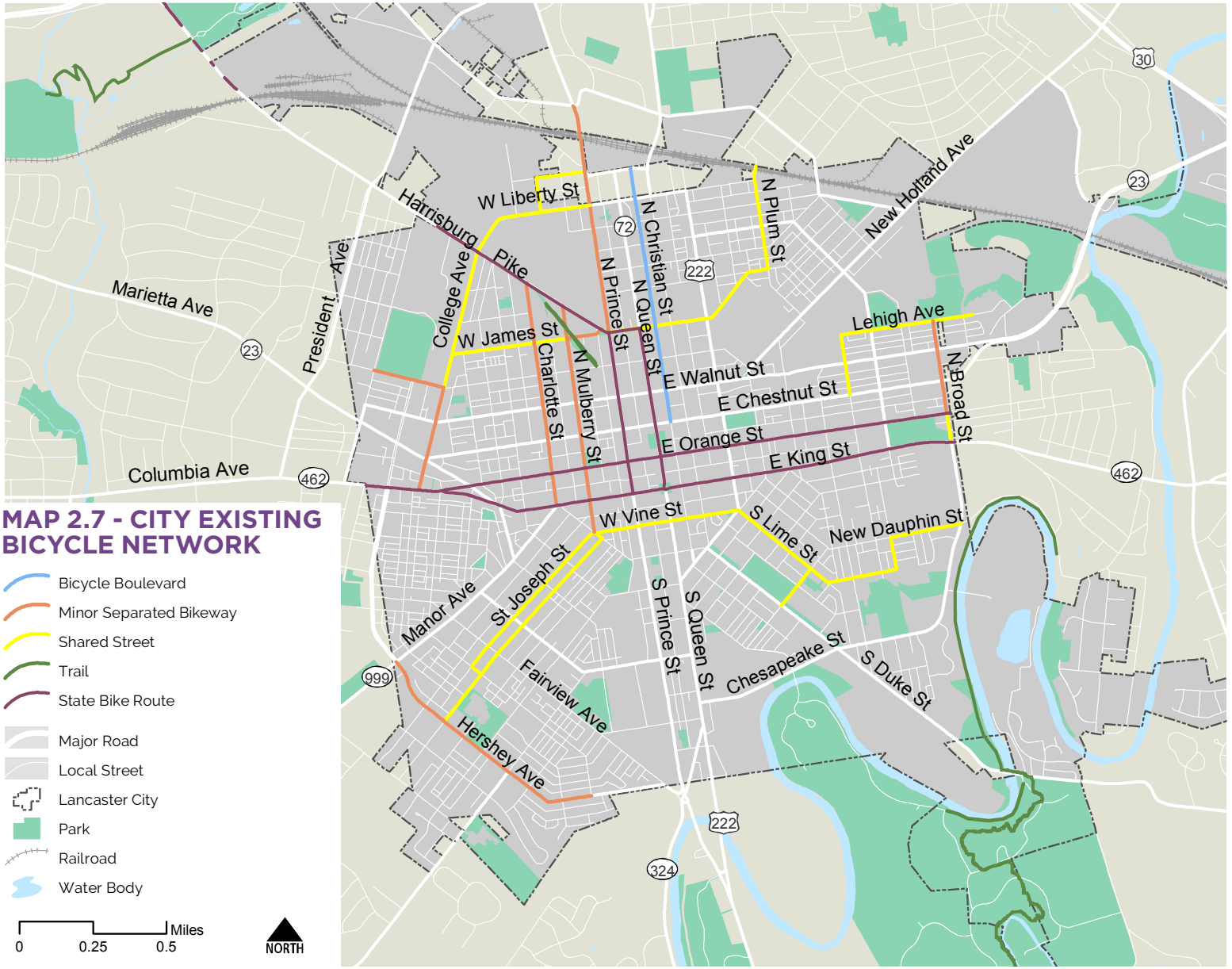
The LIMC area is not well connected with bicycle and pedestrian facilities. Therefore, network recommendations will focus on expanding connectivity for pedestrians and interested but concerned bicyclists by providing facilities that create safer and more comfortable roadway conditions.




**MAP 2.6 - EXISTING ACTIVE TRANSPORTATION NETWORK - LIMC**

# EXISTING ACTIVE TRANSPORTATION NETWORK | CITY

Since 2017, Lancaster installed almost 3 miles of bike lanes and 5 miles of shared lane streets, as well a bike boulevard on N. Christian Street, setting the stage for a city-wide network connecting all areas of the City. PA Bike Route S is aligned across the city from east to west and with an extended network will provide economic benefits for local businesses. Although a network exists, there are opportunities to make additional bicycle and pedestrian improvements that will further connect the City with adjacent municipalities.




## MAP 2.7 - CITY EXISTING BICYCLE NETWORK

- Bicycle Boulevard
- Minor Separated Bikeway
- Shared Street
- Trail
- State Bike Route
- Major Road
- Local Street
- Lancaster City
- Park
- Railroad
- Water Body

0 0.25 0.5 Miles

NORTH

# EXISTING SIDEWALK NETWORK

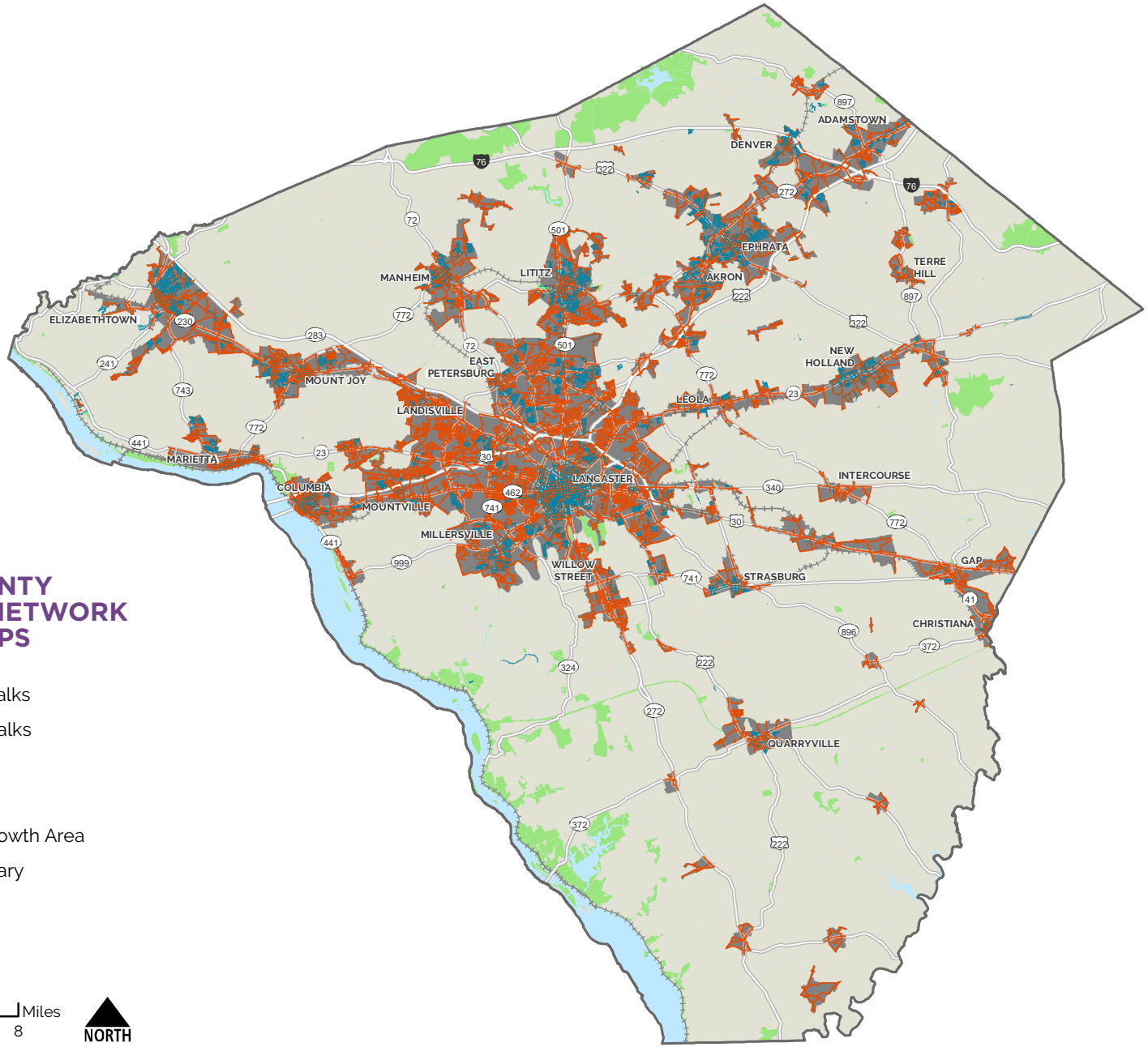
The following maps show sidewalk deficiencies for all roads within the DGA (Designated Growth Areas) in Lancaster County. These maps help to provide insight into facility gaps, areas of limited connectivity, and places of opportunity. Not every street needs to include a sidewalk to feel safe and comfortable to pedestrians, so this information is most beneficial when analyzed in the context of other characteristics such as roadway speed, width, and traffic volume.

The maps show more complete sidewalk networks in Lancaster City, the boroughs, and older urbanized areas. Sidewalks are missing in many suburban areas – and where sidewalks do exist, they may not extend beyond the limits of the subdivision or to connected sidewalk systems. Sidewalk gaps also exist along many of the arterial and connector roads that connect Lancaster County communities.

## CHART 2.1 - MISSING AND EXISTING SIDEWALKS IN LANCASTER COUNTY AND LIMC


** Mileage calculations based on the entire geographic extent specified.*

# MISSING SIDEWALK NETWORK | LANCASTER COUNTY



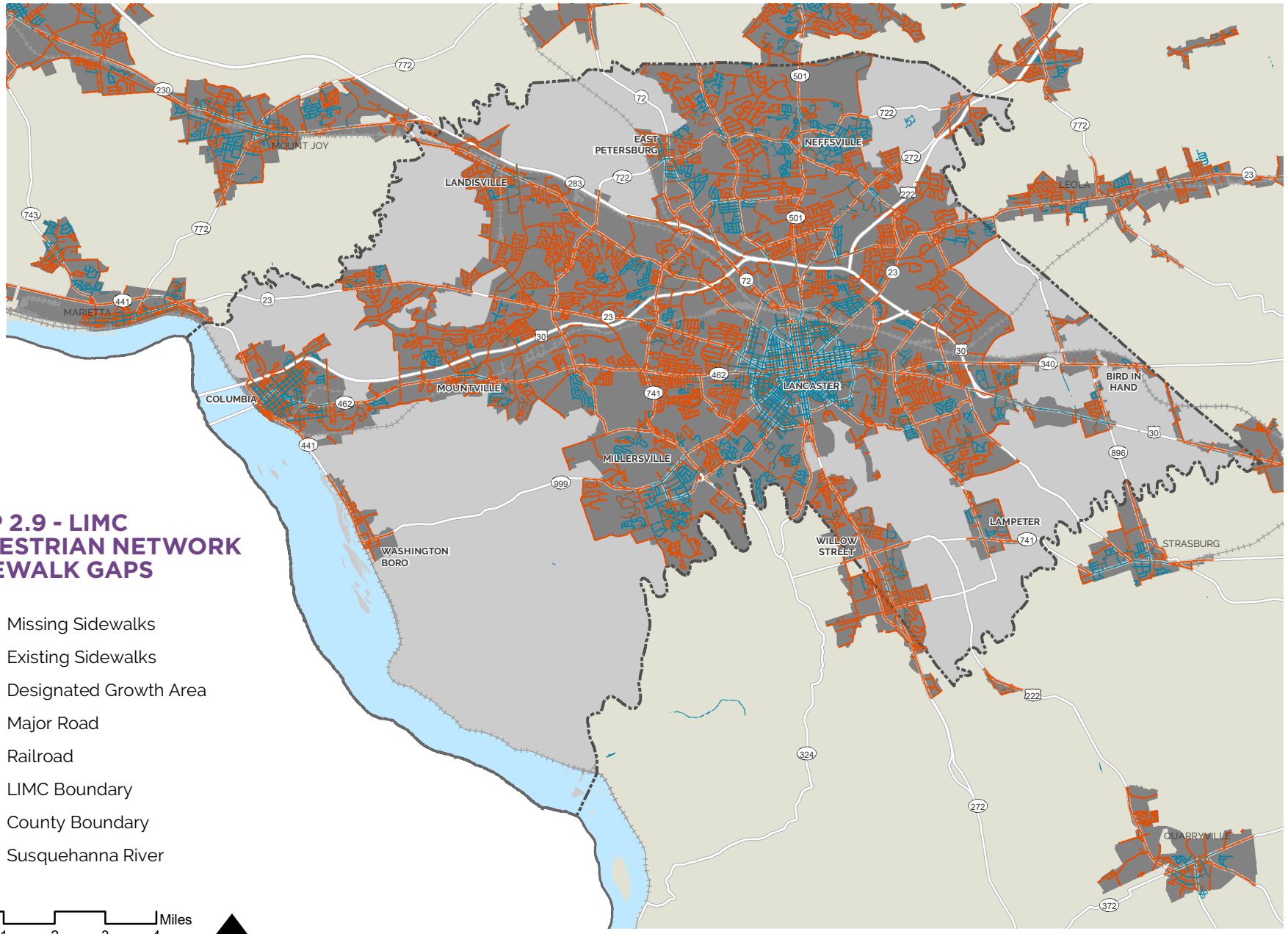

## MAP 2.8 - COUNTY PEDESTRIAN NETWORK SIDEWALK GAPS

- Missing Sidewalks
- Existing Sidewalks
- Major Road
- Railroad
- Designated Growth Area
- County Boundary
- Water Body
- Park land

0 2 4 6 8 Miles

NORTH

# MISSING SIDEWALK NETWORK | LIMC

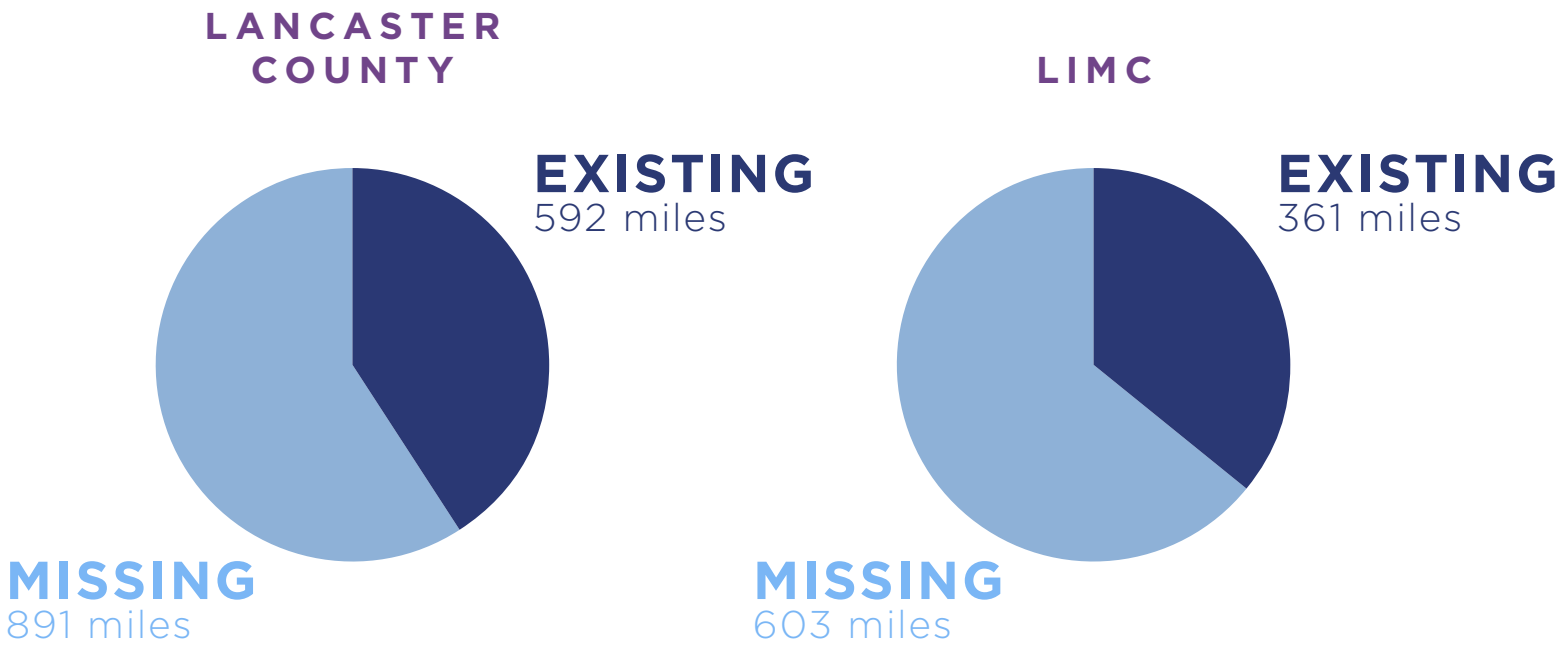


# CONNECTING TO EXISTING TRANSIT SERVICE

Active transportation is integral to a successful transit network. In most cases, trips by transit have at least one leg of the journey that is by foot, bicycle, or wheelchair or other assistive device. These segments of the trip are often referred to as first mile/last mile connections and are all about ensuring safe and comfortable active routes between destinations and transit. Improving these connections can contribute to overall health and well-being, provide more transportation options, and increase mobility equity, thereby alleviating transit overcrowding, and extending the reach of transit.

Ensuring pedestrian connections to the transit system will contribute to the capture of positive benefits associated with both transit and walking. The graphs below show the share of street miles within a quarter mile of a bus stop that have existing sidewalks or are currently devoid of sidewalks. This information will help guide pedestrian network development to spur use of the transit system.

## CHART 2.2 - MISSING AND EXISTING SIDEWALK MILEAGE WITHIN .25 MILE OF EXISTING BUS STOP IN LANCASTER COUNTY AND LIMC




**Mileage calculations based on the entire geographic extent specified.*

# BICYCLE LEVEL OF TRAFFIC STRESS (LTS)

Level of Traffic Stress (LTS) is a model used to quantify the user experience along and across the existing network of roadways and trails. LTS analysis was completed for Lancaster County and the LIMC. LTS aims to describe the comfort level of the existing roadway network for bicyclists and provides an intuitive framework to describe the benefits of bicycle infrastructure.

LTS scoring results in a range of LTS 1 to LTS 4 representing a spectrum from lowest stress to highest stress facilities. LTS 1 represents the lowest stress and LTS 4 represents highest stress and discomfort. To serve all types of people riding bicycles, a bikeway network should consist of continuous low-stress LTS 1 and LTS 2 segments and intersections. An LTS analysis helps to focus on identifying the improvements that will bring the high-stress LTS 3 and LTS 4 gaps down to low stress LTS 1 and LTS 2 levels, thereby removing barriers to bicycling for a large proportion of the population.

It's important to note that an LTS analysis is subject to the availability and thoroughness of travelway data. Inputs used in this analysis include posted speed, presence and width of bikeways, traffic volumes, and number of travel lanes. The LTS results for both Lancaster County and LIMC are displayed on the following pages and summarized in the table below.

MOST COMFORTABLE

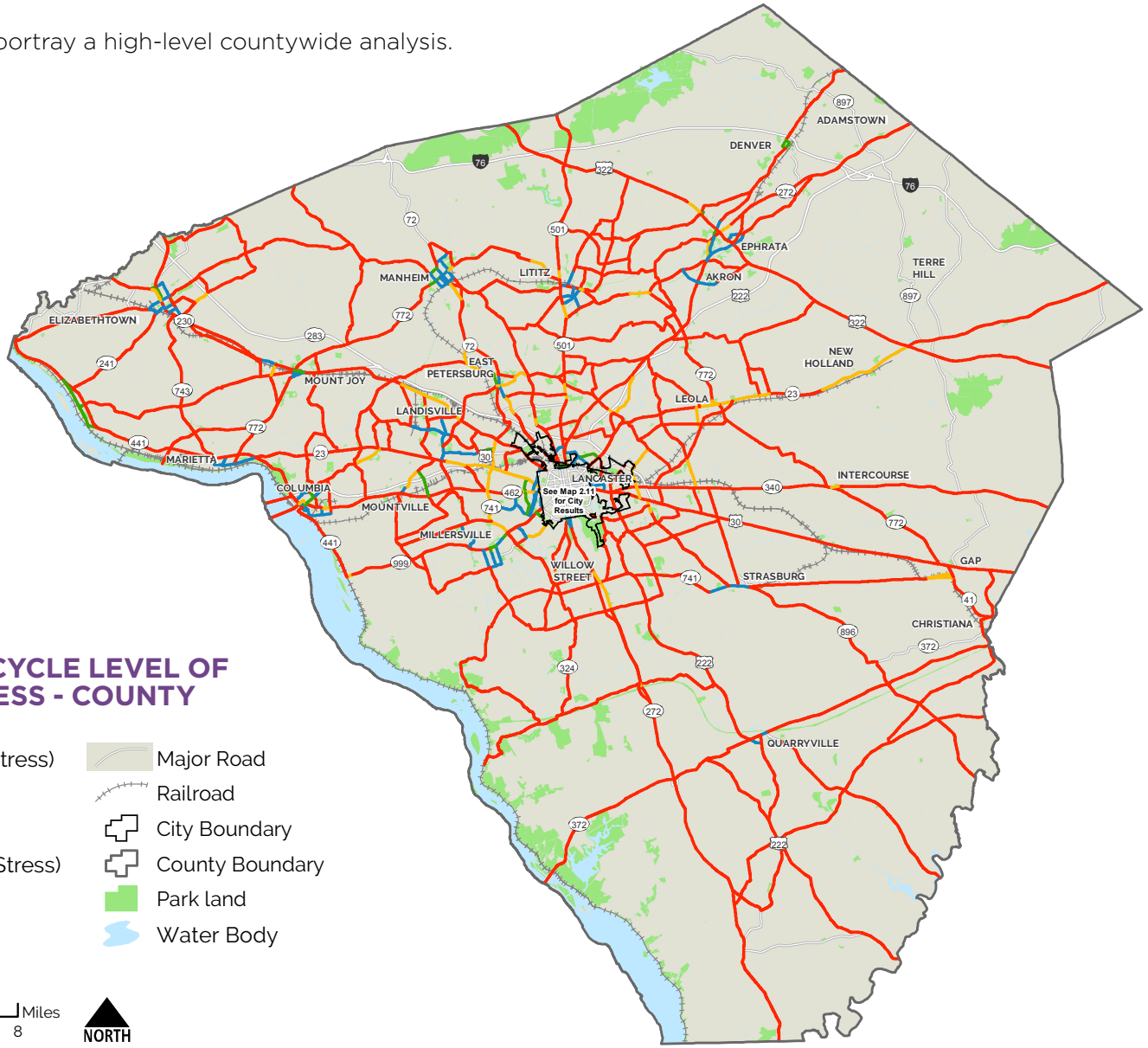
LEAST COMFORTABLE

| | | COUNTY | LIMC |
|---|---|---|---|
|  | LTS 1 | 79 miles (10%) | 55 miles (18%) |
|  | LTS 2 | 19 miles (2%) | 11 miles (4%) |
|  | LTS 3 | 53 miles (6%) | 34 miles (11%) |
|  | LTS 4 | 672 miles (82%) | 202 miles (67%) |

# BICYCLE LEVEL OF TRAFFIC STRESS (LTS) ANALYSIS | LANCASTER COUNTY

82% of the existing roadway network analyzed in Lancaster County scored as an LTS 4 which is uncomfortable for most cyclists. Only 12% of the existing network scored as LTS 1 or 2, primarily within community centers. This analysis shows the need to improve connections to Lancaster City, the largest employment hub in the county (within the LIMC area), and areas like Manheim Township and Millersville Borough to improve the overall connectivity.

The results on this map portray a high-level countywide analysis.




## MAP 2.10 - BICYCLE LEVEL OF TRAFFIC STRESS - COUNTY

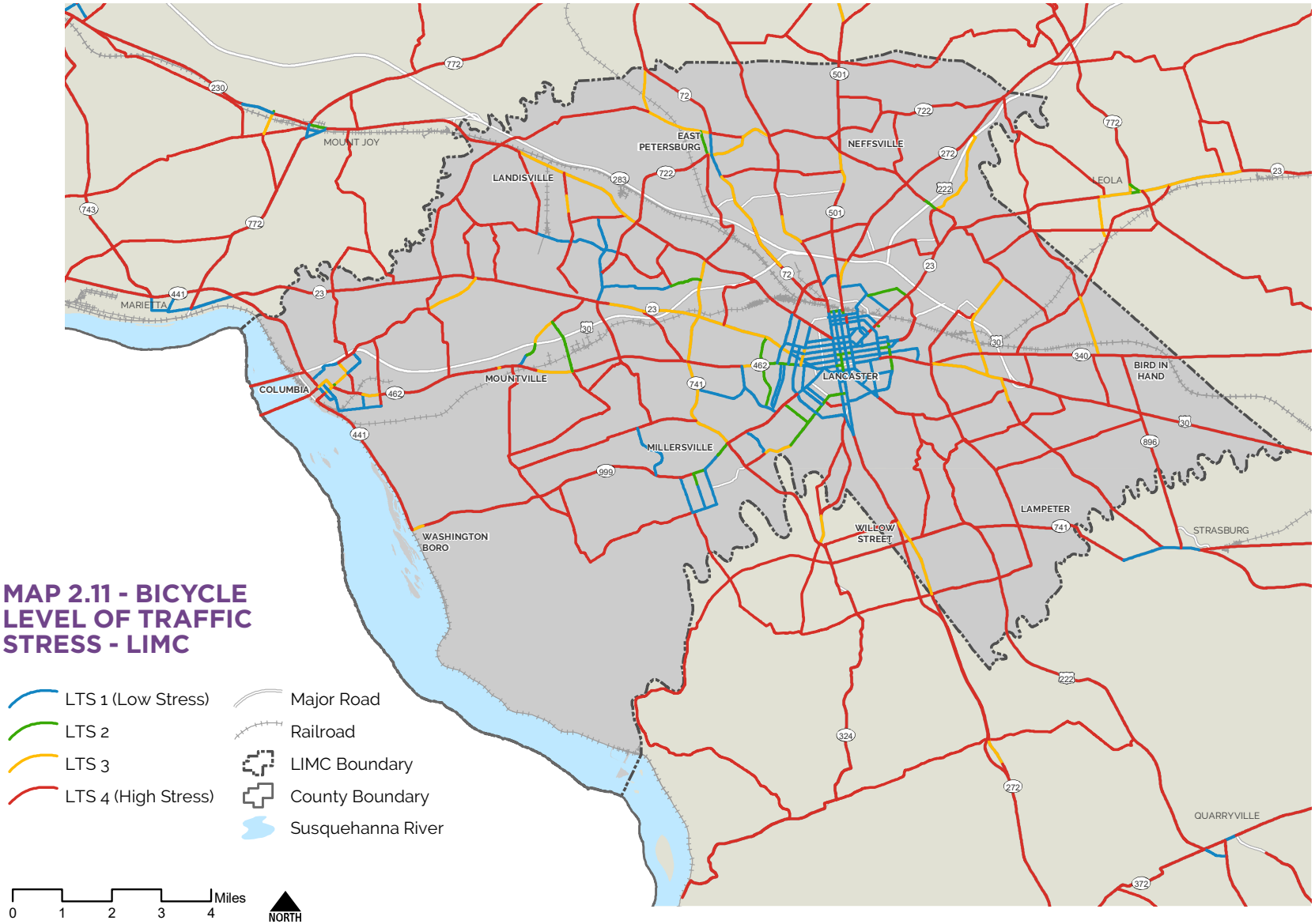
- LTS 1 (Low Stress)
- LTS 2
- LTS 3
- LTS 4 (High Stress)
- Major Road
- Railroad
- City Boundary
- County Boundary
- Park land
- Water Body

0 2 4 6 8 Miles

NORTH

## BICYCLE LEVEL OF TRAFFIC STRESS (LTS) ANALYSIS | LIMC

67% of the existing roadway network within the LIMC area scored as an LTS 4, which is uncomfortable for most cyclists. 18% scored as an LTS 1 and 4% scored as an LTS 2, both highlighting streets that are more comfortable for cyclists of all ages and abilities. The majority of the LIMC's LTS 1 and LTS 2 roadways are located within the City of Lancaster.



# PEDESTRIAN LEVEL OF SERVICE ANALYSIS

A Pedestrian Level of Service (PLOS) analysis was conducted for Lancaster County. Similar to the Bicycle Level of Traffic Stress, the PLOS provides a data-driven assessment of roadway comfort for pedestrians. The results of the model serve as an initial analysis of existing pedestrian facilities that helps identify gaps in the network that can lead to potential projects.

PLOS scoring results in a range of PLOS 1 to PLOS 5. PLOS 1 represents the lowest stress and PLOS 5 the highest stress and discomfort. Inputs in this analysis include posted speed, presence of sidewalks or shoulders, and roadway width. It's important to note that the accuracy of PLOS analysis is subject to the availability and thoroughness of data. As new data becomes available, the PLOS analysis should be updated.

The PLOS represents one method for assessing the pedestrian network. Other methods such as sidewalk gap analysis, crash data analysis, sidewalk/crosswalk condition surveys, or corridor studies might offer different insights.

**MOST COMFORTABLE** **LEAST COMFORTABLE**



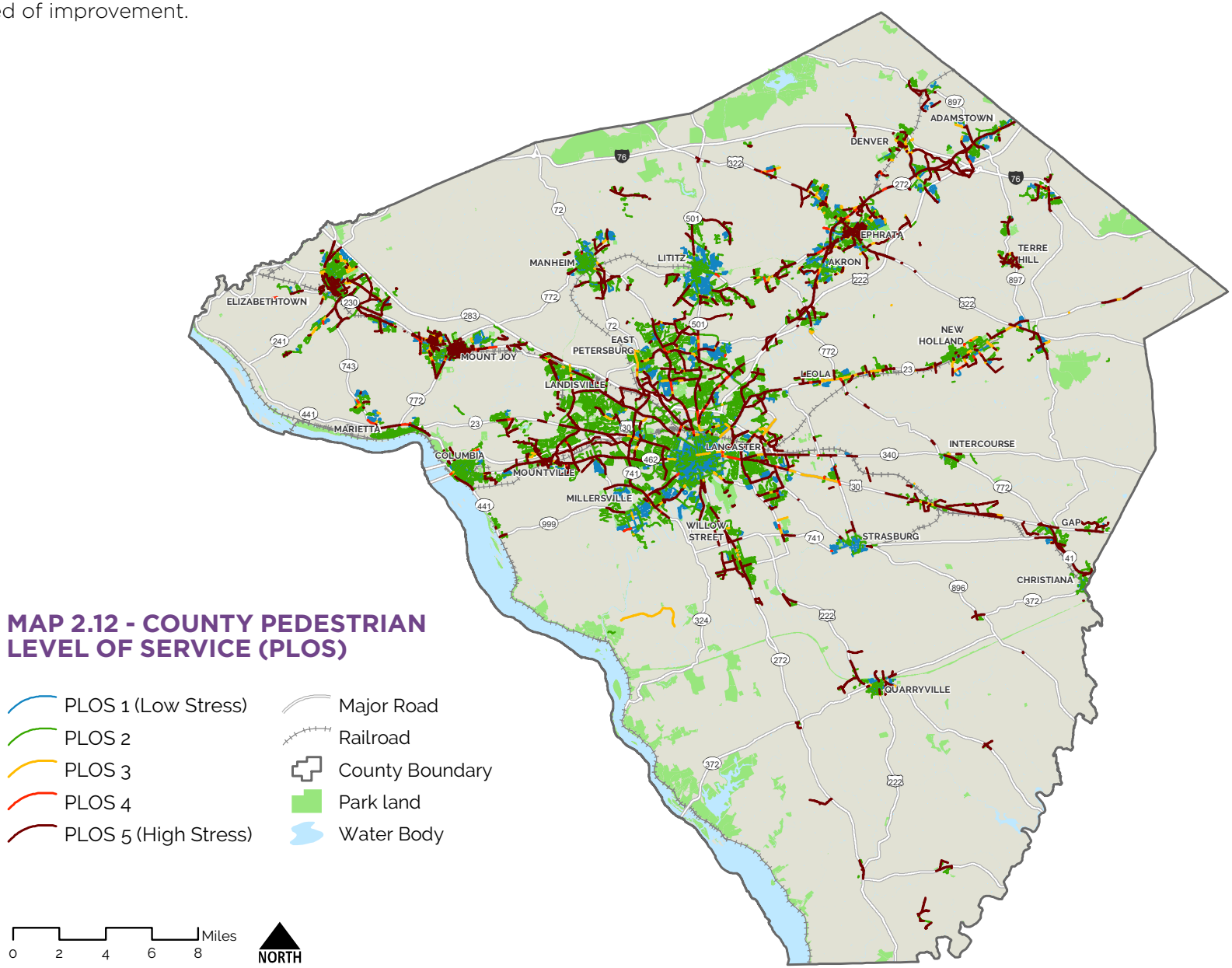


| PLOS 1 | PLOS 2 | PLOS 3 | PLOS 4 | PLOS 5 |
|---|---|---|---|---|
| **COUNTY** | | | | |
| 361 miles (23%) | 821 miles (52%) | 48 miles (3%) | 16 miles (1%) | 346 miles (22%) |
| **LIMC** | | | | |
| 194 miles (23%) | 466 miles (56%) | 19 miles (2%) | 8 miles (1%) | 139 miles (17%) |

** Mileage calculations based on the entire geographic extent specified.*

# PEDESTRIAN LEVEL OF SERVICE (PLOS) ANALYSIS | LANCASTER COUNTY

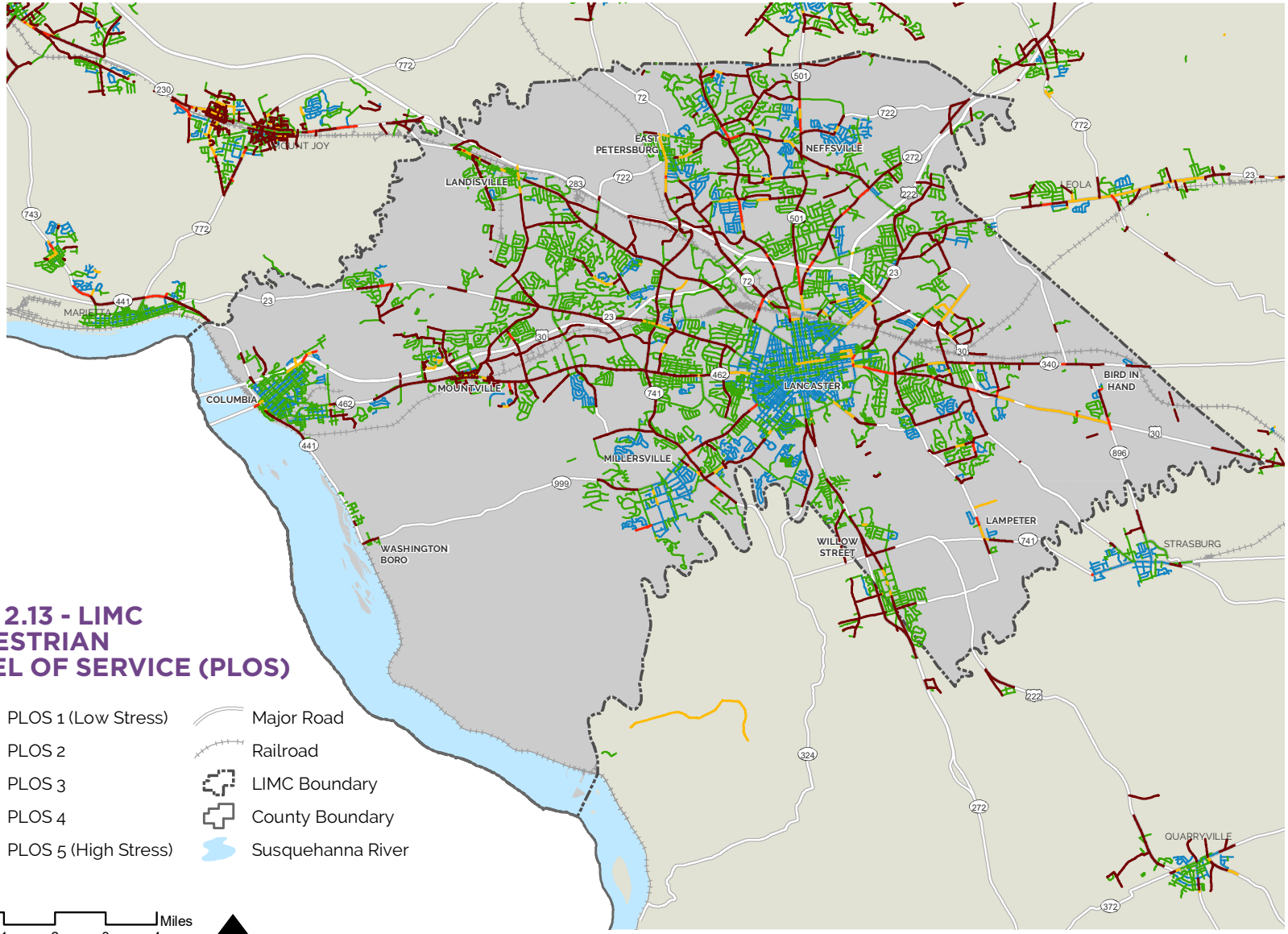
The map below depicts varying levels of comfort for pedestrians throughout the County. The roadways highlighted in red below are candidates for improved pedestrian conditions. The core of Lancaster City and some townships and boroughs are displayed as higher comfort areas for pedestrians, while other areas, like arterial and collector corridors connecting Lancaster City and the boroughs, are in need of improvement.




