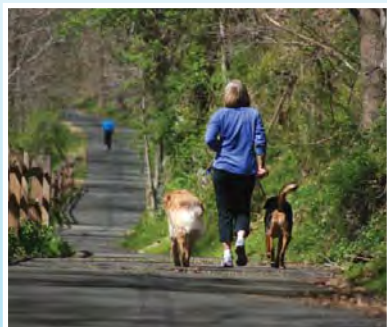




Central Chester County

Bicycle and Pedestrian Circulation Plan





Chester County Board of Commissioners

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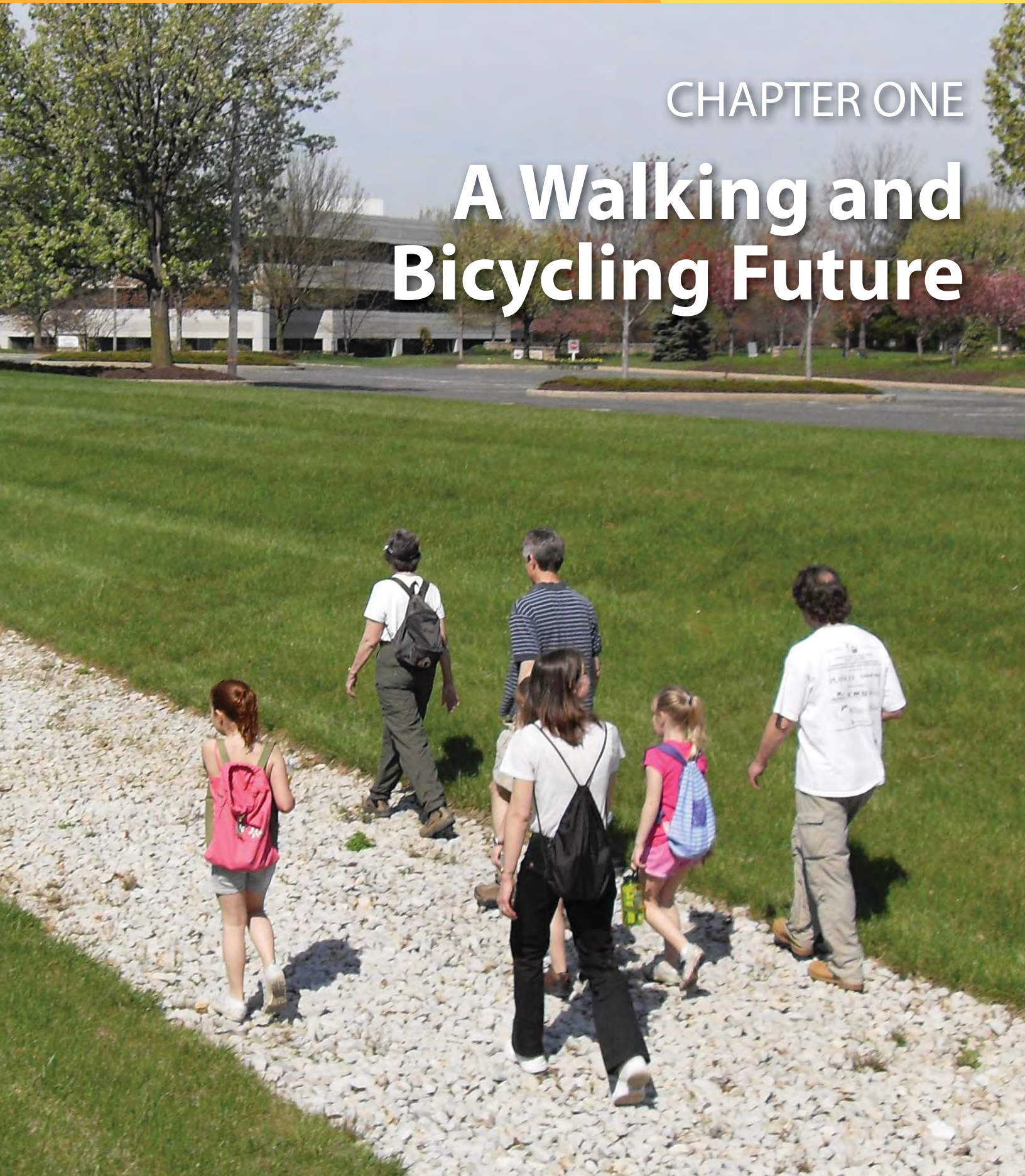


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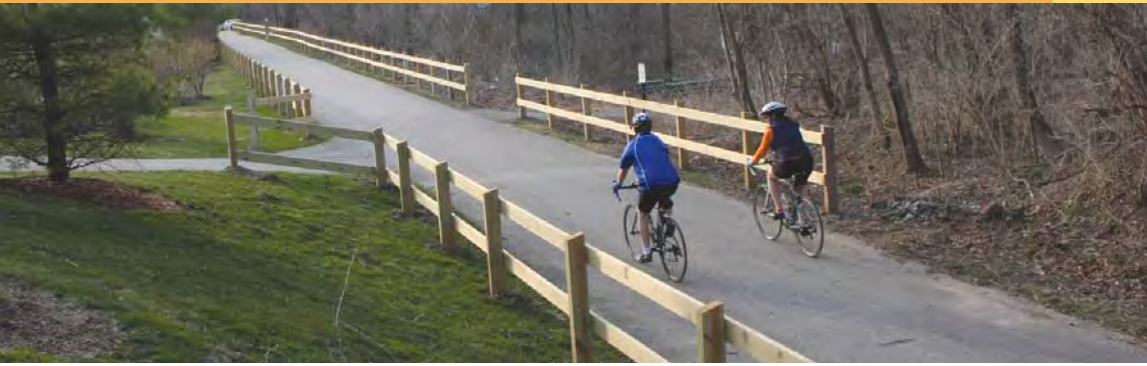


CHAPTER ONE

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.”



