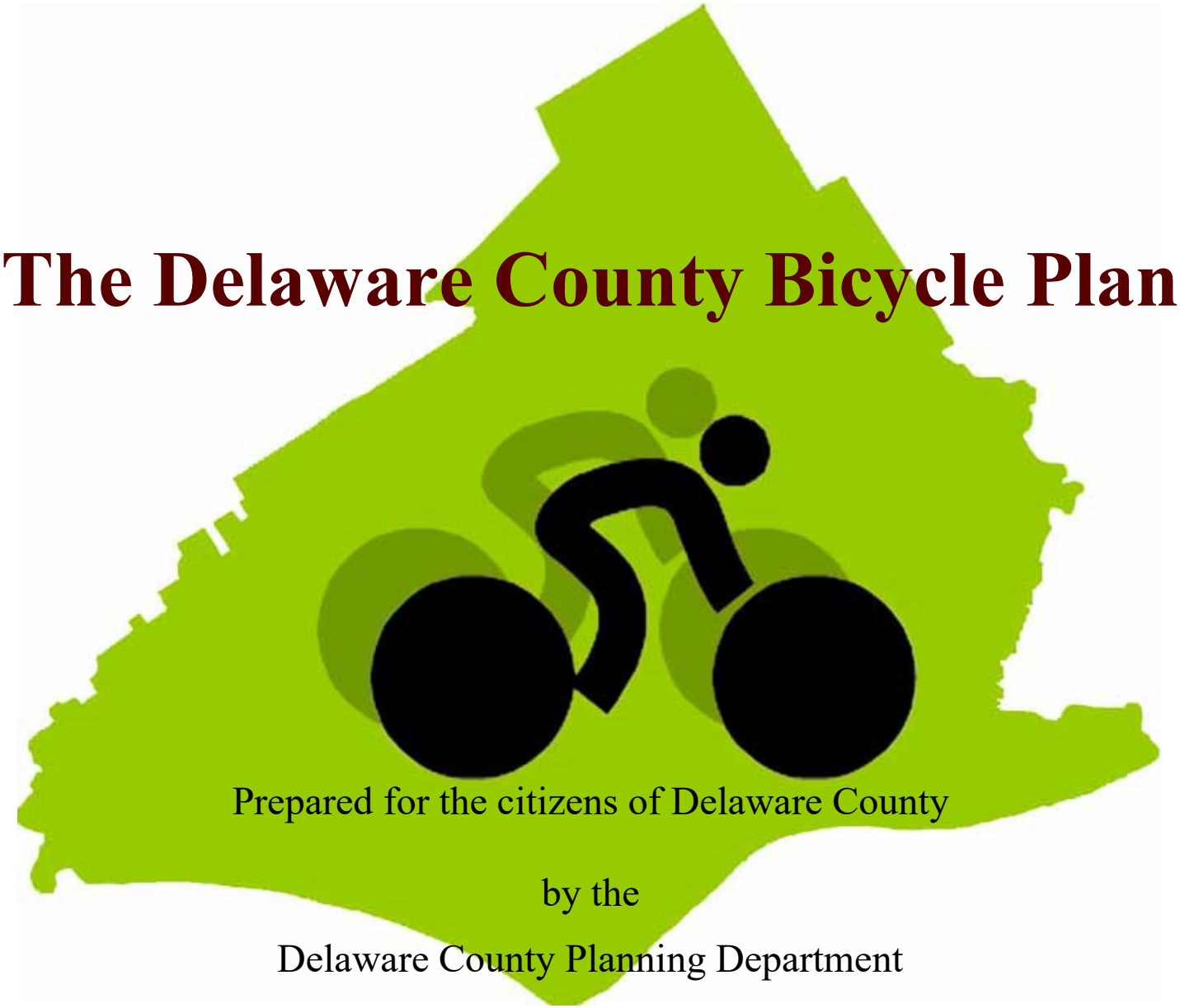
The Delaware County Bicycle Plan



Prepared for the citizens of Delaware County

by the

Delaware County Planning Department

Delaware County

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Acknowledgements

The Delaware County Planning Department greatly appreciates the assistance given by the Delaware County Cycling Advisory Committee in the preparation of this document. The list of members below represents the people serving on the Committee and their affiliations at the time it met. Some members have changed capacity or left their organizations since the Committee last met.

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The Delaware County Planning Department also thanks all of the County officials and residents who rendered their assistance through surveys and participation during meetings held for the preparation of this plan.

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OVERVIEW

Introduction and Goal

VISION: Improved acceptance of, access to, facilities for, and use of bicycling for the purpose of transportation in Delaware County.

The purpose of the Delaware County Bicycle Plan is to provide a base on which improvements to the safety and effectiveness of the bicycle as a mode of transportation in Delaware County can be built. The Delaware County Bicycle Plan is an implementation tool of the draft *Delaware County Comprehensive Plan*. A series of outlined objectives for bicycle transportation are outlined in the Plan, but the essential goal is improving acceptance of, access to, facilities for, and use of bicycling as a mode of transportation in Delaware County. The Plan looks at the background of bicycle transportation locally, nationally, and internationally. On-road routes are selected to be examined for future improvements. Trail possibilities are examined to augment the on-road bicycle improvements. Then impediments to bicycle transportation are identified. Methods for dealing with these problems are outlined using the four E's of Engineering and Planning, Encouragement, Education, and Enforcement.

The Bicycle Plan is in accordance with the Complete Streets concept, which creates streets where all users, motorists, bicyclists, pedestrians, transit users, and those with disabilities are accommodated. By increasing the use and acceptance of bicycles, roads will be another step closer to becoming a complete street.

Delaware County Bicycle Improvement Network

One of the central components of this Plan is the identification of corridors for on-road bicycle improvements. These routes are intended to be direct routes between multiple bicycle destinations, such as work sites, shopping, recreational facilities, schools, and transit stations. To determine the feasibility of bicycle improvements, the road network was analyzed using bicycle demand and the distance to these trip attractors. Bicycle demand was estimated by combining survey results with crash data to estimate demand for bicycling along certain routes. The results of this analysis can be seen in Table 3-1 and Map 3-1.

It needs to be understood that this network should also not be mistaken for a list of bicycle-friendly streets. Indeed, many of the routes in this Plan are highlighted because they have a high level of crashes involving bicyclists. The document designates a network of roads for improvement because of their importance for bicycle transportation. The inclusion of a road in the network should not be taken as a recommendation to ride the road in its current condition.

Improvements to the bicycle level of service of the highlighted network routes will be a broad effort involving many parties from both the private and public sectors. The bicycle network provides the rational basis for making bikeway improvements incidental to other highway improvements. Such incidental improvements, requiring no special financial resources, will be a principal means of implementing the network. A proposed outline of the agencies' roles in improving the bicycle transportation of Delaware County is shown in Appendix A.

Shared use paths can provide an off-road option to on-road bicycle facilities. The transportation uses of these paths as related to bicycles are touched on in this Plan. In an effort to give Delaware County residents access to the recreational and transportation benefits of mixed use trails, the County should pursue the creation of multi-use trails in corridors created by stream valleys, utility corridors, roads, and railroad rights-of-way.

Objectives: The Four E's

It is generally accepted that successful bicycle planning involves more than just building facilities. A successful strategy to improve bicycle ridership should have four broad components, sometimes called "the four E's."

1. **Engineering and Planning** deals with transportation planning and roadway design and construction issues for making both the new and existing road network bikeable. There are five main bicycle facility types described in the Plan; shared lanes, wide curb lanes, shoulders, bike lanes, and bicycle boulevards. It also involves providing bicycle facilities at destinations, such as bicycle parking, showers, and changing facilities, making stairways and transit stops bike accessible, and accommodating bikes on transit.

2. **Encouragement** addresses the promotion of bicycling as a means of transportation through creating promotional campaigns and benefits for bicyclists.

3. **Education** deals with teaching proper bicycling skills and educating bicyclists and motorists about key safety issues and rules of the road. Education is key to having safe and effective bicycling.

4. **Enforcement** involves enforcing traffic laws for both motorists and bicyclists.

Conclusions and Next Steps

The County Bicycle Plan is a necessary guide to the implementation of bicycle improvements. A successful bicycle plan should provide policy continuity that will survive turnover of County Council, the County Planning Commission, and Planning staff members. The Plan will provide a legal and political basis for requesting improvements from other agencies. It should be recognized that many aspects of the Plan, including the desired bicycle improvements, represent a wish list that may prove to be unachievable with available resources. However, if the Plan is adopted and pursued, programs and funds are available to make some portion of it a reality. It will provide guidance and a model for local bicycle mobility plans. And it will provide a reasonable path of action and benchmarks against which its success can be measured.

CHAPTER 1

Plan Purpose and Process

Plan Purpose and Scope

The purpose of the Delaware County Bicycle Plan is to provide a base on which improvements to the safety and effectiveness of the bicycle as a mode of transportation in Delaware County can be built. This Plan serves as the bicycle element of the draft Delaware County Comprehensive Plan. The Plan also incorporates aspects of the Complete Streets concept, allowing bicycle users to have access to all roads. Through exploring in depth some of the broader issues brought up in the draft County comprehensive plan and adding more specific recommendations, this Plan will ease their implementation. To that end, a list of goals is stated along with an extensive examination of different strategies that can be used to meet these goals. It proposes a Countywide bicycle improvement network of the highest priority roads to make bicycle friendly and other elements needed to establish bicycling as a viable mode of transportation in Delaware County.

The scope of this document is limited to the above mentioned purpose, and several related planning documents will be needed to make the outlined network in this document a reality. This document is not intended to be the culmination of bicycle planning efforts in Delaware County but the starting point for more detailed plans and actions to meet the above goal.

It needs to be understood that this network should also not be mistaken for a list of bicycle-friendly streets. Indeed, many of the routes in this study are highlighted because they have a particularly high bicyclist crash rate. The document designates a network of roads for improvement because of their importance for bicycle transportation. The inclusion of a road in the network does not mean that it is safe to ride in its current condition.

The Need for a Bicycle Plan

A plan is necessary to guide bicycle-related improvements. Without a network showing where and what type of improvements are wanted, Delaware County staff and interested municipalities have a weaker basis for asking the Pennsylvania Department of Transportation (PennDOT) to provide bicycle facilities when roads are rebuilt. A plan will also strengthen a municipality's position in being considered for federal and state funds for bicycle facilities by showing their relation to the County Bicycle Plan. Additionally, Title 23 of the United States Code (U.S.C.) §217 (g) (1) states that, "Bicyclists and pedestrians shall be given due consideration in the comprehensive transportation plans..."

Previous Bicycle Plans in Delaware County

The previous bicycle plan was completed in 1978. The 1978 plan, its recommended facility types, and its outlined routes need updating. The 1978 plan designated secondary street corridors as bicycle routes, an approach that has gone out of favor. Most back streets are already bikeable, but the places where bicycle transportation needs the most improvement is on the arterials. The off-road corridors identified in the 1978 plan remain valid, and some of the on-road routes may be used if making some of the arterials bikeable proves unfeasible. The "Bicyclists' Baltimore Pike" is a route from the 1978 plan which will be implemented as part of the Transportation Improvement Program (TIP).

Several municipal comprehensive plans also call for improved bicycle facilities. Among municipalities, Aston, Concord, Edgmont, Radnor, and Upper Chichester Townships and Aldan, Collingdale, Colwyn, East Lansdowne, Marcus Hook, Morton, Lansdowne, Sharon Hill, and Yeadon Boroughs have or are reviewing plans that call for bicycle trails or on-road bicycle facilities.

Sources and Models

The basic framework of this Plan is derived from the *Bicycling Road Map* of Montgomery County illustrated in Figure 1-1 as well as other sources. Montgomery County represents striking similarities to Delaware County; thus, the research and language used in the Montgomery County plan is applicable to Delaware County. Other bicycle plans from various state, county, and city governments were used as models and are highlighted in the reference section. Every attempt was made to cite all factual information for easy reference. A comprehensive list of sources is available in the reference section of this document.

Figure 1-1: Montgomery County's *Bicycling Road Map*

The Delaware County Bicycle Plan was achieved using the models of many other bicycle plans, including Montgomery County's *Bicycling Road Map*.
Source: Montgomery County Planning Commission

The Creation of the Delaware County Bicycle Plan

Many steps are required before the approval of a planning document. Understanding these steps is helpful in implementing the Plan and assists in the creation of resulting plans. These steps are outlined below and are visually represented in Figure 1-2.

Surveys

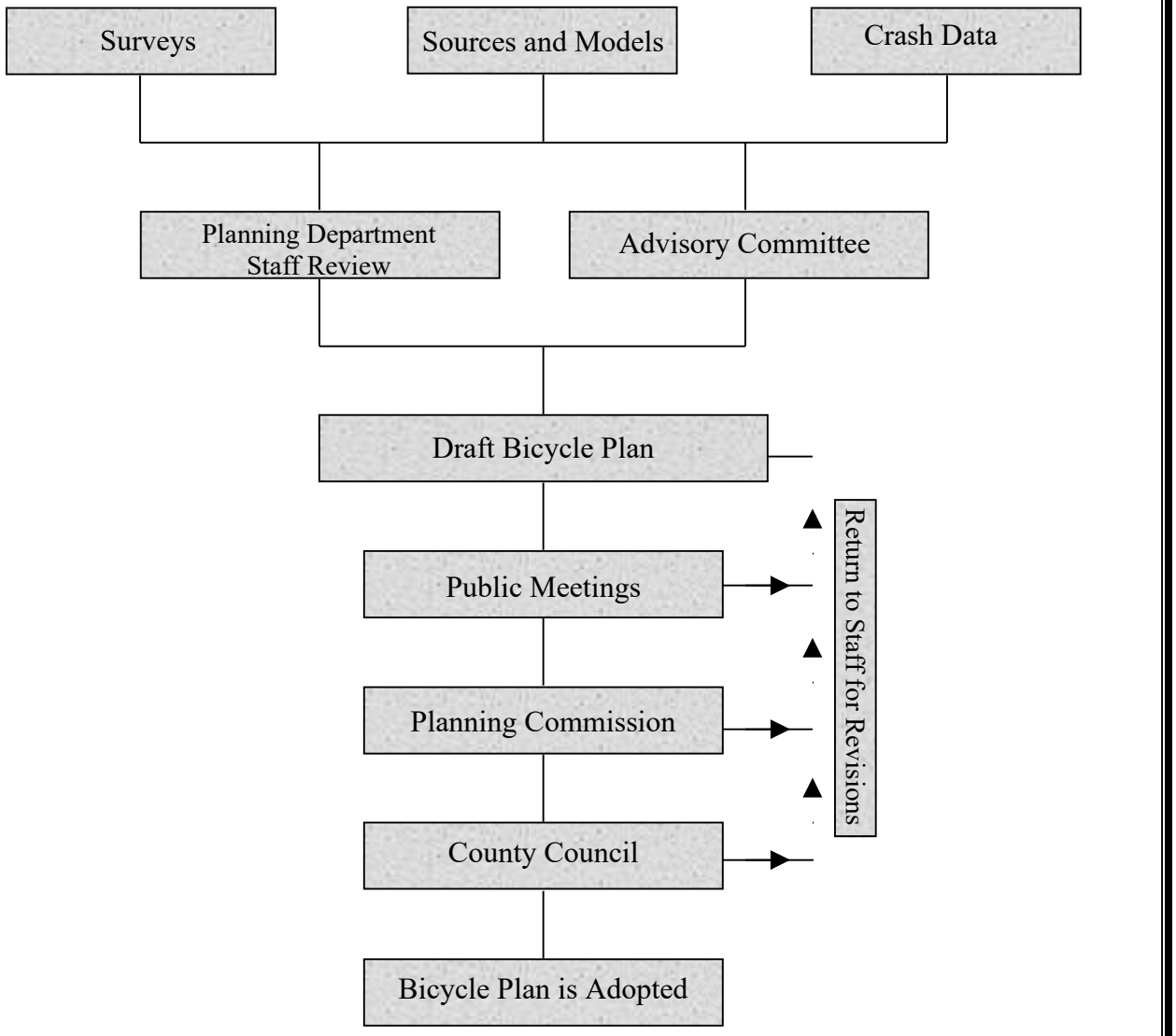
A survey is a critical element of public input into the planning process. Much survey work has already been done under the aegis of a regional bicycle plan. However, the Delaware County Planning Department (DCPD) conducted its own survey of cyclists in 1998 through the mailing lists of bicycling organizations and through distribution of surveys to bicycle shops. The survey results have been used to choose priority routes for bicycle improvements, verify the results of the regional survey, and establish the degree of need for more recreational trails. The Friends of Radnor Trails, the Bicycle Coalition of Greater Philadelphia, and the Friends of the Chester Creek Branch volunteered the use of their mailing lists. Updates and evaluation surveys of this Plan should attempt to reach beyond avid bicyclists to more of the general public, particularly school-aged children.

One hundred seventy-five people responded. Two hundred sixty surveys mailed to members of the Delaware Valley Bicycle Club, The Friends of the Chester Creek Branch, and The Bicycle Coalition of Greater Philadelphia produced 145 responses. Thirty responses came from surveys left at bicycle shops. The average age of the respondents was about 45. Children and young adults were under represented, probably due to their lower participation in organized groups. Survey results are discussed in Chapter 3: The Delaware County On-road Bicycle Improvement Network. The survey form and results are found in Appendix B.

Delaware County Bicycle Plan Advisory Committee

A committee of interested citizens and officials was formed to oversee and provide input into the

Figure 1-2: Creation and Adoption Process for the Bicycle Plan of Delaware County



planning process. The committee includes representatives of bicycling advocacy organizations, cycling clubs, trail advocacy groups, PennDOT, businesses, the Southeastern Pennsylvania Transportation Authority (SEPTA), police bicycle units, municipal governments, and other interested citizens. The committee provides an opportunity for informed representatives to guide the development of the Plan, provide advice, and discuss policy questions.

Public Meetings

Once the staff judged that a draft plan was ready to be released, a letter requesting comments and offering to present the draft of the plan was sent to various parties. Letters were sent to Delaware County federal and state legislators, municipal governing body chairs, municipal planning commission chairs, municipal managers, school districts, physical education directors, colleges, neighboring County Planning Commissions, transportation representatives at the state, regional, and local levels, and bicycle clubs and coalitions. The text of the Plan was posted on the County's website, along with telephone and e-mail contact numbers for Planning staff. Several presentations were given to municipal and state organizations. The comments received are available in Appendix G as well as ways in which they were addressed in the revised plan.

Delaware County Planning Commission

After the public meetings, the Plan will be revised and presented to the Delaware County Planning Commission for approval. The Commission may endorse the Plan or remand it to staff for revisions.

Delaware County Council

When the Planning Commission endorses the Plan, it will go to County Council to be officially adopted. All hearings will be open to the public.

CHAPTER 2

Goals and Background

General Policy Goal

VISION: Improved acceptance of, access to, facilities for, and use of bicycling for the purpose of transportation in Delaware County.

The Delaware County Bicycle Plan aims to achieve this vision through the following goals:

- To make bicycling an accepted and legitimate mode of transportation for both adults and children
- To make traveling easy for bicyclists making short trips, particularly to transit stations, recreational activities, places of employment and commerce, and schools
- To create a sense of safety and confidence among Delaware County residents when riding bicycles in their neighborhoods and to their destinations through a variety of strategies
- To encourage motorists to obey the traffic laws with respect to bicyclists' rights
- To encourage bicyclists to know and obey the traffic laws with respect to pedestrian and motorists' rights
- To create an environment where bicyclists feel comfortable riding to destinations through
    - An extensive network of on-road bike lanes, bicycle routes, or other means
    - A network of separated paths with direct and convenient access from residential areas to employment, shopping, recreational facilities, schools, and transit stops, where possible
    - The elimination of road hazards, unresponsive demand-actuated signals, and other impediments to bicycling
    - A system of signs and pavement markings that identifies bicycle facilities, directs bicyclists to destinations, and defines the presence of bicycles in a shared-roadway environment
- To encourage transit as a more viable means of transportation for Delaware County residents through the implementation of bike-on-bus and bike-on-rail programs
- To encourage the provision of destination-oriented facilities that support bicyclists' end-of-trip needs, including bicycle parking, locker rooms, and shower facilities
- To ensure that access to information pertaining to bikeable routes is available through printed and electronic sources
- To help limit local liability by creating bicycle facilities that meet current engineering and design standards

Achieving these goals will require an extensive effort by federal, state, County, and municipal governments as well as the private sector and the community at large. These goals, however, are achievable through a series of recommendations, also known as objectives, outlined in this Plan. In order to chart our progress on achieving these recommendations, we have laid out performance measures after each set of recommendations.

The recommendations and their performance measures are organized according to four broad components, sometimes called "the four E's."

1. **Engineering and Planning** deals with transportation planning and roadway design and construction issues for making both the new and existing road network bikeable.

2. **Encouragement** addresses the promotion of bicycling as a means of transportation through creating promotional campaigns and benefits for bicyclists.

3. **Education** deals with teaching proper bicycling skills, routes, and laws to bicyclists and motorists.

4. **Enforcement** involves enforcing traffic laws for both motorists and bicyclists.

Current Status of Bicycling

Partner Organizations

In order to implement the Delaware County Bicycle Plan, help will be needed from partner organizations in both the private and public sectors. Outreach efforts to ensure the maximum participation from all possible organizations will be invaluable in seeing the recommendations of this Plan become a reality. These groups may need to be educated about their roles in and the possibilities of a more bicycle-friendly Delaware County.

- Commonwealth of Pennsylvania – PennDOT (Project Management Unit, Maintenance Unit, Design Unit, Bureau of Municipal Services, Bureau of Motor Vehicles), Pedestrian and Bicycling Coordinators, Bureau of Public Transportation, Pennsylvania State Police, Department of Conservation and Natural Resources (DCNR) (Ridley Creek State Park), Historical and Museum Commission, and Department of Environmental Protection (DEP)
- Delaware Valley Regional Planning Commission (DVRPC)
- SEPTA
- Amtrak
- Delaware County – County Council, Planning Commission, Planning Department, Public Works Department, Community Service Department, and Department of Parks and Recreation
- School districts
- Municipalities – managers, road/public works, governing bodies, planning commissions, environmental advisory councils, recreation departments
- Bicycle advocacy organizations – Bicycle Coalition of Greater Philadelphia, Delaware County Cycling Committee, League of American Cyclists, Rails to Trails Conservancy
- Bicycle clubs
- Trail groups – East Coast Greenway Alliance, Friends of Radnor Trails, Friends of the Chester Creek Branch, Friends of the Octoraro Branch
- Delaware County Transportation Management Association (TMA)
- Delaware County Chamber of Commerce, PA 291 Beautification Committee
- Delaware County Coastal Zone Management (CZM) Task Force
- U.S. Fish & Wildlife Service (John Heinz National Wildlife Refuge at Tinicum)
- National Park Service
- Delaware River Port Authority (DRPA) (Commodore Barry Bridge)
- Public utilities (for their rights-of-way)
- Legislators
- Employers
- Commercial/retail providers – shopping center owners, tenants, bicycle shops
- Developers
- Police departments
- General public
- Colleges
- Automobile Association of America (AAA)

- Professional – insurance providers, Township/Borough Officials Association, Police Chiefs Association, Pennsylvania Planning Association, engineering associations
- Media/press

The County will work with its partner organizations as a coordinator and facilitator to achieve the goals of the Bicycle Plan. See Appendix A for a detailed list of roles and responsibilities for these partner organizations.

Bicycle Planning Directives

National, state, and regional directives encourage bicycle planning. At the federal level, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), its successor, the Transportation Equity Act for the 21st Century (TEA-21), and the recently passed Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) all required that consideration be given to bicyclists in the planning process and in facility design. Bicycles and pedestrians are to be accommodated everywhere they are permitted. In addition to requiring consideration of bicycles in transportation planning, the Transportation Acts also increased funding options for bikeways. During the life of ISTEA (1991- 97), $972 million of federal Transportation Enhancement (TE) funds were programmed for bicycle projects, compared with $41 million in federal funds for both pedestrian and bicycling projects in the 20 prior years.[1] This huge increase in investment has allowed for a proliferation of bicycle facilities all around the country. This trend continued in TEA-21 and its successor SAFETEA-LU. The Federal Highway Administration (FHWA) and PennDOT plans set a goal of doubling the share of pedestrian and bicycle modes from a national average of 7.9% to 15.8% of all trips.[2] DVRPC seeks to double the regional percentage of pedestrian and bicycle trips based on regional data.[3] This plan also aims to meet this goal for Delaware County.

Bicyclists Are Legal Road Users

Pennsylvania law recognizes the bicycle as a vehicle, and bicyclists have the legal right to ride on almost all public roads. Since bicyclists have a legal right to be on the road, those responsible for transportation planning need to take bicyclists into consideration. To that end, municipalities concerned with being held responsible for bike liability should note that the traffic laws that apply to automobiles also, by law, apply to bicycle users. The installation of bike lanes poses no more of a liability problem than the construction of a new highway and may avoid lawsuits from bicyclists based on lack of accommodation. By providing facilities that meet accepted engineering and design standards where it is feasible to meet these standards, local liability is greatly lessened. For more information, please consult the Clean Air Council's documents concerning liability issues (*Improved Bicycle Access in Pennsylvania: What It Means for Municipal Liability Exposure*, July 2003). Police are already responsible for policing local roads, but police may need to be trained about

[1] Pucher, John et. al., "Bicycling Renaissance in North America? Recent Trends and Alternative Policies to Promote Bicycling," *Transportation Research*, Vol. 33, Nos. 7/8 (Department of Urban Planning: Rutgers University, 1999), p. 9

[2] U.S. Department of Transportation, Federal Highway Administration, *The National Bicycling and Walking Study* (FHWA-PD-94-023, 1994), p.2

[3] Delaware Valley Regional Planning Commission, *Horizons: The Year 2025 Land Use and Transportation Plan for the Delaware Valley (2002)*, p. 28

laws related to bicycle transportation. There is more information about enforcement in Chapter 5, under the enforcement section. As mentioned, laws that apply to motor vehicles also apply to bicyclists, a fact which may need to be impressed on bicyclists unfamiliar with the law through programs such as those described in the education section of Chapter 5.

Bicycle Facilities in Delaware County

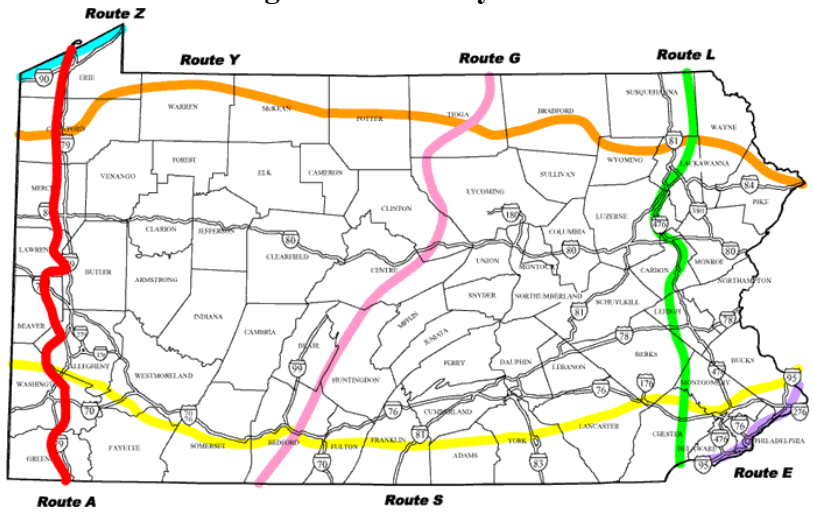
Delaware County has a few short, disconnected bicycle facilities, which can be seen on Map 2-1. The best bicycle facility, the loop in Ridley Creek State Park, is recreational in nature. Providing safer bicycle facilities near the park would encourage people to use their bicycles to access the park and allow them to leave their cars at home, freeing parking for visitors traveling farther distances.

Bicycling is also permitted on trails in the John Heinz National Wildlife Refuge. Cyclists can go off-road between Philadelphia at the north entrance and PA 420 at the south entrance. The south entrance of the Refuge lacks safe connections with surrounding neighborhoods.

The recommendations of the bicycle plan of 1978 have not been implemented, probably because of the lack of a clear implementation strategy. One new bicycle trail has been added since it was written, the 2.1 mile Leiper-Smedley Trail near I-476 (the Blue Route) in Nether Providence Township[4]. The Leiper-Smedley Trail does not meet current bicycling standards, though it may have met standards when it was created, but it is usable and has some transportation functions which can be expanded upon with future trails. It serves as an off-road connection between Yale Avenue in Swarthmore and Rose Valley Road in Nether Providence at its southern end and Baltimore Pike and Smedley Park at its northern end, but it is not very direct and has many sharp turns. Small unpaved community trails, some of them suitable for recreational bicycling, exist in Middletown, Newtown, and other townships. They are often associated with a particular development and are not ideal for transportation purposes.

PennDOT has two marked on-road bicycle routes in Delaware County that connect to its statewide system of routes for bicycle touring (see Figure 2-1). The oldest is Bicycle PA Route L, which encompasses Creek Road and Rocky Hill Road in Chadds Ford Township. The newly signed Bicycle PA Route E is the interim route for the East Coast Greenway to

Figure 2-1: Pennsylvania



A map of Pennsylvania state bicycle routes
Source: PennDOT

[4] Delaware Valley Regional Planning Commission, *The Southeastern Pennsylvania Bicycle and Pedestrian Mobility Plan* (1995), p. 40

allow users of that national trail system to safely navigate through Pennsylvania until the completion of the East Coast Greenway.

On-road facilities are also lagging behind the bicycling possibilities of the region. While Haverford Township has a network of on-street bicycle routes, they have no connection with any facilities outside of the Township. There are no marked bicycle lanes anywhere in Delaware County. Many state highways lack shoulders, and the shoulders that exist are seldom swept, based on observations by regular bicycle users. Secondary routes not on heavily traveled roads between neighborhoods are scarce due to the barriers posed by rail lines and creek valleys. High speeds and narrow roads make western Delaware County less appealing to cyclists. In eastern Delaware County, a grid system makes for some connectivity, speeds on connecting roads are lower than in the west, and main streets often have on-street parking which gives the bicyclist some operating room. But apart from residential streets and a few small neighborhoods, there is much work to be done to make Delaware County safe and comfortable for bicycling.

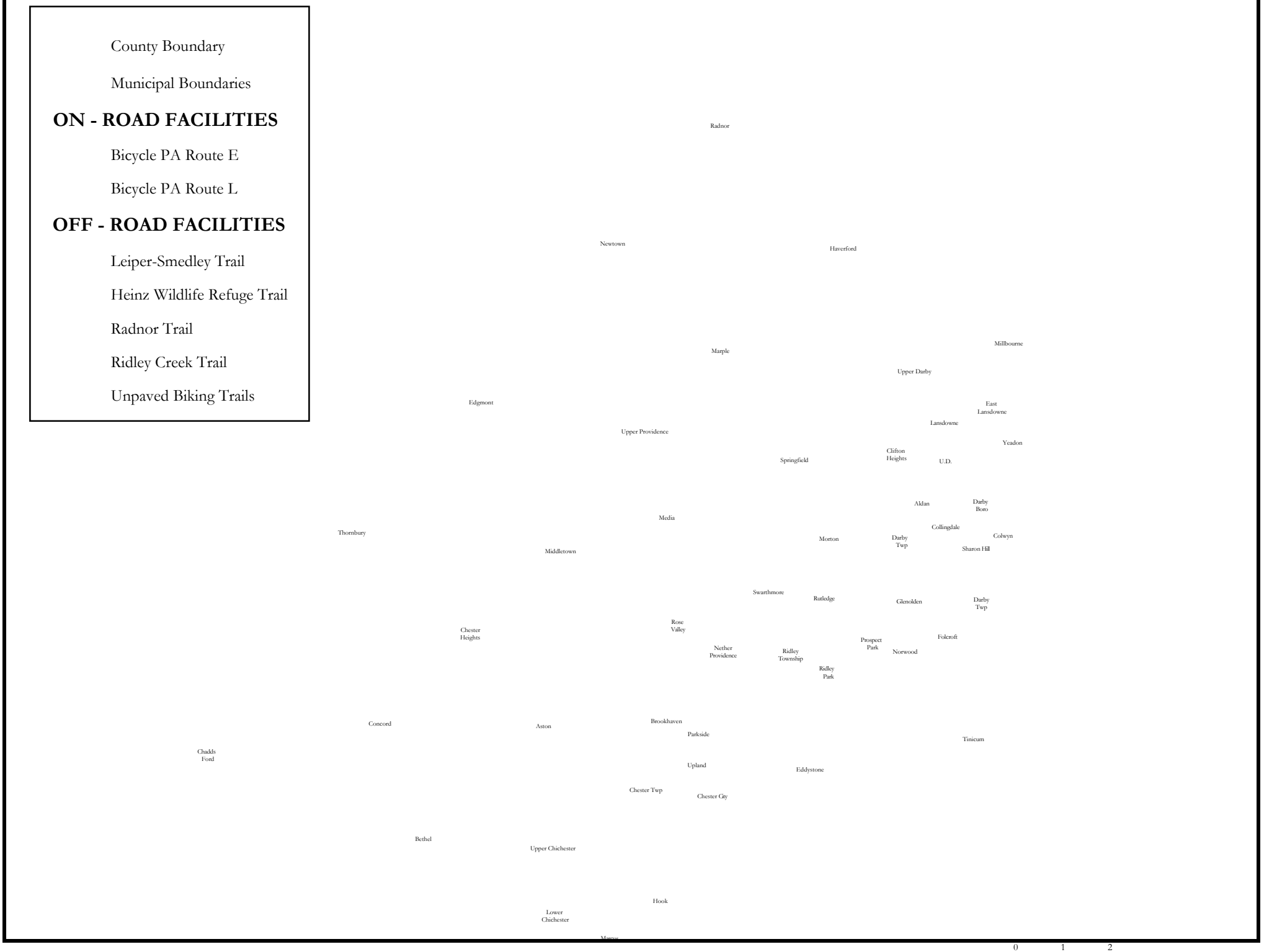
Neighboring Bicycle Initiatives

Thanks to increased federal funding and a more active cycling community, the region is becoming far more active in planning and building bicycle facilities. Philadelphia has moved the fastest and done the most of any municipality in the region. Philadelphia has built 34 miles of off-road bicycle trails, one in each major creek valley including the Cobbs, the Schuylkill, the Wissahickon, the Tacony, and the Pennypack. In planning are extensions of the trail along the Schuylkill River Trail to Bartram's Garden in Southwest Philadelphia and the Kensington and Tacony (K&T) Trail which parallels the Delaware River.

The Philadelphia Streets Department produced an ambitious plan for a 350-mile network of bicycle lanes as part of a coordinated effort between the City and the bicycling community (see Map 2-2 and Map E-9). So far, it has striped 160 miles of bike lanes by coordinating the installation of bike lanes with street resurfacing (see Figure 5-2). Common street configurations in Philadelphia facilitate restriping for bike lanes. Philadelphia has a large number of 50' streets with parking on both sides. Two 8' parking lanes leave two 17' travel lanes. Seventeen feet is too wide for one travel lane and too narrow for two. Traffic moves too fast, and people attempt to use the single lane as two lanes. Removing a parking lane is not an option in rowhouse neighborhoods. Adding a striped 5' bike lane leaves a 12' travel lane, and traffic reacts to the perceived narrowing by slowing down. Philadelphia has home rule and does not need to follow PennDOT policies on lane widths, so the configuration above can be used on streets as narrow as 44'. Philadelphia has also installed thousands of on- street bicycle racks of the "inverted U" design, which are

Figure 2-2: Inverted U Bicycle Rack

The installation of an "inverted U" bicycle rack, currently considered the industry standard.
Source: City of Chicago Department of Transportation


County Boundary
Municipal Boundaries
ON - ROAD FACILITIES
Bicycle PA Route E
Bicycle PA Route L
OFF - ROAD FACILITIES
Leiper-Smedley Trail
Heinz Wildlife Refuge Trail
Radnor Trail
Ridley Creek Trail
Unpaved Biking Trails
Radnor
Newtown
Haverford
Marple
Millbourne
Upper Darby
Edgmont
East Lansdowne
Lansdowne
Upper Providence
Yeadon
Springfield
Clifton Heights
U.D.
Aldan
Darby Boro
Media
Collingdale
Thornbury
Morton
Darby Twp
Colwyn
Middletown
Sharon Hill
Swarthmore
Rutledge
Glenolden
Darby Twp
Rose Valley
Chester Heights
Folcroft
Prospect Park
Nether Providence
Ridley Township
Norwood
Ridley Park
Concord
Aston
Brookhaven
Parkside
Tinicum
Chadds Ford
Upland
Eddystone
Chester Twp
Chester Cty
Bethel
Upper Chichester
Hook
Lower Chichester
Marcus
0
1
2

Trailer

Map 2 - 1

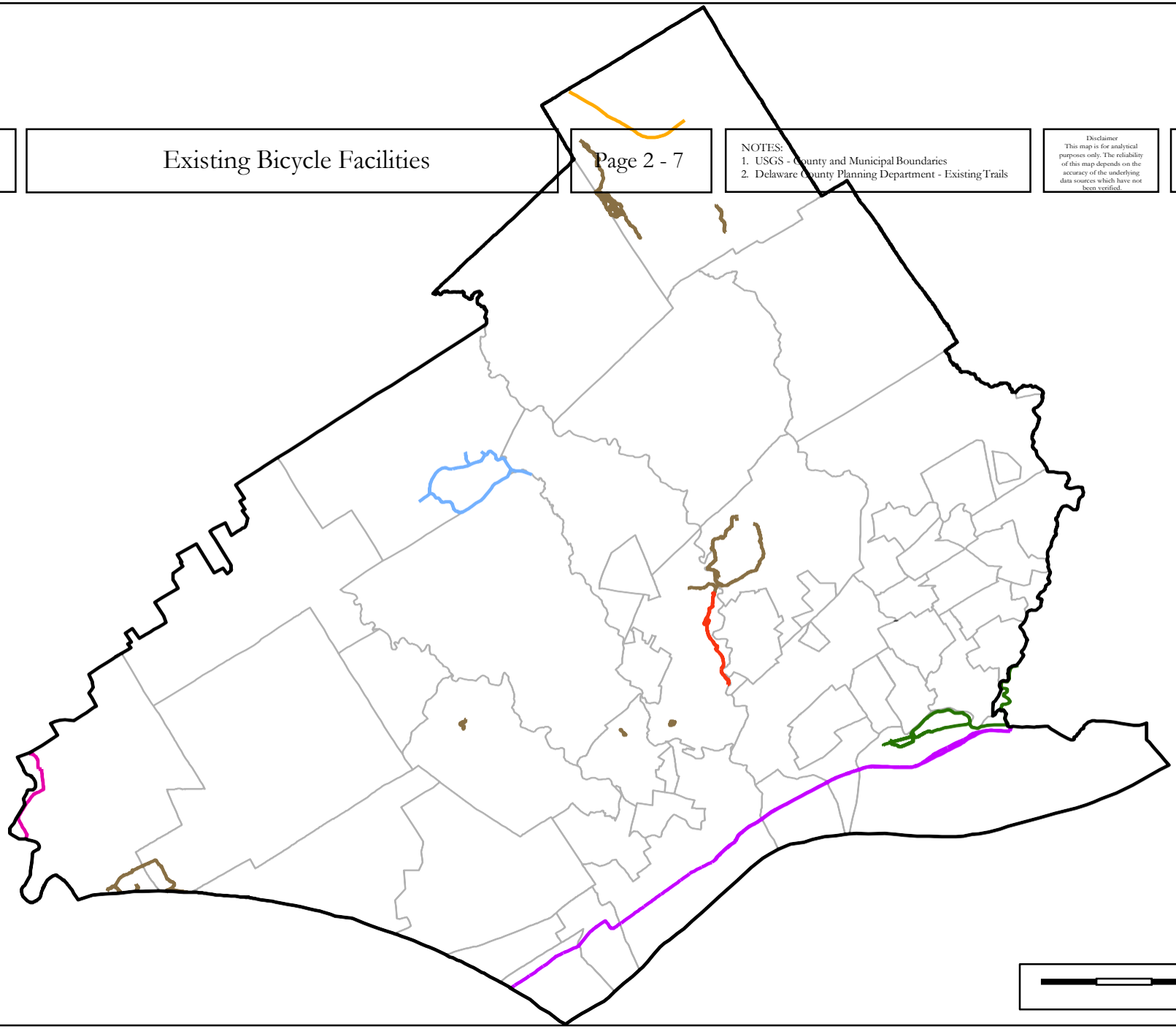
Existing Bicycle Facilities

NOTES:
1. USGS - County and Municipal Boundaries
2. Delaware County Planning Department - Existing Trails

Disclaimer
This map is for analytical purposes only. The reliability of this map depends on the accuracy of the underlying data sources which have not been verified.

Prepared by
Delaware County
Planning Department
March 2005

Miles
4



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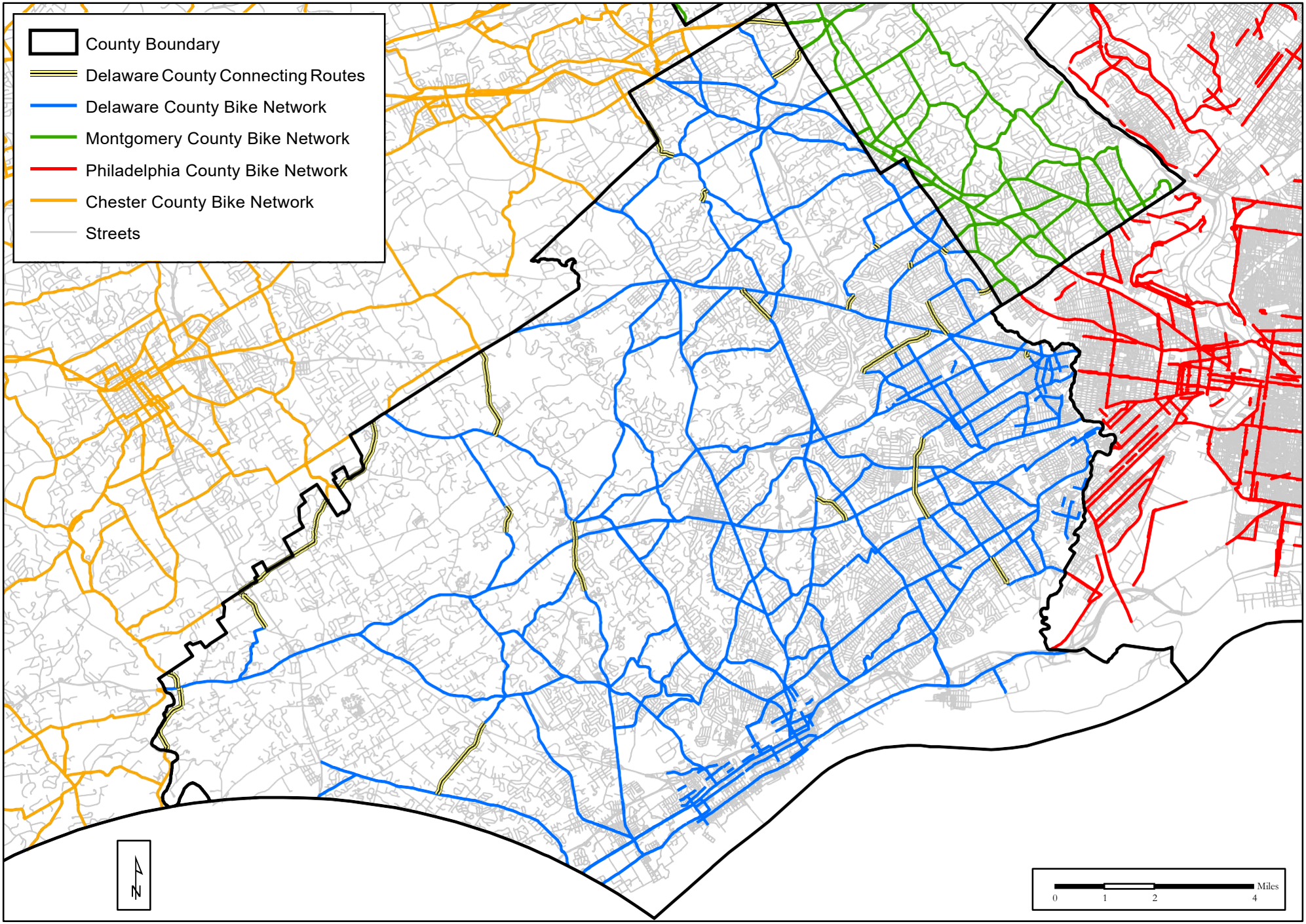

Map 2 - 2

Neighboring Counties' Bicycle Facilities

NOTES:
1. USGS - County Boundary
2. Chester County Planning Commission - Chester County Bike Network
3. Montgomery County Planning Commission - Montgomery County Bike Network
4. Philadelphia Streets Dept. - Philadelphia Bike Network
5. DVRPC - Streets

Prepared by
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Planning Department
March 2005

popular and well used (see Figure 2-2).