**MAP 2.12 - COUNTY PEDESTRIAN LEVEL OF SERVICE (PLOS)**

# PEDESTRIAN LEVEL OF SERVICE (PLOS) ANALYSIS| LIMC

The map below shows the level of pedestrian service for roads within the LIMC area. The most comfortable walking environments for pedestrians (PLOS 1 or 2) tend to be located in urbanized areas with extensive sidewalk infrastructure and low speed limits, such as Lancaster City and Columbia Borough. Many suburban neighborhoods also had relatively comfortable pedestrian environments, due to low speeds and traffic volumes. The least comfortable walking environments (PLOS 4 and 5) are primarily arterial and collector corridors such as Lititz Pike, Oregon Pike, and Columbia Pike. These same routes also host the majority of our transit routes, and are the primary routes that connect our city, boroughs, and neighborhoods.



# SAFETY ANALYSIS

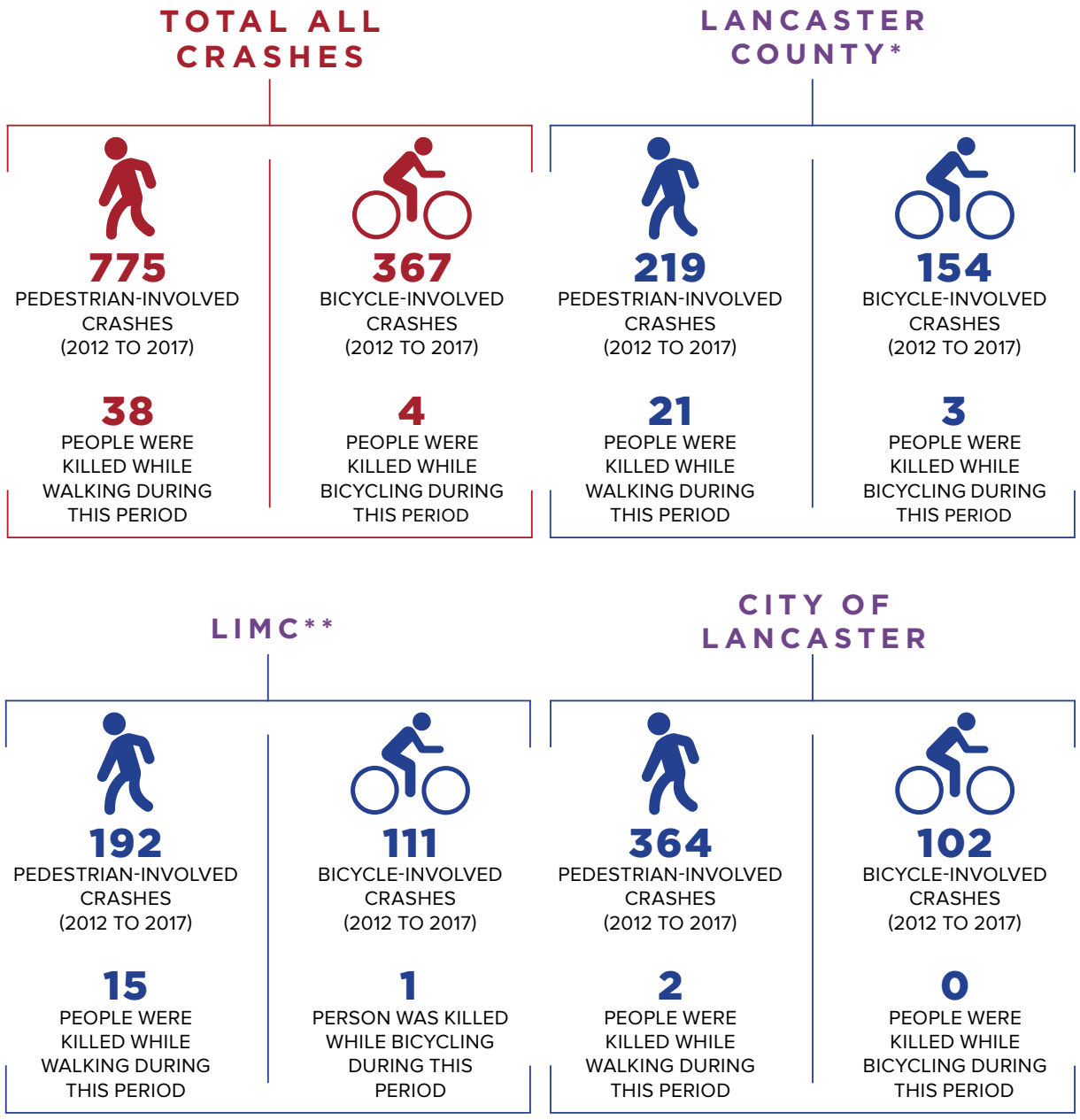
Crash data is important to analyze in order to understand which areas are in need of improvement. This can provide a foundation for both facility recommendations and as a key prioritization input based on density and frequency of conflicts.

The following graphic summarizes the reportable bicycle and pedestrian crashes from 2012 to 2017.

Over the course of 6 years, 1,142 crashes in Lancaster County involved bicyclists or pedestrians, and 42 people were killed as a result of these crashes. Though a large number of bicycle and pedestrian crashes occur in Lancaster City, these crashes were less likely to be fatal than in other parts of the county. The lower rate of fatality correlates with lower speed limits and more widespread bicycle and pedestrian infrastructure in Lancaster City.

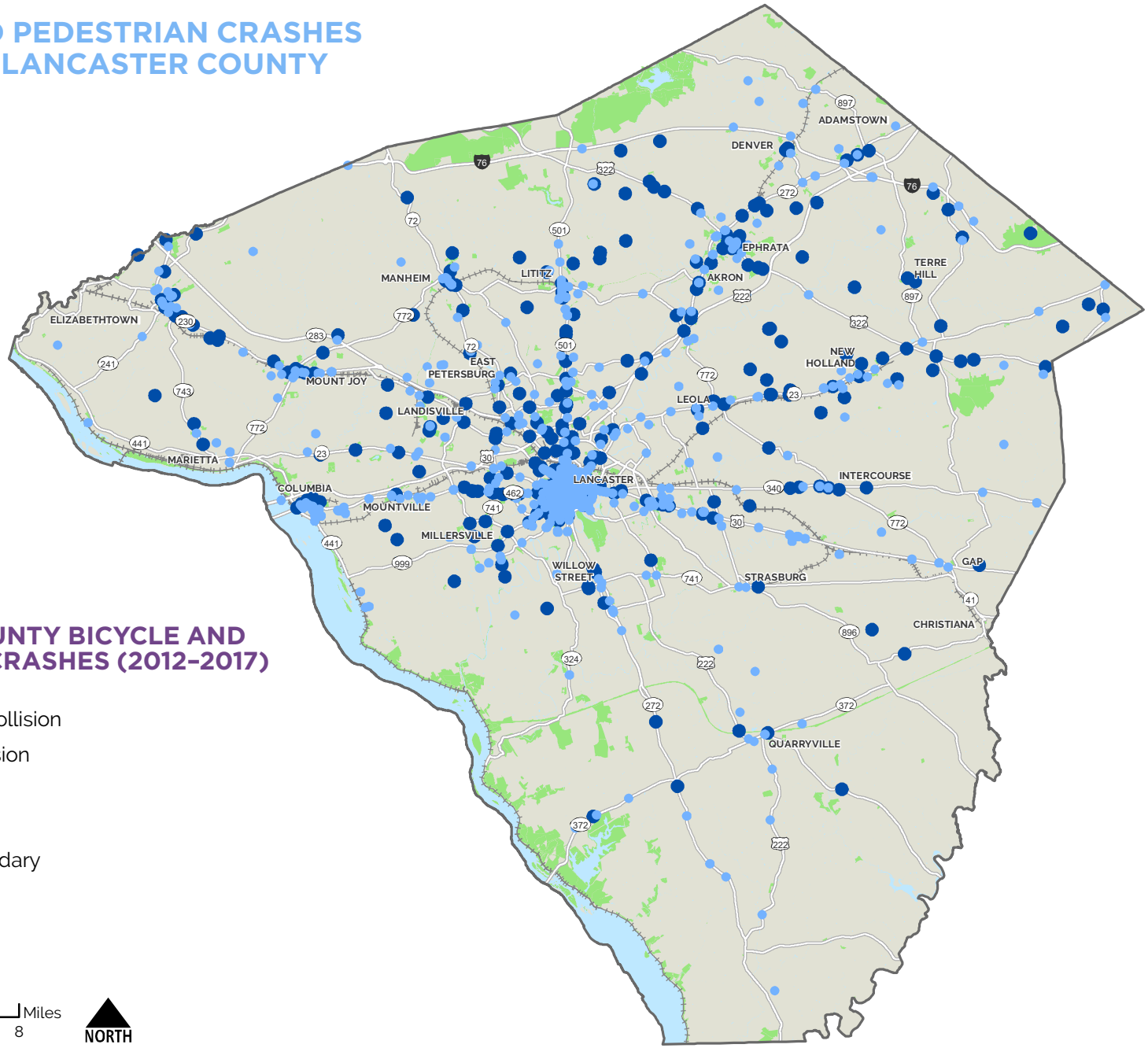
It is also important to note that the *number* of crashes is not the same as the *rate* of crashes. Places that have more pedestrians may have higher numbers of pedestrian crashes, though there may be fewer crashes per pedestrian.

*Source: PennDOT Reportable Crash Data. https://crashinfo.penndot.gov/PCIT/welcome.html*




* excluding Lancaster City and LIMC
** excluding Lancaster City

# BICYCLE AND PEDESTRIAN CRASHES (2012–2017) | LANCASTER COUNTY



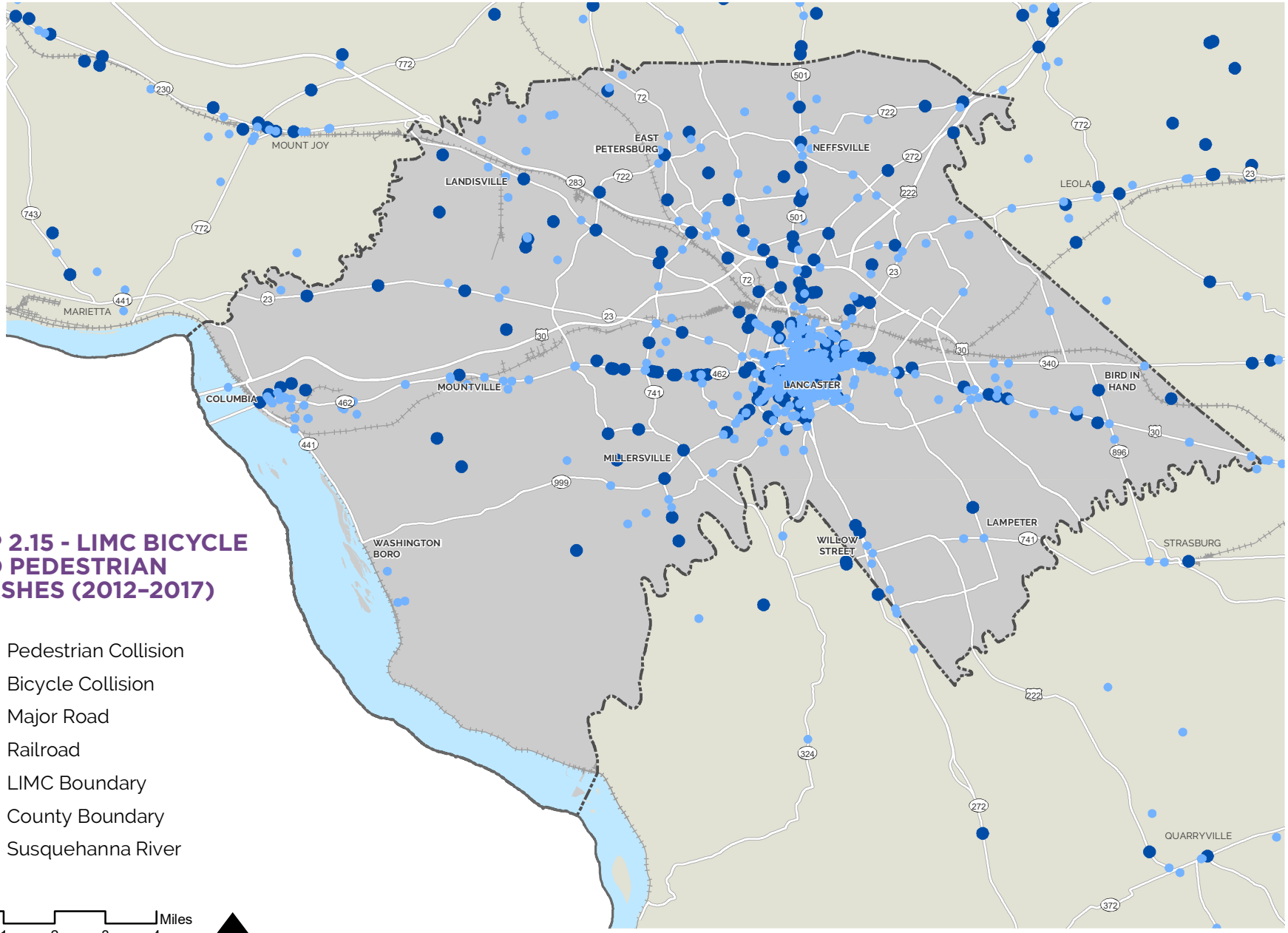

## MAP 2.14 - COUNTY BICYCLE AND PEDESTRIAN CRASHES (2012–2017)

- Pedestrian Collision
- Bicycle Collision
- Major Road
- Railroad
- County Boundary
- Park land
- Water Body

0 2 4 6 8 Miles

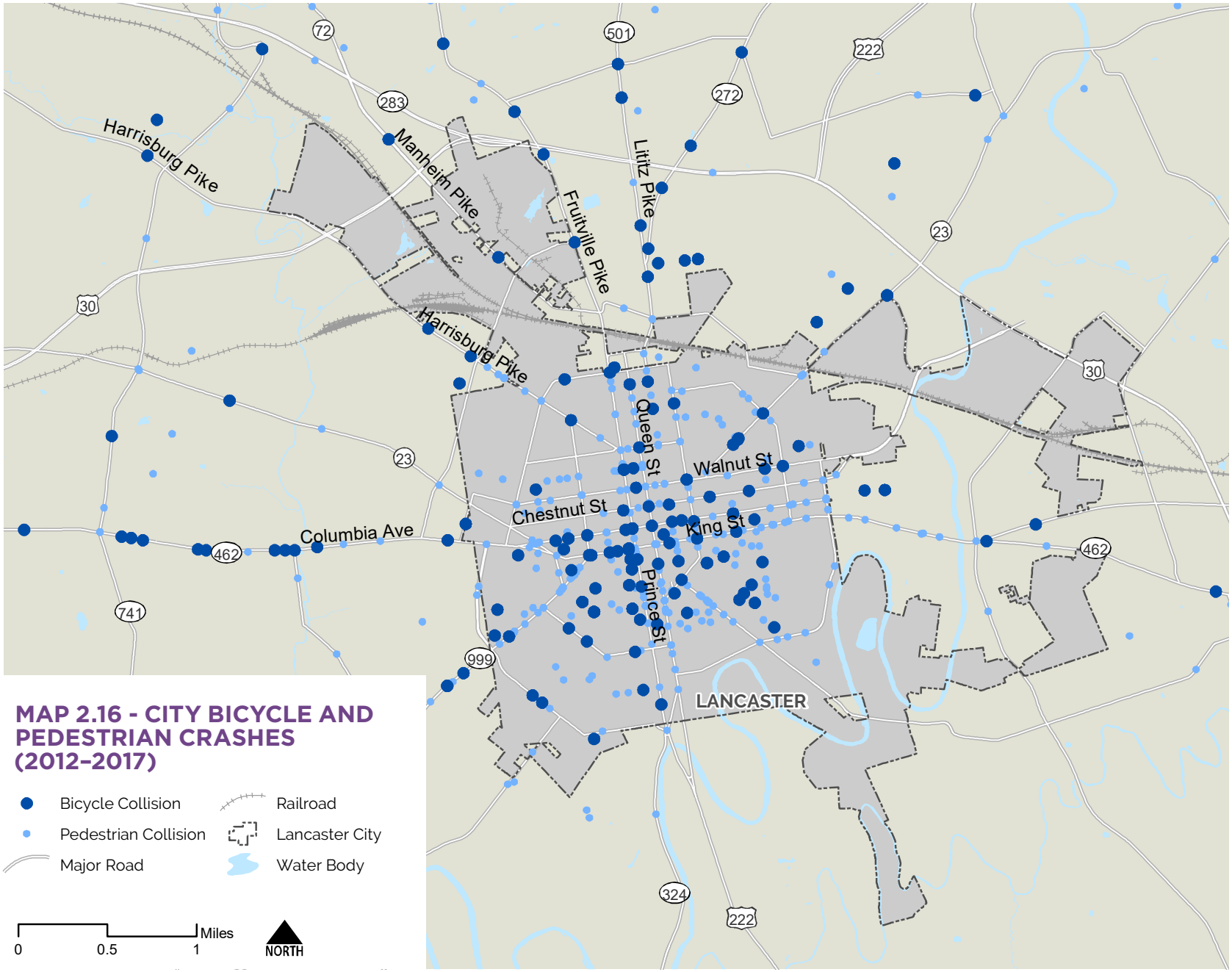
NORTH

# BICYCLE AND PEDESTRIAN CRASHES (2012–2017) | LIMC




## MAP 2.15 - LIMC BICYCLE AND PEDESTRIAN CRASHES (2012–2017)

# BICYCLE AND PEDESTRIAN CRASHES (2012–2017)| CITY OF LANCASTER




## MAP 2.16 - CITY BICYCLE AND PEDESTRIAN CRASHES (2012–2017)

- Bicycle Collision
- Pedestrian Collision
- Major Road
- Railroad
- Lancaster City
- Water Body

# RT 30 CROSSING ANALYSIS

A significant portion of Lancaster County and Lancaster City's downtown is bisected and partially encircled respectively by Route 30, a limited access highway. In order to create better active transportation access to downtown Lancaster, the streets intersecting Route 30 would need infrastructure improvements. Each of these crossings was evaluated based on its current characteristics and ranked according to the level of difficulty required to improve bicycle and pedestrian access. Table 2.3 (pg 2-37) shows the level of difficulty of implementing improvements at each crossing (1—least difficult, 5—most difficult). Map IDs in that table correspond with the markers in Map 2.17.


## MAP 2.17 - ROUTE 30 BARRIER ANALYSIS

## TABLE 2.3 - LIMITED ACCESS BARRIER ANALYSIS

| *Map ID* | *Location* | *Speed Limit* | *AADT* | *Description* | *Difficulty* |
|---|---|---|---|---|---|
| 1 | 3rd St | 40 | 9,800–19,700 | Overpass with free flow ramps, wide lanes, striped shoulder, and raised concrete median. | 4 |
| 2 | 5th St | 25 | Not available | Underpass with wide lanes. | 1 |
| 3 | 9th St | 25 | Not available | Underpass with 6-foot sidewalk on west side. Utility obstacles. | 2 |
| 4 | Kinderhook Rd | 35 | 1,700 | Underpass with 5-foot sidewalk on west side. Utility and grading challenges. | 4 |
| 5 | Ironville Pike | 40 | 3,200 | Underpass with 6-foot sidewalk on west side. Utility obstacles. | 3 |
| 6 | Malleable Rd | 25 | 1,700–1,900 | Overpass with wide outside lanes. | 1 |
| 7 | Prospect Rd | 40 | 7,000–25,200 | Overpass with signalized ramps, striped shoulders, and raised concrete median. Limited room for retrofit. | 5 |
| 8 | Sylvan Retreat Rd | 25 | 2,000 | Overpass with wide lanes. | 3 |
| 9 | Hill St | 35 | 2,200 | Overpass with wide lanes. | 3 |
| 10 | Druid Hill Rd/Clay St | 25 | 2,200 | Overpass with limited room for retrofit opportunities. | 5 |
| 11 | College Ave / Stony Battery Rd | 40 | 5,700–7,400 | Overpass with signalized ramps and striped shoulder. Limited room for retrofit opportunities. | 5 |
| 12 | Donnerville Rd | 35–40 | 5,200 | Overpass with wide lanes. Limited room for buffered facility. | 3 |
| 13 | Centerville Rd | 25–35 | 19,100–21,000 | Overpass with signalized and free flow ramps, striped shoulders, and striped median. | 4 |
| 14 | Running Pump Rd | 35 | 4,300–5,500 | Overpass with striped shoulder. Limited room for retrofit. | 5 |
| 15 | Marietta Ave | 35 | 9,600 | Overpass with striped shoulder. Limited room for buffered facility. | 3 |
| 16 | Rohrerstown Rd | 40 | 13,800–23,500 | Overpass with signalized ramps, striped shoulders, and raised concrete median. | 2 |
| 17 | Good Dr | 35 | 14,900 | Overpass with wide lanes, striped median, and 6-foot sidewalk on west side. | 1 |
| 18 | Harrisburg Pike | 40 | 19,800–21,900 | Overpass with signalized ramps, striped shoulders, and raised concrete median. | 4 |
| 19 | Between Ring Rd and Killdeer Rd | n/a | Not available | Underpass for bicycles and pedestrians only. | 1 |
| 20 | Manheim Pike | 35 | 16,200–20,000 | Underpass with signalized ramps, striped shoulders, and raised concrete median. | 1 |
| 21 | Fruitville Pike | 40 | 16,000–30,600 | Underpass with signalized and free flow ramps, striped shoulders, raised concrete median, and 6-foot sidewalk on both sides. | 4 |
| 22 | Lititz Pike | 35–40 | 17,800–22,800 | Underpass with signalized and free flow ramps, striped shoulders, raised concrete median, and 6-foot sidewalk on both sides. | 4 |
| 23 | Oregon Pike | 35–40 | 14,300–20,600 | Underpass with signalized and free flow ramps, striped shoulders, raised concrete median, and 6.5-foot sidewalks on both sides. Opportunity to widen sidewalk. | 3 |
| 24 | Homeland Dr | 25 | Not available | Underpass with wide lanes and wide paved area under the overpass. | 1 |
| 25 | New Holland Pike | 35–40 | 17,200–18,900 | Underpass with signalized and free flow ramps, striped shoulders, and raised concrete median. | 4 |
| 26 | Pitney Rd | 40 | 10,400 | Underpass with wide striped shoulders. | 1 |
| 27 | Greenfield Rd | 35 | 11,600–15,400 | Overpass with signalized and free flow ramps, striped shoulders, and raised concrete median. | 4 |
| 28 | Old Philadelphia Pike | 40 | 12,700–19,700 | Overpass with signalized and free flow ramps, striped shoulders, and raised concrete median. | 4 |

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# PUBLIC INPUT

# 3

# INTRODUCTION

Public input is key to planning for active transportation, bicycle networks, and trails. The network must be designed with a variety of users in mind – including people of different ages and abilities; recreational riders and those who commute by bicycle out of necessity; residents and visitors; novice bicycle riders as well as the most experienced. Through the public input process, we tried to understand what the perceived barriers are to walking and biking, as well as where and what types of improvements or infrastructure might improve conditions. This chapter summarizes the key input received from stakeholders and the general public. Additional information about the public input process can be found in Appendix C.

## THIS CHAPTER INCLUDES AN OVERVIEW OF:

# PUBLIC INPUT PROCESS

To gather public feedback, the ATP team held public meetings, focus groups, and steering committee meetings, and collected input through an online survey and interactive wiki mapping exercise.

## STEERING COMMITTEE

The steering committee – comprised of a visioning and a technical committee – included around thirty individuals representing a variety of community interests, such as government, recreation, public transportation, people with disabilities, bicyclists, design professionals, and others. This group met four times over the course of the planning process.

## PUBLIC MEETINGS, FOCUS GROUPS & PRESENTATIONS

The team held a public kickoff meeting in March 2017; a charette week including public meetings and focus groups in April 2017; a series of five city neighborhood meetings in June and July 2017; made presentations at regional municipal meetings in May 2018; and held a public open house for final draft review in March 2019. Staff also presented or gathered input at other events such as Chamber of Commerce YPN events, the Christmas Tree Lighting, and Open Streets. At least 500 people participated in person.

## INTERACTIVE WIKI MAP

Participants were asked to identify barriers to bicycling and walking, suggest new routes, and identify routes that need improvement. The map was available for six months, during which time 493 unique visitors provided feedback.

## COMMUNITY SURVEY

The online survey asked about existing conditions for active transportation, as well as preferences for infrastructure improvement types and locations. The survey was available for five months, during which time 1,038 people participated.

# MAJOR BARRIERS

## WHAT DID THE PUBLIC IDENTIFY AS THE MAJOR BARRIERS TO ACTIVE TRANSPORTATION IN LANCASTER COUNTY?

We asked the public to identify barriers to walking and biking in Lancaster County. Here's what we heard.

### CHART 3.1 - BARRIERS TO ACTIVE TRANSPORTATION SURVEY RESULTS

| | What **prevents** you from **WALKING/RUNNING?** | What **prevents** you from **BIKING?** | What **prevents** you from using **TRANSIT?** |
|---|---|---|---|
| |  |  |  |
| **1** | **50%** The **distance** to my destination is too far | **65%** There are **no bike lanes** on the route to my destination | **62%** The schedule is **not convenient** or is too **infrequent** |
| **2** | **40%** Drivers are too **aggressive** | **64%** The **streets/trails** do **not feel safe** | **40%** **Lack of interest** in using transit |
| **3** | **32%** The **sidewalks** are in **poor condition** | **54%** Drivers are too **aggressive** | **38%** The bus does **not travel** to my **chosen destinations** |

** Note: Respondents were permitted to indicate multiple issues, thus allow % totals over 100.*

## SAFETY

**People don't feel safe walking and biking on our streets.**

The issue of safety was very important to survey respondents. Respondents of all ages expressed an interest in walking or biking, but felt uncomfortable doing so under the current conditions. These feelings were commonly linked to aggressive driving behaviors by motorists and a lack of infrastructure designated for bicyclists and pedestrians.


## EDUCATION & AWARENESS

**People feel that all users could be more aware and more respectful on the road.**

Survey respondents believed that many road users – motorists, bicyclists, and pedestrians included – either were not aware of or did not obey the rules of the road. Respondents felt that more education of the public about road user rights and responsibilities was needed. Respondents expressed dismay at the lack of respect between users on our roads.

### ENFORCEMENT

**People don't feel that the rules of the road are adequately enforced.**

Survey respondents felt that more enforcement of traffic laws is needed. All users should be subject to enforcement, but vulnerable users such as bicyclists and pedestrians require additional protection in order to feel safe. Respondents described personal experience with motorists speeding, failing to yield, and even harassing pedestrians and bicyclists - without consequences.

## CHART 3.2 - RULES OF THE ROAD SURVEY RESULTS

**Do you think Pedestrians respect the rules of the road?**

YES 50% NO 50%

**Do you think Bicyclists respect the rules of the road?**

YES 56% NO 44%

**Do you think Motorists respect the rules of the road?**

YES 30% NO 70%

### NETWORK & CONNECTIONS

**Bicyclists and pedestrians don't feel that there are safe, direct routes to reach key destinations.**

Survey respondents described many of the primary routes around Lancaster County as difficult, if not impossible, for bicyclists and pedestrians to navigate. Barriers such as highways, interchanges, railroad tracks, or busy intersections and streets discouraged people from biking or walking to their destination, even for short distances. Schools, downtowns, places of employment, and grocery stores were among the locations people would bike or walk to if connections existed.


*Photo Creidt: Dirck Harris*

## INFRASTRUCTURE

**People don't feel that our infrastructure is designed with bicyclists and pedestrians in mind.**

Respondents noted that the condition and design of some existing transportation infrastructure feels unsafe for bicyclists and pedestrians. Maintenance issues such as potholes, uneven pavement, and poorly placed or marked crosswalks were concerning for respondents. Some respondents suggested new infrastructure such as sidewalks, high-visibility crosswalks, and protected bike lanes to improve conditions.

## RECREATION & TRAILS

**People love the trail network – but would like it to be more connected and easily accessible.**

Survey respondents praised the existing trail network, but noted that trails are currently only useful for recreation, and less so for transportation. Respondents suggested connecting existing trails, connecting communities via trails, and using trails to connect to destinations such as employment centers or schools. Expanding trail access from homes and neighborhoods – without driving - was also a common suggestion.

# QUOTES FROM THE PUBLIC

## WHAT DID THE PUBLIC TELL US ABOUT THEIR EXPERIENCES BIKING AND WALKING?

In the words of survey respondents – here is what the public told us:

### SAFETY

- "We love to bike with our young kids in bike seats but often do not feel safe because of motorists. Also I have had a few scary moments crossing streets when pushing my stroller with my children because of careless drivers not respecting the pedestrian crossing signals."

- "I have been very interested in biking downtown but have been too afraid to do it. Drivers don't always pay attention to bikers, and bikers don't always follow proper road rules. It makes it too nerve wracking to attempt on a regular basis, for me."

- "It is dangerous to bike many places in the county. I am newly retired and would leave my car at home if I could safely bike to central market, grocery stores, and restaurants. Please make that possible!"

### EDUCATION

- "I think there needs to be more education for drivers and bicyclists so both feel safer on the road. Also, drivers need more education on pedestrian right of way."

- "Need education of *drivers* — to be on the lookout for bicyclists and to understand the rights of bicyclists."

### ENFORCEMENT

- "Enforcing motorist stopping at cross walks as well as speed limits in the city would be a huge help. My son wants to bike in the city and to commute to grade school and there are streets I just do not want him crossing."

- "Need for better/more in-city speed limit enforcement; better school zone speed limit enforcement and safer corner crossings for school children; better enforcement of illegal parking at bus stops."

### NETWORK & CONNECTIONS

- "There are lots of places I'd like to walk or bike to, but obstacles like busy intersections that are not friendly to those types of transit, or lack of sidewalks or paths on busy roads. Causing you to choose to walk on someone's property or walk on the side of the busy street."

- "Walking and Biking paths need to make ways to get over major highways, and roads so that you are not cut off from parts of the city/county."

### RECREATION & TRAILS

- "More bike/rec trails would be fantastic, especially if they helped connect communities and businesses."

- "Looking to have a connected network in place not a patchwork of small trails. It will be difficult making lifestyle changes if the trails are not where people typically go."

# TYPES OF IMPROVEMENTS

## HOW DID THE PUBLIC FEEL WE SHOULD IMPROVE CONDITIONS FOR WALKING AND BIKING?

When asked what specific types of improvements they would like to see, survey respondents prioritized improvements that would offer designated facilities for each transportation mode. The majority of respondents indicated that sidewalks and off-street paths would be most likely to encourage them to walk, while intersection improvements would also be important. A similar majority of respondents indicated that off-road facilities, protected bike lanes, and buffered bike lanes would be most likely to influence them to bike more.

Respondents strongly preferred separated facilities for both walking and biking.

### CHART 3.3 - SURVEY RESULTS

What types of **WALKING FACILITIES** would **INFLUENCE** you to **WALK MORE OFTEN?**

| | | |
|---|---|---|
| 1 | Sidewalks | **88%** |
| 2 | Off Street Paths | **86%** |
| 3 | Intersection Improvements | **72%** |

What types of **BICYCLING FACILITIES** would **INFLUENCE** you to **BIKE MORE OFTEN?**

| | | |
|---|---|---|
| **85%** | Off Road Facilities | 1 |
| **83%** | Protected Bike Lane | 2 |
| **83%** | Buffered Bike Lanes | 3 |

# LOCATIONS FOR IMPROVEMENTS

## WHERE DID THE PUBLIC PRIORITIZE BICYCLE AND PEDESTRIAN IMPROVEMENTS?

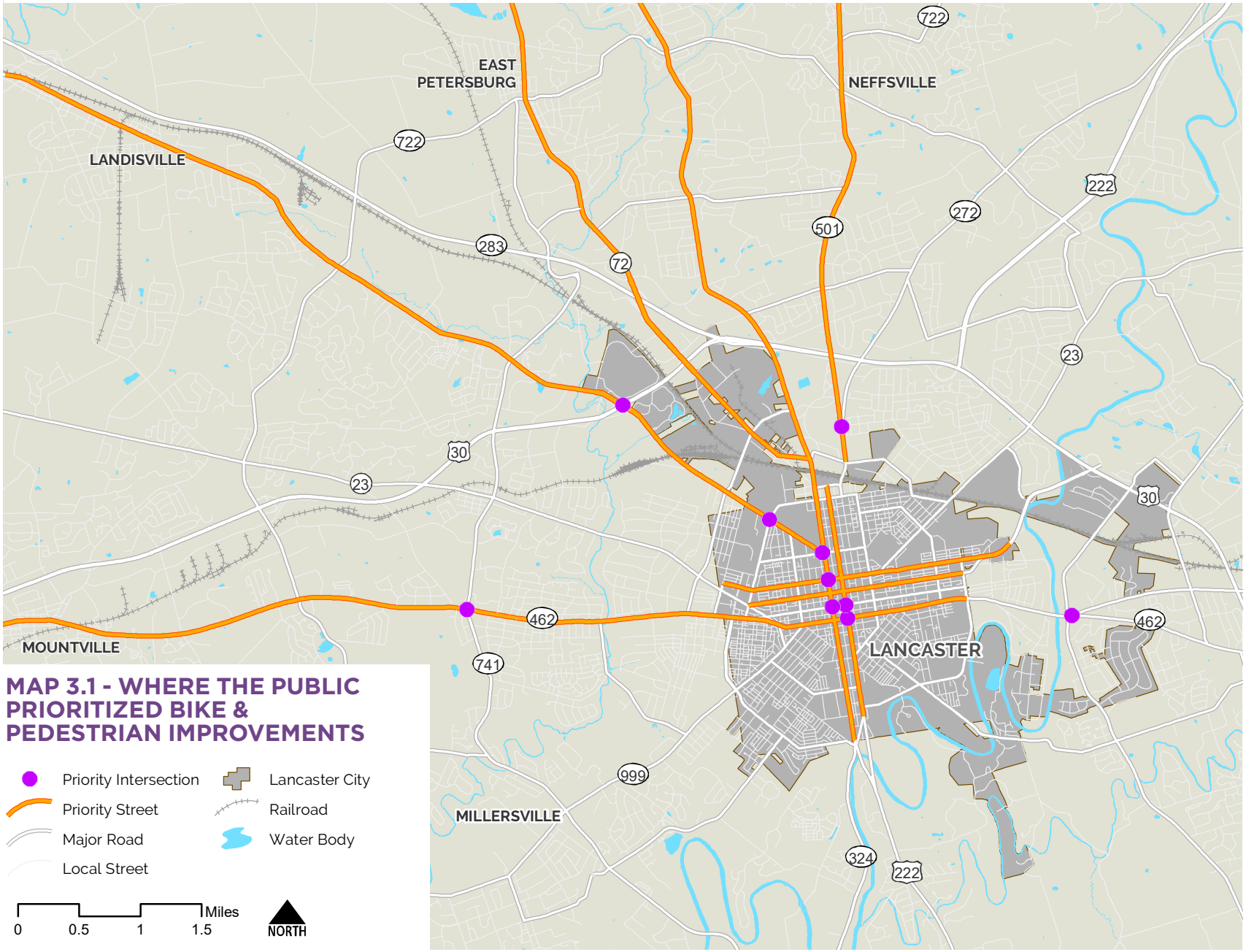
Through both the mapping tool and the survey, respondents told us about routes and locations where walking and biking felt difficult or unsafe. The areas the public identified as being most in need of bicycle and pedestrian improvements tended to be located in areas with high traffic volumes, in the midst of population and job centers. They included major community corridors that connect place to place – roadways that were lined with businesses, jobs, schools, homes, and bus stops. However, respondents also wanted an interconnected system of parks and trails, which might enable residents to both recreate and commute.

### TOP LOCATION TYPES

People told us they'd like to see safe bicycle and pedestrian routes that:

- Run along important corridors, particularly the pikes (such as Lititz Pike/501, Columbia Pike/462, etc.)
- Provide access over/under limited access highways or train tracks
- Connect parks and trails to each other, and to communities, homes, and businesses
- "Fill in the gaps" – connect existing streets to create more direct routes
- Enable children to walk/bike to school
- Provide better access to suburban areas

# WHERE THE PUBLIC PRIORITIZED BICYCLE AND PEDESTRIAN IMPROVEMENTS




*This map represents data collected via public input. It is important to note that the geographic location of participants within the county, as well as their above average level of cycling experience may skew the results.*

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LANCASTER COUNTY

# ATP NETWORK

# 4

# INTRODUCTION

Developing the Lancaster County Active Transportation Network recommendations was a multi-step process involving on-going dialogue with county, LIMC and city staff. As described in the existing conditions chapter, many of the existing roadways in the county are currently LTS 3 or LTS 4 and not safe or attractive for active transportation. Like many regions across the country, roadway design in Lancaster County typically means a system of high-speed and high-volume arterials fed by smaller roadways that rarely connect with each other. In many cases, especially within the LIMC area, there is only one roadway option to travel between communities, making it difficult for people who might walk, bike, or take transit.