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

VISION

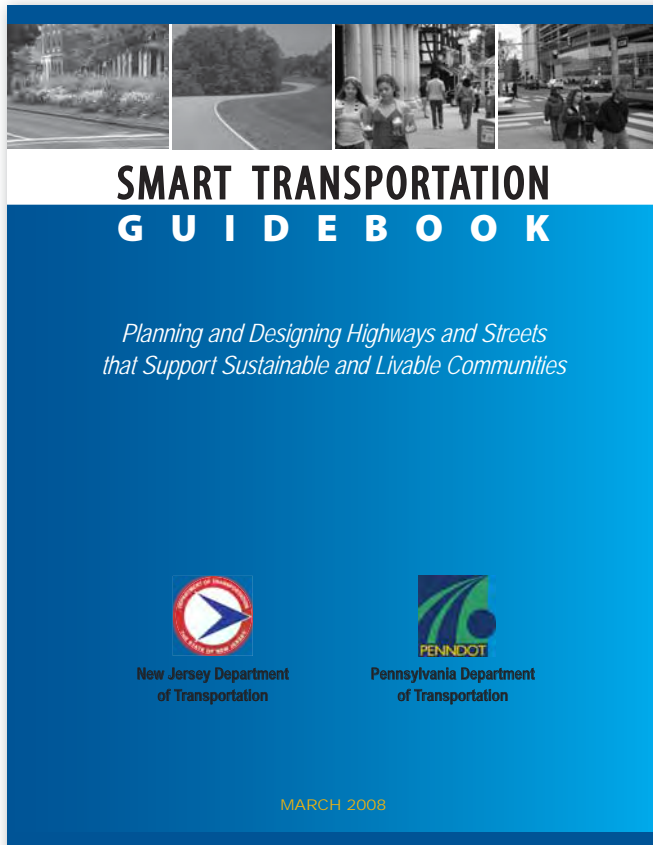
Healthy, vibrant, and economically viable communities that facilitate and encourage more walking and biking.



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: "Smart Transportation" needs. 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.

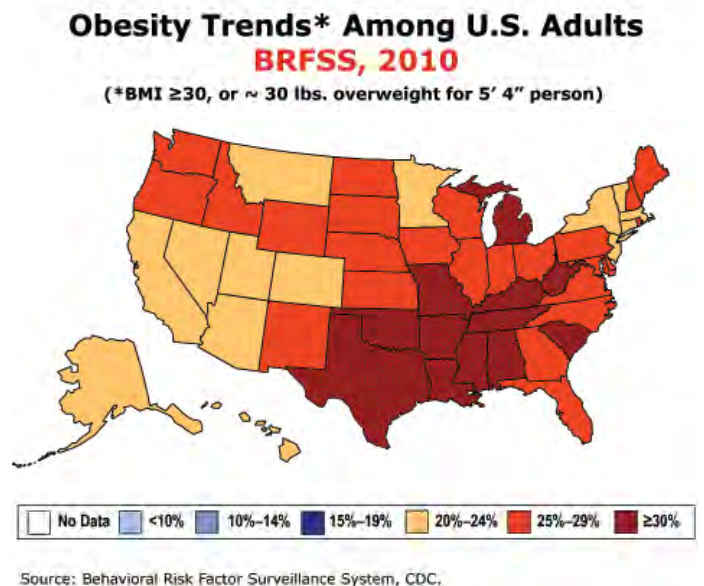
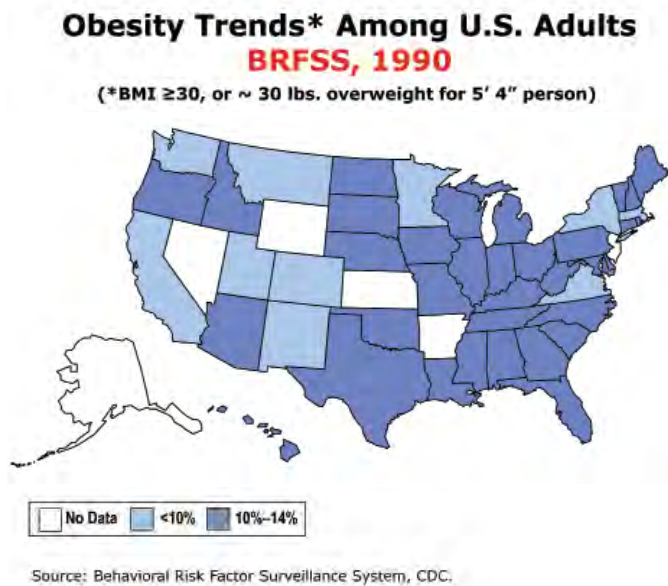
The Health Case

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).

Figure 1:
Adult Obesity Rates, 1990-2010



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.