Montgomery County adopted an ambitious bicycle plan in 1998 and has a network of on-road bicycle lanes and off-road bicycle trails in planning (see Map 2-2 and Appendix E-10). However, Montgomery County faces challenges similar to those in Delaware County and is unlikely to achieve the results currently being achieved in Philadelphia very soon. Lack of connectivity, absence of shoulders, and narrow rights-of-way make on-street bicycle facilities difficult to implement. Implementation of the on-road network is largely up to PennDOT and the local municipalities as the owners of streets.

Chester County is developing a number of trails, notably the Chester Valley Trail, a trail from Norristown to Downingtown that will connect with the Schuylkill River Trail on the Montgomery County end and the Struble Trail to French Creek State Park on the Downingtown end. The Chester County Planning Commission has developed two maps, one describing current cycling conditions on the County road network and one recommending future improvements (see Map 2-2 and Appendix E-11).

Wilmington Area Planning Council (WILMAPCO), the regional planning agency for northern Delaware including New Castle County, is planning one mostly off-road long-distance bicycle route that will become part of the East Coast Greenway. Since there is substantial linear public parkland in northern Delaware, it is nearing completion of construction on several segments, and it is well advanced in planning the remainder. The Delaware Department of Transportation has a state bicycle plan underway, but it is not yet near completion.

Bicycle Transportation in Delaware County and the Region

Since World War II, roads in Delaware County and southeastern Pennsylvania have been designed and maintained to improve motor vehicle movement without regard for the needs of bicyclists. PennDOT has taken steps to produce a more inclusive road system over the past 20 years, yet much of the development in Delaware County was designed when transportation engineering meant designing exclusively for motor vehicles. The narrow rights-of-way that prevail in Pennsylvania have led to a general absence of shoulders which, together with growing traffic volumes and speeds, has made bicycling hazardous. The high costs to taxpayers and hardships to residents of acquiring rights-of-way along already developed roads mean that some bicycle related improvements simply will not be feasible.

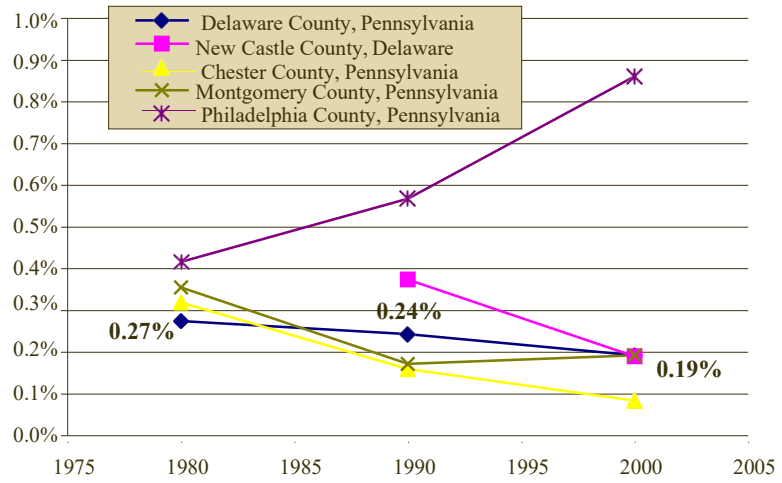
Post World War II development patterns have also made bicycling more difficult. Shops and employment were once close to residences, and neighborhoods were built on a grid pattern that allowed people to travel the shortest possible distance between destinations. In the post World War II era, because of governmental policies and the prominence of the automobile, distance mattered less. Construction of low-density cul-de-sac subdivisions and auto-oriented commercial and industrial areas came into fashion. Such development patterns increase the distance from residences to shops and employment. And when, as is often the case, cul-de-sac subdivisions open onto narrow country roads with high traffic volumes and no shoulders, bicycling and walking seem very dangerous and unpleasant.

Bicycle transportation in Delaware County is now at extremely low levels and falling, as can be seen in Figure 2-3. Only 0.19% of Delaware County resident workers commuted to work by bicycle in 2000, down from 0.24% in 1990 and 0.27% in 1980. Chester and New Castle Counties saw decreases as well, while Philadelphia and Montgomery Counties saw increases. These increases may be due to their bicycle encouragement efforts and the presence of bicycle facilities.

Bicycle commuter information is acquired through the decennial census. The census tends to underestimate the total number of bicycle commuters due to several issues related to data gathering. The Census Bureau requests that all answers are to be completed and recorded as of the time of the census day, April 1. The question is phrased in such a way as to only take into account the mode of travel commuters used during a given week, not the entire year, which tends to misrepresent bicycle commuting, which varies with weather. Also, the census question is phrased in such a way that trips made by more than one mode can only be placed in one category. It is likely that partial trips made by bicycle and some other mode of transportation will be counted as the other mode. For these reasons, bicycle use may be underrepresented in the census (see Map 2-3).

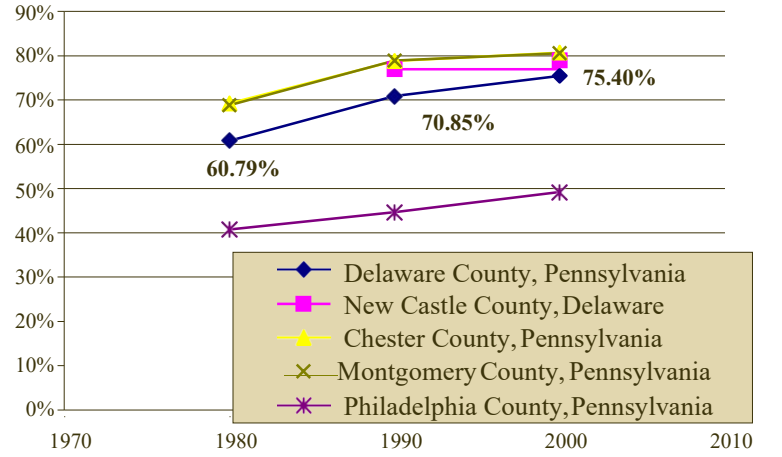
Cars are the mode of choice even for short trips, as can be seen in Figure 2-4. Single-occupant vehicles account for 44% of all work trips of two miles or less in southeastern Pennsylvania.[5] Single-occupant vehicle use in Delaware County rose from 60.8% to 75.4% of all work trips between 1980 and 2000.[6] Neighboring counties showed similar trends.

Figure 2-3: Percentage of Bicycle Commuters



Source: U.S. Department of Commerce, Bureau of the Census, 1980-2000

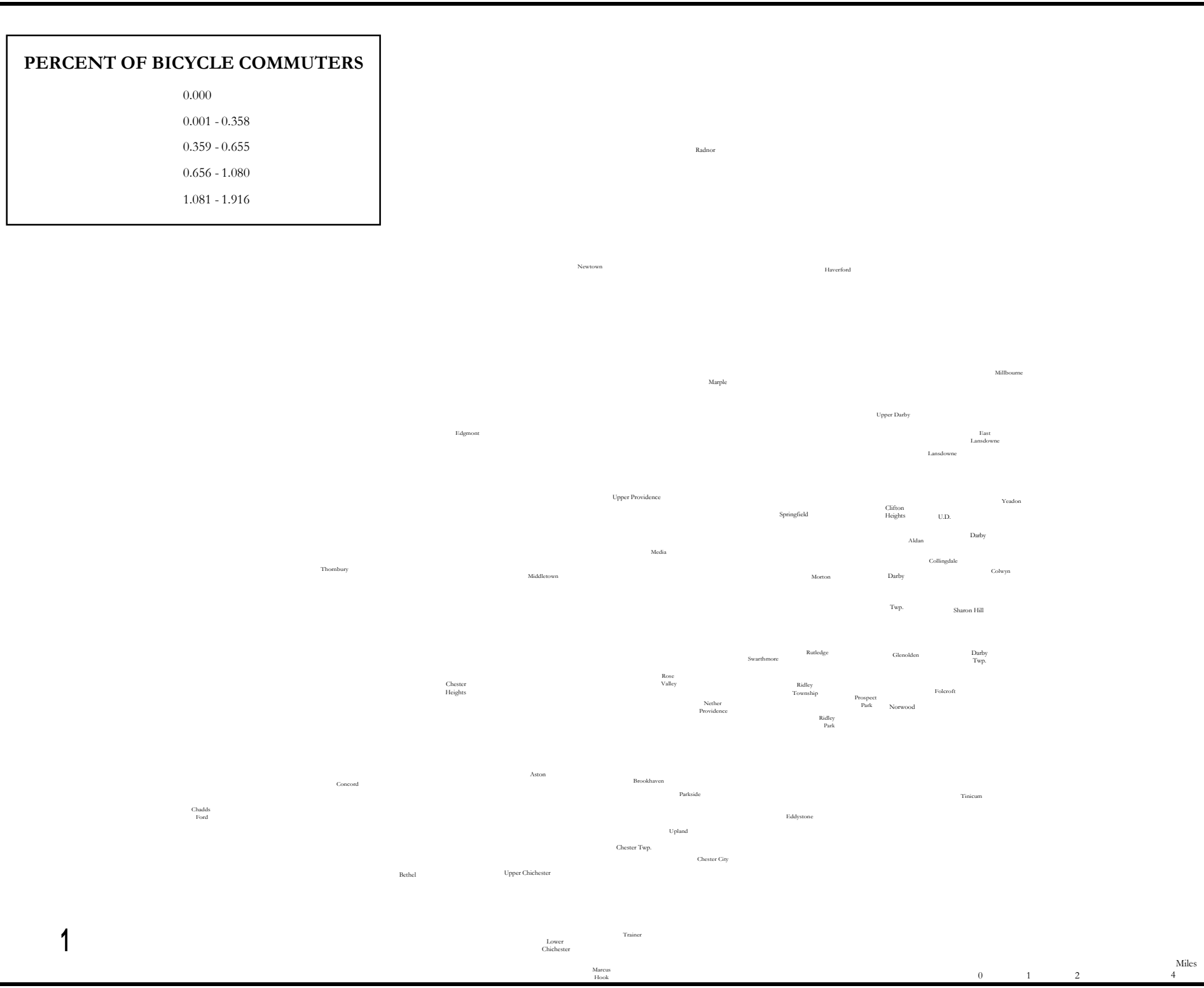
Figure 2-4: Percentage of Commuters Who Drove Alone



Source: U.S. Department of Commerce, Bureau of the Census, 1980-2000

[5] Ibid., p. 19

[6] U.S. Department of Commerce, Bureau of the Census, American Fact Finder [online], (http://factfinder.census.gov)

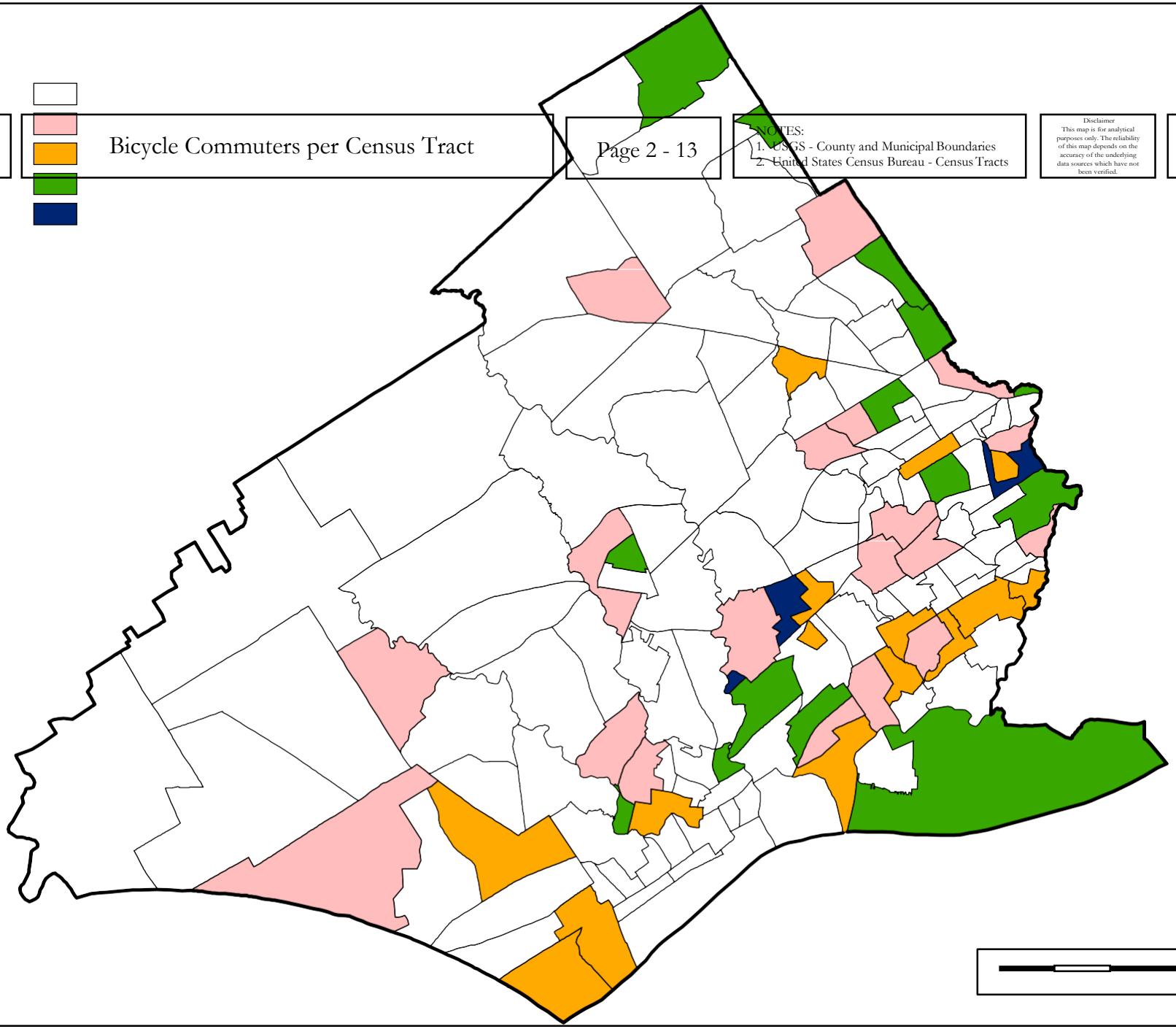

PERCENT OF BICYCLE COMMUTERS
0.000
0.001 - 0.358
0.359 - 0.655
0.656 - 1.080
1.081 - 1.916
Radnor
Newtown
Haverford
Millbourne
Marple
Upper Darby
Edgmont
East Lansdowne
Lansdowne
Upper Providence
Yeadon
Springfield
Clifton Heights
U.D.
Darby
Aldan
Media
Collingdale
Thornbury
Middletown
Morton
Darby
Colwyn
Twp.
Sharon Hill
Swarthmore
Rutledge
Glenolden
Darby Twp.
Rose Valley
Chester Heights
Ridley Township
Foleroft
Prospect Park
Nether Providence
Norwood
Ridley Park
Aston
Concord
Brookhaven
Parkside
Tinicum
Chadds Ford
Eddystone
Upland
Chester Twp.
Chester City
Bethel
Upper Chichester
Trainer
Lower Chichester
Marcus Hook
Miles
0
1
2
4

Map 2 - 3

Bicycle Commuters per Census Tract

NOTES:
1. USGS - County and Municipal Boundaries
2. United States Census Bureau - Census Tracts

Prepared by
Delaware County
Planning Department
March 2005



Despite road designs and development trends that work against bicycle transportation, bicycling has significant potential in Delaware County. The majority of the County is densely developed, and many trips are short enough to be bikeable. Delaware County is also in a unique position to take advantage of the extensive bicycle infrastructure put in place in the City of Philadelphia, with portions of Delaware County being less than five miles from Center City Philadelphia. Still, much of the public believes that bicycling for transportation is unsafe and impractical. To encourage people to bicycle more, it is necessary to alter the perception that bicycling is unsafe, while working to provide facilities that make it safer.

DVRPC has recently completed a bicycle user survey for greater Philadelphia, including Delaware County. This survey will be one of the most extensive in the country, including information about trip lengths, destinations, type of facilities, and safety knowledge.[7] This survey should be a valuable tool in estimating local bicycle user information.

The Demand for Bicycling

Even though bicycling is currently a travel mode with a very small percentage of trips, studies suggest that there is latent demand for bicycling.[8] A 1992 survey of 823 southeastern Pennsylvania residents found that only a small percentage (12%) of all respondents would never consider commuting by bicycle (see Table 2-1). Among those respondents not affiliated with bicycle clubs or advocacy groups (the general sample), 37% indicated that they would never consider commuting by bicycle. While inclement weather tops the list of reasons for not cycling at 85%, traffic and danger also rank high at 75% and 71%, respectively. "Arrive sweaty" was also listed as a reason for not bicycling. This can be remedied by better shower or locker room facilities for bicyclists. Even the "takes too long" objection (79%) can be mitigated through better street connectivity and more mixed land uses.

A survey of Delaware County cyclists distributed by DCPD through bicycling shops yielded similar results.

Table 2-1: Reasons for Not Commuting by Bicycle in Southeastern Pennsylvania

Reason why not	Total	Bicycle Sample*	General Sample
Inclement weather	**75%**	72%	85%
Arrive sweaty	**62%**	57%	75%
Too much traffic	**60%**	56%	75%
Too dangerous	**53%**	47%	71%
Takes too long	**51%**	43%	79%
Need to carry things	**49%**	45%	63%
No night biking	**41%**	39%	48%
Too cold	**36%**	29%	56%
No bike parking	**20%**	18%	25%
Miscellaneous	**20%**	22%	13%
Too tired	**19%**	11%	44%
Too much crime	**18%**	17%	22%
Too many hills	**17%**	9%	46%
Would never consider it	**12%**	5%	37%
Not physically capable	**6%**	2%	20%
Looks unprofessional	**6%**	4%	12%
Total Respondents	**763**	**584**	**179**

*Affiliated with bicycle clubs or advocacy

Information obtained from *Southeastern Pennsylvania Bicycle and Pedestrian Mobility Plan* , DVRPC, 1995

[7] Delaware Valley Regional Planning Commission [online]

[8] Delaware Valley Regional Planning Commission, *The Southeastern*

Pennsylvania Bicycle and Pedestrian Mobility Plan, p. 7

International Examples

Experience from other countries shows that with the right facilities and the right policies, bicycling can account for a major proportion of urban trips (see Table 2-2). In the Netherlands the bicycle accounts for 30% of all urban trips, and in Denmark the bicycle accounts for 20%. Bicycling accounts for 5% of urban trips even in the least bicycle- oriented European countries, France and Italy. In the United States, on the other hand, it accounts for less than 1% of all urban trips.[9]

There are several possible explanations for increased levels of bicycle transportation in Europe. Gasoline, parking, and

automobiles are more expensive in Europe, encouraging the use of alternative transportation, but Europeans own cars and can afford to drive. The average urban trip is 50% longer in the United States than in Europe, but even for short trips American bicycle use is insignificant. The weather in northern Europe is largely worse for bicycling than Philadelphia's. Bicycling in Europe has decreased in those countries that paid no attention to it but has increased in those which have built an extensive network of bicycle facilities. Germany increased the mode share of bicyclists from 8% in 1972 to 12% in 1995.[10] Public policy differences, specifically the quality and quantity of bicycle facilities and the rights and respect accorded to bicyclists on the streets by law and by custom, must be given some credit for the prevalence of cycling in Europe.

[9] Pucher, John, "The Bicycling Boom in Germany: A Revival Engineered by Public Policy," *Transportation Quarterly,* (Vol. 51, No. 4: 31-46, Fall 1997)
[10] Ibid., p. 35

Table 2-2: International Examples

Country	Rate (bikes used for urban trips)
Netherlands	30%
Denmark	20%
Germany	12%
Switzerland	10%
France	5%
Italy	5%
USA	< 1%

Source: Pucher, John et. al. "Bicycling Renaissance in North America? Recent Trends and Alternative Policies to Promote Bicycling"

Benefits of Bicycle Transportation

Bicycling benefits people directly and indirectly in the following ways:

- Bicycling improves the environment in many ways, including reducing poor air quality by motor vehicle trips.
- Bicycling reduces neighborhood traffic noise and danger, a major determinant of community quality of life and property values.
- Bicycling saves money since less is spent on car maintenance and gasoline.
- Bicycling is a viable alternative for those too young to drive, those without personal automobiles, and others who choose not to drive.
- Bicycling improves personal health and fitness.
- Bicycling helps create a sense of community by promoting social and family interaction.
- Bicycling can be used as a tourist draw for a community.
- Bicycle routes can serve as an educational tool related to environmental, historic, or community interpretation.

Environmental Benefits

The potential environmental benefits of shifting short trips from automobile to bicycle are enormous. Most trips are short trips. Nationwide, 27% of all daily trips are one mile or less, 40% are two miles or less, 49% are three miles or less, and 63% are five miles or less.[11] Short vehicle trips cause nearly as much pollution per trip as long trips because the catalytic converter does not become effective until it warms up. Reducing the number of auto trips reduces air pollution more effectively than reducing vehicle miles traveled.

Approximately half of all auto trips are short enough to plausibly be replaced with bicycle trips (see Table 2-3). If the number of auto trips could be cut in half, auto-related air pollution could be cut by nearly that much. Bicycling is most likely to occur on sunny, warm days when the risk of exceeding federal clean air standards is high. The region risks sanctions for violating standards based on the number of *days* that pollutants exceed a certain level, not for the average level of pollution. A high level of bicycling on sunny days could significantly aid the region in meeting federal standards, even if the reduction in *average* emissions is minor.

According to FHWA estimates, if the number of bicycling miles were increased by a factor of 5, and walking by 2.5, emissions of carbon monoxide, nitrous oxides, and volatile organic compounds (formerly known as hydrocarbons, a key ingredient of smog) would fall by 4% – 15%. The range represents varying estimates of the proportion of new bicycle and pedestrian trips that would displace automobile trips, as opposed to new trips that would not otherwise have taken place.[12] The FHWA estimates that between 38% and 56% of bicycle miles represent displaced auto miles, and between 26% and 37% of pedestrian miles represent displaced auto miles.[13] Increasing the amount of bicycling by a factor of 5 is not as ambitious as it sounds, given the low level of bicycling now. Portland, Oregon increased the amount of bicycling by approximately a factor of 5 between 1975 and 1995.

Economic Benefits

Table 2-3: Daily Trip Distance (National)

Distance	Percentage of Trips
10 miles or less	79.4%
5 miles or less	62.7%
3 miles or less	48.8%
2 miles or less	39.6%
1 mile or less	27.5%
1/2 mile or less	13.7%

U.S. Department of Transportation: FHWA, *The National Bicycling and Walking Study*

Driving can be a huge cost to users, especially with recently skyrocketing gasoline prices. According to the 2003 Bureau of Labor Statistic's Consumer Expenditure Survey, the cost of transportation for the average income family in the U.S. was

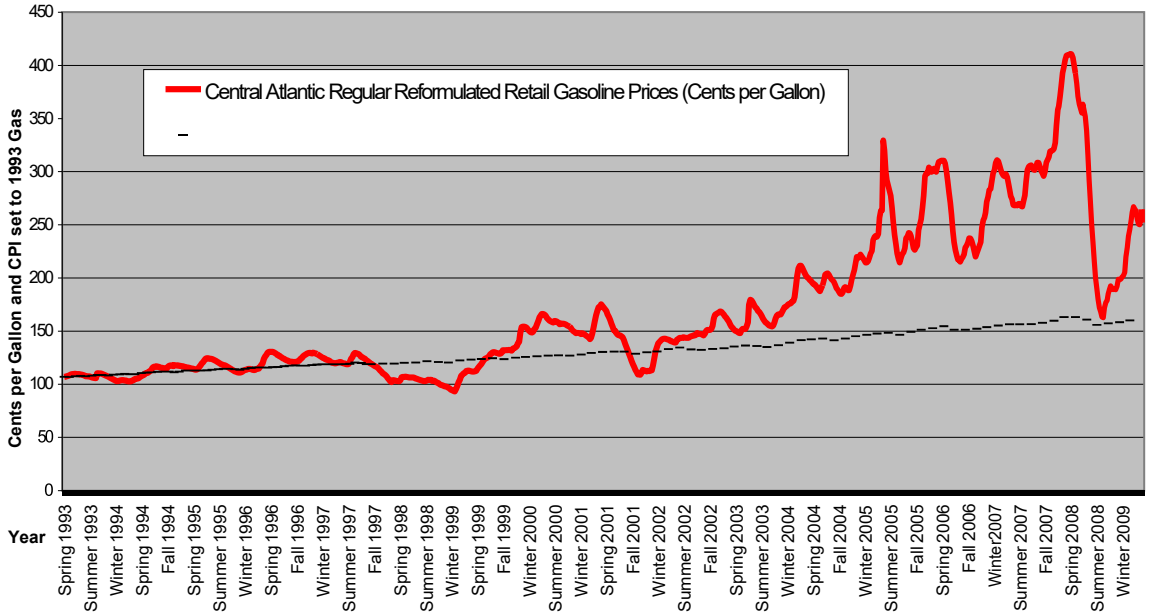
[11] U.S. Department of Transportation; p. 23

[12] U.S. Department of Transportation, Federal Highway Administration, *The National Bicycling and Walking Study: Case Study No. 15 – The Environmental Benefits of Bicycling and Walking* (FHWA-PD-93-015, 1993), p. 8

[13] Ibid., p. 4

19.1%.[14] Gasoline and motor oil accounted for approximately 16% of a household's transportation expenditures.[15] Between 1992 and 2003, transportation as a percent of expenditures rose by 8.8%.[16] These figures don't take into account the sharply climbing gasoline prices of the middle of the decade. Gasoline prices have also been increasingly volatile compared to the general level of inflation represented by the Consumer Price Index (see Figure 2-5).

Figure 2-5: Gasoline Prices and Consumer Price Index



Source: U.S. Department of Energy, Energy Information Administration, and U.S. Department of Labor, Bureau of Labor Statistics

Given the wildly fluctuating and increasing costs of gasoline and automobile transportation, users are looking for other transportation options. Bicycle sales are estimated to reach record levels in 2005, topping highs set during the oil crisis of the 1970s and outselling cars. [17] Providing an environment that encourages bicycle and transit use could give Delaware County an edge in the suburban residential and office market as commuters become more interested in avoiding high automobile transportation costs.

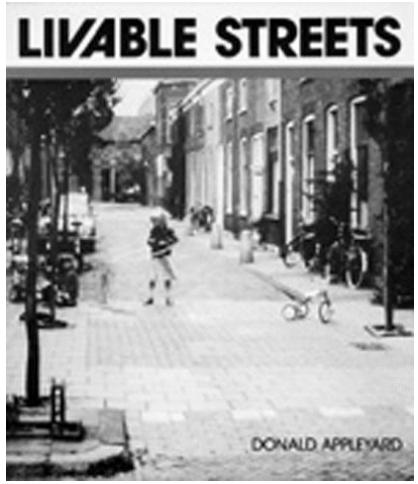
Recreational bicycling can also have significant economic impacts. Pennsylvania, through its extensive rail-trail system, has earned a reputation as a bicycling destination. The Rails to Trails Conservancy (RTC) hosts an annual event called the Pennsylvania Greenway Sojourn, which attracts riders from across the country for the 6 day tour.[18] About 15% of this ride is on road, as well as the trail portions and the approximately 300 riders supply their own food and accommodation.[19] Trips like this can be a boon for local restaurants and bed and breakfasts. Bicycle facilities also attract riders for weekend trips and as part of unorganized events. These visitors can supply tourist dollars to the area.

[14] Surface Transportation Policy Project and Center for Neighborhood Technology, *Driven to Spend* (2005), p. 5.
[15] Ibid.
[16] Ibid.
[17] Agence France Presse, *"Bicycle Sales Boom in US Amid Rising Gas Prices"* (2005).
[18] Rails to Trails: Pennsylvania Greenway Sojourn [online].
[19] Ibid.

Bicycling and Livable Communities

According to Donald Appleyard's *Livable Streets*, traffic volume and speed have an enormous effect on how people relate to their communities (see Figure 2-6). Asked to list connections and contacts with neighbors, people living on low- traffic streets reported numerous contacts with neighbors on both sides of the street. Residents used their front yards and the streets themselves. Streets were used for play and interaction as well as occasional movement of vehicles. Residents of medium-traffic streets reported significantly fewer contacts and used their front yards and sidewalks less. Residents of very high-volume traffic streets often reported avoiding not only their sidewalks and front yards, but even the front sections of their homes in an effort to escape traffic noise. Such streets exhibited few neighborhood ties or contacts, high turnover, and low property values. The negative effect of traffic on residential property values is well known, and most new subdivisions are designed with berms or sound barriers to insulate residences from the noise of the arterials. Traffic is the number one concern of residents with respect to most new development.

Figure 2-6: Donald Appleyard's Livable Streets



Source: *Livable Streets*

Bicycling has the potential to significantly reduce auto traffic on neighborhood streets. Short trip mileage takes place disproportionately on local streets. If some of those trips can be diverted to bicycling, traffic on neighborhood streets will be reduced. One method of doing this is via a technique known as traffic calming. Traffic calming is defined by the Institute of Transportation Engineers (ITE) as "…the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users."[20] Traffic calming measures such as mini traffic circles, speed humps, diverters, semi-diverters, and cul-de-sacs with gaps for bicycle passage encourage bicycle use because they slow automobiles and permit bicycles to follow the straightest route even when diverting automobile traffic. An extensive table of traffic calming information is available in Appendix C, and pictures of some traffic calming techniques can be seen in Figure 5-5.

With traffic calming, the speed difference between automobiles and bicycles on neighborhood streets becomes negligible or even turns to the advantage of cyclists on certain routes. Slower motor vehicle traffic makes for safer cycling, better communities, and higher property values.

Bicycling also has the potential to improve community cohesion while improving economic vitality of municipalities. On- and off-road bicycle routes allow the opportunity for interpretation of community sites, which in turn increases local knowledge about the community and community pride. Bicycle and walking trails are also listed as a desired amenity in National Association of Home Builder's surveys as reported by June Fletcher (*Wall Street Journal*, June 4, 1999).

[20] Institute of Transportation Engineers, *Traffic Calming; State of the Practice* (1999), p. 24

Health Benefits

The health benefits of exercise are numerous and well documented. They include the following:

- Cardiovascular health. Regular exercise has been shown to significantly reduce heart disease. Sedentary people are twice as likely to die from heart disease and cancer as moderately fit people, while the highly fit have even lower death rates from these causes. Heart disease is the leading cause of death in the United States.
- Cholesterol. Exercise has been shown to decrease the total level of cholesterol and increase the level of high-density lipoprotein (HDL), the "good" cholesterol in the blood. High levels of HDL cholesterol can help remove the cholesterol from the walls of the arteries and transport it to the liver where it can be metabolized.
- Hypertension. Exercise has been shown to reduce high blood pressure and hypertension.
- Weight control. Bicycling at an average speed of 9.4 mph burns seven calories per minute, or 420 calories per hour.[21] In addition to the calories expended during exercise, physical activity may contribute to a weight-loss program by decreasing appetite and increasing lean body weight.
- Osteoporosis. Load-bearing activity while bicycling stimulates bone content and slows its rate of loss. Stronger musculature provides further protection against fractures.
- Aging. Regular exercise has been shown to ameliorate some of the chronic diseases that frequently surface in the elderly. Much of the decline in physical capability associated with aging can be avoided through exercise.
- Immune system. Some studies of bicycling found a correlation between bicycling and a strengthened immune system, enabling subjects to fight off illnesses more readily.
- Mental health. Exercise reduces depression and anxiety. Outdoor exercise increases exposure to sunlight, which also reduces depression.
- Learning. Studies suggest that exercise improves alertness and learning capability. Schoolchildren who exercise regularly enjoy better health and better grades than those who do not.

The majority of Americans currently live in modern suburban communities where exercise is engineered out of daily life. People who seek exercise usually have a difficult time working it into their daily routines, as it often requires a special trip to the gym taken by car. Concurrently, the rate of obesity has risen faster in the last ten years than ever before in American history. Childhood obesity, once rare, is becoming commonplace. Since children (and the parents who must drive them) also have trouble finding the time for organized activity, it is critical that as many routine childhood trips as possible be made under their own power. According to a study conducted by a National Health and Nutrition Examination Survey (NHANES), 15% of children aged 6-19 are considered overweight. This amount has risen roughly 11% from the 1960s.[22] Community design that facilitates walking and bicycling is key to preventing childhood and later adult obesity.

[21] U.S. Department of Transportation, Federal Highway Administration, *The National Bicycling and Walking Study*: *Case Study No. 14 – Benefits of Bicycling and Walking to Health* (FHWA-PD-93-025, 1992), p. 12

[22] Centers for Disease Control, National Center for Health Statistics, *Prevalence of Overweight Among Children and Adolescents: United States 1999-2000*, (2002) [online]

Safety Issues

The majority of bicycle crashes do not involve a motor vehicle. Collisions with fixed objects, pedestrians, potholes, and other cyclists are common but usually not fatal. Nationally, 90% of all fatalities involved a motor vehicle. However, the vast majority of bicycle-motor vehicle crashes do not result in the death of the bicyclist. Of bicycle-motor vehicle crashes recorded in Portland, Oregon, only 2% resulted in the death of the cyclist. The most common type of crash was the low-speed crash between bicyclists and cars exiting driveways or cross streets. The most feared crash type, being hit from behind by a driver who fails to see the bicyclist, accounted for only 1.3% of all bicycle-motor vehicle crashes but was one of the deadliest, resulting in death or serious injury in 54% of all instances.[23] More data displaying the types of bicycle crashes can be found in Table 2-4. Sixty percent of such crashes took place in low- light conditions, and 60% took place on rural roads. In 1995, 830 bicyclists were killed, accounting for about 2% of all traffic deaths.[24] Sixty-one thousand bicyclists were injured.

Bicycle deaths and injuries are higher for the young male component of the cycling population. Cyclists under the age of 15 account for nearly half of all bicycle related injuries and are five times more likely to be in a bicycle crash than older riders. Young riders are found to be at fault in most of their crashes, while only one third of bicyclists age 25 or older were found to be at fault. Sixty percent of all bicyclist fatalities involve head injuries. Eighty percent of those killed were male. Youth, recklessness, and failure to wear a helmet are leading causes of bicyclist deaths and injuries.[25] Young, inexperienced automobile drivers are also at a higher risk, though there is a significantly higher risk to others when compared with bicycling. It should be noted that bicycling in the United States is actually safer than walking, whether the comparison is fatalities per trip or per mile traveled.[26] In Europe, cyclists have a higher fatality rate than pedestrians, although both modes are vastly safer there than in the United States.

Motor vehicle operators and people who bicycle now need better, safer facilities along with more education. Better bicycle facilities will induce more people to ride, putting more people at risk. However, increasing the number of bicyclists will not necessarily increase the number of crashes. In Portland, Oregon, the amount of bicycling tripled from 1987 to 1994, while the number of bicycle-motor vehicle crashes hovered around 160 per year during the entire period.[27] Increasing the number of bicyclists on the streets improves bicyclist safety by making motorists aware of their presence. Where bicyclists are rare, motorists do not look for them and are more likely to hit them. Bicycle facilities such as bicycle lanes instruct bicyclists as to their proper position in the roadway and help make their actions more predictable. Bicyclist and motorist education can further mitigate the risks associated with bicycling.

[23] U.S. Department of Transportation: Federal Highway Administration, *Bicycle Crash Types: A 1990's Informational Guide,* (1997, FHWA-RD-96-104), p. 36
[24] Ibid., p. 3
[25] National Safe Kids Campaign, Injury Facts [online]
[26] Pucher, John and Dijksra, Lewis, "Making Bicycling and Walking Safer: Lessons from Europe" *Transportation Quarterly*, (Vol. 54, No. 3, Summer 2000), pp. 25-50
[27] Portland Office of Transportation, *Bicycle Master Plan*, City of Portland, Oregon (1996), p. 67

Table 2-4: Percentage of Bicycle Crashes by Type

TYPE OF CRASH		number of crashes	percentage of all crashes combined	percentage of crashes in crash category
Parallel Paths Category		**1061**	**35.5%**	
	Crash Type Groups			
	Motorist turned or merged into cyclist's path	365	12.2%	34.4%
	Motorist overtaking the cyclist	257	8.6%	24.2%
	Cyclist turned or merged into motorist's path	219	7.3%	20.6%
	Other 12 groups	220	7.4%	20.7%
Crossing Paths Category		**1720**	**57.5%**	
	Crash Type Groups			
	Motorist failed to yield to cyclist	648	21.7%	37.7%
	Cyclist failed to yield to motorist at an intersection	501	16.8%	29.1%
	Cyclist failed to yield to motorist mid block	353	11.8%	20.5%
	Other 12 groups	218	7.3%	12.7%
Specific Circumstances Category		**209**	**7.0%**	
Total		**2990**	**100%**	

Source: U.S. Department of Transportation, Federal Highway Administration, *Bicycle Crash Types: A 1990's Informational Guide*

The experience of European countries indicates that the way to make bicycling safer is to have more bicycle facilities, on-and off-road, and many more bicyclists. The bicycle fatality rates in the Netherlands and Germany are 17 and 25 per billion kilometers traveled, respectively, compared to 110 fatalities per billion kilometers traveled in the United States. The United States is more than five times as dangerous, despite the facts that Europeans seldom wear helmets and that Europe has far more elderly cyclists, who are less likely to live when hit.[28] People over the age of 75 in the Netherlands bicycle for 25% of their trips. The per trip contrast is even stronger, with a fatality rate per trip in the United States sixteen times that of the Netherlands. Within Europe, countries with the most cycling have the lowest bicycle fatality rates. Germany, with half the bicycle mode share of the Netherlands, has a per-trip fatality rate about 50% higher than the Netherlands. Analysis of bicycle crash and ridership data in Denmark shows a strong reverse correlation between the bicycle kilometers ridden in a town and the bicycle crash rate. The more people ride, the safer it is to ride.[29] This result may be caused by increased driver awareness of bicycles that comes from more bicycles being on the road.

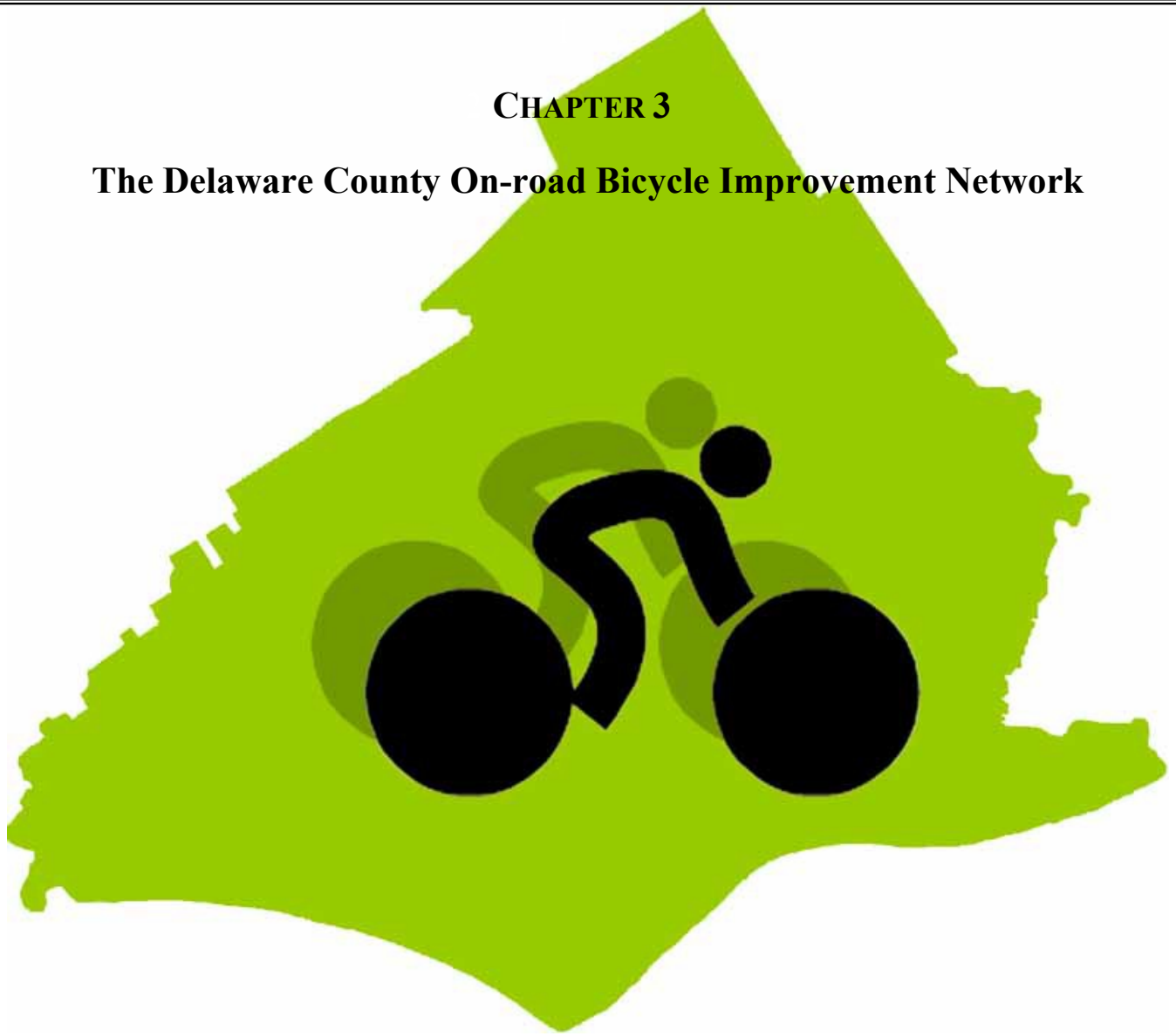
The same measures that make bicycling and walking safer create a transportation system that is much safer overall than a system that gives priority to rapid automobile circulation. The overall traffic fatality rate in the Netherlands is half what it is in the United States, and fatalities have declined much more over time in the Netherlands and Germany than they have in the United States.[30] A transportation system that is safer for bicyclists is safer for everyone.

The British Medical Association estimates that the health benefits of cycling, at least in Europe, outweigh the added risks from crashes by a factor of twenty. Motorists who switch to bicycling can expect to live one to two years longer.[31] The much higher crash rate for cyclists in the United States must modify that conclusion here, but since more facilities and more cyclists will greatly reduce the crash rate, we can advocate bicycling with a clear conscience.

[28] Pucher, John, *Transportation Quarterly,* (Vol. 51, No. 4, Fall 1997), p. 25
[29] Jensen, Soren Underlien. *Collection of Bicycle Concepts,* (Copenhagen: Road Directorate, 2000), p. 15
[30] Pucher, John, *Transportation Quarterly,* (Vol. 51, No. 4, Fall 1997), p. 32
[31] Jensen, p. 13

CHAPTER 3

The Delaware County On-road Bicycle Improvement Network



Creation of the On-road Bicycle Improvement Network

GOAL: Create a network of on-road routes for future bicycle improvements that connect people with retail, employment, educational, and entertainment destinations.

In accordance with the Complete Streets concept, bicycle (and pedestrian) facilities need to be considered when looking at all roads. A Complete Street would include access for bicyclists, pedestrians, motorists, transit users, and those who are disabled.[32] If people are going to bicycle for transportation, they must have direct, safe routes that serve the destinations where they want to go and be educated how to safely find and use those routes. Winding, circuitous routes through neighborhood streets that are devoid of all but residential destinations will not increase bicycle travel, though in some cases they may be necessary where other routes prove unfeasible.