This chapter outlines a network of improvements to transform select roadways into high-quality, multi-modal corridors that prioritize bicycle, pedestrian, and transit while still serving motorists. The chapter is organized into the following sections:

## THIS CHAPTER INCLUDES AN OVERVIEW OF:

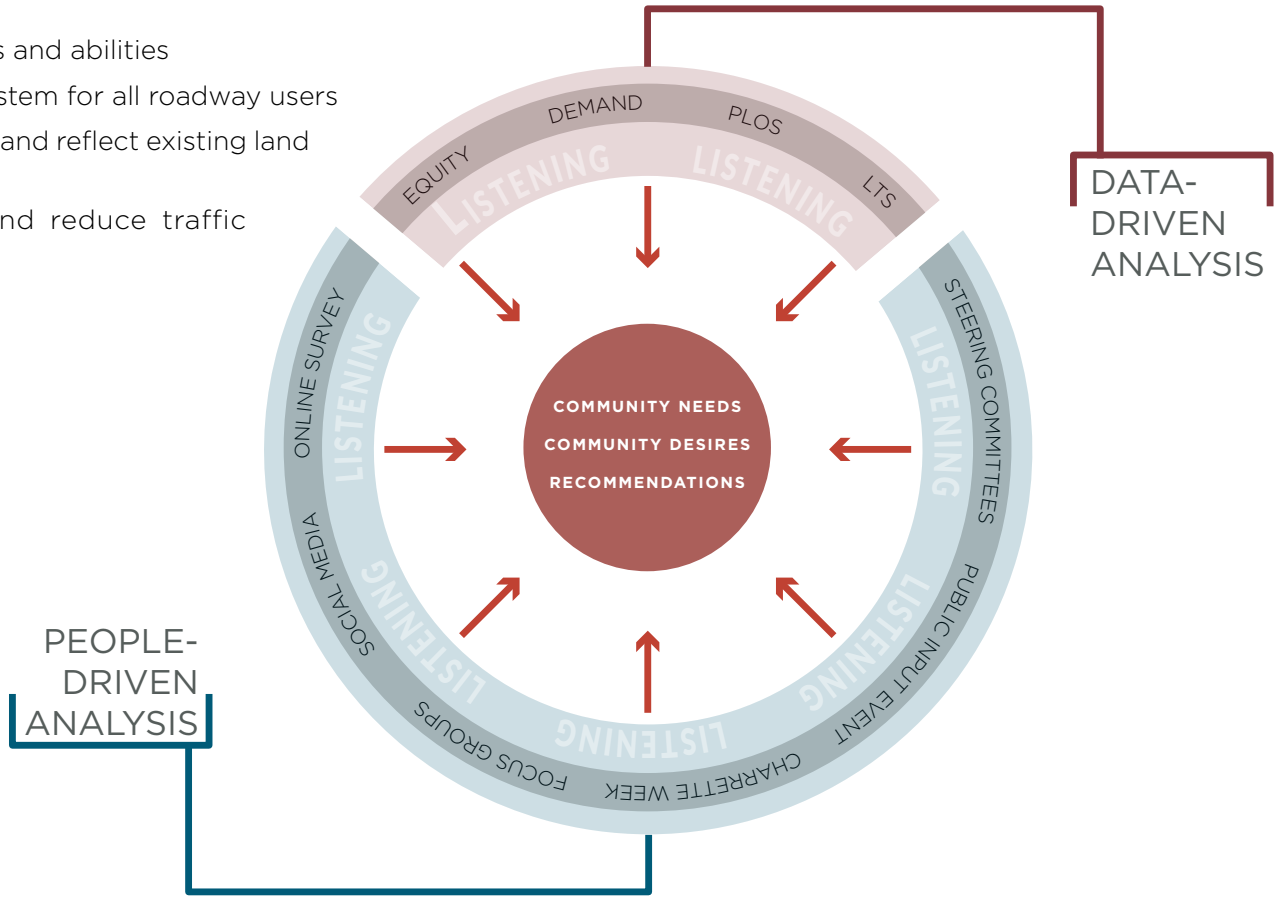
# NETWORK DEVELOPMENT + GREATEST NEED

This planning effort completed a process that focused first on network connectivity to identify corridors that were in need of improvements. Understanding the fact that active transportation improvements could be made along every roadway in Lancaster County, this plan recommends that implementation be focused where high demand is expected and the greatest impact can be achieved.

Network recommendations were informed by both data-driven analysis (quantitative) and people-driven analysis (qualitative). The graphic below highlights the various inputs used to develop county recommendations. Existing land use characteristics and user perception were two additional inputs that were used to develop the network and are described in more detail on the following pages.

The proposed network outlined in this chapter seeks to:

- Reflect our vision + goals
- Integrate the needs of all ages and abilities
- Balance the transportation system for all roadway users
- Leverage future development and reflect existing land uses
- Address safety concerns and reduce traffic accidents and fatalities



# RECOMMENDED ACTIVE TRANSPORTATION NETWORK

The recommended active transportation network combines recommendations for corridor improvements, mobility hubs and shared use trails to complete gaps in the network, connect hubs of activity, improve safety, and identify corridors that are ideal connections to link communities and landscapes.

In this "all ages and abilities" future network, there are three key components:

## CORRIDOR IMPROVEMENTS

A seamless network of improvements that will tie key corridors across the City, LIMC area, and County together to improve safety for all roadway users and promote active transportation. Improvements should match the existing and proposed land use and are therefore organized by Urban, Suburban and Rural character zones.

## MOBILITY HUBS

The creation of "Mobility Hubs," or activity nodes, that contain concentrations of pedestrian activity would link people to high demand areas. A mobility hub can take shape in a variety of ways based on the Lancaster County character zones.

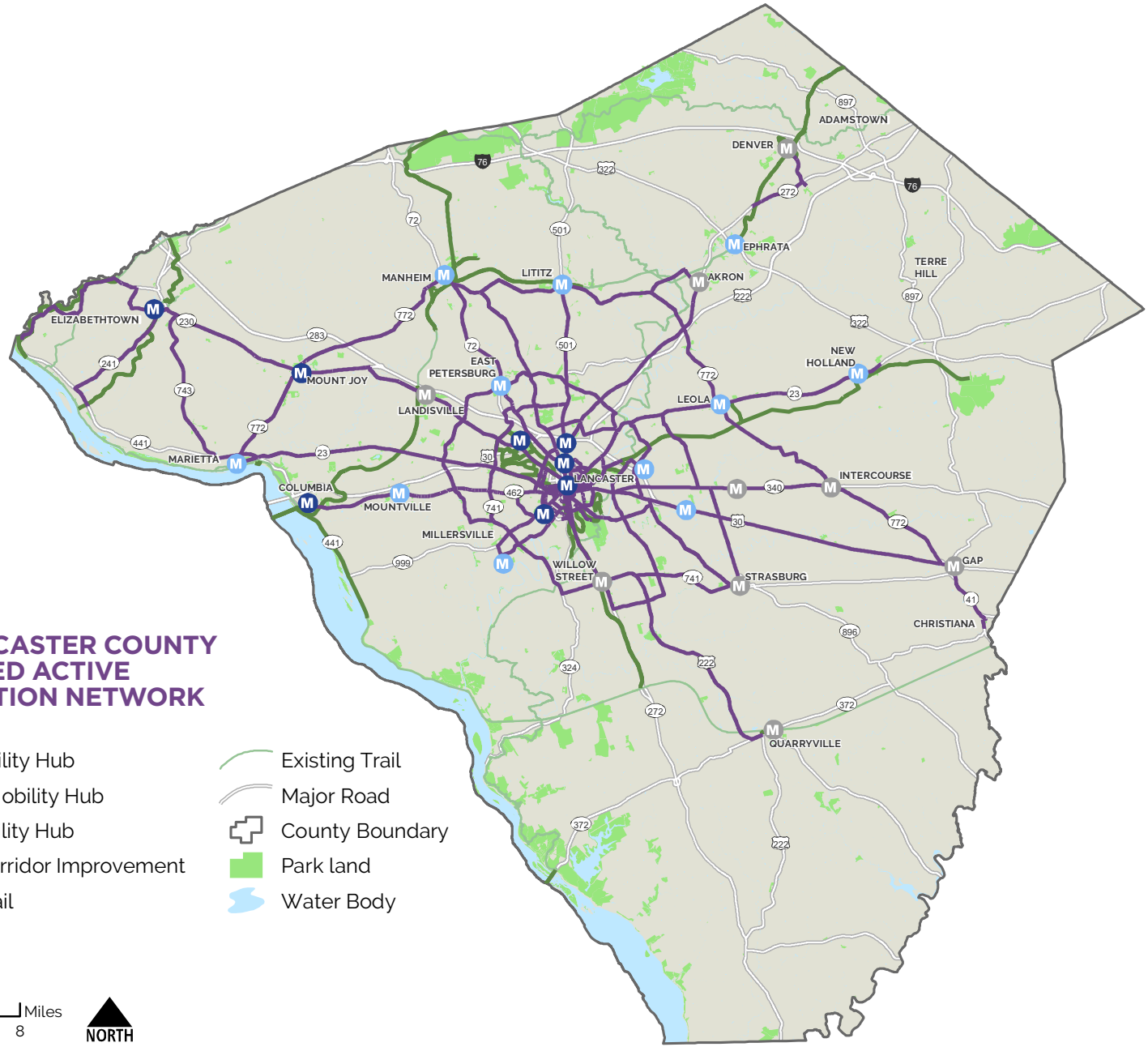
Primary Secondary Tertiary

## SHARED USE TRAILS

A network of trails across the County, LIMC area, and through the City that will serve a wide array of user ages and abilities providing transportation and recreation facilities while contributing to the plan goal of economic development through bicycle tourism.

Photo Credit: Lancaster Bicycle Club

# LANCASTER COUNTY RECOMMENDED ACTIVE TRANSPORTATION NETWORK



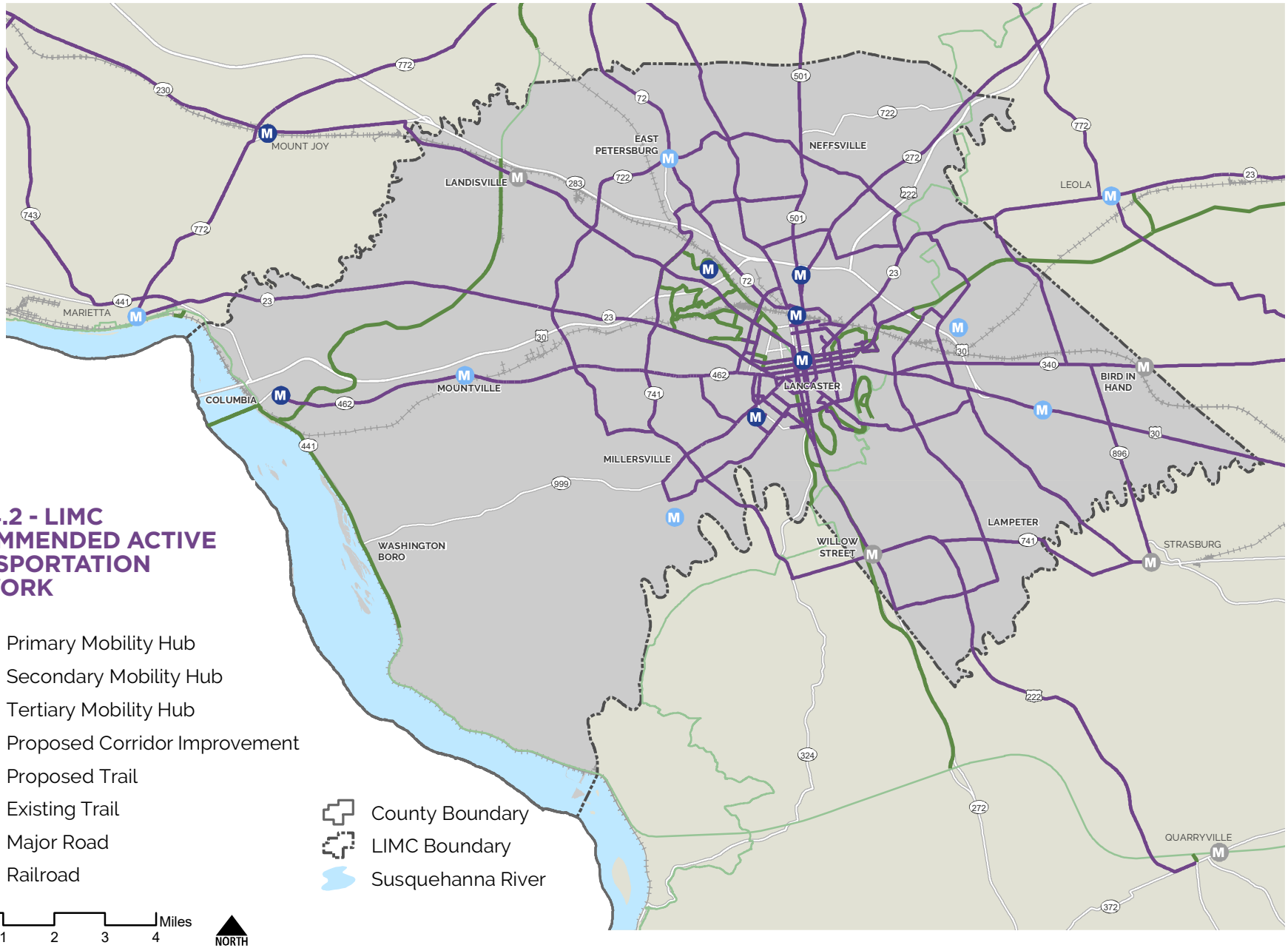

## MAP 4.1 - LANCASTER COUNTY RECOMMENDED ACTIVE TRANSPORTATION NETWORK

- Primary Mobility Hub
- Secondary Mobility Hub
- Tertiary Mobility Hub
- Proposed Corridor Improvement
- Proposed Trail
- Existing Trail
- Major Road
- County Boundary
- Park land
- Water Body

0 2 4 6 8 Miles

NORTH

# LIMC RECOMMENDED ACTIVE TRANSPORTATION NETWORK




**MAP 4.2 - LIMC RECOMMENDED ACTIVE TRANSPORTATION NETWORK**

# CORRIDOR IMPROVEMENTS

# WHERE AND HOW?

To make the most of corridor improvements for active transportation, it's important to put the right types of improvements in the most beneficial locations. This plan's recommendations for these improvements focus on:

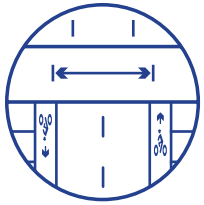
- Priority road corridors for bicycle, pedestrian, and transit improvements;
- Character zones (different environments) along these corridors; and
- Potential types of road corridor improvements for each zone.

A concept called Complete Streets informed much of this process. It's an approach to the transportation network that focuses on accommodating all modes (pedestrians, bicyclists, transit, etc.), and people of all ages and abilities. Places2040, the Lancaster County comprehensive plan, identifies this concept as one of seven catalytic tools and strategies to implement the goals of that plan.

*The photo on the left shows existing conditions on Rt.30, east of the City. The rendering on the right shows the vision for a complete streets retrofit of Rt. 30. The vision was developed during the Rt. 30 Corridor Study planning process*


# COMPLETE STREETS

Rather than allocating more space to cars, complete streets improves the efficiency and capacity of existing roads by moving more people in different ways in the same amount of space.

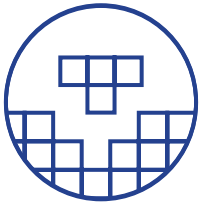


## CONTEXT-SENSITIVE DESIGN

Not every design feature can – or should – be included in every roadway. Design decisions should be flexible and informed by the local context and reflect the community's vision.

## MULTIMODAL DESIGN

Multimodal networks provide connectivity between all users and modes of travel. As they travel, motorists often become pedestrians, and pedestrians become transit users.

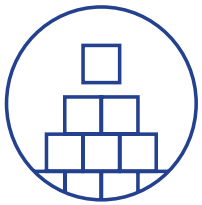


## COMPACTNESS

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

## PLACEMAKING

Complete streets can strengthen community identity by creating enhanced aesthetics, spaces for civic activities, and the right conditions to attract and retain businesses. 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 for an individual development project 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 create a more pleasant environment to walk and bike and serve as a key component of stormwater management.

# CONSIDERATIONS FOR ACTIVE TRANSPORTATION TREATMENTS ALONG PRIORITY CORRIDORS

The priority corridors in this plan are routes where improvements have the greatest potential to encourage bicycle and pedestrian travel and transit usage in Lancaster County. Improving these corridors will create a transportation network that gives the most people the most choice in how they move around. Priority corridors include both roads and trails.

Though all of these corridors have been designated as needing some type of active transportation improvement, the approach to each corridor will vary depending on the specific characteristics of the roadway and the surrounding areas, the needs of roadway users, and costs of construction and maintenance. Not all treatments will be appropriate for every corridor, nor will every corridor need every treatment; however, every design should consider the needs of all roadway users. The design should also be appropriate based on the land use and pattern of areas adjacent to the corridor. Places2040 identified character zones (see 4-11) for all of Lancaster County to help categorize different types of land use contexts.

The following factors should be considered when designing active transportation roadway improvements and treatments:

- Development Context
  - » Character zone
  - » Location relative to Designated Growth Areas
  - » Existing land use
- Roadway Characteristics
  - » Average Daily Traffic (ADT) – a measure of traffic volume
  - » Average and posted speed
  - » Safety Analysis
  - » Level of Traffic Stress (LTS) analysis
  - » Presence of sidewalks
  - » Number of travel lanes
  - » Existing roadway and shoulder width
- Demand
  - » Demand and equity analysis
  - » Proximity to mobility hubs
  - » Transit accessibility
- Constructability
  - » Available right-of-way
- Cost of Construction and Maintenance
- Public Input

### TABLE 4.1 - LANCASTER COUNTY AND LIMC CORRIDOR IMPROVEMENT MILES BY CHARACTER ZONE

| *Character Zone* | *Total County Mileage* | *Total LIMC Mileage* |
|---|---|---|
| Urban | 53 | 19 |
| Suburban | 169 | 113 |
| Rural | 72 | 34 |
| **TOTAL** | **294** | **166** |

*Note: Mileage does not include proposed City bicycle facilities shown on Map 5.1*

*Note: The priority corridors in this plan differ from those shown in places2040. Although both plans identify some of the same corridors, the methodology for selecting them was different.*

# ACTIVE TRANSPORTATION CHARACTER ZONES

Places2040 identifies seven countywide "character zones" – six zones that classify land from the most rural to the most urban, and an additional special district zone which applies to industrial, institutional, and airport uses in Urban Growth Areas. For the purposes of the Active Transportation Plan, these seven zones are grouped into three simpler categories: urban, suburban, and rural. The tables below show how these three active transportation character zones relate to the seven Lancaster County character zones.

## LANCASTER COUNTY CHARACTER ZONES (PLACES2040)


## ACTIVE TRANSPORTATION CHARACTER ZONES

| | | | | | | |
|---|---|---|---|---|---|---|
| RURAL | RURAL | | | | | |
| | | | SUBURBAN | | | SUBURBAN |
| | | URBAN | | URBAN | URBAN | |

# ROAD CORRIDOR CHARACTER ZONE TYPES AND POTENTIAL TREATMENT

## RURAL

- **NATURAL**
- **AGRICULTURAL**

**Potential corridor improvement***

- Wider shoulders
- Bicycle route signs
- Advisory shoulders
- Shoulder bikeways
- Yield roadways
- Sidepaths

## SUBURBAN

- **SUBURBAN**
- **SPECIAL DISTRICT**

**Potential corridor improvement***

- Wider sidewalks and additional green infrastructure
- Enhanced crossings
- Sidepaths
- Sharrows

## URBAN

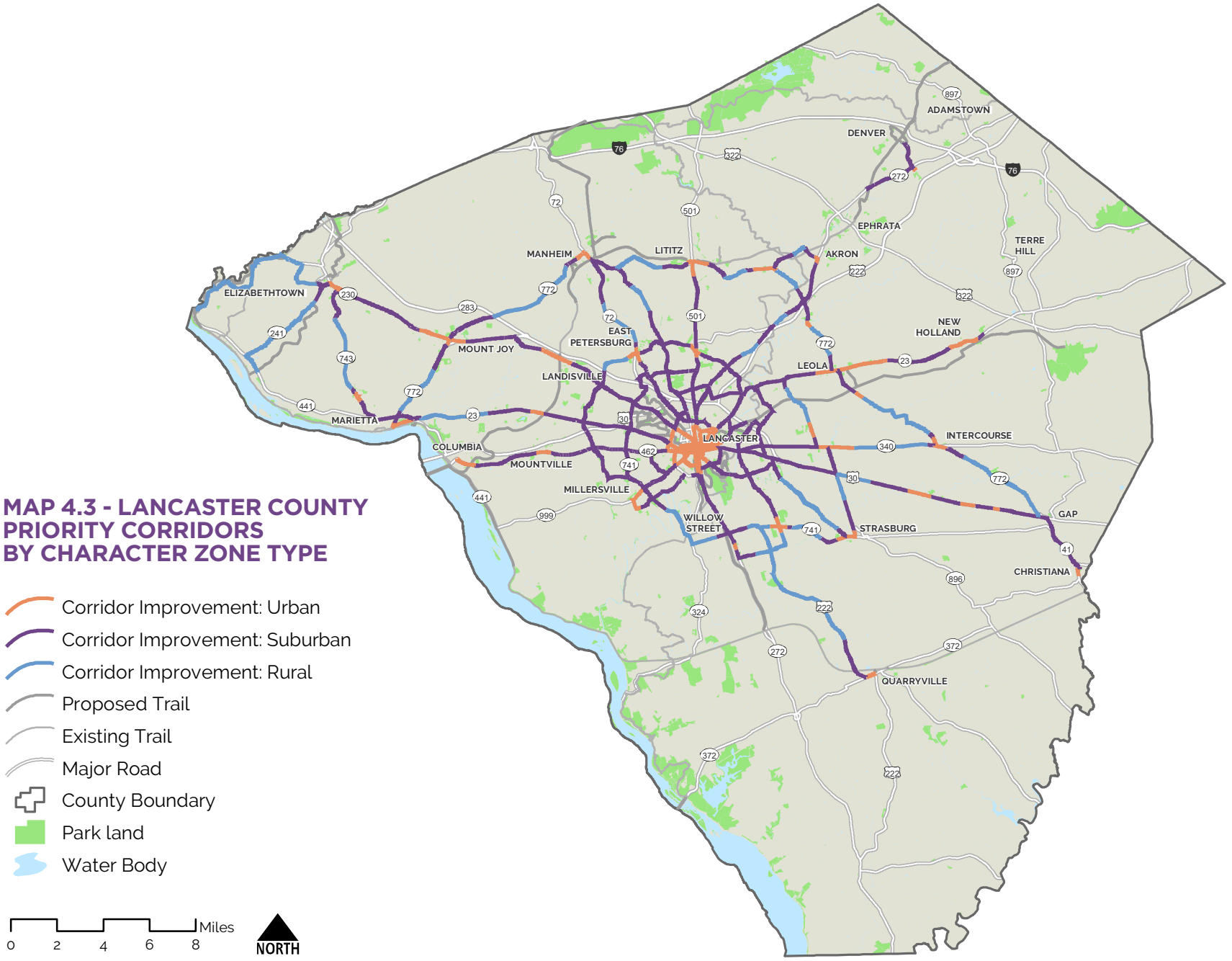
- **RURAL COMMUNITY**
- **URBAN**
- **URBAN CORE**

**Potential corridor improvement***

- Sidewalks on both sides of the roadway
- Marked crosswalks and pedestrian signals
- Bike lanes or separated bikeways
- Marked shared roadways (sharrows)
- Bike Boulevard

* *See Appendix A for additional information on on-road active transportation treatments*

# PRIORITY CORRIDORS BY CHARACTER ZONE TYPE | COUNTY



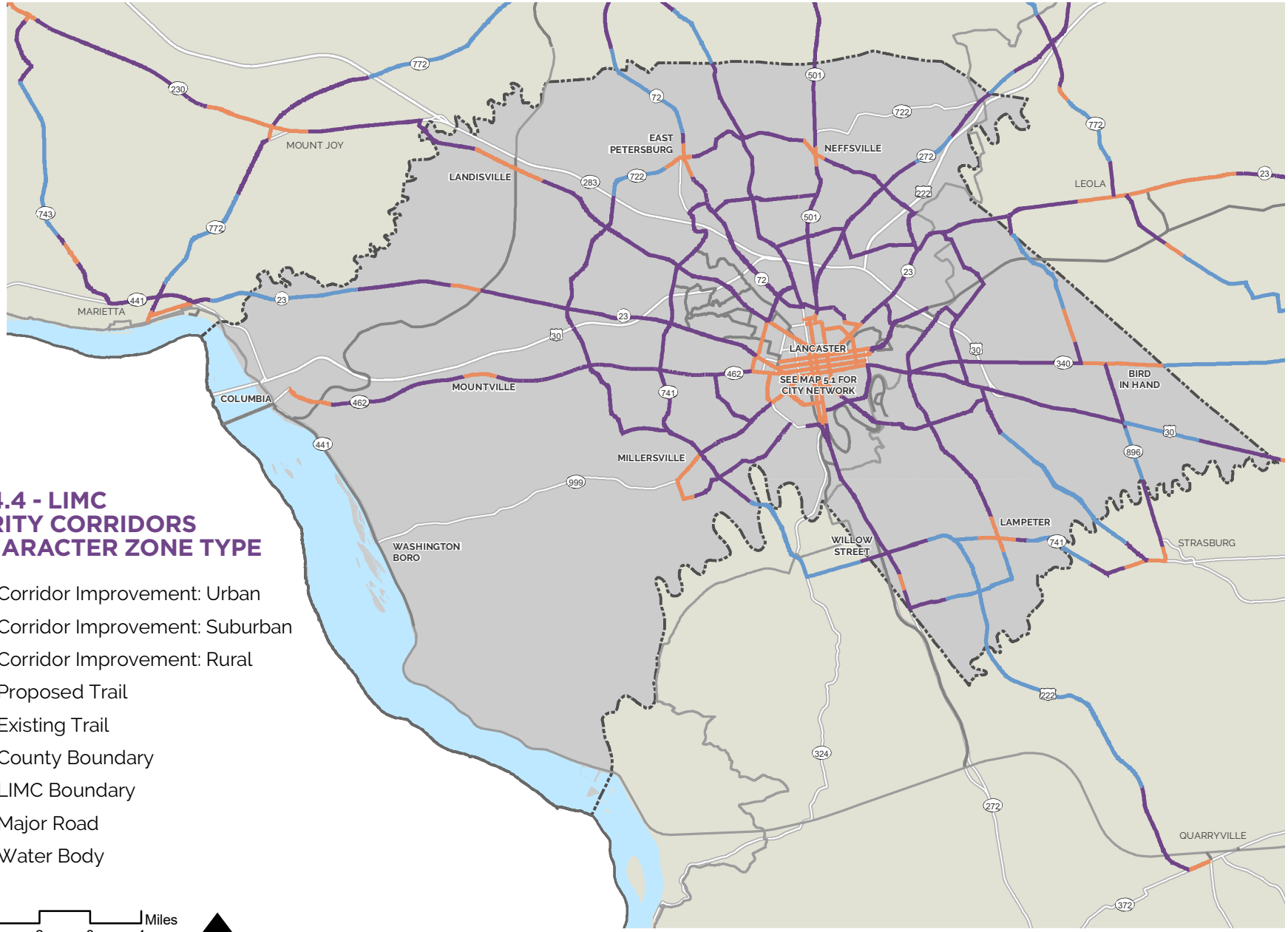

## MAP 4.3 - LANCASTER COUNTY PRIORITY CORRIDORS BY CHARACTER ZONE TYPE

- Corridor Improvement: Urban
- Corridor Improvement: Suburban
- Corridor Improvement: Rural
- Proposed Trail
- Existing Trail
- Major Road
- County Boundary
- Park land
- Water Body

0 2 4 6 8 Miles

NORTH

# PRIORITY CORRIDORS BY CHARACTER ZONE TYPE | LIMC




## MAP 4.4 - LIMC PRIORITY CORRIDORS BY CHARACTER ZONE TYPE

- Corridor Improvement: Urban
- Corridor Improvement: Suburban
- Corridor Improvement: Rural
- Proposed Trail
- Existing Trail
- County Boundary
- LIMC Boundary
- Major Road
- Water Body

0 1 2 3 4 Miles

NORTH

# TYPICAL CORRIDOR IMPROVEMENT PROJECTS

While this plan's recommendations for potential corridor improvements are intentionally broad to allow for design flexibility, the following are typical examples of corridor improvements that can encourage bicycling, walking, and transit usage.

For more detailed information about corridor improvement design, see Appendix A: Design Guidelines.

**On-Street Separated Bikeways** provide full physical separation between bicyclists and motor vehicles, but are part of the roadway network. On-Street Separated Bikeways are increasingly common across the United States and provide additional protection beyond bike lanes only marked by paint.

**Bike Lanes** provide a designated space for bicyclists to ride, helping to define where each mode of traffic can travel easily. Some bike lanes, like the one pictured here, can include an additional buffer between bicyclists and moving vehicles. Bike lanes can be installed along a curb or between parked cars and traffic.

**Road Diets** often convert streets with 4 lanes to 2 lanes with center turn lane and bike lanes. Safety is increased by separating the left-turning vehicles from through traffic. The extra space can also be used for planted medians, pedestrian refuges or curb extensions.

**Planted Medians & Street Trees** can reduce head-on and turning collisions and provide refuge for pedestrian crossings, all while beautifying the area. Sidewalk plantings can provide shade and a pleasant street experience for people walking, and create a buffer between pedestrians and vehicle traffic.


**Sidewalks, Curb Extensions and Median Refuge Areas** improve visibility and accessibility for walkers along the corridor. Curb extensions also reduce vehicle speeds by reducing turning radius, which increases the chance of survival for a pedestrian in the event of a collision.

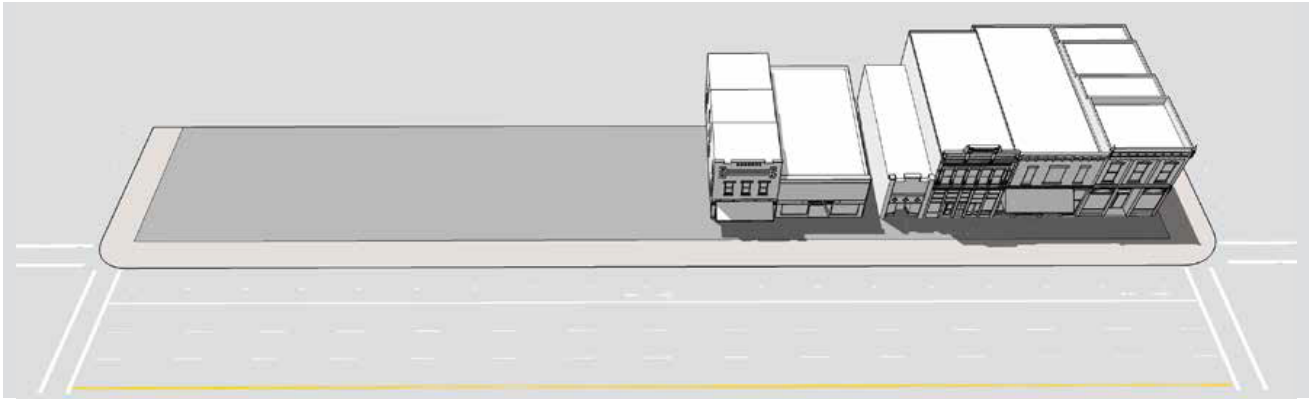
**High Visibility Crosswalks** include additional paint that can enhance a motorist's awareness of a crosswalk. Near schools, crosswalks are painted yellow for additional visibility. In-roadway lighting can further enhance crosswalk visibility.

# MOBILITY HUBS

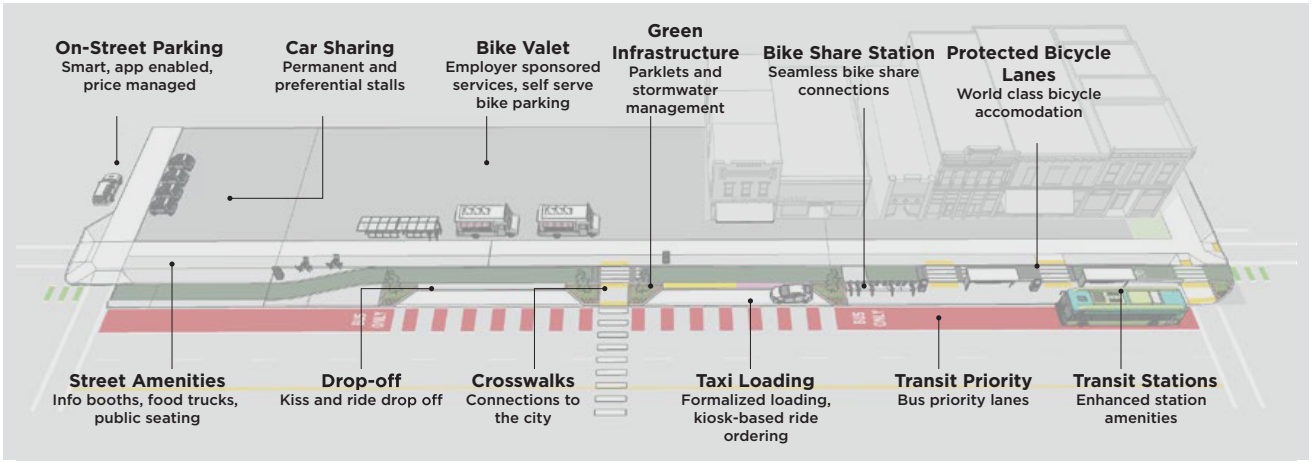
# MOBILITY HUBS

Mobility Hubs are activity nodes that contain concentrations of pedestrian activity and demand, as well as various combinations of compact development, mixed land uses, high density housing, and other types of destinations. They can form natural convergence zones for multiple modes of transportation facilities such as secure bike storage, car/bike/scooter sharing locations, bike repair stations, and transit stops with shelters and seating, to name a few. They can also be thought of as the "gateways" into communities - providing longer distance connections between areas of high active transportation demand.

## BEFORE MOBILITY HUB CONCEPT APPLIED



## AFTER MOBILITY HUB CONCEPT APPLIED




*Note: This is a diagram only. Some or all of these elements may be used and should be context-sensitive, based on the surrounding land use, culture and character, connecting pedestrian and bicycle facilities, presence of taxi/carshare/bikeshare, etc.*

# TYPES OF MOBILITY HUBS

There are three types of mobility hubs and they are distinguished by different levels of investment in bicycle and pedestrian infrastructure. Primary mobility hubs are designated based on the permanent location of existing or planned regional transit hubs. The location of secondary or tertiary mobility hubs is more flexible, as long as the general criteria are met. Local communities may also choose to expand the mobility hub concept by designating hubs that facilitate more local travel.

## PRIMARY MOBILITY HUBS

These hubs provide the most transportation options and connections between modes (automobile, transit, bicycle, pedestrian), especially for trips outside Lancaster County. They also have the most transit riders. Here, we find significant investment in facilities designed to be safe, attractive, and comfortable. As key nodes in the transportation network, these hubs are prime locations for transit-oriented, compact, mixed-use development as well as employment and leisure.

These hubs are well-lighted and highly visible, with prominent signage. They're carefully integrated into the neighborhood and safely connected to it by sidewalks and trails. Amenities include a climate-controlled building with restrooms, child and adult changing tables, secure bicycle storage, and real-time transit arrival signage. They may also provide bicycle repair stations, vehicle sharing (bicycles, scooters, etc.), and commuter parking.

The primary hubs shown on the map include the county's Amtrak rail stations and transfer centers identified in the South Central Transit Authority's *Transit Development Plan Update: Final Report* (2018). Transfer centers allow transit riders to transfer between routes without traveling into downtown Lancaster and back out again.

## SECONDARY MOBILITY HUBS

These hubs are important transit stops designed to make the transit network more accessible to other modes (automobile, bicycle, pedestrian). Their locations are meant to encourage investment in places that are walkable and bikeable. These hubs have significantly more amenities than typical transit stops, but are not as extensive as those found at primary hubs.

Like primary hubs, these locations have lighting and signage that makes them clearly visible. Sidewalks and trails connect them safely with the surrounding neighborhood. They have shelters with adequate seating and secure bicycle storage. Other amenities may include real-time transit arrival signage and bicycle repair stations. There is a pull-off area for buses and other vehicles, and parking is available nearby.

These hubs are found in the city, boroughs, larger villages, and at high-activity transit locations such as employment centers. More specifically, they are located at key points along transit routes, typically near an intersection with a significant trail or road corridor.

## TERTIARY MOBILITY HUBS

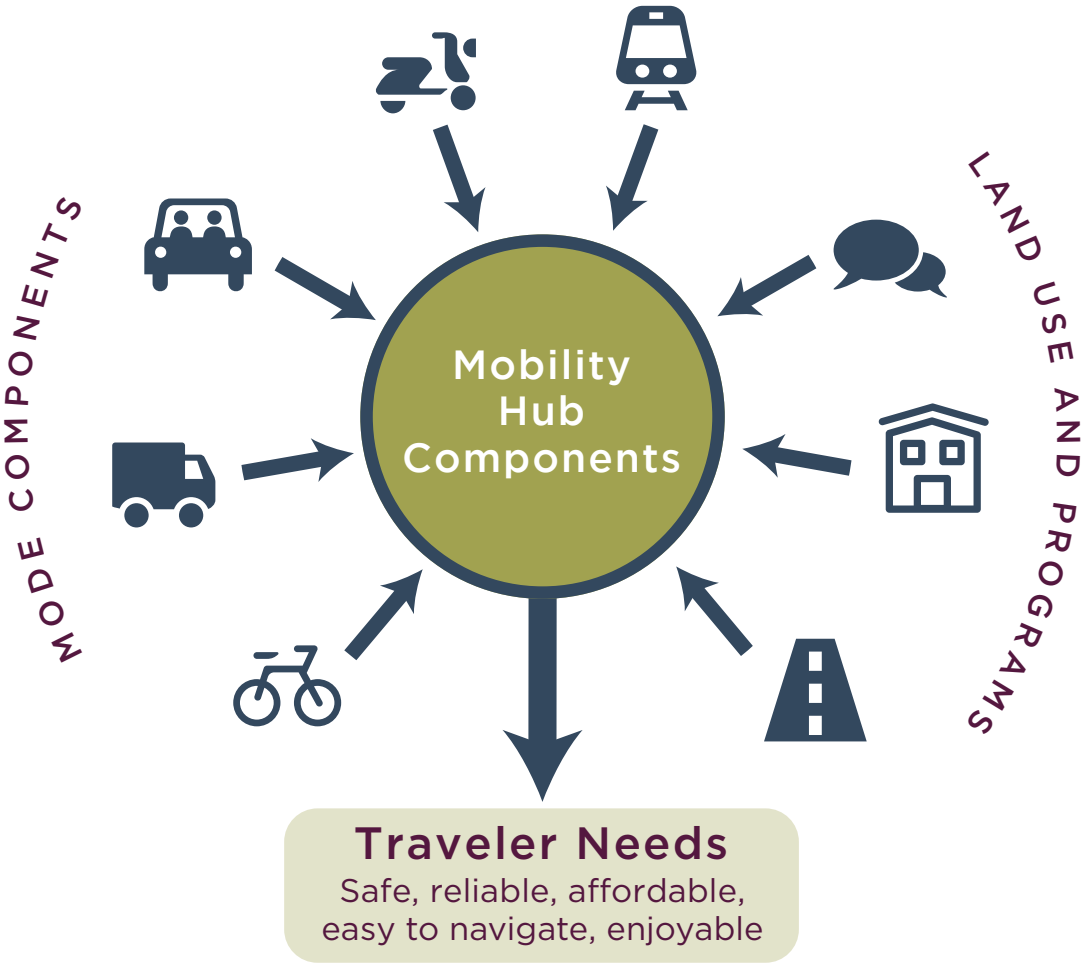
These hubs serve as key access points to the transportation network, but offer fewer transportation options, connections, and amenities than primary and secondary hubs, and may have fewer users.