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

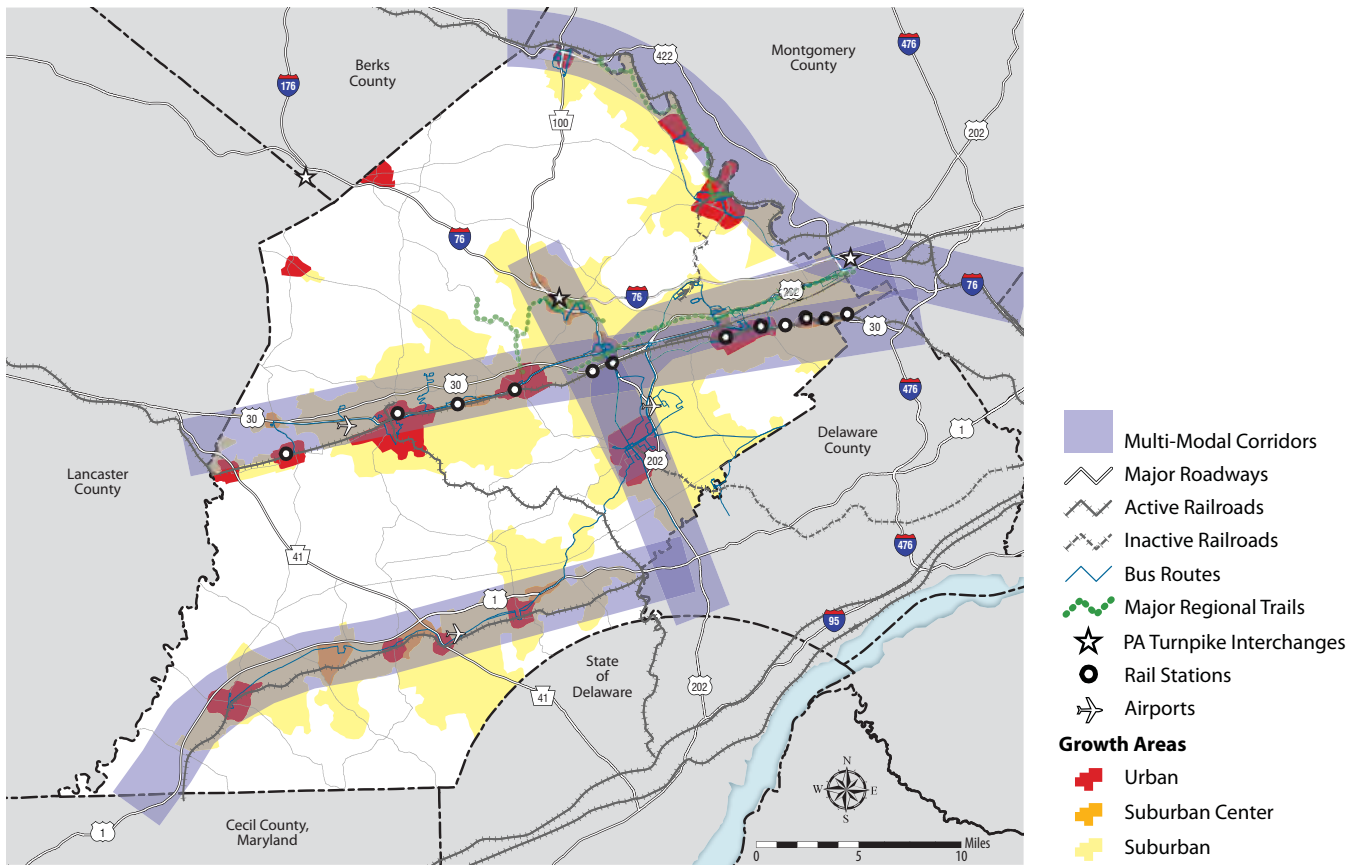
Focusing on Central Chester County

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. Additionally, 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 within the Region. 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



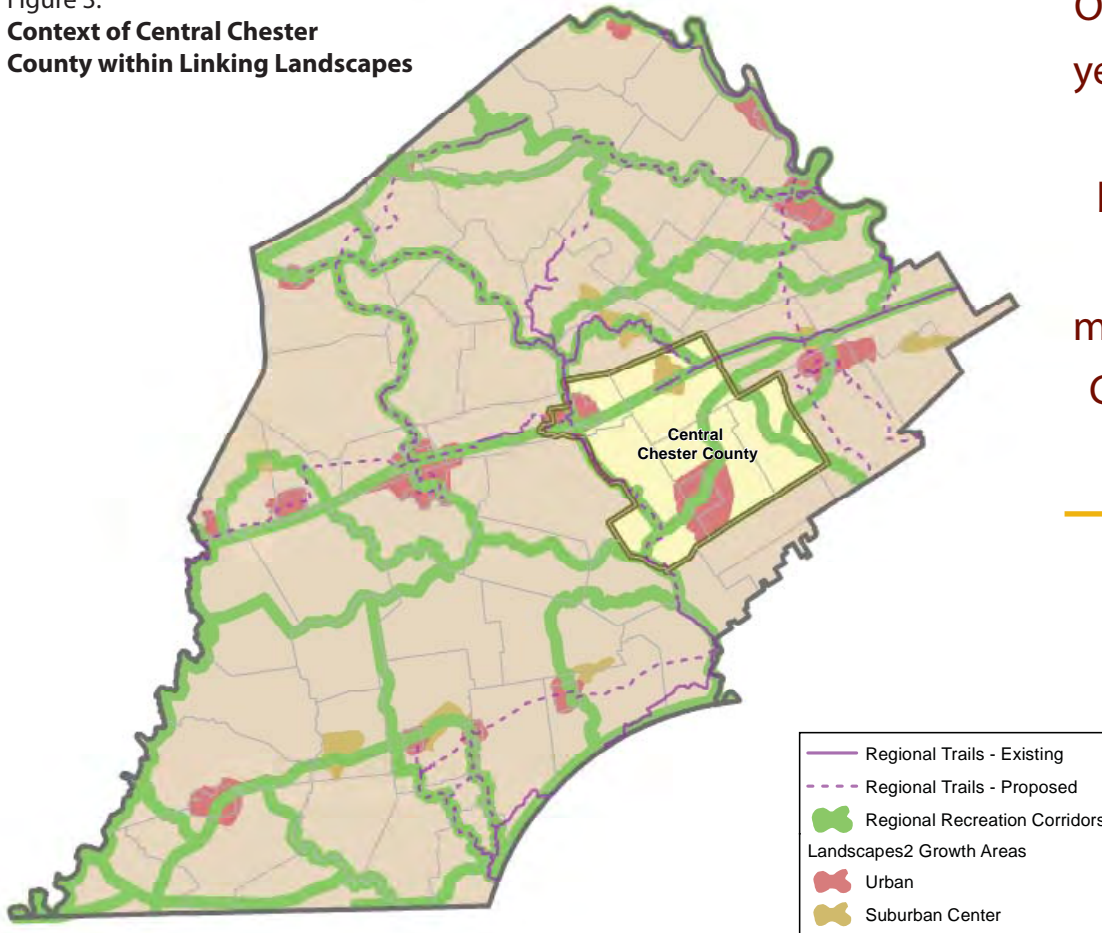
Source: Landscapes2, Chester County Planning Commission, 2009

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.

