2013

Central Chester County

Bicycle and Pedestrian Circulation Plan

Prepared by the Chester County Planning Commission and Chester County Health Department

Chester County Board of Commissioners

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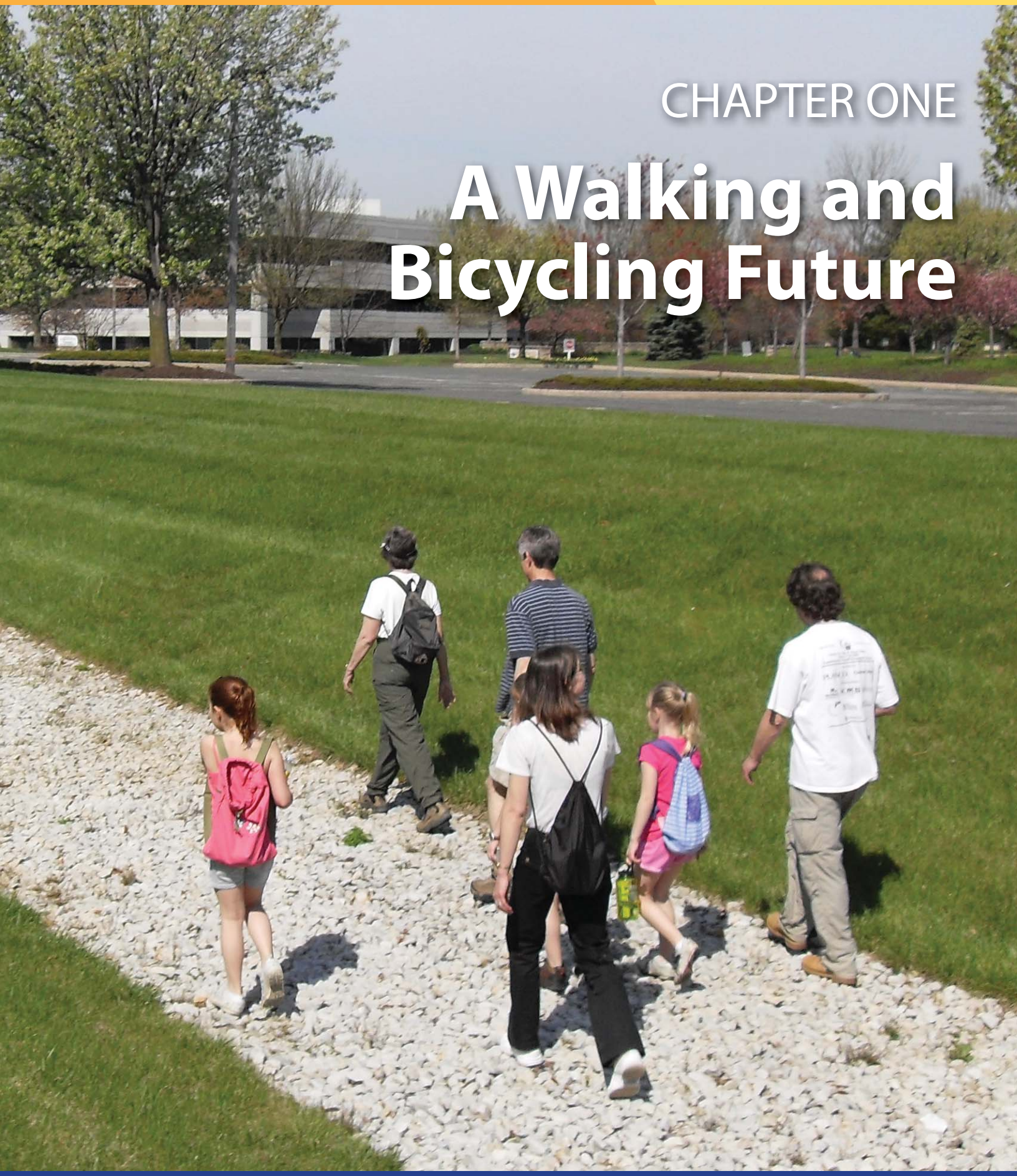


CHAPTER ONE

A Walking and Bicycling Future

Introduction

The Central Chester County Bicycle and Pedestrian Circulation Plan serves as a blueprint for transforming seven municipalities in the heart of Chester County into communities that support and encourage walking, bicycling, and public transportation. The seven municipalities of "Central Chester County" include:

- East Bradford Township
- East Caln Township
- East Goshen Township
- Downingtown Borough
- West Goshen Township
- West Whiteland Township
- West Chester Borough

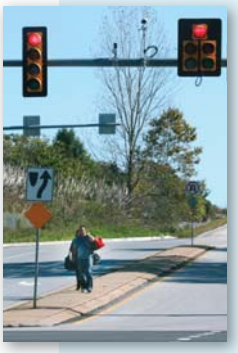
While Central Chester County is comprised of a remarkable mix of towns, parks, trails, and an extensive public transportation system, opportunities for walking and bicycling throughout the Region are limited by a fragmented sidewalk and trail network, busy roadways with limited shoulders, and a lack of amenities for walking, bicycling, and public transportation.

In response to these challenges, the seven municipalities of Central Chester County, in conjunction with the Chester County Planning Commission, Health Department, and supportive organizations have prepared this Plan to guide the collective actions of the Region towards the fulfillment of the Plan's vision of: "healthy, vibrant, and economically viable communities that facilitate and encourage more walking and biking."

VISION

Healthy, vibrant, and economically viable communities that facilitate and encourage more walking and biking.

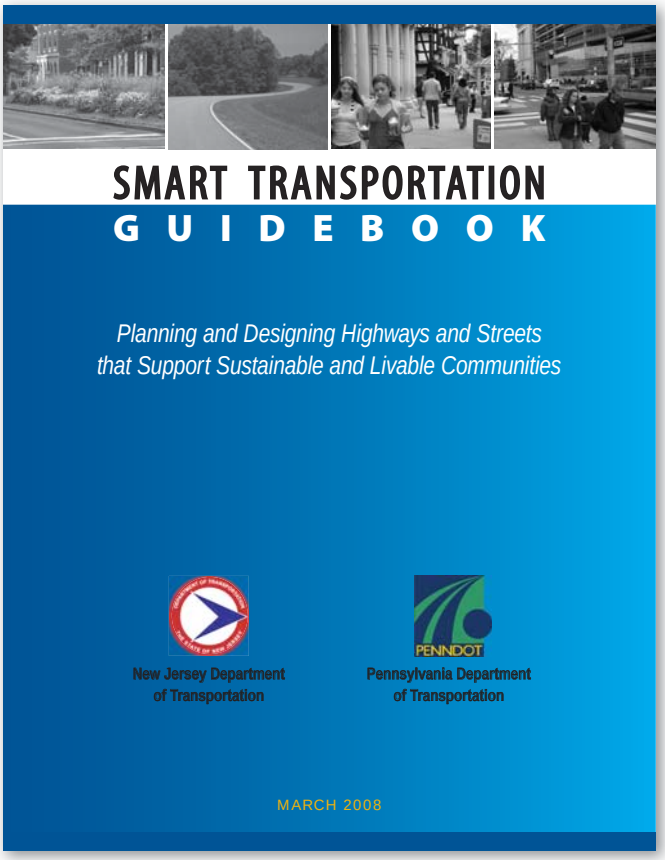
Central Chester County features many desirable destinations for walking and biking, including train stations, business districts, and multi-use trails.



Corridors such as PA 3 and PA 100 are very challenging for pedestrians and cyclists, yet destinations are located along these busy roadways.

Major Plan Influences

This Plan provides a coordinated action plan to address a culmination of quality-of-life concerns including: the Region's transportation system, public health, and environmental sustainability. These broad concerns originate from a vast array of causes; yet, improvements to walking, bicycling, and public transportation are collectively recognized as a critical implementation strategy.



PennDOT's Smart Transportation Guidebook (2008) stressed the need for planning for all transportation mode including walking, bicycling and public transportation.

The Transportation Case

Over the last five years, PennDOT has emphasized a refined statewide transportation policy known as: "Smart Transportation". Among the policy revisions, the Smart Transportation Guidebook (2008) stressed the need for planning for all transportation modes including walking, biking, and public transportation. Since 2008, PennDOT has updated design standards and planning practices to reflect this multi-modal focus.

Concurrent to the development of PennDOT's Smart Transportation policy, the Chester County Planning Commission updated Landscapes2, Chester County's Comprehensive Plan. As part of the update process, a public opinion survey asked the 8,000 survey respondents: "What would you like to see more of in Chester County?"

Top Four Responses* to "What would you to see more of in Chester County?"

1. Open Space preservation
2. Downtown revitalization
3. Cooperative planning between local governments
4. More opportunities to walk and bike

Source: Chester County Planning Commission, 2007

(*) – Top four of 17 responses

These desired improvements were embodied in the policies and actions of Landscapes2. Specifically, the Transportation Action Plan called for the completion of a county-wide non-motorized transportation plan (Action T-1c). This Plan–as well as other regional initiatives in Chester County (see Figure 5, page 13) – significantly advances this action of Landscapes2.

The Health Case

The amount of physical activity an individual engages in has the single greatest impact on their health and quality of life. Unfortunately with changes in technology, transportation, and land use, physical activity has been engineered out of most individual's daily lives.

These trends are prevalent on a national scale as demonstrated by data from the Behavioral Risk Factor Surveillance System (BRFSS). Over the last twenty years, obesity rates have more than doubled and even tripled in many states, as shown in Figure 1. It is through tools such as the BRFSS that a national epidemic has been identified.

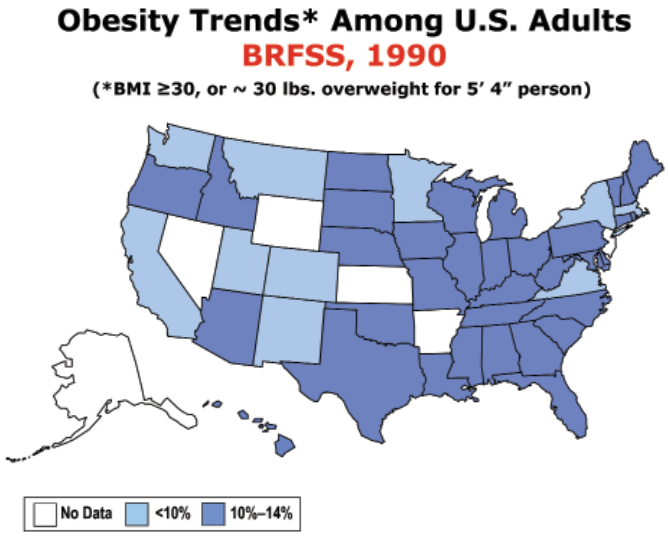
Trends such as these create a major economic burden for the United States. The current cost of treatment for chronic diseases account for an estimated 75 percent of the nation's $1.4 trillion medical care costs. If trends continue, spending by the Center for Medicaid and Medicare Services will increase to $4.1 trillion in 2016. (WELCOA, 2011).

The Sustainability Case

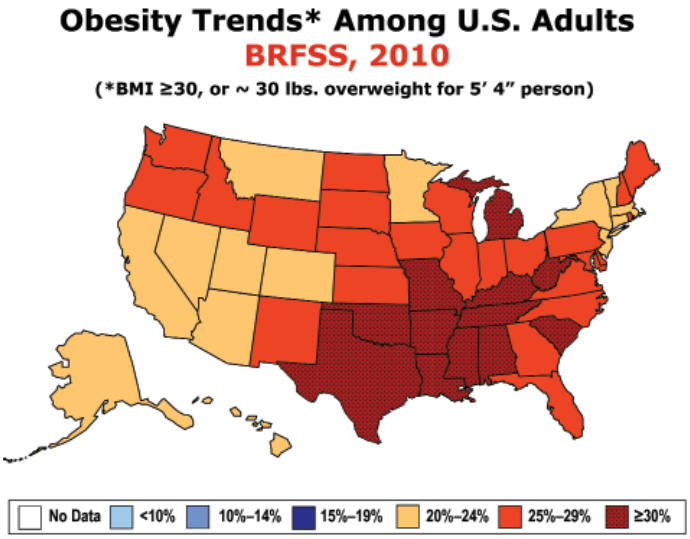
The last five years have witnessed an increased public and organizational awareness towards reducing greenhouse gas emissions and other energy-reduction strategies. For example, West Chester Borough and Chester County completed greenhouse gas reduction plans in 2009 and 2010, respectively. Chester County's Discover the Future website is dedicated to explaining how to implement sustainable practices within the County.

Collectively, these plans identify pedestrian, bicycle, and transit improvements as fundamental ingredients for sustainable communities. Moreover, these plans contain specific recommendations to improve accommodations for these modes through improved building requirements, land development site design, and multi-modal transportation planning.

Figure 1:
Adult Obesity Rates, 1990-2010



Source: Behavioral Risk Factor Surveillance System, CDC.



Source: Behavioral Risk Factor Surveillance System, CDC.

Unfortunately with changes in technology, transportation, and land use, physical activity has been engineered out of most individual's daily lives.

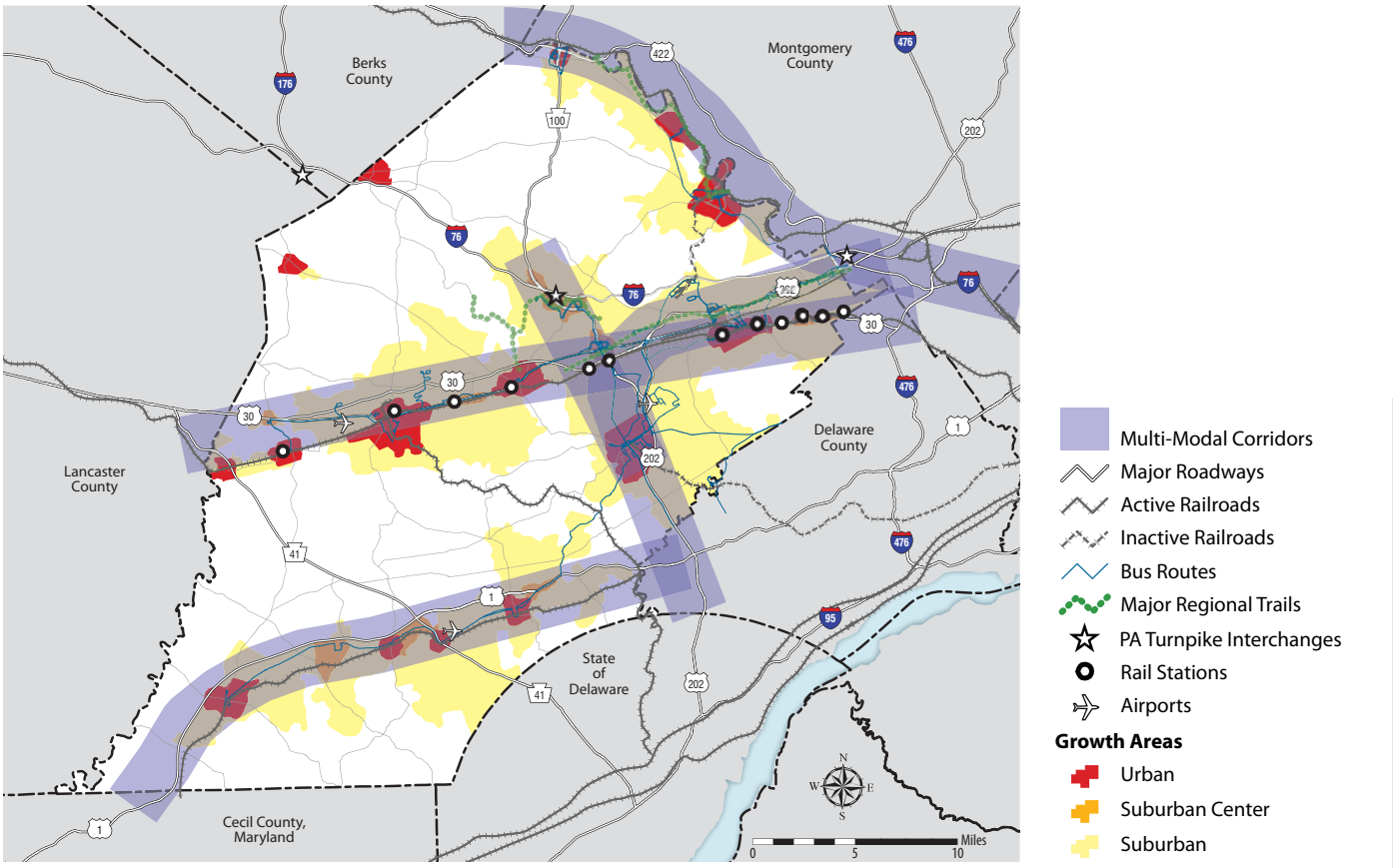
Focusing on Central Chester County

With over 100,000 residents and 80,000 jobs, the Central Chester County Region is one of the best suited portions of Chester County for targeting walking, biking, and transit improvements. The seven municipalities that comprise the Region were collectively identified for the Plan based upon this area's potentially-significant role in countywide transportation and recreation planning.

A strategic region for multi-modal transportation planning

Central Chester County hosts major transportation facilities, with two major expressways (Route 30 and Route 202), Chester County's primary north-south road (Route 100), and the Amtrak Keystone Corridor/SEPTA Paoli-Thorndale Line. Chester County's comprehensive plan, Landscapes2, defines multi-modal transportation corridors as shown in Figure 2. This figure illustrates the intersection of three multi-modal corridors within the Central Chester County Region.

Figure 2:
Multi-modal Transportation Corridors defined in Landscapes2



Source: Landscapes2, Chester County Planning Commission, 2009

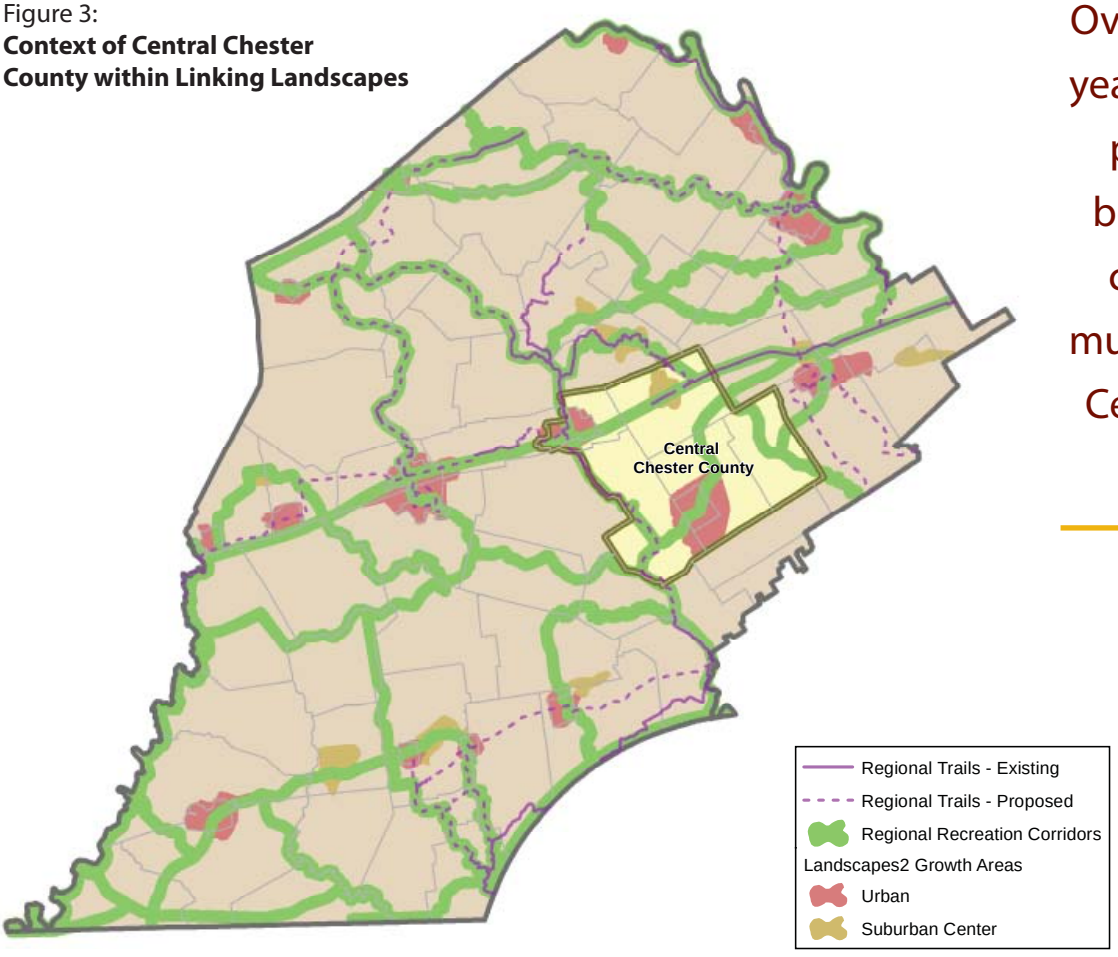
Significant recent progress on regional trails

An inter-connected bicycle and pedestrian network for Chester County and the Greater Philadelphia Region is a collective vision of Chester County and the Delaware Valley Regional Planning Commission, as expressed in Linking Landscapes (2002) and Connections (2009), respectively. In the context of these plans, many corridors intersect or traverse Central Chester County (depicted in Figure 3), making it a critical, strategic region for transportation, open space, and recreation planning in Chester County.

Over the last two years, substantial progress has been made on constructing multi-use trails in Central Chester County. In 2010, Chester County also opened the first phase of the Chester Valley Trail (4.2 miles) between Exton and PA 29. Phase 2 and Phase 3 of the trail (shown in Figure 4) are scheduled to begin construction in 2012. Upon Montgomery County's completion of an additional trail phase, the Chester Valley Trail will ultimately connect Exton to the Schuylkill River Trail in Norristown.

Over the last two years, substantial progress has been made on constructing multi-use trails in Central Chester County.

Figure 3:
Context of Central Chester County within Linking Landscapes



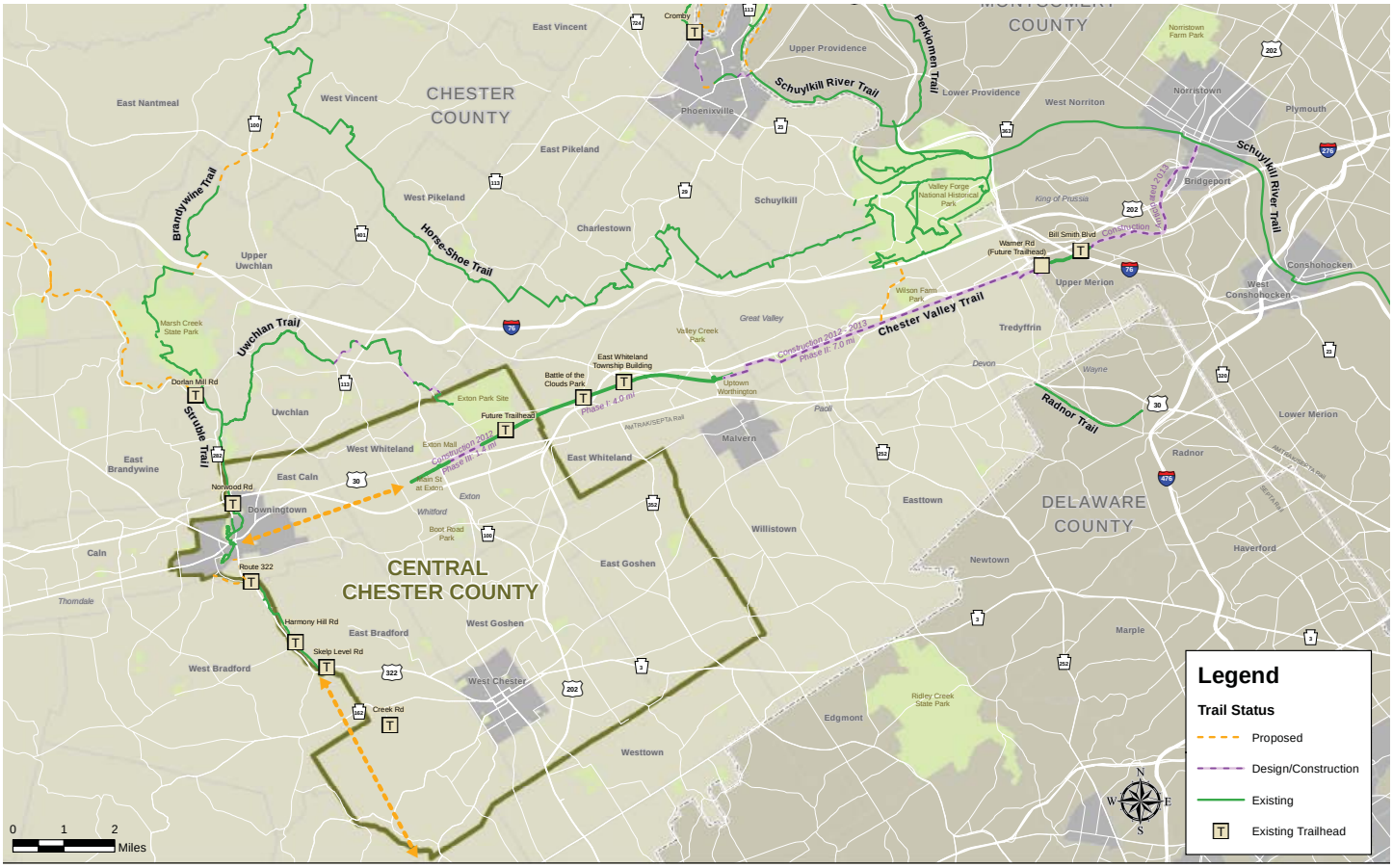
Source: Linking Landscapes: A Plan for the Protected Open Space Network in Chester County, Chester County Planning Commission, 2002

Additionally in 2010, East Bradford and West Bradford townships opened the Brandywine Trail (2.4 miles) along the East Branch of the Brandywine Creek south of Downingtown Borough. Given the significant, recent advancement of these trails – and popularity of the Struble and Uwchlan trails— the Plan proposes alignments for connecting these trails into a cohesive, seamless trail network.

A gap in multi-municipal bicycle and pedestrian planning

Many portions of Chester County have conducted or are currently undertaking multi-municipal planning efforts to determine projects and priorities for bicycle and pedestrian improvements. These are noted in Figure 5. With regional planning occurring in most of northern, eastern, and southeastern Chester County, the Plan fulfills a significant missing link in multi-municipal bicycle and pedestrian planning in Chester County.