Many, though not all, tertiary hubs are also transit stops. At these hubs, a shelter with seating is provided, and there are sidewalks for pedestrian access and/or wide shoulders for bicycle and pedestrian access. There may be a bus pull-off area, as well as parking. Amenities such as bike racks, bike share, and repair stations may also be available, particularly at hubs located near regional trails or tourism destinations.

These hubs are located in boroughs and larger villages, in or near downtowns, employment centers, tourism destinations, or regional trailheads.

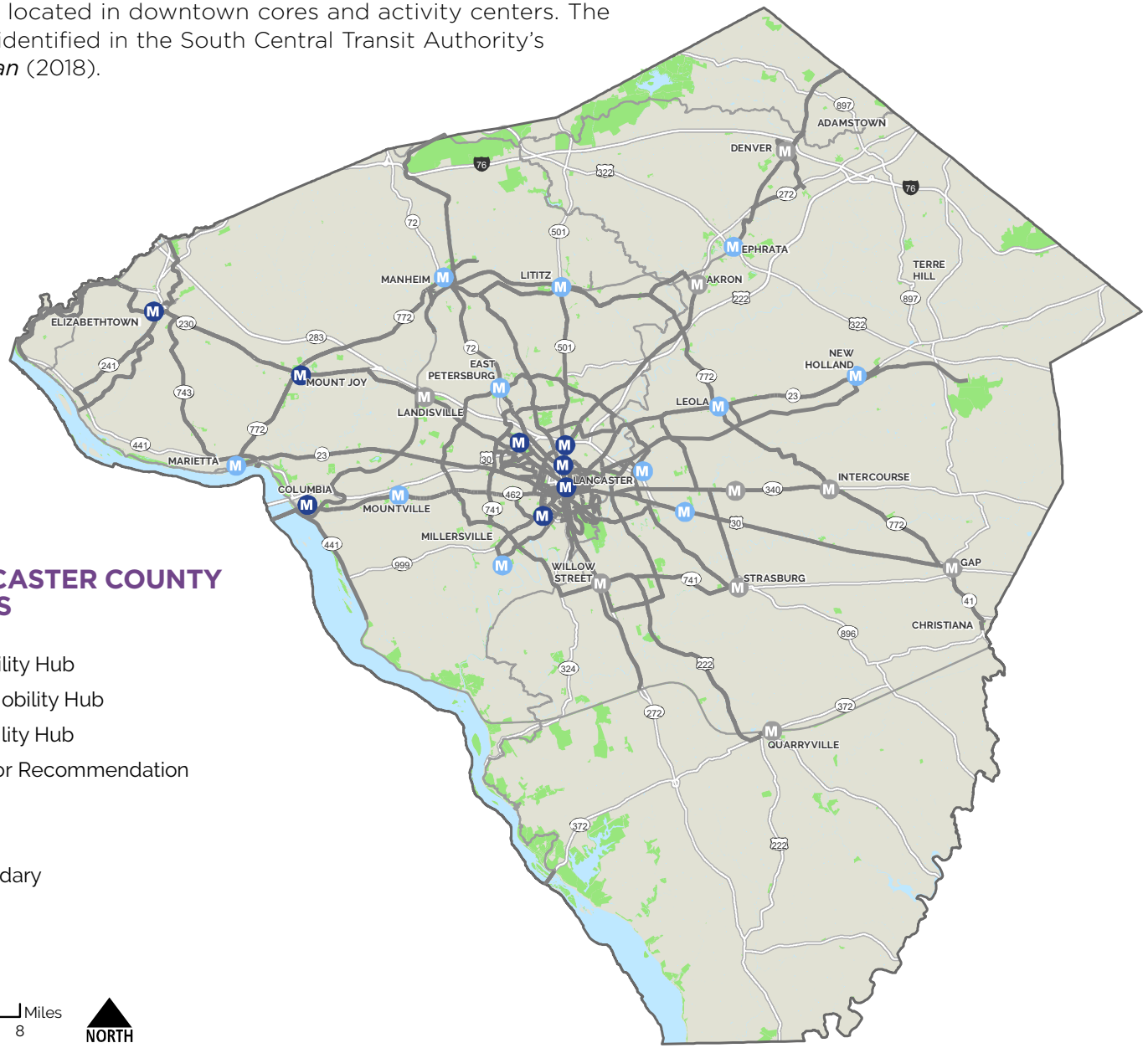
*Bicycle parking at Union Station in Washington, DC (above) and at the Lancaster City Amtrak Station (below), reflect how mobility hub components can be applied differently depending on land use and programs.*

Photo Credit: Cooper Carry



## MOBILITY HUBS | COUNTY

There are 8 primary, 11 secondary, and 9 tertiary mobility hubs (recommended) in the county primarily located in downtown cores and activity centers. The Multimodal Hubs were identified in the South Central Transit Authority's *Transit Development Plan* (2018).




**MAP 4.5 - LANCASTER COUNTY MOBILITY HUBS**

## MOBILITY HUBS | LIMC

The LIMC has 6 primary, 6 secondary and 2 tertiary mobility hubs (recommended) within its boundary.


**MAP 4.6 - LIMC**
**PROPOSED MOBILITY HUBS**

# SHARED USE TRAILS

# GUIDING PRINCIPLES FOR SHARED USE TRAIL DEVELOPMENT

One of the key goals of this plan is to create a connected and comprehensive system of shared use trails that enhances the quality of life throughout Lancaster County. In order to begin transforming that vision into reality, its is useful to start by identifying the principles upon which the future trail network will be built. The following guiding principles are derived from national best practices, and past planning efforts throughout the U.S.

## THE TRAIL SYSTEM SHOULD BE SAFE

Trails should be physically safe and perceived as safe by users. Safe means minimal conflicts with vehicular traffic and use of clear pavement markings and directional signage. Safe also means education about trail safety and etiquette, and crime prevention through environmental design.

## THE TRAIL SYSTEM SHOULD BE ACCESSIBLE

Trails and trail crossings should encourage the mobility of residents of all ages and abilities, employing principles of universal design. Bicyclists have a range of skill levels, and trails should be designed with a goal of providing for inexperienced bicyclists (especially children and seniors) to the greatest extent possible.

## TRAIL SYSTEM IMPROVEMENTS SHOULD BE ECONOMICAL

Trail improvements should achieve the maximum benefit for their cost, including initial cost and maintenance cost, as well as a reduced reliance on more expensive modes of transportation. Where possible, improvements in the right-of-way should stimulate, reinforce and connect with adjacent private improvements.

## TRAILS SHOULD CONNECT TO PLACES PEOPLE WANT TO GO

The trail system should provide continuous direct routes and convenient connections between destinations such as downtowns, parks, schools, shopping centers, transit hubs, employment centers, and neighborhoods. A complete network of trails should connect seamlessly to existing and proposed sidewalks and bicycle lanes to complete recreational and commuting routes.

## NAVIGATING THE TRAIL SYSTEM SHOULD BE EASY

As trails throughout Lancaster County are constructed and connected, the regional routes among them should use a comprehensive and consistent wayfinding system. Wayfinding tools should include directional signage, kiosks with detailed maps, hand-held paper maps, online components such as a website and/or app, and consistent design and branding across all tools in use.

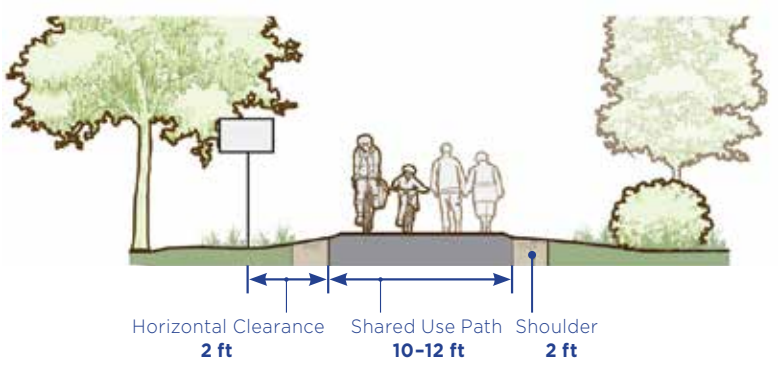
## THE TRAIL SYSTEM SHOULD ENHANCE COMMUNITY LIVABILITY

Greenway trails should be compatible with the nature, history and character of the environment. Good design should integrate with and support the development of complementary uses and should encourage preservation and construction of art, landscaping and other items that add value to communities. These components might include public art, landscaping, lighting and special paving. These, along with historical elements and cultural references, should promote a sense of place.

# 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.

- 10–12 ft 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

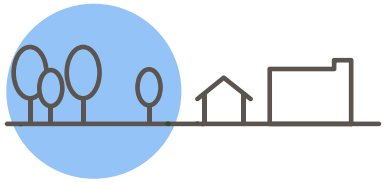
Paths operating in independent corridors are fully separated from traffic. Facility provision is based on opportunity and connectivity rather than roadway context. In some cases, an independent corridor may offer similar connectivity and access to destinations as a nearby roadway.

### NETWORK

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


### LAND USE

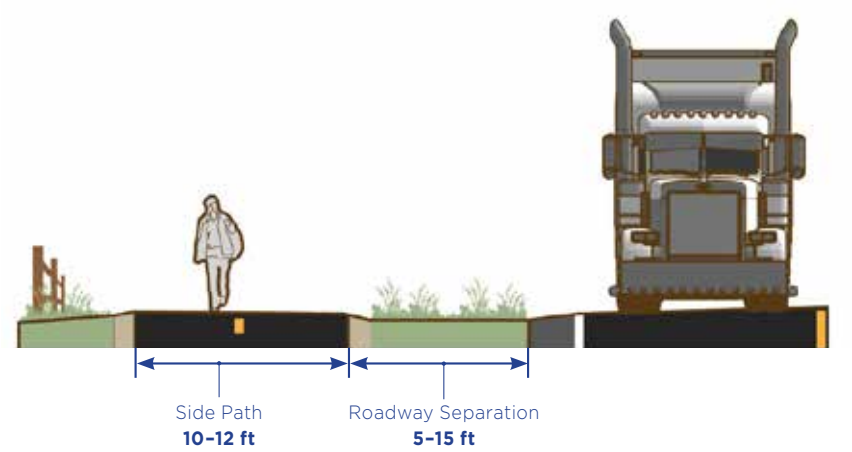
Generally appropriate outside of built-up areas, and also as a corridor connection within urban areas.



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

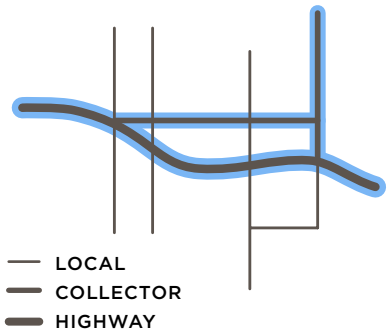
## APPLICATION

### 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.

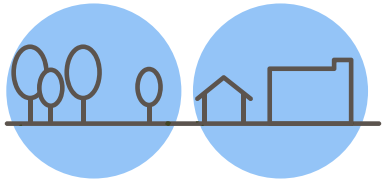
### NETWORK

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.



# SHARED USE TRAIL SELECTION CRITERIA

The main steps for developing the recommended trail projects in this plan depended on the input and involvement of community and agency representatives throughout the county.

In order to focus on a connected network of trail improvements, the following criteria were used:

- Public Input
- Connectivity (Community to community)
- Trail System Connectivity (connect to existing trail)
- Corridor Opportunities (utility corridors, greenway easements, potential railroad corridors, etc.)
- Feasibility of Trail Development

Three trail corridors (The Greater Lancaster Heritage Pathway, Northeast Greenway, and Engleside Greenway) are studied in more detail in Chapter 6.

### TABLE 4.2 - LANCASTER COUNTY AND LIMC RECOMMENDED TRAIL MILEAGE

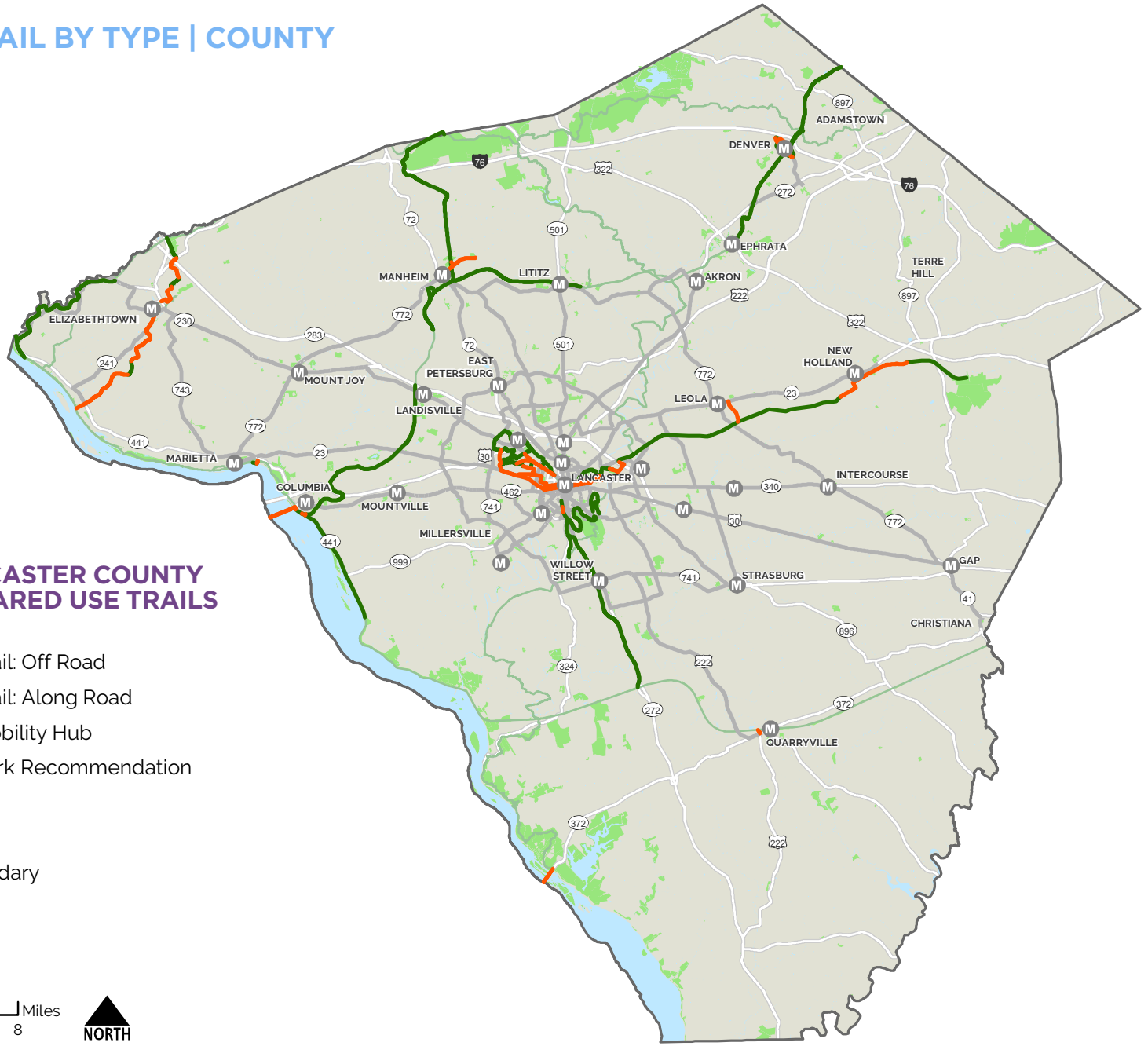
| *Facility Type* | *Total County Mileage* | *Total LIMC Mileage* |
|---|---|---|
| Along the Roadway | 30 | 15 |
| Off-Road | 88 | 38 |
| **TOTAL** | **118** | **53** |

### VISUAL LEGEND FOR MAP 4.7

#### OFF-ROAD

#### ALONG THE ROADWAY

# SHARED USE TRAIL BY TYPE | COUNTY



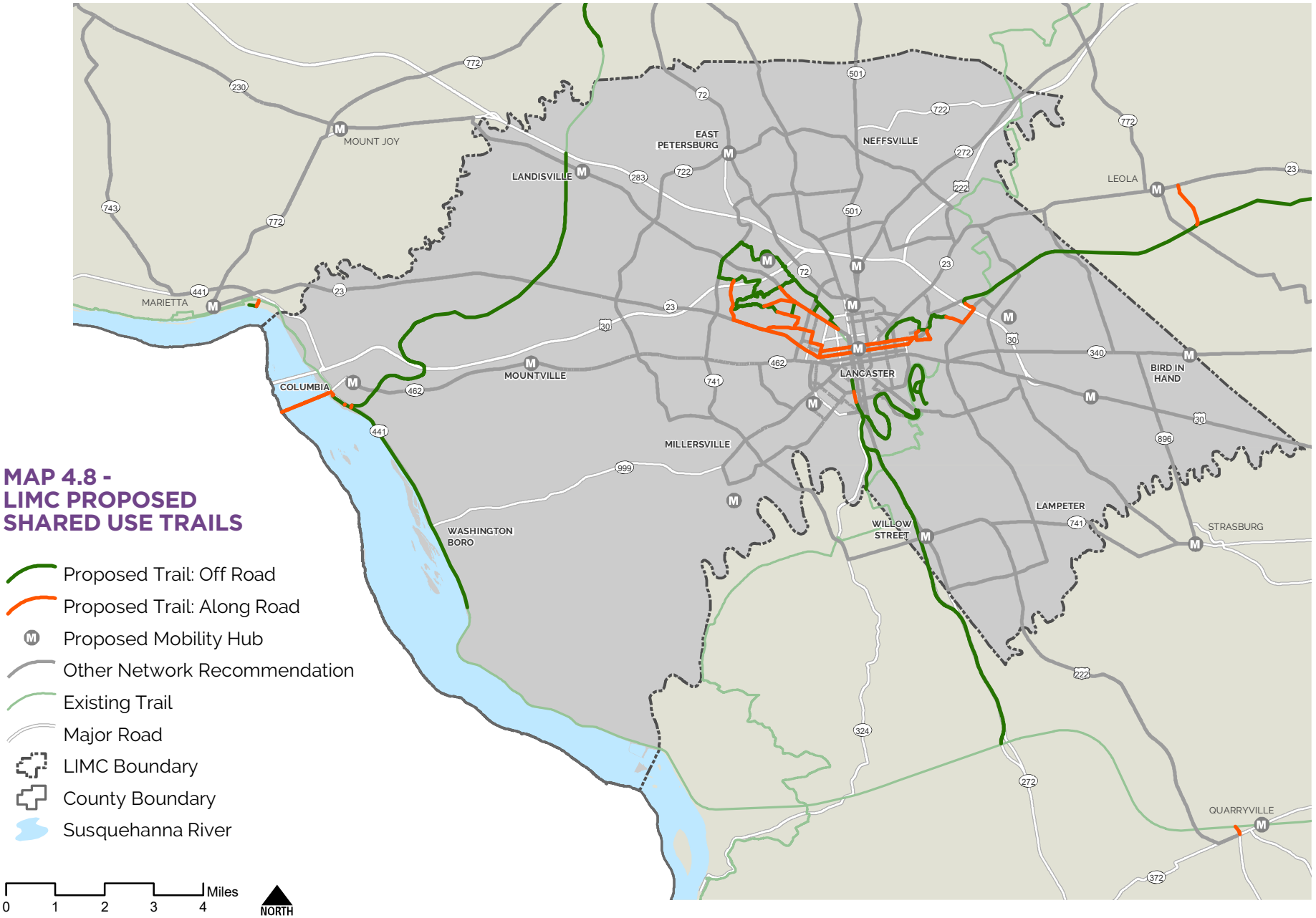

## MAP 4.7 - LANCASTER COUNTY PROPOSED SHARED USE TRAILS

- Proposed Trail: Off Road
- Proposed Trail: Along Road
- Proposed Mobility Hub
- Other Network Recommendation
- Existing Trail
- Major Road
- County Boundary
- Park land
- Water Body

0 2 4 6 8 Miles

NORTH

# SHARED USE TRAIL BY TYPE | LIMC




**MAP 4.8 - LIMC PROPOSED SHARED USE TRAILS**

# NETWORK PRIORITIZATION

# DEVELOPING PRIORITIES

Full implementation of the recommended active transportation network will take many years and significant investment. Thus, it was necessary to develop criteria by which to identify priority projects and a timeframe in which they might be completed. Projects were identified as either short-term (within 10 years), mid-term (within 10 or 20 years) or long-term (20+ years).

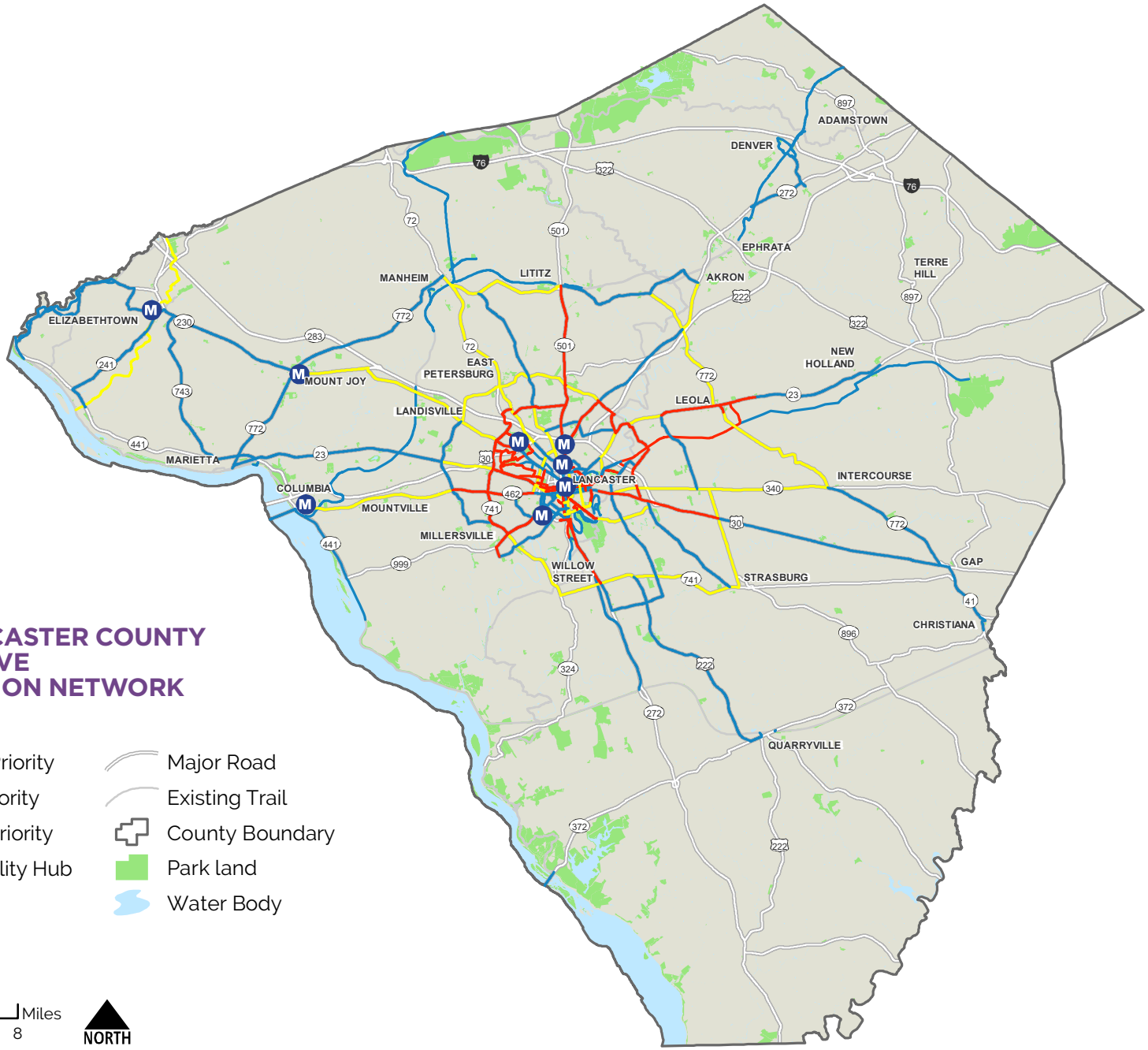
To begin this process, the network was evaluated using prioritization criteria outlined in the table below. Using this analysis as a foundation, the network was then adjusted to ensure the creation of an interconnected ATP network that would also connect mobility hubs and communities.

### TABLE 4.3 - PRIORITIZATION CRITERIA MATRIX

| *Criteria* | *Definition* | *Input* |
|---|---|---|
| Promote Safety | Does the project address a location with a recorded safety concern? | Collision analysis shows intersections and street corridors with highest crashes |
| Transit Access | To what extent does this improve pedestrian access to the transit network? | Existing Transit Route |
| Sidewalk Gap | Does the project provide pedestrian access where none currently exists? | Sidewalk Gap Analysis |
| Land Use | Does the land use contribute to the need for active transportation options? | Character Zones and Designated Growth Areas |
| Projected Demand | Is the project located in an area with high demand for active transportation? | Demand Analysis |
| Equity | To what extent does the project benefit underserved communities? | Equity Analysis |
| Roadway Conditions: Travel Lanes | Does the existing roadway cross-section pose a high risk to active transportation users? | Number of Travel Lanes |
| Roadway Conditions: Traffic Volume | Does the existing traffic volume pose a high risk to active transportation users? | Average Daily Traffic |

*Note: The priority corridors in this plan differ from those shown in places2040. Although both plans identify some of the same corridors, the methodology for selecting them was different.*

# LANCASTER COUNTY PRIORITIZED ACTIVE TRANSPORTATION NETWORK



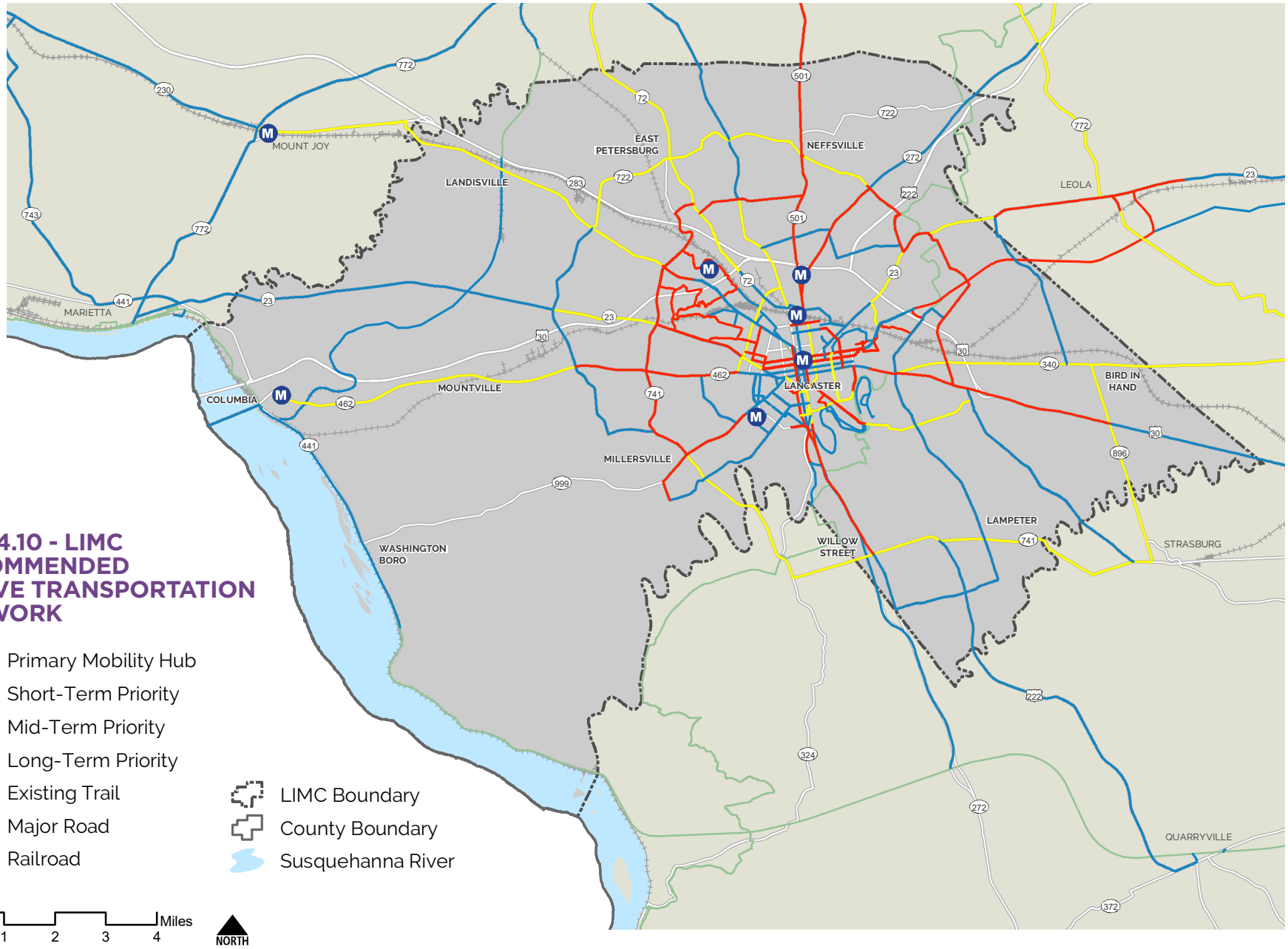

## MAP 4.9 - LANCASTER COUNTY PRIORITY ACTIVE TRANSPORTATION NETWORK

- Short-Term Priority
- Mid-Term Priority
- Long-Term Priority
- Primary Mobility Hub
- Major Road
- Existing Trail
- County Boundary
- Park land
- Water Body

0 2 4 6 8 Miles

NORTH

# LIMC PRIORITIZED ACTIVE TRANSPORTATION NETWORK




**MAP 4.10 - LIMC RECOMMENDED ACTIVE TRANSPORTATION NETWORK**

# PLANNING LEVEL COST ESTIMATES

The cost of constructing corridor improvements plays a major role in the process of prioritization, decision making, and allocation of funds for active transportation projects. The complete recommended short-term county active transportation network is estimated to cost $161 million (78 miles of improvement). According to the Federal Highway Administration, the basic cost of a single mile of urban, four-lane highway is between $20 million and $80 million. For example, the proposed Rt 30 Southern Expressway is estimated to cost $477 million according to the Lancaster County Long Range Transportation Plan. In addition, four other highway widening projects in the County would cost approximately $200 million.

The corridor improvement network does not prescribe detailed facility recommendations because the scope of each project is unknown (see corridor improvements section starting on page 4-7). Due to the variations in scope of a corridor improvement project, the average cost encompasses the following range of elements (design, engineering, and right-of-way acquisition are included):

- Bicycle Pavement Markings: $4,000
- Separated Bikeway $250,000 - $1 Million
- New Sidewalk: $800,000 - $1.15 Million
- Crossing Improvements $100,000 - $300,000
- Trail: $1.2 Million*
- Trailheads: $200,000 - $600,000*
- New Roadway/Widening: $4 Million - $7 Million*
- Road Diet: $11,000 - $50,000

## AVERAGE COST OF CORRIDOR IMPROVEMENT: $2.5 MILLION

The costs below were developed using national best practices as well as a review of recent construction costs in Pennsylvania. These are planning level costs only and further analysis and preliminary design will be needed to develop refined cost estimates per project. The cost estimates include a high-level cost for right-of-way acquisition but that can vary drastically depending on scope.

* *Trail and new roadway costs are not included in the average cost of a corridor improvement project.*

### TABLE 4.4 - RECOMMENDED BIKEWAYS + TRAILS MILEAGE TABLE

| ***Network Category*** | ***County*** | | | ***LIMC*** | | |
|---|---|---|---|---|---|---|
| *Priority* | *Short-Term (miles)* | *Mid-Term (miles)* | *Long-Term (miles)* | *Short-Term (miles)* | *Mid-Term (miles)* | *Long-Term (miles)* |
| Trail | 25 | 10 | 83 | 22 | n/a | 31 |
| Corridor Improvement | 53 | 88 | 153 | 46 | 52 | 68 |
| **TOTAL MILES** | **79** | **98** | **236** | **67** | **52** | **99** |
| **TOTAL COST** | **$164M** | **$232M** | **$482M** | **$141.5M** | **$130M** | **$207M** |

*Note: See Table 5.1 (pg. 5-11) for mileages/costs of City proposed bicycle facilities.*

# MAINTENANCE CONSIDERATIONS

Regular maintenance helps to protect public investments by keeping existing infrastructure safe and usable, and reducing the frequency of replacement. It is critical that maintenance requirements, best practices, estimated costs, and responsibilities be outlined, agreed upon, and budgeted for prior to implementation.

Maintenance costs must be planned for in regular maintenance budgets, capital improvement planning, parks and recreational plans and budgets, or transit budgets. Other sources of funding should also be explored, such as grants, financial or in-kind contributions, agreements with PennDOT, or maintenance partnerships. Maintenance cost estimates should be inclusive of special equipment needs, materials, labor, and staff training.

*Corridor improvements at bus shelters need to include a maintenance program to address riders' needs during all types of weather and for safety.*


Photo Credit: Albany Times Union

Further research should be pursued on best practices, opportunities for cost-sharing and maintenance partnerships, designs that minimize maintenance needs, and funding sources for infrastructure maintenance.

## CORRIDOR IMPROVEMENTS: BICYCLE AND PEDESTRIAN INFRASTRUCTURE

Bicycle infrastructure maintenance requirements might include tasks such as: repainting or reapplication of line markings or stencils; street cleaning to clear debris from shoulders and bicycle lanes; replacement of posts and bollards; winter maintenance and snow plowing; and maintaining even, level surfaces throughout the road and bicycle network. Because this infrastructure is located in the street, municipalities will be the responsible parties; PennDOT does not accept maintenance responsibilities.

Pedestrian infrastructure maintenance requirements might include tasks such as: restriping crosswalks, replacing curbs and sidewalks, repairing sidewalks to maintain level surfaces, and replacing pedestrian signals. Other amenities might include trash receptacles, pedestrian-scale lighting, seating, or landscaping. Currently in Lancaster County, responsibility for sidewalks primarily falls on property owners, which can present a barrier to efficient and consistent maintenance and replacement. This also relies on municipal enforcement of sidewalk maintenance regulations to ensure that infrastructure is maintained. Other improvements will largely be the responsibility of the municipality, or in some cases volunteer/civic organizations and businesses.

When maintenance or replacement is required, municipalities should address the need for safe detours around construction zones while work is underway.

*For more information, please see Recommendations B5: IMPROVE AND MAINTAIN PEDESTRIAN INFRASTRUCTURE*

*in Appendix D, page D-13; B6: MAINTAIN BICYCLE INFRASTRUCTURE in Appendix D, page D-14; and Appendix A, which outlines high-level maintenance considerations for different infrastructure types.*

## MOBILITY HUBS AND TRANSIT STOPS

Maintenance needs and costs at mobility hubs and transit stops will vary significantly depending on the available amenities. However, all mobility hubs and higher volume transit stops may share some common maintenance responsibilities, such as regular cleaning, trash removal, graffiti abatement, light bulb replacement, regular repairs, signage replacement, and shelter maintenance. Monitoring the condition of connecting infrastructure such as sidewalks, crosswalks, and bicycle lanes is also critical.

Primary mobility hubs are likely to have more intensive maintenance needs, including building maintenance; utility costs including heat, electric, and water/sewer; regular cleaning of restrooms; maintenance of TVs, announcement systems, and other technology; and landscaping.

The responsibility for maintenance is likely to fall to transit providers, though often no dedicated funding sources exist for maintenance. Maintenance partnerships should be explored to share maintenance costs or duties among transit providers, local governments, businesses/employers, volunteer/civic organizations, or institutions.

*For more information, please see Recommendation A7: CONNECT AND IMPROVE TRANSIT STOPS in Appendix D, pg. D-8.*

## SHARED-USE TRAILS

Trail maintenance includes tasks such as managing drainage, sweeping/blowing of trail surfaces, trash removal, weed and vegetation management, mowing, and minor repairs to furniture and other features. Trail maintenance may be managed or shared by local government, authorities, or volunteer or civic organizations.

*Please see the Trail Maintenance section in Chapter 6 on pages 6-31 and 6-32.*

Photo Credit: Alta Planning

*Trails and shelters must also be maintained for safety and structural integrity.*

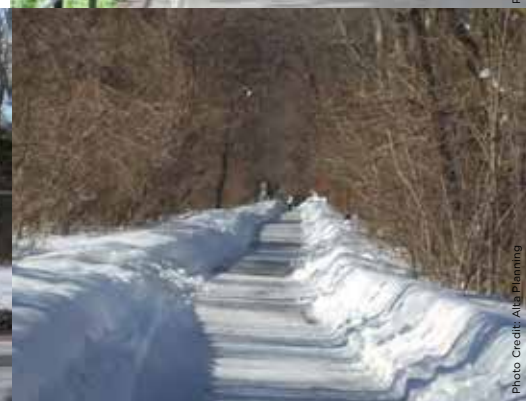


Photo Credit: Alta Planning

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LANCASTER CITY

# BIKEWAY NETWORK


5

# CITY BICYCLE NETWORK

The City is a hub of activity with employment centers, schools, residential areas, and plentiful opportunities to participate in historic and cultural activities. The bicycle network aims to connect these hot spots of activity while serving as a central hub for the County and LIMC area.