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

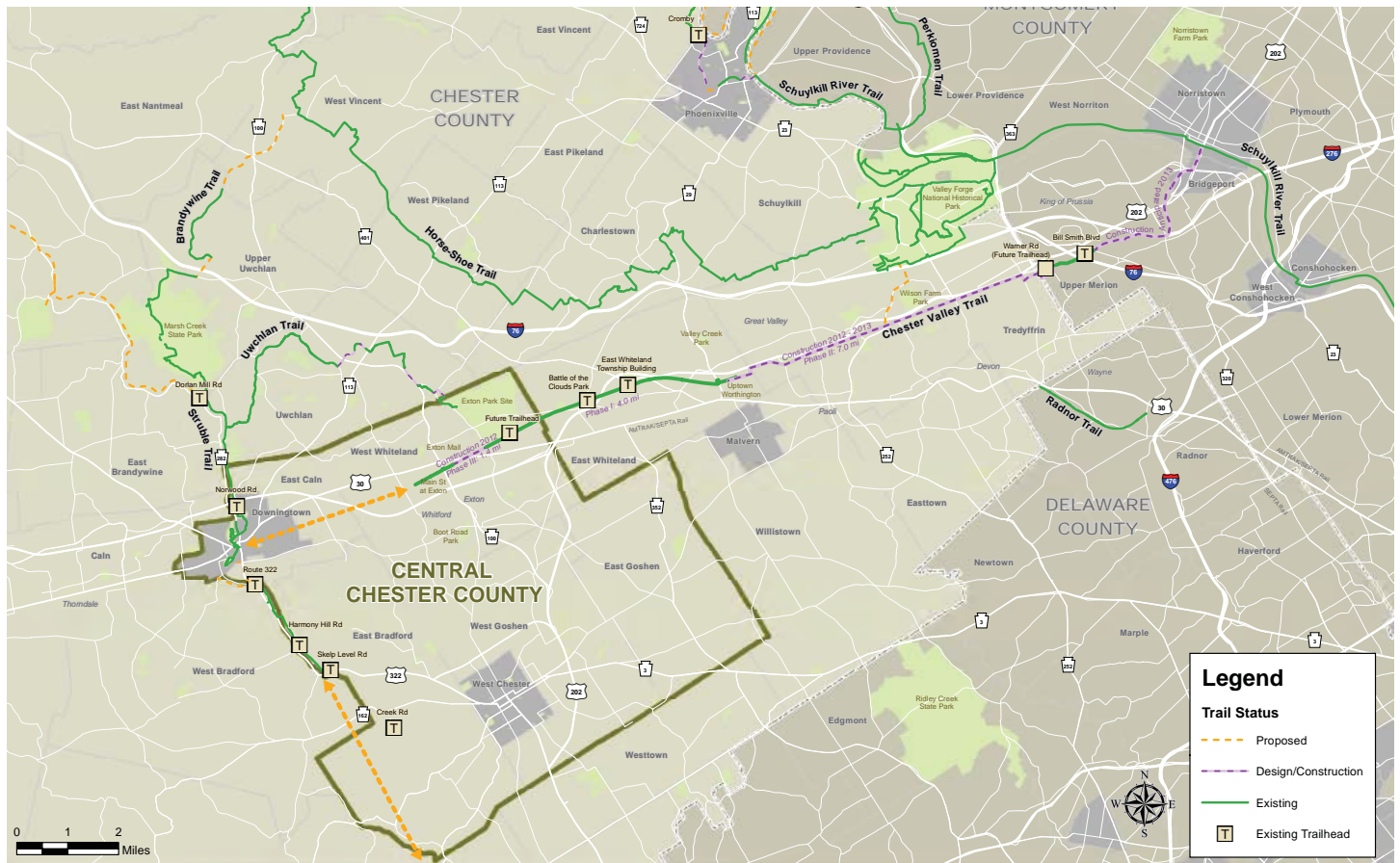
Over the last two years, substantial progress has been made on constructing multi-use trails in Central Chester County.

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

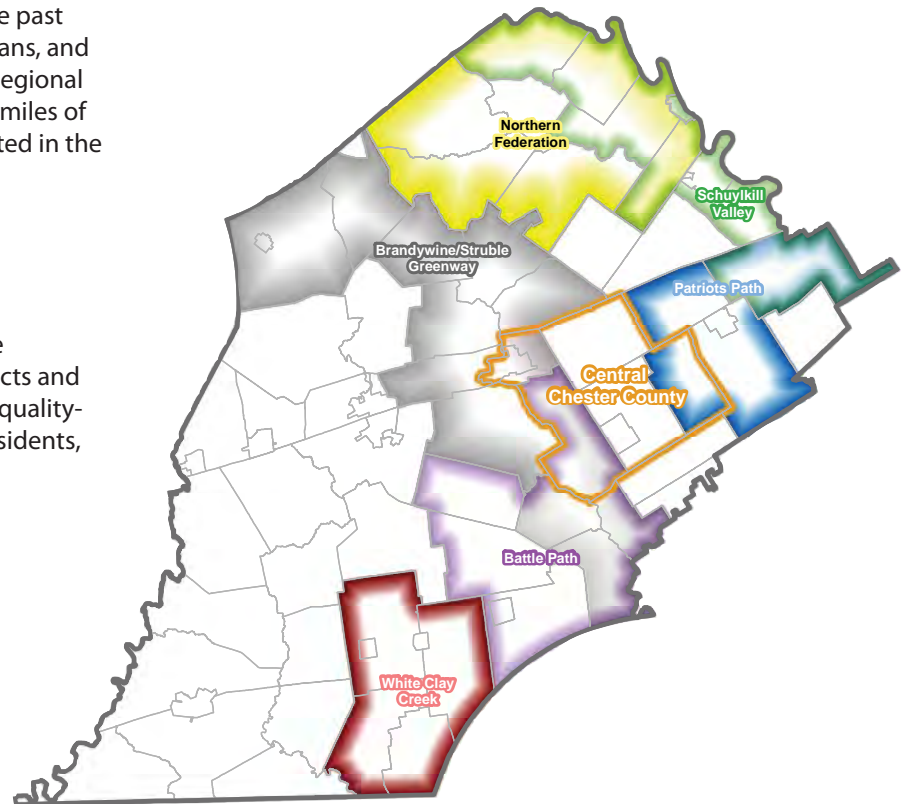
Proactive municipal partners

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

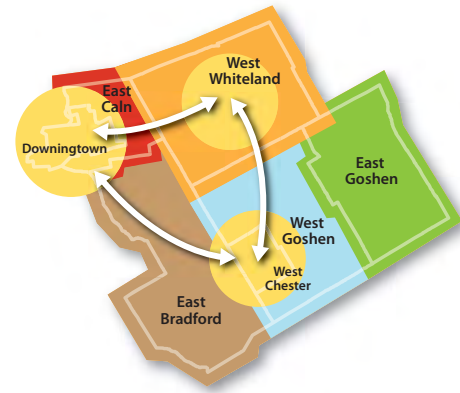


Source: Chester County Planning Commission, 2012

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-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)