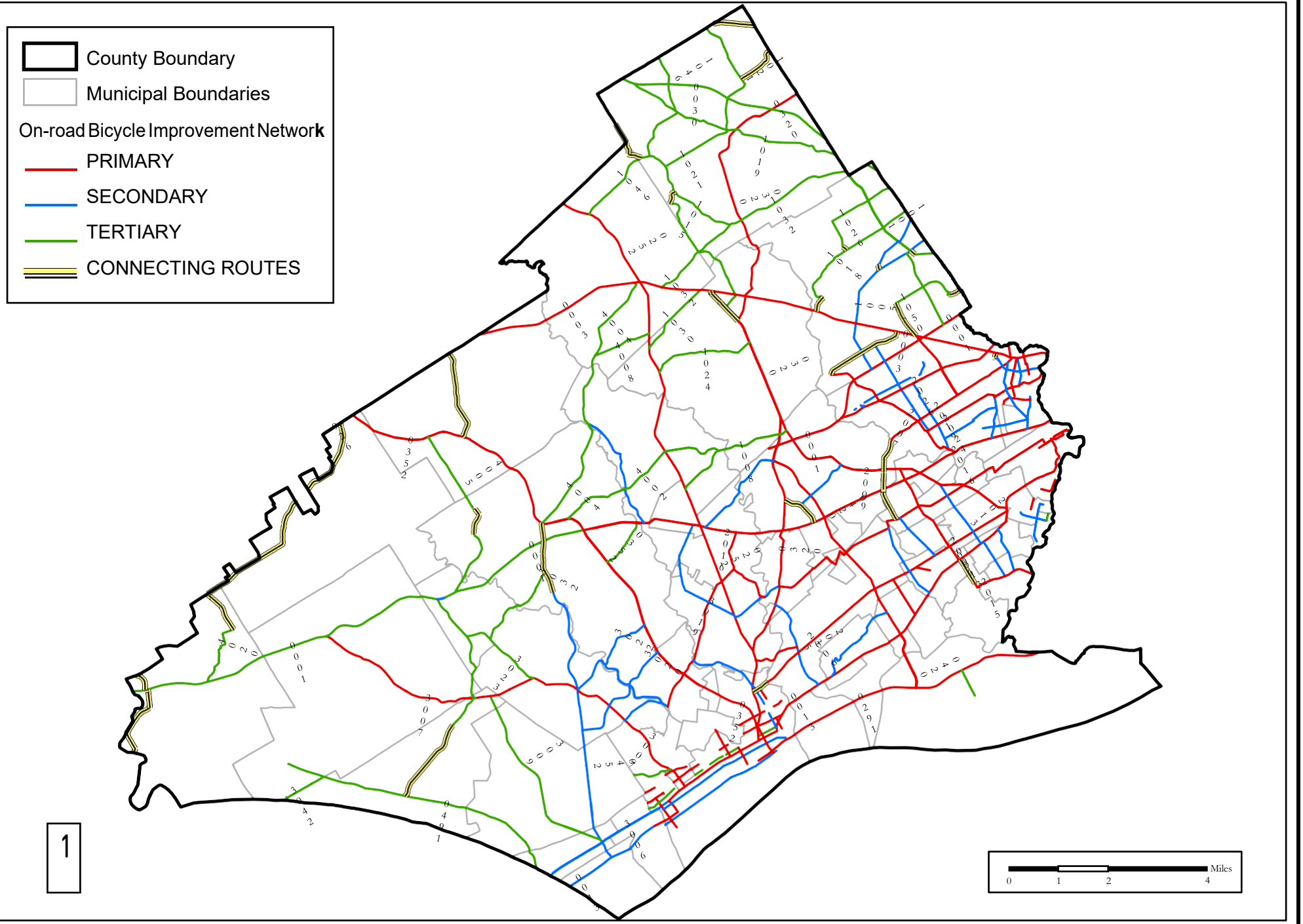
The purpose of a planned network is not to identify which roads are best for bicycling now, but to identify roads on which it is especially important to have bicycle facilities. We have not rated roads based on their bicycle-friendliness or level of service today nor on the ease with which bicycle level of service can be improved. These routes were chosen based on the number of current riders (using bicycle crashes as a proxy), the desire of bicyclists for safer facilities on these roads (using the bicycle survey), and the possible demand for bicycling (by looking at major destinations in the County) (see Map 3-1).

[32] Complete Streets Coalition [online].

This system provides us with a prioritization list for improvements and not an exclusive list of all improvements. The bicycle improvement network provides the rational basis for making bikeway improvements incidental to other highway improvements. Such incidental improvements, requiring no special financial resources, will be a principal means of implementing the network. Other projects that arise moving towards a Complete Streets system for the County are consistent with this Plan. The on-road bicycle improvement network should be updated regularly to reflect completed projects and changes in current use, desire, and demand for their use by bicyclists.

Identifying Convenient and Direct Bicycling Corridors

One way to plan a bicycle network is to identify all major potential bicycling destinations, such as work sites, shopping, recreational facilities, schools, and transit stations, and to devise a network that will connect all of those trip attractors. This is difficult for prioritization since all roads in Delaware County are within bicycling distance of trip attractors. A second method assumes that since nearly all bicycle destinations are located on arterial or collector streets, an equally plausible bicycle network could be planned by listing all arterial and collector roads. This method poses problems in Delaware County where many areas developed before the concept of a road hierarchy, leading to major destinations on smaller roads. A third suggested method includes ranking roads based strongly on the number of crashes on these roads, as safety is a primary concern for those in the transportation field. This method, though logically sound, would produce a network that would be the most crash-prone roads, some of which could



Map 3 - 1	On-road Bicycle Improvement Network	Page 3 - 3

NOTES:
1. USGS - County and Municipal Boundaries
2. Delaware County Planning Department - Bicycle Improvement Areas

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not be feasibly corrected given current spending on transportation improvements. None of these methods provide the best basis for prioritizing routes in Delaware County. We looked instead at the distance from major destination locations (schools, recreation, employers, and transit) to the road network. In order to quantify the destinations for the creation of a bike plan, we needed to denote a point system that could be applied to the road network. Points were awarded to roads based on their distance from these major destination locations up to three miles. For maps of these major destinations, see Appendix D.

Information on bicycling demand was included to augment destination information. Two elements were used to identify demand: the number of times the route was mentioned by Delaware County Bicycle Survey respondents (votes) and the number of bicycle crashes taking place from 1995-2000. Crashes serve as a proxy for the current bicycle use on streets in the County, which is far more costly and difficult to measure. Using the crash data helps correct for age and other demographic biases in the survey as mentioned in Chapter 2, while the survey helps account for suppressed demand that would not show up in crash statistics.

The bicycle crash data used in this plan is obtained from the Accident Record System (ARS) Crash Data which is collected by PennDOT's Bureau for Highway Safety and Traffic Engineering. This data includes every traffic accident in which there was either personal injury or damage to a vehicle sufficient to cause it to be towed from the scene. There is some concern about how reliable this source is as a measure of bicycle accidents, as it is mostly used to track motor vehicle crashes and obtains information from police reports. It is unclear whether accidents involving only one bicyclist (such as a bicyclist hitting a fixed object) are included in this data. Also, it is possible that there is an underreporting to the police of bicycle/fixed object and bicycle/pedestrian crashes or that many of these accidents aren't serious enough to be included in this database. This is one reason crash data wasn't exclusively used while calculating our on-road bicycle improvement network. There is an update of crash data that will be released called Crash Record System (CRS). The accuracy of this data in recording of bicycle crashes will be evaluated when updates to this plan are being completed.

Calculating the On-road Bicycle Improvement Network

The following formula was adopted to rank the routes: (votes + crashes / route length) + trip attractor points. The votes and crashes were given equal weight in the ranking process for ease of calculation. There was a need to standardize points awarded for trip attractors, votes, and crashes. The standardization method varied for each of these elements.

The demand for bicycling was calculated using votes from the survey and crashes along an individual route. The length of the route needed to be taken into account so that longer routes wouldn't overwhelm shorter ones. This was done by dividing the total of votes and crashes by route length to produce a value relative to the length of the route.

The goal of assigning trip attractor points was to prioritize routes based on being within easy bicycle distance (3 miles) of key trip attractors. The trip attractors chosen for inclusion were school facilities, recreational facilities, major employers, and

transit routes. The number of trip attractors needed to be standardized because there were a wide variety of values, ranging from 3,200 recreational facilities to 18 major employers. Without standardization, the addition of 5 extra employers within 3 miles of the routes would have the same impact on trip attractor points as 5 recreational facilities, though relatively speaking 5 more employers is a much larger percentage. To calculate trip attractor points in a more representative way, the total number of each trip attractor within 3 miles of each road was divided by the average number for that type of trip attractor on all the roads. For example, if a road is within 3 miles of 20 transit lines, then its points for transit would be 20 divided by 15.91 (which is the average number of transit routes near all the routes studied) for a total of 1.26 points.

This method for calculating points also makes them a representative tool for comparing routes. The method of calculating means that if the point score for an individual attractor is greater than 1, then the route has an above average amount of the attractor, a value equal to 1 means that the route has exactly the average number of that attractor, and a value less than 1 means that the route has less than the average number of that attractor in the County. Using the example above, the road that is within 3 miles of 20 transit lines with a point score of 1.26 has 26% more transit lines within 3 miles of it than the average route in the County. A route with 32 transit lines within 3 miles of the road would have a point score of 2.01, meaning it has just over double that County average of transit routes within its service area.

This method produced a fairly comprehensive and connected bicycle improvement network for Delaware County. There were several areas, however, where roads weren't connected to other network roads or to neighboring county network roads. This happened because of the lack of crashes or votes for these sections of road. In order to produce a bicycle improvement network that allows for connectivity between points in the County and to neighboring county networks, connecting these disjointed routes became necessary. Connecting routes were chosen based solely on the shortest on-road portion between the routes that needed to be connected. Some local roads that are included in the bicycle plan aren't connected, but when implementing these improvements, connections to the larger network should be sought.

Routes are shown in priority order in Table 3-1 below using their final scores. The selected routes were roughly evenly split into primary (above 6.75 points), secondary (above 4.75 points), and tertiary routes based on the scores shown. Connecting routes, which are shown on Map 3-1, are not included in Table 3-1.

Table 3-1: Bicycle Improvement Network Results

Street Name	Votes	Crashes (1995-2000)	Schools		Recreational Facilities		Employers		Transit		Miles	Score	State Route #	Start	End	Priority
	number	number	number	points	number	points	number	points	number	points						
Bicyclists' Baltimore Pike	17	2	149	2.70	1742	2.39	12	2.70	32	2.01	11.68	11.43	partially 2010	Philadelphia	Leiper-Smedley Trail	Primary
Baltimore Pike	14	21	113	2.04	1342	1.84	8	1.80	30	1.89	9.25	11.35	2016 & 13	Philadelphia	PA 352	Primary
Upland Ave./22nd St./MacDade Blvd.	8	16	126	2.28	1506	2.07	10	2.25	23	1.45	7.42	11.28	2006	Kerlin St.	US 13	Primary
Chester Pike/MacDade Blvd./Cobbs Creek Pkwy. W/ Longacre Blvd. N	20	16	116	2.10	1356	1.86	7	1.57	26	1.63	8.90	11.20	13	Chester City	Philadelphia	Primary
Providence Rd./Palmers Mill Rd./Newtown St./ Darby-Paoli Rd.	38	4	97	1.76	1150	1.58	10	2.25	16	1.01	10.31	10.67	252	PA 320	Chester County	Primary
15th St.	0	3	104	1.88	1331	1.83	10	2.25	21	1.32	0.94	10.47		Several portions in Chester City		Primary
Madison St./Providence Rd./Chester Rd./Sproul Rd./Spring Mill Rd.	20	7	141	2.55	1636	2.25	10	2.25	25	1.57	14.94	10.43	320	4th St.	Montgomery County	Primary
Edgmont Ave./Middletown Rd.	23	13	89	1.61	1076	1.48	10	2.25	15	0.94	11.59	9.39	352	9th St.	Chester County	Primary
Barclay St.	0	2	51	0.92	574	0.79	7	1.57	10	0.63	0.37	9.32		5th St.	10th St.	Primary
6th St. (Darby Borough)	0	3	44	0.80	648	0.89	1	0.22	27	1.70	0.54	9.16		Keystone Ave.	Cedar Ave.	Primary
Marshall Rd.	2	11	65	1.18	841	1.16	2	0.45	25	1.57	2.71	9.16	2024	Burmont Rd.	Philadelphia	Primary
4th St./Highland Ave./9th St./Morton Ave.	0	13	65	1.18	750	1.03	9	2.02	11	0.69	3.28	8.88	13	Trainer Borough	Ridley Creek	Primary
West Chester Pike/Market St.	21	26	73	1.32	1150	1.58	2	0.45	24	1.51	11.82	8.84	3	Chester County	Philadelphia	Primary
Guilford Rd.	0	3	53	0.96	605	0.83	2	0.45	25	1.57	0.60	8.81		Radbourne Rd.	Aberdeen Rd.	Primary

Table 3-1: Bicycle Improvement Network Results

Street Name	Votes	Crashes (1995-2000)	Schools		Recreational Facilities		Employers		Transit		Miles	Score	State Route #	Start	End	Priority
	number	number	number	points	number	points	number	points	number	points						
Kerlin St.	0	4	53	0.96	657	0.90	7	1.57	10	0.63	0.93	8.36	partially 3001	2nd St.	Upland Ave.	Primary
12th St.	0	4	67	1.21	809	1.11	9	2.02	12	0.75	1.30	8.17		Various sections in Chester City		Primary
Wanamaker/Lincoln/Kedron/Woodland Ave.	6	8	81	1.47	1031	1.42	7	1.57	19	1.19	5.60	8.15	420	PA 291	PA 320	Primary
State Rd./Township Line Rd.	10	5	76	1.38	1032	1.42	3	0.67	21	1.32	4.58	8.06	1	Springfield Rd.	Montgomery County	Primary
Chatham Rd.	0	2	40	0.72	488	0.67	2	0.45	23	1.45	0.42	8.05		Garden Court Rd.	Walnut St.	Primary
Garrett Rd.	1	8	76	1.38	879	1.21	3	0.67	25	1.57	2.89	7.94	2019	Darby Creek	Market St.	Primary
Bullens Ln.	1	1	68	1.23	766	1.05	7	1.57	14	0.88	0.63	7.90	partially 2008	US 13	PA 320 & Fairview Rd.	Primary
Harwick/Booth St.	0	2	48	0.87	632	0.87	5	1.12	11	0.69	0.46	7.90		2nd St..	Highland Ave.	Primary
Madison St.	0	2	54	0.98	576	0.79	6	1.35	10	0.63	0.50	7.75		20th St.	Chester Park	Primary
Hampden Rd.	0	3	49	0.89	594	0.82	2	0.45	25	1.57	0.75	7.73		Ruskin Ln.	Ludlow St.	Primary
Price St./2nd St./Crosby St./4th St./Industrial Hwy./Governor Printz Blvd.	2	9	88	1.59	1086	1.49	9	2.02	20	1.26	9.06	7.57	291	US 13	Philadelphia	Primary
Hyatt St.	0	2	58	1.05	638	0.88	6	1.35	11	0.69	0.56	7.54		several portions in Chester City		Primary
Springfield Rd.	3	5	94	1.70	1169	1.61	4	0.90	29	1.82	5.32	7.53	2009	MacDade Blvd.	PA 320	Primary
Oak Ln.	1	4	82	1.48	986	1.36	4	0.90	24	1.51	2.32	7.40	2015	Primos Ave.	Springfield Rd.	Primary
Concord Rd./Engle St.	5	4	66	1.19	1139	1.57	12	2.70	13	0.82	8.82	7.30	3007 & 3033	9th St.	Baltimore Pike	Primary
State Rd.	2	6	74	1.34	950	1.31	4	0.90	21	1.32	3.48	7.17	2026	US 1	Philadelphia	Primary

Table 3-1: Bicycle Improvement Network Results

Street Name	Votes	Crashes (1995-2000)	Schools		Recreational Facilities		Employers		Transit		Miles	Score	State Route #	Start	End	Priority
	number	number	number	points	number	points	number	points	number	points						
Burmont Rd.	4	2	82	1.48	1114	1.53	3	0.67	24	1.51	3.27	7.02	2007	Glendale Rd.	Baltimore Ave.	Primary
Hook Rd.	2	2	42	0.76	632	0.87	2	0.45	17	1.07	1.04	7.00	2015	Philadelphia	Primos Ave.	Primary
Main St./Lansdowne Ave./Darby Rd.	5	14	69	1.25	1033	1.42	2	0.45	28	1.76	9.32	6.92	2005	Philadelphia	PA 320	Primary
Brookhaven/Turner Rd.	1	1	94	1.70	1053	1.45	11	2.47	15	0.94	5.74	6.91	3003	Bridgewater Rd.	Baltimore Pike	Primary
Amosland Rd.	0	2	56	1.01	705	0.97	6	1.35	18	1.13	0.83	6.87	2021	US 13	MacDade Blvd.	Primary
Victory Rd.	0	1	43	0.78	530	0.73	2	0.45	23	1.45	0.29	6.86	2041	Market St.	Philadelphia	Primary
7th St.	0	6	66	1.19	748	1.03	8	1.80	11	0.69	2.96	6.74		Various Sections in Chester City		Secondary
Yale Ave./Rose Valley Rd. /Manchester Ave.	3	1	77	1.39	809	1.11	9	2.02	15	0.94	3.62	6.56	3019	PA 320	Baltimore Pike	Secondary
Duttons Mill Rd.	1	0	71	1.28	845	1.16	7	1.57	14	0.88	0.60	6.56	3020	PA 452	PA 352	Secondary
Hathaway Lane	1	0	32	0.58	446	0.61	2	0.45	12	0.75	0.24	6.56	partially 1011	Darby Rd.	Montgomery County	Secondary
Cedar Ln.	0	3	68	1.23	915	1.26	3	0.67	20	1.26	1.43	6.52		Various sections in Upper Darby Twp.		Secondary
69th St. Blvd./Church Ln.	0	7	53	0.96	693	0.95	2	0.45	25	1.57	2.83	6.40	partially 2001	Market St.	Philadelphia	Secondary
Drexel Ave./Eagle Rd./Wynnewood Rd.	4	5	56	1.01	810	1.11	1	0.22	21	1.32	3.35	6.35	1005	Upper Darby Twp.	Montgomery County	Secondary
South Ave.	0	3	68	1.23	846	1.16	4	0.90	18	1.13	1.56	6.34	2017	US 13	Providence Rd.	Secondary
Ridley Creek Rd.	5	2	34	0.62	516	0.71	6	1.35	12	0.75	2.42	6.32	4003	Baltimore Pike	Bishop Hollow Rd.	Secondary
Bridgewater Rd.	0	1	64	1.16	832	1.14	9	2.02	13	0.82	0.88	6.28	3018 & 3015	Concord Rd.	Brookhaven Rd.	Secondary
Shadeland Ave.	0	3	73	1.32	965	1.33	2	0.45	26	1.63	2.01	6.22		Burmont Rd.	Dermond Recreation Area	Secondary
Chestnut St.	0	2	67	1.21	720	0.99	6	1.35	14	0.88	1.14	6.18	partially 3013	10th St.	PA 320	Secondary

Table 3-1: Bicycle Improvement Network Results

Street Name	Votes	Crashes (1995-2000)	Schools		Recreational Facilities		Employers		Transit		Miles	Score	State Route #	Start	End	Priority
	number	number	number	points	number	points	number	points	number	points						
Stewart Ave. / Pembroke Ave.	0	2	52	0.94	671	0.92	2	0.45	25	1.57	0.88	6.15	2022	Lansdowne Ave.	Oak Ave.	Secondary
3rd St.	0	4	65	1.18	736	1.01	8	1.80	10	0.63	2.69	6.11		Various sections in Chester City		Secondary
Essex Ave.	0	2	60	1.09	810	1.11	2	0.45	25	1.57	1.24	5.83		Shadeland Ave.	Wycombe Ave.	Secondary
Clifton/Sharon Ave.	0	3	72	1.30	863	1.19	1	0.22	27	1.70	2.26	5.74	2013	Hook Rd.	Springfield Rd.	Secondary
Sansom St.	0	2	45	0.81	563	0.77	2	0.45	23	1.45	0.91	5.68		Various sections in Upper Darby Twp.		Secondary
Edmonds Ave.	0	2	75	1.36	1004	1.38	2	0.45	24	1.51	2.05	5.68		Marshall Rd.	Steel Rd.	Secondary
Powell Rd.	0	2	67	1.21	746	1.03	3	0.67	16	1.01	1.16	5.64	2020	Thomson Rd.	Springfield Rd.	Secondary
Market St./Pennell Rd.	3	4	62	1.12	870	1.20	7	1.57	12	0.75	7.10	5.63	452	US 13	PA 352	Secondary
Ridley/13th Ave.	0	1	73	1.32	735	1.01	7	1.57	19	1.19	1.93	5.61	2004	US 13	PA 420	Secondary
4th St. (Darby & Colwyn)	0	2	42	0.76	638	0.88	1	0.22	18	1.13	0.79	5.52		Tribet Pl.	Fern St.	Secondary
Calcon Hook Rd.	0	2	49	0.89	717	0.99	1	0.22	19	1.19	0.91	5.49	2011	Hook Rd.	US 13	Secondary
Long Ln.	0	2	52	0.94	660	0.91	2	0.45	25	1.57	1.26	5.46		Church Ln.	Garrett Rd.	Secondary
Fairview Rd.	0	1	75	1.36	737	1.01	7	1.57	15	0.94	1.93	5.40	2035	US 13	PA 320	Secondary
Waterville Rd./Chestnut Pkwy.	0	1	68	1.23	734	1.01	7	1.57	14	0.88	1.41	5.40	3013	PA 320	Brookhaven Rd.	Secondary
Baltimore Pike	2	0	28	0.51	466	0.64	4	0.90	7	0.44	0.69	5.39	1	Darlington Rd.	Valley Brook Rd.	Secondary
Walnut St.	0	2	44	0.80	649	0.89	1	0.22	18	1.13	0.87	5.34		Bywood Ave.	Powell Ln.	Secondary
Ridge Rd./9th St.	0	4	48	0.87	668	0.92	6	1.35	11	0.69	2.80	5.26	3006	Delaware State	Highland Ave.	Secondary
Ashland Ave.	0	2	72	1.30	867	1.19	4	0.90	18	1.13	2.91	5.21		Maple Ave.	Providence Rd.	Secondary
Beatty Rd.	2	1	55	1.00	688	0.95	4	0.90	12	0.75	2.06	5.06	2018	Baltimore Pike	PA 320	Secondary
Wycombe Ave.	0	2	57	1.03	710	0.98	2	0.45	25	1.57	2.02	5.02		US 13	Marshall	Secondary

Table 3-1: Bicycle Improvement Network Results

Street Name	Votes	Crashes (1995-2000)	Schools		Recreational Facilities		Employers		Transit		Miles	Score	State Route #	Start	End	Priority
	number	number	number	points	number	points	number	points	number	points						
															Rd.	
10th St./Post Rd.	2	0	39	0.71	596	0.82	6	1.35	10	0.63	1.45	4.89	13	Delaware State	Chester City	Secondary
Knowlton Rd.	1	0	53	0.96	640	0.88	8	1.80	12	0.75	2.12	4.86	3022	PA 452	PA 352	Secondary
Rose Tree Rd.	1	2	45	0.81	633	0.87	6	1.35	11	0.69	3.65	4.54	4002	PA 352	State Rd.	Tertiary
Bethel Rd.	0	1	40	0.72	836	1.15	6	1.35	8	0.50	1.27	4.51	3010	US 322	Concord Rd.	Tertiary
Earlington Rd.	0	2	43	0.78	684	0.94	1	0.22	21	1.32	1.62	4.49	1003	Upper Darby Twp.	Eagle Rd.	Tertiary
Brookline Blvd.	0	2	43	0.78	587	0.81	1	0.22	19	1.19	1.34	4.49	1050	Darby Rd.	Manoa Rd.	Tertiary
State Rd./Old Marple Rd.	1	0	57	1.03	760	1.04	4	0.90	15	0.94	2.53	4.30	1008	Providence Rd.	Springfield Rd.	Tertiary
Haverford/County Line Rd.	2	3	39	0.71	490	0.67	2	0.45	19	1.19	4.12	4.23	1001 & 1014	Philadelphia	Lancaster Ave.	Tertiary
10th St.	0	3	29	0.52	498	0.68	5	1.12	8	0.50	2.19	4.19		Various sections in Chester City		Tertiary
Media Line Rd.	3	1	24	0.43	445	0.61	1	0.22	6	0.38	1.58	4.17	1030	PA 252	West Chester Pike	Tertiary
Elwyn Rd.	0	1	34	0.62	436	0.60	6	1.35	9	0.57	1.02	4.12	3026	PA 352	Baltimore Pike	Tertiary
Malin Rd.	0	2	31	0.56	514	0.71	2	0.45	25	1.57	2.74	4.02		Springfield Rd.	Earles Rd.	Tertiary
Front St.	0	2	36	0.65	594	0.82	1	0.22	18	1.13	1.83	3.91		Various sections in Darby and Colwyn Boroughs		Tertiary
4th Ave. (Tinicum Twp.)	0	1	28	0.51	319	0.44	2	0.45	12	0.75	0.58	3.87	2029	2nd St.	PA 291	Tertiary
Chichester Ave.	0	1	36	0.65	705	0.97	6	1.35	8	0.50	3.94	3.72	3009	PA 452	Concord Rd.	Tertiary
Lancaster Ave.	5	4	27	0.49	407	0.56	1	0.22	8	0.50	4.67	3.70	30	Montgomery County	Chester County	Tertiary
Lenni Rd.	2	0	29	0.52	415	0.57	4	0.90	9	0.57	1.90	3.61	3032	Llewellyn Rd.	PA 452	Tertiary
Llewellyn Rd./Birney Hwy./Aston Mills Rd.	2	0	29	0.52	421	0.58	4	0.90	6	0.38	1.72	3.54	3023	Concord Rd.	Valley Brook Rd.	Tertiary
Bishop Hollow/Barren Rd.	1	0	38	0.69	674	0.93	5	1.12	9	0.57	5.67	3.49	4004	PA 352	West Chester Pike	Tertiary
Baltimore Pike	1	2	29	0.52	578	0.79	5	1.12	11	0.69	9.92	3.42	1	Chester	PA 352	Tertiary

Table 3-1: Bicycle Improvement Network Results

Street Name	Votes	Crashes (1995-2000)	Schools		Recreational Facilities		Employers		Transit		Miles	Score	State Route #	Start	End	Priority
	number	number	number	points	number	points	number	points	number	points						
														County		
Gradyville Rd.	4	1	23	0.42	407	0.56	4	0.90	8	0.50	5.10	3.36	4008	Creek Rd.	Bishop Hollow Rd.	Tertiary
Street Rd.	4	0	6	0.11	77	0.11	0	0.00	3	0.19	1.37	3.33	926	Chester County	PA 352	Tertiary
Foulk Rd./Valley Brook Rd.	3	0	25	0.45	437	0.60	4	0.90	6	0.38	3.21	3.26	3029	PA 261	US 1	Tertiary
Ellis Rd./Ardmore Ave.	0	1	40	0.72	547	0.75	2	0.45	12	0.75	2.82	3.02	1018	Lawrence Rd.	Montgomery County	Tertiary
Naamans Creek Rd.	2	1	19	0.34	522	0.72	5	1.12	7	0.44	9.06	2.95	491	US 202	Delaware State	Tertiary
Cedar Grove Rd.	1	0	29	0.52	594	0.82	2	0.45	10	0.63	2.07	2.90	1024	PA 252	PA 320	Tertiary
College Ave.	0	1	28	0.51	485	0.67	2	0.45	10	0.63	1.69	2.85	1026	Darby Rd.	Montgomery County	Tertiary
Valley/Darlington Rds.	1	1	20	0.36	378	0.52	4	0.90	8	0.50	3.70	2.82	4005	US 1	PA 352	Tertiary
Bryn Mawr Ave.	1	0	37	0.67	595	0.82	2	0.45	10	0.63	4.54	2.79	1032	West Chester Pike	Montgomery County	Tertiary
Darby Paoli Rd.	0	1	29	0.52	386	0.53	2	0.45	8	0.50	2.29	2.44	1015	Bryn Mawr Ave.	Brooke Rd.	Tertiary
Conestoga Rd.	0	2	25	0.45	378	0.52	1	0.22	7	0.44	4.47	2.08	1019	Montgomery County	Lancaster Ave.	Tertiary
St. Davids Rd./Darby Paoli Rd./Brooke Rd./Wayne Ave.	0	1	21	0.38	280	0.38	2	0.45	8	0.50	3.31	2.01	1046	PA 252	Chester County	Tertiary
Newtown/Radnor Chester/King of Prussia Rds.	0	1	22	0.40	274	0.38	2	0.45	8	0.50	3.99	1.98	1021	Darby Paoli Rd.	Chester County	Tertiary
Pyle Rd.	0	1	3	0.05	238	0.33	1	0.22	1	0.06	0.87	1.81	3042	US 202	PA 491	Tertiary
Harvey Rd.	1	0	0	0.00	231	0.32	1	0.22	2	0.13	1.37	1.40	4020	US 1	Oakland Rd.	Tertiary
Totals	**Votes**	**Crashes**	**Schools**		**Recreational Facilities**		**Employers**		**Transit**		**Miles**	**Score**				
Total	265	343	215		3200		18		36		329.1					
Average	2.57	3.33	55.26		727.61		4.45		15.91		3.20	5.97				

Obstacles

The County bicycle improvement network was selected according to demand, not current conditions. Narrow rights-of-way, heavy traffic volume, and existing buildings will make significant upgrades in bicycle level of service cost-prohibitive in many cases. However, arterials and collectors in Delaware County are nearly all PennDOT roads, so bicycle facilities could be built during road reconstruction, using mostly PennDOT rather than municipal funds. Moreover, reliable cost estimates for bicycle improvements on any particular route require detailed analysis which is beyond the scope of a Countywide plan. Elimination of routes or alternatives may be necessary when bicycle improvements are shown to be unfeasible or excessively expensive.

Connectivity

Planned bicycle networks for Philadelphia, Montgomery County, Chester County, and the State of Delaware were consulted to ensure that Delaware County's planned network connects with their planned networks. The County should also stay aware of our neighbors' progress towards realizing their planned networks and give priority to segments in the County network that connect to segments in their networks that have already been or are likely to be completed. Philadelphia's network of bike lanes is substantial and is likely to become more complete within a few years, while Montgomery County's on-road network is proceeding slowly through piecemeal municipal initiatives at this point. Delaware has a single major route, the East Coast Greenway, which is already under construction in some sections.

Shared use paths were included in our calculation as a recreational facility. These facilities, however, have a high propensity to attract bicycle users, as that is one of their main recreational purposes. Shared use path users will be more likely to bike to the trail where on-road facilities are conducive to biking. This can help alleviate automobile parking needs and costs for trails and allow residents greater access. As off- road facilities are completed, these facilities need to be included in the on-road calculations, and special importance should be given to creating on-road facilities that connect shared use paths and nearby residential destinations.

Recommendations

To improve the quality of bicycling on the County's on-road bicycle network, Delaware County should pursue the following recommendations:

- Overcome the impediments to bicycling by using the variety of programs described in Chapter 6.
- Develop signed bicycle routes along the network.
- Create bicycle facilities (wide curb lanes, shoulders, bicycle lanes, or bicycle boulevards) along the network where feasible.
- Aid municipalities in implementing bicycle improvements along the bicycle network.
- Encourage PennDOT to include bicycle facilities along state roads on the bicycle improvement network.
- Request that the WILMAPCO and Delaware Department of Transportation (DelDOT) provide clear signs to access Wilmington.

Performance Measures

The following performance measures can be used to track the County's progress in implementing the on-road bicycle improvement network:

- Miles of network roads improved in bicycle level of service or programmed to be improved in bicycle level of service.
- Number of signed bicycle routes.

CHAPTER 4

The Complementary Role of Shared Use Paths

Off-road Bicycle Possibilities

GOAL: Create a network of shared use paths with direct and convenient access from residential areas to employment, shopping, recreational facilities, schools, and transit stops.

Shared use paths, also referred to as multiple use trails, are designed to support bicycling, walking, jogging, running, rollerblading, and, in some cases, even equestrian, ATV, cross country skiing, and snowmobile uses. For the purpose of this document, we will examine these trails only as they relate to bicycle use for transportation purposes. Off-street paths provide a good facility for novice riders, and when they pass through scenic areas, they have important recreational functions. They can be valuable in serving corridors that are poorly served by the street system, creating linkages for bicycle and pedestrian traffic where automobile traffic would be detrimental. On long corridors, such as rail-trails or stream valleys which are grade-separated from the street system, trails can provide an expressway alternative to crowded street systems. In areas where bicycling on the road is undesirable and impractical, they provide the best feasible bicycling route. On the other hand, trails often lack sufficient connections with the surrounding streets, which discourages use for transportation purposes. The average commuter bicyclist's tolerance for out-of-direction travel is minimal. The recreational purpose can make trails a destination for bicycle riders and should have good access from the on-road network. Recreational and long-distance commuter bicyclists benefit most from separation from traffic and are least inconvenienced by lack of access.

This document largely focuses on on-road improvements for bicycle transportation. Delaware County is in the process of completing a greenway and trail plan for the Darby and Cobbs Creek watershed. After this plan is completed, similar plans will be completed for the other watersheds in the County. These will be combined into a comprehensive greenway and trail plan for the County. These plans and the combined greenway and trail plan will look at paved shared use paths, as well as hiking trails and greenways that don't encourage human use. This document will serve as the plan for future off-road bicycle use in the County.

In this chapter we examine existing, planned, and potential shared use paths which often attract on-road bicycle users and can provide an alternative to on-road routes where it is not feasible to improve the on-road cycling condition. As mentioned in Chapter 3, shared use path design should make extra efforts to encourage on-road connections to allow users to avoid driving to the trail. Also, shared use paths can parallel routes where on-road improvements are also needed or provided. This chapter includes information about potential shared use path routes, which can be looked at in conjunction with on-road improvements.

The Trail Map

The map of the County's existing and proposed trail network (Map 4-1) shows existing, proposed, and possible shared use paths. Detailed maps of trails can be seen in Appendix E.

EXISTING TRAILS

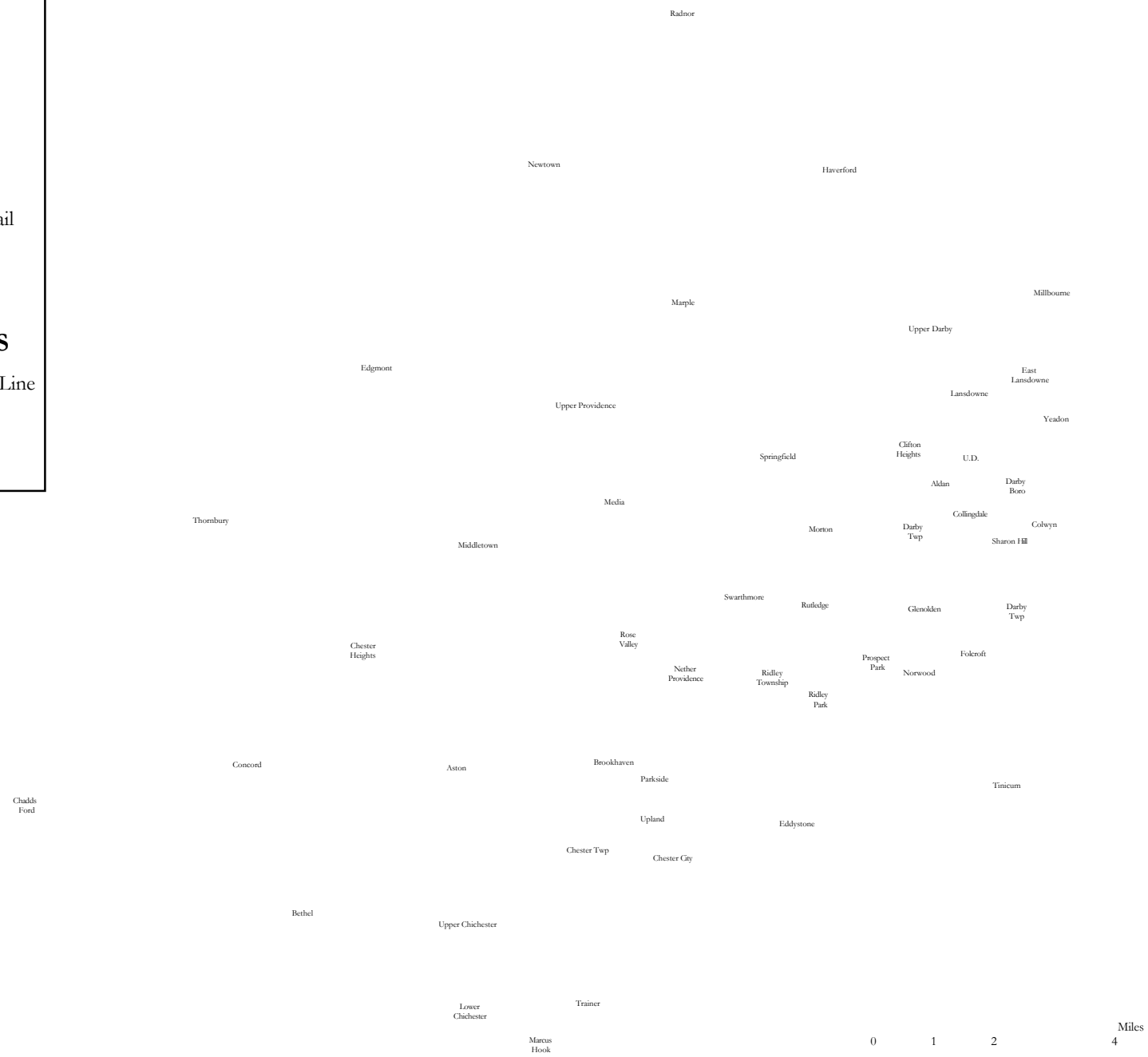
- Heinz Wildlife Refuge Trail
- Leiper-Smedley Trail
- Radnor Trail
- Ridley Creek Trail
- Unpaved Biking Trails

PROPOSED TRAILS

- Chester Creek Trail
- Darby Creek Stream Valley Trail
- East Coast Greenway
- Tinicum - Fort Mifflin Trail

RAIL TRAIL POSSIBILITIES

- Former Newtown Square Rail Line
- Former Octoraro Branch Line
- Blue Route Bikeway



Map 4 - 1

Existing, Proposed, and Possible Shared Use Paths

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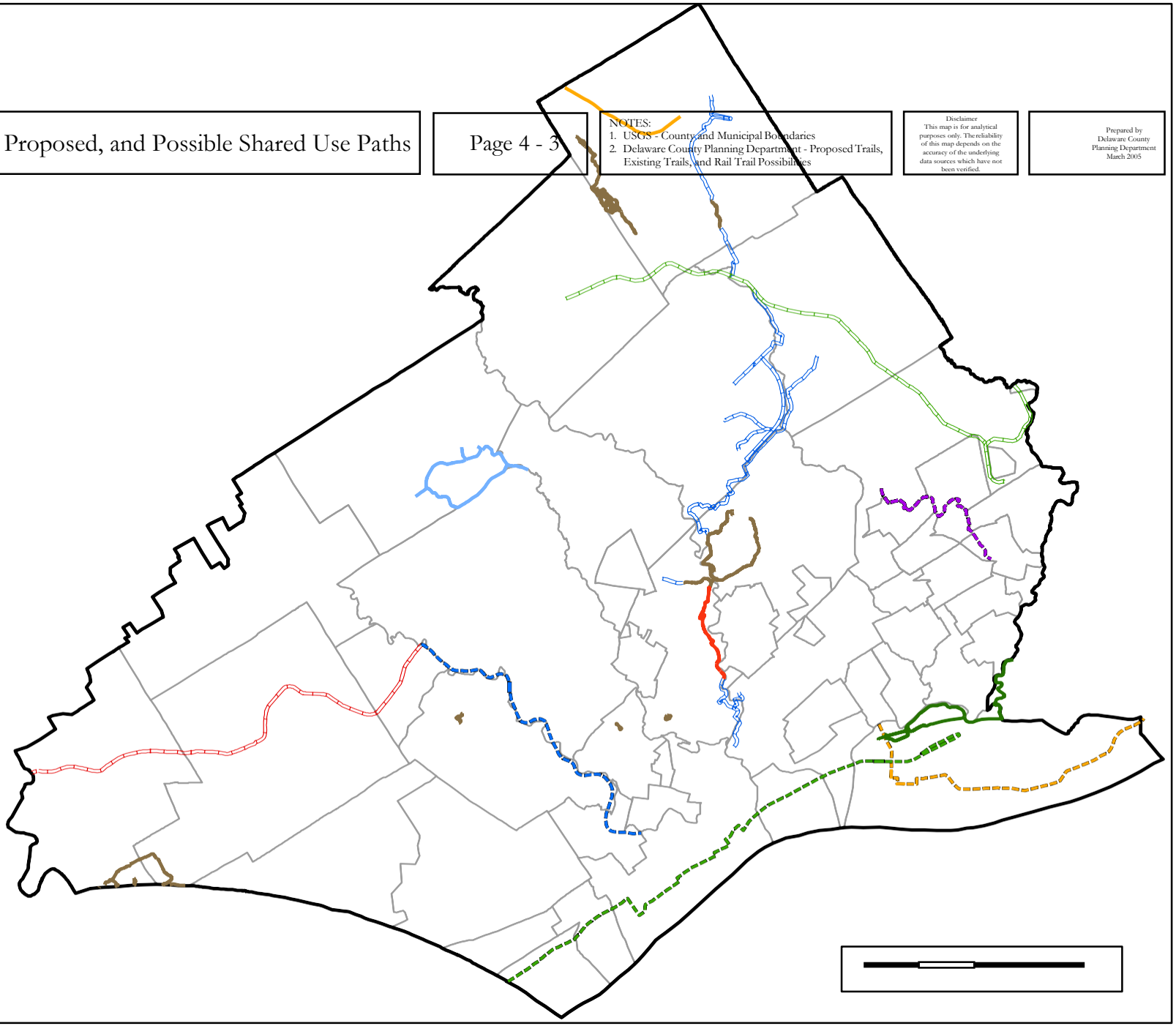
NOTES:
1. USGS - County and Municipal Boundaries
2. Delaware County Planning Department - Proposed Trails, Existing Trails, and Rail Trail Possibilities

Disclaimer
This map is for analytical purposes only. The reliability of this map depends on the accuracy of the underlying data sources which have not been verified.

Prepared by
Delaware County
Planning Department
March 2005



Existing Paths

The 1978 bicycle plan identified potential trail corridors in Delaware County. Possible routes include unused railroad rights-of-way, creek corridors, utility rights-of-way, and other linear public property.

Delaware County's only first-class recreational trail, the **Ridley Creek Trail**, is heavily used. An estimated 62,984 bicyclists used the trail from January to December of 2002 (see Table 4-1).[33] The much shorter and substandard **Leiper-Smedley Trail** is located in the I-476 (Blue Route) right- of-way in Nether Providence Township.

Table 4-1: Ridley Creek Trail Count 2002

January	446
February	574
March	6,003
April	7,024
May	7,863
June	7,791
July	7,316
August	7,601
September	7,005
October	6,598
November	4,275
December	488
Total	**62,984**

Source: Ridley Creek State Park

The 2.2 mile **Radnor Trail** uses the former P&W rail right-of-way. PennDOT originally purchased the rail right-of-way as a possible highway bypass of Wayne, though now the Township has agreed to assume maintenance responsibility. This short trail is a start in efforts to meet the need for bicycle facilities, but it has limited ability to attract people who do not live nearby and commuters due to its short length. Nonetheless, it still seems to be very well used by local residents.

For the most part, Delaware County residents must go outside of the County to Delaware State, Montgomery County, and Philadelphia for off-road recreational riding. Residents who were surveyed about their recreational riding habits named locations outside of the County about half of the time. Neighboring facilities can be seen on Map 2-2 and in Appendix E, and existing shared use paths can be seen on Map 4-1.

[33] Users are estimated using a combination of actual counts and statistical inference from those counts.

Unpaved Trails

There are several existing unpaved trails for hiking and biking in Delaware County. The trails included in this map were those with signs at the trail entrances that did not prohibit biking, though some of these may prohibit bicycling through other literature. These trails serve a mainly recreational purpose and are a destination for cyclists, as many are mountain biking trails and may be too hilly for transportation purposes. Because they don't tend to be as smooth and are susceptible to becoming muddy, they don't typically serve a transportation purpose in their current state. One example is the Skunk Hollow Trail system in Radnor Township, which is described as including several hairpin turns and changes in grade. These traits are obviously not the most desirable for bicycle commuting. They are included on this map for completeness and as a destination point for connectivity but are not considered to be part of any potential commuter route until they are paved, covered with pervious pavement, or other commuter-friendly surfaces.

Planned Trails

Planned Rail and Creekside Trails

The **Chester Creek Trail**, a 6.7 mile trail from the former Wawa train station to Upland, has been placed on the TIP in

order to be eligible for federal funding. Once it is finished, it will be a truly regional recreational trail, with some value to commuters. The trail would connect many existing sites, including the proposed Wawa train station, Route 1 employers, Aston/Middletown Little League baseball fields, trails in Middletown Township (the Rocky Run, Darlington, and Linvill Trails), Linvilla Orchards, Camp Upland Park, the Caleb Pusey historic site, and many housing developments. The Chester Creek Trail will provide a useful link among these varied recreational, historic, transportation, and business resources through rolling, scenic, forested woodlands. Delaware County and SEPTA negotiated a thirty-year lease in order to create a public trail until such time as SEPTA requires the right-of-way for rail-related use. The Chester Creek Trail can be seen in Appendix E.

Not in Delaware County, but accessible to numerous Delaware County residents, is the **Cobbs Creek Bikeway** in Philadelphia, which will follow the east bank of Cobbs Creek from 63rd and Market Streets to the Blue Bell Tavern near Main Street/Woodland Avenue in Darby. Bicycle lanes continue on Island Avenue, Lindbergh Boulevard, and Bartram Avenue to the City line near PA 291. Darby, Colwyn, Yeadon, and Upper Darby residents will have ready access to the trail, while many other eastern Delaware County residents will be only a short bicycle ride away. The Cobbs Creek Trail was completed and opened in the spring of 2005.