Figure 4:
Regional trail context



Prepared by Chester County Planning Commission, May 2012

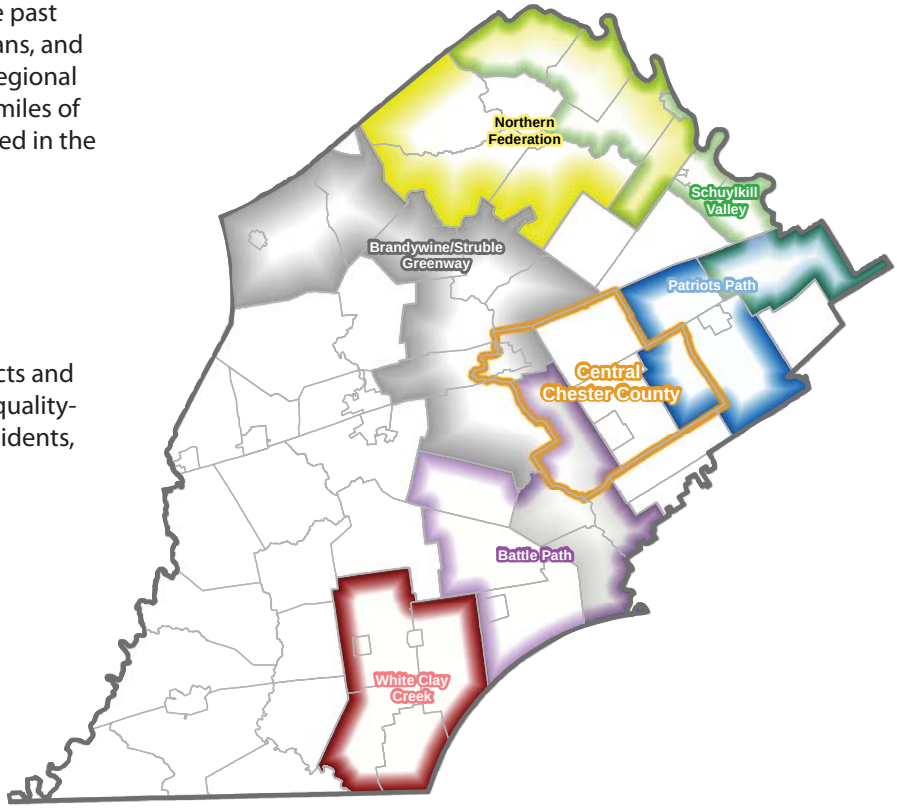
Proactive municipal partners

Many of the municipalities that comprise Central Chester County have been proactive in trail planning over the past decade, using comprehensive plans, revitalization plans, and official maps as planning tools to develop local and regional trail networks. Prior to the start of the Plan, over 100 miles of planned or existing trails were collectively documented in the municipal plans of the Region.

Culminating with a Bicycle and Pedestrian Circulation Plan

These aforementioned planning considerations have necessitated the development of this Plan. The projects and policies recommended by this Plan will improve the quality-of-life of the Central Chester County Region for its residents, workers, and businesses.

Figure 5:
Multi-Municipal Trail Planning within Chester County



Source: Chester County Planning Commission, 2012

The projects and policies recommended by this Plan will improve the quality-of-life of the Central Chester County Region for its residents, workers, and businesses.

Our Mission, Vision, and Goals

The seven municipalities of Central Chester County in partnership with the Chester County Planning Commission, Chester County Health Department, and fellow supportive agencies have prepared this Plan to provide a strategic course-of-action towards the Plan's Mission, Vision, and Goals.

Mission

CONNECT Exton, Downingtown, and West Chester; and,

TRANSFORM these centers into pedestrian, bicycle, and transit friendly communities.

Vision

Healthy, vibrant, and economically-viable communities that facilitate and encourage more walking and biking

Goals

ESTABLISH a comprehensive network of pedestrian, bicycle, and public transportation facilities that connects local and regional destinations for all users.

PROVIDE supportive amenities that address the needs of pedestrians, bicyclists, and public transportation users at their destinations.

IMPROVE public health and safety through education, enforcement, and encouragement strategies.

INTEGRATE concepts that enhance walking, bicycling, and public transportation within the policies and practices of government, private, and non-profit organizations.

Riders enjoying the Chester Valley Trail.

Our Partners and Process

Grant funding was provided by the Pennsylvania Department of Transportation's (PennDOT) Pennsylvania Community Transportation Initiative (PCTI) and the Pennsylvania Health Department's Safe and Healthy Communities Program.

Development of the Plan was guided by a Plan Advisory Committee, represented by the following organizations:

- Activate Chester County
- Brandywine Conservancy
- Chester County Chamber of Business and Industry
- Chester County Cycling Coalition
- Chester County Facilities/Parks & Recreation
- Chester County Health Department
- Chester County Planning Commission
- Delaware Valley Regional Planning Commission
- Downingtown Borough
- Downingtown-Thorndale Regional Chamber
- East Bradford Township
- East Caln Township
- East Goshen Township
- PennDOT
- Practical Energy Solutions
- SEPTA
- TMACC
- Exton Chamber of Commerce
- West Chester BLUER
- West Chester Borough
- West Chester Chamber of Commerce
- West Chester University
- West Goshen Township
- West Whiteland Township

Public outreach

Five public meetings were convened as part of the plan development process and ten Plan Advisory Committee meetings were held.

- **Exton public meeting**
  West Whiteland Township (3/29/12)
- **Downingtown public meeting**
  Downingtown Borough (5/3/12)
- **West Chester public meeting**
  West Chester Borough (7/26/12)
- **Regional public meeting**
  West Whiteland Township (10/25/12)
- **Final public information meeting**
  West Whiteland Township (2/28/13)

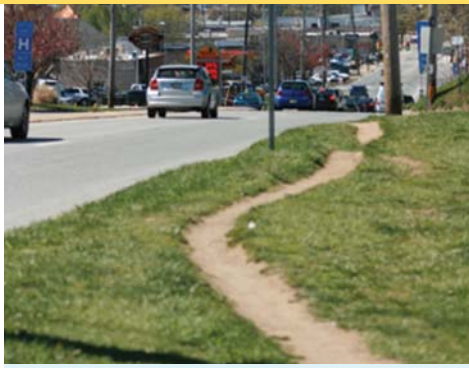
Exton public meeting at the West Whiteland Township Building (3/29/12)

Downingtown public meeting at the Downingtown Borough Hall (5/3/12)

West Chester public meeting at the West Chester Borough Hall (7/26/12)

CHAPTER TWO

Framing the Critical Issues



This Central Chester County Bicycle and Pedestrian Circulation Plan recognizes the issues, challenges, and opportunities that currently face the Central Chester County Region with respect to walking, biking, and public transportation. These issues were identified based upon input from the Plan Advisory Committee, public workshops, and research of existing trends. The issues are organized and presented in response to five fundamental questions:

- Who are potential bicycle, pedestrian, and transit "users"?
- Where do users desire to go?
- How do users get to destinations?
- What are the health implications?
- What challenges exist for making improvements in our municipalities?

Who are potential bicycle, pedestrian, and transit "users"?

This Region is one of the most densely populated areas of Chester County

With approximately 100,000 residents living in Central Chester County, the 2010 Census reported that 1-in-5 Chester County residents live in the Region. Additionally, with nearly 80,000 jobs in the Central Chester County, the Region hosts 30 percent of the total jobs in Chester County according to employment estimates by the Delaware Valley Regional Planning Commission (DVRPC). The concentration of residents and jobs in Central Chester County make this Region one of the most appropriate areas for focused pedestrian, bicycle, and transit planning in all of Chester County.

Significant population and employment growth anticipated over next 25 years

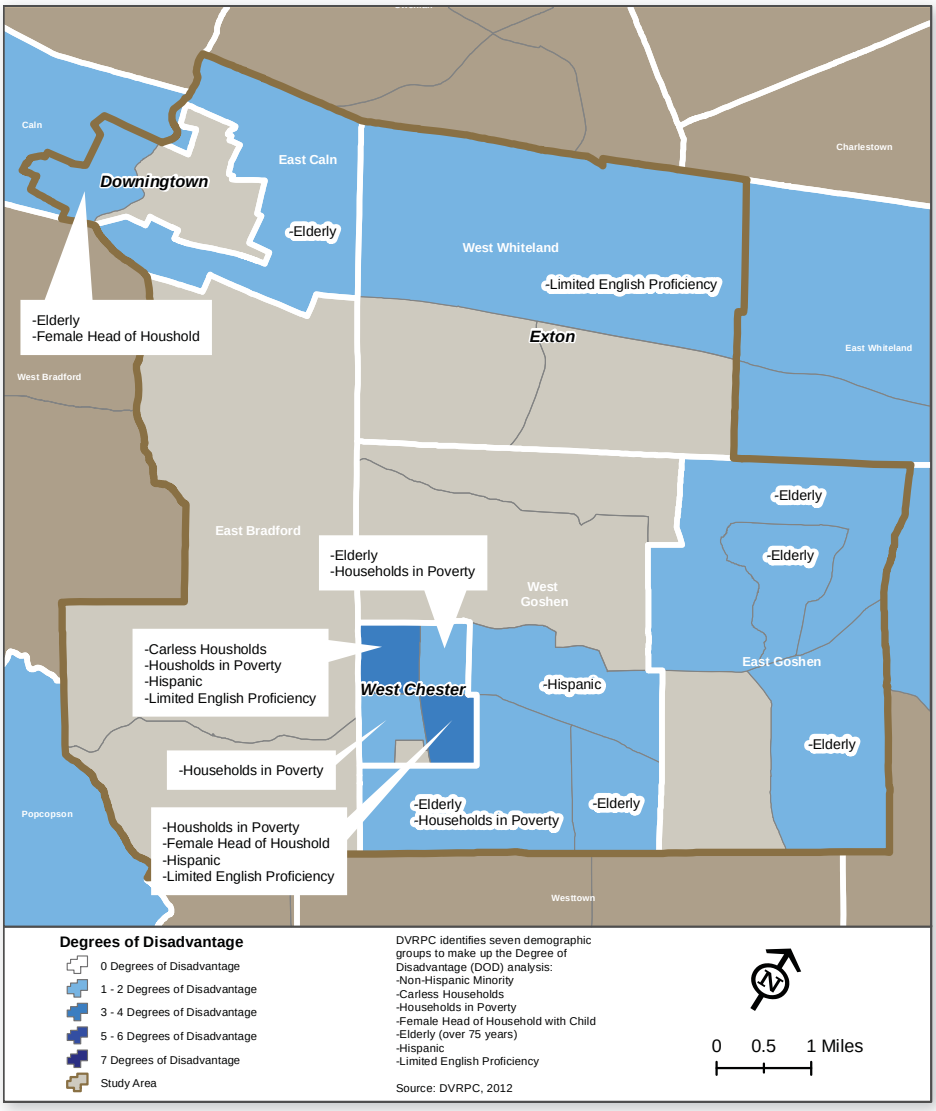
Population and employment forecasts by DVRPC anticipate an additional 20,000 residents and 15,000 jobs in the Central Chester County Region over the next 25 years. These demographic trends suggest that the demand for alternative transportation options such as walking, biking, and transit will continue to increase in this Region.

Special attention warranted for transportation-dependent cohorts

Given the goal of this Plan is to provide walking and biking opportunities for "all users," it is important to understand the unique characteristics of the Region's population regarding transportation mobility. DVRPC's Degrees of Disadvantage identifies Census tracts that contain a higher-than-average concentration of a "disadvantaged" population segment, including low-income, elderly, disabled, minorities, female head-of-household, and households with limited transportation.

As depicted in Figure 6, two tracts within West Chester Borough contained five of the eight identified population segments. Recommendations for pedestrian, bicycle, and transit improvements in the West Chester area account for the unique needs of these population segments. Overall, five of the six municipalities in the Region include a higher-than-average concentration of one of the disadvantaged population segments.

Figure 6:
Degrees of Disadvantage by Census Tract, 2000



Where do users desire to go?

Wide range of potential destinations via bicycling or walking

The Central Chester County Region contains a diverse mix of destinations that when connected through a bicycle and pedestrian network have potential to function as significant bicycle and pedestrian destinations. Figure 7 lists a sampling of the destinations with the Region.

Recognizing the density and diversity of these destinations throughout the Central Chester County Region supports the Plan's goal to "**ESTABLISH** a comprehensive network of pedestrian, bicycle, and public transportation facilities that connects local and regional destinations for all users."

GOAL

ESTABLISH a comprehensive network of pedestrian, bicycle, and public transportation facilities that connects local and regional destinations for all users.

Figure 7:
Sample of Destinations within Central Chester County

Destination Type	Examples
Business Districts	West Chester, Downingtown, Exton
Universities	West Chester University, Delaware County Community College (Exton Campus)
Schools	Nine (9): K through 6th grade public schools Seven (7): 6th through 12th grade public schools 41 private schools
Shopping Centers	Exton Square Mall, Main Street at Exton, Ashbridge Commons, West Goshen Shopping Center
Employment Centers	East Goshen Corporate Center, West Whiteland Corporate Center, Oaklands Corporate Center, Chester County Hospital
Passenger Rail Stations & Intermodal Centers	Downingtown, Exton, Whitford rail stations, Exton and West Chester Transportation centers
Parks & Trails	East Goshen Park, Kerr Park, East Branch Brandywine Trail, Struble Trail, Exton Park Site (future)
Residential Neighborhoods/Subdivisions	Various

A general lack of bicycle, pedestrian, and transit amenities at destinations

Despite the rich density of potential destinations for walking and biking, many of these locations have limited amenities for bicyclists, pedestrians, and transit users.

Deficiencies that are prevalent at destinations throughout the Region include:

1. Missing sidewalks (along roadway or internal) and crosswalks
2. Lack of bus shelters along bus routes
3. Lack of bicycle parking

In recognition of these existing challenges, one of the Plan's goals is to "**PROVIDE** supportive amenities that address the needs of pedestrians, bicyclists, and public transportation users at their destinations."

GOAL

PROVIDE supportive amenities that address the needs of pedestrians, bicyclists, and public transportation users at their destinations.

Bus (L) and rail (R) passengers walk to their destinations – without sidewalks—in Exton, West Whiteland Township.

Bikes locked to railings and signs posts at the Downingtown train station (L) and West Goshen Shopping Center (R). These destinations lack bike racks or other facilities for parking a bicycle.

How do users get to destinations?

Commercial corridors are both "barriers" and "destinations"

Driven by real estate preferences (high-quality transportation access, visibility, and zoning regulations), commercial development such as shopping centers, banks, and restaurants have concentrated along major arterials like PA 3, PA 100, and Business 30. This land use pattern (see Figure 9, page 25) creates a challenging environment for bicycle, pedestrian, and transit planning: these commercial corridors are "destinations" for biking, walking, and transit due to the concentration of commercial uses, yet "barriers" for these modes due to the high traffic volumes and limited bicycle, pedestrian, and transit amenities.

A second set of barriers within Central Chester County are the Region's expressways (US 202, US 30, PA 100, US 322 Bypass) and rail corridors (Amtrak/SEPTA Keystone Corridor; Norfolk Southern Thorndale-Trenton Cutoff). These transportation facilities have a limited number of locations for bicyclists or pedestrians (or vehicles) to cross these grade-separated corridors. The bridges or tunnels that traverse these facilities generally lack sidewalks, lighting, and adequate shoulder width for on-road bicycling.

Extensive sidewalk network exists within boroughs, but limited elsewhere

The extent of sidewalks varies considerably across Central Chester County. The Region's growth centers (Downingtown, Exton, West Chester) feature extensive sidewalk networks, whereas, suburban and rural portions of the Region have very limited amounts of sidewalks.

Gaps in the sidewalk network within West Goshen Township (L) and East Caln (R).

A bus shelter along Business 30 in West Whiteland that lacks a sidewalk connection to adjacent destinations (L). A pedestrian walking against traffic on the shoulder of Paoli Pike near PA 3/West Chester Pike in West Goshen (R).

PA 3 is both a destination for walking, biking, and transit and a barrier due to high traffic volumes and limited amenities.

Significant multi-use trail network, but disconnected

Central Chester County contains several regional multi-use trails including the Struble Trail, Chester Valley Trail, and East Branch Brandywine Trail. (See Figure 4 and related discussion on page 12.) There are several significant gaps between these regional trails, which restricts the use of these trails for commuting and utilitarian (e.g. errands) trips. The Plan proposes how to connect these trails into a seamless multi-use network, which is envisioned to be the backbone of bicycle and pedestrian travel for all trip purposes in the future.

The northern terminus of the East Branch Brandywine Trail in West Bradford Township, just south of Downingtown Borough

Busy roads and limited shoulders challenge on-road bicycling comfort

For novice or intermediate-skilled cyclists, the comfort level of bicycling or "bike-ability" of a roadway is principally influenced by two factors:

- Roadway/shoulder width available for safe bicycling
- Roadway traffic volume

In consideration of these two variables, preferential roadways for bicycling exhibit one or both of the following attributes:

- Roadways with wide travel lanes (greater than 15 feet) or defined roadway shoulders (greater than 4 feet)
- Roadways with low to moderate traffic volumes (less than 10,000 vehicles per day)

In the context of Central Chester County, on-road bicycling is generally constrained by a prevalence of narrow roadway widths and high traffic volumes. The majority of roadways within Central Chester County are less than 28 feet wide, with two 12' travel lanes and two 2' shoulders, as pictured in Figure 8. Moreover, many of the Region's major roads carry daily traffic volumes in excess of 10,000 vehicles per day as displayed in Figure 9.

Most bicycle-friendly roads in Central Chester County are preferable based on low traffic volumes, not roadway/shoulder widths. These lightly-traveled roadways have two noteworthy limitations in the context of this Plan:

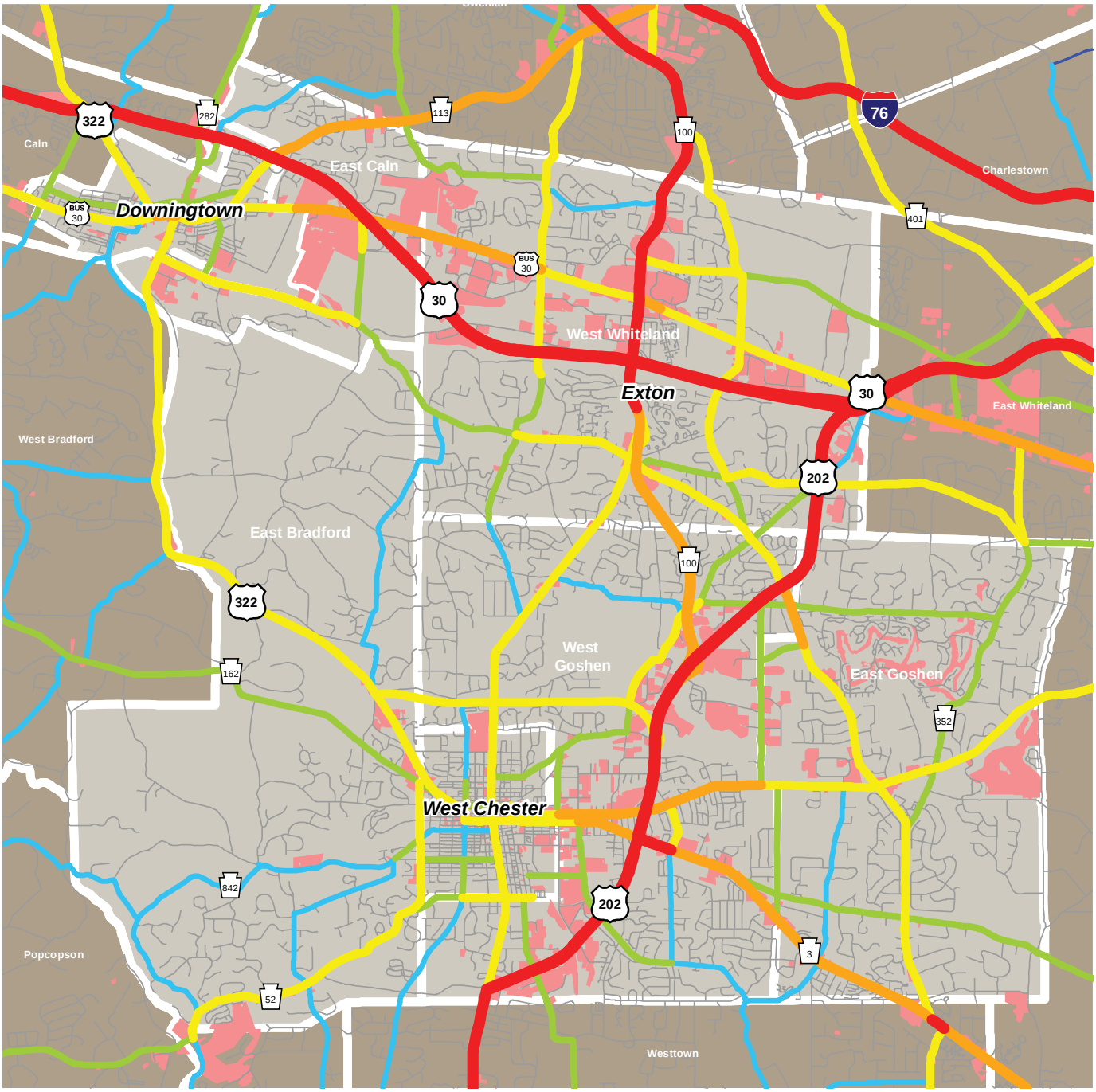
- Low-volume roadways generally lack connections to major destinations
- Changes in traffic volumes (due to development, changes in travel patterns) can significantly alter the bike-ability of these roadways

Figure 8:
Typical Roadway cross-sections in Central Chester County

This cross-section of PA 162 is typical of roadways in Central Chester County

Market Street/West Chester Pike features a wide shoulder, but shoulder debris, high vehicle speeds, poor access management, and high traffic volumes make bicycling on this roadway quite challenging.

Figure 9:
Average Daily Traffic Volumes (2007) and Commercial Land Use (2005)



Source: Chester County Planning Commission, PennDOT, Delaware Valley Regional Planning Commission

Limited designated on-road bicycling facilities and signed routes

Currently, there are no dedicated bike lanes in the Central Chester County Region. Engineering techniques such as dedicated bike lanes and signed bicycle routes can be used to improve the on-road accommodation of bicyclists. (See Chapter 3 for more information of these facility types.) Currently, there are no dedicated bike lanes in the Central Chester County Region.

Signage or "wayfinding" of on-road bicycling routes is limited in Central Chester County to the BicyclePA Route L and regional multi-use trails. The BicyclePA Route L is a signed 225-mile route that traverses the eastern half of Pennsylvania between the Chester County/Delaware state border and Susquehanna County/New York state border. In the Central Chester County Region, the Route L traverses portions of PA 282, Chestnut Street, US 322, Creek Road, PA 162, and PA 842. Share the Road signage also supplements the Bicycle L route signage.

While not formally signed, favorable or "bike-able" roadways have been mapped by the Chester County Planning Commission, Greater Philadelphia Bicycling Coalition, and West Chester BLUER. Additionally, websites such as mapmyride.com, contain shared, informal bike routes within the Region. These map resources have two notable limitations: first, this information is only available to bicyclists that are aware of these map resources; secondly, these maps do not convey any information to motorists that bicycling is encouraged on these routes.

As a means of encouraging more bicycling, the Programs section of the Plan (see Chapter 6) recommends additional designation and signage of bicycle routes, particularly routes that connect the Region's growth centers (see Chapter 4).

The BicyclePA Route L (picture here in East Bradford Township) is the Region's only designated bike route.

Currently, there are no dedicated bike lanes in the Central Chester County Region.

What are the health implications?

Physical inactivity is a major indicator of one's quality of health

Few lifestyle choices have as large an impact on one's health as physical activity. The amount of physical activity an individual engages in has the single greatest impact on one's health and quality of life. Changes in technology, transportation, and land use have engineered physical activity out of most individual's daily lives. Generally, opportunities for physical activity come as a block of scheduled recreation as opposed to frequent, organic spurts throughout the day. The suburban-style development and lack of pedestrian, bicycle, and transit amenities that is exhibited through much of Central Chester County directly influences the physical activity patterns of the Region's residents, employees, children, and youth.

Physical activity recommendations for children and adolescents includes 60 minutes or more of physical activity each day and muscle-strengthening activities at least three times a week. For adults, the recommendation includes two and a half hours, or thirty minutes/five days a week, of moderate-intensity aerobic activity every week and muscle-strengthening activities at least twice a week. Physical activity recommendations can be accomplished by doing 10 minute increments throughout the day; however, according to the Centers for Disease Control and Prevention, a non-walkable community environment can inhibit even 10 minutes of physical activity.

According to Pennsylvania Department of Health's 2009 Behavioral Risks of Chester County Adults (BRFSS) report, these physical activity recommendations are not being met. Only 56 percent of adults in Chester County reported 30 minutes of physical activity five or more times a week.

Among children and youth, the rates of physical inactivity mirror the trends of adults in Chester County. A noteworthy—yet concerning— trend reported in the BRFSS was that 63 percent of Chester County children spend one to two hours on a typical day watching television, playing video games or using a computer for non-school related purposes.

Physical inactivity has documented effects in Chester County

There are many health benefits to regular physical activity including reduced risk of chronic diseases such as cardiovascular diseases, type 2 diabetes and other metabolic syndromes, and reduced risk of colon, endometrial, lung, and breast cancer. The Centers for Disease Control and Prevention reports that regular physical activity can improve mental health, mood, balance, bone density, muscle strength, and overall quality of life. Additionally, the health benefits of physical activity can be achieved by anyone regardless of age, ethnicity, shape, or size.

Bike riders on the Chester Valley Trail, West Whiteland Township, as part of the Annual Bke to Work Week in May, 2012.

Chester County is not exempt from emerging chronic disease. As displayed in Figure 10, many adults in Chester County have signs of a chronic disease as noted by a physician.

Figure 10:
Signs of Chronic Disease in Chester County adults, as reported to Patient by Physician

Reported health issue	Percent of Chester County adults
High blood cholesterol	34%
High blood pressure	24%
Overweight or obese	56%

Source: Pennsylvania Department of Health – 2009 BRFSS

Obesity is also a prevalent health issue facing children and youth in Chester County. As reported in Figure 11, approximately 3 out of 10 children in public schools in Chester County were reported as obese in 2009.

Figure 11:
Obesity rates of public, school-aged children within Chester County

Grade	Percent of children reported obese
Elementary schools (K-6th)	26%
Middle/High schools (7th-12th)	36%
Overall	31%

Source: Pennsylvania Department of Health – 2009 BRFSS

Physical inactivity creates significant societal costs

Inactivity not only leads to increased incidents of chronic disease, but also creates a major public economic burden. While the money spent on health care has increased, the major health status indicators have not improved. The current cost of treatment for chronic diseases account for an estimated 75 percent of the nation's $1.4 trillion medical care costs. If trends continue, spending by the Center for Medicaid and Medicare Services will increase to $4.1 trillion in 2016. (WELCOA, 2011).

Increasing community walkability and promoting physical activity can decrease incidence of chronic diseases thus reducing the economic burden of health care costs related to inactivity. Improved health increases the quality of life and productivity of community members.

Increasing community walkability and promoting physical activity can decrease incidence of chronic diseases.

What challenges exist for making improvements to our municipalities?

This Plan builds upon the previous and existing efforts to improve walking and biking by the Region's seven municipalities, Chester County, and partnering agencies. These actions can be fundamentally categorized into three categories:

- Capital Projects
- Programs
- Plans, Policies, and Regulations

The role of this Plan is to provide vision and direction in each of these respective areas. Therefore, the Plan's recommendations (see Chapter 8, Action Plan) are organized in alignment with these functional categories.

Each of these areas of planning implementation face a unique set of challenges:

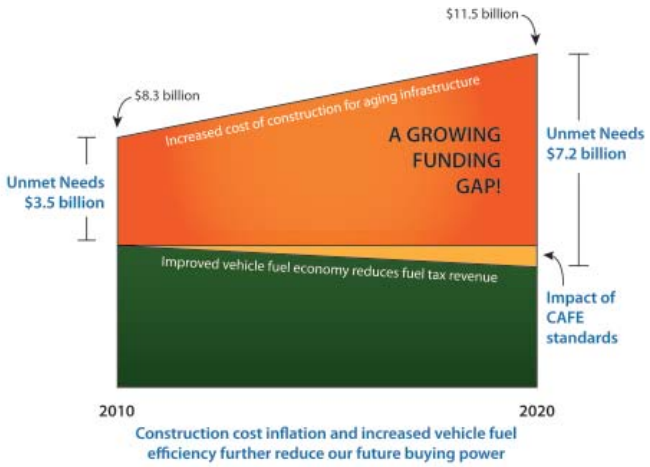
Projects

Limited transportation funding versus aging infrastructure

From a national and state-wide perspective, a significant transportation funding crisis has evolved over the last 20 years due to stagnant funding source revenues and escalating funding needs. The Pennsylvania Funding Advisory Commission in 2011 documented a $3.5 billion annual shortfall in transportation funding for Pennsylvania, as shown in Figure 12.