The City bicycle network is designed to accommodate a wide variety of users. Short trips are the norm within city limits. The existing medium density and robust street grid offer the opportunity to develop a network of connected, low-stress bikeways for users of all ages and abilities.

## THIS CHAPTER INCLUDES AN OVERVIEW OF:

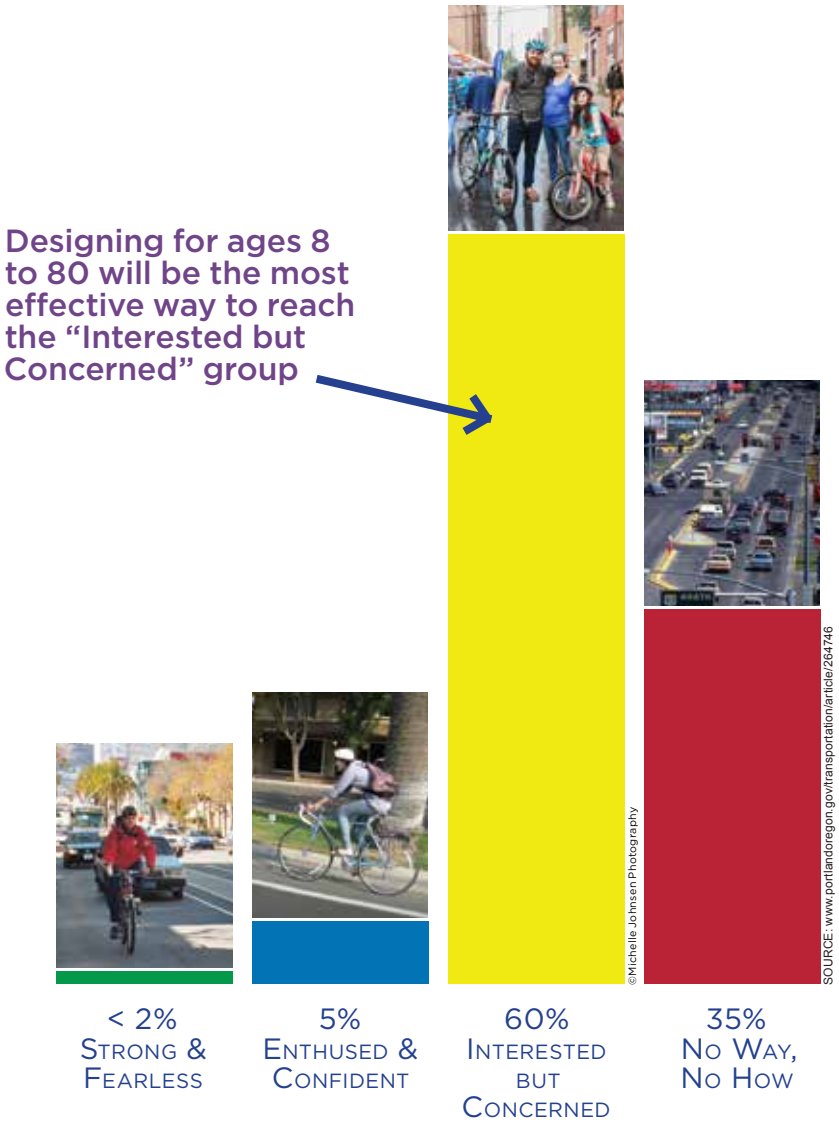
# DESIGNING BIKEWAYS FOR ALL USERS

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"). 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.

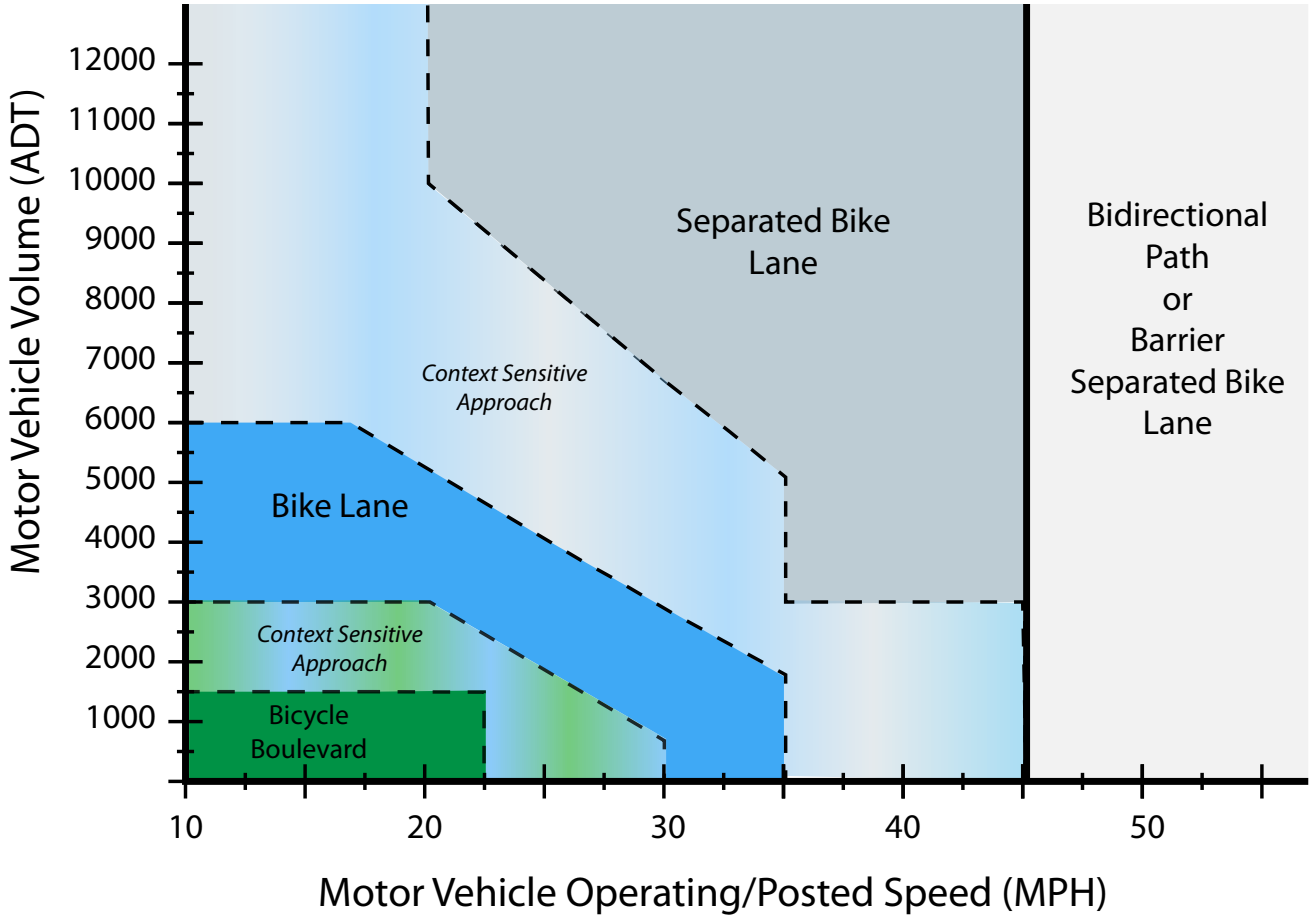


# CHOOSING THE RIGHT FACILITY TYPE

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.

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.

For general guidance, the graphic below highlights the relationship between facility type and roadway speed and volume situations



# CONTEXT-SENSITIVE APPROACH

| *Bikeway Facility Type* | *Street Type/Speed/ Volume* | *Design Specifications* | *Implementation Strategies* |
|---|---|---|---|
| **BICYCLE BOULEVARD**  | • Local<br>• Residential collector | • Identification signage and pavement markings<br>• 85th percentile speed <25 MPH<br>• ADT <3000<br>• Crossing treatments at local streets, avenues and boulevards | • Use access management and speed reduction tools to achieve desired motor vehicle volumes and speeds. |
| **SHARED ROADWAY**  | • Local<br>• Commercial Main Street | • Works best on streets with speeds of 30 MPH or lower. May be used on streets up to 35 MPH<br>• 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) | • Shared lane markings pair well with Bikes May Use Full Lane (R4-11) signs.<br>• Modifications to signal timing help induce a bicycle-friendly travel speed for all users |
| **ON-STREET BIKE LANE**  | • Local<br>• Collector<br>• Commercial Main Street | • 6′- 7′ preferred bike lane width<br>• 5′ minimum bike lane width (when adjacent to parking) | • Lane narrowing<br>• Travel lane reconfiguration<br>• Parking lane reconfiguration |
| **BUFFERED BIKE LANE**  | • Collector<br>• Commercial Main Street<br>• Arterial | • 5′ minimum bicycle travel area<br>• 18″ minimum buffer area | • Lane narrowing<br>• Travel lane reconfiguration<br>• Parking lane reconfiguration |
| **ONE-WAY SEPARATED BIKE LANE**  | • Collector<br>• Commercial Main Street<br>• Arterial | • 7′ travel area<br>• 3′ or wider buffer<br>• 18″ minimum buffer adjacent to travel lanes<br>• 3′ minimum buffer adjacent to parking lanes | • Lane narrowing<br>• Travel lane reconfiguration<br>• Parking lane reconfiguration<br>• Curb reconstruction |
| **TWO-WAY SEPARATED BIKE LANE**  | • Collector<br>• Commercial Main Street<br>• Arterial | • 12′ preferred operating width<br>• 10′ minimum travel width (8′ width in constrained conditions)<br>• 3′ minimum buffer adjacent to parking lanes | • Lane narrowing<br>• Travel lane reconfiguration<br>• Parking lane reconfiguration<br>• Curb reconstruction |

# PLANNING THE BIKEWAY NETWORK

The proposed City of Lancaster bikeway network is a result of a collaborative planning process that involved extensive public engagement, data collection, and technical analysis. The project recommendations were directly informed by four categories of inputs (see graphic below). These inputs directed the project team towards a focus on developing a network of well-connected, low-stress facilities for people of all ages and abilities.

## ROADWAY CHARACTERISTICS

- Number of Travel Lanes
- Speed Limit
- Average Daily Traffic
- Topography (Avoiding Steep Hills)
- Level of Traffic Stress
- Safety Analysis

## BICYCLE DEMAND

- Key Destinations
- Existing Network Connectivity
- Transit Connections
- Demand + Equity Analysis

## CONSTRUCTABILITY

- Available Rights-of-Way
- Implementation Strategy (How will the facility be installed?)
  - Road Diet
  - Road Widening
  - Lane Re-purposing
  - Parking Restrictions

## PUBLIC INPUT

- Steering Committee Review
- Public Comments (Survey + Online Map)
- Agency Review

# BIKEWAY FACILITY TYPE LEGEND

The following network categories describe the type of investment needed to provide a low-stress, all ages and abilities network in Lancaster City. The goal of the recommended Lancaster bike network is to develop a network of LTS 1 and LTS 2 low-stress routes. The categories are intentionally broad to remain flexible and allow for engineering judgment and context-sensitive design.

The visual legend below provides more description of each category and corresponds to the map on the following page.

## MAJOR SEPARATED BIKEWAY

The major separated bikeway category includes facilities that have a vertical separation, like curbs or bollards. Of all the bikeway types, separated bike lanes offer the most protection from adjacent motor vehicle traffic.

## SHARED STREET + BICYCLE BOULEVARD

Bike boulevards and shared streets have low traffic volumes and speeds that are designated and designed to prioritize bike travel. Often, these streets are thought of as “quiet” streets that typically run parallel to major roadway corridors.

## MINOR SEPARATED BIKEWAY

While this category of facilities provides separation from motor vehicle traffic, there is no vertical separation. Rather, separation is achieved through pavement markings only. Because of this, the cyclists’ perception of safety may be reduced.

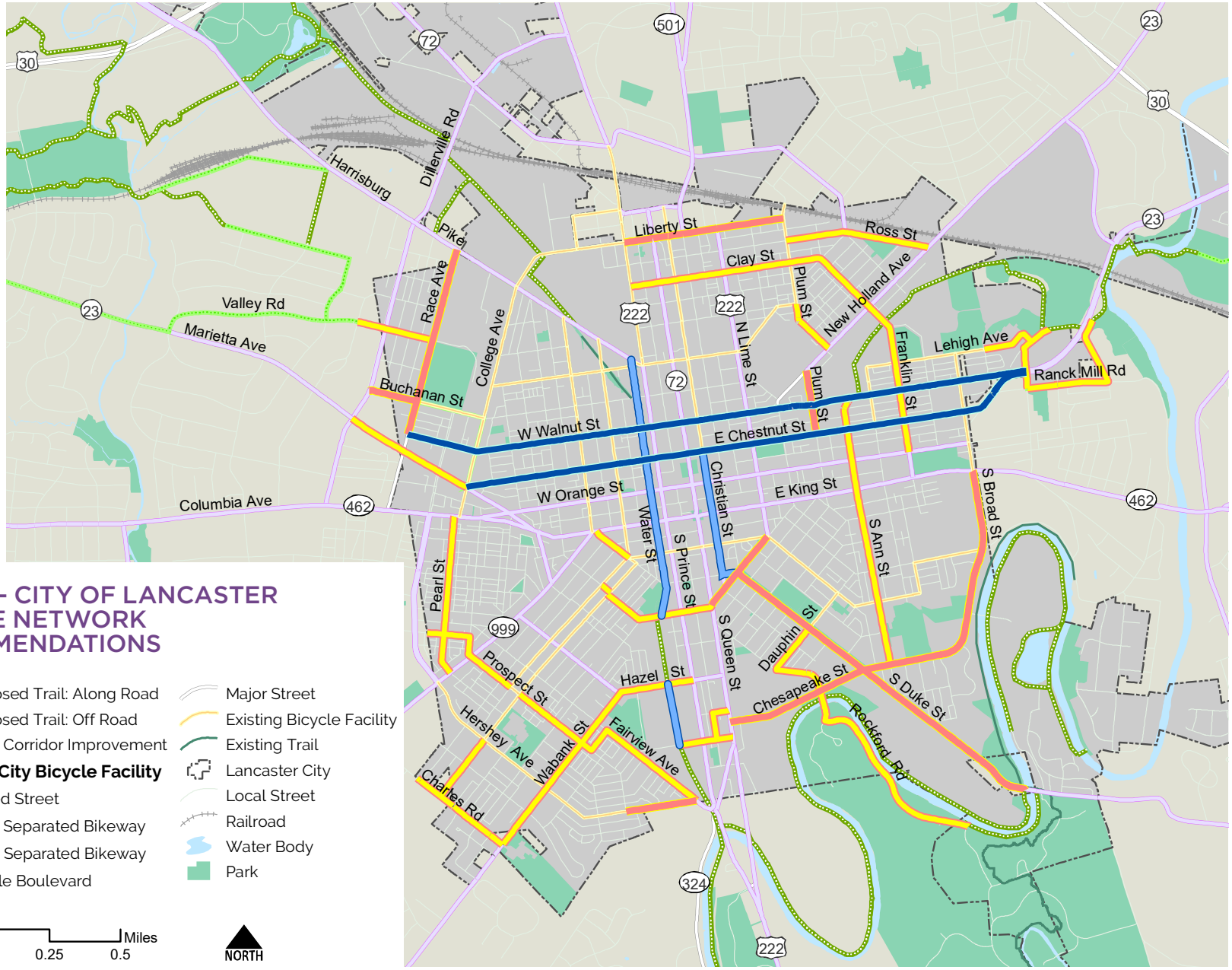

## GREENWAY TRAIL

The most recognized low-stress facility, a trail offers complete separation from motor vehicle traffic. A trail can either be along the roadway or within its own, off-road right-of-way.

*Note: Corridor Improvement is another network category within the City Network and is described in detail in Chapter 4.*

# RECOMMENDED BIKEWAY NETWORK

The bicycle network in the city was created to connect people with places - Penn Square, Central Market, schools, parks, and other key destinations. The intention of the network is to build upon the successes of existing facilities and close gaps.




## MAP 5.1 - CITY OF LANCASTER BICYCLE NETWORK RECOMMENDATIONS

- Proposed Trail: Along Road
- Proposed Trail: Off Road
- Other Corridor Improvement

**Proposed City Bicycle Facility**

- Shared Street
- Major Separated Bikeway
- Minor Separated Bikeway
- Bicycle Boulevard

- Major Street
- Existing Bicycle Facility
- Existing Trail
- Lancaster City
- Local Street
- Railroad
- Water Body
- Park

0 0.25 0.5 Miles

NORTH

# IDENTIFYING PRIORITIES

As part of the planning process, project consultants, City staff and Steering Committee members identified key inputs to prioritize projects. These five factors, illustrated below, were used to develop a phasing plan comprised of short-term, mid-term and long-term projects. These factors should be considered every time the City, PennDOT or other partners, selects projects for implementation.

## DEMAND

Does this project create links between destinations?

## GAP CLOSURES

Does this project close gaps between facilities?

## SAFETY + COMFORT/LOW STRESS FACILITY

Have there been any bicycle crashes near the project area and what is the current LTS score?


## EASE OF IMPLEMENTATION/ COMMUNITY SUPPORT

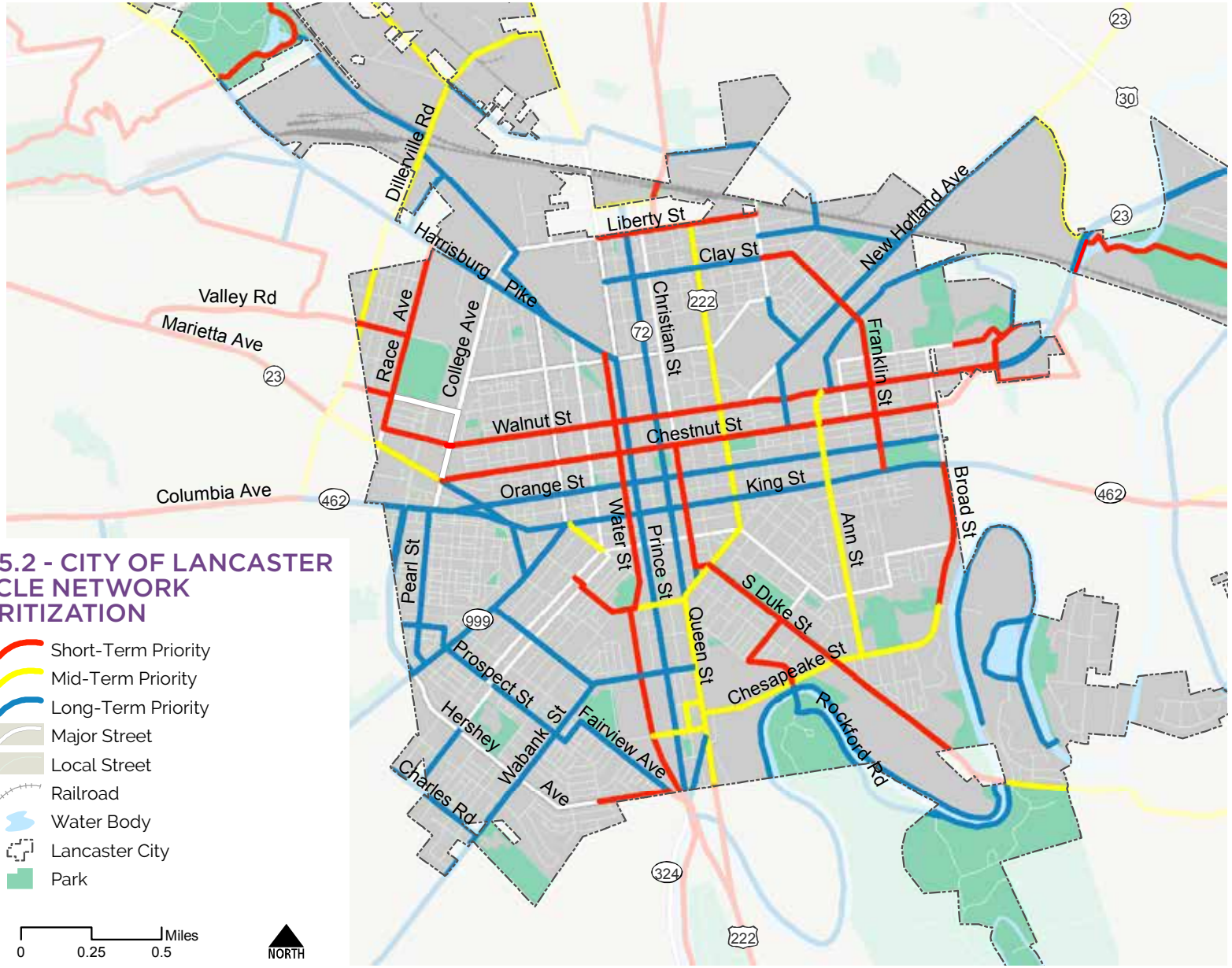
What is the cost compared to other projects?


## EQUITY + LAST MILE TRANSIT CONNECTIONS

Is this project in an area of vulnerability?

# BICYCLE NETWORK PRIORITIZATION

The below map illustrates potential short-, mid-, and long-term build out of the bicycle network. This phasing plan is based on the Steering Committee's prioritization criteria as illustrated on page 5-9.



# BIKEWAY PROJECT COST DEVELOPMENT

Planning-level cost estimates were developed, based on the five primary bikeway facility categories: major separated, minor separated, shared street, bicycle boulevard, and greenway trail. For each facility type, a range of planning-level cost estimates per linear mile was developed using cost information based on recent bikeway project experience and national unit prices.

The cost estimates shown below include engineering, construction, and right-of-way. 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 parking separation for separated bikeways. Detailed costing will be needed as part of the implementation of each individual project during the project development and design phase.

## TABLE 5.1 - SUMMARY OF PLANNING-LEVEL BIKEWAY COST ESTIMATES

| *Facility Type* | *Total Recommended Network Miles* | *Approximate Cost per Mile* | *Total Cost per Category* |
|---|---|---|---|
| **Major Separated** | 4.3 | $250,000 | **$1,075,000** |
| **Minor Separated** | 5 | $200,000 | **$1,000,000** |
| **Bicycle Boulevard** | 1.6 | $800,000 | **$1,280,000** |
| **Shared Street** | 10.3 | $100,000 | **$1,030,000** |
| **Greenway Trail** | 10.8 | $1,200,000 | **$12,960,000** |
| **TOTAL** | **32** | **N/A** | **$17,345,000** |

## TABLE 5.2 SHORT-TERM ON-ROAD NETWORK PRIORITIES

| *Street Name* | *To* | *From* | *Length (Miles)* | *Network Category* | *Implementation Strategy* |
|---|---|---|---|---|---|
| Buchanan Ave | N President Ave | Race Ave | 0.2 | Minor | Bike Lane/Sharrow |
| Chestnut St - Grofftown Rd | College Ave | Ranck Ave | 2.1 | Major | Separated Bikeway |
| E Clay St - North Franklin St | N Plum St | E Orange St | 0.9 | Shared Street | Shared-Lane Street |
| Hershey Ave | Fairview Ave | Prospect St | 0.3 | Minor | Bike Lane |
| Conestoga St - Filbert St | W Vine St | S Water St | 0.3 | Shared Street | Shared-Lane Street |
| Liberty St | N Prince St | N Plum St | 0.6 | Minor | Bike Lane |
| Walnut St | Race Ave | Ranck Ave | 2.2 | Major | Separated Bikeway |
| Water St (excluding trail segments) | Harrisburg Pike | Seymour St | 1.1 | Bicycle Boulevard | Bicycle Boulevard |
| Broad St | King St | Circle Ave | 0.5 | Minor | Bike Lane |
| Race Ave | Harrisburg Pike | Walnut St | 0.7 | Minor | Bike Lane |
| Christian St - E Farnum St | E Chestnut St | Church St | 0.5 | Bicycle Boulevard | Shared-Lane Street / Contraflow Facility |
| Grofftown Rd, Ranck Ave, Ranck Mill Rd, Riverside Ave, Lehigh Ave | McCaskey Ave | Terminus of N Riverside Ave | 1.0 | Shared Street | Shared-Lane Street |
| Frederick St - Valley Rd | N School Ln | Race Ave | 0.3 | Shared Street | Shared-Lane Street |
| E Strawberry St | Dauphin St | Chesapeake St | 0.2 | Shared Street | Shared-Lane Street |
| Dauphin St | S Duke St | E Strawberry St | 0.2 | Shared Street | Shared-Lane Street |
| S Duke St | Church St | Conestoga River Bridge | 1.3 | Minor | Separated Bikeway |

## TABLE 5.3 MID-TERM ON-ROAD NETWORK PRIORITIES

| *Street Name* | *To* | *From* | *Length (Miles)* | *Network Category* | *Implementation Strategy* |
|---|---|---|---|---|---|
| Ann St | E Walnut St | Chesapeake St | 1.0 | Shared Street | Shared-Lane Street |
| Broad St - Chesapeake St | S Queen St | Circle Ave | 1.0 | Minor | Bike Lane |
| Church St | E Vine St | S Queen St | 0.3 | Minor | Bike Lane |
| Conestoga St | S Water St | S Queen St | 0.2 | Shared Street | Shared-Lane Street |
| Beaver St, Hager St, Seymour St | S Queen St | S Water St | 0.4 | Shared Street | Shared-Lane Street |
| Marietta Ave | College Ave | President Ave | 0.5 | Shared Street | Shared-Lane Street |
| W Strawberry St | W King St | W Vine St | 0.2 | Shared Street | Shared-Lane Street |

## TABLE 5.4 LONG-TERM ON-ROAD NETWORK PRIORITIES

| *Street Name* | *To* | *From* | *Length (Miles)* | *Network Category* | *Implementation Strategy* |
|---|---|---|---|---|---|
| Charles Rd | High St | Wabank Rd | 0.4 | Shared Street | Shared-Lane Street |
| Clay St | N Prince St | N Plum St | 0.6 | Shared Street | Shared-Lane Street |
| Fairview Ave, Prospect St, Rolridge Ave | St Joseph St | Hershey Ave | 0.8 | Shared Street | Shared-Lane Street |
| Fifth St, Prospect St, Ruby St | S West End Ave | W Vine St | 0.4 | Shared Street | Shared-Lane Street |
| Hazel St, Wabank Rd | S Prince St | Charles Rd | 0.9 | Shared Street | Shared-Lane Street |
| Pearl St | Columbia Ave | Manor St | 0.6 | Shared Street | Shared-Lane Street |
| Rockford Rd, E Strawberry St | Chesapeake St | Williamson Rd | 0.8 | Shared Street | Shared-Lane Street |
| St Joseph St | Hershey Ave | Charles Rd | 0.3 | Shared Street | Shared-Lane Street |
| E Ross St | N Plum St | New Holland Ave | 0.5 | Shared Street | Shared-Lane Street |
| Plum St | E Frederick St | New Holland Ave | 0.2 | Shared Street | Shared-Lane Street |
| Plum St | New Holland Ave | E Chestnut St | 0.2 | Shared Street | Shared-Lane Street |

# PRIORITY PROJECTS

Full implementation of the recommended low stress bicycle network (including new facilities and upgrades to existing facilities) will take time. Using the prioritization process outlined on page 5-9, five short-term priority projects were selected (see map below). These projects should be a priority for implementation to create momentum for building the complete network. The three cutsheets illustrated on pages 5-16 through 5-20 highlight existing conditions, potential opportunities and challenges, and design considerations for the Prince & James Streets Intersection, the Farnum & Duke Streets Connection, and the Christian Street Bike Boulevard. The Walnut-Chestnut Separated Bike Lanes are discussed in Chapter 6 as part of the Greater Lancaster Heritage Pathway. A deeper dive including full engineering drawings should be completed prior to installation to examine conditions for projects.


**MAP 5.3 - PRIORITY PROJECTS CITY OF LANCASTER**


0 500 Feet

Alley

## CHRISTIAN STREET BIKE BOULEVARD

**TO: MCGOVERN AVENUE**
**FROM: CHURCH STREET**

**1.05** Miles*

**PRIMARY LAND USE: MIXED**

**25** MPH AVG.

**PRIORITY:**

Activity Center
Safety + Comfort/Low Stress Facility
Ease of Implementation/Community Support
Equity + Last Mile Transit Connections
Gap Closure

*See Appendix A, pg. A-92, A-96 for Design Guidelines*

## CONSIDERATIONS

- Street crossings require crosswalks and are opportunities for artistic expression.
- Christian Street between Frederick and James is used to access Lancaster General Hospital Parking Garage. Paint and other traffic calming tools should be used to denote the mixing area.
- Neighbors living along the corridor should be involved in the engineering process.
- Curb bulb-outs should be used where appropriate to reduce crossing distances. Appropriate signage should be used to alert vehicles of bike/ped crossing.

## MIXING ZONE

Christian Street between Frederick and James is used to access Lancaster General/Penn Medicine Parking Garage. Several tools can be used to create a mixing zone: striping, stenciled words, signs, and tactile pavement changes.

*Note: This project is currently in progress.*


## PARKING GARAGE CONNECTION

Creating a connection though the parking garage will require modifying the structure to provide a pass-through.

*Note: This will require evaluation by a structural engineer and is not included in the cost estimate.*

*A temporary "route around" will be required in the short term.*


*Visualization of potential street crossing for the Christian Street alley boulevard*


## FARNUM - DUKE CONNECTION

| | |
|---|---|
| **TO: CHRISTIAN STREET**<br>**FROM: S DUKE STREET** | **0.2** Miles* |
| **PRIMARY LAND USE: RESIDENTIAL** | **25** MPH AVG. |

**PRIORITY:**

Activity Center
Safety + Comfort/Low Stress Facility
Gap Closure

*See Appendix A, pg. A-92, A-96 for Design Guidelines*

* *Includes only E Farnum St improvements*

### CONSIDERATIONS

- The sequence of implementation will be critical to maintaining safe circulation for all modes.
- The complete streets study of South Duke Street should include the Church Street crossing, Farnum facilities, and bicycle and pedestrian circulation on Christian Street.
- The South Duke Street complete streets design is an opportunity to integrate green street treatments with bioretention, native species, and increased street tree canopy.

### COMPLETE STREETS STUDY

South Duke Street is a wide street with generous travel lanes and is a key tie-in to the city bicycle network from the southeast. The City should work with the surrounding community to develop a complete streets plan for all users to consider: parking, shade, multi-modal circulation, benches, street trees, traffic calming, safe crossings, etc.

## INTERSECTION IMPROVEMENTS

The intersection of Farnum Street, Duke Street and Church Street will require an engineering study to provide safe circulation for all modes. Turning movements and signalization will need to be reviewed and revised.

## SHARED LANE AND CONTRAFLOW BIKE LANE ON FARNUM STREET

The section of Farnum Street between Christian Street and Duke Street will be an east bound contraflow bike lane coupled with a west bound shared lane.

## CHRISTIAN STREET - ALLEY BOULEVARD

The Farnum Street facilities will tie into the Christian Street Bicycle Boulevard system which will connect southeast Lancaster to the center of the city, the Amtrak station on the north, and many more destinations throughout the region. Sight lines at crossings are critical to provide safe passage through the alley system.


0 100 Feet

N

| PRINCE ST - JAMES ST INTERSECTION | |
|---|---|
| **PRIMARY LAND USE: COMMERCIAL** | **25** MPH AVG. |
| **PRIORITY:**<br>Activity Center<br>Ease of Implementation/Community Support<br>Gap Closure | |

*See Appendix A, pg. A-85 for Design Guidelines*

## CONSIDERATIONS

- Providing safe connections to and from the pocket park is essential to creating a low-stress bike network in the city.
- Implementing a low-stress bicycle facility along Harrisburg Avenue will be a longer-term improvement with a coordinated effort among several key stakeholders. Eventually, those facilities will tie into this "arrival plaza" to the city.
- High visibility crossings incorporate green pavement markings at Water Street and Prince Street to provide transitions between bicycle facilities.
- Transforming the existing plaza between Prince Street and Water Street is essential to direct bicyclists from James Street. The plaza should include placemaking elements such as landscaping, benches, public art, and wayfinding signage.

# GREENWAY FEASIBILITY

# 6

# INTRODUCTION

This chapter focuses on the proposed routes and feasibility analyses for three greenway trails: 1) the Greater Lancaster Heritage Pathway (GLHP); 2) the Northeast Greenway (which is a component of the GLHP); and 3) the Engleside Greenway. Each proposed trail will play a key role in connectivity for the region, including links to the City bicycle network.

These proposed multiuse trails will connect parks, cultural destinations, economic centers, culinary experiences, employment opportunities, access to food and water, and countless experiences linked to the historic stories of Lancaster's past and future generations to come. Once complete, the new trails will expand opportunities for outdoor recreation and transportation choices; particularly for those living in the Lancaster Metro area.

## THIS CHAPTER INCLUDES AN OVERVIEW OF:

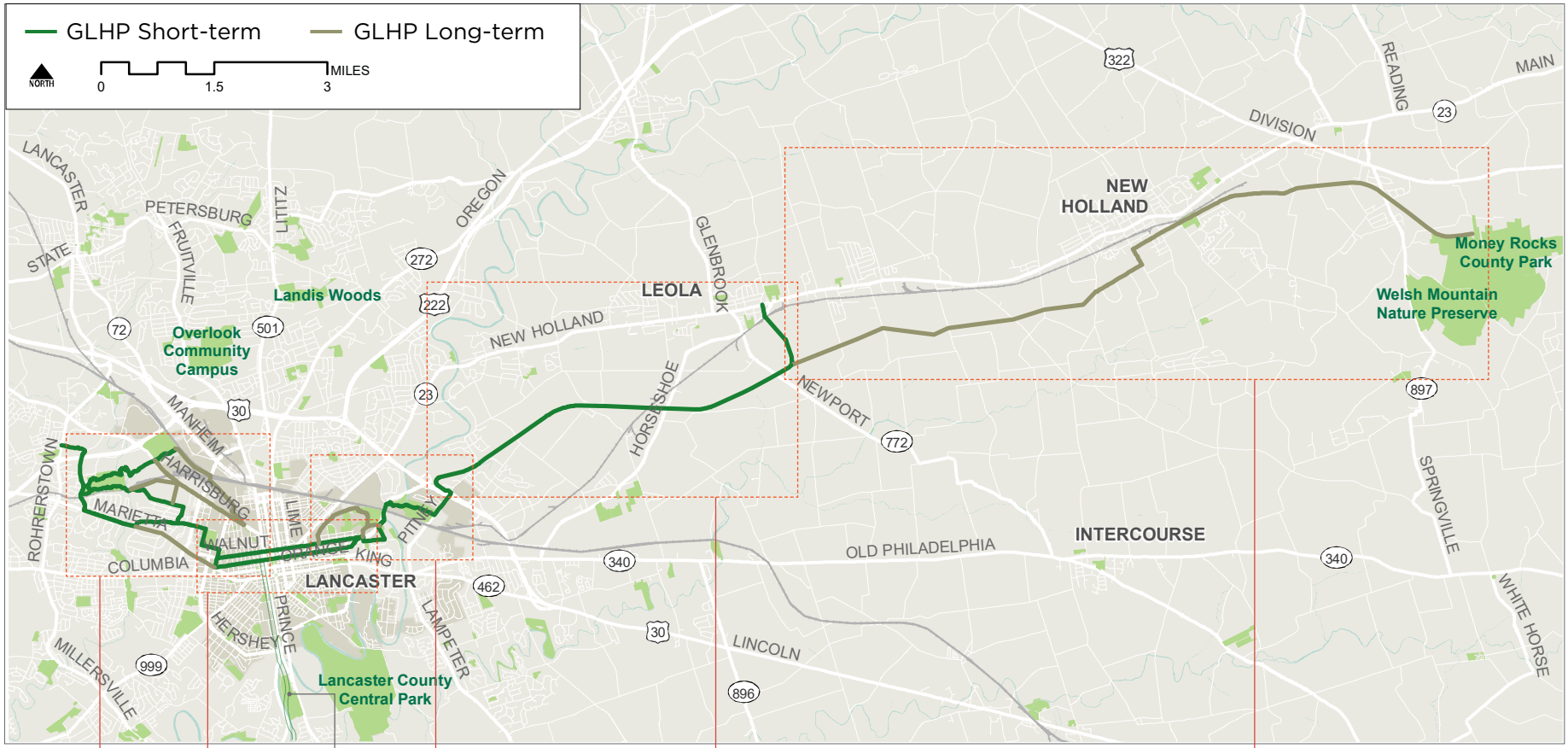


Photo Credit: Google Maps

*From top: Farmingdale Trails in the GLHP West section; Abandoned railroad bridge spanning the Conestoga River in Engleside; and the corridor for the GLHP Goat Path, as seen from Newport Rd in Upper Leacock Township.*

# GREATER LANCASTER HERITAGE PATHWAY (GLHP)

The GLHP is a proposed shared use trail that runs approximately 15 miles from Penn Medicine Lancaster General Health's Suburban Pavilion, northwest of the City of Lancaster, to the village of Leola to the east. Long-term plans to extend the trail further east through New Holland Borough to Money Rocks County Park would add an additional 10 miles to the trail project. The trail would provide over 200,000 residents living in the Lancaster Metro area easy access to a safe place to walk, ride, and commute to employment centers along the corridor. The trail is a combination of on- and off-road active transportation facilities that will be developed incrementally. The Heritage Pathway relies on existing roads for many short-term segments; especially west of the City. However, the long-term goal of the project is to develop the safest route possible so that it is accessible to all users in Lancaster County regardless of their age or ability.