East Coast Greenway Trails

A national organization, the **East Coast Greenway** Alliance, is trying to create a Maine-to-Florida bicycle route connecting the major cities of the eastern seaboard (see Figure 4-1). The goal is to achieve a fairly direct, mostly off-road route from city to city by connecting planned trails and promoting the creation of more. The East Coast Greenway Alliance is a coordinating body; it will not construct or own anything. A continuous route will benefit all of the participating trails and municipalities by promoting long-distance bicycle tourism. Currently Bicycle PA Route E provides an interim on-road alternative for those who wish to follow the trail.

The Delaware County portion of the East Coast Greenway corresponds with the landscaping and beautification efforts along the **Route 291/13 – Industrial Heritage Corridor**. The *Delaware County Industrial Heritage Parkway: Route 291/13 Beautification and Greenway Plan* was originally proposed to promote economic development of the vacant and underutilized industrial proper-ties along the Delaware River waterfront. The relation between the Industrial Heritage Parkway, Bicycle PA Route E, and the proposed alignment for the East Coast Greenway can be seen in Appendices E-3 and E-7.

Figure 4-1: East Coast Greenway

Source: East Coast Greenway Alliance

The project runs from the Delaware County line at Philadelphia International Air-port to the Delaware State line in Marcus Hook. Expansion of the airport creates the potential for hotel and office development on these properties, but their current appearance makes them harder to market. A unified landscaping

plan and project would be superior to piecemeal efforts by individual property owners or municipalities.

All parties agreed that including a bicycle path as a part of the landscaping plan would be beneficial. The proposed path would run off road as much as possible, connecting the properties to be developed with proposed and existing waterfront parks. The path would be separated from the road as much as possible but would run on road where structures and other constraints make it necessary. WILMAPCO and the City of Philadelphia have planned bicycle lanes and paths to connect with Delaware County's segment.

The *Delaware County Industrial Heritage Parkway: Route 291/13 Beautification and Greenway Plan* serves as a planning study for the East Coast Greenway through Delaware County. Over $2 million of TE funds have been secured by Marcus Hook Borough, Tinicum Township, and Chester City for segments of the East Coast Greenway in those municipalities. Trainer Borough received Delaware County Revitalization funding for its on-road connections of the East Coast Greenway. The private sector has also responded strongly in making the vision of this study become a reality.

Delaware County has also strongly supported this project, not only through funding the Trainer Borough portion, but also by planning for other portions of the trail. Delaware County, with the help of the CZM Task Force, completed the *Delaware County Route 291/13: Darby Creek Bridge Feasibility Study*. The study looked at options for crossing the East Coast Greenway over Darby Creek and provided assistance to PennDOT in its redesign of the 291 bridge to allow for a future trail across the bridge. The *Delaware County Route 291/13: Industrial Heritage Parkway and Greenway Landscape and Signage Guidelines*, completed for DCPD, provides guidance for developers and municipalities about how best to design for the East Coast Greenway. This includes sign and landscaping design guidelines for the trail based on neighboring land use character. This project should help create a cohesive design for the Greenway while allowing for differences in character that accent the communities through which it travels.

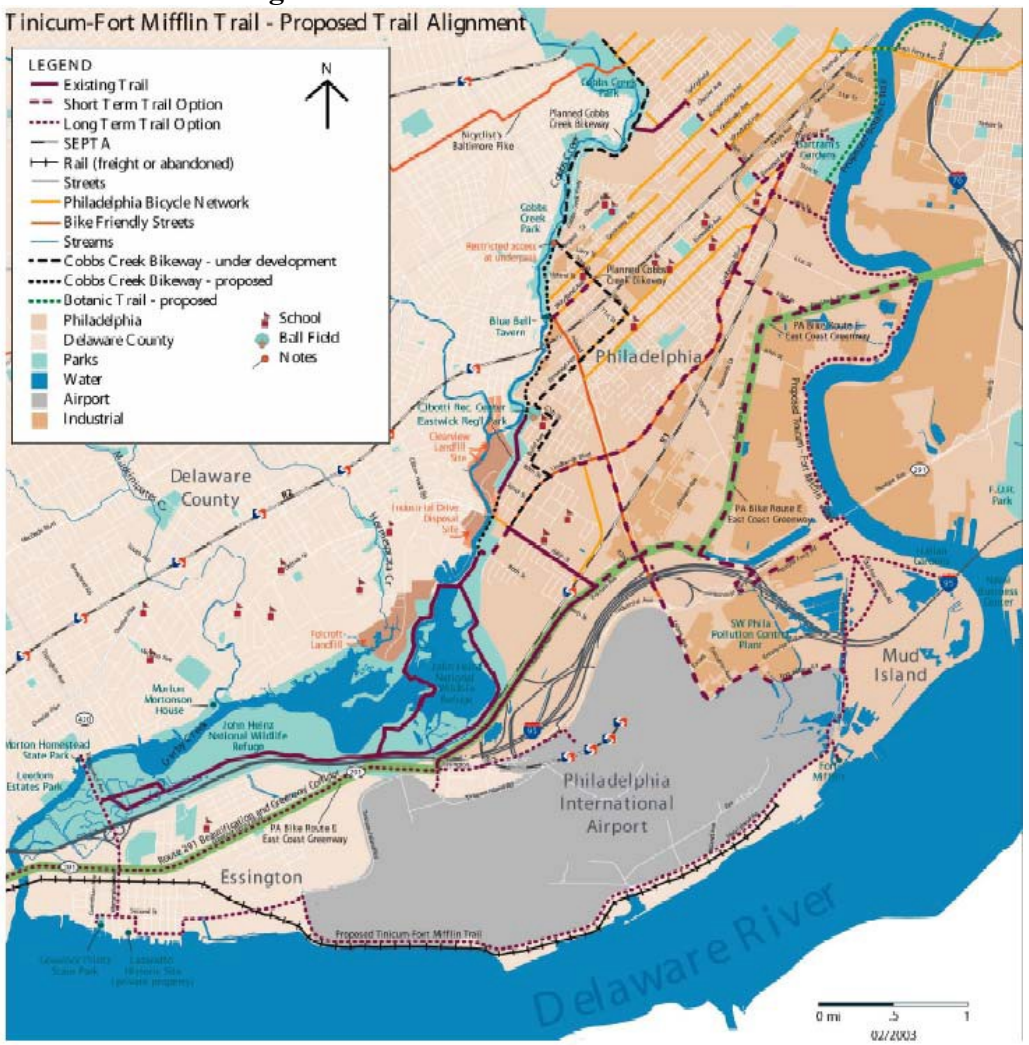
Delaware County will also begin work on a detailed feasibility study of the portion of the East Coast Greenway between Darby Creek in Ridley Township and Flower Street in Chester City. The County has applied for funding through DCNR and the CZM Program to fund this study which will outline land ownership and provide a detailed action agenda to move the project into design and construction.

A trail development study has also been completed for the **Tinicum-Fort Mifflin Trail**, which is envisioned to be a portion of the East Coast Greenway through Southwest Philadelphia and eastern Delaware County (see Figure 4-2). This trail includes portions of Tinicum Township and will serve as the link between the proposed 291/13 Greenway, the 5-county Schuylkill River Trail, and northern portions of the East Coast Greenway. *A Trail Development Study for the Tinicum-Fort Mifflin Trail* (2003) envisions the creation of an airport loop trail similar to that incorporated in the Baltimore/Washington International Airport. The connection between the airport and the national trail could provide opportunities for visitors to fly into Philadelphia International Airport (PHL) and immediately begin to use the trail. This trail also provides an opportunity for airline staff to get exercise on layovers or breaks.

This study is being implemented through detailed feasibility studies for high priority trail segments. The first of two feasibility studies, *A Feasibility Study for the Tinicum-Fort Mifflin Trail: Governor Printz Park to Fort Mifflin,* was completed in October 2005. This detailed feasibility study creates an exact trail corridor from Governor Printz Park in Essington to Fort Mifflin on the Delaware with an extension to F.D.R. Park in Philadelphia. Funding and permanent trail sponsors are currently being sought for this trail segment.

A detailed feasibility study of the second high priority segment of the Tinicum-Fort Mifflin Trail began in January 2006. This trail segment will link the John Heinz National Wildlife Refuge at Tinicum to the Cobbs Creek Bikeway on the Philadelphia County side, following Darby and Cobbs Creeks, and will include multiple points of access to communities on the Delaware County side of the creeks. This detailed feasibility study was completed in late spring 2006.

Figure 4-2: Tinicum - Fort Mifflin Trail



The proposed alignment for the Tinicum - Fort Mifflin Trail
Source: *A Trail Development Study for the Tinicum - Fort Mifflin Trail*

Other Shared Use Path Possibilities

When planning was being done for the **I-476 corridor (Blue Route)**, an effort was made to create a parallel bicycle path to allow communities to maintain their continuity and access to schools. This project led to the creation of the **Leiper- Smedley Trail**, with federal funds covering 90% of the costs. Though much has changed since the completion of the Blue Route, there are still portions of this initial proposed route that could be examined to link communities along this corridor.

A SEPTA railroad right-of-way, the **Octoraro rail line**, connects the proposed Chester Creek Trail at Wawa with the Brandywine River Museum in Chadds Ford. The Octoraro is the best remaining rail-trail opportunity in Delaware County, after the Chester Creek Trail. Many of its bridges are intact, there has been little encroachment into its right-of-way, and while numerous people live nearby, only about a dozen homes are immediately adjacent to the right-of-way. The lack of density near the right-of-way makes it unlikely that rail uses will be feasible in the near future, and a trail can be a way to reserve the line until such time as rail service is feasible again.

If and when the Chester Creek and Octoraro Trails are finished, it will be possible to ride nearly 16 miles from the Brandywine River Museum, past Brandywine Battlefield Park, Newlin Mill Park, Linvilla Orchards, and the Caleb Pusey Plantation to the County's Camp Upland Park. The completed trail would pass through attractive countryside and beautiful creek valleys, with fine views from the top of high fills. The trail would connect with the foot trails at Linvilla Orchards and at Rocky Run, which connects with Tyler Arboretum and Ridley Creek State Park. The Octoraro Trail would provide an alternate means of mobility in auto-oriented Chadds Ford and Concord Townships, connecting numerous subdivisions with stores, a cinema multiplex, and employment sites at Painters Crossroads.

Other trail prospects in Delaware County are less easily implemented. The abandoned **Newtown Square rail line** runs from Baltimore Avenue near East Lansdowne through Upper Darby, Haverford, Marple, Radnor, and Newtown Townships to Newtown Square (see Figure 4-3). The demolition of virtually every bridge on this rail line and the presence of a number of encroachments into the right-of-way would make the construction of a trail along any major length of this line expensive. However, several shorter segments may be feasible and relatively inexpensive. This trail also provides one of the only opportunities to provide a shared use path in the densely populated eastern portion of the County.

Another trail possibility for eastern Delaware County is the **Darby Creek Stream Valley Park**. A master plan was created for the park in 1987, and some thought was given to bicycle activities, but steep slopes may limit the possibilities for bicycling. Small linking trails, meant to fill gaps between bikeable streets and add much needed green space, could be useful in numerous locations and should be implemented as part of local pedestrian and bicycle mobility plans. Eventual completion of a multi-use trail along this route would aid the most densely populated part of the County with the creation of sorely needed green space. The feasibility for this trail as well as additions are outlined in the draft of *The Multi-Municipal Recreation, Park & Open Space Plan* for the communities of the William Penn School District. This plan calls for greenways to be built and gives particular details on which properties would need to be acquired to make the Darby Creek Stream Valley Trail a reality.

Figure 4-3: Newtown Square Branch

Sections of the former Newtown Square Branch rail line (above) provide opportunities for multi-use trails (below).
Source: Delaware County Planning Department

Trail Right-of-way Opportunities

There are several types of land that typically are already in public ownership or have a public use easement. These provide opportunities for shared use path creation with minimal costs for right-of-way acquisition.

Stream Valleys

Stream valleys in Delaware County, unlike in some other regions which require that floodplains be dedicated to the public, are generally in the hands of numerous private parties, and development comes quite close to the stream banks. Building trails in the developed stream valleys would be technically difficult, expensive, and politically problematic due to intrusion upon neighborhoods. Stream valleys have more potential in areas that are not fully developed. Municipalities, watershed groups, and the County should work to secure the undeveloped floodplain lands to achieve the dual goals of increased recreational possibilities and protecting private property from costly flooding. The possibility of purchasing developed lands in the floodplain when they become available should also be explored.

Utility Corridors

There are several difficulties in using utility corridors for multi-use trail facilities. Utility corridors often have slopes that are too steep and lack tree cover, making them less desirable for use as trails. Utility corridors often consist of easements, leaving in doubt the legal right to build a trail, but federal and state money can be used to build on easements held over 25 years. Utility corridors usually have no grade separation or

useable structures. Utilities often benefit from the creation of shared use paths because they allow for easier access to their infrastructure for maintenance purposes, though there are often safety and liability concerns that need to be negotiated. Municipalities should examine the possibility of using utility corridors as connections between bikeable streets or short paths where their use is feasible.

Roads

There are opportunities for the creation of fully separated roadside multi-use paths when there are major road expansions and in areas with excessive rights-of-way. The two major road expansions that are planned in Delaware County, of U.S. 322 and U.S. 202, present opportunities for constructing trails within the rights-of-way. The relatively recent addition of interstate highways in Delaware County has also left some formerly heavily traveled routes with excessive road widths. Marcus Hook is planning to reduce the number of lanes on Route 13 and to create a fully separated multi-use trail parallel to the roadway that will become part of the East Coast Greenway. In these days of increased automobile use these opportunities are rare, but municipalities should try to take advantage of them to gain green space and limit through traffic.

Railroad Rights-of-way

Railroad rights-of-way have numerous advantages as long-distance bicycle routes: grade separation, (often) useable structures, even grade, single ownership, minimal displacement, and scenic locations along streams and on high fills and bridges. Old railroads often have tree cover as well, and they pass through less developed land, free of highway clutter. Delaware County has a limited number of unused railroad rights-of-way, since most of our railroads are still in operation. If the railroad right-of-way is wide enough, there is also the possibility of creating trails along active railroad routes. Rails with trails have been successfully implemented across the country, including several in Pennsylvania. The concept of rails to trails and rails with trails is to reserve unused railroads that are not officially abandoned until such time as it becomes feasible to use them again for rail purposes.

Trail Design

Concerns with trail design are different than those for on-road bicycle facilities. There are several challenges in accommodating the varied users of the trail which require much care and public input in the trail design process. Trails should be designed in accordance with the Americans with Disabilities Act (ADA) of 1990 and the AASHTO (American Association of State Highway and Transportation Officials) *Guide for the Development of Bicycle Facilities* (1999). Decisions also need to be made as to which uses are to be permitted or specially accommodated. For example, joggers, runners, and equestrian users often prefer a dirt path next to the paved or gravel path that is less jarring for joints and separates out the faster moving users. In bicycle design, it is often helpful to separate bicycling areas from pedestrian areas if the trail is heavily used. Signs can also be used to designate that slower traffic should keep to a particular part of the trail to allow faster users to pass. Trails can also be constructed out of porous or pervious pavements to allow for better stormwater filtration.

Multi-use trails should also include destination nodes. These depend on the character of the trail, but possible nodes could include ramp areas for bike or skate tricks (see Figure 4-4), fishing areas, bird watching decks, connections with shopping centers or local businesses, etc. These nodes are dependent on the geographic layout of the trail and the proposed users. With longer corridors, often both urban and natural uses can be accommodated in different parts of the trail.

When looking at designing bicycle facilities, maintenance and ownership issues should always be taken into account. A strategy for determining which organizations will maintain the facilities and where funding will come from should be outlined before any new facilities are built.

Figure 4-4: Trick Ramps

Skate parks can provide destination nodes along multi-use trails because they also provide opportunities for trick bike riding.
Source: City of Columbus Planning Department

Recommendations

In an effort to give Delaware County residents access to the recreational and transportation benefits of mixed use trails, the County should encourage or pursue the following recommendations:

- To increase property values and quality of life for Delaware County residents, every effort should be made to provide an off-road trail within bicycling distance, or about three miles, of every Delaware County resident.
- To prevent future flood damage and to acquire new recreational and transportation assets, municipalities should acquire new trail right-of-way in conjunction with new development by encouraging developers to dedicate their floodplain for open space and trails and acquire floodplain lands when available.
- To better plan a Countywide trail network, municipalities should update their comprehensive plan and adopt an official map showing where trail corridors are to be provided. Each new community trail should be encouraged to connect with trails in the adjoining community.
- In order to maximize use of trails through the County, regional and community trails should be connected, directly where possible and by bikeable roads where not, to form a Countywide network.

- Trails should have numerous access points from the surrounding neighborhoods to encourage residents to walk or ride rather than drive to the trail.
- Ensure that any airport expansion plans make accommodation for a fully separated multi-use trail as part of the East Coast Greenway and Tinicum - Fort Mifflin Trail.
- Encourage the creation of an Industrial Heritage Corridor Committee to oversee and encourage the creation of the East Coast Greenway, Tinicum - Fort Mifflin Trail, and other bicycle improvements associated with the Route 291 beautification.

Performance Measures

The following performance measures can be used to track the County's progress towards providing trails:

- Miles of off-road trails constructed
- Miles of off-road trails funded
- Number of trail users
- Number of access points per mile of trail

All of these data are available or will be available with a moderate amount of effort.

CHAPTER 5

Overcoming Impediments to Bicycling

Identifying the Impediments

GOALS: Make traveling easy for bicyclists making short trips, particularly to transit stations, recreational activities, places of employment and commerce, and schools.

Create a sense of safety and confidence among Delaware County residents when riding bicycles in their neighborhoods and to their destinations.

If bicycling is ever to become a significant mode of transportation in Delaware County, impediments to bicycling must be identified and overcome. In an effort to better understand these impediments, they can be placed in three categories.

General

1. Distance – Are the trip distance and time perceived to be reasonable?
2. Social acceptability – Is bicycling a socially accepted mode of travel in this community?
3. Motivation and fitness – Are people able and willing to make the physical effort to bicycle?
4. Education/ability – Do people know how to bicycle safely?
5. Cargo/passenger limits – Is there a need to carry passengers or heavy cargo on this trip?
6. Cost of/access to bicycles – Can the person afford a good bicycle and necessary equipment and repairs? An old or substandard bicycle is an impediment.

Trip Barriers

1. Traffic conditions – Are traffic conditions conducive to bicycling?
2. Routes – Are direct routes available to the destination?
3. Terrain and weather – Is bicycling impeded by hilly terrain, rain, snow or ice, or excessive heat?
4. Safety – Are safe facilities built into the transportation network to accommodate bicycles?

Destination Barriers

1. Parking – Are safe places available to park and lock the bicycle?
2. Showers – Are facilities available to shower and change clothes?
3. Employer/school policies − Do employers accept employees who bicycle? Do school policies restrict students from riding bicycles to school?

Objectives: The Four E's

It is generally accepted that successful bicycle planning involves more than just building facilities. A successful strategy to improve bicycle ridership should have four broad components, sometimes called "the four E's."

1. **Engineering and Planning** deals with transportation planning and roadway design and construction issues for making the road network bikeable. It also involves providing bike parking facilities at destinations and accommodating bikes on transit.

2. **Encouragement** addresses the promotion of bicycling as a means of transportation.
3. **Education** deals with teaching proper bicycling skills and educating bicyclists and motorists about key safety issues and rules of the road.
4. **Enforcement** involves enforcing traffic laws for both motorists and bicyclists.

Engineering and Planning

GOAL: Create an environment where bicyclists feel comfortable riding to destinations through an extensive network of on-road bike lanes, bicycle routes, or other means and a system of signs and pavement markings that identify bicycle facilities, direct bicyclists to destinations, and define the presence of bicycles in a shared roadway environment.

Studies, surveys, and international experience show that better facilities are key to increased bicycling. Survey respondents consistently report that they would be more likely to bicycle if safer facilities, paths, bike lanes, parking, shower facilities, and more direct routes were provided. Nations that have provided extensive bicycle facilities have significant and growing amounts of bicycle travel, while those that do not have small and declining mode shares for bicycle travel. Accordingly, engineering and planning better bicycling facilities is the core of most bicycle plans.

Additionally, planning for bicyclists is required by U.S. law through Title 23 U.S.C. §217 and portions of SAFETEA-LU not yet codified. Specifically, the code states that, "Bicyclists and pedestrians shall be given due consideration in the comprehensive transportation plans.... Bicycle transportation facilities and pedestrian walkways shall be considered, where appropriate, in conjunction with all new construction and reconstruction of transportation facilities, except where bicycle and pedestrian use are not permitted."[34] These laws provide for some flexibility but make it clear that all new facilities need to consider bicycle transportation.

There has been much research done into the creation of standards for bicycle planning and design. There are many guidance documents put out by groups familiar to the highway planning and design community. All transportation projects should meet accepted design criteria laid out by groups such as AASHTO and FHWA. Additionally, all road signs and markers should comply with the Manual on Uniform Traffic Control Devices (MUTCD). Following accepted national standards helps ensure that users from outside of the region are able to easily understand the bicycle facilities and signs in Delaware County. Using these accepted standards helps to shield local authorities from liability as described in Chapter 2 and avoids the time consuming process of creating local standards.

Engineering and planning pertains to designing, constructing, and maintaining a safe, integrated bicycle network that provides unimpeded access to key destinations. Specifically, it calls for the following:

- Adequate lane width.
- Access to all major destinations.

[34] U.S. Department of Transportation, Federal Highway Administration, *Bicycle and Pedestrian Legislation in Title 23 United States Code (U.S.C.)* [online].

- Continuity of bicycle travel.
- Smooth road surfaces unobstructed by debris or other hazards.
- Parking facilities and other services.
- Accommodation on public transit vehicles.

Assessing Bicyclist Types and Needs

Bicyclists have a wide range of skills and abilities, depending on the individual rider's level of fitness and experience. FHWA recognizes the following three broad skill categories of riders:

Group A. Experienced. Experienced adult and teenage riders who can operate under most traffic conditions.
Group B. Basic. Casual or new adult and teenage riders who are less confident of their ability to operate in traffic.
Group C. Child. Riders age twelve and under, whose judgment and motor skills are still less developed.

Group A riders generally can make do with less comfortable facilities and conditions than those in Groups B and C. Groups B and C riders often demand separate facilities if they are to bicycle until they are experienced and educated well enough on bicycle riding to become Group A riders. Separated facilities are not always the best solution for Group A riders, who can handle auto traffic better and need a higher speed facility than Groups B and C riders. Rating and improving roads and paths for different ability levels allows implementers to avoid letting a desire for the best facilities to stand in the way of producing good facilities by providing some level of accommodation, sufficient for a skilled rider, where it is not practical to provide separated facilities. FHWA provides guidelines for bicycle facilities suitable for different ability levels, but the guidelines are so complicated that it has proven more practical to use bicycle level of service software to rate the quality of accommodation provided. If one wants to serve lower-ability riders, a higher level of service should be provided, where feasible.

This does not mean that roads with a current low level of service can be ignored, however. It is important to remember that the differently skilled riders and different riding purposes mean that multiple bicycle routes are necessary. Roads that may seem unsafe to people who don't bicycle or are casual bicyclists (Group B) may be the preferred routes for experienced cyclists (Group A). Bicyclists who are riding for recreation may prefer lightly traveled residential streets which are avoided by cyclists seeking to make a direct utilitarian trip such as going to work or the store. Also, a bicycle rider's skill level improves as he or she gets more experience, meaning there will always need to be facilities for users of the different groups. On-road facilities should cover a range of options for the wide range of cyclists and purposes for cycling. Multiple strategies on parallel routes may be needed to allow for this variety of uses and users.

FHWA guidelines identify the following types of on-road facilities:

- Shared Lane. According to FHWA, bicycles can share the road as long as traffic volume is less than 10,000 Average Annual Daily Traffic (AADT), speed is less than 30 mph, and the outer lane is at least 12' wide.
- Wide Curb Lanes. Outer lane adjacent to the curb is at least 14' wide.
- Shoulders. At least 4' wide, paved and maintained.

- Bike Lanes. One-way lane at least 4' but not more than 7' wide marked for bicycle traffic.

In addition to FHWA identified on-road bicycle facilities, other facility types will also be discussed in this section.

There has been some effort made to standardize when these various facilities should be used based on traffic volume and posted speed limits. Guidelines for which type of facility to provide vary by state and country. Engineering judgment and planning skills are required to choose the best facility for the local context.[35] Select standards compiled by the Pedestrian and Bicycle Information Center publication *Bicycle Facility Selection: A Comparison of Approaches* (2002) are also compiled in Appendix C. Also, all bicycle facilities need to meet accepted guidelines as laid out by AASHTO and the MUTCD, as stated earlier.

Shared Lanes

On a shared roadway, bicyclists and motorists share the same travel lanes. A motorist will usually have to cross over into the adjacent travel lane to pass a bicyclist. Since bicyclists generally do not travel faster than 20 mph, sharing a lane with vehicles going faster than 25 mph poses an obvious hazard. Bicyclists can safely mix with automobile traffic on very low volume, 25-mph neighborhood streets or on 20 mph and lower speed streets that permit them to keep up with traffic. Most neighborhood residential streets meet these conditions and do not require any special treatment for bicycles. The City of Portland does not recommend using shared lanes on streets with a daily traffic volume greater than 3,000 vehicles.[36] As seen in Appendix C, New Jersey guidelines are even more stringent and only recommend shared lanes for roads with volumes less than 1,200 vehicles.[37] The Center for Livable Communities recommends shared lanes for all roads with speed limits of 15 mph or less and on roads with 20 mph speed limits with less than 200 vehicles. [38]

Wide Curb Lanes

A wide curb lane is a vehicle lane next to the curb that is at least 14' wide. Wide curb lanes are not necessary on neighborhood streets but are an inadequate accommodation on busier streets. Wide curb lanes represent an inferior solution that is sometimes permitted to exist when the costs of providing enough space for a minimal bicycle lane would be prohibitive, when parking cannot be removed, or when for some other reason the situation cannot be remedied. Vehicles tend to center themselves in the lane, so a wide lane requires passing vehicles to swerve slightly around the bicycle. To remedy this problem, the curb lane can be striped to an 11' or 12' width with the excess width being turned into a shoulder or bicycle lane. As seen in Appendix C, FHWA recommends wide curb lanes for roads with less than 10,000 vehicles and speed limits of 20 mph or less.[39] New Jersey guidelines recommend wide curb lanes for roads with volumes between 1,200 and 10,000 vehicles and speeds less than 35 mph.[40] The

[35] King, Michael, Pedestrian and Bicycle Information Center, *Bicycle Facility Selection: A Comparison of Approaches* (2002), p. 2.

[36] Ibid., p. 13
[37] Ibid., p. 11
[38] Ibid., p. 14
[39] Ibid., p. 11
[40] Ibid.

Center for Livable Communities recommends wide curb lanes for roads with 20 mph speed limits with 200 - 600 vehicles. [41]

Shoulders

Existing paved shoulders often make adequate bicycle facilities (see Figure 5-1). Shoulders should be at least 4' wide. The preferred width is 5', or 6' on higher-speed roads, with at least a 2' space between the edge of the pavement and any ditch or swale that may be present. Paved shoulders are becoming a standard PennDOT practice wherever the right-of-way exists because it was found that maintenance costs were greater on roads without shoulders, which have more extensive eroding of the asphalt at the edges. Shoulders also serve as breakdown lanes and working space for utility workers. The current PennDOT standard for shoulders on new roads or reconstructions is only 4', which is not really adequate for bicycles on a high-speed road. Five feet should be standard wherever the right-of-way exists. In built up areas such as most of Delaware County, there are few roads with excess right-of-way for 5' shoulders and many that don't have the right-of-way for shoulders at all. Acceptable road width for automobile traffic varies by speed of the road and level of traffic, though 10' is generally considered to be the narrowest acceptable automobile travel lane. PennDOT policy for Delaware County includes looking at providing shoulders with every repainting or resurfacing project, where there is extra pavement space. As seen in Appendix C, FHWA recommends shoulders on all roads with speeds of 25 mph or greater.[42] New Jersey guidelines recommend shoulders or bike lanes for roads

Figure 5-1: Shoulders

Continuous shoulders (top) can serve as bicycling facilities if properly maintained, but intermittent shoulders (bottom) make bicycling difficult.
Source: Delaware County Planning Department

[41] Ibid., p. 14
[42] Ibid., p. 11.

with volumes greater than 10,000 vehicles.[43] The Center for Livable Communities recommends shoulders or bike lanes for 30 mph speed limit roads with over 3,000 vehicles and on 35 and 40 mph roads with 20,000 to 40,000 vehicles. [44]

Bicycle Lanes

Bicycle lanes are the favored on-street facility in urban and suburban areas (see Figure 5-2). Unlike paved shoulders, bicycle lanes guide the bicyclist through intersections that feature right-turn lanes. They also serve a pedagogical function, telling bicyclists where to ride, raising motorist awareness of the right of bicyclists to be on the street, and ensuring that a route is passable. Bicycle lanes should be a pair of one-way lanes that go in the same direction as traffic on two-way streets in order to avoid cyclists riding against traffic.[45] Blue coloring is sometimes used to further emphasize the denotation of bicycle lanes from standard automobile pavement. Shoulders often have gaps where there are issues with right-of-way, but bicycle lanes must be continuous. Bicycle lanes can still serve as shoulders in case of need, so they benefit motorists as well as bicyclists. Enforcement needs to be in place to ensure that people don't park in the bicycle lane except on an emergency basis. All bicycle lanes should be engineered to meet AASHTO guidelines, requiring a minimum of 4' of width but also having a maximum width so that car drivers aren't tempted to use it as an automobile lane (see

Figure 5-2: Bicycle Lane

Bicycle lanes such as these along Tyson Avenue in Northeast Philadelphia help create a designated place for bicycles on the road while narrowing the travel lanes of excessively wide roads.
Source: Delaware County Planning Department

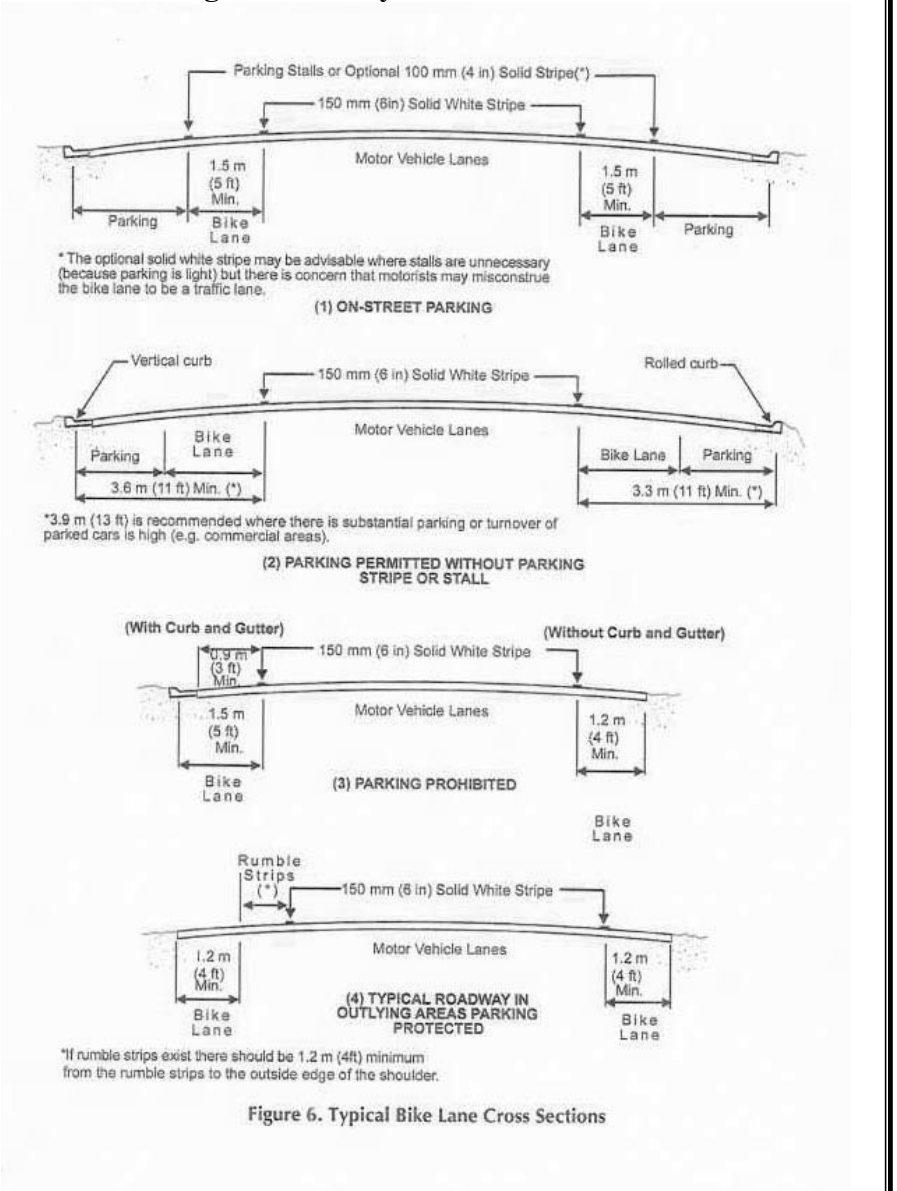
[43] Ibid.
[44] Ibid., p. 14.
[45] American Association of State Highway and Transportation Officials, *Guide for the Development of Bicycle Facilities* (1999), p. 22.

Figure 5-3).[46] As seen in Appendix C, FHWA recommends bike lanes or shoulders on all roads with speeds of 25 mph or greater.[47] New Jersey guidelines recommend bike lanes for roads with volumes greater than 10,000 vehicles.[48] The Center for Livable Communities recommends bike lanes or shoulders for 30 mph speed limit roads with over 3,000 vehicles and on 35 and 40 mph roads with 20,000 – 40,000 vehicles. [49]

Bicycle Boulevard

Bicyclists' skill levels and preferences inherently vary from bicyclists who prefer low volume, residential roadways where they need not contend with traffic to riders who choose the most direct route regardless of traffic. Bicycle boulevards are able to accommodate both of these types of riders on a single route. A bicycle boulevard is created by modifying the operation of a local street to function as a through street for bicycles while maintaining local access for automobiles (see Figures 5-4 and 5-5). Bicycle boulevards can provide an alternative to riding on busy thoroughfares with high traffic volumes and speeds when there is an appropriate parallel lower volume street. Bicycle boulevards use traffic calming measures to provide smooth flowing, as opposed to stop-and-go, bicycle traffic by reducing the number of through passenger vehicles. The most common traffic calming measures used in bicycle boulevards include intersection closures that allow only bicycles to enter, roundabouts, and stop sign changes to

Figure 5-3: Bicycle Lane Dimensions

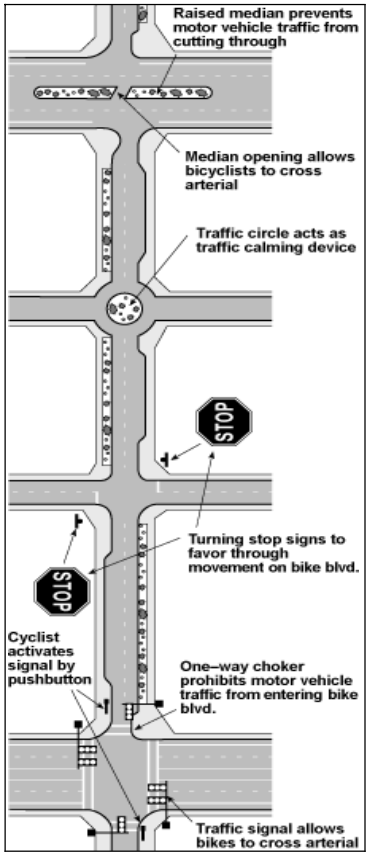


Source: American Association of State Highway and Transportation Officials

[46] Ibid., p. 22-23.
[47] King, p. 11.
[48] Ibid.
[49] Ibid., p. 14.

increase bicycle flow. A list of information on traffic calming techniques is listed in Appendix C, and some techniques can be seen in Figure 5-5. John Ciccarelli, of the University of California Berkeley's Technology Transfer Program, recommends the following five steps when developing a bicycle boulevard: (1) identify a suitable street, (2) remove barriers and detours to through cycling, (3) turn the stop signs from the bicycle boulevard to the cross streets, (4) block or deter motor vehicle through traffic, and (5) sign the route and provide additional guidance.[50]

Figure 5-4: Bicycle Boulevard



Source: Pennsylvania Department of Transportation

Sidewalks

Sidewalks are only acceptable as bicycle facilities for children younger than age 12 in residential areas. This is only acceptable when and if small children are riding at speeds that are safe on a sidewalk. In this case, their light weight and low speed make collisions with pedestrians less common and serious. Older children and teenagers ride too fast to safely ride on a sidewalk. Sidewalks are crowded with pedestrians, telephone poles, fire hydrants, and other hazards. They usually feature very poor sight lines with adjacent driveways. Drivers exiting their driveways are not

[50] Ciccarelli, John, "Bicycle Boulevards," *Tech Transfer Newsletter* (Fall 1999)

Figure 5-5: Traffic Calming for a Bicycle Boulevard

Speed humps (top) and closures (bottom) are effective ways of slowing automobile traffic for bicycle boulevards.

Sources: Federal Highway Administration and www.trafficcalming.org

looking for cyclists riding the opposite direction from street traffic. Uneven sidewalk slabs make for a bumpy ride. Sidewalks should be ridden at a walking speed, if at all, and only as a last resort due to hazardous on-road conditions. Many groups need increased education about the dangers of riding bikes at high speeds on the sidewalk, including children, parents, novice riders, police, pedestrians, and motorists. Training by police and enforcement of laws need to occur to ensure that rules about bicycling on sidewalks are followed and violators are cited for the safety of both bicyclists and pedestrians.

It is not generally acceptable to designate sidewalks as bicycle facilities.[51] Sidewalks should not even be considered for bicycle facilities unless the following conditions apply, and even then, other alternatives are preferable:

- Physical constraints make an on-street bicycle facility unfeasible, and the route is necessary for connectivity.
- Driveways and intersections are few and feature good sight lines.
- On long, narrow bridges.
- Where ramps are installed on the sidewalk approaches.

Sidewalk bicycle facilities are generally out of favor as the result of poor experiences with them. A narrow sidewalk with numerous driveways exiting through tall hedges, considerable pedestrian traffic, and numerous obstructions make the sidewalk slow, uncomfortable, and more dangerous than the road.

[51] American Association of State Highway and Transportation Officials, p. 20.

Facility Costs

GOAL: Create an environment where bicyclists feel comfortable riding to destinations through the elimination of road hazards, unresponsive demand-actuated signals, and other impediments to bicycling.

Costs for bicycle facilities of all types vary widely, depending on the need to acquire land or build structures. In general, the actual cost of repaving or construction is only a small portion of the total project cost. Engineering, maintenance, and utility relocation are costs that vary dramatically from project to project, limiting the reliability of any cost estimate for new facilities. The Pedestrian and Bicycle Information Center has a program to attempt to calculate an estimate for specific areas and projects online at Costs for Pedestrian and Bicyclist Infrastructure Improvements (pedbikeinfo.org). This plan largely avoids attempts to give actual figures because of the widely varying numerical costs and how quickly estimates become outdated due to changing material costs, but some general guidelines by facility type are listed below:

- Shared Lane: No cost for construction above roadway costs.
- Wide Curb Lanes: If they already exist, no cost. Otherwise, costs vary enormously depending on the availability of right-of-way, the need to move curbs or storm sewers, and geographical features.
- Paved Shoulders: If they already exist, no cost. Otherwise, costs vary tremendously, based on right-of-way acquisitions, geographical features, and utility

relocation costs. Some published estimates can range from $20,000 (Wisconsin Department of thought to be low for this region, especially once engineering costs are included.[52]

- Bicycle Lanes: If the right-of-way already exists, then engineering, painting, and sign costs. Right-of-way acquisitions vary tremendously with concerns similar to those of expanding shoulders. Some published estimates are between $5,000 and $281,100 per mile, depending on whether widening or signal work is needed.[53]

- Bicycle Boulevards: No new right-of-way is typically needed, but some construction is required. Cost estimates for traffic calming devices are included in Appendix C, though these too vary tremendously based on local costs for materials and engineering.

Other Considerations for Bikeable Roads

Hazards/Safety Measures

- Drainage grates and manhole covers. Grates and covers should be flush with the road surface, should not trap tires, or should be out of the path of cyclists.

- Railroad crossings pose a serious threat to bicyclists. In all cases bicyclists should receive advance warning of Transportation) to $102,000 (Florida Department of Transportation) per mile, though these are generally the crossing, in compliance with the MUTCD.[54] The first hazard is with the flangeway, which is the space between where the railroad cars connect to the rail. Bicycle wheels can get caught in this space, particularly if bicycle travel is parallel to the rails. Another concern is the rail itself, which becomes extremely slippery when wet. Wherever possible, accommodations should be made to facilitate bicyclist crossing at or near a 90 degree angle to the tracks.

- Automobile parking. Automobile drivers who parallel park can open their doors without looking behind them; thus, they risk hitting bicyclists on the road. Front angle parking does not allow vehicles to see clearly behind them when they are backing out, posing a threat to both bicyclists and automobiles. Reverse angle parking is a parking strategy where automobile drivers reverse into an angled parking spot, allowing them to have a better view of the road when they are leaving their parking spot (see Figure 5-6).

- Transition areas. These areas should have striping and signs to minimize conflict at a lane merge, bridge, or narrow point in the road.

- Debris. Shoulders should be swept regularly.

- Rough pavement. Roads should be kept in good condition, and resurfacing should be edge to edge.

[52] Pedestrian and Bicycle Information Center [online]
[53] Ibid.

[54] American Association of State Highway and Transportation Officials, p. 60.

- Driveways. Gravel driveways should be paved a minimum of 10 feet at the point where they intersect with the road to reduce loose gravel on the pavement.[55]

- Vegetation management. Vegetation along roads should be trimmed to prevent encroachment into the bikeway and to maintain sight lines.

- Drainage. Adequate drainage prevents large puddles at the edge of the road.

- Lane reflectors. Because raised reflectors can deflect a bicycle wheel, such reflectors should be located on the motorists' side of the edge stripe.

- Rumble strips. There is usually no need to slow bicyclists in a roadway, so rumble strips should not extend into the bicycle facility. Edge rumble strips, meant to alert drivers that they are driving off the road, should be placed on the motorists' side of the edge stripe.

- Traffic control devices. Signal loop detectors should be sensitive to bicycles, and pavement markings should indicate where a cyclist should stand to activate the signal. Stop signs should be eliminated or shifted to cross streets if possible.

Figure 5-6: Reverse Angle Parking

Pottstown has the first example of reverse angle parking in Pennsylvania.
Source: John A. Nawn, P. E.

- Intersections. Intersections should provide a path for bicycles that is direct, logical, and close to the point of motor vehicle traffic.

- Snow. If possible, snow should be removed from the bicycle operating space.

- Ice. Refreezing of water on the road at night in the winter can cause hazardous conditions greater than snow.

[55] Ibid., p. 55.

Retrofitting Roads for Bicyclists

Whenever road work is being planned on existing highways, bicycle accommodations should be included, especially on designated bicycle routes. Existing roads can be retrofitted for bicycles when they are resurfaced or reconstructed. There are four ways to retrofit a road for bicycles:

1. Widen the road to provide a bicycle lane or wide shoulder. Right-of-way costs and curb and storm sewer relocations can make widening expensive.

2. Restripe the roadway to provide for bicycle lanes. Narrowing or removing travel lanes, removing a middle turn lane, and removing parking lanes are all relatively low-cost methods of accommodating bicycles, if traffic volumes permit. One method of accommodating bicycles is through converting streets from four lanes into two lanes plus a two-way left-turn lane and bike lanes through the resurfacing process. Experience has shown that conversion will make roads safer for pedestrians, cars, bicyclists, and transit users while having only a minimal decrease in roadway capacity, if any. It is often met with great opposition, but following the construction, the feelings shift to overwhelming popularity.[56] The general results of the process have been smoother traffic flow and greater comfort in use of the street for all involved. Limiting the number of lanes stops vehicles from swapping lanes to speed ahead of slower cars or to prepare for future turns. Though it seems counterintuitive, more lanes (increased roadway capacity) can actually serve to increase traffic congestion (decrease roadway efficiency). The City of Philadelphia has done much work with restriping roads for bicycle lanes, and its experience can be a helpful reference. Table 5-1 and Figure 5-2 help illustrate this process.

3. Pave the shoulders. Paving the shoulder is a low-cost way of providing operating space for bicyclists if there is adequate right-of-way.