The Chester County Planning Commission's Transportation Improvement Inventory (2011) documented 464 desired transportation projects with a total estimated cost of $5.4 billion. (As a basis of comparison, Chester County receives about $100 million in transportation funding annually.) Of the 464 projects, 55 projects were bicycle or pedestrian-related with a total estimated cost of $103 million.

Figure 12:
Transportation funding shortfall in Pennsylvania, 2010-2020



Source: Pennsylvania Funding Advisory Commission, Executive Summary, 2011

In this context of immense demand for transportation funding, planning for transportation improvements requires: a) clearly defined priorities for use of "traditional" state and federal transportation funds; and b) use of "alternative" implementation strategies such as requiring transportation improvements as part of the land development approval process. The Action Plan (see Chapter 8) defines high priority projects as well as policy-related strategies for implementing some elements of the Plan without dependence on state or federal funding.

Extensive agency coordination requires a unified plan

Transportation improvements of any type require coordination with a wide array of agencies, including federal, state, and municipal agencies, public transportation agencies (if transit-related), and property owners. Improvements that occur beyond the road cartway, such as sidewalks, bus shelters, bicycle parking, and multi-use trails require particularly-high levels of coordination. This degree of multi-agency review and regulation is a fundamental reason for the development of this Plan; it is intended to guide the regulatory actions of all agencies.

Programs

Program administration spread through public, private, and non-profit sectors

Currently, a variety of agencies conduct programs that encourage, educate, or enforce safe walking and bicycling; each of these organizations target their own-specified audience. Organizations currently conducting pedestrian and bicycle-related programs include school districts, municipal recreation boards, YMCAs, employers, TMAs, and cycling clubs. These decentralized programming efforts are not managed by one, over-seeing organization. One role of this Plan is to set general direction for all programming efforts in the Central Chester County Region.

Limited programming efforts in Central Chester County

The National Center for Safe Routes to School and League of American Bicyclists have developed recommended guidelines for communities striving to be more pedestrian and bicycle-friendly. In comparison to these guidelines, programming efforts in the Region are generally limited. Chapter 6 contains a strategy to fulfill the Plan's programming-related goal to "**IMPROVE** public health and safety related to walking, bicycling and public transportation activities."

GOAL

IMPROVE public health and safety related to walking, bicycling and public transportation activities.

Plans, Policies, and Regulations

Municipal plans support improvements for walking and biking

Goals and policies presented in plans explain, and sometimes illustrate, a municipality's vision for their community over a ten- to twenty-year period. Relevant information in municipal comprehensive plans, revitalization plans, and open space, recreation, and environmental resources plans has been inventoried for this Plan. Elements within the municipal plans include transportation and recreation criteria highlighting goals, objectives, and policies related to bicycle/pedestrian and transit facilities. These plans also include prioritized action plans identifying recommendations and various projects to promote bicycle/pedestrian facilities. Mapping included in the plans include visual representations of projects that provide guidance for next steps in the planning process.

Municipalities within Central Chester County all show a strong support for the provision of bicycle/pedestrian facilities. Many plans have detailed goals, objectives, and action plans, while others have minimal criteria for bicycle/pedestrian facilities. The following areas could be better addressed within municipal plans:

- **Lack of recommendations to update ordinances with bicycle/pedestrian provisions.** Several of the plans have either no recommendations or very broad recommendations that state the municipality will update subdivision and land development and zoning ordinances using recommendations within the plan. Recommendations need to provide clear detailed provisions related to bicycle/pedestrian facilities to transition into ordinances.
- **Little to no mapping of bicycle/pedestrian facilities.** The majority of the plans have very little mapping of bicycle and pedestrian facilities. It is not required to map all elements discussed within plans, but it does help to have a visual representation of certain facilities that could transition well into implementation measures (i.e. preliminary engineering, coordination with PennDOT) or an official map.

Policy gaps between plans and ordinances

The regulations contained within municipal ordinances are an important means of implementing the pedestrian and bicycle related policies promoted in local and regional plans. Zoning ordinances and subdivision and land development ordinances can require that sidewalks, trails, and related pedestrian facilities be installed at the time of development and specify the design of those facilities. These ordinances can also require the installation of transit related facilities such as bus shelters. Official maps can designate the location of future pedestrian facilities to ensure that the envisioned pedestrian network is realized over the long term.

Municipalities within the Central Chester County Region vary widely in the range of ordinance regulations they have in their ordinances for sidewalk, bicycle, and trail facilities. While some ordinances have detailed standards, others have minimal provisions for pedestrian and bicycle facilities. The following issues represent the more-significant issues found in municipal ordinances:

- **Pedestrian facilities are not mandatory.** Rather than using the mandatory language of "shall be required," ordinances state that sidewalks or other pedestrian facilities "may be required" or their installation is "at the discretion of the Township/Borough." This non-mandatory language more easily allows the municipality to waive provisions for pedestrian and bicycle related improvements.
- **Requirements for pedestrian facilities are waived by the municipality.** If the regulation is located in the subdivision and land development ordinance, even if stated as the mandatory "shall be required," the municipality has the option of waiving it. Such waivers frequently occur when the facility is viewed as a "sidewalk to nowhere," a situation that could be avoided if there were a municipal or region-wide planned pedestrian network that clearly shows future links. If the provision is located in the zoning ordinance, it cannot be waived by the governing body, but must undergo a variance procedure through the zoning hearing board.
- **Trails are not required to be installed prior to the construction of buildings.** The installation of trails after homes are constructed can be difficult, particularly if new residents are not aware that a trail was planned for their neighborhood. Ordinances can specify that trails and related amenities (e.g. fences, gates, landscaping) be planned for and installed prior to building construction.
- **Specific trail design standards are not included in the ordinances.** While municipal ordinances generally include clear construction and design standards for sidewalks, many do not include similar standards for trail construction. Defining types of trails, based on their use, and then specifying the width, access-control, surface, base materials, and construction standards will help ensure that trails will require less maintenance and will last over the long term.
- **There are no provisions for crosswalks.** Many ordinances do not include design guidance for handling road crossings for trails or sidewalks. Such provisions might include the required width of the crosswalk and visual or physical clues for motorists.
- **Lack of follow-through on comprehensive plan recommendations.** While local plans often contain policies that are supportive of pedestrian and bicycle facilities, their ordinances do not always follow through with the regulations that would require those facilities to be implemented in practice.

These plan and ordinance related issues are addressed in Chapter 7 of the Plan.

Zoning ordinances and subdivision and land development ordinances can require that sidewalks, trails, and related pedestrian facilities be installed at the time of development and specify the design of those facilities.

CHAPTER THREE

Defining System Users & Facility Types

Introduction

Defining the type of users and facilities within the purview of the Plan is an important basis for bicycle and pedestrian planning. The following description of users and facilities is primarily based upon PennDOT's Design Manual (DM-2) and Guide for the Development of Bicycle Facilities by the American Association of State Highway and Transportation Officials (AASHTO).

System users

For the purposes of this Plan, the users of the Region are defined as follows:

Pedestrians

Fundamentally, every transportation trip regardless of length or primary mode includes a pedestrian element. As the foundation of human mobility, there exists a wide range of pedestrian users, abilities, and trip purposes.

Types of users/trips

- Recreation: hikers, runners, persons with strollers, persons with pets
- Commuters
- Utilitarian (i.e. errands, shopping)
- Public transportation users
- Persons with disabilities (i.e. motorized/non-motorized wheelchairs)

User criteria

Travel Speed: 3 to 8 miles per hour

Bicyclists

Types of users:

Class A
Advanced Bicyclists: are individuals who typically use a bicycle in place of an automobile on a regular basis for both commuting and recreational purposes. Commuting cyclists generally prefer the fastest, most direct route, whether it is on or off the street.

Class B/C
Basic Bicyclists & Children: for planning purposes this Plan combines the user classifications of basic bicyclists (Class B) and children (Class C) into one user group, due to the commonality of facility preferences among these two groups. The Class B/C riders avoid roads or routes with moderate to high levels of conflict with motor vehicles. Instead, these users prefer shared-use trail facilities and roadways with low traffic volumes, low traveling speed, and/or ample roadway shoulder width.

User criteria
Travel Speed: 18 to 22 miles per hour (Class A)
10 to 15 miles per hour (Class B/C)

Other users

These trail users are not the primary focus of this Bicycle and Pedestrian Plan; however, these forms of non-motorized transportation should be recognized, especially in the context of multi-use trail planning.

Types of users
- In-line Skating/Skateboarding
- Crossing-county Skiing
- Horseback Riding

User criteria
Travel Speed: 2 to 17 miles per hour

Facility Types

A range of bicycle and pedestrian facilities are available to address the non-motorized transportation demands of the Region. Selecting the appropriate facility type is determined by defining the primary users, trip purposes, and geographic constraints such as right-of-way width, topography, and cost. Facilities that are discussed include:

Bicycle Facilities

Shared Roadway (no shoulder)

Motor vehicles and bicycles are intended to use the same travel lane.

Shared Roadway (paved shoulder)

A wide, paved shoulder available for bicycles to use.

Bike Lane

A striped travel lane for non-motorized vehicles.

Bicycle Boulevard

Shared roadways with low traffic volumes which are suitable for bicycle travel.

Cycle Track

Travel lane for non-motorized vehicles with a barrier to other traffic. May be designed for one-way or two-way travel.

Pedestrian-Only Facilities

Signalized Intersection Improvements

Treatments targeted to improve pedestrian safety and comfort.

High Visibility Crosswalk

Pavement markings that are easily seen by motorists from their vehicle.

Supplemental Striping & Signage

Share the Road signs

Alert motorists of increased potential for bicycle traffic.

Sharrow

Pavement marking used to indicate increased bicycle traffic.

Signed Bike Route

Way-finding treatment that indicates the facility has been designated for bicycle use.

Shared-Use Facilities

Multi-Use Trails

Off-road facilities, intended for multiple user modes.

Sidepath

A multi-use trail that parallels a roadway.

Use-Restricted Trails

Off-road facilities, only certain modes are accepted.

Mid-block Crossing

Allows users to cross a road safely at a location other than an intersection.

Bicycle Facilities

In the context of bicycle planning, the broad range of bicyclists' abilities and confidence may necessitate multiple facilities to fulfill the demand of a particular trip:

"No one type of bicycle facility or highway design suits every bicyclist … Within any given transportation corridor, bicyclists may be provided with more than one option to meet the travel and access needs of all potential users."

- Guide for the Development of Bicycle Facilities (AASHTO)

Cartway treatments approved by PennDOT

Shared roadway (with limited, inconsistent, or no shoulder)

A Shared Roadway (shown in Figure 13) accommodates bicyclists and motorists in the same travel lane. Currently, this arrangement is the most prevalent bicycle facility in the Region.

Figure 13:
Example of shared roadway

A shared roadway example with limited shoulders: PA 162 in East Bradford Township

Wide outside travel lanes, with widths of 12' to 15' depending on the roadway context (e.g., rural or urban), are desired for shared lane facilities. A Shared Lane can be supplemented with "Share the Road" signage (see Signage and Signage Treatments).

Region examples
- PA 842 (East Bradford)
- Valley Creek Road (East Bradford)
- Paoli Pike (West Goshen/East Goshen)

Shared roadway with paved shoulder

A paved shoulder or wide curb lanes provide accommodation for bicyclists adjacent to the vehicle travel lanes. Paved shoulders can be located on urban or rural roadways with moderate to high vehicular traffic volumes and moderate to high posted speeds. Paved shoulders for bicyclists range in width from 4' to 6'+ depending on the available pavement width and can be supplemented with 'Share the Road' warning signs.

Figure 14:
Example of shared roadway with shoulder

Paved shoulders along US 322 in Guthriesville, East Brandywine Township

Shoulder

Paved shoulders are separated from travel lanes by the striping representing the outside edge of the outermost travel lane. The maintenance of paved shoulders via street-sweeping is important for their success, as roadway debris, cinders, and tree limbs typically accumulate in this area of the cartway.

Region examples
- Pennsylvania Avenue (Downingtown)
- Portions of PA 162 (East Bradford)
- PA 3 (West Goshen/East Goshen)

Bike lane

Bike lanes are designated travel lanes for exclusive use by bicyclists. Bike lanes are typically located on roadways in urban and suburban settings with moderate to high vehicular traffic volumes and moderate to high posted speeds.

PennDOT's Design Manual requires a formal bike lane to have a 5' dedicated shoulder, application of pavement striping, markings, and regulatory signage.

Bicycle lane facilities should be one-way facilities that carry traffic in the same direction as motor vehicles.

Region examples
- None

Local examples
- Business 30 (Coatesville)
- Baltimore Pike (New Garden)

Figure 15:
Example of bike lane

A bike lane example in an urban setting: Business 30 in Coatesville City

Bicycle lanes are designated travel lanes for exclusive use by bicyclists.

Supplemental Striping and Signage Treatments

In addition to the shared roadway and bike lane facilities, supplemental signage and striping can be added to these facilities when warranted.

Share the road

Share the Road signage is supplemental signage added to a shared roadway to warn motorists of the increased likelihood of bicyclists.

Figure 16:
Example of a share the road sign

A share the road sign along Strasburg Road in East Bradford Township.

Within the last ten years, PennDOT's Chester County Maintenance Office coordinated with the Chester County Planning Commission and Chester County Cycling Coalition on the most appropriate locations for Share the Road signage within Chester County.

Region examples
• PA 162 (East Bradford)

Sharrow

The 2009 edition of the Manual on Uniform Traffic Control Devices (MUTCD) included a new pavement marking called a "sharrow". Sharrows increase driver awareness of shared roadway arrangements, similar to the advisory treatment of Share the Road signage.

Sharrows have been approved by PennDOT; however, the approval of sharrows is presently evaluated by District staff on a case-by-case basis.

Figure 17:
Example of a sharrow

Sharrow example in Washington, DC. Photo by Richard Layman.

Region examples
None

Local examples
• Doyelstown Borough (Bucks County)
• Roxborough (Philadelphia City)

Signed bicycle route

Signed bicycle routes are treatments used to designate a preferential bicycle routing and provide wayfinding guidance to cyclists. AASHTO's Guide for the Development of Bicycle Facilities states that the "signing of shared roadways indicates to cyclists that there are particular advantages to using these routes compared to alternate routes".

Route signs can provide directional, distance, and destination information to assist bicyclists in navigation. Signed routes can direct cyclists to corridors that have existing on-road facilities, or access locations for off road facilities.

Within the Region, the Bicycle PA Route L, which runs along Creek Road and US 322, is a type of signed bicycle route. The Bicycle Route L is a long-distance, Class A-oriented bicycle route that runs 225 miles from Chester County to Susquehanna County.

Figure 18:
Example of signed bike route

Bike route signage on the Chester Valley Trail

Region examples

• Bicycle PA L (Downingtown, East Caln, East Bradford)

Alternative Bicycle Facility Designs (not approved by PennDOT Design Manual)

Within the national bicycling planning community, additional facility designs have emerged over the last 10-15 years. These alternative bicycle facility designs have been applied in select states and/or cities within the United States, but are not approved within PennDOT's Design Manual for usage on state-owned highways.

Bicycle boulevard

A bicycle boulevard is a corridor treatment that prioritizes bicycle travel via traffic calming measures, signs, pavement markings, and crossing improvements to enhance bicycle travel. Corridors identified for bicycle boulevards are typically characterized by low volumes and low speeds.

Bicycle boulevards are not included in the PennDOT Design Manual; however, a Bicycle Boulevard Guidebook was recently released by the Initiative for Bicycle and Pedestrian Innovation at the Center for Transportation Studies. The guidebook provides direction on selecting routes and the application of design elements.

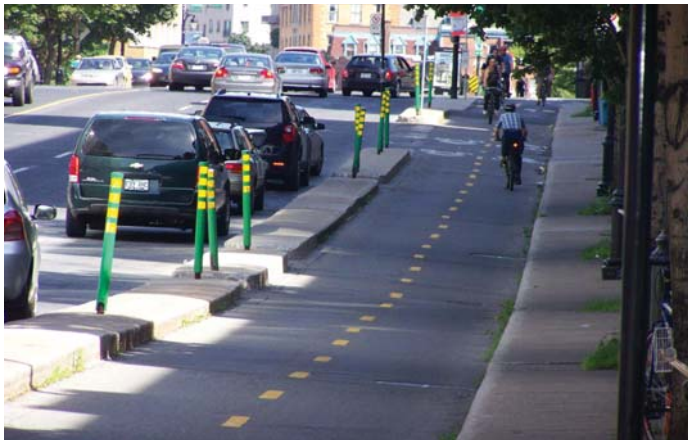
Figure 19:
Example of a bicycle boulevard

Bicycle boulevard in Berkeley, CA. Photo by Richard Layman. Used with permission.

Cycle track

A cycle track facility is an exclusive facility for bicyclists that combines design aspects of bike lanes and shared use trails/sidepaths (see "Shared Use Paths"). Cycle tracks are constructed within an existing cartway, but buffered from the vehicle lanes by striping or on-street, parallel parking. Existing cycle track facilities have been designed for both one-way and two-way operations. For more information, see Alta Planning & Design's Cycle Tracks: Lessons Learned.

Figure 20:
Example of a cycle track



Two-way cycle track in Montreal. Photo by Richard Layman. Used with permission

Shared-Use Facilities

These facilities accommodate multiple users on the same facility:

Shared use path/multi-use trail

A shared use path or multi-use trail is a facility that is physically separated from the roadway and typically accommodates bi-directional travel by both bicyclists and pedestrians. The path can be located within a publicly owned right-of-way, an exclusive right-of-way, or an easement.

Shared use paths typically have a hard surface (e.g., asphalt, concrete, compacted gravel, etc.) and have a recommended width per AASHTO of 10', although a minimum width of 8' may be used where space is constrained or in environmentally sensitive areas. Wider paths are also recommended if there is a high volume of existing or anticipated bicycle and pedestrian traffic.

Figure 21:
Example of a multi-use trail

The Chester Valley Trail in East Whiteland Township.

Sidepaths are a subset of shared use paths that denote paths that run adjacent to a parallel roadway. Sidepaths can provide bicycle connections between on- and off-road facilities, but often require a more in-depth operational and safety analysis.

Region examples

- Chester Valley Trail (West Whiteland)
- Struble Trail (Downingtown)
- Brandywine Trail (East Bradford)

Use-restricted trail

Use-restricted trails are typically unpaved trails that are primarily used for one form of travel. Most commonly, single-use trails are designated for pedestrian/hiking purposes due to trail width, surface, topography, condition, and potential user-conflict.

Figure 22:
Example of use-restricted path

A use-restricted path in East Goshen Township

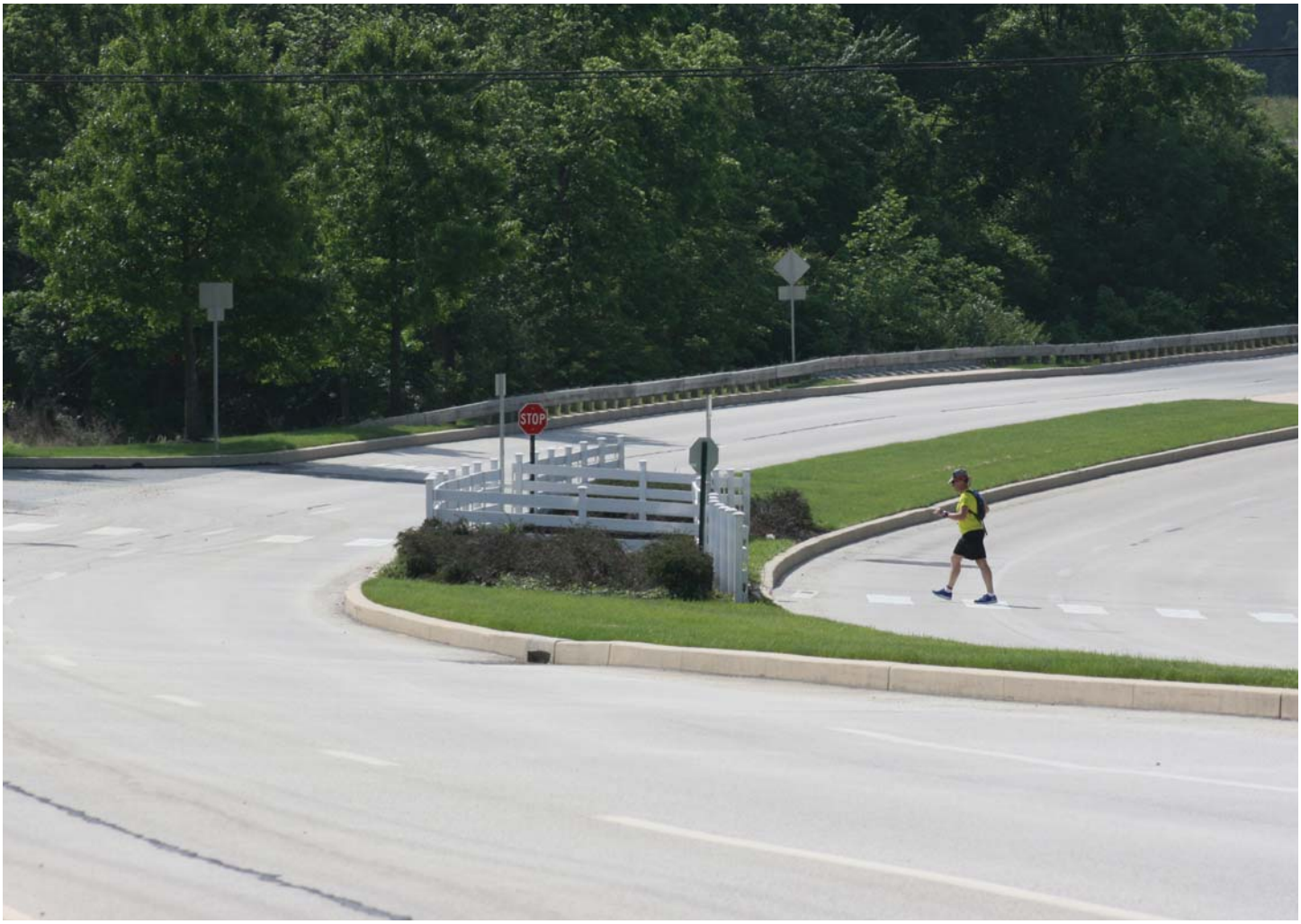
Region examples

- Hiking trails in Gordon Nature Preserve (West Goshen)
- East Goshen Township Park (East Goshen Township)

Mid-block crossing

A mid-block crossing permits pedestrians and bicyclists to cross a road at a location other than an intersection. These crossing require special engineering analysis to determine their appropriateness and effectiveness. Section 11.9 of PennDOT's Traffic Engineering Manual (Pub. 46) establishing criteria for mid-block crossings including roadway speed limit, traffic volume, sight distance, parking restrictions, proximity to other crossings, and pedestrian volume. For state-owned roads, a mid-block crosswalk engineering and traffic study is required to record the study's findings.

Figure 23:
Example of mid-block crossing



A pedestrian uses the mid-block crossing feature on the Chester Valley Trail in West Whiteland Township

Pedestrian-Only Facilities

These facilities are limited to pedestrian-use only.

Sidewalks

Sidewalks are pedestrian routes that provide space to travel within the public right-of-way while physically-separated from vehicular traffic. PennDOT's Design Manual requires sidewalks to be a minimum of 5' in width to comply with ADA requirements.

Title 75 of Pennsylvania's Consolidated Statute prohibits bicycling on sidewalks within business districts, unless expressly permitted by regulatory signage. Planning guidance by PennDOT and AASHTO discourages bicycling on sidewalks, except in the case of young children or in unique circumstances, such as bridges with travel lanes too narrow to safely accommodate bicycle travel.

Figure 24:
Example of sidewalks

An active sidewalk/streetscape in West Chester Borough

A sidewalk along Route 30 on the eastern edge of Downingtown Borough

Region examples:

- Sidewalks are prevalent throughout West Chester and Downingtown boroughs as well as established suburban areas in the Region.

Walkways

Walkways (also known as internal walkways or pedestrian paths) are designed to ensure that pedestrians can avoid using parking aisles or travel lanes for access to building entrances. A walkway is generally used for pedestrian transportation between buildings and parking areas or sidewalks, within parking lots, between buildings on a parcel or within a development, or between adjacent uses, developments, or facilities as shown in Figure 25. While the design and construction of walkways is similar to sidewalks, walkways are typically located outside of the road right-of-way and/or not adjacent to a street.

Figure 25:
Examples of walkways

An internal walkway in the parking lot of the Government Services Center in West Goshen Township

A system of pedestrian walkways on the campus of West Chester University

Region examples:

- Government Services Center, West Goshen Township
- West Chester University Campus, West Chester Borough.

Informal paths

An informal path (also known as a social path) is an unimproved path typically found in grassy areas and is formed by pedestrians repeatedly traveling between areas where no formal trails, sidewalks, or walkways have been installed.

Figure 26:
Example of an informal path

An informal path along Paoli Pike in West Goshen Township

Supportive amenities

Intersection treatments

Crosswalks and countdown timers are designed to facilitate safe crossing of roadways. These types of facilities are intended to limit the potential conflict between pedestrians and motorists.

Crosswalks are public rights-of-way that cross a roadway at an intersection (or any portion of a block) to provide pedestrian access to adjacent roads, lots, sidewalks, trails, or public use areas. Crosswalks may be either marked or unmarked: a marked crosswalk is any portion of the road outlined by painted markings or a different texture of concrete or pavers to slow and alert drivers, as shown in Figure 27.

Signage plays a key role in regard to safety at crosswalks, drivers must be alert for possible pedestrian activity and stop for pedestrians who are crossing a roadway in a marked or unmarked crosswalk.

Crosswalks are usually marked at intersections where there is a substantial amount of vehicular and pedestrian traffic, such as along school routes and at signalized and four-way stop intersections.

High visibility crosswalks are pavement markings that are installed to raise the awareness of motorists to the potential of pedestrians crossing the roadway. There are many different types of pavement markings for high visibility crossings. Zebra crossings (as seen in Figure 27) are often considered to be the most visible crosswalk treatment for both pedestrians and motorists.

Figure 27:
Examples of high-visibility crosswalks

A high-visibility crosswalk in Downingtown Borough

A high-visibility crosswalk at the intersection of Routes 30 and 100 in West Whiteland Township

Region examples:

- Marked crosswalks are located throughout West Chester and Downingtown Boroughs and West Whiteland Township.

Countdown timers are installed in conjunction with walk signals and pavement markings at crossings. Timers warn pedestrians of the time remaining to completely cross the roadway safely before motor vehicles begin to move through the intersection. Timers are often paired with audible cues to benefit sight impaired pedestrians.

Figure 28:
Example of a countdown timer

A countdown timer in West Chester Borough

Bicycle parking

To accommodate recreational cycling and bicycle mobility, it is essential that communities provide, or facilitate the provision of, secure bicycle parking and/or storage for a bicycle. Figure 29 illustrates the need for bicycle parking at the Downingtown Train Station where bicycles are often locked to fences in a waiting/sitting area because no other option for bicycle parking is provided. Parking should be located at major trip destinations such as shopping and business centers, parks, trailheads, schools, hospitals, libraries, municipal buildings, and perhaps historic sites. There are several options for short-term and long-term bicycle parking and include, but are not limited to, bicycle racks, bicycle stations, and bicycle corrals.

Figure 29:
A need for bicycle parking facilities

This train platform at the Downingtown Train Station illustrates a need for dedicated bike parking

Bicycle Racks are stationary fixtures on which a bicycle is held upright and securely attached (typically using a bicycle lock) to prevent theft. Depending on the type of rack and space dedicated to the parking of bicycles, a bicycle rack can accommodate a few bicycles or a few dozen. Bicycle racks are available in many different designs and configurations that can be customized to a given installation. The bicycle rack shown in Figure 30, for example, was chosen to reflect the design and theme of the specific use. At a minimum, bicycle racks should be conveniently located, easy to use, and secure.