GLHP West
*p. 6-6 to 6-7*

GLHP City Connection
*p. 6-8 to 6-9*

Engleside Greenway and Water St Bike and Ped Blvd
*(separate from GLHP)*
*p. 6-26 to 6-28*

GLHP Northeast Greenway
*p. 6-10 to 6-11*

GLHP Goat Path
*p. 6-14 to 6-19*

GLHP Goat Path Extension
*p. 6-22 to 6-23*

# EXPANDING TRANSPORTATION OPTIONS WITH TRAILS

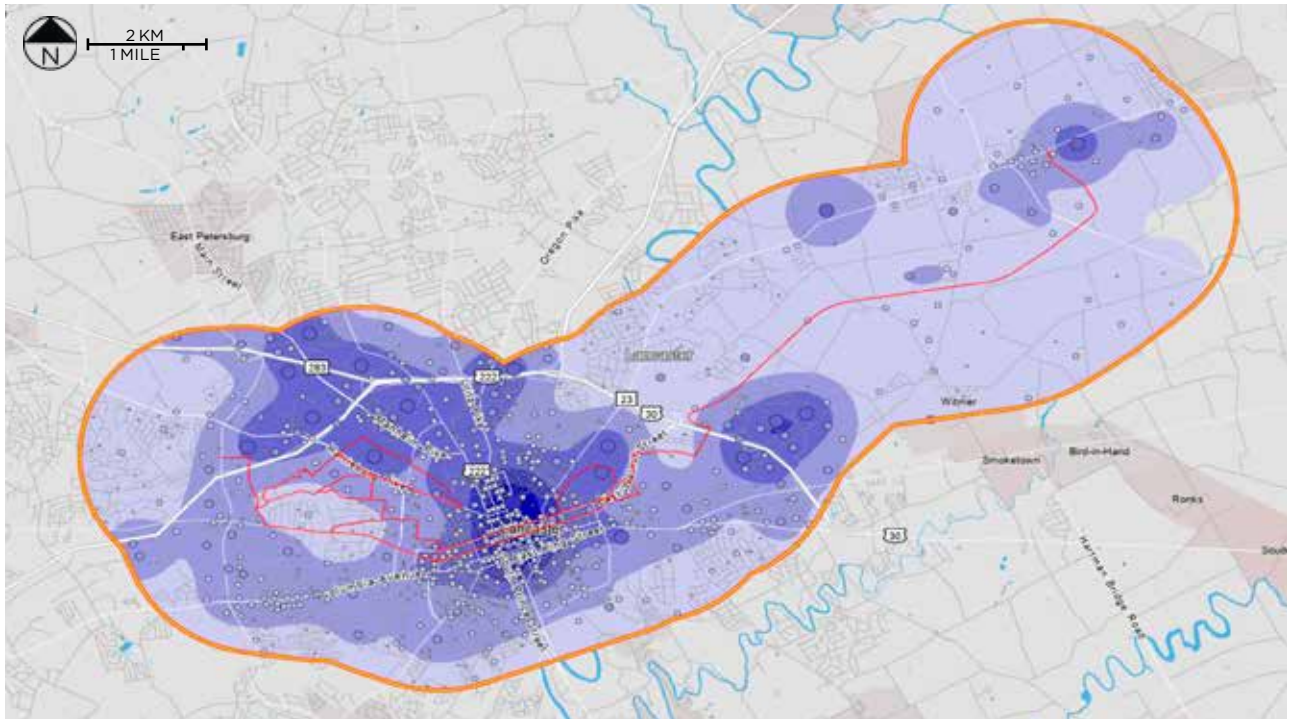
Trails that connect high demand destinations such as large employment centers, commercial retail areas, schools, and parks offer workers and area residents alternatives to the use of automobiles or mass transit. While alternative modes of transportation are a choice for many workers, for others they are a necessity. Many low- or moderate-income households lack access to a private vehicle. Public transit is available in the county, but routes or hours of operation may not coincide with employment location and shift schedules. In these circumstances, bicycling and walking become a necessity for daily life.

Connecting trails and large employment centers can enable workers to commute to their job in an efficient and affordable manner at any time of the day or night. Using trails for commuting, shopping, recreating, and other short trips can reduce road congestion, improve air quality and lead to happier and healthier residents and workers.

The heat map below identifies concentrations of employment centers within a 1.5 mile radius along the proposed Greater Lancaster Heritage Pathway. The darker shaded areas of the map indicate high concentrations of employment, such as western and southern Manheim Township, the City of Lancaster, the Greenfield area of East Lampeter, and the village of Leola in Upper Leacock, which could be connected to the GLHP and provide access to jobs by commuters bicycling to work. On the following page is a list of types of businesses within the 1.5-mile radius. As you can see, there are over 105,000 jobs within this area that could be accessed from the proposed trail. This trail, much like the existing Warwick to Ephrata Rail Trail (WERT), could expand travel options for commuters and residents and enhance the efficiency of the overall transportation system in the county.

Whether by choice for health, financial, or environmental reasons, or simply out of necessity, shared-use trails are an important component of an effective regional transportation network.

## EMPLOYMENT ALONG THE GLHP CORRIDOR



# TABLE 6.1 - WORKPLACE BUSINESS AND EMPLOYMENT IN GLHP CORRIDOR

| *2018 Workplace Business & Employment* | *NAICS Code* | *# of Businesses* | *Total Employees* |
|---|---|---|---|
| **Total Businesses** | **All** | **7,605** | **105,611** |
| Private Sector | 11 to 81 | 7,393 | 99,097 |
| Public Administration | 92 | 212 | 6,513 |
| **Retail Trade** | **44-45** | **860** | **12,137** |
| Motor Vehicle and Parts Dealers | 441 | 90 | 1,256 |
| Furniture and Home Furnishing Stores | 442 | 65 | 938 |
| Electronics and Appliance Stores | 443 | 40 | 394 |
| Building Material and Garden Equipment and Supplies | 444 | 58 | 1,251 |
| Food and Beverage Stores | 445 | 116 | 1,958 |
| Health and Personal Care Stores | 446 | 89 | 838 |
| Gasoline Stations | 447 | 21 | 83 |
| Clothing and Accessories Stores | 448 | 134 | 1,507 |
| Sporting Goods, Hobby, Book and Music Stores | 451 | 60 | 1,435 |
| General Merchandise Stores | 452 | 30 | 1,331 |
| Miscellaneous Store Retailers | 453 | 139 | 954 |
| Nonstore Retailers | 454 | 16 | 191 |
| **Finance and Insurance** | **52** | **586** | **3,196** |
| Monetary Authorities-Central Bank | 521 | 0 | 0 |
| Credit Intermediation and Related Activities | 522 | 310 | 1,257 |
| Securities, Commercial Contracts, Financial Investments and Related Activities | 523 | 110 | 650 |
| Insurance Carriers and Related Activities | 524 | 164 | 1,272 |
| Funds, Trusts and Other Financial Vehicles | 525 | 2 | 17 |
| **Accommodation and Food Services** | **72** | **420** | **6,834** |
| Accommodation | 721 | 43 | 1,065 |
| Food Services and Drinking Places | 722 | 377 | 5,769 |
| **Other Services (except Public Administration)** | **81** | **816** | **4,787** |
| Repair and Maintenance | 811 | 193 | 1,185 |
| Personal and Laundry Services | 812 | 302 | 1,344 |
| Religious, Grant Making, Civic, Professional, and Similar Organizations | 813 | 321 | 2,257 |

| *2018 Workplace Business & Employment* | *NAICS Code* | *# of Businesses* | *Total Employees* |
|---|---|---|---|
| **Agriculture, Forestry, Fishing and Hunting** | **11** | **10** | **73** |
| **Mining, Quarrying, and Oil and Gas Extraction** | **21** | **1** | **21** |
| **Utilities** | **22** | **5** | **86** |
| **Construction** | **23** | **356** | **3,127** |
| **Manufacturing** | **31-33** | **260** | **14,046** |
| **Wholesale Trade** | **42** | **226** | **3,410** |
| **Transportation and Warehousing** | **48-49** | **83** | **1,960** |
| **Information** | **51** | **115** | **2,366** |
| **Real Estate and Rental and Leasing** | **53** | **295** | **1,840** |
| **Professional, Scientific, and Technical Services** | **54** | **881** | **5,510** |
| **Management of Companies and Enterprises** | **55** | **4** | **948** |
| **Administrative, Support, Waste Mgmt Remediation Services** | **56** | **230** | **1,672** |
| **Educational Services** | **61** | **146** | **6,362** |
| **Healthcare and Social Assistance** | **62** | **2,011** | **29,302** |
| **Arts, Entertainment, and Recreation** | **71** | **87** | **1,416** |

| | |
|---|---|
| **Number of Employees** | **105,611** |
| **Employees per Business** | **14** |
| **Residential Population** | **119,610** |
| **Residential Population per Business** | **16** |
| **Number of Households** | **46,079** |
| **Total Employees Working at Home** | **2,119** |

*Source: Claritas 2018*

## GLHP WEST: PROPOSED SHORT-TERM ROUTES AND LONG-TERM ALTERNATIVES

The west end of the GLHP is proposed as a series of on- and off-road facilities. Individual segments of this section of the GLHP are described below, corresponding to the map on the opposite page. This plan's design guidelines should be referenced according to the facility types recommended, and all segments of the main route of the GLHP should be signed consistently for wayfinding purposes. Map ID numbers and letters do not signify priorities.

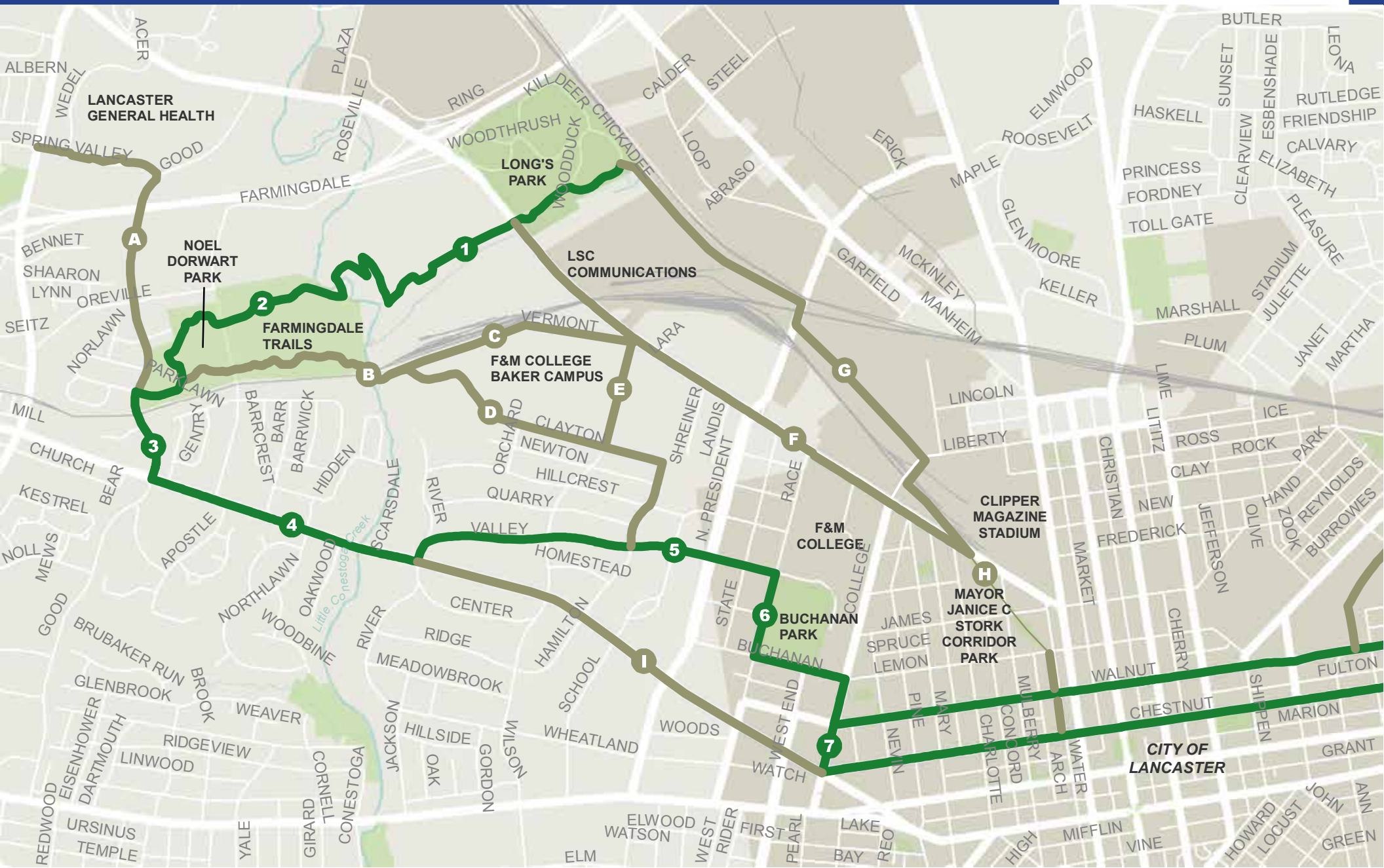
### TABLE 6.2 - PROPOSED SHORT-TERM ROUTES

| *Map ID* | *Segment* | *Description* |
|---|---|---|
| 1 | Park to Park Trail | Existing trail from Long's Park entrance at Harrisburg Pike, through The Crossings at Conestoga Creek, to the east end of Farmingdale Trails, at Little Conestoga Creek. |
| 2 | Farmingdale Trail / Dorwart Park Trail | Existing trail in Farmingdale Trails, from Little Conestoga Creek to Dorwart Park entrance at Good Dr. Trails are currently unpaved. |
| 3 | Good Dr Side Path | Proposed side path on east side of Good Dr, from the Dorwart Park entrance to Marietta Ave (east side recommended because both connections to this segment are on east side). See design guidelines for trail crossing in Appendix A. |
| 4 | Marietta Ave Bicycle Lanes and Sidewalk | Proposed bicycle lanes and sidewalk on Marietta Ave, from Good Dr to River Dr; segment has paved shoulders of varying widths that may need to be widened to create 5' bike lanes, especially if buffered bicycle lanes are desired. Sidewalk is recommend on the south side of Marietta Ave, due to the existing walkway on the south side of the Little Conestoga Creek bridge, and greater cleared and graded space on the south side in general. A crosswalk and crossing signal will be needed to connect the Marietta Ave sidewalk with the Good Dr sidepath. Similarly, a crosswalk is recommended across Marietta Ave at River Dr, connecting the proposed sidewalk to the GLHP route to the north on Valley Rd. |
| 5 | Valley Rd Bike Blvd | Proposed bike blvd on River Dr, Valley Rd, and W Frederick St, from Marietta Ave to Buchanan Park. See design guidelines for potential bicycle blvd treatments in Appendix A. See bicycle blvd treatments for intersection crossings at N President Ave and Race Ave, in particular. Pedestrians would be on-road for these low-volume and low speed streets, and will mutually benefit from the aforementioned crossing improvements. |
| 6 | Race Ave and Buchanan Ave Sharrows and Sidewalks | These streets have existing sidewalks on both sides, and posted speeds at 25 MPH. Bicycle shared-lane markings (sharrows) are recommended for both streets, with bicycle detection at traffic signals. An alternate recommendation is to create a trail within Buchanan Park (and the North Museum of Nature and Science) to connect the GLHP through this segment, though at a greater cost and impact to current park layout and function. |
| 7 | College Ave Bicycle Lanes and Sidewalks | Existing bicycle lanes and sidewalk along College Ave connect Buchanan Park to the proposed Walnut St and Chestnut St cycle tracks (see the GLHP City Connection section, pp. 6-8 through 6-9). |

### TABLE 6.3 - LONG-TERM ALTERNATIVES

| *Map ID* | *Segment* | *Description* |
|---|---|---|
| A | Good Dr Side Path | Proposed side path on Good Dr, connecting the proposed GLHP at Dorwart Park to the existing side path at Spring Valley Rd. |
| B | Farmingdale Trail / Dorwart Park Trail | Existing trail in Farmingdale Trails, with proposed railroad underpass along Little Conestoga Creek, on the southeast end of the park. |
| C | Franklin and Marshall Trail | Proposed trail from Little Conestoga Creek, to Vermont Ave, to Wilson Dr. Advantage over long-term alternative Segment D is separation from traffic in a park setting. |
| D | Clayton Rd. Bike Blvd | Proposed trail from Little Conestoga Creek to the west end of Clayton Rd, continuing east as a bicycle blvd on Clayton Rd to Hamilton Rd. Advantage over long-term alternative Segment C is cost savings from less trail right-of-way acquisition and trail construction costs. |
| E | Wilson Dr Bike Blvd | Proposed bike blvd on Wilson Dr, connecting Clayton Rd to the south, with Franklin and Marshall Athletic Field and Harrisburg Pike to the north. |
| F | Harrisburg Pike Complete Streets | See the 2012 Feasibility Study for Harrisburg Pike: Pedestrian Accommodations and Multi-Use Trail. The key advantage of Harrisburg Pike over long-term alternative Segment G is that a full study is already in place with detailed recommendations, and it has fewer potential rail corridor conflicts. |
| G | Park to Park Rail-Trail | Proposed trail connecting Long's Park and Mayor Janice P. Stork Corridor Park. Key challenges include potential conflicts with trail users and rail yard management on the Dillerville Rd railroad overpass access ramp, and potential constrained right-of-way issues near the LSC Communications building. |
| H | Mayor Janice P. Stork Corridor Park | The existing Mayor Janice P. Stork Corridor Park runs from Harrisburg Pike to N Water St. From here, see the GLHP City Connection section, p. 6-8to 6-9, and the Engleside Greenway/Water St Bike Blvd p. 6-22 to 6-23. |
| I | Marietta Ave | Proposed shared street and sidewalk from Chestnut St to Valley Rd. Experienced cyclists use this route but improvements are needed to enhance safety and attract less experienced cyclists. |

# GLHP WEST: PROPOSED SHORT-TERM ROUTES AND LONG-TERM ALTERNATIVES



## GLHP CITY CONNECTION: WALNUT ST AND CHESTNUT ST SEPARATED BICYCLE LANES

This connection through the City of Lancaster is a priority segment of the overall GLHP and City of Lancaster Bicycle Network. The information below corresponds to the map on the opposite page. For additional design guidance about separated bicycle lanes see this Plan's Appendix A, the NACTO *Urban Bikeway Design Guide* (2011) and the FHWA *Separated Bike Lane Planning and Design Guide* (2015). Like all sections of the GLHP, this route should be signed consistently for wayfinding purposes.

### TABLE 6.4 - PROPOSED ROUTES

| *Map ID* | *Segment* | *Description* |
|---|---|---|
| 8 | Walnut St and Chestnut St Separated Bicycle Lanes (from College Ave in the west to Ranck Ave in the east) | This pair of one-way separated bike lanes will provide a safer, more comfortable on-street connection for the eastern and western sections of the GLHP through the City. These east-west parallel streets will connect important cultural, employment and recreational destinations as well as the north-south bike network in the City. Installation of parking protected bicycle lanes is geometrically feasible on portions of Walnut St and Chestnut St corridors through downtown Lancaster, with conventional bike lanes and shared lane marking needed on the constrained segments. Where lanes are reduced from two to one, a traffic analysis should be completed to understand the impact to the traffic network. Public safety agencies should be consulted regarding the width of the single one-way travel lane and evaluated for impact to emergency response. Based on the NACTO, FHWA and other design guidance, recommendations for this segment are illustrated in the cross sections below and on the following page. A detailed block-by-block description of the route can be found in Appendix E. |
| *Cross Sections* | ***Chestnut St*** | |

**Parking Protected Bike Lane**

*For sections with 38'-42' curb to curb width.*

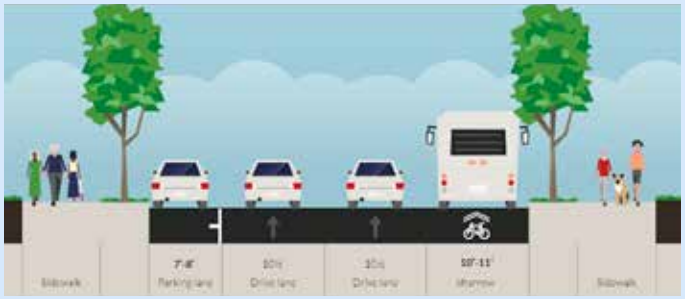
**Shared Lane**

*For sections with 36'-38' curb to curb width.*

**Buffered Bike Lane**

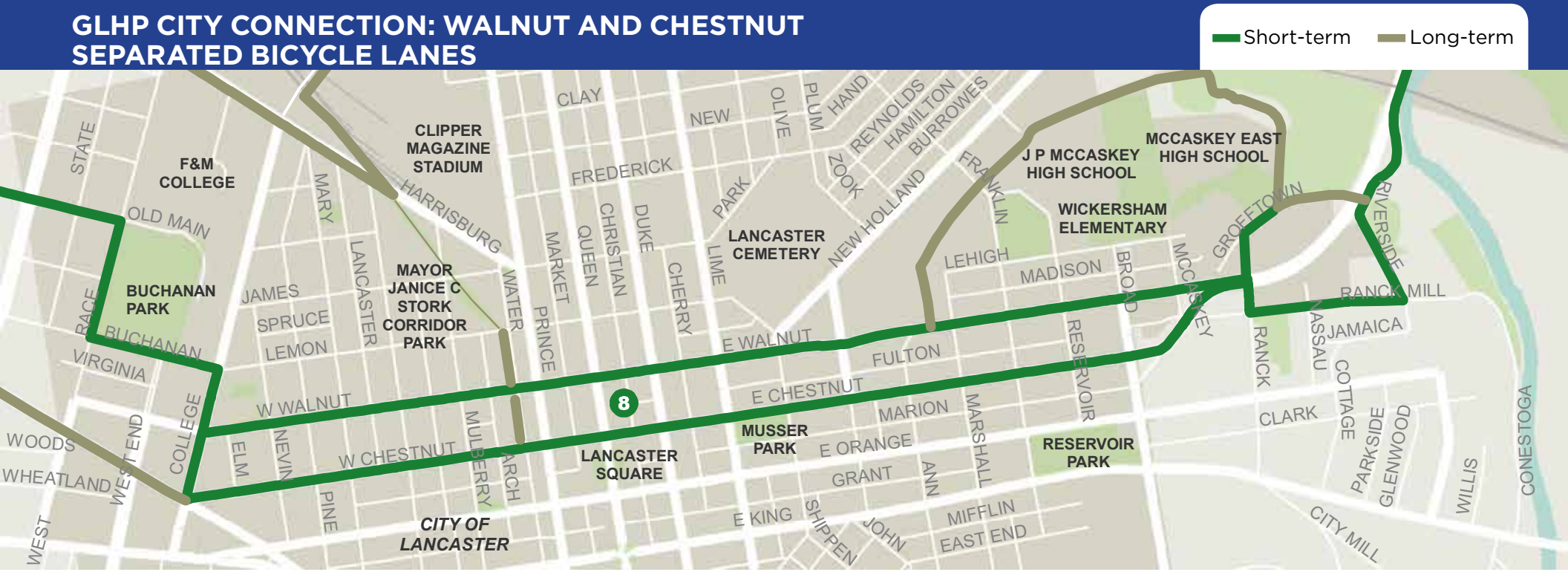
*For sections with 40' curb to curb width and parking on one side.*

**Shared Bus-Bike Lane**



*For sections with 40' curb to curb width and parking on both sides.*

# GLHP CITY CONNECTION: WALNUT AND CHESTNUT SEPARATED BICYCLE LANES




*Cross Sections* ***Walnut St***

**Parking Protected Bike Lane**

*For sections with 42'-44' curb to curb width.*

**Conventional Bike Lane**

*For sections with 39'-41' curb to curb width.*

# GLHP NORTHEAST GREENWAY: PROPOSED SHORT-TERM ROUTES AND LONG-TERM ALTERNATIVES

The Northeast Greenway section of the GLHP is proposed as a series of on- and off-road facilities. Individual segments of this section are described below, corresponding to the map on the opposite page. This plan's design guidelines should be referenced according to the facility types recommended, and all segments of the main route of the GLHP should be signed consistently for wayfinding purposes.

## TABLE 6.5 - PROPOSED SHORT-TERM ROUTES

| *Map ID* | *Segment* | *Description* |
|---|---|---|
| 9 | City to River Connector | This segment consists of proposed sharrows along Ranck Ave, Ranck Mill Rd, and Riverside Ave, from E Walnut St to the Conestoga River. There are intermittent portions of existing sidewalk along this segment; gaps in these sidewalk segments should be filled. GLHP wayfinding signage will be especially important in this segment, as the route changes streets several times. The intersection of E Walnut St and Ranck Ave, at the beginning of this segment, would require signal modification for the implementation of bike signals and crosswalks. |
| 10 | Boardwalk Walkway / Bikeway over Conestoga River | There is a long-term possibility to convert the Walnut St Extension (Segment M) to a tree-lined boulevard with bicycle and pedestrian facilities. A cantilevered walkway/bikeway will run along the south side of Walnut St (PA 23) and adjacent to the Conestoga River. It will connect from the north end of Riverside Ave to the Walnut St Fishing Area along the Conestoga River (at the south end of Pleasure Rd). The City of Lancaster committed funds for the design of this project, and $1,305,713 in PennDOT Multimodal funds have been secured for construction (with additional City matching funds). |
| 11 | Conestoga Pines Pedestrian Bridge (see p. 6-10) | The Conestoga Pines Pedestrian Bridge will span the Conestoga River, from the Walnut St Fishing Area on the west side, to Conestoga Pines Park on the east side. The bridge will be built by reusing the existing piers adjacent to the existing Water Works bridge. $100,000 in CFA Multimodal Transportation Funds have been secured for design, plus $962,378 in TAP funding for construction. The City will provide matching funds. |
| 12 | Conestoga Pines Park Trail | This segment of the GLHP will run from the Conestoga Pines Pedestrian Bridge to Pitney Rd, using a combination of proposed trail from the bridge to the Conestoga Pines Pool, and a yield roadway along Arthur E. Morris Parkway. A yield roadway is designed to serve pedestrians, bicyclists, and motor vehicle traffic in the same slow-speed travel area. Yield roadways serve bidirectional motor vehicle traffic without lane markings in the roadway travel area. See the Small Town and Rural Design Guide for more on yield roadways: http://ruraldesignguide.com/mixed-traffic/yield-roadway. |
| 13 | Pitney Rd Wide Shoulders and Sidewalk | Segment has paved shoulders of varying widths that are suitable for bicycle travel, or that may need to be widened as necessary, to create a low-stress connection. Sidewalk is recommended on the northwest side of Pitney Rd due to (1) the existing sections of sidewalk on the northwest side and (2) GLHP connections on each end of this segment are also on the northwest side. |

## TABLE 6.5 - PROPOSED SHORT-TERM ROUTES

| *Map ID* | *Segment* | *Description* |
|---|---|---|
| 14 | Oak Grove Dr Connector | This segment consists of proposed sharrows along Oak Grove Dr, connecting the proposed Pitney Rd bicycle lanes to the proposed western terminus of the GLHP Goat Path. Sidewalks could be considered in the long-term for this segment, but they may not be necessary with the volume of traffic on this short residential street. |

## TABLE 6.6 - LONG-TERM ALTERNATIVES

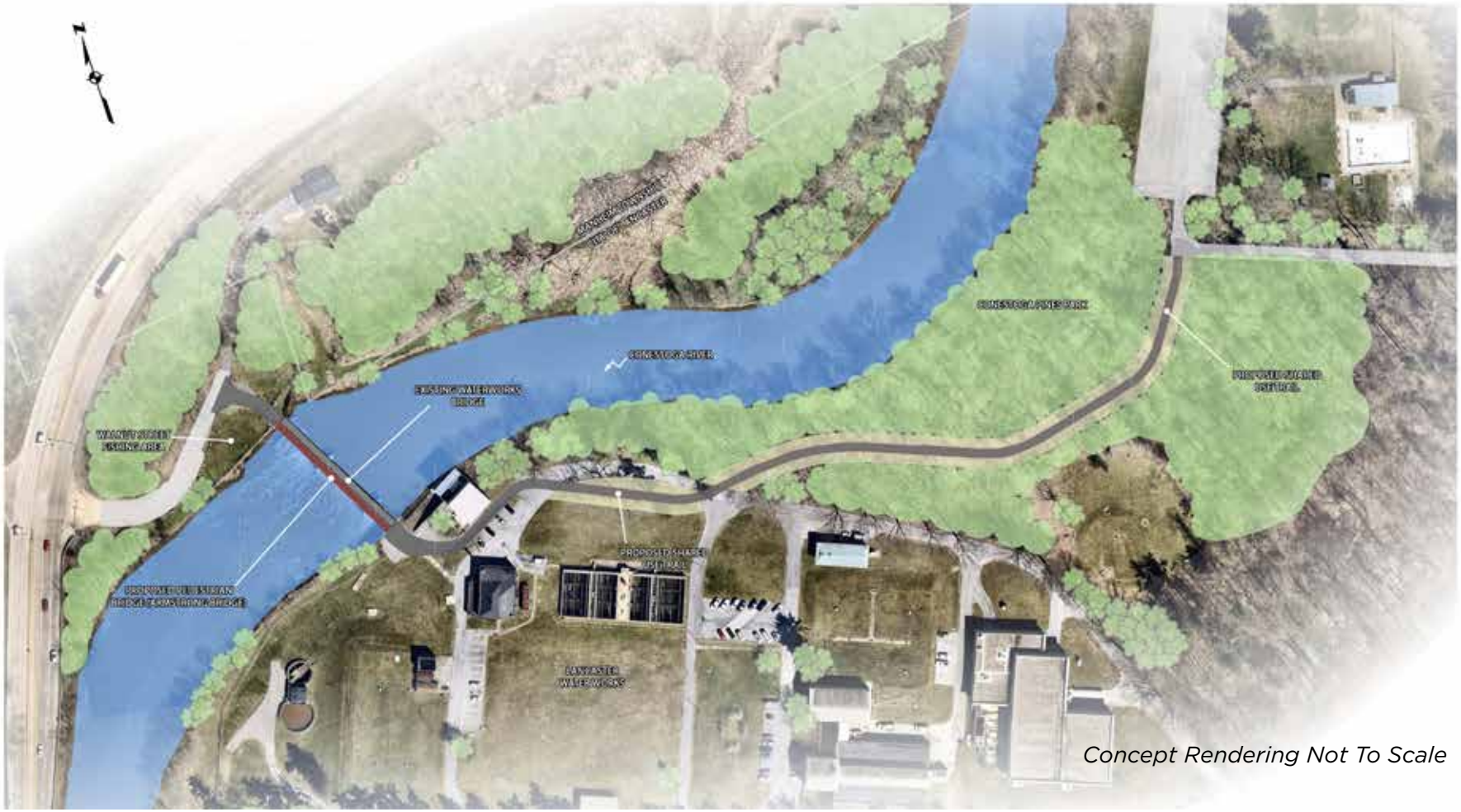
| *Map ID* | *Segment* | *Description* |
|---|---|---|
| J | Business Driveway Connector | Proposed trail from E Walnut St along abandoned RR right-of-way using existing business driveways, crossing to J.P. McCaskey High School at N Franklin St The existing crosswalks at N Franklin St and N Reservoir St, could be consolidated with this new crossing (appx. 100 ft north), to take advantage of the extra space available for a median island refuge area. Significant redesign of the business driveway/parking area will be required to make this section safe and comfortable. |
| K | McCaskey High School Trail | Proposed trail connection to follow fence line on the north side of J.P. McCaskey High School, continuing east around the baseball field at McCaskey East High School, and then south to Grofftown Rd and the proposed E Walnut St Underpass. |
| L | E Walnut St Trail Underpass | If road diet is implemented on Walnut St (see recommendation M below), at-grade crossing is possible. Otherwise, pedestrian/bicycle tunnel under E Walnut St (PA 23) would provide a direct connect between school sites, the new riverside projects, and Conestoga Pines Park. It would require extensive grading and structural work. |
| M | E Walnut St (PA 23) Complete Streets | This proposed road diet would run along E Walnut St (PA 23), from Ranck Ave to US 30. It would consist of a conversion from two lanes in each direction to one lane in each direction, while adding some form of separated bicycle lanes or buffered bicycle lanes. Traffic volumes suggest that this may be feasible without negatively affecting motor vehicle traffic flow. This would provide the most direct connection between downtown Lancaster and the proposed GLHP Goat Path to the east, |

# GLHP NE GREENWAY: PROPOSED SHORT-TERM ROUTES AND LONG-TERM ALTERNATIVES

## GLHP NORTHEAST GREENWAY (CONTINUED): CROSSING OF CONESTOGA AND NEW TRAILHEAD AT CONESTOGA PINES PARK

There are two proposed trailheads along the Conestoga River, providing an opportunity to create a short loop trail and provide a critical river crossing. The access at E Walnut St includes an ADA accessible parking area with ADA kayak launch and ADA accessible bridge. The Conestoga Pines Park side includes a connection via an up-cycled pedestrian bridge, with enhancements to the parking lot and pool, new picnic shelters with green roofs, rain gardens, opportunities to install rain barrels, and ample opportunities for wildlife, river, and green infrastructure interpretive signage. Both trailheads, the trail alignments along each bank, and the implementation of a master plan for Conestoga Pines Park should be constructed as one project.

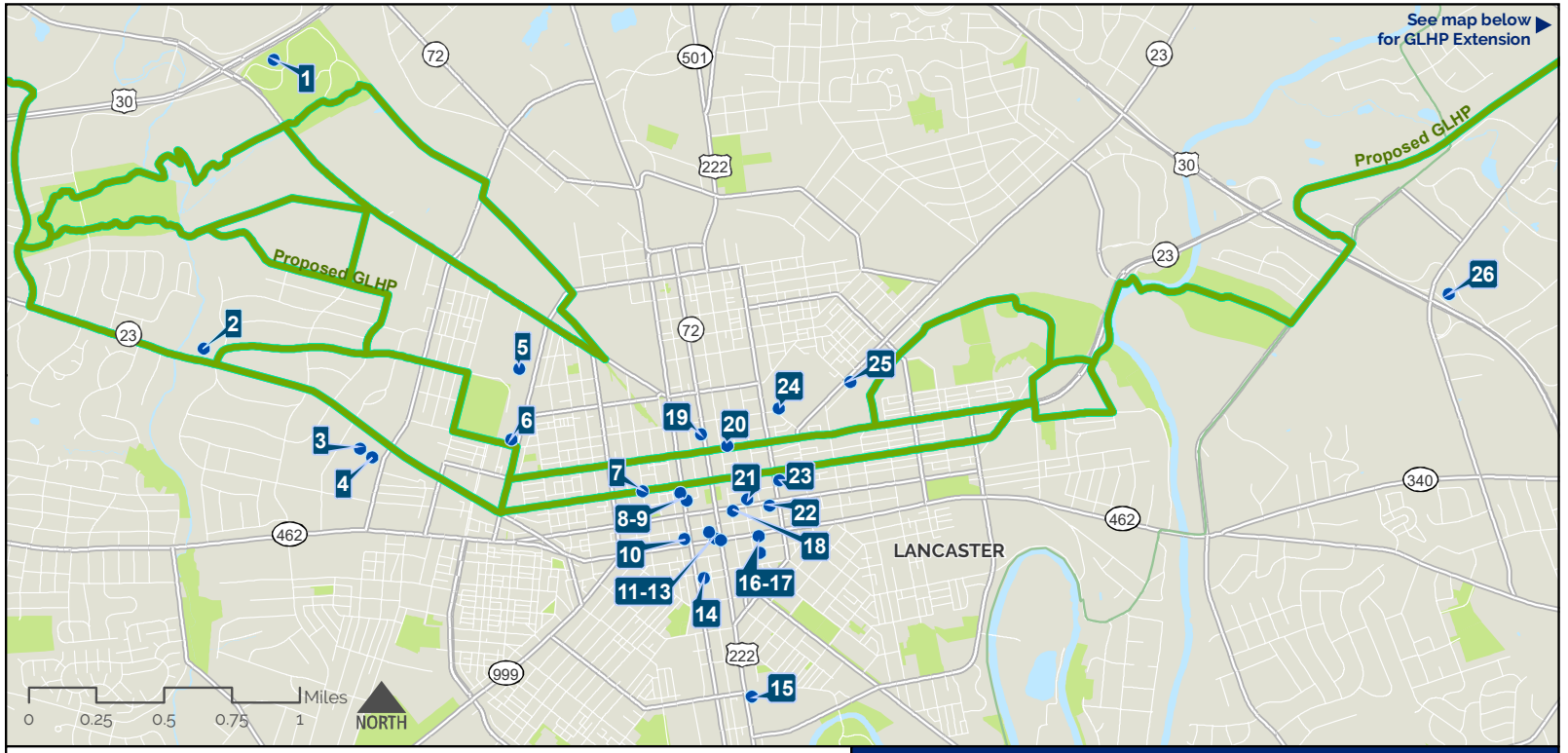
*Map ID* **11**




*This is a conceptual graphic and elements may or may not be included when the project moves into design feasibility.*

# VISITOR ATTRACTIONS ALONG THE GLHP TRAIL CORRIDOR

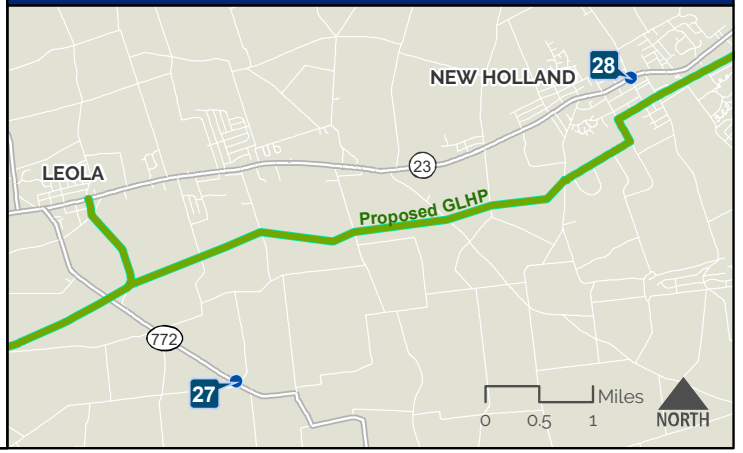
The GLHP will provide great opportunities for residents and visitors to recreate and move about the region without the use of an automobile. But trail users will also be able to explore some of Lancaster's most important historic sites, architectural gems, and cultural attractions along the corridor. The following map identifies the locations of attractions within close proximity of the trail corridor that are open to the public to visit.