4. Install a bicycle boulevard.

Bicycle occupancy permits (BOP) are required for any bicycle facility on a PennDOT right-of-way. The current BOP is quite onerous on the municipalities, including requiring them to remove snow from the facility even if it is an on-road bicycle lane. BOPs have had the reverse effect of their intention, which was to allow bicycle facilities on state owned rights-of- way. Instead, they form a major political obstacle to producing bicycle lanes.

[56] Burden, Dan and Lagerwey, Peter, "Road Diets, Fixing the Big Roads," (*Walkable Communities, Inc.*) 1999, p. 2

Table 5-1 : Lane Reductions of Selected Street Conversions

Roadway Section		Before	After				AADT*	
City / State	Street Name	Lanes	Through Lanes	Multi-directional Turn Lanes	Median	Bike Lanes	Before	After
Seattle, WA	Dexter Ave	4	2	1		2	13,606	14,949
Seattle, WA	Madison St	4	2	1			16,969	18,075
Bellevue, WA	Montana St	4	2	1	1	2	18,500	18,500
Seattle, WA	N. 45th St	4	2	1		2	19,421	20,274
Santa Monica, CA	Main St	4	2	1	1	2	20,000	18,000
East Lansing, MI	Grand River Blvd	4	2	1		2	23,000	23,000
Philadelphia, PA	Aramingo Ave	6	4	1		2	25,150	23,586
Philadelphia, PA	Grant Ave	4[1]	2	.5[2]	.5[2]	2	28,241	19,764
Philadelphia, PA	Ogontz Ave	4	2	1		2	15,535	16,295
Philadelphia, PA	Tyson Ave	4[1]	2	.5[2]	.5[2]	2	12,027	n/a
Philadelphia, PA	Verree Rd	4[1]	2	.5[2]	.5[2]	2	13,495	15,659
Philadelphia, PA	Welsh Rd	4[1]	2	.5[2]	.5[2]	2	7,520	n/a

[1]Lanes were not striped but road was traveled as a four-lane highway
[2]Turning lanes are at intersections with striped median elsewhere
*Volume changes from Burden, Dan et al, "Road Diets: Fixing the Big Road," *Walkable Communities, Inc* ., 1999 and DVRPC traffic count data

New Roads

In general, new roads should incorporate bicycle facilities. The consideration of facilities on new roads is explicitly outlined in Title 23 of the United States Code (U.S.C.) §217.[57] PennDOT District 6-0 currently looks at bicycle facilities as a part of every new project. Facility standards should be in accordance with this Plan. Oregon law mandates that the State spend no less than 1% of its highway funds on bicycle facilities per year. Bicycle facilities need not be provided if "the cost of establishing such paths or trails would be excessively disproportionate to the need or probable use."[58] A bicycle bill similar to Oregon's would be a useful tool in helping PennDOT to provide bicycle facilities where possible.

Providing Destination Bicycle Facilities

GOAL: Encourage the provision of destination-oriented facilities that support bicyclists' end-of-trip needs, including bicycle parking, locker rooms, and shower facilities.

Even if roads are suitable for bicycling, destination barriers can limit the appeal of bicycling.

- Bicycle parking – racks and lockers. Bicycle racks should be of an approved design, such as an "inverted U" (see Figure 2-2), ribbon rack, or a wall-mount and be located at all major schools, workplaces, and shopping centers. These racks are an improvement over the old fashioned racks that can bend bicycle tires. Municipalities should permit the locking of bicycles to signs and parking meters. Lockers (see Figure 5-7) provide the highest level of security but are the costliest solution, require the most space, and have the worst problems with administration, maintenance, and vandalism. Norristown Borough is planning on installing bicycle lockers at destinations throughout the Borough to encourage bicyclists to visit the Norristown. Municipalities should consider adding bicycle parking requirements to their zoning codes in the same way that this is done for car parking or providing incentives for developers who provide bicycle parking. Another option is to provide an incentive program where developers can replace some of the required automobile parking with bicycle parking or gain density bonuses

Figure 5-7: Bicycle Lockers

Bicycle lockers are costly but provide the highest security in bicycle parking.
Source: Department for Planning and Infrastructure: Government of Western Australia

[57] U.S. Department of Transportation, Federal Highway Administration, *Bicycle and Pedestrian Legislation in Title 23 United States Code (U.S.C.)* [online].
[58] Oregon Bike Bill, ORS 1971, s. 366.514

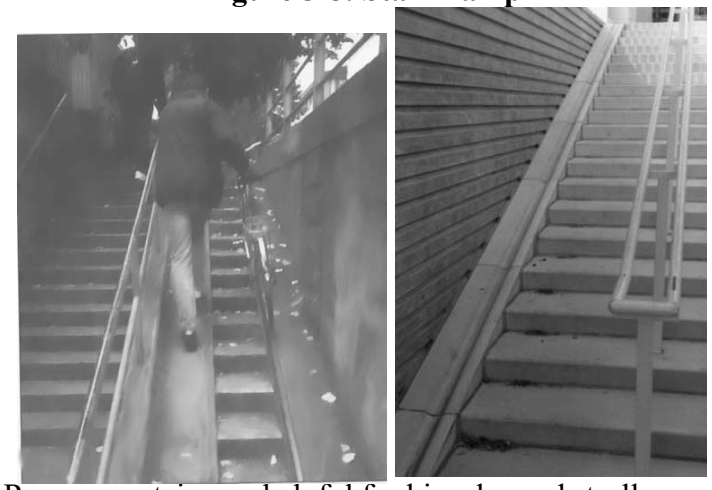
through providing bicycle facilities. Also, incentive programs should be created to encourage existing employers to install bicycle facilities.

- Showers and changing facilities. For workplaces and schools.

- Delaware County should set an example for other employers by providing inverted U racks and shower facilities where they haven't already been provided.

- Stairways at destinations should have ramps that allow users to roll their bikes up stairways (see Figure 5-8) as opposed to carrying them. These facilities can also be useful for other wheeled carrying devices like folded up strollers or personal shopping carts.

Figure 5-8: Stair Ramp



Ramps on stairs are helpful for bicycles and strollers. An example of a bike ramp stairway in Chicago.
Source: ITE and Delaware County Planning Department

- Municipalities could use the resources of a business improvement district, parking authority, or bus shelter advertisements to provide and care for bicycle facilities.

Bikes on Transit

GOAL: Encourage transit as a more viable means of transportation for Delaware County residents through the implementation of bike-on-bus and bike-on-rail programs.

- Transit stops should be accessible by bicycle. The areas near transit stops should also be highlighted for development of bicycle facilities, as it will increase the comparative benefits of both bicycling and transit as modes of transportation.

- Covered bike racks and lockers should be provided at locations where long-term bicycle parking is needed, such as most places where long-term parking is provided. Bicycle lockers provide more protection against weather, vandalism, and theft than bicycle racks, especially where bicycles are left unattended or overnight.[59] A locker program started by SEPTA led to the placement of lockers at the Wayne and Bryn Mawr stations on the R5 Paoli/Thorndale line and Fox Chase station on the R8 Fox Chase line in the mid 1990s. The lockers are well used. This program was halted due to security concerns after the incidents of September 11, 2001. SEPTA has decided to put the money that was set aside for bike lockers instead to bike racks. It is

[59] Colorado Department of Transportation, *Colorado Bicycling Manual: A Guide for Using Roads and Trails* [online]. p.55.

attempting to place these racks in covered areas where possible, but the threat of theft is still higher than with lockers. Security concerns with lockers are similar to that of automobiles (i.e., the threat of bombs being placed inside), so the installation of bike lockers at distances to the station equal to that of automobiles should be continued. As an alternative to lockers, bike racks could be placed inside the transit station so that they are in view of the attendant's booth, giving cyclists a greater sense of security.

- Bike racks on buses should be encouraged. SEPTA has vowed that all new buses added to the fleet will have bike racks (see Figure 5-9). The newest racks have substantially improved reliability and loading time, so they should not adversely affect bus operations. All bus routes in Delaware County are currently designated as bicycle accessible. SEPTA's entire bus fleet is outfitted with bike racks, with the exception of Route 23 and trackless trolley Routes 29, 59, 66, 75, and 79.

- Bicycle access on trains and trolleys should continue to be a priority. Bicycles are permitted on the Market Frankford el, Broad Street line, and Route 100 Norristown high speed line from 6 pm to 6 am and from 9 am to 3 pm on weekdays and anytime on weekends and holidays. Bike racks or hooks should be installed on SEPTA trains and trolleys to permit more compact vertical storage (see Figure 5-10). As trains and trolleys are replaced with newer models, care should be taken to ensure that all rail routes in Delaware County, including the 101 and 102 trolleys, are bicycle accessible at all times of the day (see Map 5-1).

- Park and ride lots should have bicycle parking, covered where possible.

Bridge Access

For a fully integrated, continuous bicycle network to be successful, bridge authorities in the area must permit bicycles to cross their bridges. DRPA prohibits bicycles on the Commodore Barry Bridge. Such a restriction makes it nearly impossible for Delaware County residents to bicycle into New

Figure 5-9: Transit Bicycle Racks

Buses can accommodate two bicycles per rack.
Source: Bicycle Coalition of Greater Philadelphia

Figure 5-10: Vertical Bicycle Storage

Vertical storage inside transit vehicles decreases transit delay.
Source: Steve Spindler Cartography

Jersey. When new construction is being designed or engineered, appropriate bicycle facilities should be part of the plan. This would require a separated facility for bridges such as the Commodore Barry, which are only accessible to the automobile, but adding pedestrian and bicycle facilities to the design of such a bridge is a relatively small additional cost.

Recommendations

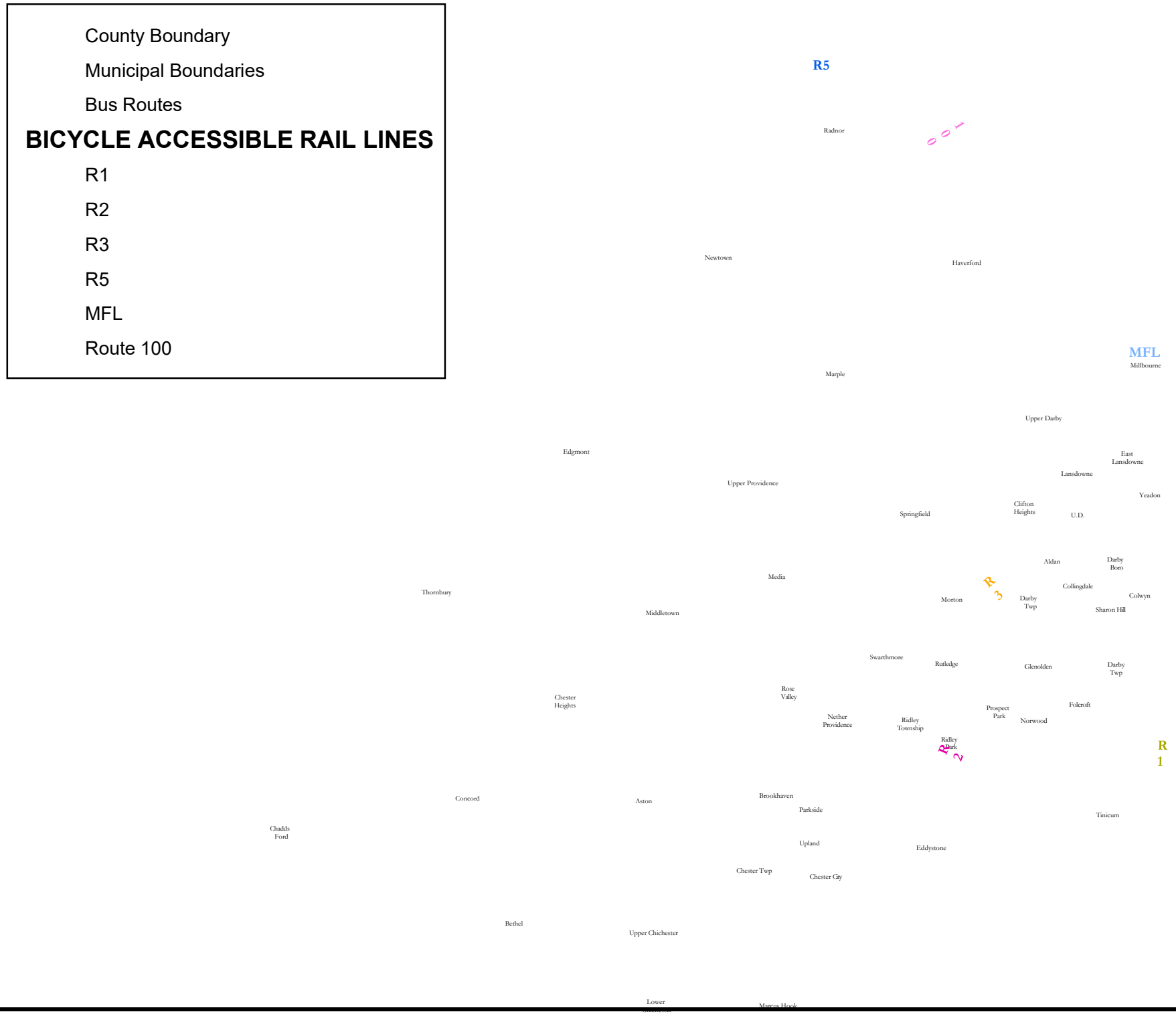
Delaware County should encourage and pursue the following recommendations with regard to physical facilities for bicycles:

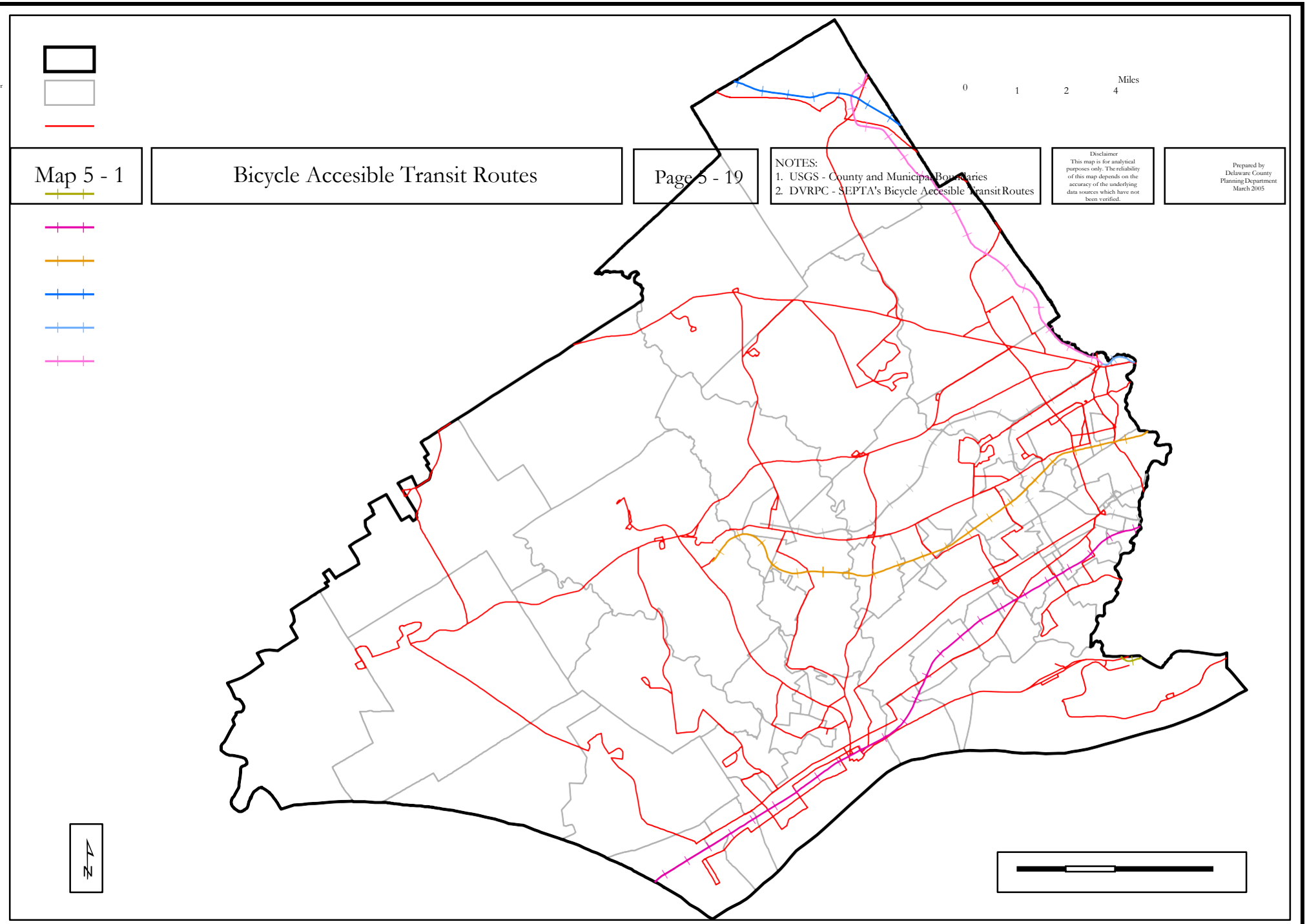
- Use a variety of programs to bring the planned bicycle improvement network up to standards.
- Develop trails to supplement on-road bicycle facilities.
- Provide bicycle parking at bicycling destinations, with County facilities leading the way.
- Provide showers and changing facilities at work and school destinations.
- Establish effective bike-on-transit policies and appropriately equip transit vehicles.
- Adopt guidelines and standards for providing bicycle facilities through municipal land use and development regulations.
- Encourage the adoption of a state "bicycle bill."
- Encourage bicycle facilities to be incorporated with new road or significant road reconstruction, particularly with bridge projects.
- Encourage PennDOT to revisit the requirements of the BOP to ensure safety while making the demands on municipalities less onerous.
- Use Safe Routes to School and other public participation programs to better gauge where engineering improvements are needed for a successful bicycle transportation system.
- Encourage reverse angle parking where appropriate.
- Encourage the creation of municipal incentive programs for bicycle facilities such as ones that allow developers to provide fewer automobile parking spaces or increase density if they provide bicycle facilities such as bicycle parking, restroom facilities, etc.
- Work with existing employers to improve destination bicycle facilities.

Performance Measures

The following performance measures can be used to track the County's progress towards improving facilities for bicycles:

- Miles of roads brought up in bicycling standards or programmed to be brought up in bicycling standards.
- Miles of bicycle lanes and bicycle boulevards created or programmed to be created.
- Miles of multi-use trails.
- Number of municipalities that incorporate the bicycle mobility policies and recommendations into local comprehensive plans, zoning ordinances, and official maps.
- Number of transit lines that allow bicycles on board.
- Percentage of rail stations with modern racks or lockers.
- Percentage of trains, buses, and trolleys serving routes in Delaware County that have bicycle racks or hooks.
- Number of municipal incentive programs for bicycle facilities.


County Boundary
Municipal Boundaries
Bus Routes
BICYCLE ACCESSIBLE RAIL LINES
R1
R2
R3
R5
MFL
Route 100
R5
Radnor
100
Newtown
Haverford
MFL
Millbourne
Marple
Upper Darby
Edgmont
East Lansdowne
Lansdowne
Upper Providence
Yeadon
Springfield
Clifton Heights
U.D.
Aldan
Darby Boro
Media
R3
Collingdale
Thornbury
Morton
Darby Twp
Colwyn
Sharon Hill
Middletown
Swarthmore
Rutledge
Glenolden
Darby Twp
Rose Valley
Chester Heights
Folcroft
Prospect Park
Nether Providence
Ridley Township
Norwood
Ridley Park
R2
R1
Concord
Aston
Brookhaven
Parkside
Tinicum
Chadds Ford
Upland
Eddystone
Chester Twp
Chester City
Bethel
Upper Chichester
Lower
Marcus Hook


Miles
0
1
2
4
Map 5 - 1
Bicycle Accesible Transit Routes
Page 5 - 19
NOTES:
1. USGS - County and Municipal Boundaries
2. DVRPC - SEPTA's Bicycle Accesible Transit Routes
Disclaimer
This map is for analytical purposes only. The reliability of this map depends on the accuracy of the underlying data sources which have not been verified.
Prepared by
Delaware County
Planning Department
March 2005

Miles of programmed roads and bicycle facilities are readily available from sources on hand. Municipal ordinances and plans can be monitored with only slightly more effort. SEPTA will be able to provide information with regard to racks, hooks, and lockers on its facilities. DVRPC has software to evaluate bicycle level of service and may be able to provide information on the level of service on existing roads. Data for schools, shopping centers, and workplaces will be harder to gather.

Encouragement

GOAL: Make bicycling an accepted and legitimate mode of transportation for both adults and children.

Most people in the United States either already own, or could easily afford, a bicycle. Bicycle use, however, is much less common than ownership. All too often the bicycle hangs in the garage gathering dust. Awareness of the potential of the bicycle as a transportation tool is limited among Americans. Today, even children are driven between activities for reasons including distance, safety, and comfort. People need to be made aware of the practical uses of the bicycle, as well as its fitness benefits.

Besides raising public awareness, encouragement can also include policies that make bicycling more attractive, such as the following:

- An informal dress code that eliminates the need to change clothes at work.
- Guaranteed ride home programs in case of home emergencies or unanticipated inclement weather.
- Financial incentives for bicycling to work.
- Bike to Work, Car Free, and Try Transit days that promote changes in the single driver commuting pattern in Delaware County.

Safe Routes to School

An effort to bring the four E's to school-aged children is referred to as Safe Routes to School. There has been a steady decline in the number of school-aged children that walk or bike to school which has coincided with increased childhood obesity. Some communities have made efforts to remedy these problems through a program called Safe Routes to School. These programs use children's knowledge of their routes to school to highlight improvements to the road network needed to make it safer for them to walk to school while educating them on the benefits of alternative modes of transportation. The implementation of programs such as Safe Routes to School would help reduce neighborhood pollution and congestion while ensuring that communities are safer for students commuting to school. Safe Routes to School is a program that stresses the importance of walking and bicycling as modes of transportation while simultaneously making them safer for school children. Incentives can be used to encourage students to walk to school, including giving physical education credits or prizes such as stickers to students. Through the four E's, engineering, encouragement, education, and enforcement, Safe Routes to School programs promote walking and bicycling, helping to reduce the dependency on the automobile (see Figure 5-11).

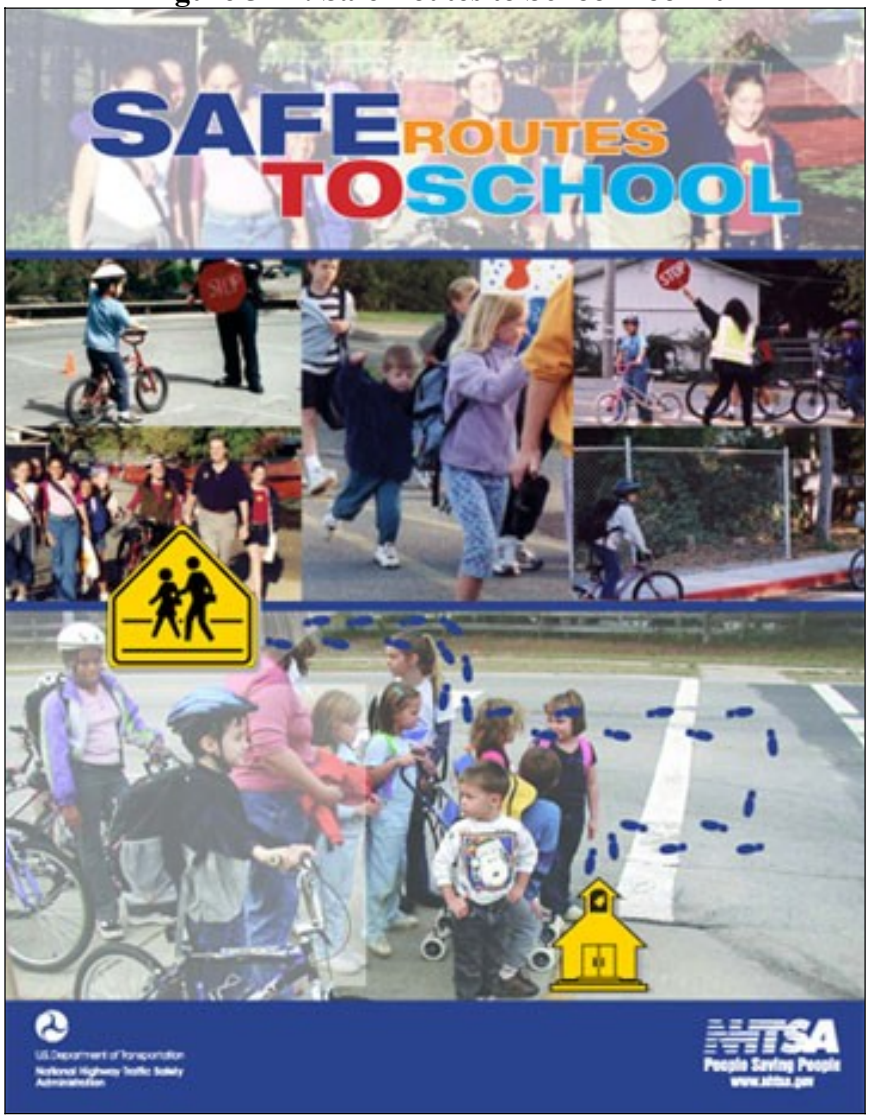
This program has been so successful that it was included in SAFETEA-LU. National funding for the program increases to an eventual $183 million in 2009. The bulk of this money is to

be used for infrastructure improvements such as sidewalk improvements, traffic calming and speed reduction improvements, pedestrian and bicycle crossing improvements, on-street bicycle facilities, off-street bicycle and pedestrian facilities, secure bike parking, and traffic diversion improvements in the vicinity of schools.[60] Each state will have a Safe Routes to School Coordinator through this legislation. Also, at least 10% and no more than 30% of the funding is for noninfrastructure-related activities to encourage walking and bicycling to school. These include public awareness campaigns and outreach to press and community leaders, traffic education and enforcement in the vicinity of schools, student sessions on bicycle and pedestrian safety, health, and environment, and training, volunteers, and managers of Safe Routes to School programs.[61]

Bicycle Promotion Efforts in the Delaware Valley

Advocacy groups, clubs, DVRPC, county governments, PennDOT, and the City of Philadelphia have already been doing a number of things to promote bicycling, including publishing maps, building websites, hosting rides, hosting bicycle conventions, and holding bike-to-work days. The City of Philadelphia has published a user-friendly bike map which shows the location of bike lanes, trails, bicycle-friendly streets, bicycle shops, transit stops, neighborhood names, travel time charts, and other information useful for the cycling commuter. The map has been favorably

Figure 5-11: Safe Routes to School Toolkit



A toolkit for creating a Safe Routes to School program is available online at www.saferoutestoschools.org.
Source: U.S. Department of Transportation

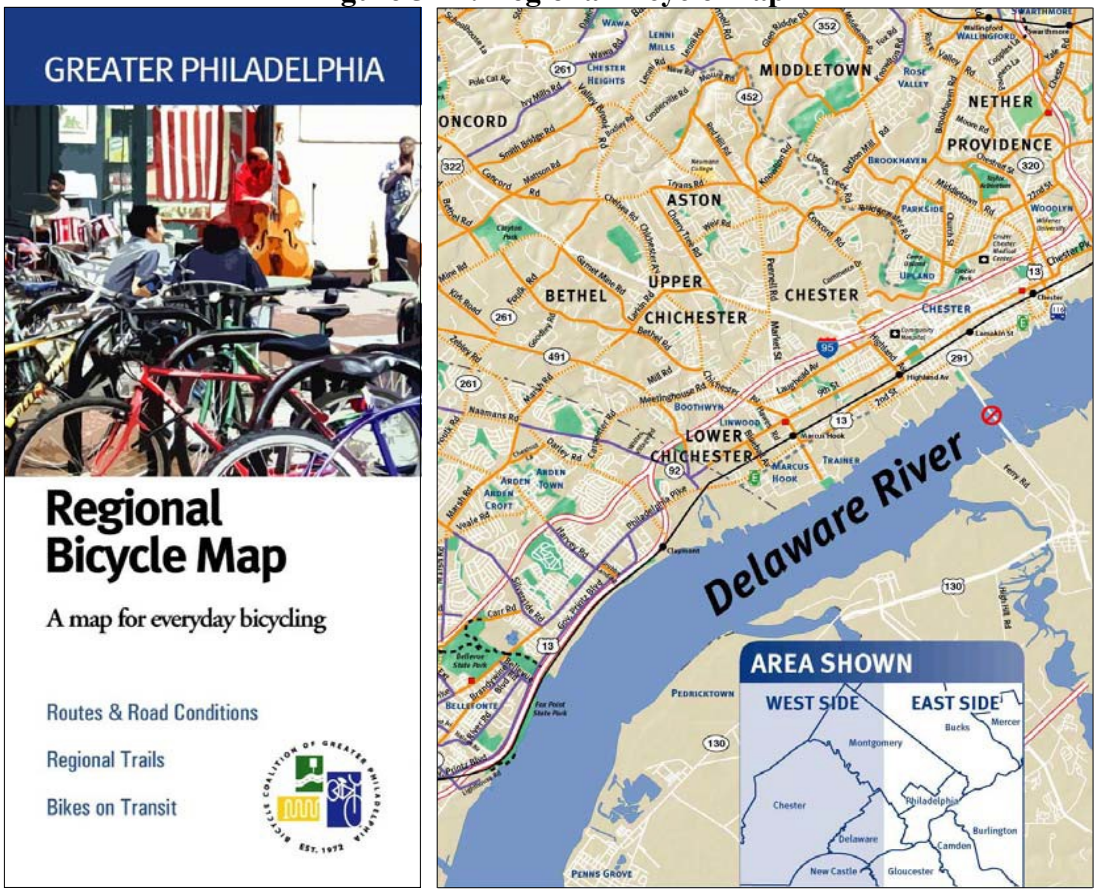
[60] FHWA SAFETEA-LU [online].
[61] Ibid.

received by the bicycling public. As a companion to Philadelphia's map, the Bicycle Coalition of Greater Philadelphia has published a regional bicycle mobility map (see Figure 5-12), which includes most bike routes and trails in the region as well as transit stops, bicycle stores, and other features. This map attempts to rate bicycle routes into three categories: below average, average, and above average.

PennDOT has published a directory of bicycle resources for Pennsylvania, and the Delaware Valley Bicycle Coalition and the bicycle clubs maintain websites with useful information and links. The City of Philadelphia's bike-to-work day is a huge and successful event, and events such as the Wachovia Race attract immense publicity and give a favorable image to cyclists. The Pro Bike/Pro Walk Conference, held in Center City in September 2000, was a huge success and gave visitors a favorable impression of the City and its bicycling efforts.

The Keystone Active Zone (KAZ) Campaign is a promotional campaign designed to make Pennsylvanians aware of the many municipal, county, and state parks and trails available to help them get and stay active.[62] KAZ is a program of PANA (Pennsylvania Advocates for Nutrition and Activity) in partnership with DCNR and the Pennsylvania Recreation and Parks Society. The KAZ Campaign gives counties tools to promote awareness of close-to-home parks and trails and

Figure 5-12: Regional Bicycle Map



The Regional Bicycle Map estimates bicycle level of service.
Source: Bicycle Coalition of Greater Philadelphia

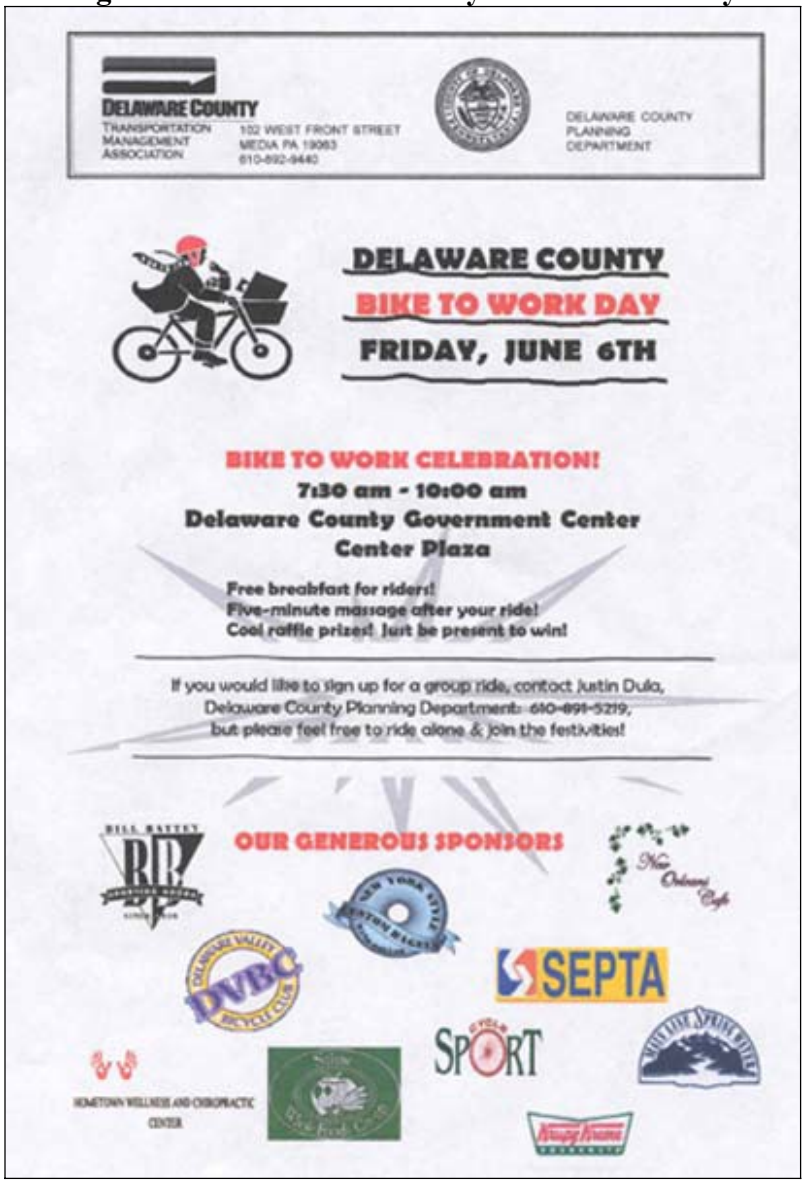
[62] Keystone Active Zone [online].

encourages increased physical activity to help residents lead healthier lifestyles.[63] The program includes technical assistance, a website (www.keystoneactivezone.com), brochures, an implementation guide, and a KAZ passport program to encourage users to visit multiple parks. The program also has a competitive mini-grant program to help organizations get started.

Delaware County has also sponsored an annual bike-to-work day since 2000. The event consists of rides led by local enthusiasts throughout the County to Media to a culmination that includes refreshments, raffles, and speakers. Generally, the number of bicycle riding participants has increased since the inception of the event, and more public and private sponsors have been brought on board. With events such as this, the greater the publicity the better, and the DCTMA has been pivotal in helping make this event a success.

Events that promote alternative modes of transportation such as Try Transit days, Car Free days, and Bike to Work days should be encouraged by the County as well as area businesses. Each event should promote bicycling as a viable mode of transportation regardless of length; even trips partially made by bicycle should be encouraged. Delaware County government should continue to sponsor the Delaware County "Bike to Work Day" (see Figure 5-13). A "Bike-to-Work" Day should be scheduled in conjunction with Philadelphia's "Bike to Work" Day. This allows the opportunity for greater region- wide publicity, better raffle prizes, and increased outreach to Delaware County residents who work in Philadelphia. County employees who already bicycle to work should be recruited as ride leaders, and each ride leader can lead a group of

Figure 5-13: Delaware County Bike to Work Day



Source: Delaware County Transportation Management Association

[63] Ibid.

inexperienced riders from an assembly point in the neighborhood to the County Courthouse, where coffee, juice, and other breakfast items would be served. Prizes can be raffled off by the sponsors, which should include local bicycle shops and merchants. To maximize participation, local bicycle clubs and anyone working in Media should be encouraged to participate and to promote the event. Effort should also be made to create destinations at other work places such as the airport and Boeing. Bicycle events in Delaware County can also be coordinated with events such as the Wachovia Bicycle Race, the Freedom Valley Ride, Share the Road, or East Coast Greenway events to benefit from ancillary publicity.

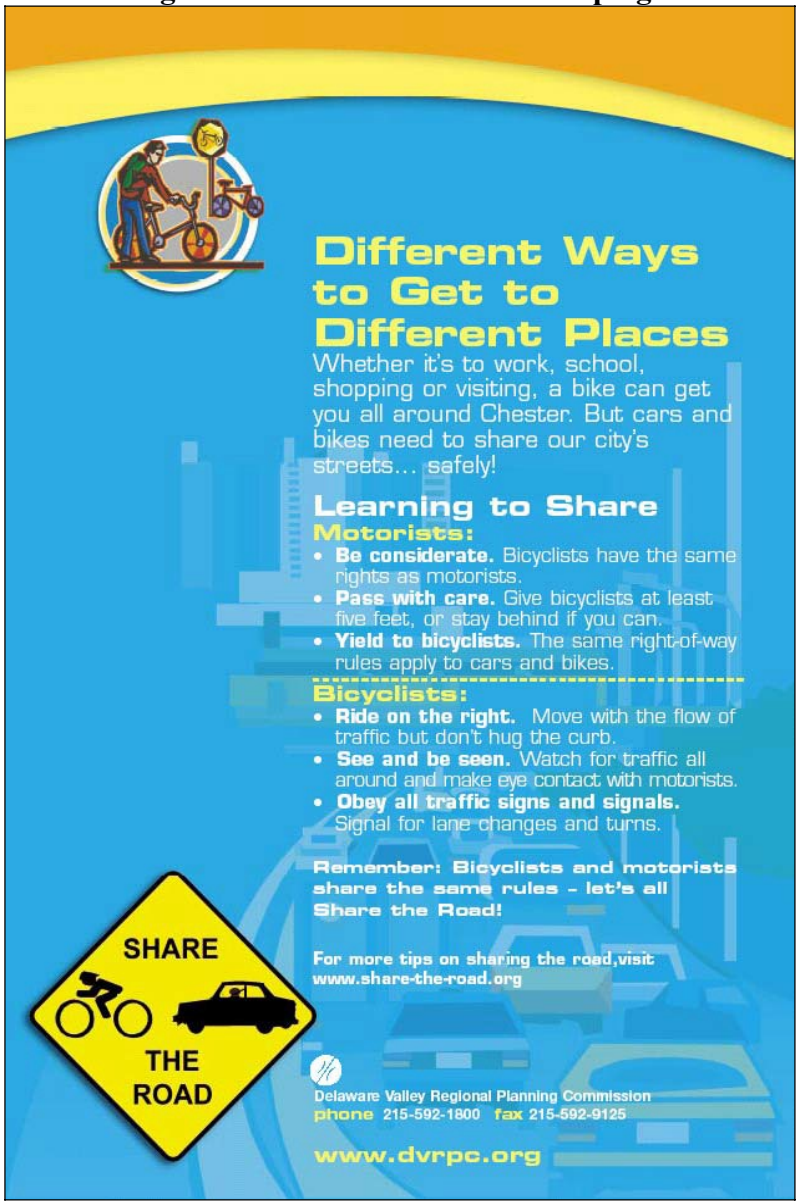
The Delaware Valley Share the Road Campaign

Encouragement and educational activities are eligible for TE and Congestion Mitigation and Air Quality (CMAQ) funding. The region received TE funding for a "Delaware Valley Share the Road Campaign," an educational and encouragement campaign designed to create greater acceptance of bicycling as a means of transportation. DVRPC staff submitted the application on behalf of the City of Philadelphia and Montgomery, Chester, and Delaware Counties. The campaign promotes the following messages:

- Bicyclists and motorists must share the road.
- Bicycling is good for the community and the environment.
- Bicycling is a fun, practical mode of transportation.

Mass media, direct mail, the internet, and community outreach convey these messages selectively to bicyclists, motorists, transportation planners/engineers, elected officials, employers, retail managers, and the general public. The greatest outreach in Delaware County focused on the City of Chester (see Figure 5-14), where DVRPC staff distributed posters, flyers, pencils,

Figure 5-14: Share the Road Campaign



Source: Delaware Valley Regional Planning Commission

keychains, and stickers.

The concluded program was managed and administered by a full-time regional bicycle coordinator at DVRPC, in consultation with the Southeastern Pennsylvania Bicycle Issues Task Force.

The Task Force, which includes representatives from Delaware County, set programmatic direction and approved message design and content, monitored the program's progress, and ensured coordination with other complementary projects in the region. The Bicycle Coalition of Greater Philadelphia and the Clean Air Council also had input into the content of the program and assisted the program through the use of their mailing lists. Although this project has concluded, a five- minute video (in VHS and DVD) and various collateral items are still available. The website will remain indefinitely and be updated periodically.

Recommendations

To raise awareness of bicycling, the County, the region, bicycling groups, advocacy groups, employers, and others should do the following:

- Delaware County should join the KAZ Program.
- Publish and circulate literature that describes the benefits of bicycling.
- Publish and circulate literature that describes the logistics of bicycle commuting.
- Publish and circulate maps that show where resources (bikeable roads and trails) go and to what they connect.
- Advertise governmental plans, policies, and programs that support bicycling transportation.
- Establish employer policies that encourage bicycle commuting and bicycle use for work-related trips.
- Establish bike to work days/weeks and other special riding events to introduce people to bicycle commuting.
- Continue to sponsor Delaware County's annual Bike to Work Week and work to link it with Philadelphia's Bike to Work Day for increased publicity and to increase awareness among Delaware County residents who work in Philadelphia.
- Promote acceptance of the bicycle as a viable transportation vehicle.
- Provide presentations and workshops on bicycling transportation issues.
- Track economic changes in businesses near bicycle facilities and publish the results.
- Establish websites to augment all of the above.

Performance Measures

The County can use the following performance measures to monitor progress in encouraging bicycling:

- Number of schools with Safe Routes to School Programs to encourage bicycle use.
- Number of bicycle commuters.
- Number of employers which offer incentives to employees who bike to work.
- Number of persons who participate in bike to work events.
- Number of hosts for bike to work events.

Education

GOAL: Ensure that the access to information pertaining to bicycle operation skills and bikeable routes is available through printed and electronic sources.

Encourage educational methods to reach everyone, even those who currently don't think about bicycle education.

To achieve the general policy goals of this Plan, people must know how to use the roads safely. In fact, producing improved bicycle facilities without educating people on how to use them would defeat the goal of improving safety as well as bicycle use. Educational efforts should be aimed at two groups:

1. *Bicyclists*. Programs should teach safe riding practices, rules of the road, bicycle handling skills, and bicycle maintenance. After-school programs should be offered. TE funding is available to pay for after-school courses taught by certified instructors.
2. *Motorists*. Motorist programs are meant to create a greater awareness of bicyclists' rights. Media campaigns and "Share the Road" signs can help raise such awareness, while supplementary material in driver education courses, in drivers' manuals, and on the licensing exam can give drivers more detailed knowledge of how they should behave around bicyclists.

When thinking about education, an obvious place to start is with school-aged children. The encouragement section of this chapter discusses the Safe Routes to School Program, which has a strong educational component. Working with school districts to incorporate bicycle education into their physical education curriculum allows schools to extend physical activity outside of the classroom. After training students how to safely bike, students can log their trips to and from school and gain physical activity credits. This can save class time and create a lifelong interest in physical activity.

There are several organizations in the state and region that work with school-aged children to encourage safe bicycling. PANA has several programs to work with schools throughout Pennsylvania to improve activity, including bicycling. Several Delaware County schools have signed up to participate in their Keystone Healthy Zone School Program, which can include a Safe Routes to School Program and provides some funding through mini-grants. PANA's website (www.panaonline.org) also contains valuable programs for schools including the Action Kits for Change and Resource Guide, which include a walking school bus guide and tools to make routes to school safer and inform children. The Safe Kids Southeastern Pennsylvania Coalition, led by The Children's Hospital of Philadelphia (https://www.safekids.org/safe) focuses on programs of accidental injury to children, including bicycle-related programs such as helmet fittings and bicycle education (see Figure 5-15). Active Safe Kids members oftentimes have the opportunity to partner on bicycle safety mini-grants through the coalition.

Philadelphia has several educational and after-school programs that teach school children about safe bicycle use. The Bicycle Education Enhancement Program (BEEP) has been educating seventh and eighth graders in Philadelphia since 1999. BEEP is designed to teach middle school students how to ride their bikes safely, confidently, and legally, as well as to promote an active and healthy lifestyle through commuting by bicycle to

Figure 5-15: Safe Kids Week 2005

Safe Kids Southeastern Pennsylvania hosts events such as Safe Kids Week to educate children about bike safety and distribute helmets.
Source: Safe Kids Southeastern Pennsylvania Coalition

school and elsewhere.[64] Neighborhood Bike Works has after-school, weekend, and summer programs for kids in West Philadelphia teaching them about bikes and bike maintenance.[65]

Bicycle education isn't only for children, though. Many adults equate bicycling with the low traffic neighborhood streets of their childhood. Many are unaware of the traffic laws for bicycles and advances in safety equipment such as helmets and lights. Reaching out to adults is necessary with the addition of new bicycle facilities to ensure that they are used properly.