Figure 30:
Example of a bicycle rack

A bike rack in Kerr Park, Downingtown Borough

Bicycle stations are typically enclosed parking structures that securely house bicycles from theft and from the elements. Amenities can include changing facilities, day use lockers, parts and other gear available for purchase, repair services, air inflation stations, and information. Cyclists can purchase a membership to access their bicycles anytime, day or night. The bike station pictured in Figure 31 is located in Washington D.C. and the membership fee averages around $100 per year.

Figure 31:
Example of a bike station

A bike station in Washington D.C. Photo Courtesy of Mobis Transportation Alternatives

Bicycle corrals are on-street bicycle parking facilities that make efficient use of on-street automobile parking spaces for bicycle parking in areas with a high demand. Corrals typically have 6 to 12 bicycle racks in a row and can park 10 to 20 bicycles using space otherwise occupied by one to two cars. Bike corrals remove the bicycle (and rider) from the sidewalk and away from potential conflicts with pedestrians using the sidewalk. Several bike corrals have been installed in the City of Philadelphia where the demand is high for bicycle parking as shown in Figure 32.

Figure 32:
Example of a bicycle corral

A bicycle corral at Walnut and Syderham in the City of Philadelphia

Bus shelters

Bus shelters can greatly improve the public transportation experience by providing riders with a safe waiting area, protection during inclement weather, and service information as shown in Figure 33. Bus shelters are generally located in a roadway right-of-way unless private property owners have consented to the shelter being placed on their property. Shelters can be integrated into the building design, as shown in Figure 34, where a bus stop and shelter was implemented as part of the Mall's renovation several years ago.

Figure 33:
Example of a bus shelter

A bus shelter in West Whiteland Township

Figure 34:
Bus shelter integrated into a building's exterior

A bus stop and shelter at the Exton Mall in West Whiteland Township

CHAPTER FOUR

Establishing a Comprehensive Network

Improvement plan

In light of existing gaps in the Region's multi-use, bicycle, and pedestrian network, this chapter recommends an array of facility improvements that would establish a regional multi-modal network. These improvements, in aggregate, are intended to fulfill the first goal of the Plan: "**ESTABLISH** a comprehensive network of pedestrian, bicycle and public transportation facilities that connects local and regional destinations for all users."

It bears emphasizing that in selecting the facility improvements, the recommendations are intended to create a network that is accessible to users of all types, ages, abilities, and trip purposes. There was general consensus from the public workshop participants that the recommendations were rational and would greatly improve bicycle and pedestrian circulation within and between growth centers.

The depth, scope, and magnitude of the Improvement Plan, as summarized in Figure 35 and specifically detailed in Figure 36, will require a sustained and determined implementation strategy by all of the Plan's partners over the next 20 years.

GOAL

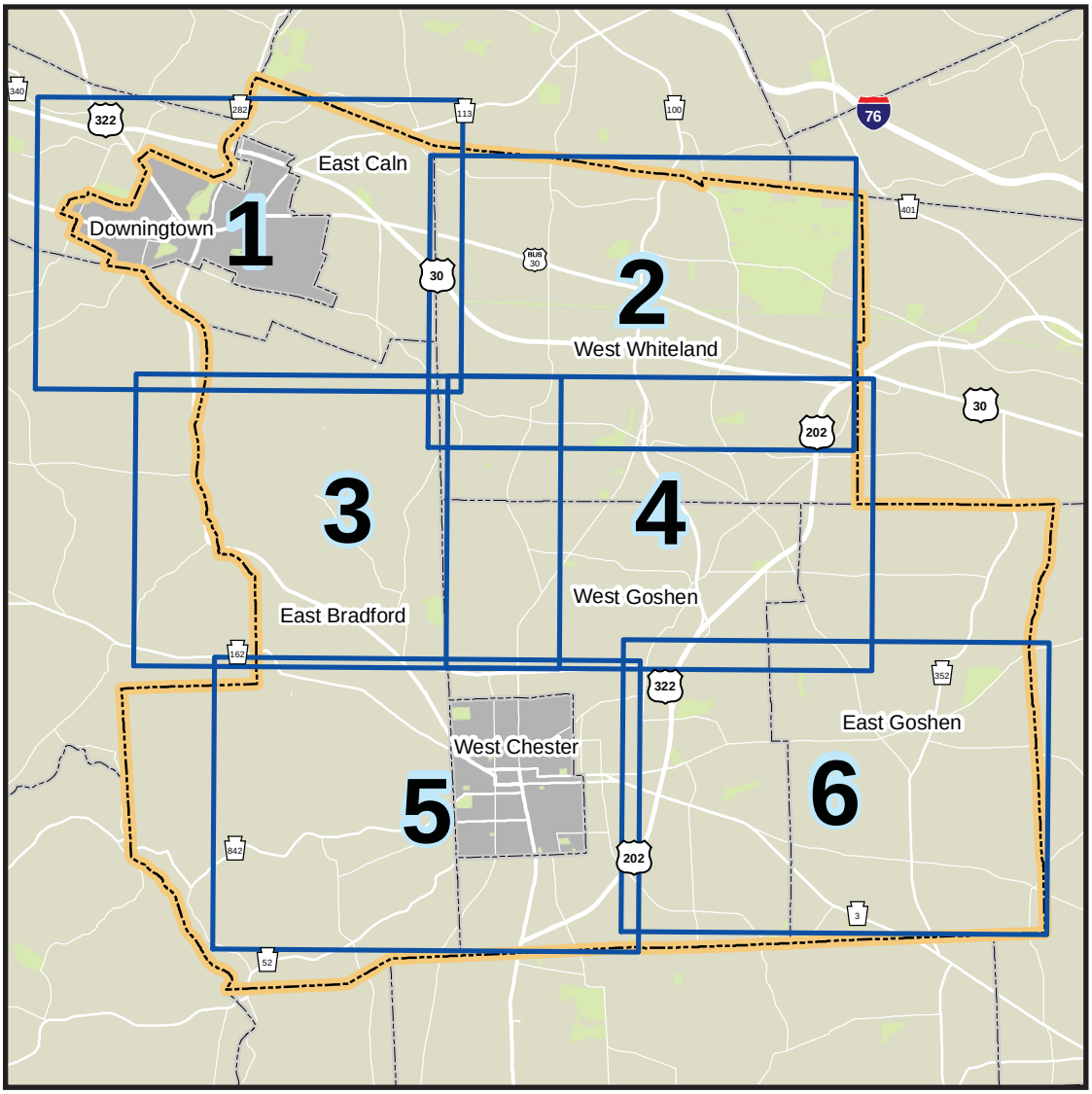
ESTABLISH a comprehensive network of pedestrian, bicycle and public transportation facilities that connects local and regional destinations for all users.

Figure 35:
Summary of improvement plan facilities

Network Improvements	Miles	Amenity Improvements	Quantity
Bike Lane	21.2	Bus Shelters	34
Shared Roadway	41.7	Locations for Bike Racks	42
Bicycle Boulevard	12.0		
Signed Bike Route	81.8	**Intersection Improvements**	
Local Multi-Use Trails	16.4	Add Pedestrian Signalization/Crosswalks	37
Regional Multi-Use Trail (CVT)	3.2	Upgrade Intersection Crosswalks/Pedestrian Signalization	39
Restricted-Use Trails	18.0	Add Mid-block Crossing	7
Proposed Sidewalks	62.6		
Other Network Improvements	n/a		

The following maps comprise the Region's Improvement Plan, containing bicycle, pedestrian, and transit-related improvements.

Figure 36 :
Improvement Plan maps



Central Chester County Improvement Plan
Bicycle Improvements

Improvements

- Bike Lane
- Shared Roadway
- Multi-Use Trails
- Restricted-Use Trails
- Bicycle Boulevard
- Signed Bike Route
- Priority Corridors
- Bike Rack
- Trail Parking
- Traffic Calming Table
- Bike Signage Improvements
- At Grade Trail Crossing
- Signalized Crossing

Existing Features

- Existing Trails
- PA Bike Route L
- Existing Trailhead
- Existing Trail Parking
- Growth Centers
- Intermodal Stop

Central Chester County Improvement Plan
Pedestrian Improvements

Improvements

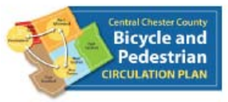
- Multi-Use Trails
- Restricted-Use Trails
- Proposed Sidewalks
- Trail Parking
- Add Transit Shelter
- Priority Corridors

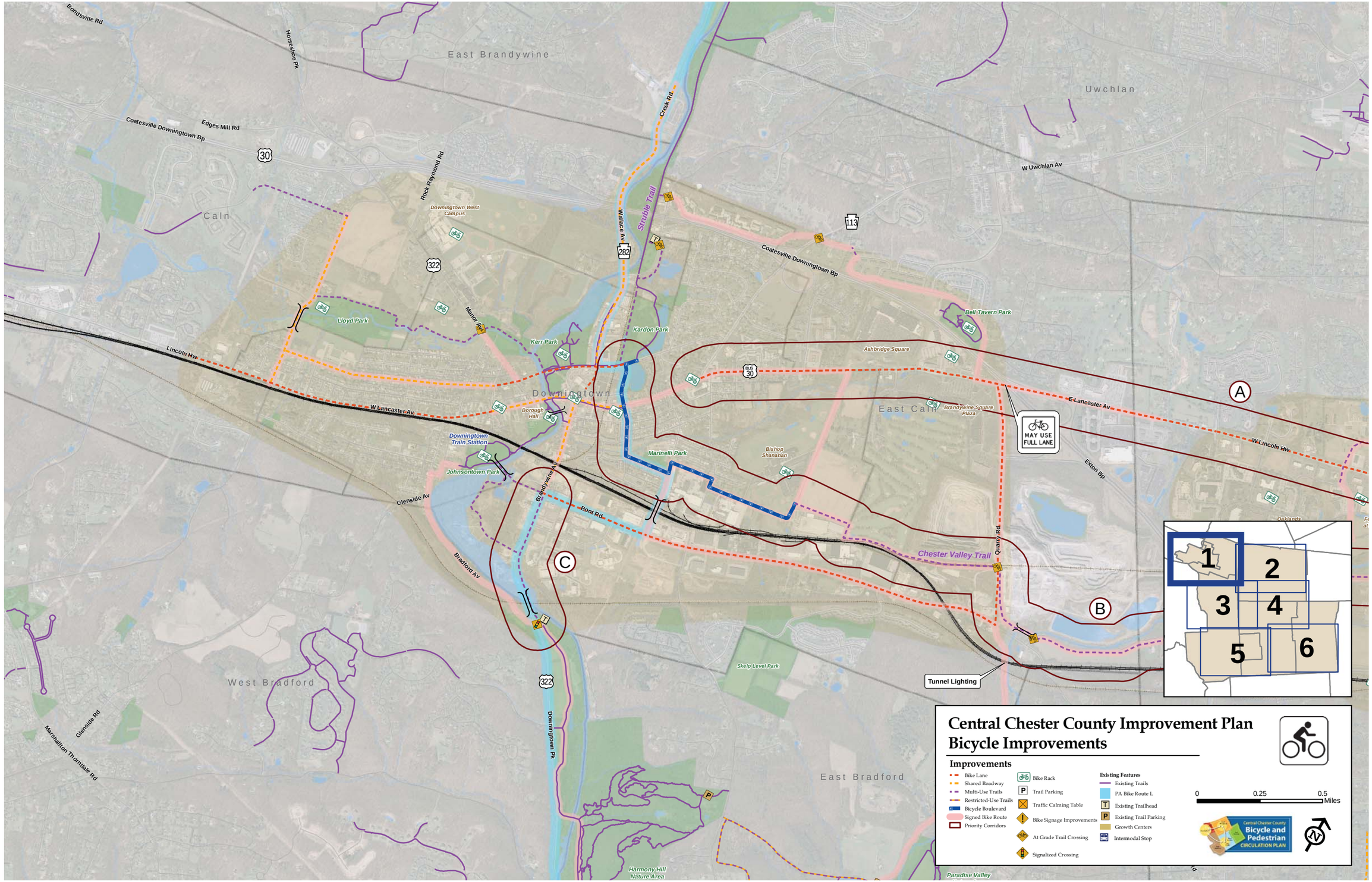
Intersections Improvements

- Update Crosswalks/Ped. Signals
- Add Crosswalks/Ped. Signals
- Mid-block Crossing
- Signalized Trail Crossing

Existing Features

- Existing Trails
- Existing Sidewalks
- Growth Centers
- Existing Trailhead
- Existing Trail Parking
- Intermodal Stop