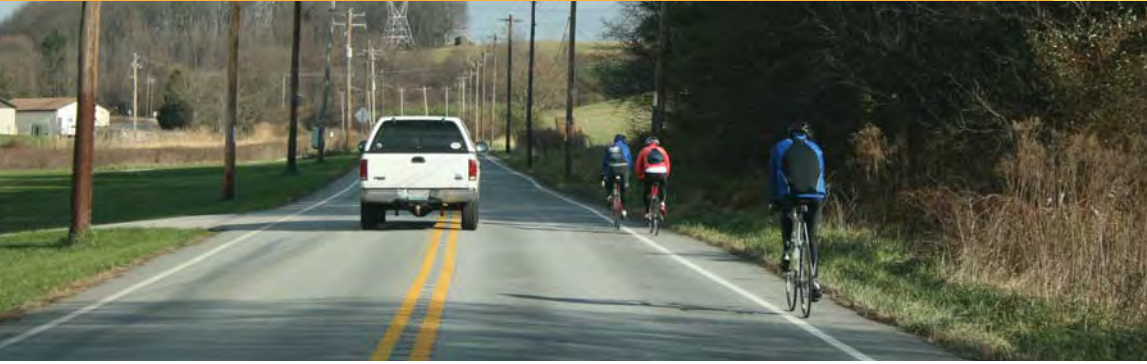




CHAPTER TWO

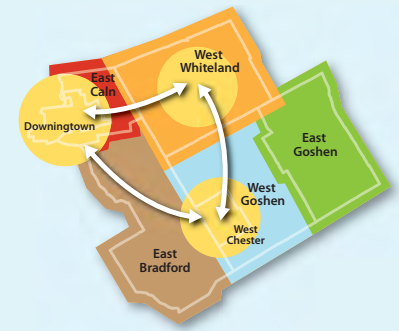
Framing the Critical Issues





This Central Chester County Bicycle and Pedestrian Circulation Plan recognizes of 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.

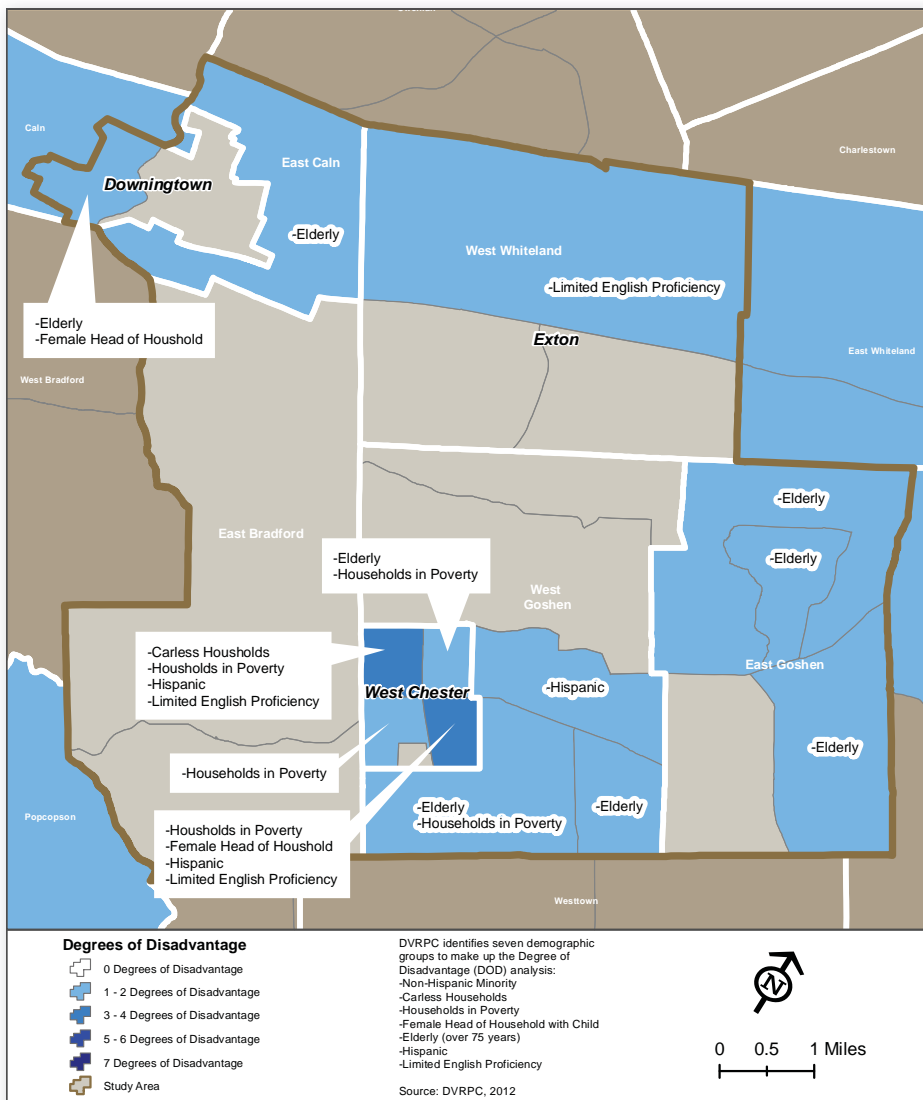
Special attention warranted for transportation-dependent cohorts

Given the goal of this Plan 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.

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 |

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.

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

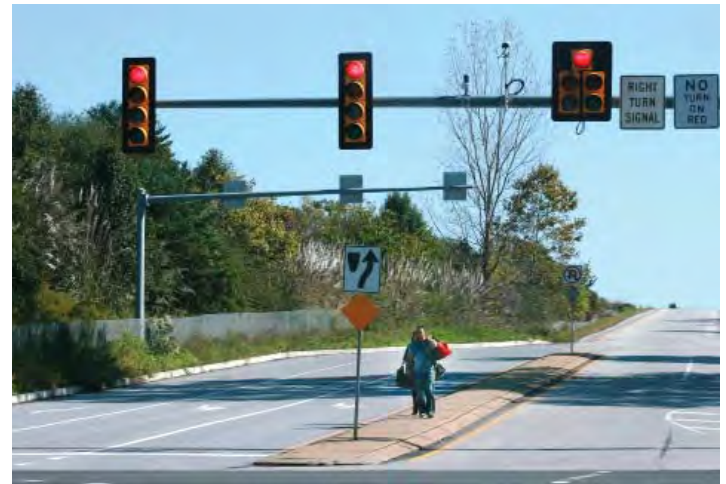
Despite the rich density of potential destinations for walking and biking, many of these locations have limited amenities for bicyclists, pedestrians, and transit users.