## HERITAGE RESOURCES NEAR PROPOSED GLHP

| ID | Name | ID | Name |
|---|---|---|---|
| 1 | LONG'S PARK AMPHITHEATER | 15 | WOODWARD HILL CEMETERY |
| 2 | CONESTOGA HOUSE & GARDENS | 16 | TRINITY LUTHERAN CHURCH |
| 3 | PRESIDENT JAMES BUCHANAN'S WHEATLAND | 17 | DEMUTH MUSEUM |
| 4 | LANCASTERHISTORY.ORG | 18 | FIRST REFORMED CHURCH |
| 5 | PHILLIPS MUSEUM OF ART | 19 | 300 BLOCK OF NORTH QUEEN STREET |
| 6 | NORTH MUSEUM OF NATURE AND SCIENCE | 20 | FIRST UNITED METHODIST CHURCH |
| 7 | SHREINER-CONCORD CEMETERY | 21 | SAINT JAMES EPISCOPAL CHURCH |
| 8 | GALLERY ROW | 22 | FIRST PRESBYTERIAN CHURCH |
| 9 | SEHNER-ELLICOTT HOUSE | 23 | LANCASTER MUSEUM OF ART |
| 10 | FULTON THEATRE | 24 | LANCASTER CEMETERY |
| 11 | LANCASTER CENTRAL MARKET | 25 | LANCASTER SCIENCE FACTORY |
| 12 | DOWNTOWN LANCASTER VISITORS CENTER | 26 | DISCOVER LANCASTER VISITORS CENTER |
| 13 | PENN SQUARE | 27 | MASCOT ROLLER MILLS & RESSLER FAMILY HOME |
| 14 | HISTORIC ST MARY'S CHURCH | 28 | NEW HOLLAND HISTORICAL SOCIETY |

## INSET MAP OF GLHP GOAT PATH EXTENSION



## GLHP GOAT PATH: PROPOSED ROUTE

The Goat Path section of the GLHP is approximately 5 miles long and would connect the City of Lancaster to Leola, from just north of US Route 30 (Lancaster) to Maple Ave (Leola). The proposed route would align within an unfinished highway right-of-way, which was cleared and graded, but halted before road surface was installed. Currently, this land is used by adjacent farmers to graze animals. Key next steps for this project should include a survey of existing fence lines, research on lease agreements, and an implementation strategy that allows for grazing to continue on land not needed for the trail. See the end of this chapter for more on next steps for implementation.

The wide right-of-way along the GLHP Goat Path could provide an opportunity to create several parks and trailheads along its route, as described below and on the following pages. Coupled with a strong brand, outreach campaign, and cooperative promotion, the Goat Path may become a true destination trail that draws visitors from across the country to experience an amazing sequence of historic, recreational, and programmed spaces, along with the natural agricultural beauty of Lancaster County.


GLHP
Goat Path
Section

## TABLE 6.7 - PROPOSED ROUTE

| *Map ID* | *Segment* | *Description* |
|---|---|---|
| 15 A | City Connection Trailhead (Pitney Rd) (see p. 6-17) | This trailhead is a bookend to the Goat Path and serves as more than just a trail access point. By using the width of the right-of-way, a 35-acre park is created to enhance the passive recreation offerings of the county. In addition to being connected to the five plus mile Goat Path, the park offers the opportunity for a one mile daily use trail, unprogrammed open recreation space, picnic shelters, and interpretive opportunities. A master planning process for this park should be initiated to gather public input and discover how this park can enhance outdoor recreation in Lancaster County.<br><br>Pedestrian access points connect residential areas along the park as well as sidewalk users along Pitney Rd. Vehicular parking is available to visitors via Millcross Rd where an intersection improvement will provide safer circulation for multiple modes. A new bicycle and pedestrian bridge links trail users from the park, east to the Goat Path. |
| 15 B | City Connection Trailhead (Pitney Rd) (see p. 6-18) | This alternative involves extending Walnut St as a boulevard for approximately one mile, with one lane of traffic in each direction and a landscaped median down the center and connecting with Ben Franklin Way. Neighborhood park facilities, passive recreation trails, picnic facilities, natural open spaces, and limited parking spaces could be constructed near the Oak Grove Dr entrance. A trailhead with parking facilities, restroom accommodations, signage and trail access could be constructed where the boulevard would turn to meet Ben Franklin Way. A meandering multi-use trail proposed along the south side of the roadway extension would connect to Oak Grove Dr. The would allow for the continuation of the GLHP to Conestoga Pines Park and the City. The crossing of the roadway extension at Ben Franklin Way with the multi-use trail would enable users to safety continue along the remainder of the Goat Path to the east. The crossing will need to be evaluated further to ensure the greatest safety for bicyclists and pedestrians. Should this opportunity come to fruition, the boulevard concept could be extended further west along Walnut St into the City of Lancaster. |
| 16 | Overall Trail Cross-Section (see p. 6-20 to 6-21) | The actual trail that runs between the proposed linear park trailhead areas (Millcross, Horseshoe and Leola) is proposed as two paths of varying widths: one for bicyclists and pedestrians and the other as a possible future alternative for horse and buggy users. These paths could be divided by a landscaped median, design to capture and filter stormwater runoff (e.g., bioretention), using plants selected for low-maintenance that are native to the region. The buggy path could follow a more or less direct route, while the bicycle and pedestrian path could meander slightly, creating greater visual and experiential interest along the way, avoiding a straight-line monotonous pathway. The path should be designed to create small rest areas along the route that offer shaded seating and, if possible, other amenities such as water fountains and bicycle repair stands.<br><br>During the design phase, adjacent farmers should be consulted to understand where perpendicular buggy paths and access fencing should be placed to maintain access across the Goat Path to their farmland and neighbors' farms. Prior to implementation, fence lines should be surveyed to explore how the trail can weave around the current pastures and fields to preserve use of the corridor as an agricultural asset. For information on the trade-offs for trail cross-section selection, see pages 6-20 and 6-21. |
| 17 | Horseshoe Park and Trailhead (see p. 6-19) | This site would serve as a central connection to the Goat Path, with access at Horseshoe Rd. Similar in concept to the proposed Millcross Park and Trailhead, this site would be shaped as a linear park that stretches along the Goat Path. Examples of the types of activities and uses could include passive recreation, community gardening, a play area, plaza, and shelter. A master plan for this site that includes public outreach would help determine what is most desired by the surrounding community. See the illustrated concept plan on page 6-19. |
| 18 | Leola Park and Trailhead (see p. 6-19) | This site would serve as the eastern "bookend" to the Goat Path, at least until the long-term proposed Goat Path Extension is created (see pages 6-20 and 6-21). With vehicular access at Newport Rd, this site could serve as a small four-acre trailhead or be expanded to a 20-acre park. A minimum of a shelter and parking area could be implemented as a first phase, followed by a master plan to determine the expansion to a larger passive recreation facility. |

# GLHP GOAT PATH: PROPOSED SHORT-TERM ROUTE

Short-term Long-term

LEOLA
LEACOCK
CITY OF LANCASTER
PENNSYLVANIA COLLEGE OF HEALTH SCIENCES
CONESTOGA PINES PARK
Conestoga River
WINDY TOR
CARDINAL
ANITA
NEW HOLLAND
HUNSECKER
BRADFORD
MAIN
WILSON
LEMON
APRICOT
HELLERS CHURCH
RIDGE
BUTTER
LANDIS VALLEY
PICKERING
WYNFIELD
KOLB
MEADOW RIDGE
PINE
CREEK HILL
LARCHMONT
VISTA
EDEN
ESHELMAN
OAK
MILLCROSS
ALFA
WILLOW
HARTMAN STATION
FORRY
EBY
NEWPORT
ROBERT
SHERRY GAIL
COLONIAL VILLAGE
HORSESHOE
LA SALLE
PITNEY
DEER FORD

See Concept Plan p. 6-19

See Concept Plan p. 6-19

Overall Trail Cross Section p. 6-20 to 6-21

A, B p. 6-17 to 6-18

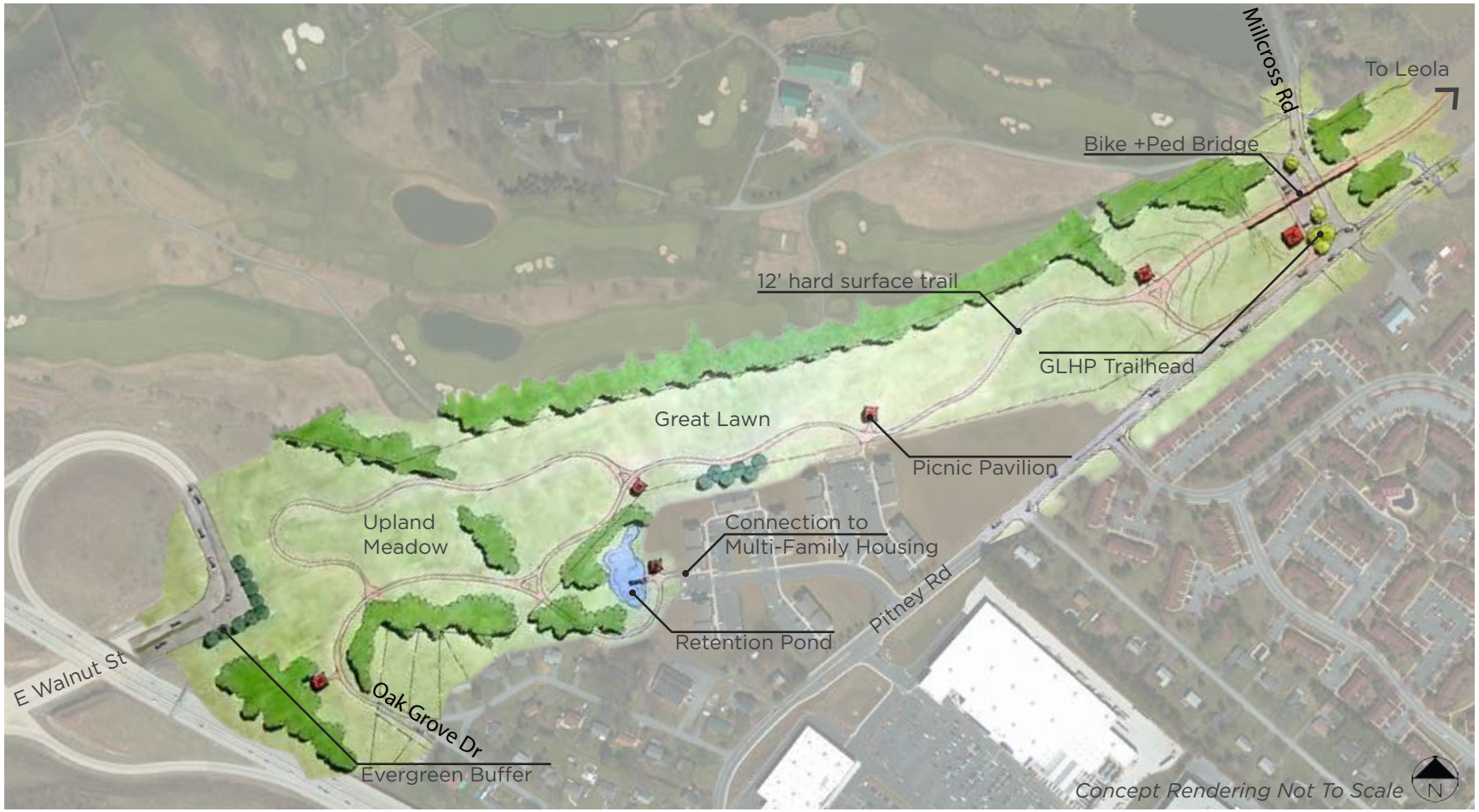
15 16 17 18

NORTH 0 0.5 1 MILES

*Top: Existing conditions along the Goat Path corridor. Above: Proposed trail cross-section for the Goat Path. The equestrian/buggy trail is a potential long-term option.*

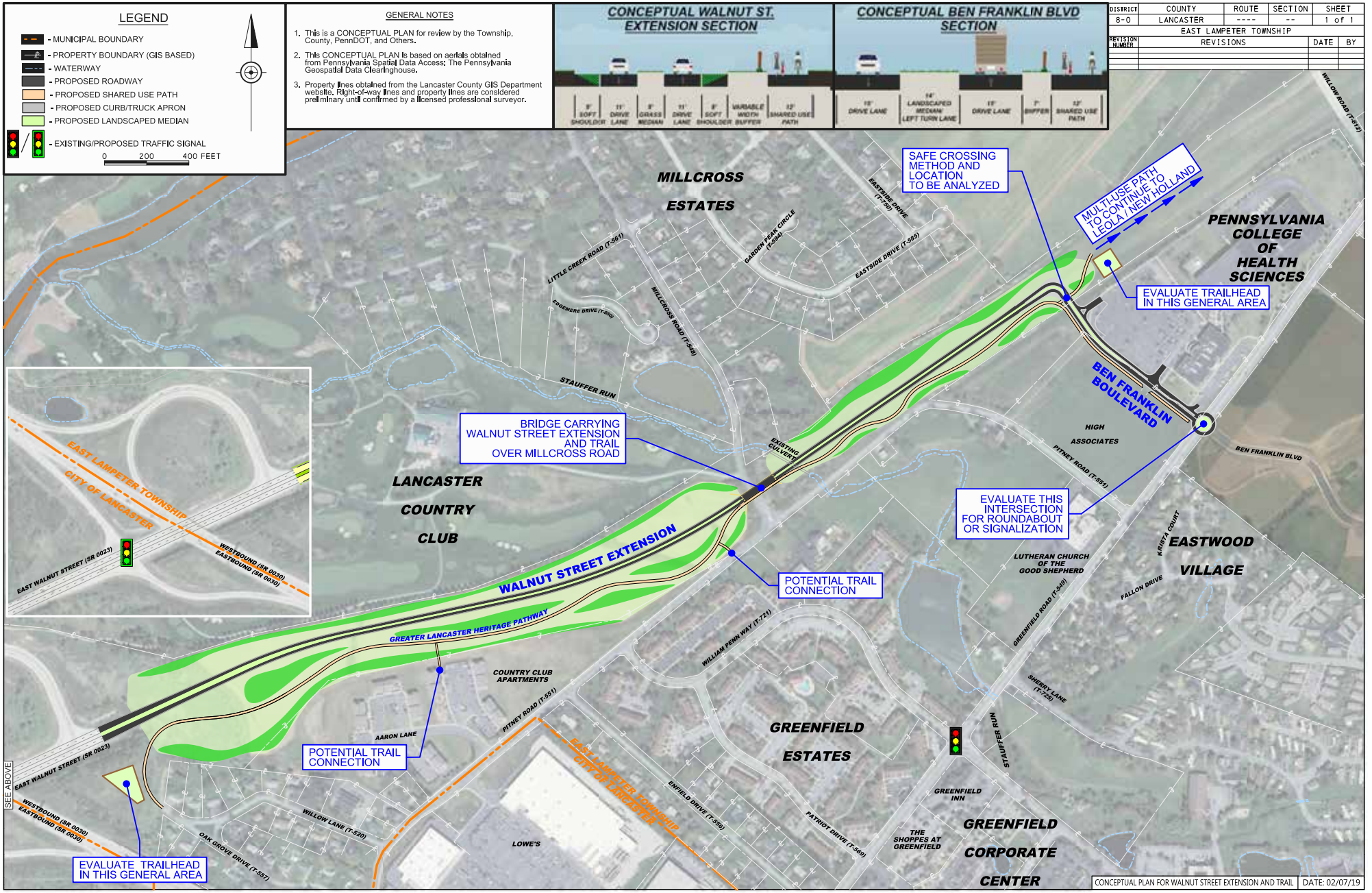
# GLHP GOAT PATH (CONTINUED): MILLCROSS PARK & TRAILHEAD (OPTION A)

*Map ID*
15 **A**



Map ID 15 B

# GLHP GOAT PATH (CONTINUED): MILLCROSS PARK, TRAILHEAD, AND WALNUT STREET EXTENSION (OPTION B)



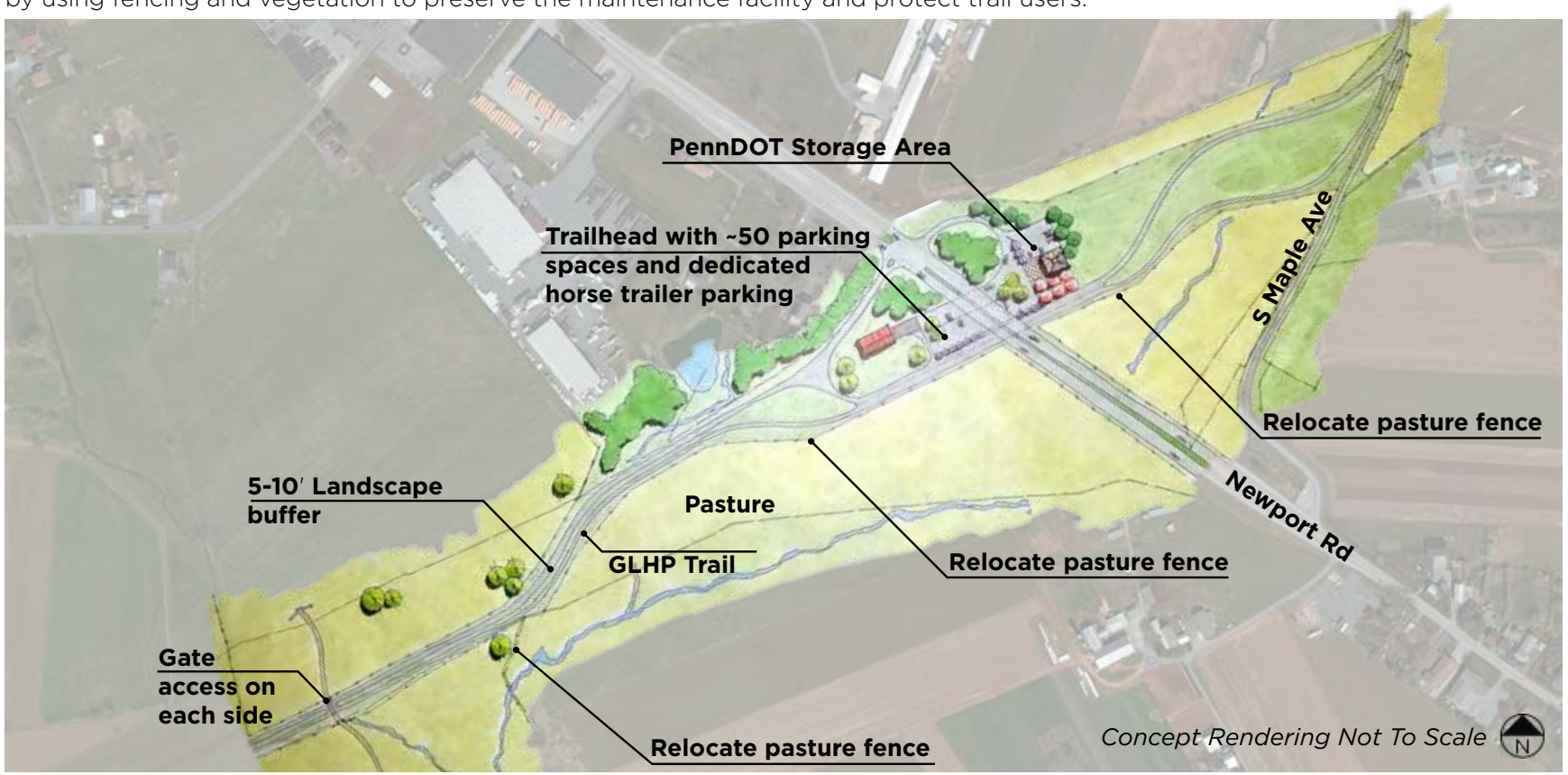
## GLHP GOAT PATH (CONTINUED): HORSESHOE PARK AND TRAILHEAD

*Map ID* 16


## GLHP GOAT PATH (CONTINUED): LEOLA PARK AND TRAILHEAD

Trail access could be provided along Newport Rd via the existing PennDOT maintenance road. Separation and screening is recommended by using fencing and vegetation to preserve the maintenance facility and protect trail users.

*Map ID* 17



## GLHP GOAT PATH (CONTINUED): CONSIDERATIONS FOR TREAD SELECTION

The following cross sections illustrate potential tread material and width for the Goat Path. Each graphic is accompanied by icons that illustrate considerations that should be prioritized prior to design and may be vetted through a public input process to determine user desire and behavioral compliance. One icon indicates a low concern or low cost, three icons indicates a higher level of concern or cost.

### PRIORITIZATION FACTORS

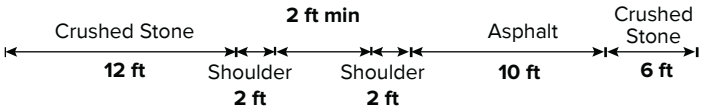
**User Conflict**
- Different Tread
- Tighter Lanes
- Non-Compliance To User Designated Path
- Conflict With Passing Movements

**Maintenance**
- Asphalt
- Crushed Stone
- Horse Hooves
- More Difficult to Remove Manure

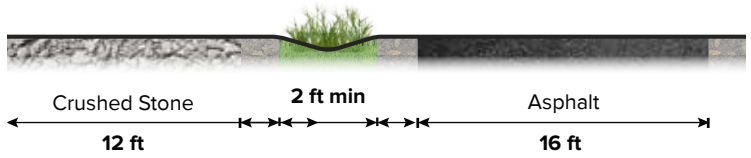
**Constructibility + Cost**
- Asphalt
- Crushed Stone
- High
- Low

**NOTE: The section below illustrates opportunities for structure and material selection. The design will be further developed in the later phases of this project. The equestrian trail/horse-and-buggy option is considered a long-term option and will need to be revisited with significant public outreach.**

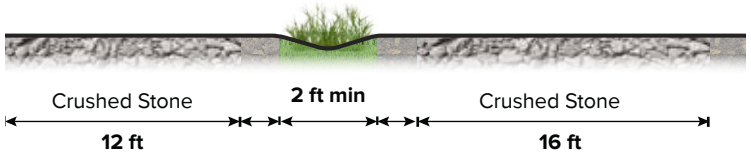

**OPTION 1**




**OPTION 2**




**OPTION 3**



# PRIORITIZATION FACTORS

**User Conflict**

| | |
|---|---|
| Different Tread Path | Non-Compliance To User Designated |
| Tighter Lanes | Conflict With Passing Movements |

**Maintenance**

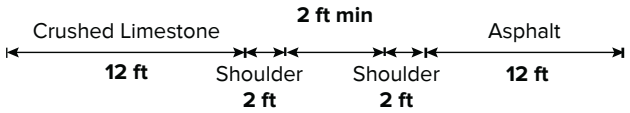
| | |
|---|---|
| Asphalt | Horse Hooves |
| Crushed Stone | More Difficult to Remove Manure |

**Constructibility + Cost**

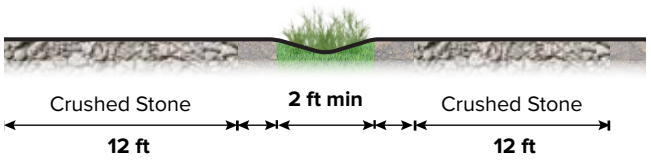
| | |
|---|---|
| Asphalt | High |
| Crushed Stone | Low |

**NOTE: The section below illustrates opportunities for structure and material selection. The design will be further developed in the later phases of this project. The equestrian trail/horse-and-buggy option is considered a long-term option and will need to be revisited with significant public outreach.**


## OPTION 1




## OPTION 2



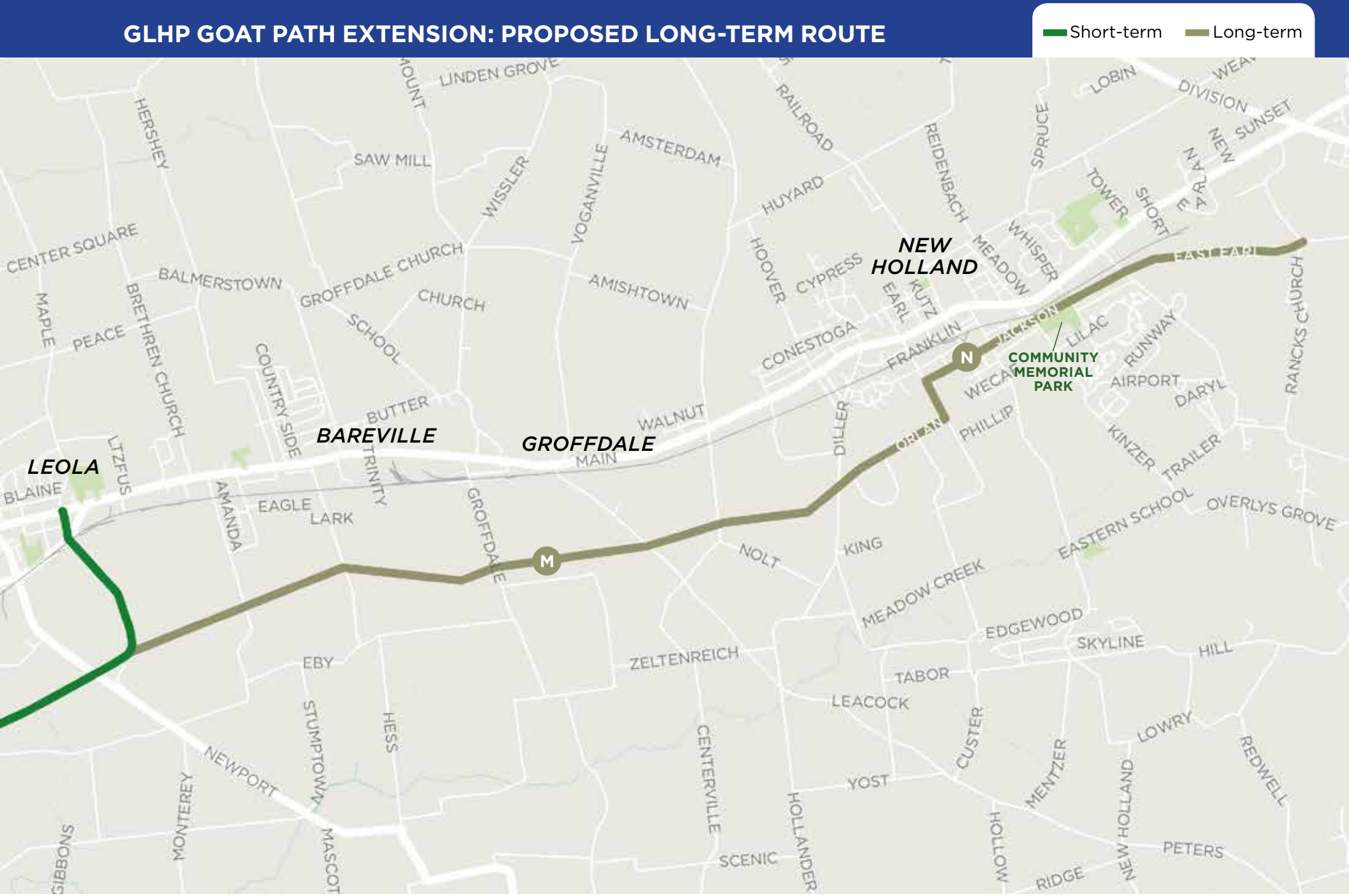
## GLHP GOAT PATH EXTENSION: PROPOSED LONG-TERM ROUTE

The Goat Path Extension would connect all trail points west of Leola with New Holland Borough. The route would be through mostly rural agricultural land, with some sections on or along Orlan Rd, S Custer Ave, and W Jackson St in New Holland Borough. This long-term project could be pursued after other portions of the Goat Path are completed to the west, building upon the momentum, success, and management models of preceding projects.

### TABLE 6.8 - LONG-TERM ROUTE

| *Map ID* | *Segment* | *Description* |
|---|---|---|
| M | Leola to New Holland Goat Path | The western portion of this segment of the Goat Path would begin at Maple Ave within the proposed Leola Park and Trailhead (see p. 6-19) and would continue east for approximately four miles towards New Holland, connecting with the Orlan Rd. The trail cross section would likely be a continuation of the previous sections to the west (see pages 6-18 and 6-19), but it could vary from that model, depending on available right-of-way (the Goat Path to the west of Leola takes advantage of the wide highway right-of-way, whereas this segment of proposed trail will need to navigate between well-established farmland). See the implementation section of this chapter for more on rural trail development and working respectfully with agricultural landowners. |
| N | On-road Connections in New Holland Borough | The alignment (as proposed through coordination with the manager of New Holland Borough) includes a connection into the west end of Orlan Rd, heading north on S Custer Ave, and then east onto W Jackson St These on-road sections would run approximately 3.25 miles, and could consist of either a side path (if right-of-way and physical constraints allow), or a combination of sidewalks and bicycle shared-lane markings (sharrows). With the exception of Orlan Rd (which is 45 MPH), almost the entire section through New Holland has speeds and volumes that should be low enough to share comfortably by bicycle, and most sections already have a sidewalk in place.<br><br>An alternative consideration for the route through New Holland would be to bring the trail alignment along a portion of Main St, thereby directing trail users to the core of the community's commercial area, maximizing the potential for the economic benefits of the trail. The advantage of Jackson St, however, is that it is a quieter, mostly residential street that will be more comfortable for most trail users. If the main Goat Path route is kept on W Jackson St as opposed to Main St, then wayfinding signage is recommended to at least direct trail users to Main St, to be sure those businesses can benefit from the trail.<br><br>The easternmost end of this segment, as proposed, continues along E Jackson St (which turns into Earl Rd), and terminates at the intersection of Earl Rd and Ranck Church Rd. New Holland's Community Memorial Park should be considered as an alternative end point and trailhead, as it provides a much stronger "anchor" for the eastern terminus of the entire GLHP. If the on-road segment stopped at the park instead of Ranck Church Rd, then the approximate length of this segment would be 1.75 miles (as opposed to 3.25 miles, as noted above). |

# GLHP GOAT PATH EXTENSION: PROPOSED LONG-TERM ROUTE




NORTH

0 0.5 1 MILES

## TABLE 6.9 - GLHP: GOAT PATH COST ESTIMATE (CITY OF LANCASTER TO LEOLA)

| *Category* | *Unit* | *Unit Cost* | *Quantity* | *Cost* | *Totals* |
|---|---|---|---|---|---|
| Category 1 - Maintenance of Traffic: % of categories 2, 4, 5, and 6 | | | | 20% | $859,408 |
| Category 2 - Earthwork | | | | | $1,689,600 |
| Class 1 Excavation | CY | $40 | 42,240 | $1,689,600 | |
| Category 3 - Drainage: % of categories, 2, 4, 5, and 6 | | | | 50% | $2,148,520 |
| Category 4 - Structures | | | | | $200,000 |
| Steel Bridge | LS | $200,000 | 1 | $200,000 | |
| Category 5 - Pavement | | | | | $1,330,320 |
| Superpave Asphalt Mix 12.5MM for Surface, HDFV, PGS-22, Level 2 | TON | $90 | 5,000 | $450,000 | |
| Superpave Asphalt Mix 19MM for Base, PG 64S-22, Level 2 | TON | $90 | 5,000 | $450,000 | |
| 6 Inch Graded Aggregate Base Course | SY | $10 | 42,240 | $422,400 | |
| 5 Inch Yellow Pavement Marking | LF | $0.25 | 31,680 | $7,920 | |
| Category 6 - Shoulders | | | | | $1,077,120 |
| 4 Foot Fence | LF | $17 | 63,360 | $1,077,120 | |
| Category 7 - Landscaping | | | | 12% | $515,645 |
| Category 8 - Traffic | | | | | $0 |
| Utilities: % of categories 1-3, 5-8 | | | | 15% | $1,143,092 |
| **Subtotal** | | | | | **$8,963,705** |

| | | |
|---|---|---|
| **Contingency** | **30%** | **$2,689,111.42** |
| **Admin. / Overhead** | **15.3%** | **$411,434** |
| **Total Construction** | | **$12,064,250** |
| **Preliminary Engineering** | **15%** | **$1,809,638** |
| **TOTAL COST** | | **$13,873,888** |

| ***ROUNDED TOTALS*** | |
|---|---|
| **Preliminary Engineering** | **$1,810,000** |
| **Construction** | **$12,070,000** |
| **TOTAL** | **$13,880,000** |

*Note: For maintenance cost estimates, please see page 6-32.*

# ENGLESIDE GREENWAY AND WATER ST BICYCLE AND PED BLVD: PROPOSED ROUTE

Together, these two projects will create an important north-south route, connecting the County park system to the City of Lancaster and the GLHP corridor, running approximately 3 miles in total (the Engleside Greenway, as described below, is approximately 1.75 miles, and the Water St Bicycle and Pedestrian Boulevard is approximately 1.25 miles). These projects are described by segment below and on the next page, from south to north.

## TABLE 6.10 - PROPOSED ROUTE FOR ENGLESIDE GREENWAY

| *Map ID* | *Segment* | *Description* |
|---|---|---|
| 1 | Engleside Greenway | The proposed segment of trail would run for about 1.4 miles, starting at the south end of Buchmiller Park, at the confluence of the Conestoga River and Mill Creek, then continuing north along the utility corridor to South Ledwith Dr. The trail would then run generally parallel to Ledwith Dr, meandering to avoid large trees and other existing park features. Near the north end of N Ledwith Dr, the trail would continue along the utility corridor to the Conestoga River near Willow St Pike.<br><br>Constraints for the alignment parallel to Ledwith Dr include two crossings of South Ledwith Dr, one crossing of Buchmiller Park Dr, and steep slopes that would make bicycling difficult for some trail users (or require extensive earthwork). Therefore, an alternative alignment was also considered, running along the east bank of the Conestoga River. However, this route also has significant challenges due to steep grade changes. For example, the steep grade changes between the abandoned rail bridge and the banks of the Conestoga River would have to be navigated, as well as between South Ledwith Dr and the bank of the Conestoga River. |
| 2 | Rail-Trail Bridge | Just north of Buchmiller Park, near Willow St Pike, there is an opportunity to for the proposed trail to cross the Conestoga River on an abandoned railroad bridge. On the south end of this future potential trail bridge, there is also a former gas station site, which could be converted to a pocket park, or possibly incorporated into Buchmiller Park as a northern entrance. On the north side of the bridge, the trail would connect with the five-leg intersection at Willow St Pike/South Queen St/South Prince St. |
| 3 | Intersection Improvements for Willow St Pike/ S Queen St/ S Prince St/ Fairview Ave/ New Danville Pike | Alterations to this five-leg intersection are proposed to enhance public safety for motorists and trail users alike. See page 6-27 for a concept illustration and detailed description of these proposed improvements.<br><br>North of this intersection, the trail would continue along the old railroad corridor, in the block between Fairview Ave and S Prince St, connecting to the southern terminus of Water St, at Seymour St Incidentally, the Pennsylvania SPCA-Lancaster Center is located on this block, creating an opportunity for a volunteer dog-walking program that could be created through a partnership between the SPCA and local trail advocates. |

*Photo Creidt: Google Maps*

*View of utility corridor, looking south from S Ledwith Dr*

*Photo Creidt: Google Maps*

*View of S Water St, looking north from Seymour St*


## ENGLESIDE GREENWAY AND WATER ST BIKE AND PED BLVD: PROPOSED ROUTE

The City's vision for this bicycle and pedestrian boulevard includes a shared space for bicyclists and local vehicles, traffic calming to reduce speeds and through traffic, intersection improvements to improve safety, and green infrastructure for stormwater capture, traffic calming, and greening the urban space. Water St is used by through traffic to avoid traffic signals and more congested roadways so significant changes will be needed to transform Water St. Based on PennDOT data, average daily traffic on Water St north of the proposed site is in the range of 5,000 vehicles per day. An off-road trail is needed to connect the gaps, and street markings, signage, and intersection improvements are necessary on the existing street to increase safety and discourage through vehicular traffic.

Funding from the Lancaster County Metropolitan Planning Organization is already in place for the construction of on- and off-road segments south of W Vine St. Construction should begin in 2019.

### TABLE 6.11 - PROPOSED ROUTE FOR WATER ST BICYCLE AND PEDESTRIAN BLVD

| *Map ID* | *Segment* | *Description* |
|---|---|---|
| 4 | Water St Bicycle and Pedestrian Boulevard, from Culliton Park to Mayor Janice P. Stork Corridor Park | • Bicycle shared lane markings and wayfinding/route confirmation signage would be needed between Culliton Park and Mayor Janice P. Stork Corridor Park.<br>• Key improvements for this segment will be at intersections. There are eight intersections between Culliton Park and Mayor Janice P. Stork Corridor Park, each of which will need improved crossing treatments to enhance safety and comfort for walking and bicycling along this corridor. Some of these intersections are better than others in terms of existing treatments; for example, Water St at King St already has high-visibility crosswalks, curb ramps, and pedestrian signals at all legs of the intersection. Others, such as at Walnut St, have no existing north-south crosswalks. |

# ENGLESIDE GREENWAY AND WATER ST BIKE BLVD: ROUNDABOUT CONCEPT

- This roundabout concept enhances public safety for motorists and trail users alike. Please refer to Map ID 3 on pages 6-25 and 6-26 for location information.
- This concept directs trail users along the west side of the roundabout. Crossings on the east side of the roundabout may be difficult due to the vertical alignment of South Queen St in the northeast corner of the intersection.
- Auxiliary lanes allow for vehicles to bypass the roundabout if they are on southbound S Prince St destined for northbound Fairview Ave, southbound Fairview Ave destined for southbound New Danville Pike, or northbound New Danville Pike destined for southbound Willow St Pike.
  - » Auxiliary lanes have potential to improve overall Level of Service of the intersection by increasing the number of vehicles the roundabout can service, however, the radius of each turn should be examined where trail users will be crossing.
  - » Auxiliary lanes create additional conflict points as vehicles in auxiliary lanes must yield to vehicles leaving the roundabout in the same direction.
- Traffic counts and analysis would be needed to determine if this design can accommodate the demand at this intersection.
  - » There is concern about the traffic effects of the S Prince St approach. Currently, it is a four-lane approach. This design would reduce the approach to two lanes (one auxiliary lane for northbound Fairview Ave and one for New Danville Pike, Willow St Pike and S. Queen St) which may not be sufficient at peak hours.