East Brandywine
Uwchlan
Caln
Downingtown
East Caln
West Bradford
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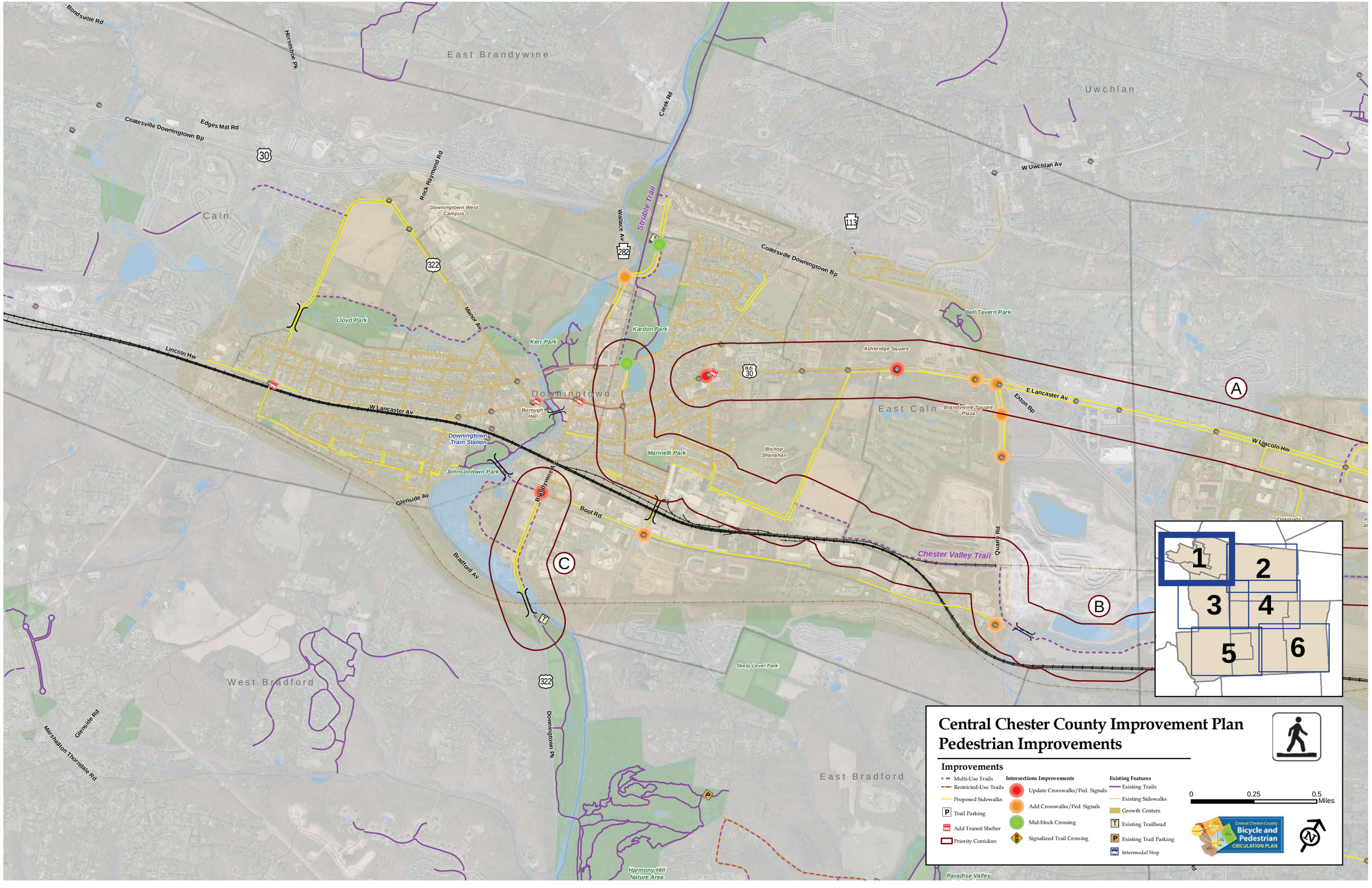
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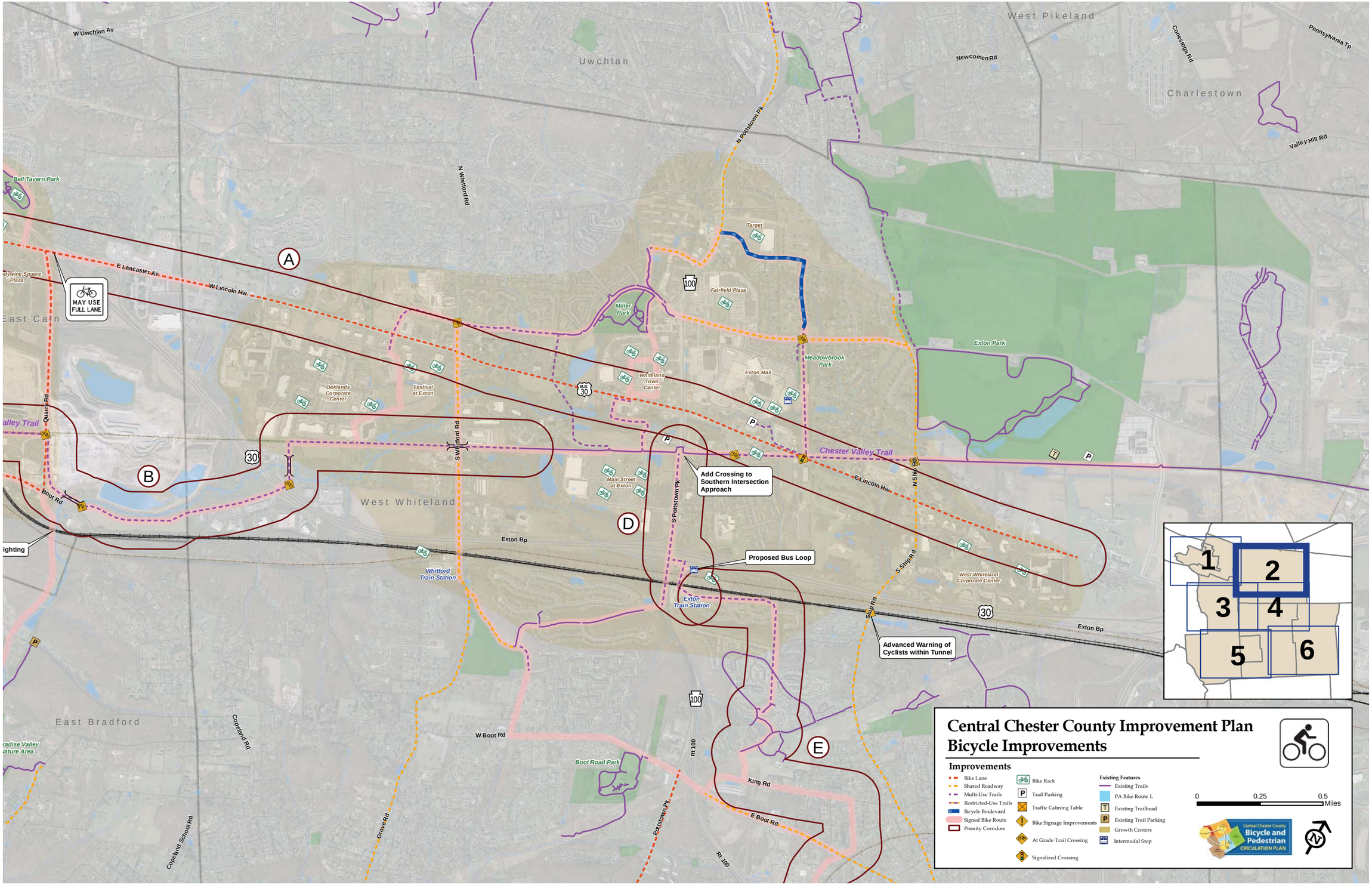
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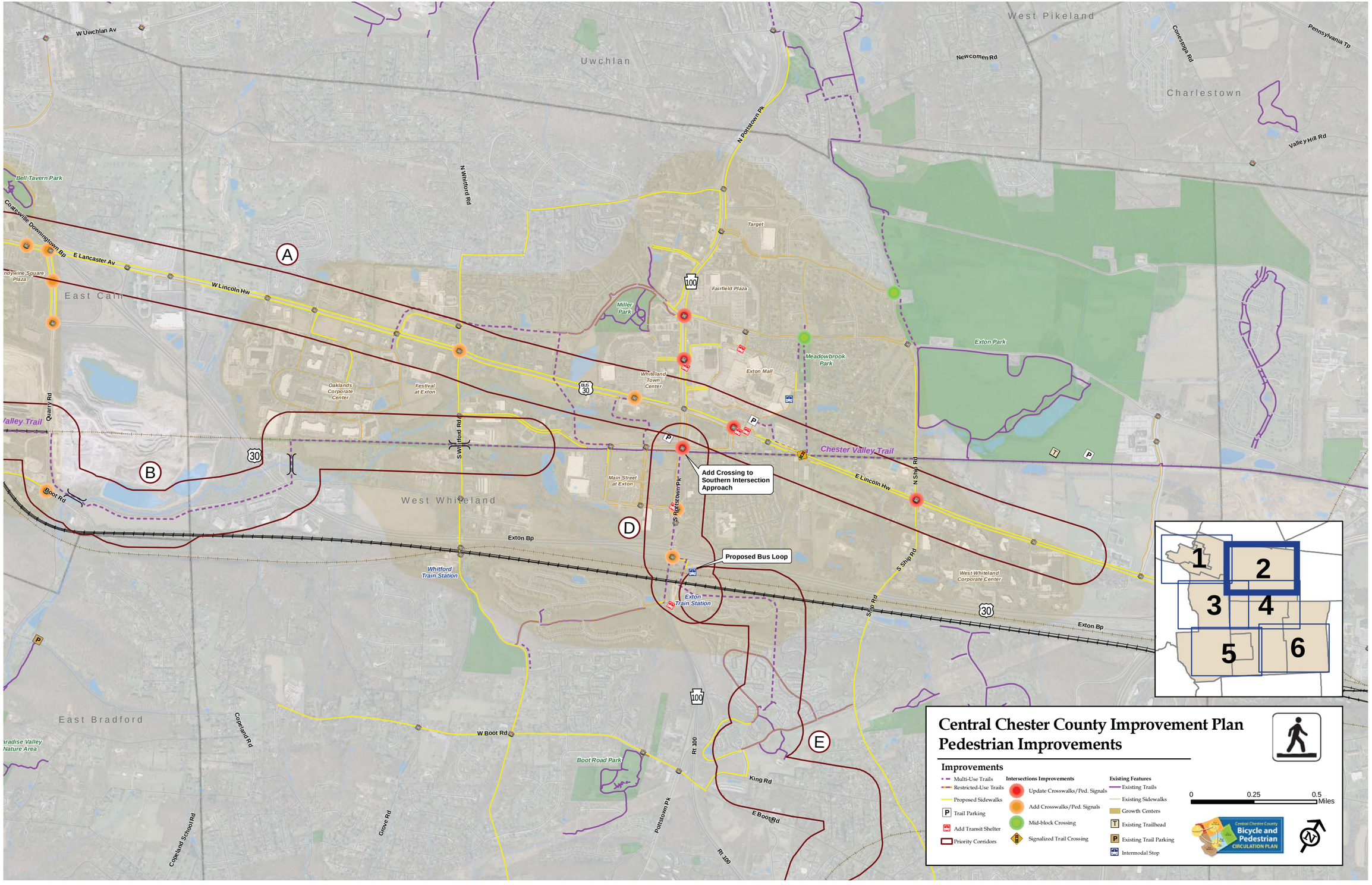
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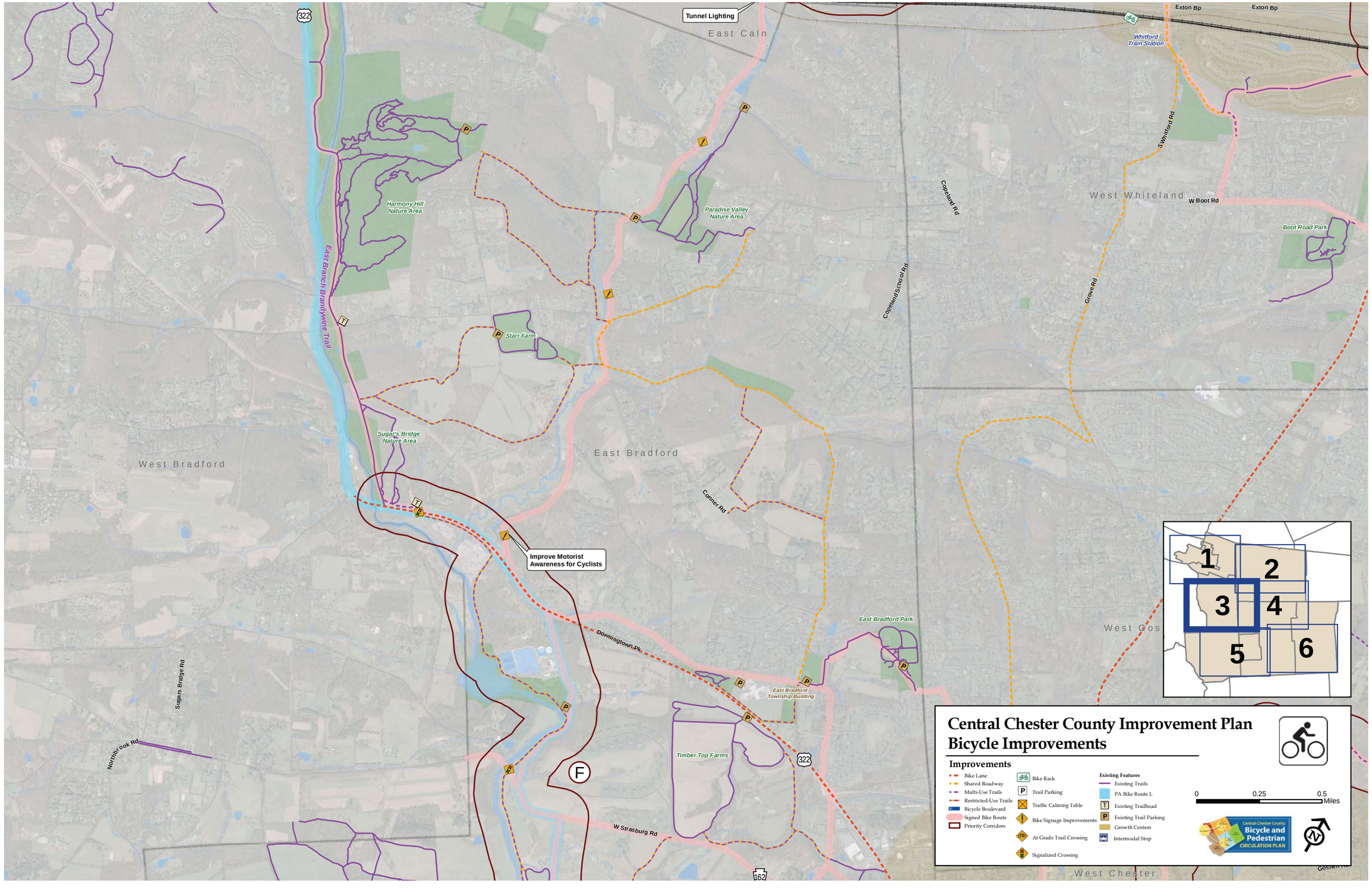
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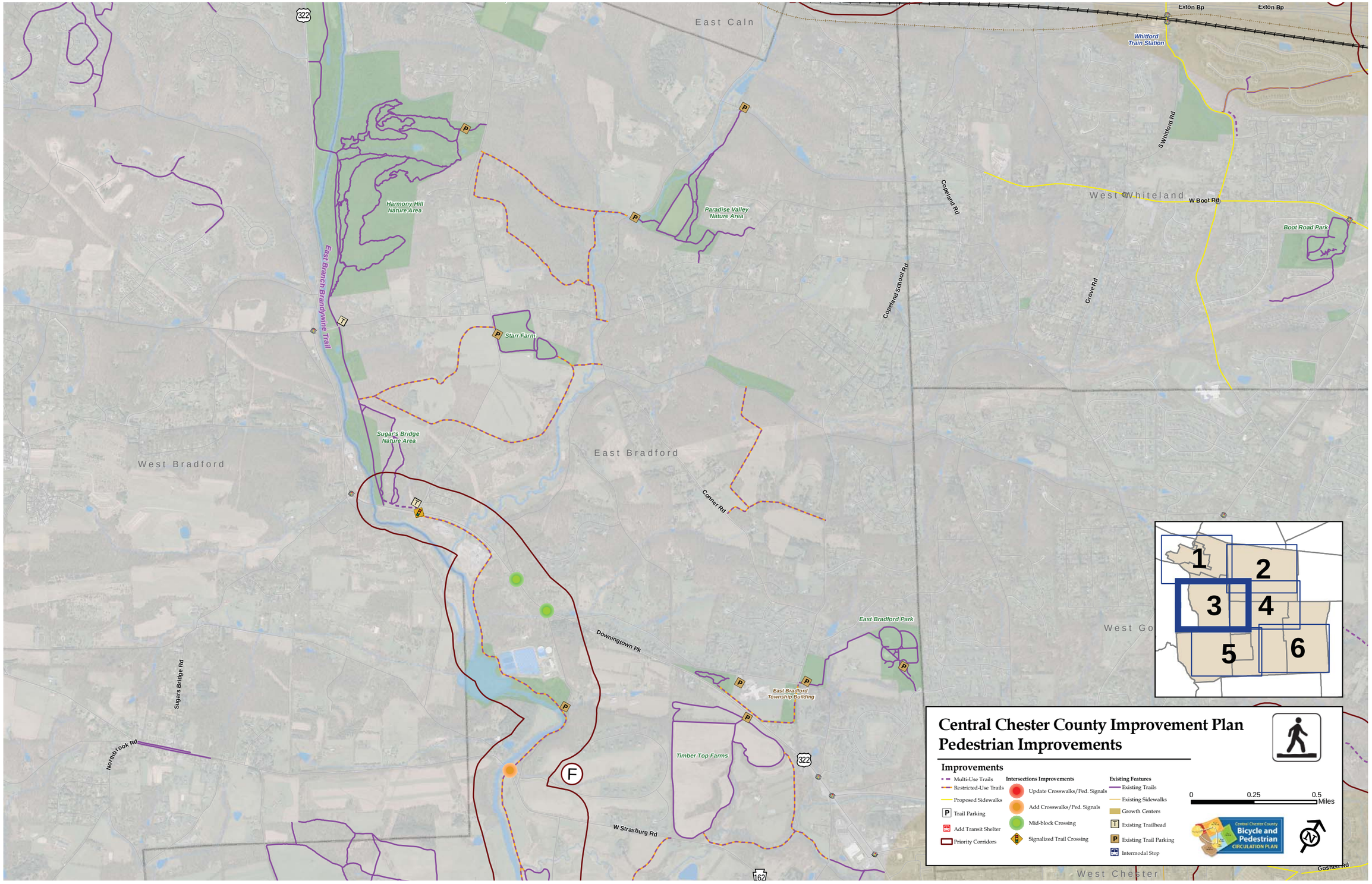
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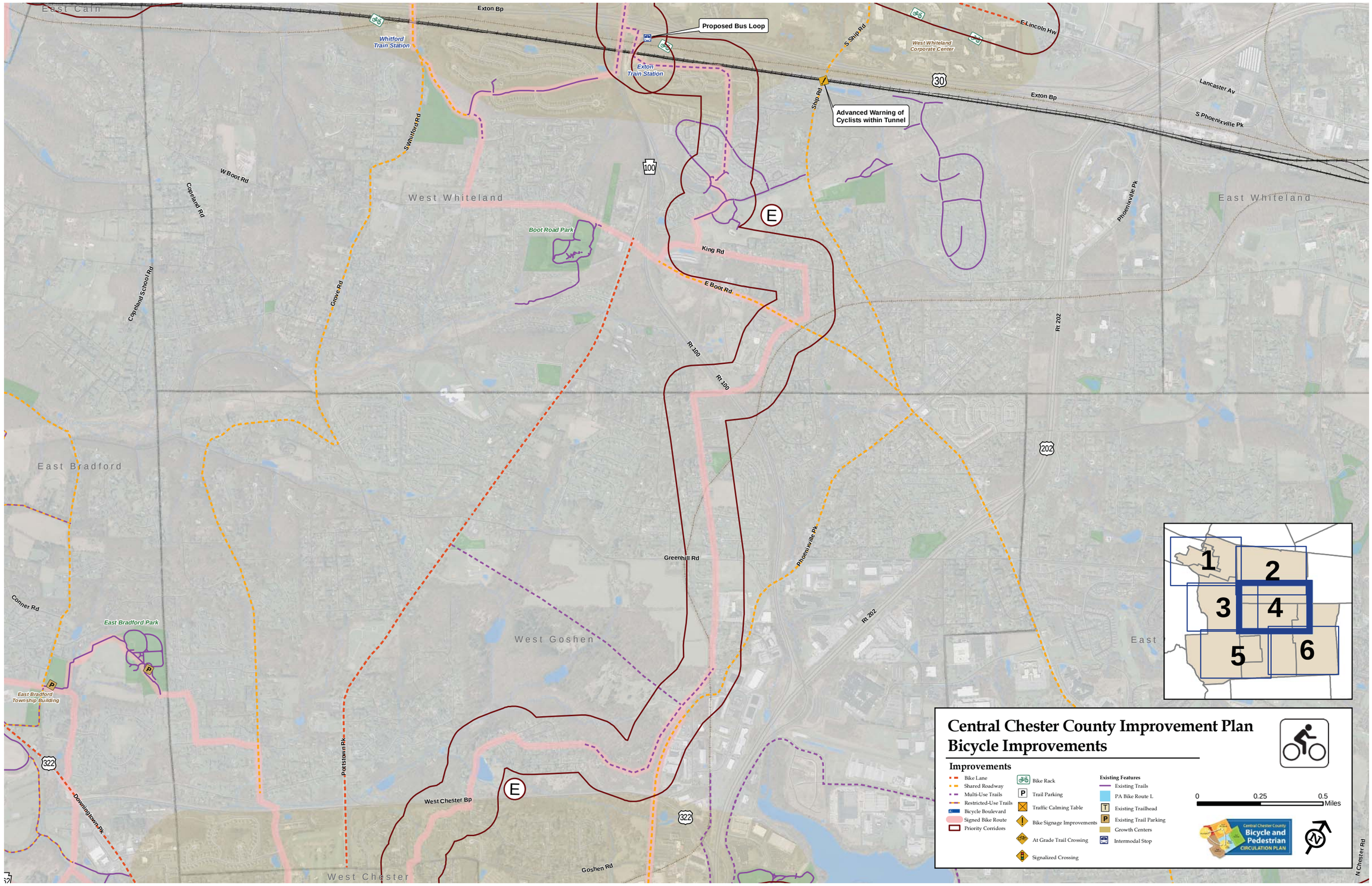
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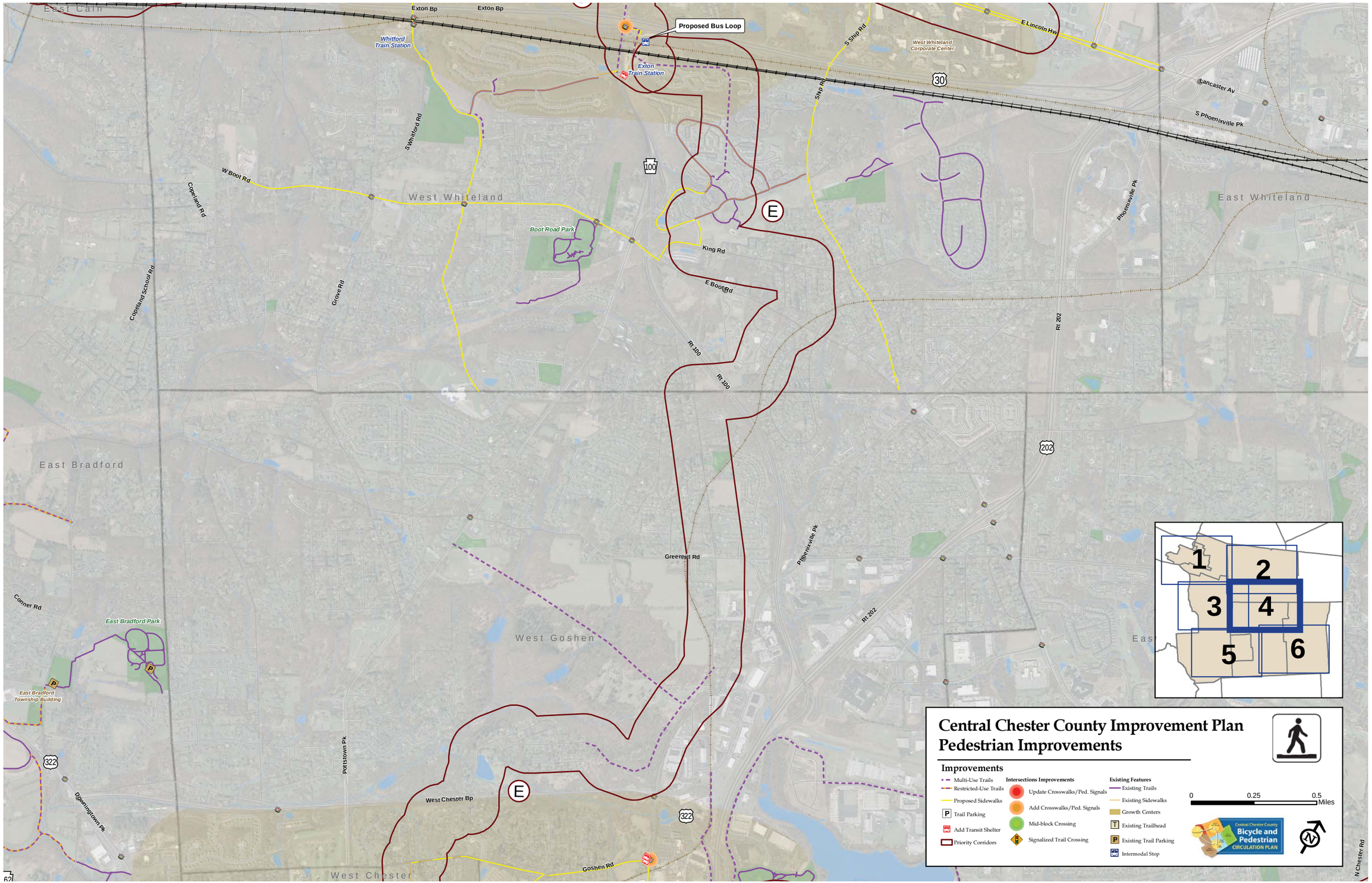
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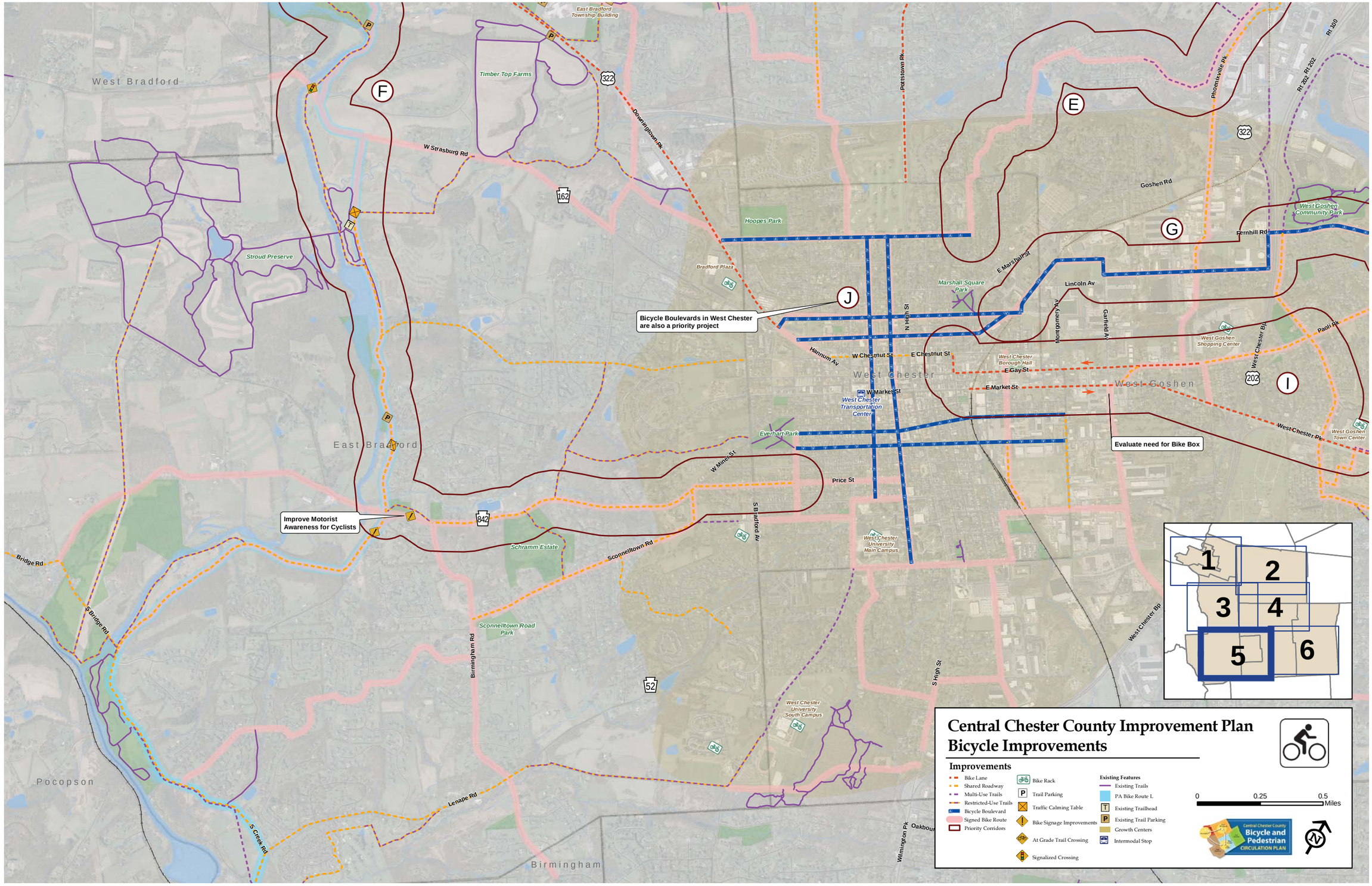
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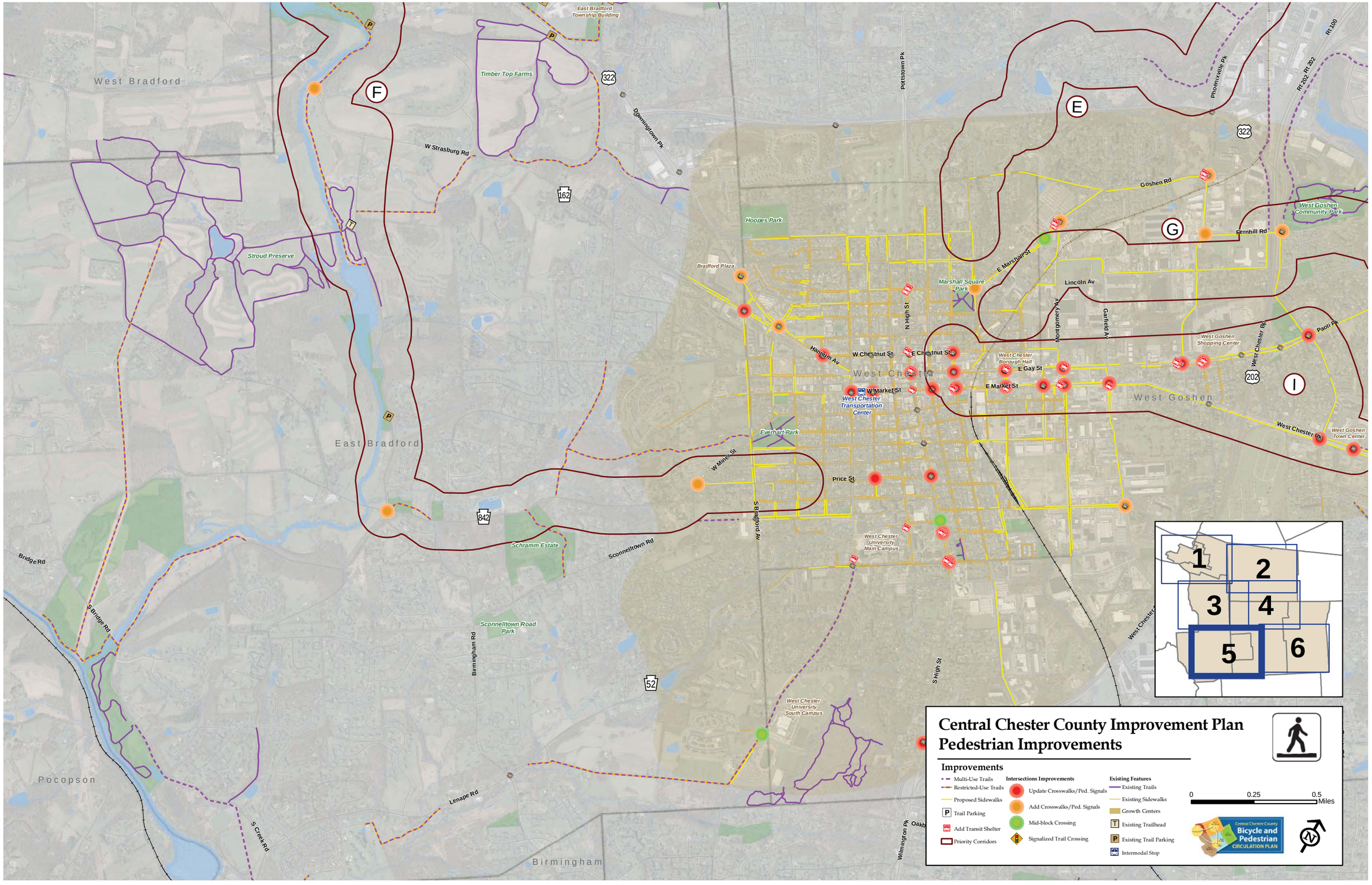
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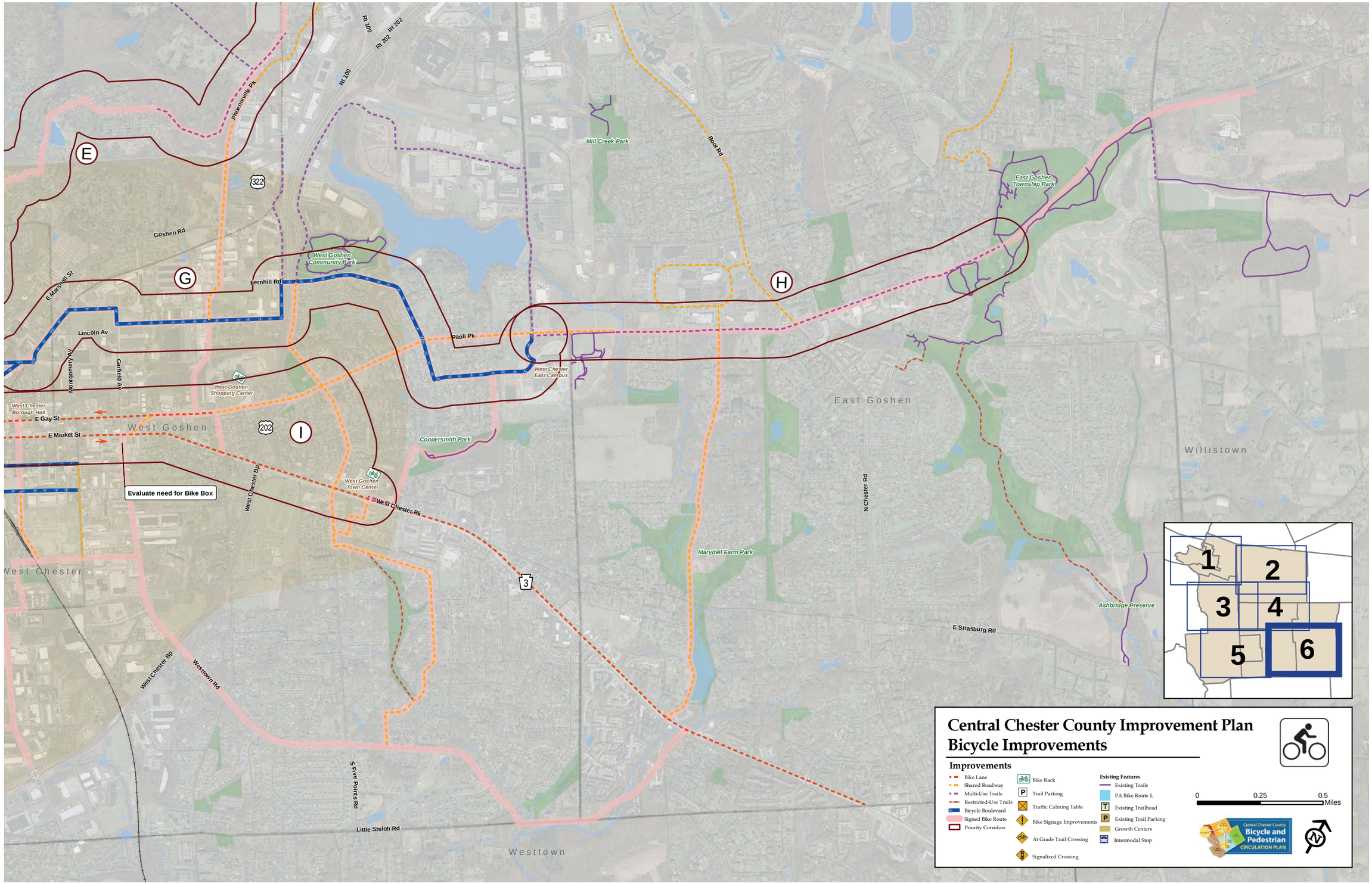
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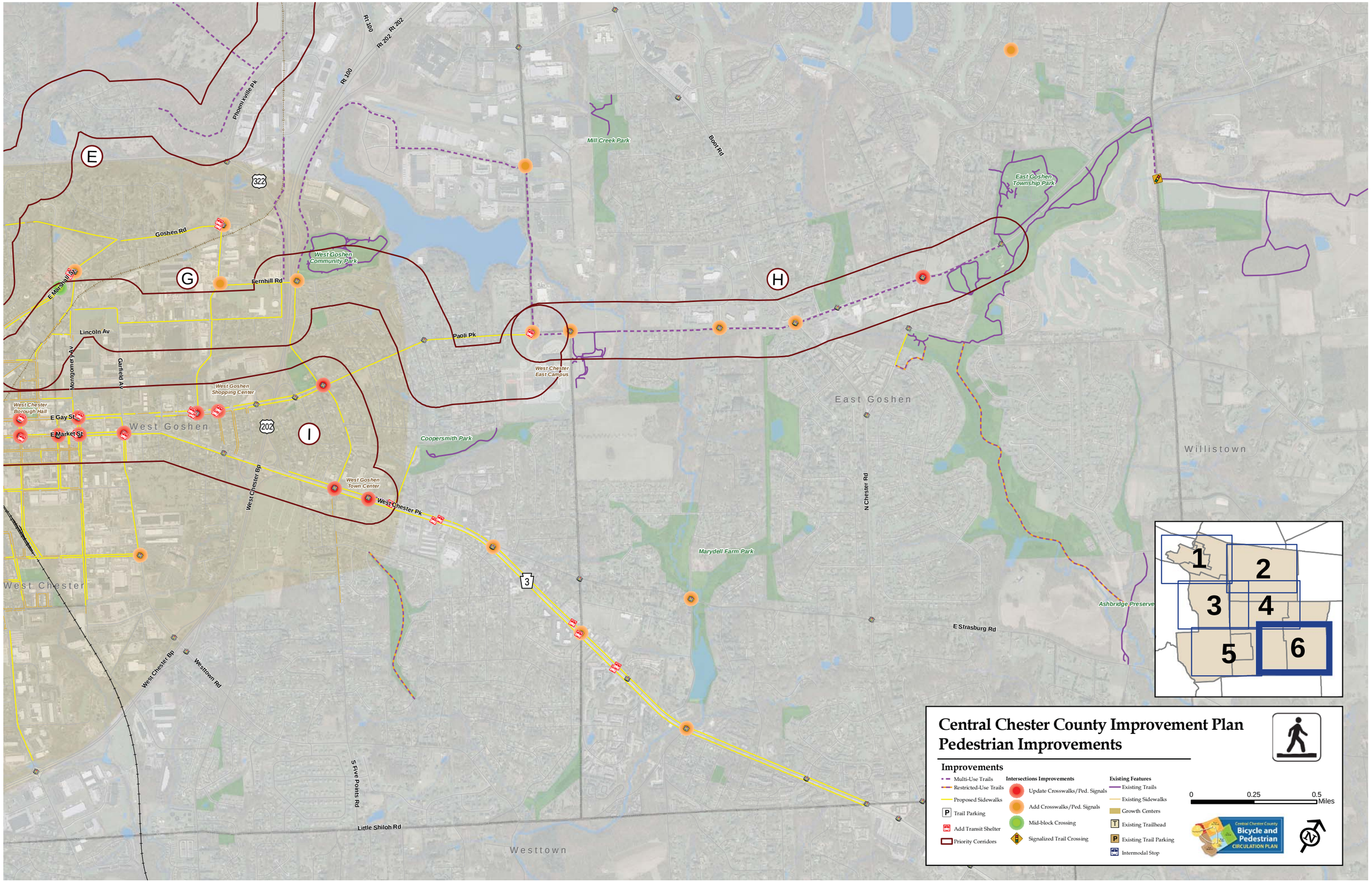
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Interpreting the estimate of probable development costs:
The estimated costs were developed to give the plan partners an order-of-magnitude estimate of the probable costs of the improvements shown in the Improvement Plan.
It is helpful to emphasize the following points when interpreting the probable development costs:

- The role of this Plan is to establish a long-term vision for the Central Chester County Region. These improvements are suggested for incremental implementation as opportunities arise over the next 20-25 years.
- These cost estimates are not a financial obligation or commitment to any of the Region's municipalities, Chester County, or other Plan partners. The advancement and funding of any project identified in the Improvement Plan must be decided on a project-by-project basis by the project sponsor.
- These cost estimates were prepared based on previous projects constructed using state and federal requirements; the permitting and construction standards required for state and federally-funded projects tends to be significantly more costly than projects using non-state and non-federal sources.
- Many of the proposed improvements can be developed as part of the land and/or roadway development processes where the improvements are constructed as a condition of the land development approval process.
- Many of the proposed improvements can be funded through grant programs where project sponsors can leverage their funds against state, federal, and private resources. The Chester County Planning Commission specializes in assisting municipalities to identify appropriate grant funding sources.
- Given the scope of the improvement plan and limited funding, this Plan recommends that the Region work collaboratively on the advancement of the Plan's Priority Projects.