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



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



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.



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](#).

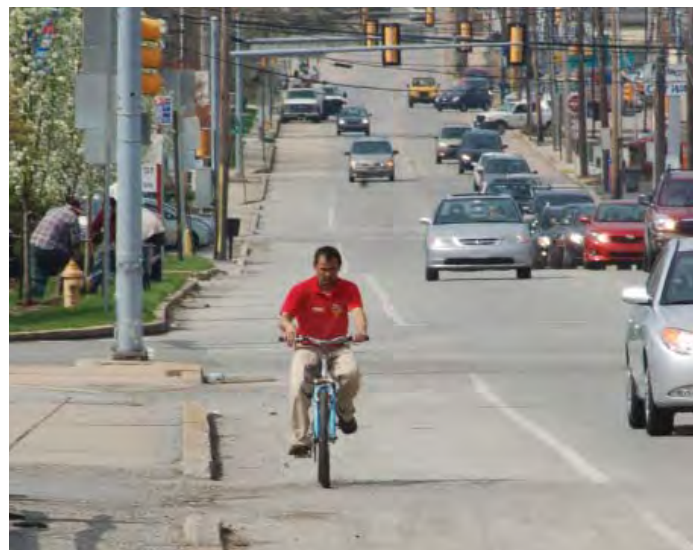
Most bicycle-friendly roads in Central Chester County are preferable based on low traffic volumes, not roadway/shoulder widths. These lightly-traveled roadways have two noteworthy limitations in the context of this Plan:

- 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

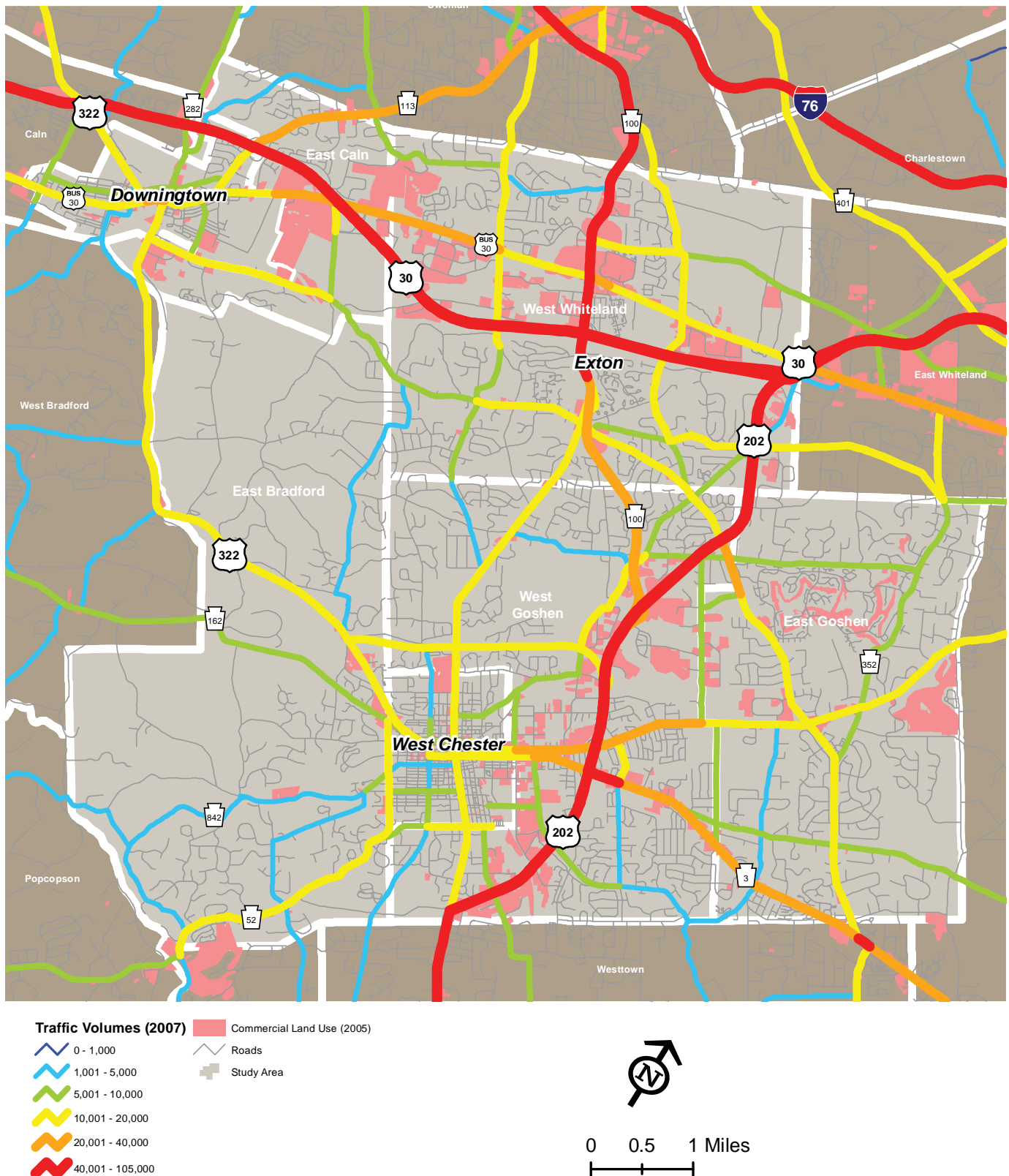


This cross-section of PA 162 is typical of roadways in Central Chester County



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

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.