The League of American Cyclists conducts a national bicycling education program through which they give training through League certified cycling instructors.[66] Upper Merion Township in Montgomery County put on a program for its residents. The Bicycle Coalition of Greater Philadelphia runs an urban cycling workshop that is on road and focuses on local and regional details.

[64] Bicycle Education Enhancement Program (BEEP) [online].

[65] Neighborhood Bike Works [online].

[66] League of American Bicyclists Education Center [online].

Another innovative bicycle education program for adults and children alike is the Bicycling Ambassador program started by Mayor Daley in Chicago. Teams of Bicycling Ambassadors deliver bicycling expertise personally in demonstrations and conversations in public places and at events (see Figure 5-16).[67] The Bicycling Ambassadors also deliver educational materials that people can take home with them. The Bicycle Coalition of Greater Philadelphia is currently working to create a similar program for this region.

Figure 5-16: Bicycling Ambassador

Bicycling Ambassadors programs take a hands-on approach to bicycle education.
Source: Used with permission from the Chicago Department of Transportation

Additionally, many of the programs listed in the encouragement section of this chapter contain a large educational component. Programs such as Safe Routes to School and Bike to Work day should be looked at as educational as well as encouragement tools.

Publications

PennDOT has printed publications to educate the public about bicycle transportation. The first is a published 39-page bicycle driver's manual which includes the traffic laws relating to bicyclists and offers instruction on how best to ride with traffic. The Pennsylvania Driver's Manual also includes some information about bicyclists, including specifying that bicycles are a vehicle in Pennsylvania and, therefore, subject to all of the rules of the road. PennDOT has also published a slim directory of regional bicycle resources for use by touring

[67] Mayor Daley's Bicycling Ambassador Program [online].

bicyclists called the Bicycling Directory of Pennsylvania (see Figure 5-17).

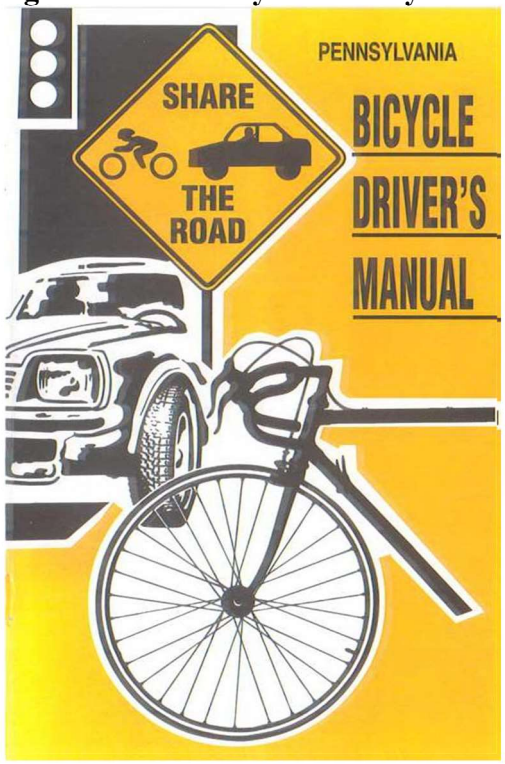
The National Highway Traffic Safety Administration (NHTSA) of the United States Department of Transportation (USDOT) has a wide selection of bicycle education materials on its website in the traffic safety section. It has also published a Safe Routes to School Toolkit (see Figure 5-11) explaining and providing guidance in setting up a localized version of the national program. This document is available on line via the website www.saferoutestoschools.org.

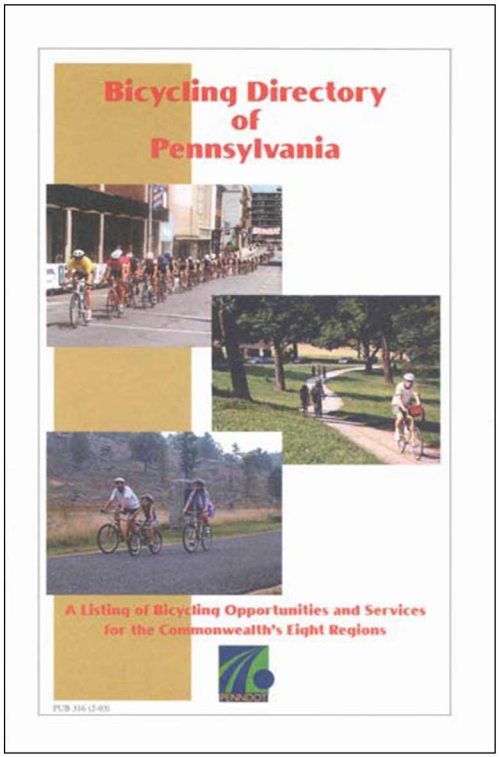
Other Resources

The Bicycle Transportation Alliance (BTA) has produced educational public service announcements (PSAs) that can be used to inform and educate the public about bicycle issues. They can be downloaded directly from their website at http://www.bta4bikes.org/.

NHTSA awarded a grant to MassBike to create a national program to educate police departments about laws relating to bicyclists.[68] This program includes slide presentations, resource guides, and videos. The program is available on the MassBike website at www.mass.gov/info-details/massachusetts-law-about-bicycles.

Figure 5-17: Pennsylvania Bicycle Publications





Some PennDOT published bicycle education and encouragement documents.
Source: Pennsylvania Department of Transportation

Signs serve as an educational tool for motor vehicle operators who do not bicycle. Overuse of signs can cause visual clutter that lead motor vehicle operators to mentally block out signs. Signs should be placed at locations where they will have the maximum impact. All signs should meet MUTCD or PennDOT approved standards.

MassBike Law Officer's Guide to Bicycle Safety [online].

Education Recommendations

Delaware County should take the following measures to promote bicyclist and motorist education:

- Cooperate with regional educational and encouragement programs.

- Promote a regional program, along the same lines as the "Share the Road" campaign, to fund voluntary after-school cycling instruction programs, using certified instructors, with an emphasis on hands-on instruction. A regional program to pay for instructors would be eligible for TE and CMAQ funding, and DVRPC's bicycle coordinator could administer it. Delaware County should strongly encourage the school districts to provide after-school instructional space for such programs and to promote them with students and parents.

- Delaware County, in conjunction with the region, should request that PennDOT incorporate questions about the obligations of motorists and bicyclists into the driver license exam.

- DCPD designated 54 locations for "Share the Road" signs, and PennDOT has installed signs at those locations. The consensus is that some signs are warranted, but cost and sign clutter considerations led to a decision to have a small initial deployment of signs. PennDOT considers this pilot "Share the Road" sign installation a success. More signs should be added where they are needed as determined by PennDOT criteria, and current signs should be maintained.

- Promote the construction of bicycle lanes. Bicycle lanes serve a pedagogical function. They educate drivers that bicyclists have a right to be on the road, while helping to make driver and bicyclist behavior more predictable. They show bicyclists that they should be riding in the direction of traffic. For motorists or bicyclists who mistakenly believe that bicycle lanes are the only place where bicyclists are permitted to travel on roads, new bike lane installations should accompany local educational and enforcement efforts.

- Promote the Safe Routes to School Program. Safer, alternate routes to school help educate students about the benefits and dangers of bicycling. These programs encourage the sustained use of bicycling as a feasible mode of transportation.

- Look to extend or replicate bicycle education programs such as BEEP and Neighborhood Bike Works in Delaware County.

- Encourage bicycle education for residents when new bicycle improvements are created in the form of classes, newsletter articles, public access cable announcements, flyers, etc.

- Encourage the creation of a program similar to the Bicycling Ambassadors program in Chicago.

- Work with the insurance industry to look at the possibility of providing discounts to individuals who successfully complete certified bicycle training courses.

Performance Measures

To assess progress towards improving bicycle education, the County should use the following performance measures:

- Number of certified training programs that focus on bicycle/motorist safety.
- Number of individuals successfully completing bicyclist/motorist safety instruction.
- Funds expended on bicyclist/motorist safety instruction.
- Number of "Share the Road" and other prominent bicycle-related signs in appropriate locations.
- Number of bicycle-related questions incorporated into the driver license exam.
- Schools with Safe Routes to School Programs or other events.
- Schools with in-school programs to educate students about safe bicycle habits.
- Number of after-school programs to educate students about bicycling and safe bicycle habits.
- Number and attendance of adult bicycle training classes.
- Number of Bicycling Ambassadors.
- Number and circulation of bicycle-related articles in newsletters, flyers, newspapers, and on cable programs.
- Number of insurance companies providing discounts to motor vehicle drivers who successfully complete certified training programs.

Enforcement

GOALS: Encourage motorists to obey the traffic laws with respect to bicyclists' rights.

Encourage bicyclists to learn and obey the traffic laws.

Under state law, bicycles are legitimate vehicles required to adhere to the same traffic laws and rules as motorists. Roads become less safe if rules are not enforced against both bicyclists and motorists. Enforcement programs should do the following:

- Ensure that traffic and bicycling laws are appropriate and effective.

- Ensure that police officers are adequately trained on bicycle issues. Massachusetts has a statewide curriculum of bicycle law training for officers. Informational presentations are available online at www.mass.gov/info-details/massachusetts-law-about-bicycles.

- Encourage the citation of both motorist and bicyclist infractions.

- Encourage bicyclists to regulate each other by advocating good riding practices.

- Enforce speed, reckless driving, and DUI laws, which apply to both motorists and bicyclists, more

aggressively where bicycle and pedestrian traffic is high.

- Arrest bicycle thieves and recover bicycles through sting operations and bicycle registration.

- Form more police bicycle patrol units. Police bike patrols promote police understanding of bicycle issues (see Figure 5-18).

Responsible Organizations

Municipal and state law enforcement agencies bear responsibility for enforcing traffic laws. Bicycling organizations should require obedience to traffic laws on organized rides and promote lawful behavior at all times.

Performance Measures

To assess the quality of law enforcement related to bicycles, the County should use the following performance measures:

- Number of crashes involving bicyclists and party at fault in those crashes.

- Number of crashes involving cyclists that are reported, particularly minor crashes and citations which cyclists feel are being underreported.

Crash data is readily available in computerized format, fault data is less available, and other data would have to be obtained from police departments directly.

Figure 5-18: Enforcement Campaigns

The Delaware Valley Share the Road Campaign also sought to improve enforcement in selected areas by informing police and the public of the law and then encouraging stricter enforcement.
Source: Delaware Valley Regional Planning Commission

CHAPTER 6

Conclusion and Next Steps

Plan Implementation

The Delaware County Bicycle Plan is a necessary guide to the implementation of bicycle improvements. A successful bicycle plan should provide policy continuity that will survive turnover of County Council, the County Planning Commission, and DCPD staff. The Plan will provide a legal and political basis for requesting improvements from other agencies. It should be recognized that many aspects of the Plan, including the desired bicycle improvements, represent a wish list that may prove to be unachievable with available resources. However, if the Plan is adopted and pursued, programs and funds are available to make some portion of it a reality. It will provide guidance and a model for local bicycle mobility plans. And it will provide a reasonable plan for action and benchmarks against which its success can be measured.

Bicycle Coordinators

The County and other agencies should cooperate to ensure that bicycle-friendly policies are instituted at all levels. Each municipality or multi-municipal planning group should name a bicycle coordinator or advisory committee. The County should also name a bicycle coordinator to monitor the implementation of County bicycle policies and be an expert on bicycle considerations. This does not necessarily mean hiring new staff, where the need isn't warranted. In most cases, explicitly naming an individual staff member as a bicycle coordinator in addition to other duties already carried out will achieve the goal of facilitating the implementation of the bicycle policies laid out in this Plan and create a contact for bicycle-related issues. Federal funding for a bicycle coordinator position can be obtained through federal CMAQ Program funds of the FHWA.

A Regional Handbook

A regional handbook should be created that includes the following elements:

- Bicycle parking requirements/recommendations
- Model ordinance provisions for bicycle planning
- Other useful guidelines for planning bicycle facilities

The above elements are useful but not specific to any particular county or even region. Duplicating them for each county makes little sense; a single regional or state reference book would be the best use of resources.

Action Agenda

Numerous entities need to be involved to realize a bicycle plan. Appendix A includes a summary of recommendations proposed in this plan and a detailed list of partner groups and their proposed roles in implementing bike routes. Many of the recommendations in this plan have been assembled into very general recommendations in order to appear on the matrix appearing in Appendix A. The County bicycle coordinator should actively encourage the participation of all partner agencies. There are several recommendations that the County can take the lead in initiating that come from this Plan. Specifically, the County should take the following actions:

1. Ensure that County operations, programs, plans, and ordinances are bicycle friendly where applicable and amend those that are currently deficient.
2. Introduce the Plan to municipal governments to gauge their interest in implementing bicycle- friendly policies. This will allow future efforts to be directed to municipalities eagerly pursuing the objectives and recommendations of the Plan, maximizing County efforts.
3. Start a Delaware County Bicycling Advisory Committee to provide a forum for interested municipalities to share strategies for implementing bicycle improvements.
4. Work with PennDOT to ensure that all new roads, major reconstructions, and as many resurfacings as possible provide for bicycle facilities.
5. Work with municipalities to develop TIP funding applications for bicycle facilities.
6. Push for the completion of the Route 291/US 13 Greenway.
7. Support the efforts of community trails organizations.
8. Support the adoption of a state "Bicycle Bill" requiring that a minimum percentage of transportation funds be spent on bicycle facilities.
9. Work with PennDOT to encourage a revision of the BOP that is less onerous on municipalities.
10. Promote regional programs, such as the "Share the Road" campaign, to fund voluntary after-school cycling instruction programs, using certified instructors. Delaware County should strongly encourage the school districts to provide after-school instructional space for such programs and to promote them with students and parents.
11. Solicit bicyclist input on the "Share the Road" signs, and request more if the reaction is favorable.
12. Recommend that shoulders, bicycle lanes, and bicycle parking be provided as part of the development process as encouraged by zoning.
13. Encourage municipalities to follow bicycle-friendly policies and amend their plans and ordinances with bicycle-friendly provisions.
14. Ensure that any airport expansion plans make accommodation for a fully separated multi-use trail as part of the East Coast Greenway and Tinicum - Ft. Mifflin Trail.
15. Work with the DRPA to improve bicycle access across the Ben Franklin Bridge and to provide some access across the Commodore Barry Bridge.
16. Continue to have a "Bike to Work Day" for County employees and employees of Media businesses. Work with other employers and the TMA to help sponsor events at other major employment destinations. Work with Philadelphia's Bike to Work Day sponsors to make Delaware County residents who commute to Philadelphia more aware of their events.

17. If sufficient interest and resources exist, Delaware County should fund bicycle projects.
18. In conjunction with the region, request that PennDOT incorporate questions about the obligations of motorists and bicyclists into the driver's license exam.
19. Encourage municipalities or multi-municipal planning districts to name bicycle coordinators or advisory committees.
20. Work on a Countywide Safe Routes to School Program with input from municipalities and school district officials.
21. Join the KAZ program to encourage use of County and local parks by County residents.
22. Complete a shared use path/greenway plan for the County. Update and specify off-road trail possibilities in conjunction with the Countywide open space plan. The County is currently preparing a greenway plan for the Darby Creek watershed as a pilot for the creation of a Countywide greenway plan.
23. Look at specific routes for improvement and create detailed feasibility studies to facilitate the final construction of routes where interest exists.
24. Examine the economic impact of bicycle facilities and shared use paths on local businesses and publish the results.
25. Produce progress reports based on the recommendations, objectives, and performance measures outlined in this plan.
26. Regularly update the *Delaware County Bicycle Plan*.

Bicycle Facility Implementation and Funding

Just as responsibility for providing roads and automobile facilities is in many different hands, providing bicycle facilities should also be the responsibility of anyone who is developing and or building new transportation facilities. Listed below are principal funding sources that are available for bicycle projects. Consult Appendix F for a more extensive list of possible funding sources. These appendices are also not an exclusive list of funding sources and partner groups. As public funding for transportation gets increasingly tight, looking at innovative funding mechanisms like foundations, corporate investments, and producing revenue policies become more important. The importance of using public-private partnerships to fund bicycle related projects cannot be overstated.

- **New, rebuilt, resurfaced, and reconstructed roads**. Bicycle facilities built as part of new or rebuilt roads will be funded from normal highway funding sources. The bicycle improvement network provides the rational basis for making bikeway improvements incidental to other highway improvements. Such incidental improvements, requiring no special financial resources, will be a principal means of implementing the network. Designated routes should be priorities for bicycle accommodation when they are resurfaced or rebuilt. For PennDOT-sponsored improvements, PennDOT would pay the required 20% local match; no local participation would be required. Municipalities and the County should update their zoning codes and subdivision and land use ordinances to require that these facilities be provided with new development.

- **Developers**. Developers should be strongly encouraged to dedicate sufficient right-of-way for shoulders and sidewalks on routes featured in the on-road bicycle improvement network identified in Chapter 3. The County and municipalities should recommend that shoulders and bicycle lanes be provided where appropriate. Sidewalks should be separated from the road by a planting strip where feasible.

- **DVRPC Programs**. DVRPC should consider modifying its long-range plan, *The Southeastern Pennsylvania Bicycle and Pedestrian Mobility Plan*, to correspond to the routes recommended in this Plan.

  DVRPC has previously sponsored a Bicycle Mobility Improvements Program that was designed to select, evaluate, and make recommendations for improvements. Funds are set aside in the region's TIP to provide 80% of the cost of the recommended improvements. The TIP is a list of transportation projects agreed upon at the regional level. The total cost of programs in the TIP is not allowed to exceed the total federal, state, and local funds available. Setting aside funds in the TIP assures, with a high level of probability, that the money will be available when needed. The absence of regional funding of the 20% local match proved to be a stumbling block for the Bicycle Mobility Improvements Program. Municipalities can still get 80% funding without the help of this program by applying through the TIP process.

  DVRPC's initial study highlighted two on-road bicycle routes in Delaware County, Bicyclists' Baltimore Pike and PA Route 252. The State agreed to provide the local match to implement the Bicyclists' Baltimore Pike route. DVRPC has hired a project manager who oversees the implementation of this and other nontraditional projects. Delaware County has recommended that the local match requirement be waived for all of the regional network miles designated thus far under the Bicycle Mobility Improvements Program. Absent regional funding of some of the local match, top-down bicycle planning from DVRPC is not likely to yield results.

- **CMAQ funded regional programs**. In 2002, DVRPC submitted an application for CMAQ funding to install 1,000 inverted U racks for free upon request in front of any business. DVRPC would administer the program, and its labor would constitute the region's local match. Delaware County would be slated to receive 200 racks. Bulk orders and a single contract for installation and replacement would enable DVRPC to install racks at a cost far lower than any individual business could get for the installation of a single rack. The program would be completely request-driven. This program was not included in the FY 2003-2006 TIP because no one stepped forward to provide a cash, as opposed to an in-kind, match. The program will be re- submitted when a commitment of local funds can be identified. The City of Philadelphia has a similar program that has proven extremely popular, with over 2,000 rack installations in a single year. Philadelphia is using a combination of CMAQ and City funds to purchase and install racks in its upcoming adopt-a-rack program, which should lead to the installation of an additional 2,000 racks. Businesses can get a free rack installed if they agree to remove graffiti and stickers and report serious damage to the Streets Department.

- **TE**. The TE program is funded with federal SAFETEA- LU money. SAFETEA-LU is the principal vehicle whereby federal gas tax money is handed down to the states for highway and transit projects. The TE set-aside can be used to fund a broad range of "soft" transportation programs, such as landscaping, educational efforts, transportation museums, and restoration of historic transportation facilities, as well as bicycle and pedestrian improvements. In the past, numerous bicycle projects, especially trails, have been funded with TE money. However, the use of TE money for bicycle projects is in theory no longer necessary since such projects can now be funded with other, less competitive SAFETEA-LU funds. TE has a separate selection application and process from the rest of the TIP. As with most projects funded under SAFETEA-LU , a 20% local match is required.

- **SAFETEA-LU**. The County recommends that municipalities use SAFETEA-LU funds other than the TE set-aside, since TE is highly competitive. Bicycle projects are broadly eligible for most SAFETEA-LU funding categories. SAFETEA-LU funds are distributed within the region every two years in the TIP update. Municipalities should submit applications to the County, along with highway, transit, or pedestrian projects. Such applications require a 20% local match.

- **DCNR Programs.** DCNR has several funding sources that can be applied for through their Community Conservation Partnership Program (C2P2) application process. This state funding can be used to match federal funds such as TE, SAFETEA-LU, and CMAQ funding.

- **County funding**. In exceptional cases, Delaware County could consider aiding a municipality in funding bicycle projects. Providing the 20% local match for projects on the TIP would permit the County to implement its network faster. Eighty percent of project costs would come from federal sources, 20% from the County. Or the County could offer 10% to match 10% from the local municipalities. Since the costs might prove to be considerable, strong political support would be required. Eligible municipalities can also take advantage of Revitalization funding to match federal or state funds for the completion of bicycle-related projects. This program has elements of open space acquisition as well for the construction of shared use paths. Delaware County can also provide political support to well planned bicycle improvement projects, which can help projects get funding through other sources and influence landowners or developers.

Monitoring

The County can use the following general performance measures to assess the overall success of the Plan:

- Number of miles of bike lanes and multi-use trails
- Percentage of motor vehicle trips
- Percentage of bicycle trips
- Number of employees commuting to work by bicycle
- Number of persons bicycling for non-work purposes from their homes
- Volume count of bicyclists at selected locations
- Air pollution from automobiles

- Collect bike-on-transit counts from SEPTA
- Bicycle crashes
- Number of municipalities or multi-municipal planning areas that have appointed bicycle coordinators or have bicycling advisory committees
- Number of municipalities that have joined the Delaware County Bicycling Advisory Committee

The availability of data for the general performance measures is fairly good. The census provides periodic counts of bicycle commuters. Independent of the census, the National Personal Transportation Survey periodically gathers detailed information on mode shares. Air pollution is also routinely monitored. No one is currently doing ongoing bicycle counts, but performing counts at selected locations would make a good intern project. SEPTA will do periodic bike-on-transit estimates. PennDOT records data on the number and location of bicycle crashes in a readily accessible computerized format.

Performance Report

Reports evaluating the achievements/failures of bicycle policies, using the general performance measures above as well as those specific to each aspect of the Plan, should be made every two years following the adoption of the Plan. The most important measures of success of the Plan are the mode share of bicycles and the number of bicycle crashes. We would like to see the bicycle mode share go up and the crash rate go down, specifically we would like to meet the national and regional goal of doubling bicycle use. When calculating performance measures, the plan should also be updated to reflect changes in standards, completed facilities, changes in priorities, and any other elements that have changed from the adoption of the plan. These additions will help to keep the *Delaware County Bicycle Plan* a pertinent and actively implemented document.

APPENDICES

Appendix A
Policy Action Agenda

Appendix B
Delaware County Bicycle Survey

Appendix C
Bicycle Facility Guidance

Appendix D
Detailed Trip Attractor Locations

Appendix E
Detailed Off-road Shared Use Path Alignments

Appendix F
Bicycle Funding Sources

Appendix G
Comments on the Draft Plan

Appendix H
Glossary

Appendix I
References

Appendix A

Policy Action Agenda

POLICY ACTION AGENDA

L = LEAD ROLE (active involvement in carrying out the action)
S = SUPPORTING ROLE (indirect involvement in implementation. Provide support and advocacy for other partners to carry out.)

	State Government												County Government						Municipal Government							School Districts		DVRPC		Transit Providers		Bicycle Advocacy Organizations				Special Interest Groups				Federal Agencies			Professional Organizations				Commercial/ Retail Providers					
	State Officials/Legislators	PennDOT - Pedestrian & Bicycling Coordinators	PennDOT - Project Management Unit	PennDOT - Maintenance Unit	PennDOT - Assistant District Executive - Design	PennDOT - Bureau of Municipal Services	PennDOT - Bureau of Public Transportation	PennDOT - Bureau of Motor Vehicles	State Police	Historical and Museum Commission	Department of Conservation and Natural Resources	Department of Environmental Protection	County Council	Planning Department	Public Works Department	Intercommunity Health Department	Community Service	Parks and Recreation Department	Governing Bodies	Road/Public Works Departments	Parks and Recreation Departments	Police Departments	Planning Commissions	Environmental Advisory Board	School Boards	Administration	Planning Commission Board	Planning Staff	SEPTA	Amtrak	Bicycle Coalition of the Delaware Valley	Trail Groups	League of American Bicyclists	Bicycle Clubs	Transportation Management Associations	Chambers of Commerce	Automobile Associations/Clubs (i.e., AAA)	Insurance Providers (i.e. Health, Auto)	U.S. Fish & Wildlife Service	National Park Service	Elected Officials	Township/Borough Officials Associations	Police Chiefs Association	Pennsylvania Planning Association	Engineering Associations	Employers	Shopping Center Owners/Tenants	Bicycle Shops	Developers	Media/Press	General Public, Interested Citizens, Bicyclists
Engineering and Policy Objectives:																																																			
1. Endorse and adopt Delaware County Bicycle Plan policies	L	L	S	S	S	S	S	S	S				L	L	S	S		L	L	S	S	S	S	S	L	S	L	S			S	S	S	S	S	S			S	S	S	L	L	S				S	S
2. Retrofit roads	S	L	L	L	L	S			S	S		S	S	S	L	S		S	S	L	S		S	S	S	S	S	L	S	S	S	S	S	S	S	S	S	S	S	S		S	S	S	S	L	S	S
3. Remove hazards and hindrances	S	L	L	L	L	S			S				S	S	L	S	S	S	S	L	S		S	S	S	S	S	L	S	S	S	S	S	S	S	S	S	S	S	S	S		S	S	S	S	L	S	S
4. Develop trails	S	S	S		S								L	L		S		L	L		L		L	S	L	L	S	S	S	S	S	S	S	S	S	S		S	S	S	S		S	L	S	S	L	S	S
5. Provide bike racks and lockers		S					S		L	L		L	L	S		S		L	L		S	S	S	S	S	L	S	S	L	L	S	S	S	S		S		S		S	S			L	L	L	L	S	S
6. Provide showers and changing facilities		S							L			L	L	S		S			L		S		S	S	S	L	S	S			S	S	S	S	S	S		S	S	S		S				L	L		L	S	S
7. Establish bike-on-transit policies and equip transit vehicles	S	S				S	S						S	L					S				S	S	S	S	S	S	L	L	S	S	S	S	S	S		S	S	S		S		S					S	S
8. Include bike facility projects in funding programs	L	S	L	L		S	S						L	L	L				L	L	S	S	S	S			L	L	L	L	S	S	S	S	S			S		S	S							S	S
9. Adopt bike facility standards in municipal regulations		S												S		S			L	S	S	S	S	S							S	S	S	S	S	S			S	S		L	S		S					S	S
Encouragement Policy Objectives:																																																		
1. Publish and/or circulate literature about bicycling benefits		L						L						L		L		S	S		S		S		S	L			S		L	L	L	S	L	S			L	S			S		L			L	S
2. Publish and/or circulate literature about bike commuting logistics		L												L		S		S	S		S		S		S	L			S		L	L	L	S	L	S			L	S			S		S			L	S
3. Publish and/or circulate maps of bikeable roads and trails		L												L				L	S		L			S	S	L			S		L	L		S	L	S			L	S			S					L	S
4. Advertise plans, programs, and policies	S	S						L	S				L	L	S			L	L	S	S			S	S	L	L		L	L	S	S	S	S	L			L		S			S					L	S
5. Establish employer policies	L	S							L	L		L	L	S				L			S				L	L	S		L		S	S	S		S	S	S			S	S					L	L			S	S
6. Establish bike to work days and special events	L	S											L	L		L		L	L		L	S		S	S	L	S		S		L	L	S	L	L	S		L	L	S		S	S				L	L	L		S	S
7. Campaign to advance bicycling transportation	L	S				S		L	S			L	L	L	S	L		L	L	S	L		S	S			L		L		L	L	L	L	L	S		L	S	S	S	S	S		S		L	L	L		L	L
8. Provide presentations and workshops		S							L					L					S		L			L	S	L	L		S		L	L	L	L	S	S		L				L	S	S		L		L		S	S

POLICY ACTION AGENDA

L = LEAD ROLE (active involvement in carrying out the action)
S = SUPPORTING ROLE (indirect involvement in implementation. Provide support and advocacy for other partners to carry out.)

	State Government												**County Government**						**Municipal Government**						**School Districts**		**DVRPC**		**Transit Providers**		**Bicycle Advocacy Organizations**				**Special Interest Groups**				**Federal Agencies**			**Professional Organizations**				**Commercial/ Retail Providers**					
	State Officials/Legislators	PennDOT - Pedestrian & Bicycling Coordinators	PennDOT - Project Management Unit	PennDOT - Maintenance Unit	PennDOT - Assistant District Executive - Design	PennDOT - Bureau of Municipal Services	PennDOT - Bureau of Public Transportation	PennDOT - Bureau of Motor Vehicles	State Police	Historical and Museum Commission	Department of Conservation and Natural Resources	Department of Environmental Protection	County Council	Planning Department	Public Works Department	Intercommunity Health Department	Community Service	Parks and Recreation Department	Governing Bodies	Road/Public Works Departments	Parks and Recreation Departments	Police Departments	Planning Commissions	Environmental Advisory Board	School Boards	Administration	Planning Commission Board	Planning Staff	SEPTA	Amtrak	Bicycle Coalition of the Delaware Valley	Trail Groups	League of American Bicyclists	Bicycle Clubs	Transportation Management Associations	Chambers of Commerce	Automobile Associations/Clubs (i.e., AAA)	Insurance Providers (i.e. Health, Auto)	U.S. Fish & Wildlife Service	National Park Service	Elected Officials	Township/Borough Officials Associations	Police Chiefs Association	Pennsylvania Planning Association	Engineering Associations	Employers	Shopping Center Owners/Tenants	Bicycle Shops	Developers	Media/Press	General Public, Interested Citizens, Bicyclists
Education Policy Objectives:																																																			
1. Publish and/or circulate literature about bicycle safety		L						L					L	S		L			S		L				S	L		S	L	S	S	S	L		L	L	S	S	S	L		S				S		L	S
2. Establish and encourage school-based on-road bicyclist training		S						L	L				S	S		L			S		L	L			L	L		S			S	S	L			S	S	S	S	S		S				S			S
3. Establish and encourage public workshops and bicyclist training		L						L					S	S		L			S		L	S	S	S	S	S	S	S	S	S	L	S	S			S	S	S	S	S		S	S			S		L	S
4. Establish and encourage driver education classes		S						L	S				S	S		S		S	S		S	S			L	L				L	S	L				S				S										S
5. Incorporate bicycle issues in driver licensing manual and exam	S	S						L	L				S	S		S			S			S									S	S	S				S				S										S
6. Install "Share the Road" signs		L	L	L	L	S		S	S				S	S	S	S			L	L	S	S	S	S	S		S				L	L	S	S	S		S	S	S	S	S		S			S		S	S
7. Provide profession development courses on bikeway planning and design for engineers and planners	S	L	S	S	S	S	S	S	S	S	L	L	S	L	S	L		S	S	L	S	S	L	S	S	S	L	L	S	S	L	L	L	L	L		S	S	S	S	S	S	S	L	L			S	S	S	
Enforcement Policy Objectives:																																																			
1. Enact, modify, or repeal unsafe and inconsistent laws	L	S						L	L					S		S			L			L			S						S	S	S	S			S	S			L		L				S		S	S
2. Train law enforcement officers	S	S							L					S		S			S			L			S			L			S	S	S								L								S
3. Publish and circulate traffic laws	S	S							L					S		S			S			L			S			S	L		L	L	L	L	S		S	S	S		L		L				S	L	S
4. Advertise high-profile bicycling incidents/crashes		S												S		S															L	L	L	L															L	S
5. Establish police-on-bike programs and bike patrols		S							L					S		S			L			L			S				L	L	L	S	S				S				S	L			S	S			S
6. Promote good bicycling behavior and etiquette		S												S		S			S						S	S		S	S		L	L	S	S													S		S	L
7. Issue warnings and citations to bicyclists		S							L				S	S		S			S			L			S		S	S	S		S	S	S			S	S			S		S							S
8. Issue warnings and citations to motorists		S							L				S	S		S			S			L			S		S	S	S		S	S	S			S	S			S		S							S

Policy Agenda adapted from Montgomery County [Pennsylvania] Planning Commission. *Bicycling Road Map.* 1998.

Appendix B

Delaware County Bicycle Survey

Preference Survey of Bicycle Facilities

The Delaware County Planning Department is developing a Bicycle Master Plan for a comprehensive and safe network of bikeways. This survey is intended to learn more about residents' preferences of bicycle facility types. As you fill this out, please try to visualize which facilities, if provided, would entice you to cycle more often, rather than what streets look like today.

Date survey completed: _____

1. During the winter, approximately how often do you cycle? (check one box)

☐ nearly every day ☐ 3-5 times per week ☐ 1-2 times per week ☐ 2-3 times per month
☐ once a month ☐ less often ☐ not at all

2. During the summer, approximately how often do you cycle? (check one box)

☐ nearly every day ☐ 3-5 times per week ☐ 1-2 times per week ☐ 2-3 times per month
☐ once a month ☐ less often ☐ not at all

3. What are the most frequent purposes of your cycling trips? Rank the top three, #1 being most frequent.

Recreation & exercise _____
Work _____
Shopping _____
School _____
Entertainment _____
Visit friends _____
Other _____

4. Where do you usually ride? Please mark the appropriate response(s).

☐ on residential streets
☐ on major roads (PA or US numbered routes)
☐ on other main roads
☐ on off-road trails
☐ at places (parks, trails, scenic or country roads, etc.) that you must first get to by car

5. When you ride for recreation, where do you usually go? (please be specific)

_____
_____
_____
_____

1 of 4

6. Why don't you use a bicycle more often for local trips? (check as many boxes as apply)

☐ difficulty bicycling on streets (high traffic volumes, dangerous intersections, poor maintenance, narrow streets, etc.)
☐ lack of bicycle facilities (bicycle lanes, trails, neighborhood through-streets -- see #8 for definitions)
☐ lack of trip-end facilities (e.g., secure/convenient parking, showers, clothing storage)
☐ unfavorable weather (e.g., rain, wind, heat, cold, etc.)
☐ unfavorable topography (e.g., hills)
☐ time of day (don't cycle when dark)
☐ takes too long
☐ can't carry passengers/cargo
☐ other _____

7. If there were better bicycle facilities (bicycle lanes, trails, bicycle boulevards -- see #8 for definitions), would you cycle more frequently? (check one box)

☐ yes (continue) ☐ no (skip to # 9) ☐ don't know (skip to #9)

8. If yes to #7, which type of bicycle facility would cause you to cycle more frequently? (check one box)

☐ bicycle lane (an on-street lane designated for bicycles, usually on higher traffic speed/volume roads)
☐ bicycle boulevard (a lower traffic neighborhood street allowing for through bicycle movement and good connections, with traffic calming measures to discourage auto speeding and through movement)
☐ paved shoulders
☐ combination
☐ other _____

9. Multi-use trails (separated from the roadway and shared with pedestrians and other users) can be provided in a few places in Delaware County, e.g., along creek banks or in scenic corridors. Given the choice of an on-street facility or a multi-use trail, which would you prefer? (check one box)

☐ on-street facility ☐ trail ☐ doesn't matter

10. A multi-use trail is currently being proposed for the old Chester Creek Branch Railroad right-of-way. The trail would follow Chester Creek and connect the old Wawa train station in Chester Heights with the Caleb Pusey Plantation in Upland via Middletown, Aston, and Chester Townships. The upper end of the 6.7-mile trail would be at the old Wawa SEPTA station in Chester Heights Borough, which may eventually be re-opened for commuter rail service. Check the box next to the phrase which most closely describes your feelings towards a multi-use trail on this route.

☐ strongly opposed ☐ somewhat opposed ☐ neutral/don't know ☐ somewhat in favor ☐ strongly in favor

2 of 4

11. If a good system of the bicycle facilities described in #8 and #9 were provided, where would your bicycling increase? (check all boxes that apply)

☐ recreation ☐ work ☐ shopping ☐ school ☐ entertainment ☐ visit friends ☐ cycling wouldn't increase

☐ other _____

To help us look at different groups of people, please tell us:

12. Into which age group do you fall? (check one box)

☐ teens ☐ 20s ☐ 30s ☐ 40s ☐ 50s ☐ 60s ☐ 70 and over

13. Are you? ☐ male ☐ female

14. Are there any particular places in your neighborhood where you think a bicycle facility is needed? If so, please write the names of the roads and indicate below which improvements you think are most needed.

Road name/route number:_____from:_____to:_____

☐ add bicycle lanes
☐ provide wider shoulders
☐ improve pavement conditions
☐ install "Share the Road" warning signs
☐ keep existing shoulders clear of debris
☐ install a bicycle boulevard
☐ other: _____

Road name/route number: _____from:_____to:_____

☐ add bicycle lanes
☐ provide wider shoulders
☐ improve pavement conditions
☐ install "Share the Road" warning signs
☐ keep existing shoulders clear of debris
☐ install a bicycle boulevard
☐ other: _____

3 of 4

Road name/route number:_____from:_____to:_____

☐ add bicycle lanes
☐ provide wider shoulders
☐ improve pavement conditions
☐ install "Share the Road" warning signs
☐ keep existing shoulders clear of debris
☐ install a bicycle boulevard
☐ other: _____

If you have any other comments that will help us provide comprehensive and safe bicycle facilities, please tell us below:

_____
_____
_____
_____
_____
_____
_____
_____

THANK YOU FOR YOUR HELP! Please mail your completed form in the self-addressed stamped envelope provided:

If you need further assistance, please contact:

Michael J. Farrell
Delaware County Planning Department
Court House/Government Center
201 W. Front Street
Media, PA 19063
(610) 891-4396

If you got our survey through Friends of Radnor Trails, and you would like to be invited to future forums where bicycle routes will be selected, please fill in your address below. This information will not be used for commercial purposes.

Name: _____

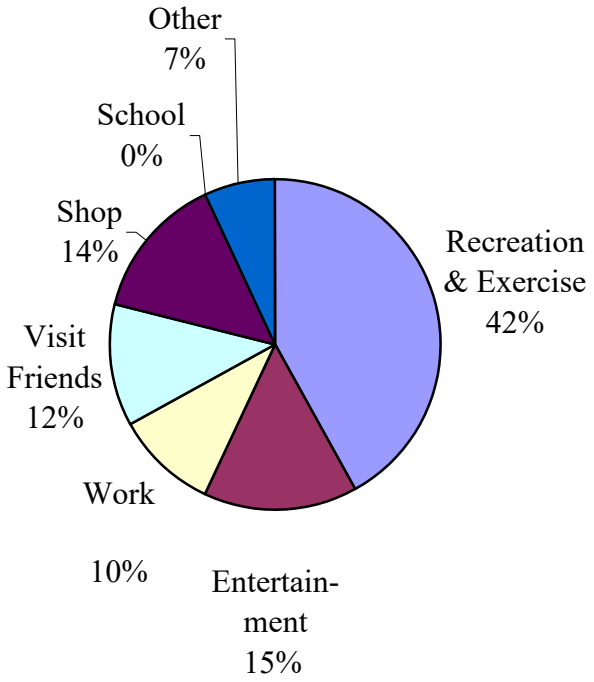
Street: _____ Apt. # _____

City: _____

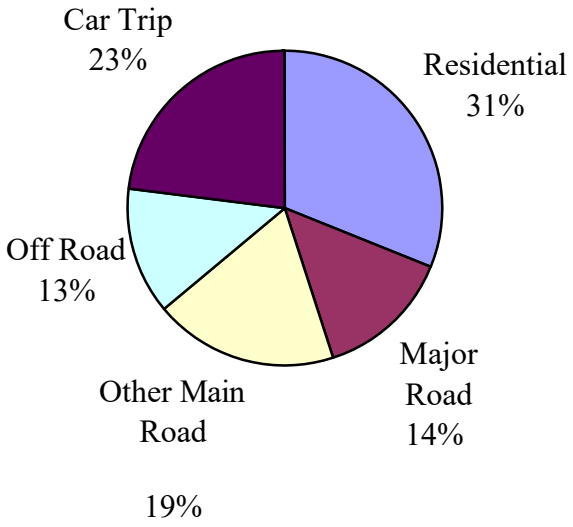
Zip Code: _____

4 of 4

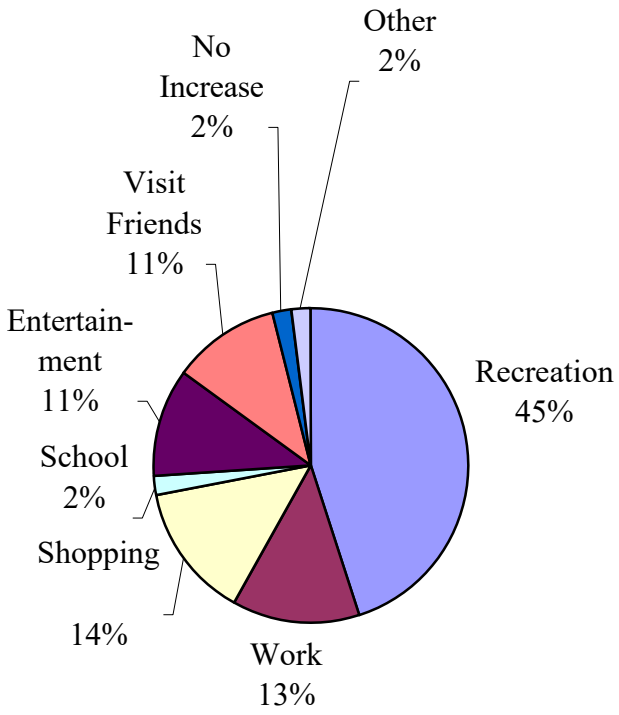
Top Three Reasons for Cycling



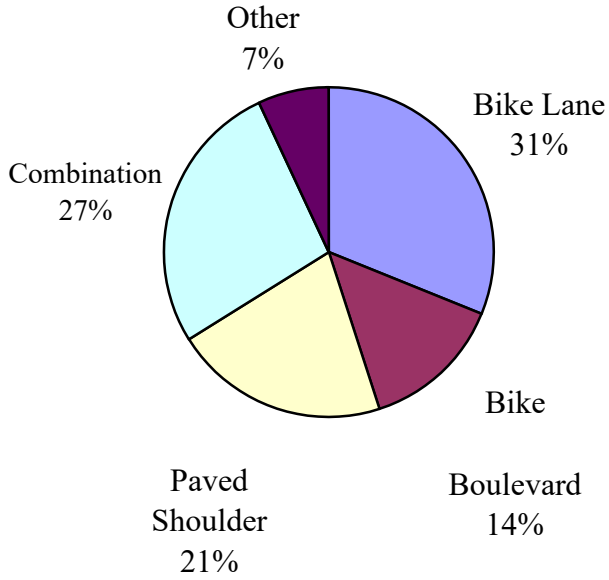
Where do you usually ride?



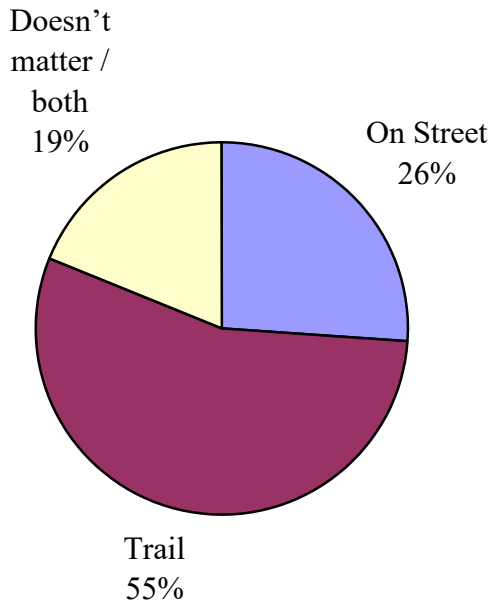
If good bicycle facilities were provided, where would your cycling increase?



Preferred On-street Facility



Do you prefer riding on trails or on-street facilities?