Figure 37:
Estimate of Probable Development Costs

	Location of Project by Municipality													
	Downingtown Borough		East Bradford Township		West Chester Borough		West Goshen Township		East Goshen Township		West Whiteland Township		East Caln Township	
	miles	cost	miles	cost	miles	cost	miles	cost	miles	cost	miles	cost	miles	cost
Network Improvements	21.87	$3,528,000	54.75	$1,388,000	33.23	$3,689,000	55.16	$5,003,000	18.21	$1,605,000	59.68	$9,743,000	14.07	$3,129,000
Bike Lane	3.59	$94,675	3.01	$79,550	1.13	$29,800	4.92	$130,000	1.36	$35,775	4.42	$116,800	2.78	$73,450
Shared Roadway	2.34	$12,365	13.79	$72,790	1.33	$7,045	10.66	$56,270	5.20	$27,435	8.36	$44,120	0.07	$375
Multi-Use Trails	1.46	$462,600	1.09	$345,600	0.00	$0	5.08	$1,608,000	2.47	$782,700	5.12	$1,620,600	1.15	$363,300
Chester Valley Multi-Use Trail	0.29	$139,500	0.00	$0	0.00	$0	0.00	$0	0.00	$0	1.52	$721,800	1.42	$676,800
Restricted-Use Trails	0.00	$0	15.74	$332,400	0.00	$0	0.66	$14,040	1.57	$33,260	0.00	$0	0.00	$0
Bicycle Boulevard	1.26	$43,388	0.00	$0	7.47	$256,490	2.57	$88,043	0.00	$0	0.64	$22,133	0.00	$0
Signed Bike Route	6.91	$72,980	20.26	$213,950	9.42	$99,440	19.06	$201,310	4.78	$50,430	17.02	$179,680	4.40	$46,420
Proposed Sidewalks	6.01	$1,427,625	0.86	$203,400	13.87	$3,296,250	12.21	$2,901,600	2.84	$675,000	22.61	$5,371,650	4.25	$1,008,900
Other Network Improvements		$1,275,000		$140,000		$0		$3,500		$0		$1,666,500		$960,000
Amenity Improvements		**$85,000**		**$8,000**		**$198,000**		**$158,000**		**$30,000**		**$130,000**		**$7,500**
Intersection Improvements		**$215,000**		**$282,500**		**$1,375,000**		**$1,275,000**		**$605,000**		**$590,000**		**$562,500**
Subtotal:		$3,828,000		$1,679,000		$5,262,000		$6,436,000		$2,240,000		$10,463,000		$3,699,000
Contingency (10%):		$383,000		$168,000		$526,000		$644,000		$224,000		$1,046,000		$370,000
Total:		$4,211,000		$1,847,000		$5,788,000		$7,080,000		$2,464,000		$11,509,000		$4,069,000
Design & Engineering (15%):		$632,000		$277,000		$868,000		$1,062,000		$370,000		$1,726,000		$610,000
Grand Total:		**$4,843,000**		**$2,124,000**		**$6,656,000**		**$8,142,000**		**$2,834,000**		**$13,235,000**		**$4,679,000**
Grand Total-Region:		**$42, 513,000**												

Estimate of probable development costs

Cost estimates have been developed for the proposed linear network improvements (as described in this chapter) and the proposed amenity and intersection improvements described in Chapter 5. These cost estimates are summarized in Figure 37. **It should be noted that while the costs are summarized by municipality, this does not imply that these improvements are the sole responsibility of the Region's municipalities.**

Interpreting the estimate of probable development costs: The estimated costs were developed to give the plan partners an order-of-magnitude estimate of the probable costs of the improvements shown in the Improvement Plan.

It is helpful to emphasize the following points when interpreting the probable development costs:

- The role of this Plan is to establish a long-term vision for the Central Chester County Region. These improvements are suggested for incremental implementation as opportunities arise over the next 20-25 years.
- These cost estimates are not a financial obligation or commitment to any of the Region's municipalities, Chester County, or other Plan partners. The advancement and funding of any project identified in the Improvement Plan must be decided on a project-by-project basis by the project sponsor.
- The Action Plan in Chapter 8 distinguishes key responsibilities for all of the Plan's partners. PennDOT and Chester County (in particular, the development of the Chester Valley Trail) have defined roles towards the implementation of this network, as well as the Region's municipalities.
- These cost estimates were prepared based on previous projects constructed using state and federal requirements; the permitting and construction standards required for state and federally-funded projects tends to be significantly more costly than projects using non-state and non-federal sources.
- Many of the proposed improvements can be developed as part of the land and/or roadway development processes where the improvements are funded and/or constructed by private land developers or other roadway related projects. (See Chapter 7 for specific recommendations on how to implement some of the improvement plan elements via zoning, subdivision requirements, official map, and other regulatory tools.) .
- Many of the proposed improvements can be funded through grant programs where project sponsors can leverage their funds against state, federal, and private resources. The Chester County Planning Commission specializes in assisting municipalities to identify appropriate grant funding sources.
- Given the scope of the improvement plan and limited funding, this Plan recommends that the Region work collaboratively on the advancement of the Plan's Priority Projects.

> These improvements are suggested for incremental implementation as opportunities arise over the next 20-25 years.

METHODOLOGY

Network Improvements indicated on the Improvement Plan were tabulated using GIS mapping for counts and distances then multiplied by historical construction unit prices for each improvement type. For those improvements estimated with linear foot costs, a number of assumptions were made regarding the number and/or frequency of non-linear improvements (bike safe grates, for example) to generate the linear foot costs. Amenity and intersection improvements estimates were generated in a similar fashion using historical construction unit prices and a number of non-site specific assumptions.

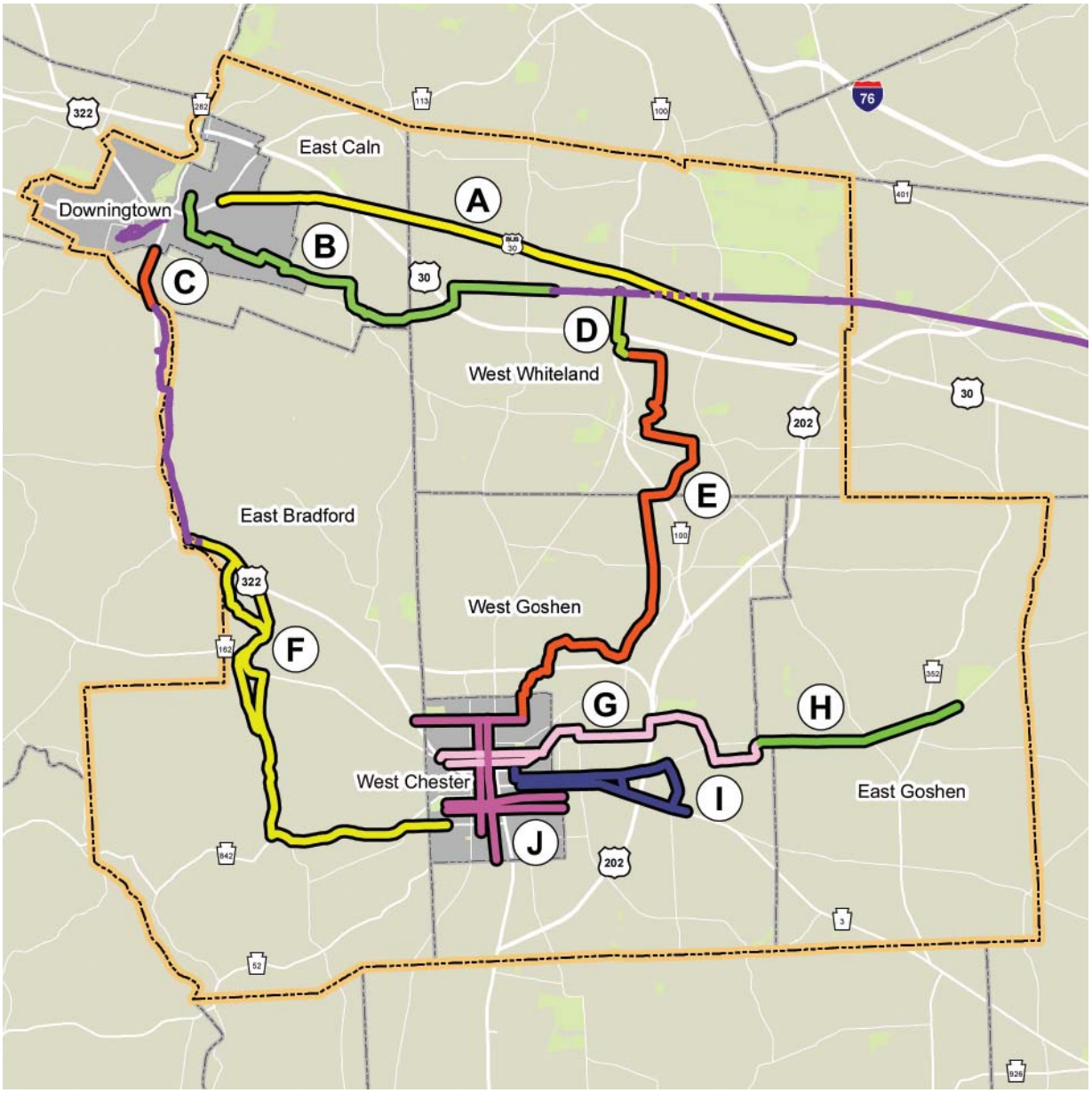
Total costs include a 10% contingency on the improvements, plus another 15% for Design & Engineering (D&E) fees. Please note that D&E fees may vary greatly depending on the funding source. Private funding sources typically have fewer necessary reviews and approvals resulting in a 5-15% of improvements costs range for D&E, while state and federal funding agency requirements could result in D&E fees as high as 25-30% of the proposed improvements.

These costs do not include property acquisition and are based on estimated construction costs for 2012, including standard prevailing wage rates associated with public sector development. Over time, these costs will need to be adjusted to reflect economic fluctuations relative to inflation and petroleum costs, typically at a rate of +3% per year.

Priority implementation projects

Ten priority projects have been identified from the overall Improvement Plan. These priority projects (as displayed in Figure 38) are regionally significant projects that will be emphasized for implementation. Many of these projects will require further planning or engineering before funding sources for construction can be identified and solicited. In aggregate, the estimated construction cost for these 10 projects is approximately $12.9 million, or approximately 28 percent of the Improvement Plan's total estimated cost.

Figure 38:
Regional priority projects



Below are brief descriptions of the proposed improvements associated with each of the priority projects. Please consult the Improvement Plan (Figure 36) for further details and information.

Priority project descriptions

A. Business Route 30 Improvements
This approximately 5-mile stretch of Business Route 30 includes the proposed installation of bike lanes, sidewalks, bus shelters, signage, and a signalized crossing for the existing Chester Valley Trail in the vicinity of Exton Mall. These improvements would enable the Business Route 30 corridor to function as a "complete street."
Estimated cost: $2,787,000

B. Chester Valley Trail (CVT)
This segment of the Chester Valley Trail will extend the trail from its current terminus in Exton to Downingtown, the Struble Trail, and East Branch Brandywine Trail. Proposed improvements include a multi-use trail, bike boulevard, bike lanes, three new bridges, three at-grade trail crossings, and signage.
Estimated cost: $5,527,000

C. Brandywine Trail Connector
This half-mile multi-use trail will extend the East Branch Brandywine Trail in West Bradford Township from its northern terminus to the Boot Road/Route 322 intersection.
Estimated cost: $182,000

D. Exton Station to Chester Valley Trail Connection
This proposed connection between the Exton Train Station and the Chester Valley Trail will be a multi-use trail along the west side of Route 100. In addition to the multi-use trail, other improvements include signage and intersection upgrades, particularly the addition of a new crosswalk on the south side of the Route 100/Commerce Drive for the Chester Valley Trail.
Estimated cost: $319,000

E. Exton Station to West Chester Bike Route
This proposed connection between Exton and West Chester includes approximately ¾ miles of multi-use trail, 5.6 miles of signed bike routes, and limited sidewalk improvements along the proposed route.
Estimated cost: $519,000

F. Creek Road/PA 842-East Bradford/West Chester Connection
Proposed improvements include a combination of bike lanes, shared roadway, signed bike routes, restricted-use trails and other associated improvements. This route will provide a connection from South Bradford Avenue in West Chester Borough to the Brandywine Creek area along West Miner Street, then north along Creek Road to the East Branch Brandywine Trail's current terminus near Skelp Level Road.
Estimated cost: $568,000

G. West Chester/West Goshen Bike Boulevard
Includes the establishment of bicycle boulevards along Biddle Street and Washington Street in West Chester Borough and extending eastward along Evans Street, Maple Avenue, Virginia Avenue, Lincoln Avenue, Old Fern Hill Road, Fern Hill Road, Fern Hill Lane, and Gateway Lane to the intersection of Airport Road and Paoli Pike in West Goshen Township. This bike boulevard will provide a signed route using lower-volume, lower-speed roadways to access West Goshen Township Park, East High School, and the YMCA on Airport Road.
Estimated cost: $391,000

H. Paoli Pike Multi-Use Trail
Includes the proposed installation of a 1.75 mile +/- multi-use trail to parallel Paoli Pike in both East Goshen and West Goshen Townships. This trail (in combination with Priority G) will connect East Goshen Township Park with adjacent municipalities and destinations.
Estimated cost: $765,000

I. Market St./Gay St. Bike Lanes & Sidewalks
Proposed improvements include the proposed installation of bike lanes, shared roadways, sidewalks, bus shelters, and signage along the commercial corridor of Market and Gay Streets between downtown West Chester and the shopping plazas at the West Goshen Shopping Center and the West Goshen Town Center.
Estimated cost: $1,400,000

J. West Chester Bike Boulevards (remainder)
Includes the installation of the remaining bicycle boulevards in West Chester Borough. As planned, these bike boulevards will establish one north-south and two east-west boulevards, using Ashbridge, Darlington, Church, Barnard, and Union streets.
Estimated cost: $409,000

Recommendations

The bicycle and pedestrian network improvements recommended in this chapter are intended to increase the mobility options within and between each growth center of the Region. Implementation of these recommendations is a core component of improving bicycle and pedestrian circulation within the seven municipalities. Additional detail for each of the recommendations can be found in the Implementation Tables in Chapter 8 of this document.

4-A Identify and pursue funding sources.
The proposed improvements outlined in the Improvement Plan are eligible for various state, federal, and private grant programs. The Delaware Valley Regional Planning Commission's Implementing Connections: A Guide for Municipalities maintains a list of current funding programs and opportunities.

4-B Initiate further planning and engineering for priority projects.
To best position the priority projects for grant funding, further planning and design should be initiated. These technical efforts should further refine the project scope and associated cost estimates for these projects.

4-C Install bicycle lanes in accordance with the Improvements Map.
In some cases, installing bicycle lanes will involve simply adding bicycle legends and/ or striping to road shoulders. In these instances, the installation of bike lanes should be programmed within PennDOT or a municipality's resurfacing program.

Other locations may require additional work including road widening. In these instances, any impediments to widening should be identified as well as possible remediation strategies.

4-D Implement shared roadways in accordance with the Improvements Map.
Shared roadways in this Region are considered a low cost and effective means of improving bicycle and pedestrian safety. The routes indicated on the Improvements Map will increase motorists awareness of potential use conflict with cyclists and pedestrians.

4-H Construct trails in accordance with the Improvements Map.
Preliminary engineering and/or feasibility studies should be initiated for the proposed trail improvements. These technical efforts should identify existing right-of-way widths, precise trail alignments, and required environmental mitigation.

4-F Implement bicycle boulevards in accordance with the Improvements Map.
On the Improvements Map, bicycle boulevards are recommended to connect destinations of interest in areas where roadway conditions are generally conducive to bicycling. A roadway signage and striping plan should be prepared for these selected roadways. Opportunities for traffic calming should also be explored.

4-G Implement signed bike routes in accordance with Improvements Map.
A detailed signed plan should be initiated that specifically identifies the type, frequency, and placement of bicycle route signage.

4-H Construct sidewalks in accordance with the Improvements Map.
Sidewalks can be constructed by a variety of mechanisms, such as land development approval, grants for streetscape projects, and municipal capital budgets. Due to regulatory requirements of grants, many municipalities in Chester County have found the installation of sidewalks to be cheaper (and significantly quicker) using local funding that when securing state or federal funding. Chapter 7 discusses regulatory strategies for implementing sidewalks.

The East Branch Brandywine Trail is a key north-south multi-use trail in East Bradford Township.

CHAPTER FIVE

Providing Supportive Amenities

Introduction

To fully "complete" the Region's bicycle and pedestrian network that amenities support walking and biking such as striped crosswalks, bike racks, bus shelters, and showers are essential elements for the Region to realize the Plan's Mission and Vision. This chapter articulates a strategy for the Region to fulfill the Plan's second goal: "**PROVIDE** supportive amenities that address the needs of pedestrians, bicyclists, and public transportation users at their destinations."

Intersection Treatments

Based on the extent of proposed sidewalks proposed in the Improvement Plan, this Plan proposes an aggressive change-of-course with respect to pedestrian accommodations at intersections.

The proposed intersection improvements were identified by a review of existing conditions, input from the Plan Advisory Committee and public, and the selection of priority corridors. Three types of intersection improvements were identified:

- **Add Crosswalks and Pedestrian Signals**: Improvements include adding crosswalks, pedestrian signage and signalization.
- **Upgrade Crosswalks and Pedestrian Signals**: Improvements include adding high visibility crosswalks, pedestrian signage and countdown signalization.
- **Add Midblock Crossing**: Improvements include adding high visibility crosswalks, pedestrian signage and pedestrian signalization. PennDOT design guidelines suggests a different planning process to be used when implementing such crossings.

Figure 39 lists the proposed intersection improvements by municipality. The location of these intersection improvements are noted on pedestrian maps within the Improvement Plan (Figure 36).

GOAL

PROVIDE supportive amenities that address the needs of pedestrians, bicyclists, and public transportation users at their destinations.

The identified intersection improvements cannot be accomplished all at once. Therefore, the intersection improvements were prioritized by municipality. These priorities were primarily based upon the priority corridors shown on the Improvement Plan (Figure 36) and Priorities Map (Figure 38) in Chapter 4. Projects that have a "High" priority designation are located within the priority corridors. "Medium" priority projects are located within or on the periphery of the priority corridors, while "Low" priority projects are at other locations. Priorities are subject to change based on the municipality's goals and funding availability for related projects.

Figure 39:
Intersection improvements

Location/Intersection Improvements	Priority
Downingtown Borough	
Add Crosswalks and Pedestrian Signals	
Chestnut St & Boot Rd*	Medium
Upgrade Crosswalks and Pedestrian Signals	
Brandywine Ave (US 322)* & Boot Rd*	High
Whiteland Ave/Uwchlan Ave (PA 113)* & Lancaster Ave (BUS 30)*	Medium
Add Midblock Crossing	
Green St & Pennsylvania Ave (Kardon Park Entrance)	High
Norwood Rd (Struble Trail Trailhead)	Low
East Bradford Township	
Add Crosswalks and Pedestrian Signals	
Downingtown Pk (US 322)* & Bradford Plaza Entrance	High
Creek Rd & Miner St/Creek Rd (PA 842)*/Allerton Rd	Medium
Sconnelltown Rd & Price St/Miner St (PA 842)	Low
Upgrade Crosswalks and Pedestrian Signals	
Bradford Ave & Strasburg Rd (PA 162)*	Low
Add Midblock Crossing	
New St (Access to WCU Stadium and South Campus Village)	Medium
East Caln Township	
Add Crosswalks and Pedestrian Signals	
Chestnut St & Boot Rd*	Medium
Bell Tavern Rd & Lancaster Ave (BUS 30)*	Medium
Wallace Ave (PA 282)* & Norwood Rd	Low
Quarry Rd* & Boot Rd*	Low
Quarry Rd* & Lancaster Ave (BUS 30)*	Low
Quarry Rd* & Entrance to Quarry Crossings	Low
Quarry Rd* & Exton Bypass (US 30) EB on/off Ramps*	Low
Upgrade Crosswalks and Pedestrian Signals	
Brandywine Ave (US 322)* & Boot Rd*	High
Country Club Dr & Lancaster Ave (BUS 30)*	Low
Add Midblock Crossing	
Norwood Rd (Struble Trail Trailhead)	Low

* State-owned roadway

Figure 39: Intersection Improvements (continued)

Location/Intersection Improvements	Priority
East Goshen Township	
Add Crosswalks and Pedestrian Signals	
Ellis Ln & Paoli Pk*	High
Airport Rd & Paoli Pk*	High
Airport Rd & Ward Ave	Medium
Ellis Ln/Falcon Ln & West Chester Pk (PA 3)*	Medium
Boot Rd* & Paoli Pk*	Medium
Westtown Wy & West Chester Pk (PA 3)*	Low
Enterprise Dr/Reservoir Rd & Paoli Pk*	Low
Reservoir Rd & Strasburg Rd*	Low
Chester Rd (PA 352)* & Hershey's Mill Village West Entrance	Low
Upgrade Crosswalks and Pedestrian Signals	
Chester Rd (PA 352)* & Paoli Pk*	Medium
West Chester Borough	
Add Crosswalks and Pedestrian Signals	
Downingtown Pk (US 322)* & Bradford Plaza Entrance	High
Everhart St/Strasburg Rd (PA 162)* & Hannum Ave (US 322)*	Medium
Franklin St & Marshall St/Marshall Dr	Low
Upgrade Crosswalks and Pedestrian Signals	
Bolmar St & Gay St (PA 3)*	High
Bolmar St & Market St (PA 3)*	High
High St* & Rosedale Ave	Medium
Worthington St & Market St (PA 3)*	Medium
Adams St & Gay St (PA 3)*	Medium
Adams St & Market St (PA 3)*	Medium
High St* & Gay St (PA 3)*	Medium
Matlack St & Gay St (PA 3)*	Medium
Matlack St & Market St (PA 3)*	Medium
Bradford Ave & Strasburg Rd (PA 162)*	Low
Matlack St & Chestnut St	Low
Walnut St & Market St (PA 3)*	Low
Darlington St & Market St*	Low
New St & Market St*	Low
Wayne St & Hannum Ave (US 322)*/Chestnut St	Low
High St* & Price St	Low
Darlington St & Price St	Low
High St* & Linden St	Low
Add Midblock Crossing	
High St* & University Ave	Medium
Marshall St & Chester County Hospital/Medical Facilities Entrance	Medium

* State-owned roadway

Figure 39: Intersection Improvements (continued)

Location/Intersection Improvements	Priority
West Goshen Township	
Add Crosswalks and Pedestrian Signals	
Ellis Ln & Paoli Pk*	High
Airport Rd & Paoli Pk*	Medium
Airport Rd & Ward Ave	Medium
Ellis Ln/Falcon Ln & West Chester Pk (PA 3)*	Medium
Montgomery Ave* and Marshall St	Medium
Five Points Rd & Fernhill Rd*	Low
Turner Ln & Fernhill Rd*	Low
Phoenixville Pk* /Fernhill Rd* & Goshen Rd*/Old Fern Hill Rd	Low
Glen Ave/Strasburg Rd* & West Chester Pk (PA 3)*	Low
Upgrade Crosswalks and Pedestrian Signals	
Bolmar St & Gay St (PA 3)*	High
Bolmar St & Market St (PA 3)*	High
High St* & Rosedale Ave	Medium
Westtown Rd & Market St (PA 3)*	Medium
Five Points Rd & West Chester Pk (PA 3)*	Medium
West Chester Pk (PA 3)* & West Goshen Town Center Entrance	Medium
Turner Ln & Paoli Pk*	Medium
Concord Rd & Paoli Pk*	Medium
Five Points Rd & Paoli Pk*	Low
High St* & Yorktown Ave	Low
Add Midblock Crossing	
New St (Access to WCU Stadium and South Campus Village)	Medium
Marshall St & Chester County Hospital/Medical Facilities Entrance	Medium
West Whiteland Township	
Add Crosswalks and Pedestrian Signals	
Pottstown Pk (PA 100)* & Bartlett Ave	High
Pottstown Pk (PA 100)* & Exton Bypass (US 30) EB on Ramp*	High
Whitford Rd* & Lincoln Hwy (BUS 30)*	Medium
Lincoln Hwy (BUS 30)* & Entrance to Whiteland Town Center	Medium
Upgrade Crosswalks and Pedestrian Signals	
Pottstown Pk (PA 100)* & Commerce Dr	High
Pottstown Pk (PA 100)* & Miller Way	Medium
Pottstown Pk (PA 100)* & Swedesford Rd/Waterloo Blvd	Medium
Exton Square Pwy/Iron Lakes Blvd & Lincoln Hwy (BUS 30)*	Medium
Ship Rd* & Lincoln Hwy (BUS 30)*	Low
Add Midblock Crossing	
Ship Rd* & Sunrise Blvd	Low
Swedesford Rd & Meadowbrook Park	Low

* State-owned roadway

Bus Shelters

Many of the Region's corridor that are served by bus transit–especially Business 30 and PA 3–lack bus shelters or an equivalent waiting area. To improve pedestrian safety while using public transportation within the Region, Figure 30 lists the location of proposed bus shelters. The location of these bus shelters are also displayed on pedestrian maps within the Improvement Plan (Figure 36).

When planning the installation of a new bus shelter, it is recommended that one consult the recently published SEPTA Bus Stop Design Guidelines, which was authored for municipalities to standardize and improve the provision of bus stops within the Philadelphia region.

A bus passenger debarks the Krapf A bus at a location lacking sidewalks or a bus shelter.

A bus shelter on Business Route 30, West Whiteland Township

Figure 40: **Proposed bus shelters**

Location	Priority
Downingtown Borough	
Wallace Ave/Brandywine Ave (US 322) & Lancaster Ave (BUS 30)	High
Manor Rd (US 322) & Lancaster Ave (BUS 30)	Medium
Lloyd Ave & Lancaster Ave (BUS 30)	Low
Whiteland Ave/Uwchlan Ave (PA 113) & Lancaster Ave (BUS 30)	Low
East Goshen Township	
Airport Rd & Paoli Pk	High
Mary Fran Dr & West Chester Pk (PA 3)	High
West Chester Borough	
Bolmar St & Gay St (PA 3)	High
Bolmar St & Market St (PA 3)	High
Church St & University Ave	High
Adams St & Gay St (PA 3)	Medium
Adams St & Market St (PA 3)	Medium
Matlack St & Market St (PA 3)	Medium
High St & Linden St	Medium
High St & Chestnut St	Medium
High St & Gay St (PA 3)	Medium
High St & Market St (PA 3)	Medium
New St & Rosedale Ave	Medium
High St & Marshall St	Low
High St & Rosedale Ave	Low
West Goshen Township	
Montgomery Ave and Marshall St	Medium
Spring Ln & West Chester Pk (PA 3)	Medium
Kingsway Rd & West Chester Pk (PA 3)	Medium
Westtown Rd & Market St (PA 3)	Medium
Turner Ln & Paoli Pk	Medium
Concord Rd & Paoli Pk	Medium
Airport Rd & Paoli Pk	Medium
Ellis Ln/Falcon Ln & West Chester Pk (PA 3)	Low
Phoenixville Pk /Fernhill Rd & Goshen Rd/Old Fern Hill Rd	Low
High St & Rosedale Ave	Low
West Whiteland Township	
Pottstown Pk (PA 100) & Bartlett Ave	High
Exton Train Station	High
Pottstown Pk (PA 100) & Miller Way	Medium
Exton Square Pwy/Iron Lakes Blvd & Lincoln Hwy (BUS 30)	Medium
Exton Mall North Entrance & Exton Square Pwy	Medium

Bicycle Parking

Parking is an essential feature to the accessibility of all land use types. Whether it is an automobile or a bicycle, people need a safe, secure, and convenient location to store their vehicle/bicycle once they get to their trip destination.