## TABLE 6.12 - ENGLESIDE GREENWAY COST ESTIMATE

| *Category* | *Unit* | *Unit Cost* | *Quantity* | *Cost* | *Totals* |
|---|---|---|---|---|---|
| Category 1 - Maintenance of Traffic: % of categories 2, 4, 5, and 6 | | | | 10% | $151,860 |
| Category 2 - Earthwork | | | | | $516,000 |
| Class 1 Excavation | CY | $40 | 12,900 | $516,600 | |
| Category 3 - Drainage: % of categories, 2, 4, 5, and 6 | | | | 50% | $759,300 |
| Category 4 - Structures | | | | | $600,000 |
| Repurposed Abandoned Steel Rail Bridge | LS | $600,000 | 1 | $600,000 | |
| Category 5 - Pavement | | | | | $402,600 |
| Superpave Asphalt Mix 12.5MM for Surface, HDFV, PGS-22, Level 2 | TON | $90 | 1,520 | $136,800 | |
| Superpave Asphalt Mix 19MM for Base, PG 64S-22, Level 2 | TON | $90 | 1,520 | $136,800 | |
| 6 Inch Graded Aggregate Base Course | SY | $10 | 12,900 | $129,000 | |
| Category 6 - Shoulders | | | | | $0 |
| Category 7 - Landscaping | | | | 12% | $182,232 |
| Category 8 - Traffic | | | | | $3,010,000 |
| Remove and Dispose Existing Signal Equipment | LS | $10,000 | 1 | $10,000 | |
| Roundabout | LS | $3,000,000 | 1 | $3,000,000 | |
| Utilities: % of categories 1-3, 5-8 | | | | 15% | $753,299 |
| **Subtotal** | | | | | **$6,375,291** |

| | | |
|---|---|---|
| **Contingency** | **30%** | **$1,912,587** |
| **Admin. / Overhead** | **15.3%** | **$975,420** |
| **Total Construction** | | **$9,263,298** |
| **Preliminary Engineering** | **15%** | **$1,389,495** |
| **TOTAL COST** | | **$10,652,793** |

| *ROUNDED TOTALS* | |
|---|---|
| **Preliminary Engineering** | **$1,400,000** |
| **Construction** | **$9,300,000** |
| **TOTAL** | **$10,700,000** |

*Note: For maintenance cost estimates, please see pages 6-31 and 6-32.*

# GREENWAY TRAIL IMPLEMENTATION ACTION STEPS

These action steps should serve as a guide for the multiple stakeholder agencies responsible for implementing this plan, including those representing the City of Lancaster, Lancaster County, PennDOT, and the Lancaster Inter-Municipal Committee (LIMC). [For action greenway funding, please see Appendix D, D-34 to D-37.]

## TABLE 6.13 - IMPLEMENTATION ACTION STEPS

| *Task* | *Key Stakeholders* | *Details* |
|---|---|---|
| Designate staff or create a new position dedicated to greenway development | City of Lancaster, Lancaster County, and the LIMC | The City and County should each have designated staff for greenway development, to oversee the implementation of top projects. The City, County, and LIMC should consider hiring a part-time or full-time dedicated position to fulfill the role of the Regional Bicycle, Pedestrian, and Greenway Planner. This person could be dedicated to grant writing and overseeing project implementation across the GLHP, and the position could be supported through a City-County-LIMC partnership. |
| Identify and secure specific funding sources for the top priority projects and begin design and construction phases | City of Lancaster and Lancaster County | Lancaster City and Lancaster County should devote work sessions to the topic of funding for their priority sections of the GLHP. The goal should be to identify funds that could be leveraged with outside sources. These groups should also consider allocating local funds annually to help sustain project implementation over time, such as through a bond initiative. |
| Meet with PennDOT to introduce the Plan and coordinate on key projects, intersections and trail crossings | City of Lancaster, Lancaster County, and PennDOT | PennDOT should refer to this document when assessing the impact of future projects and plans for PennDOT maintained roadways in Lancaster City and Lancaster County. Efforts should be made between state and local partners to include parallel greenways and bikeways facilities on planned future roadways and roadway reconstruction projects, especially where they appear on the adopted plan.<br><br>This meeting should also be used to initiate plans to reduce speed limits on PennDOT roadways that will be part of the GLHP, or along roadways that are critical to network connectivity. |
| Gather further public support and input during the design phase for projects. | City of Lancaster, Lancaster County, and the LIMC | Involve local stakeholders and the general public in the design stage for greenway development. In particular, residents along and adjacent to these corridors should be invited to review and provide feedback on design options and proposals. Meetings with major landowner stakeholders should also be set up in order to negotiate trail right-of-way easements where necessary. |

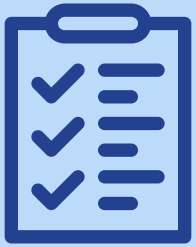
## TABLE 6.13 - IMPLEMENTATION ACTION STEPS (CONT'D)

| *Task* | *Key Stakeholders* | *Details* |
|---|---|---|
| Develop a corporate sponsorship policy | City of Lancaster, Lancaster County, and the LIMC | For a comprehensive sponsorship policy example, see that of Portland Parks and Recreation: www.portlandonline.com/shared/cfm/image.cfm?id=155570. For a sponsorship brochure example, see that of the 'Mountains to Sound Greenway': https://mtsgreenway.org/support/sponsorships/. On a related note, also see Burlington's Public Art, Memorial and Honorary Policy (PAMH). |
| Establish a greenways and bikeways wayfinding system | City of Lancaster, Lancaster County, and the LIMC | Once some of the longer-distance projects are completed throughout the region, stakeholder partners should coordinate with one another to establish a wayfinding system that is comprehensive and cohesive across jurisdictions. The system should be designed so that it is flexible enough to be updated as new projects are completed. |
| Develop a long-term funding strategy | City of Lancaster, Lancaster County, and the LIMC | To allow continued development of the overall system, capital funds for greenways and bikeways construction should be set aside every year, even if only a small amount; small amounts of local funding can be matched to outside funding sources, such as state, federal, and private funds. |

# TRAIL MAINTENANCE

Trails are often considered to be the most comfortable, welcoming and safe facilities available to people walking and biking. However, trails with neglected maintenance often are not accessible or comfortable and have an increased risk of hazards to users. This leads to concerns about liability from managing agencies and discourages existing and potential new users from using these facilities. Proper maintenance of existing, and management planning for future, facilities leads to safe, reliable, courteous and accessible trail use.

Trails in Lancaster are considered a public resource and should be viewed and maintained as such. These facilities should be viewed as equal to streets and roadways for maintenance purposes. These recommendations provide a framework for trail management entities.



Develop a management plan for each trail corridor that is reviewed and updated annually with tasks, operational policies, standards, and routine and remedial maintenance goals.

Maintain quality control and conduct regular inspections of existing facilities; plan for future facilities.

Include field crews, police and fire/rescue personnel in both the design review and ongoing management process.

Maintain an effective, responsive public feedback system and promote public participation.

## MAINTENANCE RECOMMENDATIONS

Each trail and the community it touches is unique and therefore requires distinct management activities. While communities can learn lessons from others with high quality trail systems, no amount of recommendations will be perfectly tailored to a particular trail. However, general estimates can be used to help inform decision making and planning for the sound maintenance of trails based on lessons learned from throughout the nation. The following table describes the activities, frequency, and cost estimated for each task to maintain a trail.

### TABLE 6.14 - TRAIL MAINTENANCE ACTIVITIES

| *Activity Description* | *Frequency* | *Annual Estimated Cost (per Mile)* | *Annual Estimated Cost (per Linear Foot)* |
|---|---|---|---|
| Drainage | Monthly (12x/Year) | $1,000 | $0.19 |
| Maintenance of Trail Surface (Sweeping/Blowing) | Weekly (52x/Year) | $2,000 | $0.38 |
| Pick up and Removal of Trash | Weekly (52x/Year) | $2,000 | $0.38 |
| Weed and Vegetation Management | Monthly (12x/Year) | $1,200 | $0.22 |
| Mowing of 3-foot Clear Zone | Weekly (52x/Year) | $2,000 | $0.38 |
| Minor Repairs to Trail, Furniture, and Safety Features | As Needed | $500 | $0.09 |
| Maintenance Supplies | | $300 | $0.06 |
| Equipment Fuel and Repairs | | $1,000 | $0.19 |
| **Total** | | **$10,000 per Mile** | **$1.89 per Linear Foot** |

With an understanding of an estimated cost of trail maintenance, an extrapolation can be made on the annual maintenance of the trail system in Lancaster County. While actual costs will vary depending upon labor rates, environmental events, economic downturn and inflation, and advances in technology, the estimates can provide a general idea of potential operations and maintenance obligations.

### TABLE 6.15 - ESTIMATED TRAIL MAINTENANCE COSTS

| *Proposed Trail* | *Proposed Linear Feet* | *Total Annual Estimated Maintenance Cost* |
|---|---|---|
| GLHP West | 20,790 | $39,290 |
| GLHP City Connection | 42,790 | $80,870 |
| GLHP Northeast Greenway | 13,510 | $25,530 |
| GLHP Goat Path | 33,590 | $63,490 |
| Engleside Greenway | 9,240 | $17,460 |
| **Total** | **119,920** | **$226,640** |

*Note: The costs above are reflective of the short-term recommendations for the GLHP.*

# IMPLEMENTATION

# VISION

*"Lancaster is a vibrant, diverse, and active community where people of all ages and abilities can move safely and conveniently through an interconnected network of pedestrian, bicycle, and transit facilities that promote healthy living and economic vitality."*

This chapter summarizes the key recommendations of this plan. These recommendations should be comprehensively and strategically implemented by ATP stakeholders. Each year, a list of 'action items' will be created after reviewing the ATP recommendations and implementation progress thus far. Recommendations will be updated every five years to reflect best practices and changing conditions in the county. Stakeholders should collaborate to strategically use existing funding and determine additional funding sources necessary to achieve the goals of the ATP.

## THIS CHAPTER INCLUDES AN OVERVIEW OF:

# ACTIVE TRANSPORTATION PLAN RECOMMENDATIONS

## A. CONNECT THE TRANSPORTATION NETWORK.

***Create a complete network for each mode of transportation, and provide connections between modes.*** The transportation network should provide safe, connected infrastructure including roads, sidewalks, bicycle lanes, and parking facilities, trails and paths, rail stations, and bus stops throughout the county. Barriers that inhibit the movement of bicyclists and pedestrians should be addressed. Our system should be multi-modal so that it is easy to use more than one mode to reach a destination. Greater network connectivity will provide more options to reach a destination.

## B. IMPLEMENT COMPLETE STREETS: CONSIDER ALL ROADWAY USERS IN INFRASTRUCTURE DESIGN.

***Design our transportation infrastructure to accommodate roadway users – motorists, pedestrians, bicyclists, and transit users – of all ages and abilities.*** Complete Streets increase the capacity and efficiency of the roadway by moving more people in the same amount of space, which can improve air quality and reduce congestion. Roadway designs should be context-sensitive, meaning that not every road requires every treatment. The character zones established in places2040 are the framework by which to identify what treatments are appropriate for communities, corridors, and landscapes across Lancaster County.

## C. IMPROVE SAFETY THROUGH EDUCATION, AWARENESS & ENFORCEMENT.

***Educate all road users about their rights and responsibilities, and enforce traffic laws.*** Increase awareness of traffic safety through educational outreach and media campaigns. Ensure that all road users understand the proper uses for bicycle and pedestrian infrastructure. Work to reduce traffic conflicts and crashes.

## D. ENCOURAGE EVERYONE TO WALK AND BIKE.

***Make active transportation more attractive and accessible to a variety of users - including commuters, residents, recreational users, visitors, and people of all ages and abilities.*** Marketing bicycle and pedestrian attractions, infrastructure, and resources generates awareness and interest amongst potential users. Increased usage of active transportation modes supports economic development, healthy lifestyle choices, and community-building.

## E. ALIGN RESOURCES AND WORK COLLABORATIVELY TO IMPLEMENT ACTIVE TRANSPORTATION PRIORITIES.

***Coordinate the work of the public, private, and non-profit sectors to implement this plan.*** Transportation challenges extend beyond municipal and organization boundaries – the solutions must do the same. Public, private, and nonprofit sector partners and their staff must coordinate funding, planning, policies, and procedures to align with shared priorities due to the limited availability of resources. Transportation improvements should be used as an opportunity to address other community needs.

## A. CONNECT THE TRANSPORTATION NETWORK.

| *Recommendations* | *Details* | *References* |
|---|---|---|
| **(A1) STUDY PRIORITY ROAD CORRIDORS AND IMPLEMENT BICYCLE/PEDESTRIAN IMPROVEMENTS.** | • Prioritize road corridor studies to implement planned bicycle/pedestrian networks. Use context sensitive infrastructure improvements to create a sense of comfort and safety for all users. | Ch 4, 4-7 to 4-15; App A; D-3 |
| **(A2) IMPLEMENT MOBILITY HUBS TO IMPROVE INTERMODAL CONNECTIONS.** | • Develop mobility hubs as intermodal centers to connect people with a variety of transportation modes.<br>• Develop cost estimates and maintenance strategies for intermodal improvements at mobility hubs based on local 'best practice' design, such as SCTA guidance for transit stops. | 4-16 to 4-21; D-4 to D-5 |
| **(A3) IMPLEMENT THE LANCASTER CITY BICYCLE NETWORK.** | • Build the recommended network using suggested improvements to connect City neighborhoods, neighboring municipalities, and the entire county. | Ch 5; 6-3 to 6-13, 6-23 to 6-30; App A; App E |
| **(A4) CREATE AN INTERCONNECTED, COUNTYWIDE TRAIL SYSTEM.** | • Complete the regional network of shared-use trails with special consideration for the accessibility of trails from communities, mobility hubs, priority corridors, and local trails. | Ch 6; App A |
| | • Implement the Greater Lancaster Heritage Pathway, Northeast Greenway, and Engleside Greenway. | Ch 6, 6-29 to 6-30 |
| **(A5) ADOPT OFFICIAL MAPS.** | • Utilize municipal official maps to identify important active transportation connections and improvements in communities, at mobility hubs, and along priority corridors for regional coordination and implementation. | D-6 |
| **(A6) CONNECT THE STREET NETWORK.** | • Connect existing roads and require new development to be connected through existing development, infrastructure, and the regional roadway network. | D-7 |
| | • Improve existing – and identify new – routes over/under limited access highways, railroads, streams, and other physical barriers that inhibit connectivity. | Ch 2, 2-36 to 2-37; App A; D-7 |
| **(A7) CONNECT AND IMPROVE TRANSIT STOPS.** | • In coordination with SCTA, develop design guides, cost estimates, and maintenance strategies for transit stops to improve the transit user experience. Incorporate transit improvements into planning efforts and new development. Develop partnerships for cost-sharing and maintenance. | D-8 to D-9 |
| **(A8) CONNECT TO BICYCLE AND PEDESTRIAN INFRASTRUCTURE IN OTHER COUNTIES.** | • Reevaluate the location of Pennsylvania State Bike Routes in Lancaster County. | 2-19 to 2-20; 4-5 |
| | • Provide bicycle, pedestrian, and trail connections to neighboring counties. | |

## B. IMPLEMENT COMPLETE STREETS: CONSIDER ALL ROADWAY USERS IN INFRASTRUCTURE DESIGN.

| *Recommendations* | *Details* | *References* |
|---|---|---|
| **(B1) IMPLEMENT COMPLETE STREETS.** | • Enact Complete Streets through county and municipal policies, ordinances, plans, and procedures. | 4-9; 7-10 to 7-12 |
| | • Promote context-sensitive design recommendations based on the places2040 character zones. | 4-7 to 4-15; App A |
| | • Reinvigorate the county Complete Streets program, including the guidebook and other resources. | 2-6 |
| **(B2) USE STANDARD DESIGN GUIDELINES FOR MULTIMODAL FACILITIES.** | • Integrate consistent design standards for bicycle, pedestrian, and transit facilities into local zoning and Subdivision and Land Development Ordinance (SALDO). | 7-10 to 7-12; App A |
| | • Uphold and utilize nationally-recognized design guidelines for multimodal transportation infrastructure. | App A |
| **(B3) INCORPORATE BICYCLE AND PEDESTRIAN FACILITIES AS STANDARD FEATURES IN ALL TRANSPORTATION PROJECTS.** | • Incorporate active transportation-oriented improvements into scheduled construction or maintenance projects, whenever possible. | 7-10 to 7-12 |
| | • Facilities should be context-sensitive; not every road requires every treatment. | 4-7 to 4-15; App A |
| **(B4) USE BEST PRACTICES TO IMPROVE SAFETY AND REDUCE CONFLICT ON ROADWAYS.** | • Establish criteria for applying various traffic calming techniques, especially at multimodal crossings. | App A; D-10 to D-11 |
| | • Utilize context-sensitive traffic calming techniques to highlight the presence of bicyclists and pedestrians for increased awareness and safety of all road users. | 4-12; App A; D-10 to D-11 |
| | • Use access management to consolidate driveways and limit the number of new access points along arterials and major collectors, which reduces the potential for conflict between motor vehicles, bicyclists, and pedestrians. | D-12 |
| **(B5) IMPROVE AND MAINTAIN PEDESTRIAN INFRASTRUCTURE.** | • Maintain existing pedestrian infrastructure using tools like sidewalk maintenance policies. | D-13 |
| | • Close gaps in the existing sidewalk network, particularly in designated growth areas. | |
| | • Require safe sidewalk detours around construction zones. | |
| **(B6) IMPROVE AND MAINTAIN BICYCLE INFRASTRUCTURE AND PARKING.** | • Provide bicycle infrastructure and parking, particularly in designated growth areas. When possible, repurpose underutilized pavement and parking spaces in high-traffic areas for this purpose. | App A; D-14 |
| | • Research and compile best practices for bicycle infrastructure maintenance. Estimate the cost of maintenance and designate roles and responsibilities prior to implementation. | D-15 to D-16 |
| | • Require safe bikeway detours around construction zones. | |

## C. IMPROVE SAFETY THROUGH EDUCATION, AWARENESS & ENFORCEMENT.

| *Recommendations* | *Details* | *References* |
|---|---|---|
| **(C1) EXPAND THE REACH OF SAFETY & EDUCATION PROGRAMS FOR ALL ROADWAY USERS.** | • Support the provision of bicycle safety education for all ages and abilities, including beginning driver education, classroom, and on-bike training, and other educational programming and events. | D-17 to D-18 |
| **(C2) ORGANIZE MEDIA & PUBLIC AWARENESS CAMPAIGNS.** | • Promote education programs and public awareness campaigns that focus on how to use bicycle and pedestrian infrastructure in addition to the rules of the road for all users. | D-19 |
| **(C3) COORDINATE POLICE ENFORCEMENT OPERATIONS.** | • Conduct special police enforcement operations like targeted crosswalk enforcement focusing on issues like speeding, aggressive driving, and failing to yield to pedestrians. | D-20 |
| | • Prioritize designated growth areas, school zones, and areas with significant pedestrian and bicycle traffic volumes. Enforce bicycle and pedestrian laws as a part of the day-to-day activities of patrol officers. | |
| **(C4) EMPHASIZE POLICE TRAINING ON BICYCLE AND PEDESTRIAN ISSUES.** | • Bolster bicycle and pedestrian content in police education courses to enhance public safety through the enforcement of existing laws. | D-21 |
| **(C5) WORK TO REDUCE TRAFFIC FATALITIES.** | • Develop a routine analysis of crashes and implement data-driven measures to reduce crash incidence through enforcement, infrastructure, speed limit reductions, or other measures. | D-22 |

## D. ENCOURAGE EVERYONE TO WALK AND BIKE.

| *Recommendations* | *Details* | *References* |
|---|---|---|
| **(D1) UPDATE THE LANCASTER COUNTY BICYCLE MAP.** | • Amend the Lancaster County bicycle map to show a variety of routes, infrastructure, and destinations. Employ the map to promote economic development in Lancaster County communities. | 6-13; D-23 |
| **(D2) EXPAND ACCESS TO BIKES AND SHARED MOBILITY.** | • Grow and market bike share programs throughout Lancaster County to increase access to bicycles for residents and visitors. | D-24 to D-25 |
| | • Establish methods to manage the use of, and identify facilities where the full range of shared mobility and personal mobility devices will be used. | |
| | • Expand bike giveaway and repair programs to support access to and ownership of bicycles. | |
| **(D3) COORDINATE SIGNAGE AND WAYFINDING.** | • Develop cohesive countywide wayfinding signage to promote tourism as well as economic development by encouraging residents to explore beyond familiar places. | D-25 |
| | • Ensure important bicycle or pedestrian routes and trails are easy to find and well-marked. | |
| **(D4) SEEK BICYCLE FRIENDLY℠ DESIGNATIONS.** | • Endorse the League of American Bicyclists 'Bicycle Friendly℠' designation programs to offer a roadmap for businesses, universities, and communities to become more welcoming to bicyclists. | D-26 |
| **(D5) MAKE SCHOOLS BICYCLE- AND PEDESTRIAN-FRIENDLY.** | • Partner with school districts across the county to address barriers to walking and biking to school. | D-27 |
| **(D6) SUPPORT LOCAL AND REGIONAL PROGRAMMING THAT ENCOURAGES ACTIVE TRANSPORTATION.** | • Promote programming such as Critical Mass/Slow Rides, Open Streets events, Parking Day, and other fun and informative ways to build community and encourage active transportation. | D-28 to D-30 |

## E. ALIGN RESOURCES AND WORK COLLABORATIVELY TO IMPLEMENT ACTIVE TRANSPORTATION PRIORITIES.

| *Recommendations* | *Details* | *References* |
|---|---|---|
| **(E1) PRIORITIZE TRANSPORTATION FUNDING FOR ACTIVE TRANSPORTATION PLAN IMPLEMENTATION.** | • Incentivize funding for communities that undertake implementation of the ATP recommendations. | 7-9 to 7-12; D-33 to D-36 |
| | • Revise discretionary funding guidelines and associated criteria to prioritize the provision of bicycle and pedestrian facilities located:<br>◦ Along the proposed priority network.<br>◦ Within proximity to mobility hubs, regional trails, and transit stops.<br>◦ Inside designated growth areas. | |
| | • Undertake a review and create recommendations as part of the development and adoption of the long-range Metropolitan Transportation Plan (MTP) and the four-year Transportation Improvement Program (TIP). | |
| **(E2) PARTNER WITH PUBLIC, PRIVATE, AND NON-PROFIT ORGANIZATIONS TO IMPLEMENT THE PLAN.** | • Collaborate with partners to implement the plan – each organization and its staff bring a different set of skills and resources to the task. | 7-13 |
| | • Coordinate with private and non-profit organizations to fund relevant plan recommendations. | 7-13; D-33 to D-36 |
| **(E3) COORDINATE TRANSPORTATION IMPROVEMENTS ACROSS MUNICIPAL BOUNDARIES.** | • Coordinate municipal transportation planning documents, such as official maps, pavement replacement plans, and capital improvement plans, so corridor improvements can be aligned for cost-savings and efficiency. | 7-10 to 7-12 |
| **(E4) INCORPORATE OTHER COMMUNITY NEEDS INTO TRANSPORTATION IMPROVEMENTS.** | • Integrate recommendations from municipal transportation planning documents as well as other community plans when scoping road improvements. | D-31 |
| | • Distribute plans for transportation improvements like road reconstruction or resurfacing to utility companies as early as possible to allow time for their necessary work to be completed first. | |
| **(E5) COLLECT AND USE BICYCLE AND PEDESTRIAN DATA IN DECISION MAKING.** | • Collect, procure, analyze and use bicycle and pedestrian data to better assess countywide infrastructure needs. Use this information to inform MPO decision-making and other planning processes. Examples include:<br>◦ Countywide GIS layers showing bicycle infrastructure, sidewalks, crosswalks, and official map features.<br>◦ Bicycle and pedestrian-involved crash data.<br>◦ Permanent, seasonal, and temporary bicycle and pedestrian count data. | D-32 |

# HOW TO IMPLEMENT THIS PLAN

Implementation of this plan is a long-term effort. It will require the commitment of time and resources from ATP stakeholders, as well as a combination of significant policy shifts and incremental change across Lancaster County.

## A. ESTABLISH A PERMANENT ADVISORY COMMITTEE.

***While the structure of the advisory committee will be determined later, it could include entities such as the Lancaster MPO's Transportation Technical Advisory Committee (TTAC), Bicycle and Pedestrian Advisory Committee (BPAC) members, staff representatives from Lancaster County Planning (LCPC), the Lancaster Inter-Municipal Committee (LIMC), and the City of Lancaster, bicycle and pedestrian advocacy and education organizations, and others.*** Members assume a leadership role to implement the plan recommendations. The members should collaborate with municipalities, places2040 implementation teams, Partners for Place, and other stakeholders.

## B. DEVELOP ANNUAL ACTION ITEMS.

***Every year, a list of 'action items' will be developed by the advisory committee upon review of the plan recommendations and implementation progress thus far.***

The annual list of 'action items' should be:

1. Comprehensive – consider the varying user needs across the county.
2. Collaborative – include ATP stakeholders in the implementation.
3. Realistic – given the time and resources of the advisory committee and stakeholders.

## C. PRIORITIZE FUNDING FOR ATP IMPLEMENTATION.

***Partners and stakeholders should collaborate to strategically use existing funding and determine additional funding sources necessary to implement the annual 'action items', and ultimately, the goals of the plan.***

## D. REVIEW AND UPDATE THE RECOMMENDATIONS.

***Revisit plan recommendations every five years to reflect best practices and changing conditions in the county.***

# HOW TO IMPLEMENT THE NETWORK AND MAKE INFRASTRUCTURE IMPROVEMENTS

In order to implement this plan, we must align our funding, regulations, and processes. At every step of the way, the intention to connect and improve bicycle and pedestrian infrastructure should be formalized and the expectations made clear. The steps below represent many of the key decision points on which implementation will depend.

1. **COUNTY POLICY & FUNDING.** With the adoption of places2040 and this plan, the County of Lancaster will set the tone for active transportation planning throughout Lancaster County. Recommendations of this plan will be incorporated into other transportation planning and programming. Though county plans are advisory rather than regulatory, they should guide and coordinate the efforts of municipalities. Discretionary funding guidelines and criteria should be revised to prioritize or require bicycle and pedestrian facilities, where appropriate. Incentives for funding should focus on communities that are actively implementing the recommendations of the Active Transportation Plan. Specific review and recommendations should be undertaken during the development of the Lancaster County Metropolitan Planning Organization's long-range Metropolitan Transportation Plan (MTP) and the Transportation Improvement Program (TIP) which implements the MTP (see below).

2. **MUNICIPAL POLICY & REGULATIONS.** Municipal plans, ordinances, and processes are critical to implementing this plan. Planning and regulatory documents are the best tools for communities to formalize ideas and conversations about bicycle and pedestrian improvements – and to begin to implement the recommendations of places2040 and the active transportation plan. To the greatest extent possible, municipalities should plan and implement regionally, developing standards that are consistent with those of their neighbors.

    - **COMPREHENSIVE PLANS.** Work regionally to identify possible trail connections, corridors for further study, possible roadway connections, mobility hubs, and bicycle and pedestrian improvements. Share information and build a good rapport with neighbors. Comprehensive plans may also identify needs such as stormwater management, urban greening, or utility upgrades that could be integrated into transportation improvements. Elements identified in the comprehensive plan should be solidified through the adoption of official maps.

    - **OFFICIAL MAPS.** Using the comprehensive plan as the foundation, all municipalities should adopt an official map developed in a regional context. Official maps can include a variety of elements; transportation-specific improvements might focus on roadway connections, trail extensions, intersection or corridor improvements, sidewalk or crosswalk improvements, transit shelters, bicycle lanes, etc. Official maps give the community, land owners, developers, and PennDOT notice of planned connections and improvements. As a land use ordinance, it is a negotiating tool that allows municipalities to ensure implementation of planned improvements through land development, PennDOT projects, and other processes.

    - **ZONING & SUBDIVISION AND LAND DEVELOPMENT ORDINANCES.** Specific design requirements for streets, sidewalks, crosswalks, bicycle parking, and other related infrastructure are typically found in the zoning ordinance and the subdivision and land development ordinance. It is critical that these regulatory documents incorporate the policies

and tools recommended in the Active Transportation Plan. These ordinances should also provide for compact, mixed-use development within designated growth areas as called for in places2040 – this type of development supports and encourages active transportation.

- **OTHER RELATED ORDINANCES: STREETS & SIDEWALKS, BICYCLES, ETC.** Any other municipal ordinances related to streets, sidewalks, trails, pedestrians, or bicyclists should incorporate the recommendations of this plan.

3. **PLACE-BASED PLANS.** Priority corridors have been identified in this plan – but municipalities will need to work together with neighboring municipalities to identify specific improvement plans for these corridors. These planning efforts will likely traverse municipal boundaries and should include a variety of stakeholders. Corridor plans are an opportunity to improve connectivity, eliminate gaps in the sidewalk and bicycle infrastructure networks, implement access management, and generally improve the safety and mobility of bicyclists, pedestrians, transit users, and motorists alike. These plans should consider current and future land-use; economic development needs; density, pattern, and character zones; and other infrastructure such as water, sewer, and stormwater management.

4. **TIP DEVELOPMENT.** The Transportation Improvement Program (TIP) is a list of federally funded capital and non-capital transportation improvement projects and programs for a four-year time period and constitutes the county's short range surface transportation investment strategy. The Lancaster MPO in coordination with PennDOT and South Central Transit Authority (SCTA), develops, adopts, and manages the TIP. Projects on the TIP must come from the Long-Range Transportation Plan (now called the Metropolitan Transportation Plan [MTP]). TIP projects should reflect the updated priorities of the MTP which will prioritize or require bicycle and pedestrian facilities, where appropriate, and incentivize communities to implement the recommendations of the ATP.

- **PennDOT CONNECTS.** PennDOT Connects is a new initiative that allows PennDOT to work more closely with MPOs, municipalities and community leaders to obtain their input on transportation projects early in the planning phase to ensure that transportation projects are designed to address local concerns. All projects that are on an MPO's Draft Transportation Improvement Program are intended to be part of the PennDOT Connects program and will be included in meetings with local leaders. These meetings offer a critical opportunity to implement the plans related to bicycle, pedestrian, and transit infrastructure that communities have made in the steps above.

5. **PAVEMENT PLANS.** When creating pavement improvement plans, make sure to review comprehensive plans, official maps, parks, and recreation plans and place-based plans to ensure that repaving and reconstruction projects incorporate the recommendations of these plans. Plans should be shared and coordinated with neighbors. Where priorities align, municipalities may be able to partner on repaving projects – which holds the potential to save time and money.

6. **CAPITAL IMPROVEMENT PLANS.** A capital improvement plan (CIP) is a short-range plan, usually five years, which identifies capital projects (road paving, sewer, water) and equipment purchases, provides a planning schedule and identifies options for financing the plan. The plan provides a link between a municipal comprehensive plan and its annual budget. It coordinates strategic planning, financial capacity, and physical development. A CIP stands at the epicenter of a government's Planning, Public Works, and Finance departments. A CIP has two parts – a capital budget and a capital program. The capital budget is the upcoming year's spending plan for capital items. The capital program is a plan for capital expenditures

that extends typically five to ten years beyond the capital budget. CIPs can be used to budget for planned bicycle and pedestrian facilities.

7. **OPPORTUNITIES FOR NETWORK IMPLEMENTATION.** At the project level, there are a variety of ways bicycle and pedestrian infrastructure can be implemented; often, they can be added as part of a project that must occur anyway, rather than in addition to regular maintenance or reconstruction.

## TABLE 7.1 - OPPORTUNITIES FOR INFRASTRUCTURE NETWORK IMPLEMENTATION

| *Opportunities for Implementation* | *Pedestrian Projects* | *Bicycle Projects* | *Multi-Use Projects* |
|---|---|---|---|
| Development or redevelopment | X | X | X |
| Retrofit existing roadways | X | X | |
| Repaving | X | X | |
| Restriping | X | X | |
| Removing parking | | X | |
| Bridge replacement | X | X | X |
| Roadway construction/reconstruction | X | X | |
| Developer dedication - ROW/trails | | | X |
| Utility and sewer easements and provision of public access within ROW | | | X |
| Rail to trails | | | X |
| Rail with trails | | | X |

# WHO IMPLEMENTS

The Active Transportation Plan will only be implemented if we are able to work collaboratively with a variety of different partners to achieve our common goals. The list below comprises many of the major bodies and organizations that may help to implement this plan. Some organizations have been specifically identified because they are already playing a central role in bicycle and pedestrian advocacy; other organizational types have been identified because they have significant potential to play leadership roles moving forward. There may also be additional partners such as businesses, land owners, foundations, or new organizations whose roles have not yet been defined. Part of implementation will involve bringing these partners into the process and identifying which actions each organization is able to assist with or implement.

Potential Implementation Partners:

1. Lancaster County Planning Commission
2. MPO
3. TTAC
4. BPAC
5. PennDOT
6. South Central Transit Authority
7. Municipalities
8. LIMC
9. Lancaster City
10. School districts
11. Police departments
12. Penn Medicine Lancaster General Health, Hospitals & Health Care providers
13. Center for Traffic Safety
14. Local parks and trails committees
15. Lancaster Bikes!
16. The Common Wheel
17. Lancaster Bicycle Club
18. Discover Lancaster and hoteliers
19. Bicycle shops
20. Developers and land owners
21. Disability rights organizations
22. Lancaster County Housing and Redevelopment Authorities
23. Lighten Up Lancaster County
24. Community institutions
25. Volunteer/civic organizations and neighborhood groups

# PERFORMANCE MEASURES

Performance measures help to track the plan's progress and effectiveness over time. Lancaster County, the LIMC, and the City of Lancaster should establish performance measures to benchmark progress towards implementing this plan. The measures listed below are possible measures we might use to understand how well we are implementing the plan – though we may not be able to measure all of them. Many are consistent with those contained within *places2040*, the Lancaster County Comprehensive Plan – implementing the Active Transportation Plan will in turn help to implement the places2040 plan. Additional performance measures will be included in the Long-Range Transportation Plan update (also known as the *Metropolitan Transportation Plan*).

## TABLE 7.2 - IMPLEMENTATION PERFORMANCE MEASURES

| *Topic* | *Measure* | *Improve Access & Connectivity* | *Enhance Health* | *Protect the Environment* | *Create Economic Opportunity* | *Increase Safety* | ***Places2040** Big Idea* |
|---|---|---|---|---|---|---|---|
| Obesity | Reduce the % of people who are obese | | X | | | | Creating Great Places |
| Fatalities | Reduce the # of fatalities due to crashes | | X | | | X | |
| Bicycle/Pedestrian Fatalities | Reduce the # of bicycle/pedestrian fatalities due to crashes | | X | | | X | |
| Walkability | Increase walkability (Walk Score) | X | | | | X | Connecting People, Place, & Opportunity |
| Sidewalk Coverage | Increase % of roads with sidewalks in Urban Growth Areas | X | | | | X | |
| On-Road Bicycle Facilities | Increase miles of on-road bicycle facilities (bike lanes and sharrows) in UGAs | X | | | | X | |
| Intersection Density | Increase the # of intersections per mile of roadway in UGAs | X | | | | | |
| New Development Connections | Increase connectivity between new and existing development | X | | | | | |
| Commute Mode Split | Increase % of people walking, biking, or taking transit to work | X | | | | | |
| Time Spent Commuting | Reduce length of average commute | | X | | X | | |
| Daily Vehicle Miles Traveled (DVMT) | Reduce Daily Vehicle Miles Traveled | | X | X | | | |
| RRTA/SCTA Ridership | Increase ridership | X | | | | | |
| Amtrak Ridership | Increase ridership | X | | | | | |
| Commuter Services of PA Programs | Increase participation | X | | | | | |
| Miles of Regional Trails | Increase miles of regional trails | | X | | X | | |
| Trail Access | Increase % of UGA land within 1/2 mile of trail | | X | | X | | |

## TABLE 7.2 - IMPLEMENTATION PERFORMANCE MEASURES

| *Topic* | *Measure* | *Improve Access & Connectivity* | *Enhance Health* | *Protect the Environment* | *Create Economic Opportunity* | *Increase Safety* | ***Places2040** Big Idea* |
|---|---|---|---|---|---|---|---|
| Days with Unhealthy Air Quality | Reduce % of days with unhealthy air quality | | X | X | | | Taking Care of What We Have |
| Ozone | Reduce ozone levels | | X | X | | | |
| Short-Term Particle Pollution | Reduce short-term levels of particle pollution (24-hr avg) | | X | X | | | |
| Long-Term Particle Pollution | Reduce long-term levels of particle pollution (year round average) | | X | X | | | |
| Parking Cover | Reduce % of land covered in parking | | | X | X | | Growing Responsibly |
| New Intersection Density | Increase intersection density of new development | X | | | | | |
| Connections to Neighbors in New Development | Increase average # of connections to adjacent development | X | | | | | |
| Regional Corridor Plans | Increase # of municipalities participating in regional corridor plans | X | | | | | Thinking Beyond Boundaries |
| Regional Official Maps | Increase # of municipalities participating in regional official maps | X | | | | | |
| Regional Complete Streets | Increase # of municipalities participating in regional complete streets policies | X | | | | | |
| Complete Streets Amendments | Increase # of municipalities amending codes based on complete streets concepts | X | | | | | |

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