Appendix C

Bicycle Facility Guidance

Traffic Calming Measures

Measure	Speed Reduction	Traffic Reduction	Noise and Pollution	Loss of Parking	Traffic Access Restrictions	Emergency Vehicle Impacts	Maintenance	Cost
Traffic Education Campaign	Maybe	Maybe	No change	None	None	None	No	Varies
Speed Display	Yes	No	No change	None	None	None	No	$250/day
Neighborhood Sign	Maybe	Minimal	No change	None	None	None	No	$200/sign
High Visibility Crosswalks	Maybe	No	No change	None	None	None	Yes	$1K-$5K
Police Enforcement	Yes	Maybe	No change	None	None	None	No	$75/hour
Narrowing Lanes	Yes	Maybe	No change	None	None	None	Yes	$1K-$3K
Speed Limit Signing	Maybe	No	No change	None	None	None	No	$200/sign
Stop Signs	Maybe	No	Increase	None	None	None	No	$200/sign
Bike Lane	Maybe	No	No change	Maybe	None	None	Yes	$25K-$75K/mile
Sidewalk	No	No	No change	Maybe	None	None	Yes	$20-$30/foot
Median Island	Maybe	Yes	Decrease	Maybe	Yes	Yes	Maybe	$10K-$75K
Curb Extension	Maybe	No	No change	Yes	None	Some	Yes	$10K-$20K
Choker	Yes	Maybe	No change	Yes	None	Some	No	$15K
Speed Hump	Yes	Limited	Increase	Maybe	None	Yes	Yes	$5K
Raised Crosswalk	Yes	Maybe	Increase	Yes	None	Some	Yes	$5K-$10K
Raised Intersection	Yes	No	Increase	Yes	None	Yes	Yes	$25K-$50K
Traffic Circle	Yes	Maybe	No change	Yes	None	Some	Yes	$15K-$25K
Intersection Channelizing	Yes	Maybe	No change	Yes	None	None	Maybe	$15K-$20K
Chicane	Yes	Maybe	Maybe	Yes	None	Yes	Maybe	$20K-$40K
Movement Barrier	Maybe	Yes	Decrease	None	Yes	Yes	Yes	$5K
Entrance Barrier	Maybe	Yes	No change	Maybe	Yes	Maybe	No	$15K-$20K
One-way Streets	No	Yes	No change	None	Yes	Yes	No	$5K
Diagonal Diverter	Yes	Yes	Decrease	Maybe	Yes	Maybe	No	$15K-$35K
Street Closure	Yes	Yes	Decrease	Yes	Total	Yes	No	$20K-$35K

Traffic calming measures adapted from *Safe Routes to School* ; National Highway Traffic Safety Administration, 2002.

Selected National Speed-Volume Bicycle Facility Guidance Matrices

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N Narrow lane		all	<200				
W Wide lane			200-600				
B Bike lane or shoulder			3,000-10,000	3,000-20,000	3,000-40,000	20,000-40,000	20,000-40,000
S Separated lane or path							
Center for Livable Communities Matrix							

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N Narrow lane							
W Wide lane		<10,000	<10,000				
B Bike lane or shoulder		>10,000	>10,000	all	all	all	all
S Separated lane or path							
United States (FHWA) Matrix							

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N Narrow lane		<1,200	<1,200	<1,200	<1,200	<1,200	
W Wide lane		1,200-10,000	1,200-10,000	1,200-10,000	1,200-10,000	1,200-10,000	<1,200
B Bike lane or shoulder		>10,000	>10,000	>10,000	>10,000	>10,000	>1,200
S Separated lane or path							
New Jersey Matrix							

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N Narrow lane		all	all	all	<3,000	<3,000	<3,000
W Wide lane							
B Bike lane or shoulder					>3,000	>3,000	>3,000
S Separated lane or path							
Oregon Matrix							

Source
King, Michael. Pedestrian and Bicycle Information Center.
Bicycle Facility Selection: A Comparison of Approaches (2002)

Selected International Speed-Volume Bicycle Facility Guidance Matrices

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	**Narrow** lane	all	<200				
W	**Wide** lane		200-600				
B	**Bike lane** or shoulder		3,000-10,000	3,000-20,000	3,000-40,000	20,000-40,000	20,000-40,000
S	**Separated** lane or path						
Center for Livable Communities Matrix							

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	**Narrow** lane	<3,500	<5,000	<3,500	<2,000	<500	
W	**Wide** lane						
B	**Bike lane** or shoulder		5,000-10,000	3,500-8,500	2,000-7,000	500-5,500	<4,000
S	**Separated** lane or path		>10,000	>8,500	>7,000	>5,500	>4,000
Denmark Matrix							

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	**Narrow** lane	<8,000					
W	**Wide** lane		<9,000	<6,000	<4,000	<2,000	
B	**Bike lane** or shoulder		9,000-10,000	6,000-9,000	4,000-6,500	2,000-2,500	
S	**Separated** lane or path		>10,000	>9,000	>6,500	>2,500	all
Netherlands Matrix							

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	**Narrow** lane	<3,500	<3,200	<3,000	<2,500	<1,700	
W	**Wide** lane	3,500-6,200	3,200-6,200				
B	**Bike lane** or shoulder	6,200-10,000	6,200-10,000	3,000-8,500	2,500-5,200	1,700-11,500	<8,000
S	**Separated** lane or path	10,000-15,000	10,000-15,000	8,500-15,000	5200-15,000	11,500-15,000	8,000-15,000
United Kingdom Matrix							

Source
King, Michael. Pedestrian and Bicycle Information Center.
Bicycle Facility Selection: A Comparison of Approaches **(2002)**

Level of Service Speed-Volume Matrices

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	**Narrow** lane						
W	**Wide** lane						
B	**Bike lane** or shoulder						
S	**Separated** lane or path			1,800-3,250	1,800-2,000		
Bicycle Compatibility Indices - LOS A Matrix							

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	**Narrow** lane						
W	**Wide** lane						
B	**Bike lane** or shoulder			1,800-3,250	1,800-2,000		
S	**Separated** lane or path			3,250-1,800	2,000-18,000	1,800-18,000	1,800-18,000
Bicycle Compatibility Indices - LOS B Matrix							

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	**Narrow** lane						
W	**Wide** lane			1,800-3,000			
B	**Bike lane** or shoulder			3,000-11,000	1,800-10,000	1,800-8,500	1,800-7,000
S	**Separated** lane or path			11,000-18,000	10,000-18,000	8,500-18,000	7,000-18,000
Bicycle Compatibility Indices - LOS C Matrix							

Source
King, Michael. Pedestrian and Bicycle Information Center.
***Bicycle Facility Selection: A Comparison of Approaches* (2002)**

Level of Service Speed-Volume Matrices (Continued)

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	**Narrow** lane			1800-6500	1800-5250	1800-4250	1800-3250
W	**Wide** lane			6500-10500	5250-9000	4250-7500	3250-6000
B	**Bike lane** or shoulder			10500-1800	9000-18000	7500-17000	6000-15250
S	**Separated** lane or path					17000-18000	15250-18000

Bicycle Compatibility Indes - LOS D Matrix

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	**Narrow** lane			1800-13750	1800-12250	1800-10500	1800-10000
W	**Wide** lane			13750-1800	12250-1625	10500-14750	10000-13250
B	**Bike lane** or shoulder				16250-1800	14750-18000	13250-18000
S	**Separated** lane or path						

Bicycle Compatibility Indes - LOS E Matrix

	Facilties	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	**Narrow** lane			13750-1800	12250-1625	10500-14750	10000-13250
W	**Wide** lane				16250-1800	14750-18000	13250-18000
B	**Bike lane** or shoulder						
S	**Separated** lane or path						

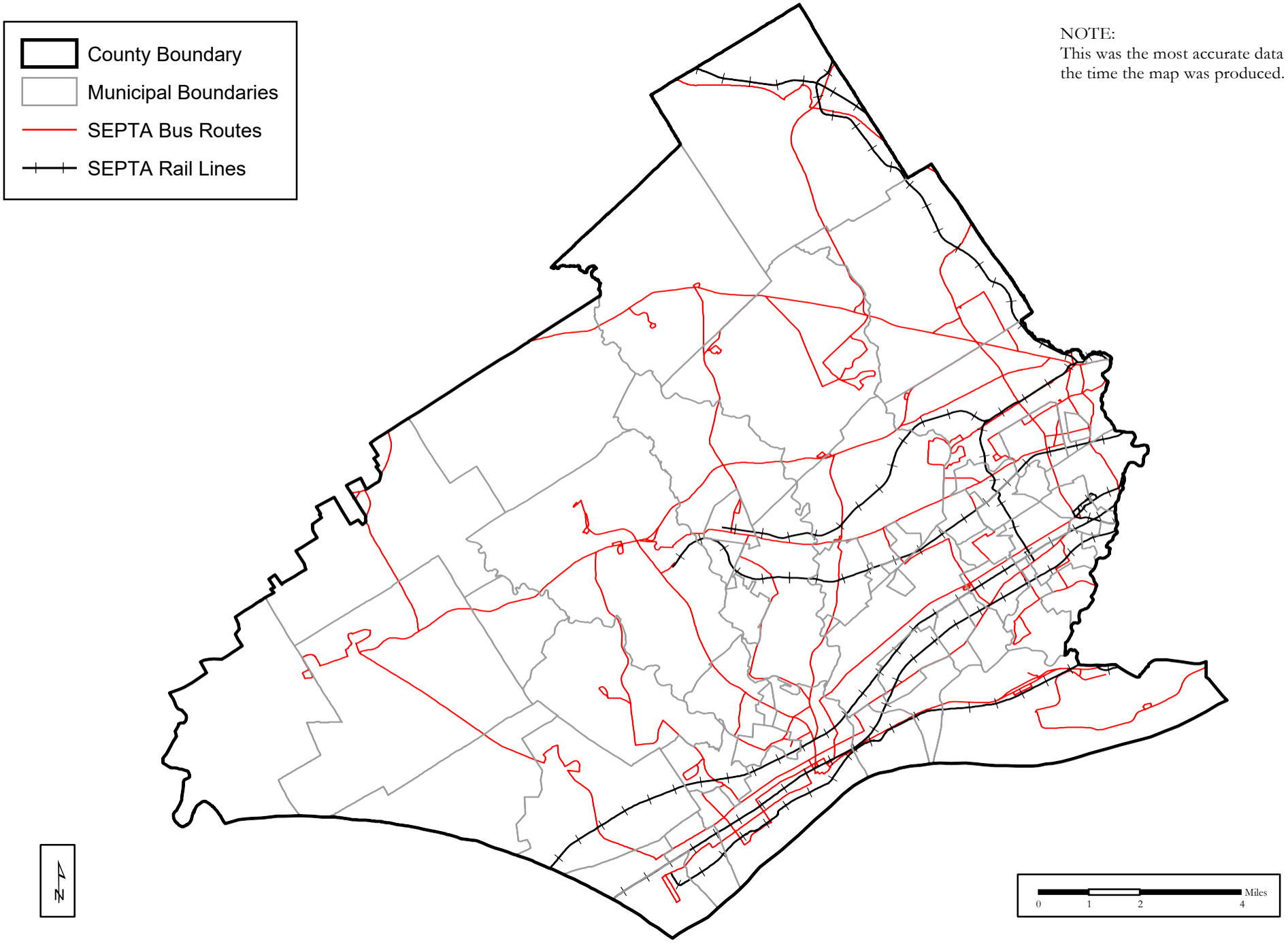
Bicycle Compatibility Indes - LOS F Matrix

Source
King, Michael. Pedestrian and Bicycle Information Center.
***Bicycle Facility Selection: A Comparison of Approaches* (2002)**

Appendix D

Detailed Trip Attractor Locations

Map D-1: Transit Routes
Map D-2: School Facilities
Map D-3: Recreational Areas
Map D-4: Major Employers



Map D - 1

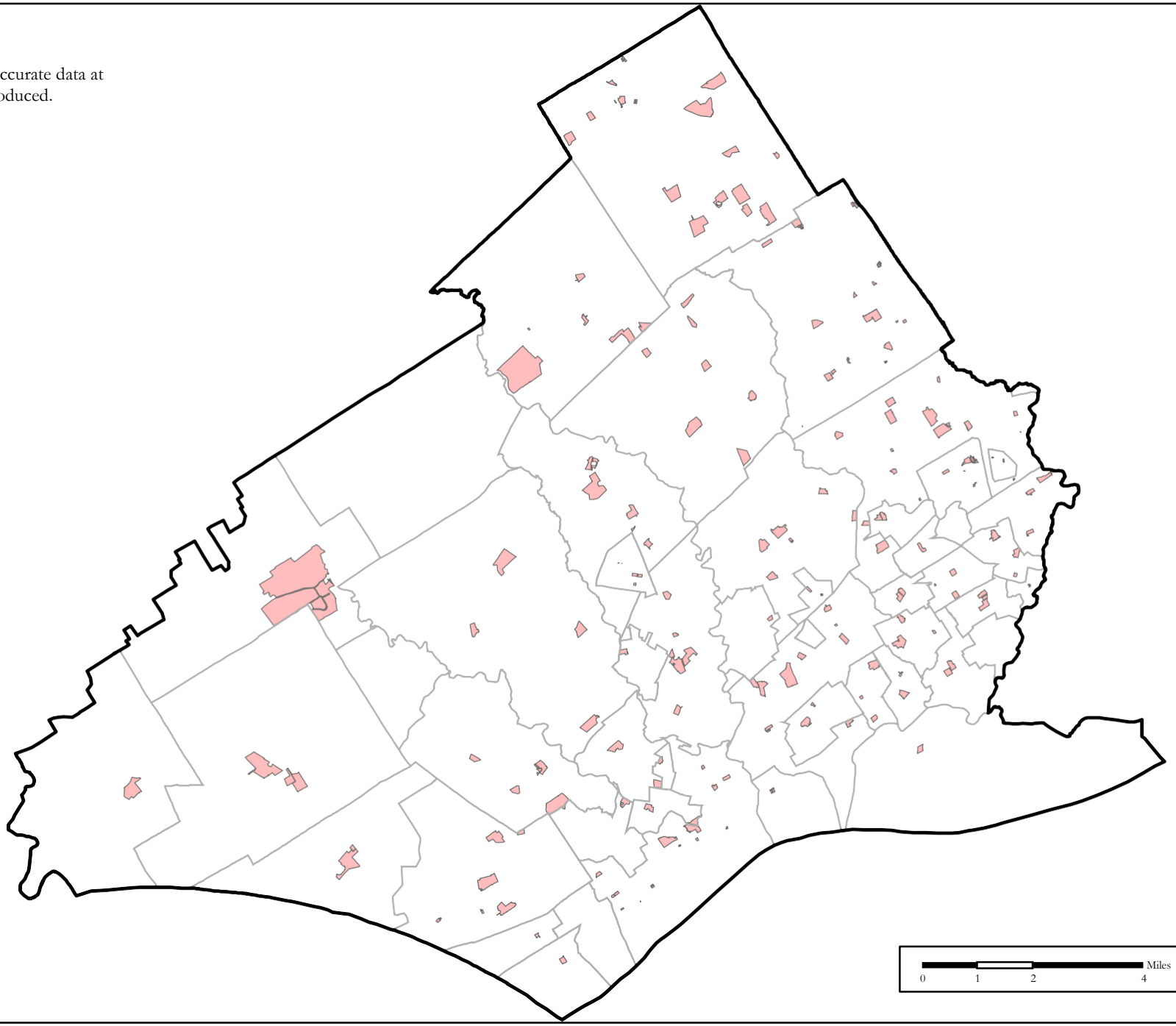
Transit Routes

Page D - 3

NOTES:
1. USGS - County and Municipal Boundaries
2. DVRPC - SEPTA Bus Routes and Rail Lines

Prepared by
Delaware County
Planning Department
March 2005

NOTE:
This data was the most accurate data at the time the map was produced.

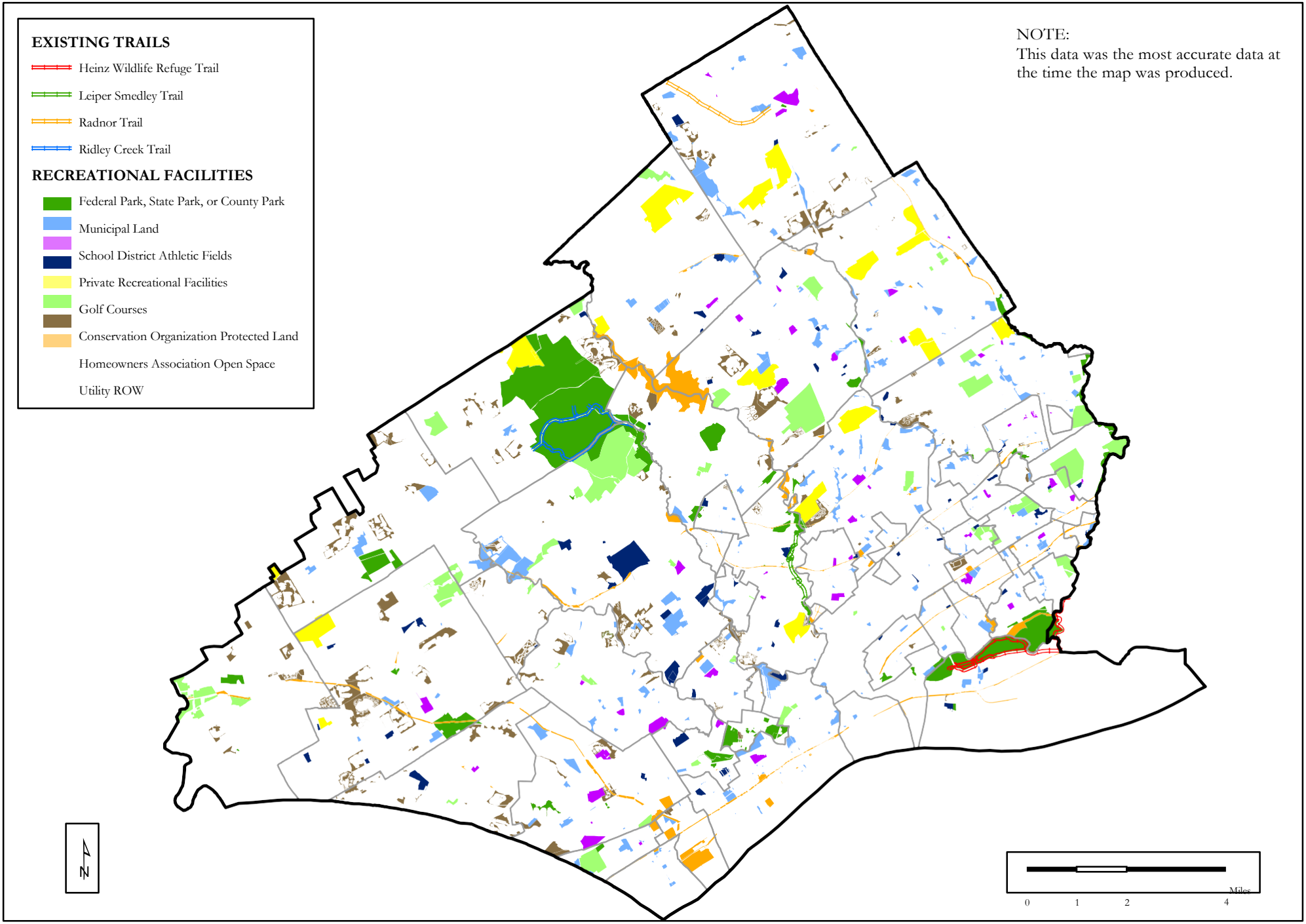


Map D - 2

School Facilities in Delaware County

NOTES:
1. USGS - County and Municipal Boundaries
2. Delaware County Planning Department - School Facilities

Prepared by
Delaware County
Planning Department
March 2005



Map D - 3

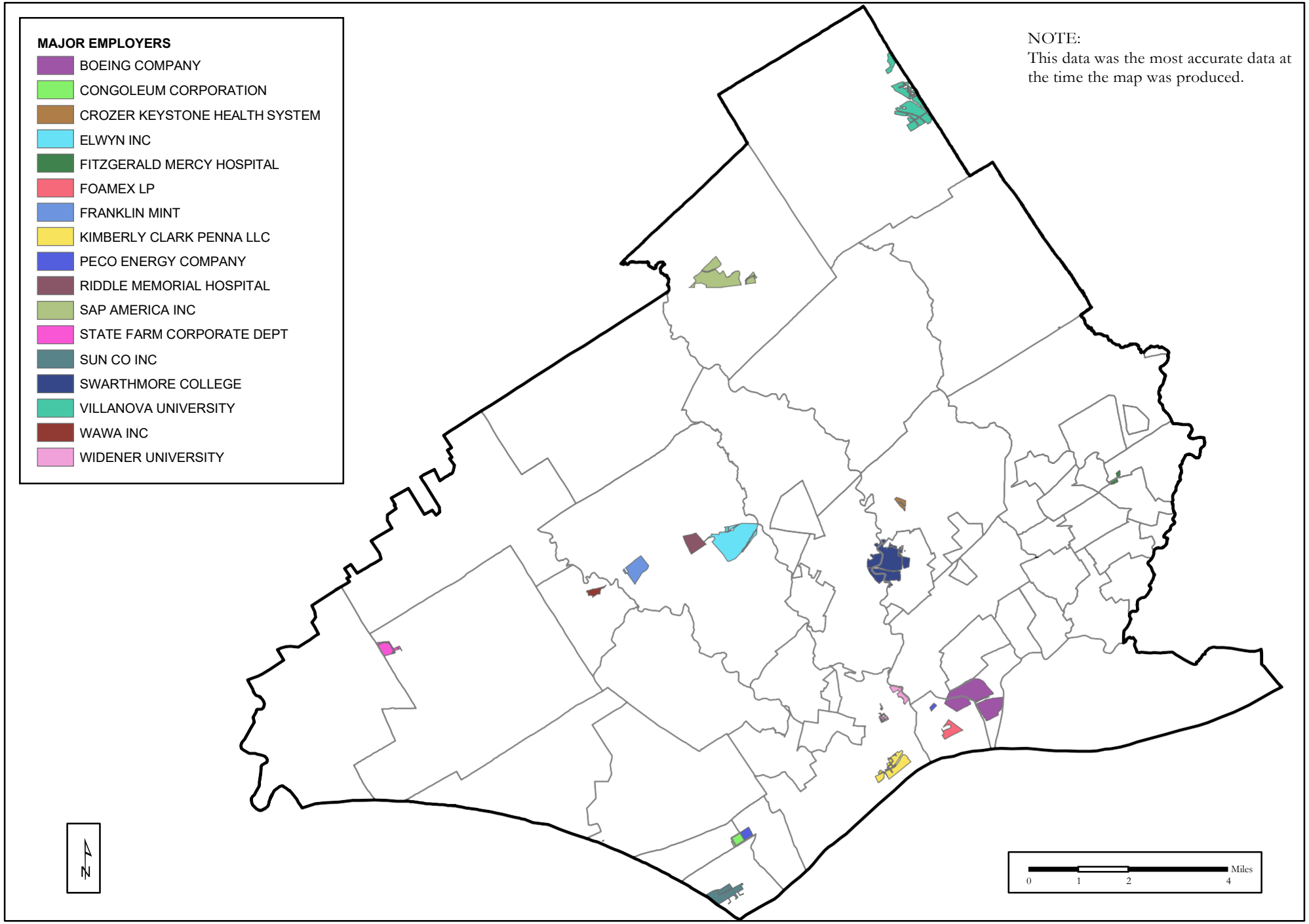
Recreational Areas

Page D - 7

NOTES:
1. USGS - County and Municipal Boundaries
2. Delaware County Planning Department - Recreational Areas and Existing Trails

Disclaimer
This map is for analytical purposes only. The reliability of this map depends on the accuracy of the underlying data sources which have not been verified.

Prepared by
Delaware County
Planning Department
March 2005



Map D - 4

Major Employers in Delaware County

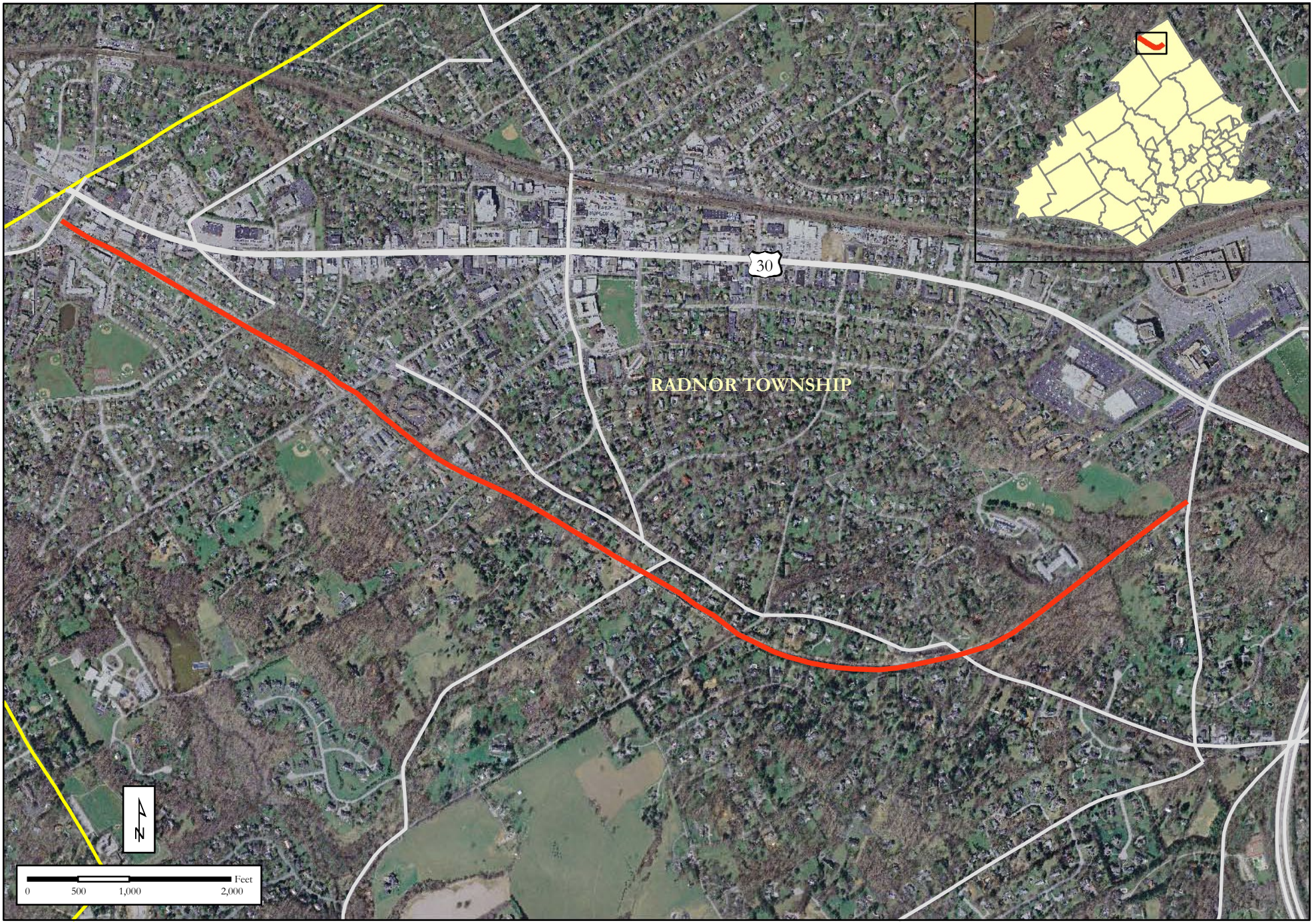
Page D - 9

NOTES:
1. USGS - County and Municipal Boundaries
2. Delaware County Planning Department - Major Employers

Prepared by
Delaware County
Planning Department
March 2005

Appendix E

Detailed Maps including: Off-road Shared Use Path Alignments, On-road Bicycle Routes, and Neighboring County Networks



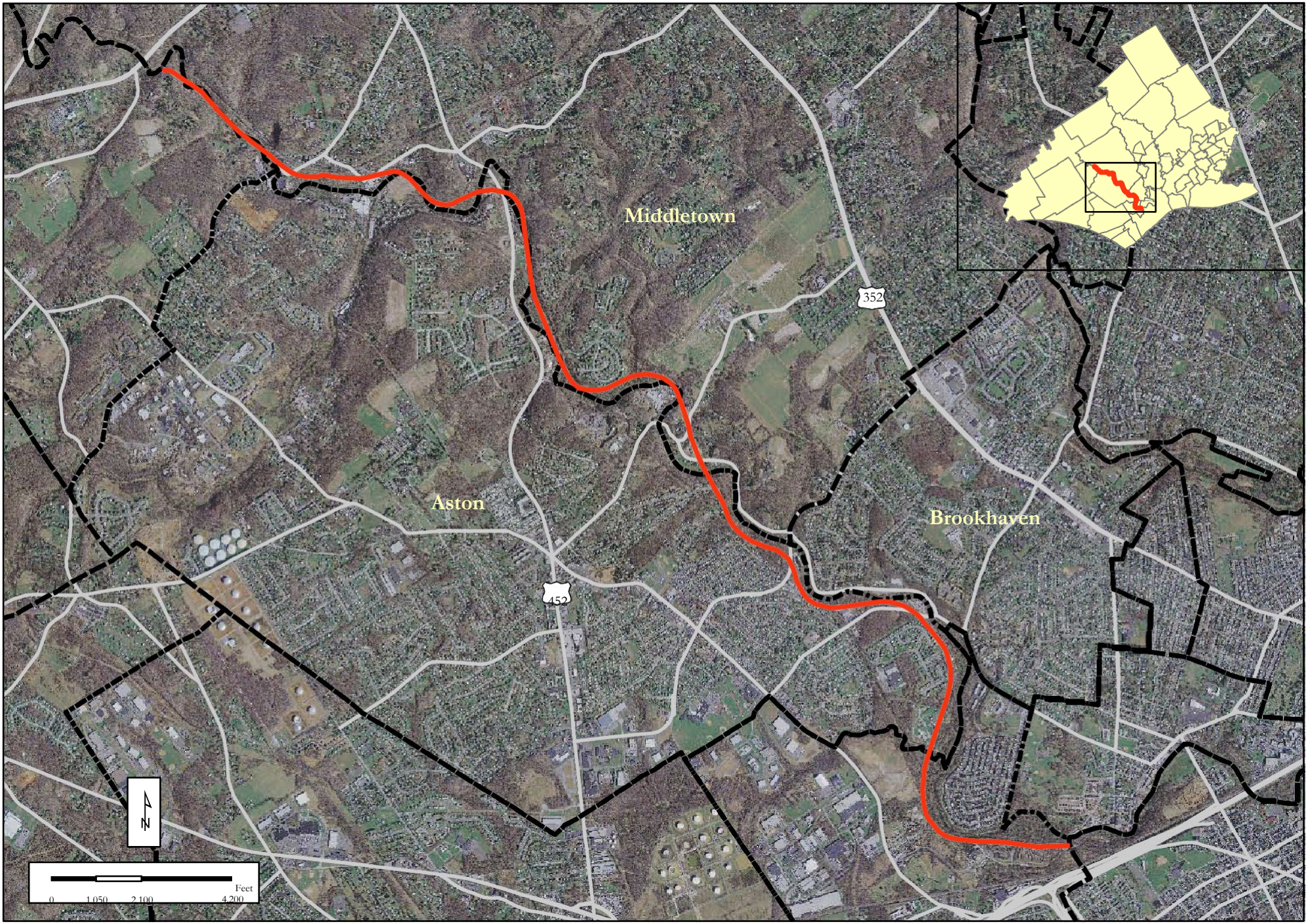
Map E - 1

Radnor Trail

Page E - 3

NOTES:
1. USGS - County and Municipal Boundaries
2. DVRPC - Orthophotography
3. Delaware County Planning Department - Radnor Trail

Prepared by
Delaware County
Planning Department
March 2005



Map E - 2

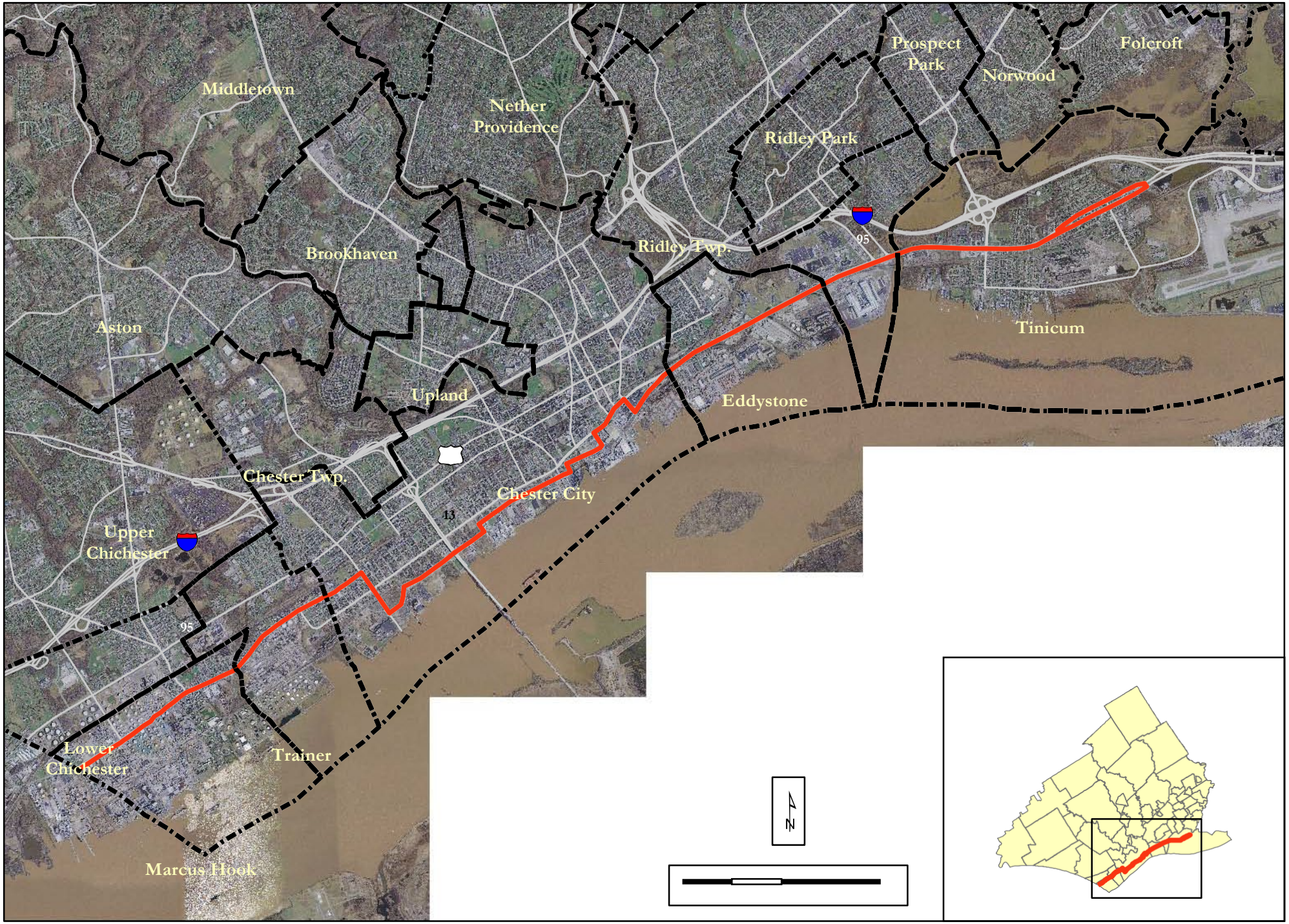
Chester Creek Branch Right-of-way

Page E - 5

NOTES:
1. USGS - County and Municipal Boundaries
2. DVRPC - Orthophotography
3. Delaware County Planning Department - Chester Creek Trail

Disclaimer
This map is for analytical purposes only. The reliability of this map depends on the accuracy of the underlying data sources which have not been verified.

Prepared by
Delaware County
Planning Department
March 2005


Middletown
Nether Providence
Prospect Park
Norwood
Folcroft
Ridley Park
Brookhaven
Ridley Twp.
95
Aston
Tinicum
Upland
Eddystone
Chester Twp.
Chester City
13
Upper Chichester
95
Lower Chichester
Trainer
Marcus Hook
N
Feet

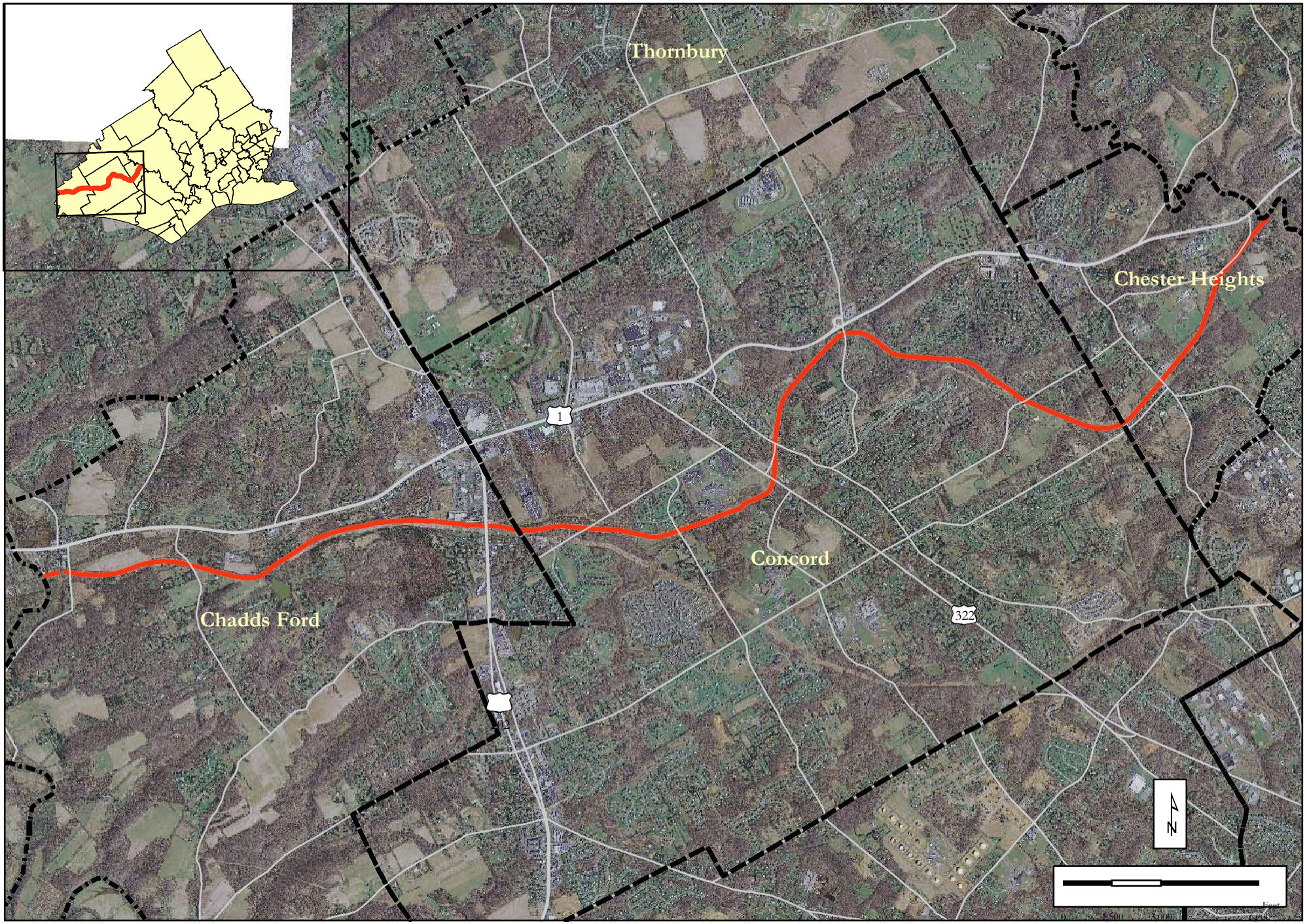
Map E - 3

Proposed East Coast Greenway Alignment

Page E - 7

NOTES:
1. USGS - County and Municipal Boundaries
2. DVRPC - Orthophotography
3. Delaware County Planning Department - East Coast Greenway

Prepared by
Delaware County
Planning Department
March 2005



Map E - 4

Octoraro Branch Right-of-way

Page E - 9

NOTES:
1. USGS - County and Municipal Boundaries
2. DVRPC - Orthophotography
3. Delaware County Planning Department - Octoraro Trail

Disclaimer
This map is for analytical purposes only. The reliability of this map depends on the accuracy of the underlying data sources which have not

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Planning Department
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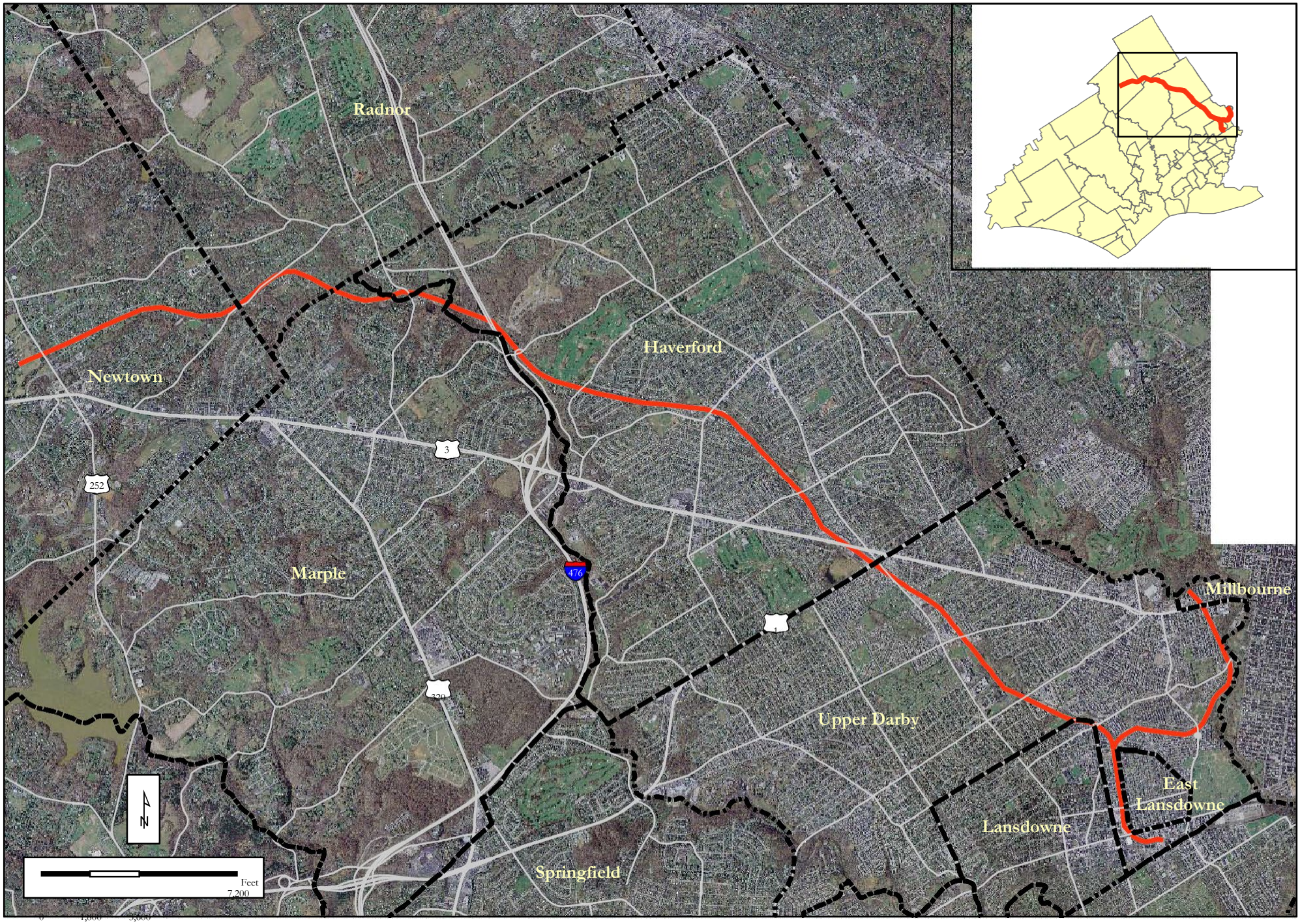
Radnor
Haverford
Newtown
Marple
Millbourne
Upper Darby
East Lansdowne
Lansdowne
Springfield
3
252
476
1
320
N
Feet
7,200
0
1,800
3,600

Map E - 5

Newtown Square Branch Right-of-way

Page E - 11

NOTES:
1. USGS - County and Municipal Boundaries
2. DVRPC - Orthophotography
3. Delaware County Planning Department - Newtown Square Trail