The type of bicycle parking facility is dependent on the type of user and volume of cyclists. For instance, commuters may prefer covered bicycle parking, such as a bike locker, for added security and to protect their vehicles from the elements for extended lengths of time. Alternatively, someone running errands may be more concerned with ease of access to quickly park and depart the location.

Bicycle parking should be targeted to the following land uses:

- Institutional (libraries, schools, government offices)
- Retail centers
- Employment centers
- Recreational uses (parks and trails)
- Rail stations

Figure 41 provides a list of specific locations that warrant consideration for bicycle parking. These locations are also identified on the pedestrian maps within the Improvement Plan (Figure 36).

Chapter 7 of the Plan explains how municipalities can use regulatory tools to ensure that adequate bicycle parking is provided throughout each municipality. Any place that is accessible by bike or could be accessed by a facility identified in the improvement plan should be prepared to facilitate an increased number of patrons arriving by bicycle.

This bike corral at 49th and Baltimore Avenue in Philadelphia can store a dozen bicycles.

Figure 41:
Proposed bicycle parking

Location	Priority
Downingtown Borough	
Kerr Park	High
Johnsontown Park	High
Borough Hall	High
Downingtown Library	High
East Ward Elementary School	High
Bishop Shanahan High School	High
Various locations/ businesses along Rt. 30	High
Downingtown Rail Station	High
Downingtown West High School	Medium
East Bradford Township	
East Bradford Township Building	Medium
East Bradford Park	Medium
East Bradford Shops Shopping Center	High
WCU South Campus Housing	Medium
Bradford Plaza Shopping Center	Medium
East Caln Township	
Brandywine Square Plaza	High
Lloyd Park	Medium
Bell Tavern Park	High
Ashbridge Square Shopping Center	High
East Goshen Township	
East Goshen Township Park	High
East Goshen Township Building	High
Goshen Corporate Park	High
YMCA	High
West Chester Borough	
West Chester Transportation Center	High
West Chester Borough Hall	High
WCU Main Campus (all buildings)	High
Hillsdale Elementary School	Medium
Henderson High School	High
Various locations/ businesses in the CBD	High
West Goshen Township	
West Goshen Shopping Center	High
West Goshen Town Center	High
West Goshen Community Park	High
Coopersmith Park	Medium
West Chester East High School	High
Various employers in Airport Road Corridor	Medium

Figure 41:
Proposed Bicycle Parking (continued)

Location	Priority
West Whiteland Township	
Whitford Rail Station	Medium
Exton Rail Station	High
Main Street at Exton	High
West Whiteland Township Building	High
Whiteland Town Center	High
Exton Library	High
Exton Square Mall (SEPTA bus stop)	Medium
Fairfield Plaza	Medium
Target	Medium
Festival at Exton	High
Oaklands Corporate Center	High
West Whiteland Corporate Center	High

**Bicycle parking might already exist at some locations.*

Showers

Showers are a supportive amenity and incentive for those who commute to work by walking or biking. The provision of shower/changing facilities (as well as bicycle storage facilities) is an eligible credit for LEED certification of newly constructed buildings.

The Region has many corporate/ office parks located around the regional trails system and along proposed designated bike routes shown in Chapter 4. Data on the availability of shower facilities at existing locations was not available; however, based on anecdotal discussion with municipal staff, the availability of shower facilities is generally assumed to be low and limited to fitness clubs and the most significant employers with the Region.

This Plan recommends the consideration of shower facilities in future corporate/ office parks and other major employers. Showers as well as other employer based incentives (discussed in Chapter 6) should be encouraged within corporate/office parks to reward employees who choose not to use their automobiles.

This bike corral in Philadelphia at Sydenham Street and Walnut Street features a car-shaped design.

Recommendations

5-A Identify and pursue funding sources
Identify and pursue traditional and non-traditional forms of funding to implement all recommendations. Funding forms include but are not limited to County, State and Federal grant programs. To elevate the competitiveness of a grant application, the Region should consider coordinating the submission of multi-municipal projects.

5-B Improve Intersections as recommended within the Improvement Plan
Intersection improvements should be implemented as opportunities arise, including development/ redevelopment and/or traffic improvement projects. Coordination with PennDOT will be necessary for intersections along state-owned roads.

5-C Install midblock intersections as recommended within the Improvement Plan
Midblock intersections require a more detailed engineering assessment to determine their appropriateness, location, and design. The proposed midblock crossing locations should be reviewed by municipal engineering staff, in coordination with PennDOT (if warranted).

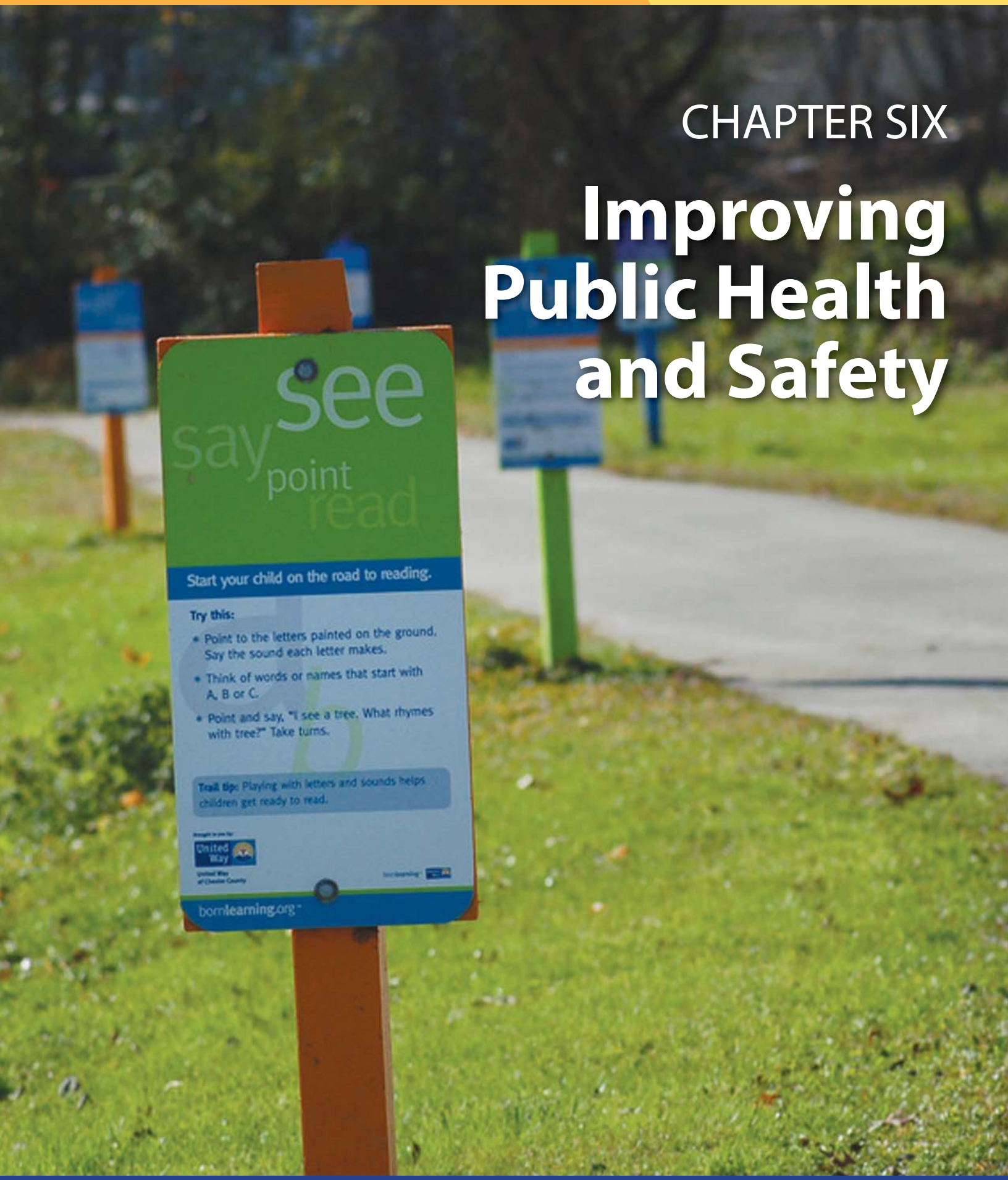
5-D Install bus shelters in accordance with the Improvement Plan
Bus shelters require coordination with the municipality, property owners, transit service provider, and transportation management association. This coordination should identify proper shelter siting, funding, and maintenance responsibilities, among other appropriate considerations.

5-E Install bicycle parking in accordance with the Improvement Plan
Based on the prioritization as listed in Figure 31, bicycle parking amenities should be pursued at the highest priority locations. The size and required space for each location should be identified. A field view is recommended for each site to identify possible locations. Coordination between the municipality, property owner, and Chester County Cycling Coalition is recommended.

5-F Provide shower facilities to encourage more active lifestyles
The provision of shower facilities may require unique coordination with a property owner or potential development applicant. The municipality should consider if any regulatory incentives could assist in the implementation of shower facilities. See Chapter 7 for regulatory strategy for implementing these improvements.

CHAPTER SIX

Improving Public Health and Safety



Introduction

The infrastructure improvements and engineering solutions presented in Chapter 4 and Chapter 5 will not solely fulfill the Plan's of mission of "transforming" the Central Chester County Region. As noted by The League of American Bicyclists, engineering strategies are only one of the five pillars that ultimately define a bicycle and pedestrian-friendly community. The five focus areas are:

- Engineering
- Education
- Encouragement
- Enforcement
- Evaluation

This chapter, therefore, outlines a regionally coordinated set of programs that will fulfill the Plan's goal to "**IMPROVE** public health and safety through education, enforcement, and encouragement strategies." While many of the projects identified in the Improvement Plan will require further engineering and significant funding, the recommended programs are low-cost/high-return strategies that can be implemented in next one to three years.

GOAL

IMPROVE public health and safety through education, enforcement, and encouragement strategies.

Program Evaluation

A list of twenty-five possible strategies was developed, as displayed in Figure 42. The strategies were chosen from a review of best practices, success stories, and bicycle and pedestrian plans from across the United States.

With input from the Plan Advisory Committee and the residents who attended the public workshops, a list of implementable priorities for the seven municipalities was identified.

Figure 42: **List of program strategies for public input**

- Wayfinding
- Interpretive Signage
- Trail Mile Markers
- Yield to Pedestrian Channelizing Devices
- Trail Speed Limit
- Issue Reporting
- Maintenance Planning
- Spot Maintenance
- Walking School Bus
- Walkability Audit
- Ped/Bike Concepts in Drivers' Education
- Bike Rodeos
- Employer Based Incentives
- Commuter Parking "Cash-out"
- Emergency Ride Home
- Commute Planner
- Bike Share
- Donation Program
- Educate Police
- Trail Patrol
- Give Respect/Get Respect (Edu-forcement)
- Passport to Fitness
- Bike Tours/Fun Rides
- Community Walks

Priority Programs

Ten priority programs have been chosen with the purpose of improving public health and safety through education, enforcement, and encouragement strategies. Recommendations to implement each of the priority programs can be found in Chapter 8.

6-A Bicycle/ Pedestrian Concepts in Driver's Education

Throughout the development of the Plan, one of the most commonly-raised issues was the general lack of education for motorists, bicyclists, and pedestrians. To emphasize the importance of this subject area, the Bicycle Coalition, with support from Chester County and the municipalities, is recommended to prepare a letter to PennDOT encouraging more bicycle/pedestrian be included in the PA Driver's Manual. Specifics about safe driver/cyclists/pedestrian interaction that could be added to the next update of the Driver's Manual should be contained within the text. Once finalized, the letter should be sent as a joint document, endorsed by all municipalities and participating agencies, to the Pennsylvania Department of Transportation.

6-B Education and Enforcement

This priority refers to targeted enforcement of bicycle and pedestrian related traffic laws. Along with violation tickets, police would hand out guides about being responsible drivers, walkers, or bikers. Buy-in from local law enforcement agencies is crucial to the success of an education and enforcement program. Officers must be willing to fully engage in a conversation with individuals regarding how their behaviors affect the safety of bicyclists and pedestrians. Advocacy groups should provide input on the materials distributed and monitor the program, but they cannot enforce traffic laws. Local government entities would lead the implementation of the program through their law enforcement agency, such as police departments or park rangers.

6-C Route Signage and Mapping

As noted in Chapter 2, there are limited signed bike routes in the Region—only the PA Bike Route L and multi-use trails are signed. However, favorable or "bike-able" roadways have been mapped by the Chester County Planning Commission, Greater Philadelphia Bicycling Coalition, and West Chester BLUER.

As a near-term strategy, it is recommended that the Region's "bikeability" and recommended rides be mapped and distributed via the Chester County Cycling Coalition and other project partners. Downingtown and Exton may warrant similar dedicated maps, as piloted by West Chester Borough. This effort could also be a way to showcase Central Chester County as a bicycling destination in the Philadelphia Region.

As a mid-term strategy, these routes should be designated as signed bike routes as displayed in Figure 43 and the Improvement Plan. This guidance system would provide uniform, consistent signage throughout the Region. Moreover, this signage would provide motorists with a visual cue to expect bicyclists on these designated roadways.

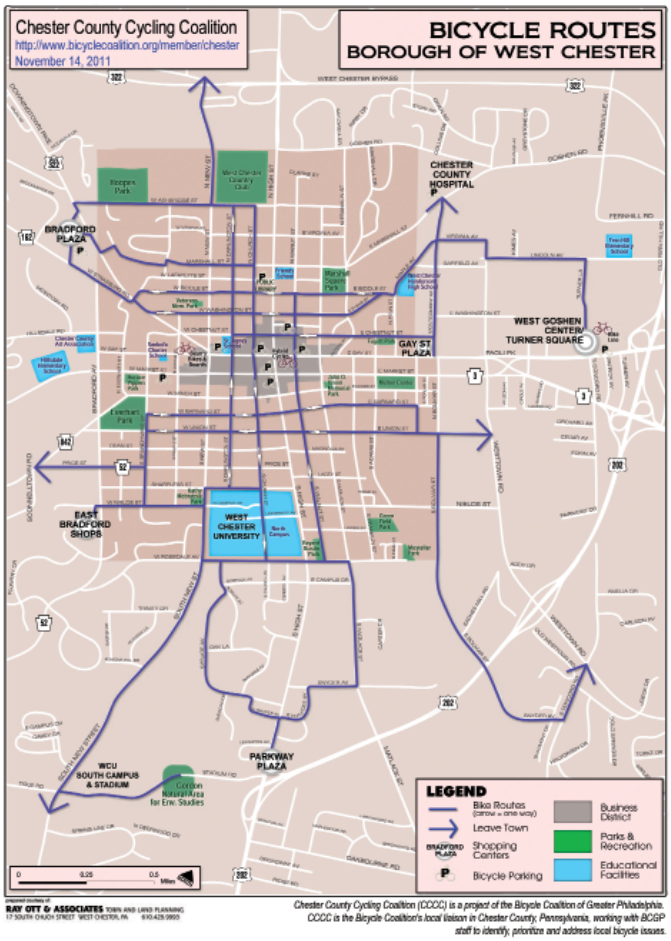


Figure 43:
Signed bike routes and "maintenance-first" priority routes

See "Signed Bike Routes" on Improvement Plan (Figure 36) for more detail on these routes.

6-D Maintenance Planning

Proper maintenance of pedestrian and bicycle facilities will ensure that they are free of obstacles and debris. The two main entities that would be responsible for developing a maintenance plan would be local public works departments and PennDOT. Chester County is also responsible for the maintenance of the Chester Valley Trail. Maintenance planning should address topics such as street sweeping, leaf removal, gravel removal, snow removal, lighting, and signage condition.

"Maintenance-First" Priority Routes

Given limited resources and the vast number of roadways in the Region, it is imperative to identify the most critical roadways for targeted, aggressive, and proactive maintenance treatment. The Region should use the proposed signed bike route network (Figure 43) as the prioritized network for maintenance activities. This policy will emphasize that those roadways signed as bike routes are also a priority for maintenance.

6-E Employer Based Incentives

Programs that encourage employees to walk/bike/take transit to work have a multitude of benefits for employers and their workers. Benefits to employees include: physical and mental health, congestion reduction, stress relief, and financial benefits. Employers benefit by having healthier workers, increased environmental sustainability, and reduced parking demand.

The County Health Department, partnering with local municipalities, can provide guidance to employers who are interested in developing this type of program. A fact sheet or white paper could be crafted and provided to employers. The information packet should include ideas that employers could implement and explain the benefit to the employer. Larger employers, especially those near regional trails, should be targeted first, because they tend to have the staffing capacity in the human resources department to implement these types of initiatives.

6-F Yield for Pedestrians Channeling Devices

This is an effective program to increase the safety of pedestrians within crosswalks through a simple traffic calming technique. The signs can be temporarily placed in the center of the road to alert motorists of increased potential of pedestrians crossing the road (some municipalities have permanently placed signs). They have the affect of causing motorist to slow down to avoid striking them. Also, the words "State Law: Yield for Pedestrians Within Crosswalk" serve as a form of education, informing motorists that they must legally yield for pedestrians crossing the roadway. The signs are provided by PennDOT free of charge to municipalities if specified crossing criteria are met.

This image is from the Manual of Traffic Signs, by Richard C. Moeur (http://www.trafficsign.us/)

6-G Walking School Bus

A walking school bus is a group of children walking to school along a defined route supervised by an adult. It can be as informal as two families walking their kids to school together, or it can be a structured program administered through the school district. A feasibility assessment is useful to calm any fears that parents may have of allowing their kids to walk to school. Typically, the grassroots version precedes a more structured program. An informal program typically starts with a small group of parents and children. A route is chosen and a test walk is taken. Then the parents decide how often the group will walk together. If this is successful, the community may desire additional routes to be established. A more structured program requires coordination, volunteers and attention to other issues, such as safety training and liability. The school administration, law enforcement and other community leaders are likely to become involved. The program development follows the same basic outline as the informal version. Routes should be identified and tested without children. Then, the number of adult supervisors should be identified. Next, logistical details need to be finalized, such as: Who will participate? How often? When do children meet the bus? Where will the bus meet? What training do volunteers need? What safety training do children need? Walk to School Day, in October, is a great time to kick-off the program.

A walking school bus is a supervised program that encourages children to walk to school in appropriate settings.

6-H Bicycle Share

A bicycle sharing program makes bicycles available for use by individuals who do not own them. There are three different types of bike share programs: free, membership based, and fee based. With free programs, bicycles are lent out at no cost to the user. Membership based programs may either be free or have some fees attached.

A prerequisite of using the service is to have registered with the program. Fee based programs are essentially a bicycle rental program. In all three of these cases, the exchange of bicycles may either be through a program administrator or by an automated system. A few companies have developed automated systems specifically for bike sharing programs. These systems are all-in-one units that include specifically designed bicycles, docking stations, and payment methods. The companies often are awarded contracts to administer the programs. Many major corporations have used bike share programs as an opportunity for advertisement. By allowing advertisers, the programs have been able to offset some costs associated with program administration. Another key feature of bicycle sharing programs are uniform, easily recognizable bicycles. This is important for exposure to future potential customers. Lastly, successful programs are always located in strategic locations. Those may be near trails, public transportation hubs, or major employment centers.

Identified potential leaders of a bike share program are the Bicycle Coalition of Greater Philadelphia, local TMAs, local chambers of commerce, business improvement districts, and Main Street managers.

A bike share program is a green intitiative for major employers.

6-I Educate Police

Ensuring that police officers are informed of the latest developments in pedestrian and bicycle laws is vital to the safety of all users. Officers do receive regular training on a variety of topics related to law enforcement. However, most police agencies do not have a special program dedicated to bicycle and pedestrian laws and safety. The Chester County Highway Safety program, who administers many police education programs, and the Bicycle Coalition could partner to provide training materials for local police agencies. This information could come in the form of seminars or handouts, whichever is best suited for each specific police department.

6-J Bike Rodeos

Events that teach children techniques to improve their safety and ability on bicycles are known as bicycle rodeos. These events are chances to instill, at a young age, safe bicycle riding skills. There are two key components to a successful bicycle rodeo, education and practice. Children are taught how to properly fit and wear their safety equipment, how to fit their bicycle, and safe riding skills. They then negotiate an obstacle course to test their skills. Generally, refreshments are available to all who attend. An active coordinator/ facilitator is vital to develop the program and coordinate with all involved parties. Also, a location with ample space is needed for parking and to set up a riding course. This type of program can be implemented by a variety of parties ranging from local municipalities to bike shops. Partnerships generally make for the most successful events.

A Local Success Story:

Bike Schuylkill

The only active bicycle sharing program in Chester County is Bike Schuylkill. It is characterized by its easily recognizable, beach cruiser type, yellow or blue bicycles with the Bike Schuylkill logo attached to a front basket. This program is completely free, and it makes it possible for anyone over the age of 16 to borrow a bike for short periods of time, up to one day. A program administrator must be presented with a driver's license or valid state-issued identification. In return, a bicycle is loaned out. The bicycle must be returned to the loaning office before it closes, at which time, the driver's license or ID is returned. Currently, there are four locations for the Bike Schuylkill program: Phoenix Cycles in Phoenixville, Tri-County Bicycles in Pottstown, Schuylkill River Heritage Area offices in Pottstown, and State Street Cycles in Hamburg. Additional information can be found by visiting www.schuylkillriver.org

Bicycle Rodeos:

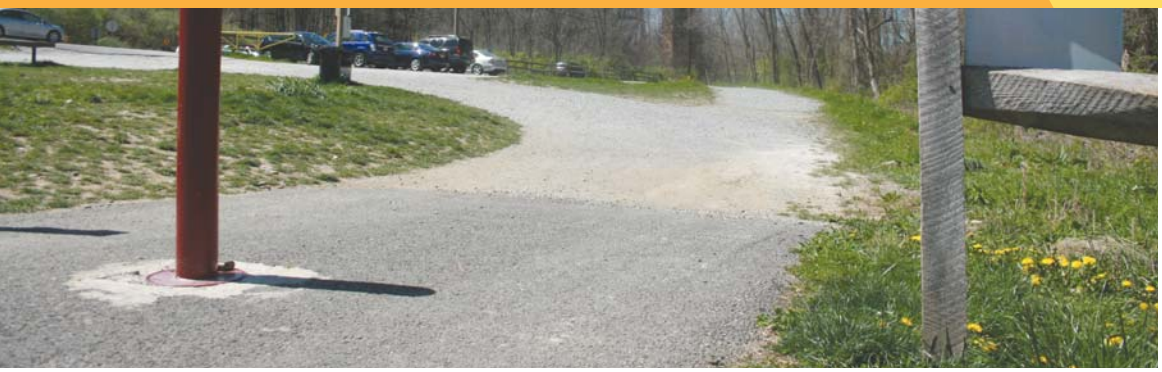
Tredyffrin Township's Experience

To coincide with Bike to Work Month in May, a Bike Safety Rodeo is held at Wilson Farm Park in Tredyffrin Township annually. At the second year of the annual event in 2012, 60 children ages 3-13 attended to learn safe bicycle riding techniques. Each child was awarded a bike driver's license upon completion of the course. Sponsors graciously donated prizes, food, and volunteer hours. The most important partner that added to the success of the event was the Tredyffrin Township Police Department.

Phoenixville's Bike Schuylkill is presently Chester County's only bicycle sharing program.

CHAPTER SEVEN

Integrating Concepts within Policies and Practices



Introduction

In an era of highly competitive grant funding and constrained capital improvement budgets, one of the most efficient strategies for "transforming" the Region over the next 20 years is through the revision of regulatory documents such as the municipal zoning and subdivision and land development ordinances.

This chapter provides specific recommendations and sample ordinance language that will guide the Region towards the fulfillment of the Plan's final goal: "**INTEGRATE** concepts that enhance walking, bicycling, and public transportation within the policies and practices of government, private, and non-profit organizations."

Regulatory Assessment

As part of the plan development process, an assessment of municipal ordinance regulations addressing bicycle and pedestrian facilities was completed. This assessment reviewed the degree to which various bicycle and pedestrian concepts were addressed by the existing, adopted ordinance. The status of those regulations should be interpreted as follows:

Yes	Effective standards are in place.
Limited	Standards are in place but a significant issue was identified that limits their effectiveness.
No	No standards are in place for this particular concept.

GOAL

INTEGRATE concepts that enhance walking, bicycling, and public transportation within the policies and practices of government, private, and non-profit organizations.

Figure 44:
Summary of bicycle and pedestrian standards within existing ordinances

Standard	Downingtown	East Bradford	East Caln	East Goshen	West Chester	West Goshen	West Whiteland
Pedestrian Facilities - Sidewalks							
Are pedestrian facilities defined?							
Support purpose statement?							
When required? (i.e., for what types of uses)							
Where required? (location, etc.)							
Are sidewalks required?							
Is a minimum sidewalk width specified?							
Owner/maintenance responsibilities?							
Reference ADA standards? (curb cuts)							
Are bus shelters required?							TC District
Are crosswalks required?							TC District
Trail Facilities							
Are trail facilities defined?							Trail Def.
Supported in purpose statement.							
When required? (i.e., what type of uses)					TND District		
Where required? (i.e., location, linkages?)					TND District		
Are trails mandatory or optional?						POR Dev.	
Ownership/Maintenance responsibilities?							
Is a minimum trail width included?							
Is a surface treatment specified?							
Bicycle Facilities							
Bike facilities defined							
When required (i.e., for what type of use)						POR Dev.	TC District
Where required? (i.e., location)							TC District
Ownership/maintenance responsibilities?							
Is a minimum width specified?							
Is a surface treatment specified?							
Are bicycle parking facilities required?							
Official Map							
Are trails/sidewalks designated?							
Are bike routes designated?							

Yes — Effective standards are in place.

Limited — Standards are in place but a significant issue was identified that limits their effectiveness.

No — No standards are in place for this particular concept.

Recommendations

The following recommendations address ordinance definitions, the official map and ordinance, the traffic impact study, and the development process.

Ordinance Definitions

7-A: Amend municipal ordinances to include the terms for bicycle and pedestrian facilities.
Municipalities should amend their zoning and subdivision and land development ordinances to include consistent definitions for bicycle and pedestrian facilities and clarify these terms across municipal borders. To this end, it may be necessary to 1) include new definitions 2) address inconsistencies with current definitions, and 3) delete conflicting definitions and replace wording as appropriate throughout all municipal ordinances.

Figure 45 provides recommended definitions for bicycle and pedestrian-related concepts discussed within this Plan.