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 Bike 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

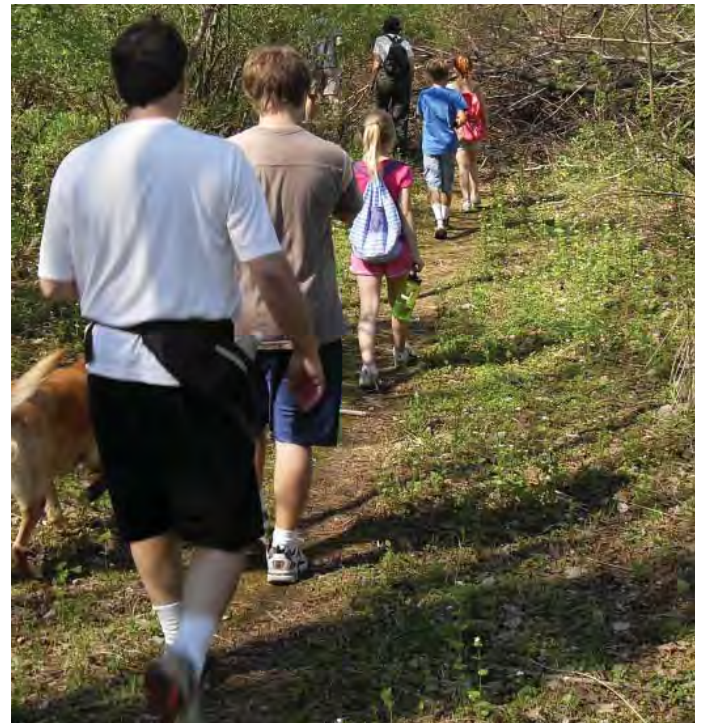
| Grade | Percent of children reported obese |
|--------------------------------|------------------------------------|
| Elementary schools (K-6th) | 26% |
| Middle/High schools (7th-12th) | 36% |
| Overall | 31% |

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:

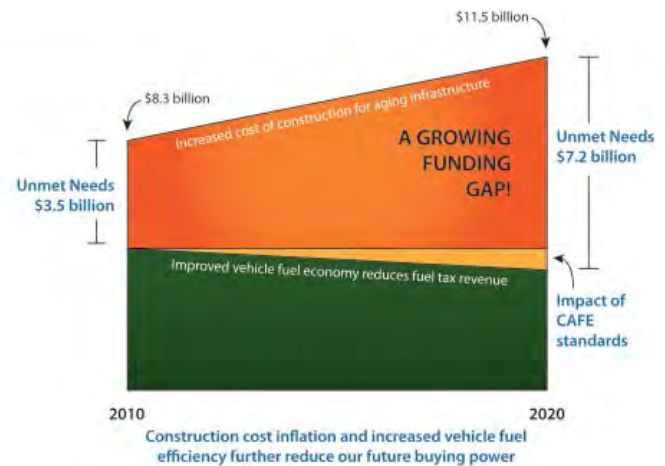
Projects

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

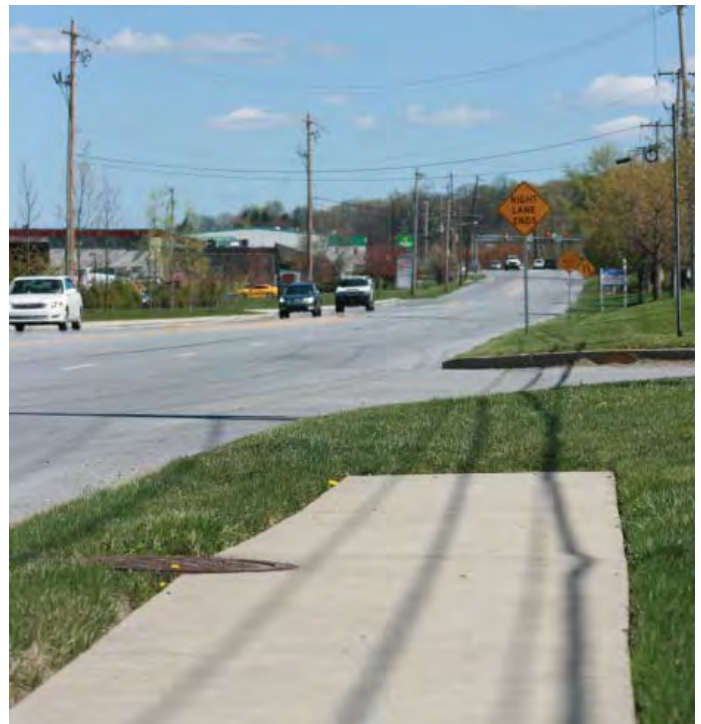
The regulations contained within municipal ordinances are an important means of implementing the pedestrian and bicycle related policies promoted in local and regional plans. Zoning ordinances and subdivision and land development ordinances can require that sidewalks, trails, and related pedestrian facilities 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.

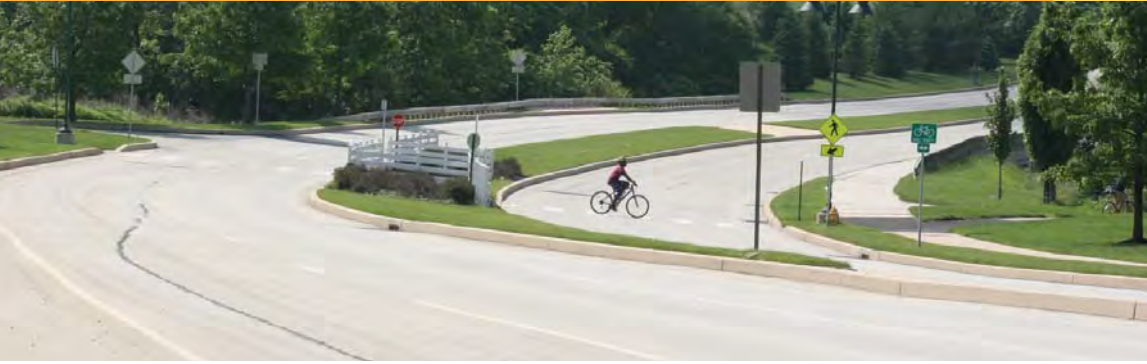


A person in a blue long-sleeved shirt and black pants is walking away from the camera on a paved path. They are holding leashes for two dogs: a golden retriever on the left and a black and tan dog on the right. The path is surrounded by lush green trees and foliage. In the distance, another person in a blue shirt is walking away. The top of the image has a yellow and orange gradient bar.