Figure 45: **Recommended ordinance definitions**

Bike Lane	Designated travel lanes within the cartway or along the road shoulder for exclusive use by bicyclists. Bike lanes typically involve a combination of supplemental indicators including but not limited to Share the Road Signs, Sharrows, and other pavement markings.
Bicycle Boulevard	A street corridor treatment that prioritizes and enhances bicycle travel via traffic calming measures, signs, pavement markings, and crossing improvements.
Bus Shelter	A pedestrian amenity located at a bus stop to provide convenience, comfort, and shelter from the elements in the form of a structure such as a canopy.
Crosswalk	A public right-of-way used for pedestrian travel across a roadway at an intersection or any portion of a block to provide safe pedestrian access to adjacent roads, lots, or public use areas.
Internal Walkway	A designated single use facility with an improved surface, primarily for use by pedestrians, typically located outside of the road right-of-way and/or not directly adjacent to a street. A walkway is generally used for pedestrian transportation between buildings and parking areas or sidewalks, within parking lots, between buildings on a parcel or within a development, or between adjacent uses, developments, or facilities.
Official Map and Ordinance	An independent map and ordinance enabled by the MPC that may identify public facilities including but limited to parks, trails, areas of open space, recreation, utilities, and other similar facilities. The Official Map gives the municipality the first right of refusal to purchase land necessary to facilitate the identified public improvement(s) and may delay a development for up to one year.
Share the Road Sign	Supplemental signage added to a shared roadway to warn motorists of the increased likelihood of bicyclists.
Shared Roadway (limited or no shoulder)	A street which accommodates bicyclists and motorists in the same travel lane. Typically the travel lanes are wider than what would be designed for automobile traffic only for the associated functional classification of the road and its context. Shared roadways may be a Signed Bike Route or include other indicators such as Share the Road Signs, Sharrows, or other pavement markers.
Shared Roadway (paved shoulder)	A street with a paved shoulder or wide curb lane that accommodates bicyclists adjacent to the vehicle travel lanes. A four (4) foot shoulder is preferable, in conjunction with applicable municipal and PennDOT guidelines. Shared Roadways with paved shoulders may be a Signed Bike Route or include other indicators such as Share the Road Signs, Sharrows, or other pavement markers.
Shared-Use/ Multi-Use Trails	A facility that is physically separated from the roadway and typically accommodates bi-directional travel by both bicyclists and pedestrians. The trail can be located within a publicly owned right-of-way, an exclusive right-of-way, or an easement. Shared use trails typically have an improved surface (e.g., asphalt, concrete, compacted gravel, etc.) and have a recommended width (per AASHTO) of 10 feet, although a minimum width of 8 feet may be used where space is constrained or in environmentally-sensitive areas.
Sharrow	A pavement marking that increases driver awareness of shared roadway arrangements. Typically, the use of sharrows has been approved by PennDOT; however, the approval of sharrows is presently evaluated on a case-by-case basis.
Sidewalk	A pedestrian route, typically constructed of concrete and parallel to a street that provides a means for pedestrians to travel within the public right-of-way while physically-separated from vehicular traffic. Sidewalks are designed for pedestrian use.
Traffic Impact Study	An analysis of the effect of traffic generated by a development on the capacity, operations, and safety of the public street and highway system. The TIS is used to determine the improvements that are necessary to ensure that the transportation network can accommodate the new development
Use-Restricted/ Single Use Trails	Trails that are primarily used for one form of travel or by one type of user such as cyclists or pedestrians. These trails are typically paved or have an improved surface.

Official Map and Ordinance

7-B: Identify and prioritize the installation of a pedestrian network on municipal official maps and ordinances
All municipalities should adopt an official map and ordinance or amend their current official map and ordinance to identify a pedestrian network and prioritize the areas that are most in need of connection in accordance with the Improvement plan in Chapter 4.

The Official Map, which is enabled by Article IV of the Pennsylvania Municipalities Planning Code (Act 247), is typically used as a negotiating tool to inform developers of intended future facilities the municipality intends to implement when development occurs. Currently, three of the seven municipalities in the Region, East Bradford and East Caln, and West Whiteland townships, have a adopted official maps.

Traffic Impact Study

7-C: Promote the use of municipal Traffic Impact Studies to facilitate the pedestrian and bicycle network
Municipalities should consider adopting a Traffic Impact Study (TIS) if one is not already included in their municipal ordinances. Potentially a TIS could be required for all development, with different scales of TIS depending on the size or impact of the development. Each municipality will need to evaluate the criteria for when a TIS is required.

A traffic impact study may be required through either the zoning or subdivision and land development ordinance based on a minimum number of units, a pre-determined density, or a particular use or uses or developments that may have a significant traffic generation or impact. Municipalities should ensure that Traffic Impact Studies include an evaluation of bicycle/pedestrian/transit needs and appropriate requirements.

PennDOT's 2009 publication, Policies and Procedures for Transportation Impact Studies, includes a list of characteristics (or thresholds) that, when met or exceeded, require a TIS for HOP (Highway Occupancy Permit) applications:

- The site is expected to generate 3,000 or more average daily trips or 1,500 vehicles per day.
- During any one(1) hour time period of any day of the week, the development is expected to generate 100 or more vehicle trips entering the development or 100 or more vehicle trips exiting the development.
- For existing sites being redeveloped the site is expected to generate 100 or more additional trips entering or exiting the development during any one hour time period of any day of the week.
- In the opinion of the Department, the development or redevelopment is expected to have a significant impact on highway safety or traffic flow, even if 1, 2, or 3 above are not met.

Municipalities may want to include lower thresholds for requiring a TIS for development proposals within their borders. East Caln, for example, requires a Traffic evaluation study (aka, Traffic Impact Study) for all residential developments or subdivisions containing twenty (20) or more dwelling units or residential lots and all nonresidential subdivision and land developments (with the exception of agricultural development) with buildings containing in excess of 10,000 square feet of space. Other Chester County communities use a general threshold of any development generating 500 or more average daily trips or 100 or more a.m. or p.m. peak hour trips.

Development Process

7-D: Work with applicants through the land development process to promote implementation of the Improvements Plan
It is common for municipal officials to place conditions on the approval of subdivision and land development applications. Through this "negotiation," a municipality can request the installation of sidewalks, trails, or other facilities that will implement the Improvements Map and be beneficial to the community.

Pedestrian Facilities

The following recommendations address pedestrian facilities including sidewalks, crosswalks, walkways, and bus shelters.

Sidewalks

7-E: Require Sidewalks in Accordance with the Improvements Map

Municipalities may use the Improvements Plan mapping in Chapter 4 as justification for when sidewalks may or may not be waived. Municipalities should reference the improvement maps in their individual ordinance(s), particularly if the mapping is adopted into the municipal comprehensive plan. Municipalities should work towards filling in missing gaps in the sidewalk network, and particularly the missing connections and corridors identified on the Improvement Plan. Municipalities should work with local property owners and businesses (See Recommendation 7-D) in addition to applying for funding to facilitate the installation of these sidewalks.

Option 1

Require Sidewalks on Both Sides of All Public Roads. If a municipality intends to promote a comprehensive sidewalk network throughout their community, they may chose to amend their subdivision and land development ordinance.

Option 2

Requiring the installation of sidewalks in prioritized locations will help to fill gaps in the network by requiring the installation of sidewalks when there is a change in use, change in ownership or when a subdivision or land development is submitted. Municipalities should reference the relevant Improvements Plan maps in their ordinances as justification for not waiving sidewalks for certain subdivision and land developments. Borough's may use the authority of the State Borough Code to require the installation of sidewalks on a property, potentially in conjunction with the improvements map as justification or prioritization.

Sample ordinance language:

Sidewalks a minimum of five (5) feet in width shall be required on both sides of all public streets where identified as a priority on the [Improvements Map of the Central Chester County Bicycle and Pedestrian Plan or municipal Comprehensive Plan]. Where sidewalks are not identified as a priority installation is encouraged, but not required along both sides of public streets.

Option 3

The adoption of "fee-in-lieu" of sidewalk regulations would enable a municipality to collect fees from an applicant where the installation of a sidewalk may not be possible or practical based on the location of the proposed use. This fee would be dedicated to the construction of a sidewalk or section thereof in a more appropriate public location. Fee-in-lieu of sidewalks is not common in Southeastern Pennsylvania although it is used in other areas of the country. Many municipalities in Chester County have fee-in-lieu of open space provisions which are effectively the same concept, and could be used as model provisions for fee-in-lieu of sidewalks. For example, East Bradford Township has fee-in-lieu of open space provisions in Section 95-34.1.E of its subdivision and land development ordinance.

Sample ordinance language:

Where sidewalks are not identified as a priority on the Improvements Map the applicant may either install sidewalks on both sides of all public streets or pay a fee-in-lieu of the installation of sidewalks, as determined by the municipality.

Crosswalks

7-F: Facilitate the installation or improvement of crosswalks in accordance with Chapter 5 and any other identified municipal priorities

Municipalities should implement the installation or improvement of crosswalks in accordance with the Improvements Map (Chapter 4) and at other identified priority locations. In certain cases this may be as simple as allocating municipal resources to paint crosswalks at priority locations. In other cases, it may be necessary to install signals or work with PennDOT where a state road is involved. Municipalities should require crosswalks within certain zoning districts or development types, such as a town center, and tie their implementation to the improvements map via reference. The following sample language is based on the West Whiteland Township Subdivision and Land Development Ordinance.

Sample ordinance language:

1. Crosswalks shall be installed and maintained as an integral component of the sidewalk and pathway system of the [zoning district/other designation] and shall be provided at all intersections of streets and driveways, and at all continuations of sidewalks and paths across streets and driveways.

2. All crosswalks shall be signed to indicate a pedestrian crossing.

3. Crosswalks shall be a minimum of six (6) feet wide defined through the use of interlocking unit pavers or striped in accordance with the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD).

Internal Walkway

7-G: Consider requiring walkways within parking areas and between parking areas and buildings

Where buildings are constructed with a setback or a development that occurs on a parcel where the buildings do not abut a public sidewalk, a requirement for a walkway from the building entrance to the public sidewalk should be required. Such requirements ensure that pedestrians can avoid using parking aisles or travel lanes for access to building entrances. This requirement may be linked to criteria such as parking lots over a certain size or where a parking lot does not directly abut a public sidewalk. Walkways should also be required within parking areas, between parking lots on adjacent lots or developments, and between adjacent developments on abutting tracts where applicable. Walkways should be a minimum of five (5) feet in width and constructed to sidewalk standards.

Model ordinance language:

A. Walkways shall be required between building entrances and sidewalks, buildings and parking areas, adjacent building entrances on the same lot, multiple uses on the same lot, and between developments on adjacent parcels.

B. Walkways shall be required within parking lots containing greater than twenty (20) parking spaces within a center island or along the perimeter of the parking lot.

C. Walkways shall be a minimum of five (5) feet wide and otherwise constructed in accordance with the requirements for a sidewalk within the applicable regulation within the municipal ordinances.

Bus Shelters

7-H. Require bus shelters in accordance with the Improvements Map

Municipalities should adopt requirements for the placement of bus shelters in municipal ordinances when buildings, uses, or developments, that meet a minimum threshold, occur along an existing or planned bus route. Pedestrian connections to the bus stop/transit shelter from parking lots and nearby development should be required. Each municipality will need to determine the appropriate criteria for what type of development (size, number of units, density) should trigger the requirement for a bus shelter.

SEPTA and the Delaware Valley Regional Planning Commission (DVRPC) recently released SEPTA Bus Stop Design Guidelines, which was authored for municipalities to standardize and improve the provision of bus stops within the Philadelphia region.

Sample ordinance language:

A. Bus shelters shall be installed and maintained for any development where the gross leasable area for commercial, industrial, or institutional uses is X s.f. or more or where there is a residential development greater than X units where there is existing bus service and/or where the development is determined to be of a significant nature to warrant a bus transit stop.
(Note: Municipalities should consider referencing the Improvements Map, particularly if the map is adopted into the municipal comprehensive plan.)

B. Bus shelters shall be consistent with the design standards of the SEPTA Bus Stop Design Guide developed by SEPTA and the DVRPC.

C. Design standards

1. A pull-over area for buses and for the discharge of passengers shall be provided, and such area shall be line striped.
2. Sidewalks and pedestrian paths shall be provided to connect bus stops/shelters to nearby commercial, office, institutional, recreational, residential, or other similar uses that generate significant pedestrian traffic.
3. Bus shelters shall be adequately illuminated to provide visibility during darkness. The source of the light shall be shielded from all abutting properties and from traffic along the road.
4. Bus shelters and shall utilize a bench with center divider/armrest and trash receptacle in a style approved by the Municipality.
5. Each bus shelter shall consist of at least three sides and a roof, in a style approved by the municipality.

Bicycle Parking

7-I: Require bicycle parking facilities for uses that meet minimum requirements

There are a number of ways to incorporate bicycle parking into ordinances. Ordinances can require a certain amount of parking spaces be dedicated to bicycle parking though the installation of bike racks. Ordinance standards can also require or encourage the installation of bike racks near the entrance to a business or use on a public sidewalk where appropriate accommodations can be made. This can be accomplished through off-street parking requirements, streetscape requirements, or incentives.

A bike rack in Kerr Park, Downingtown Borough

Sample ordinance language:

A. Bike racks shall be required as an integral component to the pedestrian orientation of the [zoning district/other designation] and shall be installed and maintained accordance with the following:

1. One (1) bike rack, [x] in color, with a capability of holding up to ten (10) bicycles shall be required for every thirty thousand (30,000) square feet of gross leasable area.
2. Bike racks shall be permanently anchored or in a concrete footing to promote stability and security.
3. Bike racks shall be located near building entrances, in a visible area, and major areas of pedestrian activity.
4. If and as possible, bike racks may be located under a shelter or a building overhang or inset to provide shelter for bicycles.

Trails

7-J: Require identification and maintenance of existing trails and establishing additional trails and connections in new development.

There are a number of ways to protect existing trails and establish new trails through ordinances. A few key points should be included in ordinances trail requirements. First, ordinances should require the identification of existing trails and/or recreational needs or impacts during the land development process in the subdivision and land development ordinance (preliminary plan requirements, impact assessments, conservation plan requirements). Second, ordinance requirements should protect existing trails or allow for the realignment of existing trails on a site. Third, there should be requirements for the identification and establishment of new trails as appropriate to connect to adjacent existing or planned facilities. Lastly, existing, realigned, or new trail alignments should be installed prior to the construction of building or other structures on a site. Identification and establishment of trails may occur through either the zoning or subdivision and land development ordinance, or a combination of both.

The Struble Trail

Sample ordinance language:

A. Pedestrian circulation. The following regulations shall apply to all uses:

1. The developer shall preserve existing trails or install trails and paths devoted to pedestrian, equestrian, or bicycle use other pedestrian facilities as necessary and desirable to achieve the following:

   a. Logically continue, link or expand existing pedestrian facilities on, across and abutting the site consistent with the [Official Map, Improvements Plan Map, Comprehensive Plan, etc.]. The applicant may be requested to provide an easement dedicated to the municipality with connections to abutting properties that will enable the future continuation of the pedestrian network.

   b. Alter the course of a trail within the tract for which development is proposed provided the proposed alteration exhibits quality trail design according to generally accepted principles of trail design. The municipality recommends the guidelines in Trail & Path Planning: A Guide for Municipalities (2007), available from the Chester County Planning Commission.

   c. Provide pedestrian access to existing or anticipated public bus or train transportation pickup points, public parks, community facilities, commercial areas, or higher density residential developments.

   d. Implement the pedestrian circulation plan identified on Map [x] of the [Comprehensive Plan, Improvements Plan, Official Map, etc.].

   e. Identify existing and proposed trails and paths during the site development process and install them prior to the construction of buildings and other structures.

   f. As appropriate, provide for the continued ownership and maintenance of trails and trail easements by having them dedicated to the public sector, donated to a private conservation organization, or placed under the care of a community association.

   For more information see the Trail & Path Planning: A Guide for Municipalities (2007), available from the Chester County Planning Commission under Open Space Planning (www.chesco.org). This guide contains detailed recommendations for addressing trail planning and includes chapters on how to address trails in municipal plans and ordinances.

CHAPTER EIGHT
Action Plan

Prioritization of recommendations

The Action Plan provides guidance for the implementation of the recommendations described in Chapters 4, 5, 6 and 7. This table serves as the Region's blueprint for implementing the concepts within the Plan and fulfilling the Plan's Mission, Vision, and Goals. Each recommendation has been assigned a timeframe for completion as well as the method and agencies responsible for its implementation.

Timeframe (When)

The Central Chester County Region recognizes that all of the recommendations cannot be advanced simultaneously. Therefore, the recommendations have been strategically allocated a recommended timeframe for initiating action on a particular method.

Immediate:
Recommendations that should be implemented within the next one to two years.

Short-term:
Recommendations to be implemented within the next three to five years.

Mid-term:
Recommendations to be implemented within the next five to ten years or when funding becomes available.

Long-term:
Recommendations to be implemented within the next ten to 20 years or when funding becomes available.

Ongoing:
Recommendations that will require a continued effort or are only undertaken on an as-needed basis. The initial action, if not already begun, should be undertaken in the next one to two years. These actions often involve monitoring or the continuation of existing programs.

Responsibility (Who)

The group or groups with primary responsibility for implementing a recommendation are listed under this heading. Generally, the groups that have the most responsibility assigned to them are the planning commissions, the boards of supervisors or borough councils, or municipal administration. In some cases, a special task force or sub-committee may be formed consisting of members from one or more of the main groups.

Suggested Method of Implementation (What)

The suggested method of implementation provides a recommendation for the document, tool, or other method that may be used for implementation. The municipality and/or Region may decide to move ahead with a different method or methods to implement the specified recommendation.

The following abbreviations have been used in the table:

GB	Governing Body/Administration (Board of Supervisors/Borough Council/Municipal Managers)
PC	Planning Commission
RM	Roadmaster/Public Works/Engineer
PADOT	Pennsylvania Department of Transportation
CCFP	Chester County Facilities & Parks Department
CCPC	Chester County Planning Commission
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Goal:
ESTABLISH a Comprehensive Network (Chapter 4)

#	Recommendation (What)	When	Who	Suggested Methods (How)	Page #
All Facility Types					
4-A	Identify/pursue funding sources.	Immediate	GB/PC	Coordinate internally and regionally to identify priority projects	72
		Immediate	GB/PC CCPC	Add priority projects to County Transportation Improvement Inventory	
		Ongoing	GB/PC CCPC	Pursue both traditional and non-traditional funding sources (i.e. County, State, Federal, private, donations)	
4-B	Initiate further planning/engineering for priority projects.	Short-term	PC CCFP	Review priority projects with Township Engineer, Roadmaster, CCPC, and PennDOT (if applicable)	
Bike Lanes					
4-B	Install Bicycle Lanes in accordance with the Improvements Map.	Ongoing	RM PADOT	Where there is sufficient shoulder width, install bicycle lane signage and pavement legends.	72
		Ongoing	RM PADOT CCPC	Where there is sufficient roadway width, rework pavement markings to include bicycle lanes. Coordinate with responsible entity(ies) to incorporate into repaving program.	
		Long-term	GB/PC PADOT	Where there is not sufficient roadway width, install bicycle lanes; perform engineering assessment.	
Shared Roadways					
4-C	Implement Shared Roadways in accordance with the Improvements Map.	Short-term	RM PADOT	Install "Share the Road" signage on roadways indicated on Improvements Map.	72
Multi-Use/Restricted-Use Trails					
4-D	Construct Trails in accordance with the Improvements Map.	Mid-term	GB/PC CCFP	Conduct preliminary engineering studies for trail improvements indicated on Improvements Map.	72
		Mid/ Long-term	GB/PC CCFP	Perform final design/right-of-way/construction	
Bicycle Boulevard					
4-E	Implement Bicycle Boulevards in accordance with the Improvements Map.	Short-term	RM CCFP CCCC	Where current conditions are sufficient, install bicycle boulevard signage and pavement markings.	72
		Mid-term	PADOT RM	Where current conditions are insufficient, apply traffic calming techniques in association with bicycle boulevard signage and pavement markings.	
Signed Bike Route					
4-F	Implement Signed Bike Routes in accordance with the Improvements Map.	Short-Term	CCCC	Develop wayfinding signage for use throughout the Region.	72
		Short-term	PADOT RM	Install Bicycle Route signage to roadways indicated on Improvements Map.	
Sidewalks					
4-G	Construct Sidewalks in accordance with the Improvements Map.	Ongoing	PC RM	See Recommendation 7-E	72

Goal:
PROVIDE Supportive Amenities (Chapter 5)

#	Recommendation (What)	When	Who	Suggested Methods (How)	Page #
All Amenities					
5-A	Identify/pursue funding sources.	Ongoing	GB/PC	Coordinate internally and regionally to identify funding sources for projects	82
		Short-term	GB/PC CCPC	Pursue both traditional and non-traditional funding sources (i.e. County, State, Federal)	
Intersection Treatments					
5-B	Improve Intersections as recommended in Chapter 5.	Mid/ Long-term	GB/PC PADOT	Implement improvements in conjunction with development approved process and/or roadway improvement	82
5-C	Install Midblock Crossing as recommended in Chapter 5.	Short-term	GB/PC	Include identified midblock crossing as elements within streetscape projects (particularly in the Boroughs)	82
		Short-term	GB/PC PADOT	Allocate resources to manageable elements of projects (Crosswalks, Signage)	
		Short-term	RM PADOT	At signalized midblock crossings coordinate improvements with PennDOT Traffic Unit and revise Signal Plan	
		Short-term	RM/PC PADOT	Pursue design and engineering for identified projects	
Bus Shelters					
5-D	Install bus shelters in accordance with Chapter 5 locations.	Short-term	GB/PC	Include identified bus shelters as elements within streetscape projects (particularly in the Boroughs)	82
		Short-term	GB/PC SEPTA TMA	Pursue design and engineering for identified projects	
		Mid/ Long-term	RM GB	Provide additional pedestrian amenities as part of project (i.e. connection to existing sidewalk systems and signage)	
		Immediate	GB/PC	Follow Chapter 7: Regulatory Tools Recommendations	

#	Recommendation (What)	When	Who	Suggested Methods (How)	Page #
Bicycle Parking					
5-E	Install bicycle parking in accordance with Chapters 3 & 5 descriptions and locations.	Short-term	PC	Include identified bicycle parking as elements within streetscape projects (particularly in the Boroughs)	82
		Ongoing	CCCC GB	Coordinate with parties that own areas where proposed bicycle parking would be located	
		Immediate	PC	Follow Chapter 7: Regulatory Tools Recommendations	
Showers					
5-F	Provide shower facilities to encourage more active lifestyles	Immediate	PC CCFP CCCC TMA	Coordinate with employment centers and corporate parks owners located adjacent to Regional Trails or along multi-modal corridors	82
		Short/ Mid-term	TMA CCCC	Follow Chapter 6: Recommendations for Employer Based Incentives	

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Goal:
IMPROVE Health and Safety (Chapter 6)

#	Recommendation (What)	When	Who	Suggested Methods (How)	Page #
Bicycle/ Pedestrian Concepts in Driver's Education					
6-A	Emphasize the importance of bicycle and pedestrian safety concepts in new driver education.	Short-term	CCCC GB Region	Draft letter to PennDOT and State representatives with recommendations on information to include in the next edition of the PA Driver's Manual.	86
Education & Enforcement					
6-B	Educate drivers, bikers, and walkers about responsibly "sharing the road." Enforce relevant traffic laws.	Immediate	CCCC CCHD NP	Identify core team responsible to develop program.	86
		Immediate	CCCC CCHD NP	Develop program and materials.	
		Immediate and Ongoing	CCCC CCHD NP	Deploy program.	
Route Signage and Mapping					
6-C	Provide guidance to help individuals determine the best route between destinations.	Short-term	CCCC RM PADOT	See Recommendation 4-F.	86
		Immediate	CCCC CCPC	Draft region-wide map of bikeability, including suggested circuits. Make maps available to general public and post to web.	
		Short-term	CCCC NP	Develop QR codes and post them at all trailheads to provide trail users with useful information.	
Maintenance Planning					
6-D	Ensure pedestrian and bicycle facilities are free of obstacles and debris.	Immediate	CCCC RM PADOT	Identify high maintenance priorities and responsible entities. Refer to the maps within this Plan.	87
		Ongoing	CCCC	Monitor maintenance status.	
Employer Based Incentives					
6-E	Develop incentive program for employers to encourage their employees to walk or bike to work.	Immediate and Ongoing	CCCC RM PADOT	Draft information packet and provide to employers.	87
		Immediate and Ongoing		Develop and implement program.	
Yield for Pedestrians Channeling Devices					
6-F	Install warning devices to alert motorists of pedestrian crossings.	Immediate	RM	Acquire signs from PennDOT.	87
		Immediate	RM	Place signs in locations that meet PennDOT standards.	

#	Recommendation (What)	When	Who	Suggested Methods (How)	Page #
Walking School Bus					
6-G	Develop a program for children to walk to school under adult supervision.	Immediate	CCHD NP	Develop pilot program for one school.	88
		Immediate	CCHD NP	Launch pilot program.	
		Ongoing	CCHD NP	Demonstrate pilot program's success and expand regionally.	
Bicycle Share					
6-H	Make bicycles available to individuals who do not own them.	Short-term	CCCC TMA CCHD NP	Identify responsible entity(s) to develop a bicycle share program.	88
		Short-term		Identify funding source, partners, and sponsors.	
		Short-term		Identify the type of bicycle share program that would best benefit the Region.	
		Mid-term		Identify bicycle share locations.	
		Mid-term		Purchase bicycles and other necessary supplies.	
		Mid-term		Launch program.	
Educate Police					
6-I	Keep police up to date on new developments in pedestrian and bicycle safety and laws.	Immediate	CCCC	Draft handout to provide to police agencies.	89
		Mid-term	CCCC	Develop training session to be administered by Highway Safety Program.	
		Ongoing	CCCC	Update training materials.	
Bike Rodeos					
6-J	Teach children techniques to improve their safety and ability levels on bicycles.	Short-term	CCCC CCHD NP	Identify responsible entities, partners and sponsors.	89
		Ongoing	CCCC CCHD NP	Identify locations and event details.	

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Goal:
INTEGRATE within policies and practices (Chapter 7)

#	Recommendation (What)	When	Who	Suggested Methods (How)	Page #
Definitions					
7-A	Amend municipal ordinances to include the terms for bicycle and pedestrian facilities defined in Chapter 7	Immediate	PC GB	Method specified in recommendation	95
Official Map and Ordinance					
7-B	Identify and prioritize the installation of a pedestrian and bicycle network on municipal official maps (and ordinances)	Short-term and Ongoing	PC GB	Adopt or amend municipal official maps and ordinances to include pedestrian and bicycle facilities as specified in Chapter 7.	96
Traffic Impact Studies					
7-C	Promote the use of Municipal Traffic Impact Studies to facilitate the pedestrian and bicycle network	Short-term	PC GB	Amend municipal zoning and/or subdivision and land development (SLDO) ordinances to require traffic impact studies in accordance with the specifications include in Chapter 7.	96
The Development Process					
7-D	Work with applicants through the development to promote implementation of the Improvements Map (Chapter 4)	Ongoing	PC/GB CCPC	Method specified in recommendation	96
		Short-term	PC/GB PADOT CCPC	Coordinate improvements with PennDOT's Highway Occupancy Permit approval (if applicable).	
Sidewalks					
7-E	Require Sidewalks in accordance with the Improvements Map	Immediate	PC GB	Amend municipal ordinances (preferably zoning) to require sidewalks on one or both sides of all public roads.	97
			PC GB	Adopt a sidewalk ordinance that requires the installation of sidewalks under certain circumstances in accordance with Chapter 7.	
		Mid-term	PC GB	Amend municipal zoning ordinances to require fee-in-lieu of sidewalk regulations in accordance with Chapter 7.	
Crosswalks					
7-F	Facilitate the installation or improvement of crosswalks in accordance with Chapter 5 and any other identified municipal priorities	Short-term	GB	When possible, allocate municipal resources to install marked crosswalks in accordance with Chapter 7.	98
		Ongoing	GB PADOT	Work with PennDOT to improve crosswalks when intersections with state roads are upgraded.	
			PC GB	Work with applicants through the land development process to improve crosswalks associated with new land development. See Recommendation 7-D.	

#	Recommendation (What)	When	Who	Suggested Methods (How)	Page #
Internal Walkway					
7-G	Require walkways within parking areas and between parking areas and buildings	Immediate	PC GB	Amend municipal subdivision ordinance to require walkways in accordance with Chapter 7. See Chapter 7 for model ordinance language.	98
Bus/Transit Shelter					
7-H	Require bus/transit shelters in accordance with Chapter 5	Immediate	PC GB	Amend municipal ordinances to require bus shelters based on size/ units/density and the provision of connection to bus shelters.	99
Bicycle Parking					
7-I	Require bike parking facilities for uses that meet minimum requirements (Set forth by each municipality)	Immediate	GB RM	Amend municipal ordinances to require bike parking facilities based on type of use, density, and/or proximity to pedestrian and bicycle network.	100
Trails					
7-J	Require identification and maintenance of existing trails and establishing additional trails and connections in new development	Immediate	GB PC	Amend municipal subdivision ordinance to require walkways in accordance with Chapter 7. See Chapter 7 for model ordinance language.	100

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