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
- Cross-country Skiing
- Horseback Riding

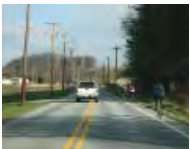
User criteria

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.

Figure 15:

Example of bike lane



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

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)

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 crossings 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 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 Downtown 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 27](#), 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



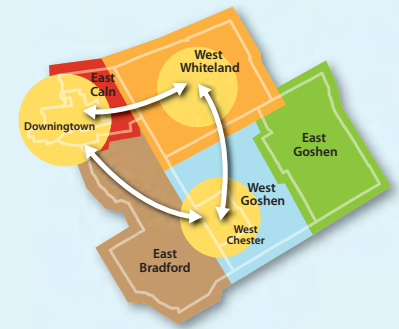


Improvement plan

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

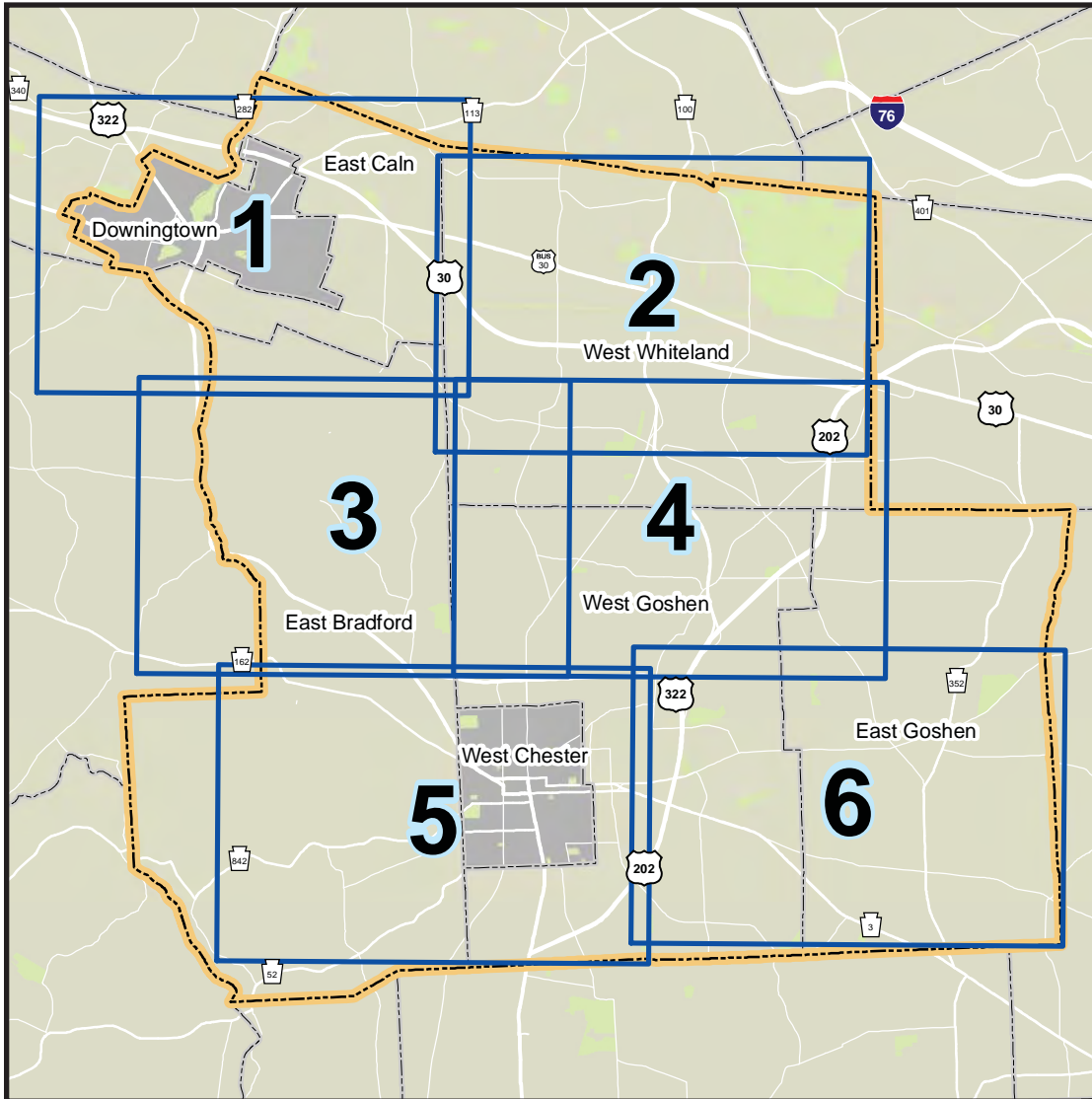
ESTABLISH a comprehensive network of pedestrian, bicycle and public transportation facilities that connects local and regional destinations for all users.

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 | 39 |
| Restricted-Use Trails | 18.0 | Add Mid-block Crossing | 12 |
| 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 | Bike Rack | Existing Features |
| --- Shared Roadway | Trail Parking | — Existing Trails |
| --- Multi-Use Trails | Traffic Calming Table | ■ PA Bike Route L |
| --- Restricted-Use Trails | Bike Signage Improvements | Existing Trailhead |
| — Bicycle Boulevard | At Grade Trail Crossing | Existing Trail Parking |
| — Signed Bike Route | Signalized Crossing | ■ Growth Centers |
| □ Priority Corridors | | Intermodal Stop |



Central Chester County Improvement Plan Pedestrian Improvements



Improvements

- | | | |
|---------------------------|-----------------------------------|--------------------------|
| --- Multi-Use Trails | Intersections Improvements | Existing Features |
| --- Restricted-Use Trails | Update Crosswalks/Ped. Signals | — Existing Trails |
| — Proposed Sidewalks | Add Crosswalks/Ped. Signals | — Existing Sidewalks |
| Trail Parking | Mid-block Crossing | ■ Growth Centers |
| Add Transit Shelter | Signalized Trail Crossing | Existing Trailhead |
| □ Priority Corridors | | Existing Trail Parking |
| | | Intermodal Stop |