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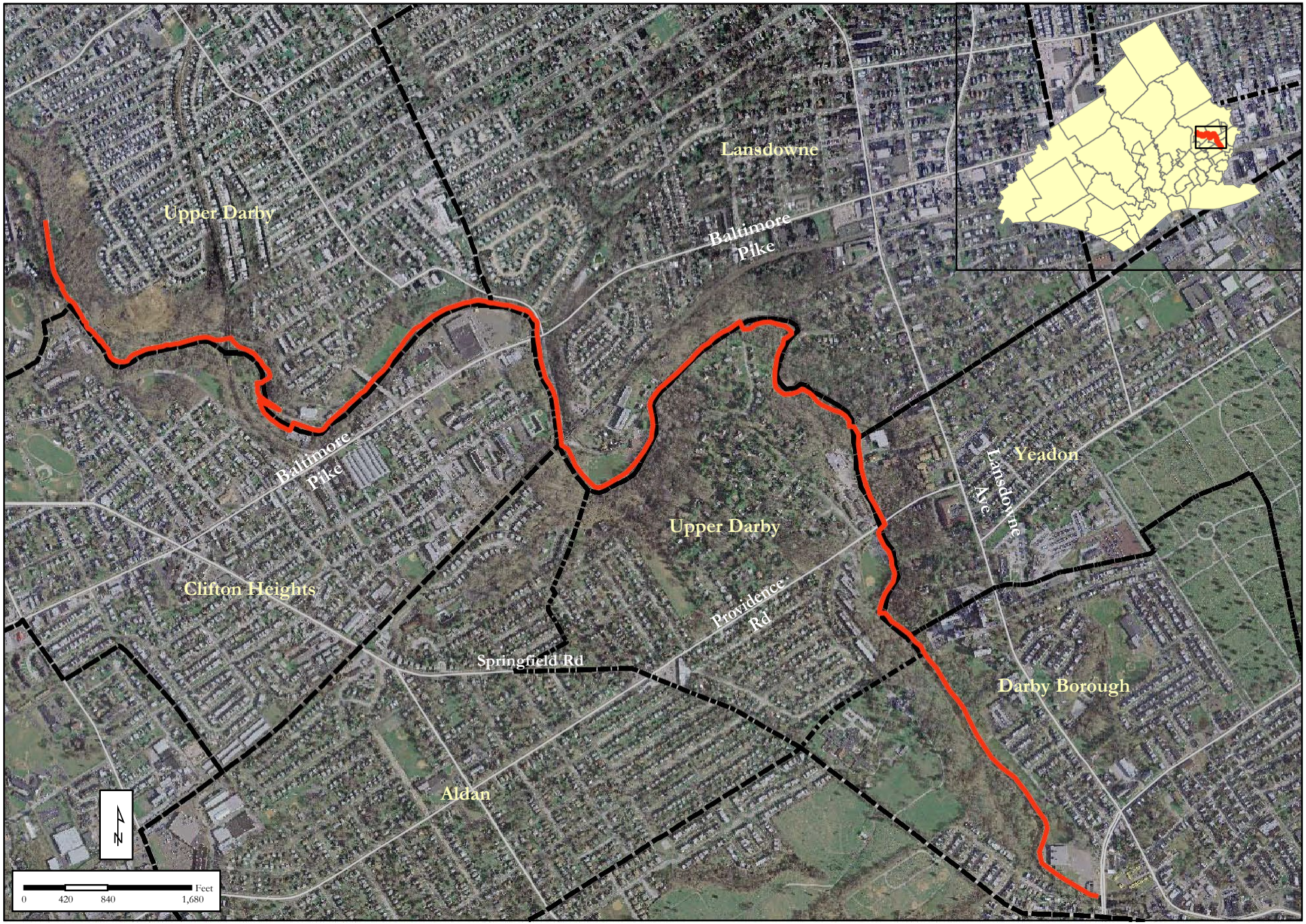
Planning Department
March 2005



Map E - 6

Darby Creek Stream Valley Park

Page E - 13

NOTES:
1. USGS - County and Municipal Boundaries
2. DVRPC - Orthophotography
3. Delaware County Planning Department - Darby Creek Stream Valley Park

Prepared by
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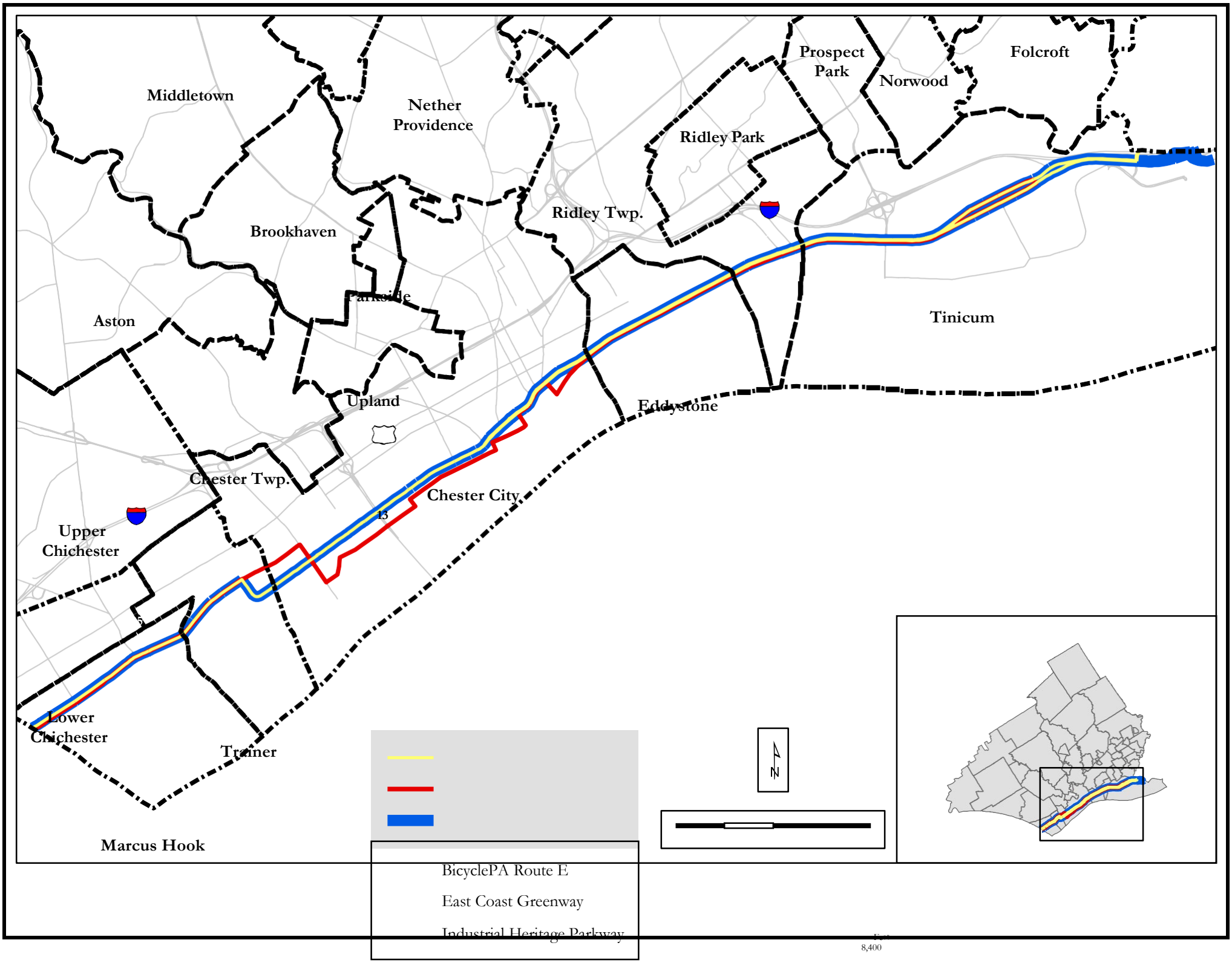
Planning Department
March 2005


Middletown
Nether Providence
Prospect Park
Norwood
Folcroft
Ridley Park
Ridley Twp.
Brookhaven
Aston
Parkside
Tinicum
Upland
Eddystone
Chester Twp.
Chester City
Upper Chichester
Lower Chichester
Trainer
Marcus Hook
BicyclePA Route E
East Coast Greenway
Industrial Heritage Parkway
N
8,400

0 2,100 4,200

Map E - 7

BicyclePA Route E,
Proposed East Coast Greenway Alignment,
Industrial Heritage Parkway

Page E - 15

NOTES:
1. USGS - County and Municipal Boundaries
2. DVRPC - Orthophotography
3. Delaware County Planning Department - Bike Routes

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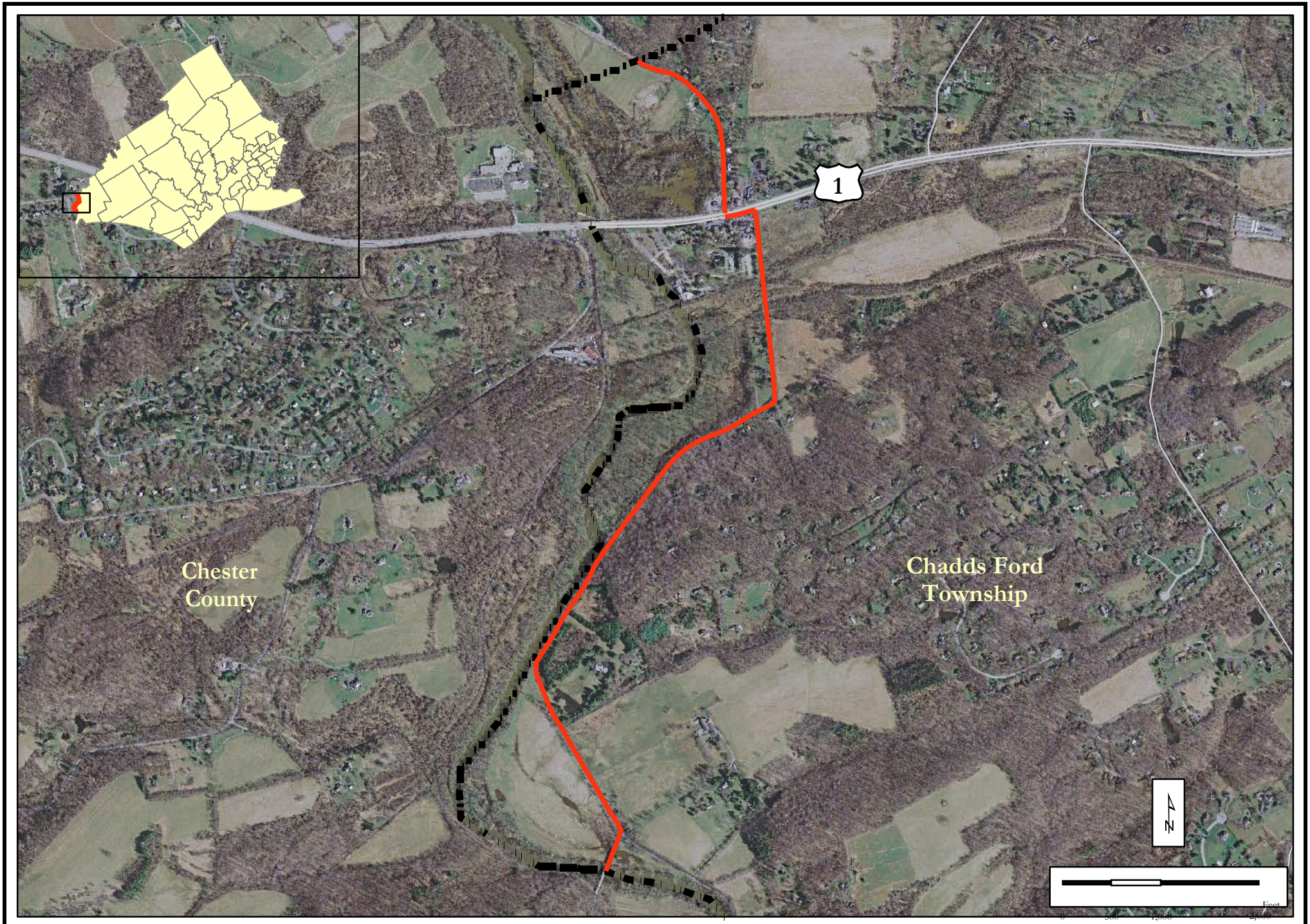
Planning Department
March 2005


1
Chester
County
Chadds Ford
Township
N
Feet

Map E - 8

BicyclePA Route L

Page E - 17

NOTES:
1. USGS - County and Municipal Boundaries
2. DVRPC - Orthophotography
3. Delaware County Planning Department - BicyclePA Route L

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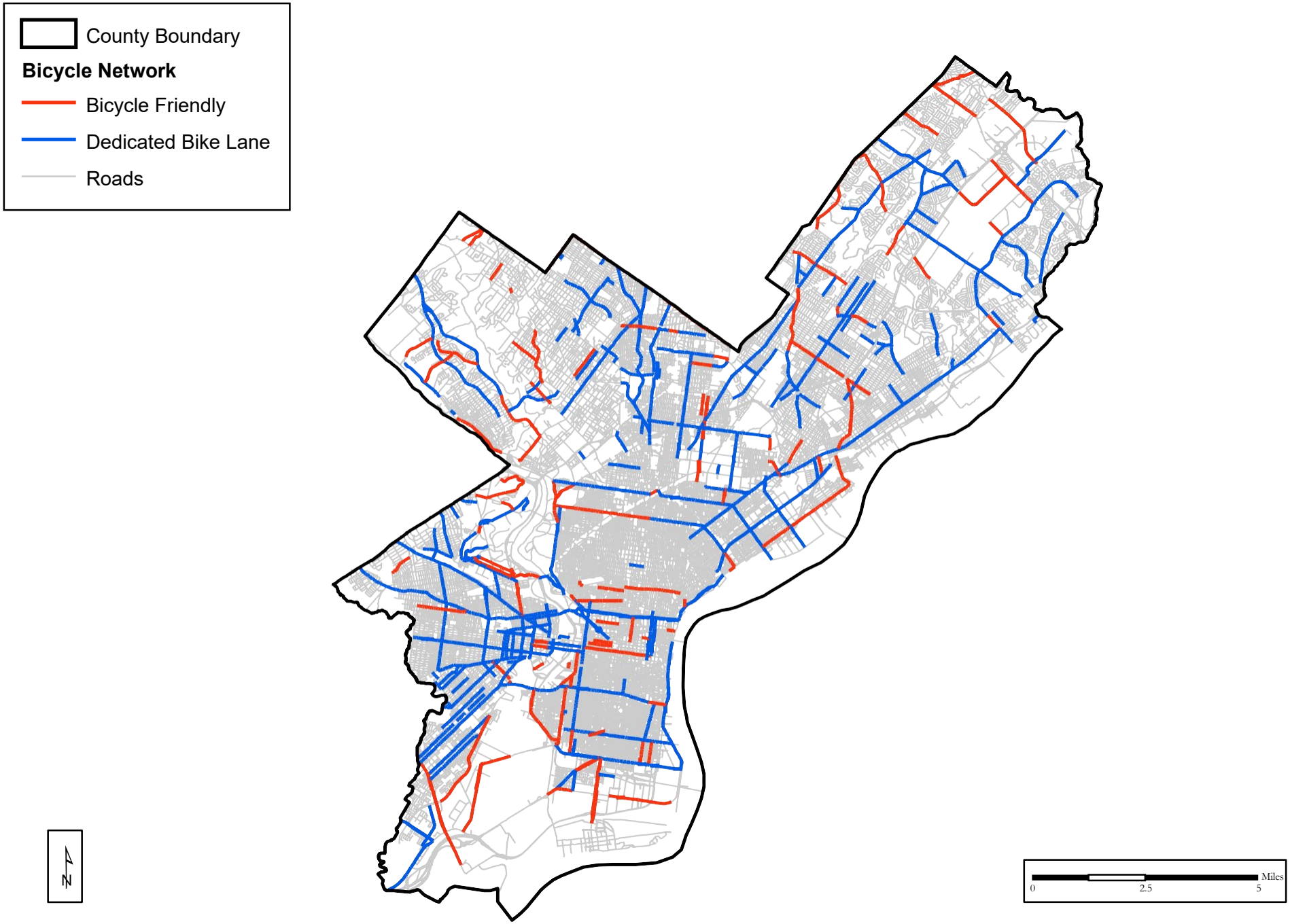
Planning Department
March 2005



Map E - 9

Philadelphia On-road Bike Network

NOTES:
1. USGS - County Boundary
2. Philadelphia Streets Department - Bikeway Network and Roads

Prepared by
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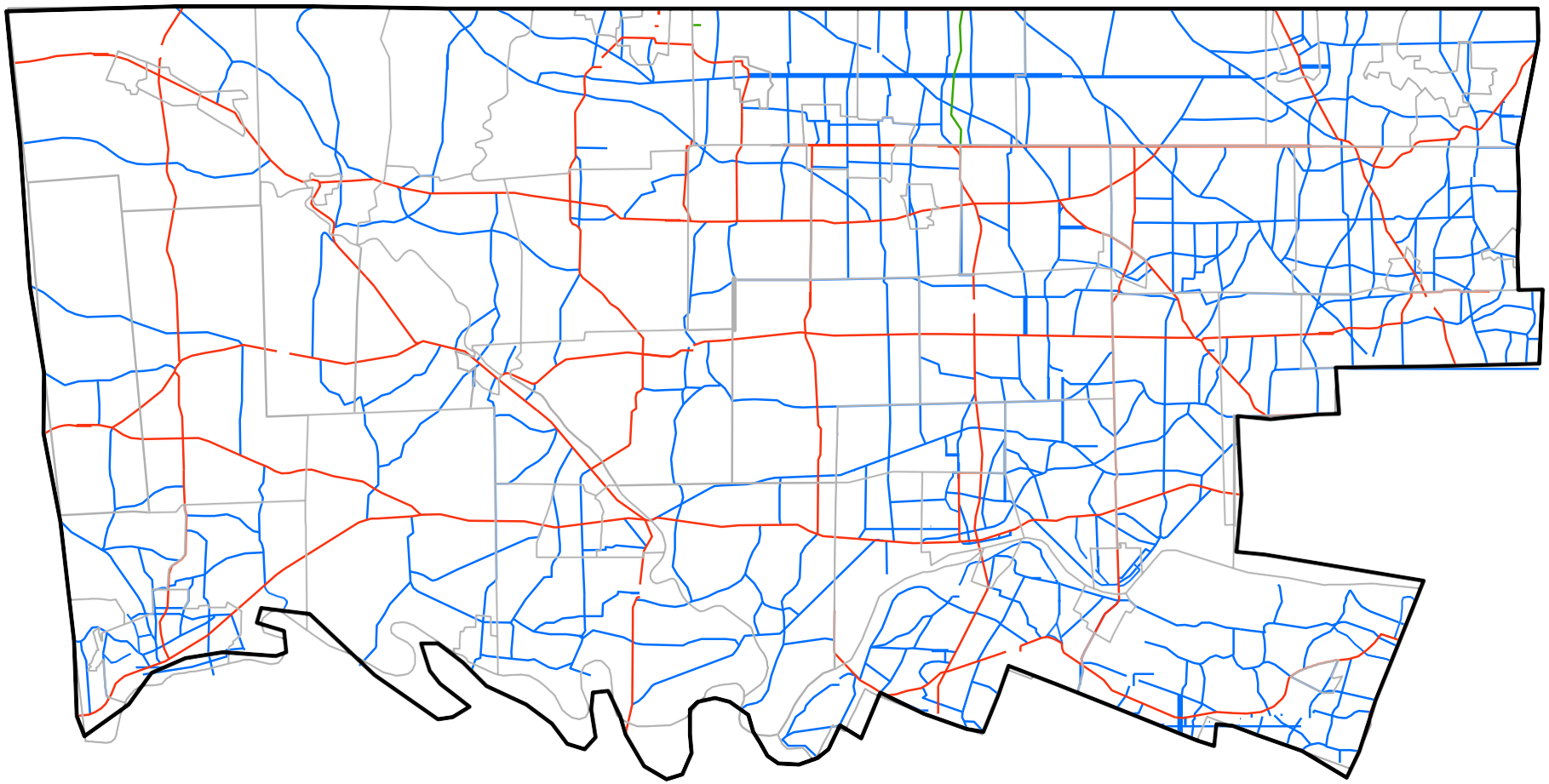
Planning Department
March 2005



N

Miles
0 1 2 4

Primary Bike Network
Primary Bike Network Not Built
Secondary Bike Network
Municipal Boundary

Map E - 10

Montgomery County Recommended Bicycle Routes

Page E - 21

NOTES:
1. USGS - County Boundary
2. Montgomery County Planning Department - Bicycle Network

Disclaimer
This map is for analytical purposes only. The reliability of this map depends on the accuracy of the underlying data sources which have not been verified.

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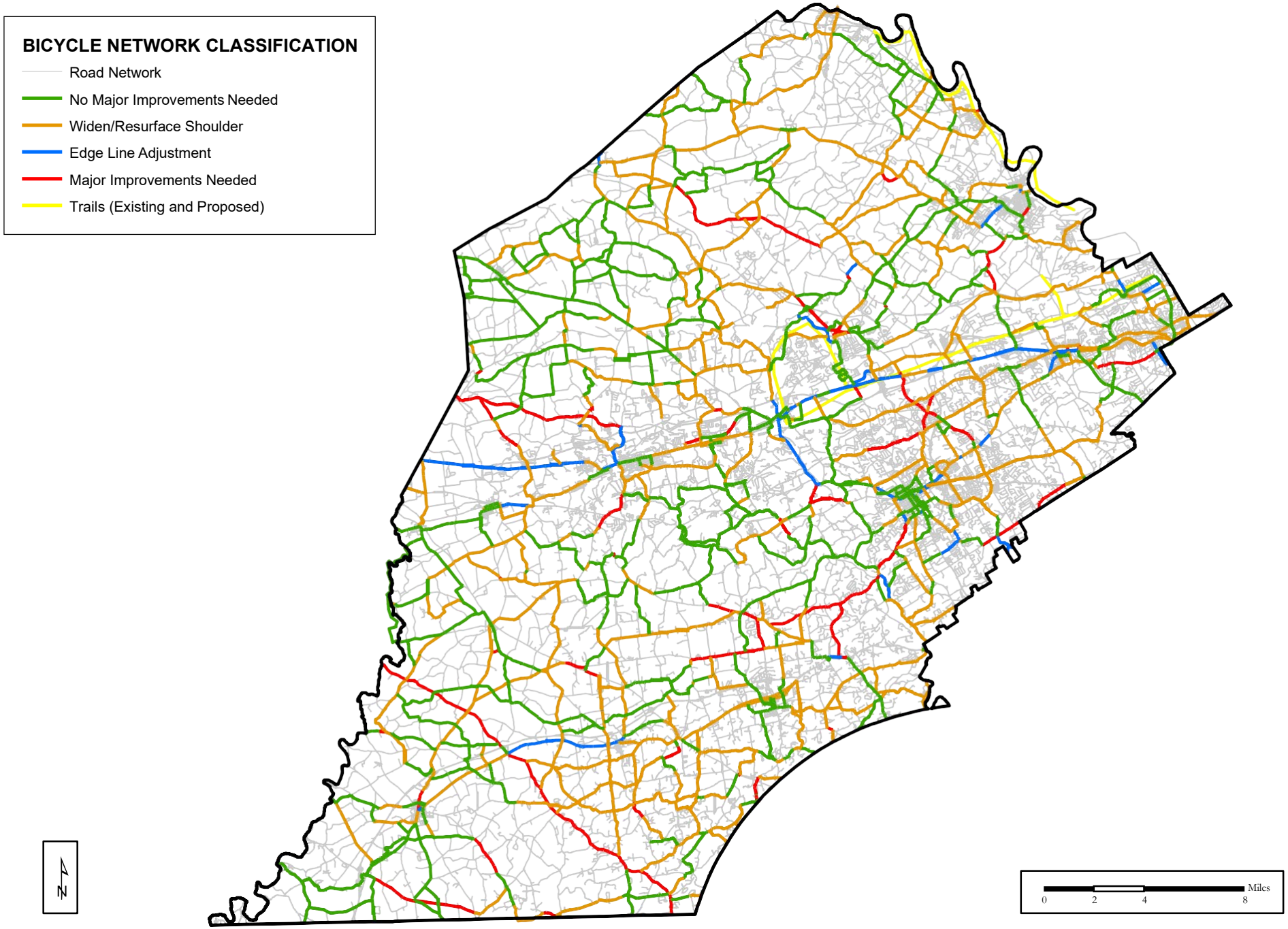
Planning Department
March 2005



Map E - 11

Chester County Recommended Bikeway Network

Page E - 23

NOTES:
1. USGS - County Boundary
2. Chester County Planning Commission - Bikeway Network

Disclaimer
This map is for analytical purposes only. The reliability of this map depends on the accuracy of the underlying data sources which have not been verified.

Prepared by
Delaware County
Planning Department
March 2005

Appendix F

Bicycle Funding Sources

BIKES BELONG COALITION

Program General Grants

Types of Assistance

Bikes Belong helps fund bicycle facilities and paths that encourage facility, education, and capacity building. Grants of $10,000 or less are issued.

Who is Eligible

Bikes Belong will accept applications from nonprofit organizations and from public agencies and departments at the national, state, regional, and local levels and will fund organizations whose mission is expressly related to bicycle advocacy.

Program Use

All proposals must:

- address the first four goals of the grants program strategic plan (ridership growth, leveraging funding, building political support, and promoting cycling)
- address the project objectives of the facility, education, or capacity funding categories
- propose a specific program or project whose impact is measurable

Bikes Belong will not fund general operating costs.

Application Procedure

Applications are accepted quarterly in May, August, November, and February with decision notification within two months after submission.

Contact

Grants Administrator
Bikes Belong Coalition
P.O. Box 2359
Boulder, CO 8030
Tel: 303-449-4893
Email: mail@bikesbelong.org
Websites:
https://www.peopleforbikes.org/

COMMUNITY TRANSPORTATION ASSOCIATION OF AMERICA (CTAA)

Program Community Transportation Development Fund (CTDF)

Types of Assistance

Through the CTDF loan program, CTAA is able to offer very low-interest loans (all rates and terms are negotiable) of up to $150,000 per recipient and 75% of the total project cost.

Who is Eligible

Nonprofit transit providers, private transit providers, public agencies/local and state governments, and community or human service organizations. Location or agency's service area must be in rural areas (pop. under 25,000).

Program Use

To purchase vehicles, to provide a local match, to purchase or develop land for transit facilities, to provide seed money or gap operating funds, transit facility construction, and other transportation or rural economic development projects. Could be used to improve bikes on transit by helping pay for bike racks, bike lockers, or bike parking.

Application Procedure

A preliminary loan application can be accessed on the CTAA website web1.ctaa.org/webmodules/webarticles/articlefiles/LOANAPPL3.doc.

Upon application receipt, the contact person specified in the application will be notified for a further exchange of information. Application submission is considered an indication of interest, not a commitment.

Contact Patrick Kellogg, c/o CDTLS (Community Development Transportation Lending Services)
1341 G. Street, NW, 10th floor
Washington, D. C. 2005-3116
Tel: (202) 415-9682
Fax: (202) 737-9197
Email: kellogg@ctaa.org
Website: www.ctaa.org

DELAWARE COUNTY
OFFICE OF HOUSING AND COMMUNITY DEVELOPMENT (OHCD)

Program Community Development Block Grant (CDBG) Program

Type of Assistance

Delaware County has been entitled to receive an annual grant from the Community Development Block Grant (CDBG) Program, operated by the federal Department of Housing and Urban Development (HUD), since the program began in 1974. This grant is disbursed through an application process to eligible entities in the County who meet the program's goal of developing viable urban communities by providing decent housing and a suitable living environment and by expanding economic opportunities. Seventy percent of each block grant award must be used for activities that benefit low- and moderate-income persons. The County OHCD is responsible for administering this program, as well as other federal housing and community development programs.

Who is Eligible

46 municipal governments of Delaware County and private nonprofit organizations may participate in the program (*Chester City, Haverford, and Upper Darby Townships do not participate because they receive direct entitlements from HUD). An activity must be eligible as authorized by program regulations and meet a national objective of the program.

Program Use

There are a multitude of potentially eligible activities as well as specific ineligible activities. Transportation related projects could include:

- creating handicap access to public buildings, streets, curbs, and sidewalks
- acquisition/construction/reconstruction/ rehabilitation/installation of streets, sidewalks, and parking lots
- acquisition of real property for use as a pedestrian or biking right-of-way
- transportation planning activities

Application Procedure

Annual: Application packets are distributed in October and due to OHCD in January. Awards are announced in April, and grants are distributed in July for the current fiscal year (July to June).

Contact E. Jennifer Wesson
Community Development Coordinator
Delaware County Office of Housing and Community Development
600 N. Jackson Street, Room 101
Media, PA 19063-2561
Tel: (610) 891-5131

Fax: (610) 566-0532
Email: wessonj@co.delaware.pa.us
Website: www.co.delaware.pa.us/hcd/

* The Chester City Economic Development Authority (CEDA) is responsible for implementing Chester City's CDBG, HOME, and ESG Programs.

  Haverford Township implements the CDBG and state funded HOME Programs.

  The Upper Darby Office of Community Development serves as the Township's housing/community development agency and is responsible for implementing the CDBG, HOME, and ESG Programs.

DELAWARE COUNTY OFFICE OF HOUSING AND COMMUNITY DEVELOPMENT (OHCD)

Program Revitalization Program

Type of Assistance

The Revitalization Program provides grant money for revitalization-oriented projects identified in the five regional Renaissance Action Plans prepared for the 29 eligible municipalities in the County. Funds are to be used as matching funds to leverage other public or private dollars.

Who is Eligible

The following municipalities: Aldan Borough, Chester City, Chester Township, Clifton Heights Borough, Collingdale Borough, Colwyn Borough, Darby Borough, Darby Township, East Lansdowne Borough, Eddystone Borough, Folcroft Borough, Glenolden Borough, Lansdowne Borough, Lower Chichester Township, Marcus Hook Borough, Millbourne Borough, Morton Borough, Norwood Borough, Parkside Borough, Prospect Park Borough, Ridley Park Borough, Ridley Township, Rutledge Borough, Sharon Hill Borough, Trainer Borough, Tinicum Township, Upland Borough, Upper Darby Township, Yeadon Borough.

Program Use For bicycle-related activities, Revitalization Program funds could be used for trail or greenway improvement and creation projects and to provide match money for implementation of larger projects like the East Coast Greenway and Industrial Heritage Parkway that will run through the southern portion of Delaware County.

Application Procedure Application packets are distributed in October and due to OHCD in March. Awards are announced in May, and grants are distributed in July for the current fiscal year (July to June).

Contact

E. Jennifer Wesson
Community Development Coordinator
Delaware County Office of Housing and Community Development
600 N. Jackson Street, Room 101
Media, PA 19063-2561
Tel: (610) 891-5131
Fax: (610) 566-0532
Email: wessonj@co.delaware.pa.us
Website: www.co.delaware.pa.us/hcd/

DELAWARE COUNTY OFFICE OF HOUSING AND COMMUNITY DEVELOPMENT (OHCD)

Program Urban Open Space Acquisition and Recreation Fund (UOSARF)

Type of Assistance

The UOSARF, a component of the Delaware County R Revitalization Program, provides grant money for open space and recreational projects that support the goals of the five regional Renaissance Action Plans prepared for the 29 eligible municipalities in the County. Funds are to be used as matching funds to leverage other public or private dollars.

Who is Eligible

The following municipalities: Aldan Borough, Chester City, Chester Township, Clifton Heights Borough, Collingdale Borough, Colwyn Borough, Darby Borough, Darby Township, East Lansdowne Borough, Eddystone Borough, Folcroft Borough, Glenolden Borough, Lansdowne Borough, Lower Chichester Township, Marcus Hook Borough, Millbourne Borough, Morton Borough, Norwood Borough, Parkside Borough, Prospect Park Borough, Ridley Park Borough, Ridley Township, Rutledge Borough, Sharon Hill Borough, Trainer Borough, Tinicum Township, Upland Borough, Upper Darby Township, Yeadon Borough.

Program Use

Activities eligible for funding include acquisition and improvement of land for open space and/or recreational purposes. The County encourages municipalities to partner with local conservation and open space groups when identifying potential projects and developing an application. This fund can be used for creating shared use paths.

Application Procedure

Applications are accepted on a rolling basis. Prior to submitting a UOSARF application package, applicants must schedule a meeting with County OHCD staff to review the potential project.

Contact

E. Jennifer Wesson
Community Development Coordinator
Delaware County Office of Housing and Community Development
600 N. Jackson Street, Room 101
Media, PA 19063-2561
Tel: (610) 891-5131
Fax: (610) 566-0532
Email: wessonj@co.delaware.pa.us
Website: www.co.delaware.pa.us/hcd/

DELAWARE VALLEY REGIONAL PLANNING COMMISSION (DVRPC)

Program Transportation Improvement Program (TIP)

Types of Assistance

The TIP, required under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), is the agreed upon list of specific priority transportation improvement projects in the region for which federal funds are anticipated, along with nonfederally funded projects that are regionally significant. The list is multi-modal; in addition to the more traditional highway and public transit projects, it includes bicycle, pedestrian, bridge, rail/highway grade crossing safety, drainage, signals, and freight related projects as well.

A project's presence in the TIP represents a critical step in the authorization of funding but does not, however, represent a commitment, obligation, or a grant of funds.

Who is Eligible

Approximately 20 agencies directly participate in the TIP development process, including member governments, operating agencies, and state and federal agencies. Municipalities within the region participate through their respective county governments. Other groups, the business community, and the general public become involved through the DVRPC public participation process in addition to their involvement at the municipal and county levels. The multiplicity of jurisdictions and agencies in the region necessitates a high degree of coordination during the TIP development process by DVRPC.

Program Use

The TIP lists all transportation projects for which federal funds are anticipated, along with nonfederally funded projects that are regionally significant.

The major funding source for the projects in the TIP is the federal SAFETEA-LU (reauthorized every six years) and administered through the U.S. Department of Transportation's Federal Highway Administration and Federal Transit Administration. In addition, funds are made available by Pennsylvania to match federal funding (in varying ratios) and to provide 100% financing for selected projects. Local counties, municipalities, and private developers or toll authorities, as well as transit operators, may participate in providing matching funds. New funding sources and innovative funding techniques are constantly being sought.

Application Procedure

Contact DCPD for more information. The TIP process is also explained with contact information at www.dvrpc.org/Products/17065/.

Contact

Thomas Shaffer
Manager, Transportation Planning
Delaware County Planning Department
Court House and Government Center
201 W. Front Street
Media, PA 19063-2708
Tel: (610) 891-5217
Fax: (610) 891-5203
Email:
Planning_Department@co.delaware.pa.us
Website:
www.co.delaware.pa.us/planning/

PENNSYLVANIA ADVOCATES FOR NUTRITION AND ACTIVITY (PANA)

Program nrgBalance Zone Program

Types of Assistance

The nrgBalance Zone Program, formerly the Keystone Healthy Zone (KHZ) Schools Campaign, is an annual program that recognizes and rewards schools for making a commitment to improve nutrition and physical activity. The program provides resources, templates, training, and technical assistance for schools to make healthy changes and meet the federal requirements for school wellness policies.

Who is Eligible

Schools and recreation centers.

Program Use

Bicycle related programs that can be funded include Safe Routes to School and bicycle safety education programs. The program also provides information about how to create a walking and biking school bus program.

Application Procedure

Annual submission through the PANA website.

Contact Tel: (717) 531-1440 ext. 2
Website: http://www.nrgbalance.org

PENNSYLVANIA DEPARTMENT OF COMMUNITY AND ECONOMIC DEVELOPMENT (DCED)

Program Community Revitalization Program

Types of Assistance

The Community Revitalization Program provides grant funds to support local initiatives that promote community stabilization and assist them in achieving and maintaining social and economic diversity that ensures a productive tax base and a good quality of life. Grants vary from $5,000 to $25,000.

Who is Eligible

Local governments, municipal and redevelopment authorities and agencies, industrial development agencies, and nonprofit corporations incorporated under the laws of the Commonwealth.

Program Use

Construction or rehabilitation of infrastructure, building rehabilitation, acquisition and demolition of structures, revitalization or construction of community facilities, purchase or upgrade of machinery and equipment, planning of community assets, public safety, crime prevention, recreation, bicycle routes, training, and acquisition of land, buildings, and rights-of-way.

Application Procedure

This program is applied for through DCED's Single Application for Assistance. This application is available through its website at www.inventpa.com or through the contact below.

Contact

Department of Community and Economic Development
Customer Service Center
400 North Street, 4th Floor
Commonwealth Keystone Building
Harrisburg, PA 17120-0225
Tel: 1-800-379-7448
Email: ra-dcedcs@state.pa.us
Website: https://dced.pa.gov/program/

PENNSYLVANIA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (DCNR)

Program Community Grants (through the Community Conservation Partnership Program (C2P2))

Types of Assistance

Community Grants is one funding program of C2P2, which includes funds that were formerly separate application procedures, including the Pennsylvania Recreational Trails Program, Growing Greener, the ATV/Snow-mobile Act, the Keystone Grant Program, and the Land and Water Conservation Fund. Federal funding for the program is through the FHWA and SAFETEA-LU.

Grants for Acquisition and Development require at least a 50% match. Small Community Development Projects have a limit of $40,000, where the initial $20,000 or less in grant funding must be used to purchase materials only and for approved professional design fees, while additional grant funds (up to $20,000) may be provided for matching the municipal applicant's local cash/non- cash contribution, covering all other eligible costs. Grants for Planning and Technical Assistance generally have a 50% match limit (details below).

Who is Eligible

Municipal governments may apply for funding from this program.

Program Use

Eligible Acquisition and Development projects include the acquisition of land for park, recreation, and conservation purposes, the rehabilitation of existing parks, indoor and outdoor recreational facilities, and the development of new park and recreational areas. Small Community Development projects must be in municipalities of less than 5,000 people and be used for rehabilitation and development of minor indoor and basic outdoor park, recreation, and conservation areas and facilities, as detailed above.

Planning and Technical Assistance grants may be used in the following manner:

- Circuit Riders – a four-year program to hire a full-time recreation and/or park director to share services through an intergovernmental cooperative effort by two or more municipalities. 100% funding the first year, 75% the second, 50% the third, and 25% the fourth.
- Comprehensive Recreation, Park, and Open Space Plans – develop a comprehensive long-range planning document that provides strategies to address a municipality's recreational, park, and open space needs.
- Conservation/Sound Land Use – create studies that encourage conservation planning and sound land use as either a stand-alone document or part of another plan.

- Feasibility Studies – to determine the feasibility of acquiring, developing, or rehabilitating swimming pools, ice rinks, sports complexes, recreation centers, etc.
- Greenway Plans – to explore establishing, developing, and managing linear corridors of open space along streams, shorelines, wetlands, canals, ridge tops, etc. for creation of recreational trails and bikeways, park connectors, and environmental protection.
- Master Site Plans – to design the proposed development of a neighborhood, community, or regional park. Site control is required.
- County Natural Areas Inventories – to inventory (by a county/multi-county area) important natural areas, habitats for species of special concern, significant natural plant communities, and areas important for open space, recreation, and wildlife habitat.
- Peer-to-peer Technical Assistance – up to 90% of eligible costs ($7,500 maximum) to study problem-specific issues dealing with the administration of park and recreational facilities and/or services.

Application Procedure

Contact should be made as early as possible with Recreation and Park Advisors to help guide municipalities through the application process. There is a limit of one application per project type per funding period. Applications are due each fall.

Contact

Pennsylvania Department of Conservation and Natural Resources
Southeast Regional Office
908 State Office Building
1400 Spring Garden Street
Philadelphia, PA 19130-4088
Website: www.dcnr.state.pa.us/brc/grants/

Carolyn Wallis
Recreation and Park Advisors
Tel: (215) 560-1183
Fax: (215) 560-6722
Email: cwallis@state.pa.us

PENNSYLVANIA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (DCNR)

Program Heritage Parks Grants (through the C2P2)

Types of Assistance

Heritage Parks Grants are one funding program of the C2P2, which includes funds that were formerly separate application procedures, including the Pennsylvania Recreational Trails Program, Growing Greener, the ATV/Snowmobile Act, the Keystone Grant Program, and the Land and Water Conservation Fund. Federal funding for the program is through the FHWA and SAFETEA-LU.

These grants require a 25-50% local match.

Who is Eligible

Local governments, nonprofit organizations, or federally designated commissions acting on behalf of the municipalities in a heritage park area may apply for funding from this program.

Program Use

These grants should promote public-private partnerships to preserve and enhance natural, cultural, historic, and recreational resources to stimulate economic development through heritage tourism. This includes bicycle tourism. Eligible projects include feasibility studies, development of management action plans for heritage park areas, specialized studies, implementation projects, and hiring state heritage park managers.

Application Procedure

Contact should be made as early as possible with Recreation and Park Advisors to help guide interested agencies through the application process. Applications are due each fall.

Contact

Pennsylvania Department of Conservation and Natural Resources
Southeast Regional Office
908 State Office Building
1400 Spring Garden Street
Philadelphia, PA 19130-4088
Website: www.dcnr.state.pa.us/brc/grants/

Carolyn Wallis
Recreation and Park Advisors
Tel: (215) 560-1183
Fax: (215) 560-6722
Email: cwallis@state.pa.us

PENNSYLVANIA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (DCNR)

Program Pennsylvania Recreational Trails Program Grants (through the C2P2)

Types of Assistance

These grants are one funding program of the C2P2, which includes funds that were formerly separate application procedures, including the Pennsylvania Recreational Trails Program, Growing Greener, the ATV/Snow-mobile Act, the Keystone Grant Program, and the Land and Water Conservation Fund. Federal funding for the program is through the FHWA and SAFETEA-LU.

This grant provides 80% of the project cost, to a maximum of $100,000, while applicants provide 20% of the cost for eligible activities as described below. Acquisition projects require a 50/50 match. "Soft match" (credit for donation of funds, materials, services, or new right-of-way) is permitted from any project sponsor, whether a private organization or a public agency.

Who is Eligible

Local governments, federal and state agencies, and appropriate/authorized private organizations are eligible for funding from this program.

Program Use

Grants may be used to develop and maintain recreational trails and trail related facilities for motorized and non-motorized recreational trail use. Eligible project categories include maintenance and restoration of existing recreational trails, development and rehabilitation of trailside and trailhead facilities and trail linkages, purchase and lease of recreational trail construction and maintenance equipment, construction of new recreational trails (with restrictions on new trails on federal land), and acquisition of easements or property for recreational trails or recreational trail corridors.

Application Procedure

Contact should be made as early as possible with Recreation and Park Advisors to help guide interested agencies through the application process. Applications are due yearly in the fall.

Contact

Pennsylvania Department of Conservation and Natural Resources
Southeast Regional Office
908 State Office Building
1400 Spring Garden Street
Philadelphia, PA 19130-4088
Website: www.dcnr.state.pa.us/brc/grants/

Carolyn Wallis
Recreation and Park Advisors
Tel: (215) 560-1183
Fax: (215) 560-6722
Email: cwallis@state.pa.us

PENNSYLVANIA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (DCNR)

Program Rails-to-Trails Grants (through the C2P2)

Types of Assistance

Rails-to-Trails Grants are one funding program of the C2P2, which includes funds that were formerly separate application procedures, including the Pennsylvania Recreational Trails Program, Growing Greener, the ATV/Snowmobile Act, the Keystone Grant Program, and the Land and Water Conservation Fund. Federal funding for the program is through the FHWA and SAFETEA-LU.

This grant provides 50% funding for eligible projects as described below.

Who is Eligible

Municipalities and appropriate organizations may apply for funding from this program.

Program Use

Grants may be used for acquisition, rehabilitation, and development, including:

- Rail-Trail Feasibility Studies to determine feasibility of converting available rights-of-way to a trail. Site control, either through ownership or long- term lease, is not required in order to conduct the study.
- Rail-Trail Master Plans to develop a design detailing the proposed development of a trail. Site control is required.
- Rail-Trail Special Purpose Studies to develop a detailed study on a particular issue or structure (culvert, bridge) that impacts the conversion of a rail corridor to a trail. Site control is required.

Application Procedure

Contact should be made as early as possible with Recreation and Park Advisors to help guide interested agencies through the application process. There is a limit of one application per project type per funding period. Applications are due yearly in the fall.

Contact

Pennsylvania Department of Conservation and Natural Resources
Southeast Regional Office
908 State Office Building
1400 Spring Garden Street
Philadelphia, PA 19130-4088
Website: www.dcnr.state.pa.us/brc/grants/

Carolyn Wallis
Recreation and Park Advisors
Tel: (215) 560-1183
Fax: (215) 560-6722
Email: cwallis@state.pa.us

PENNSYLVANIA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (DCNR)

Program River Conservation Grants (through the C2P2)

Types of Assistance

River Conservation Grants are one funding program of the C2P2, which includes funds that were formerly separate application procedures, including the Pennsylvania Recreational Trails Program, Growing Greener, the ATV/Snowmobile Act, the Keystone Grant Program, and the Land and Water Conservation Fund. Federal funding for the program is through the FHWA and SAFETEA-LU.

These grants require a minimum 50% match for eligible activities.

Who is Eligible

Local governments, counties, municipal and intermunicipal authorities, and river support groups (nonprofits designated to act on behalf of interested municipalities) may apply for funding from this program.

Program Use

Grants for planning may be used to identify significant natural and cultural resources, threats, concerns, and special opportunities and to develop river conservation plans.

Grants for implementation are available to carry out projects or activities defined in an approved river conservation plan, including shared use paths, that is on the Pennsylvania Rivers Conservation Registry. Projects may include investigation into river access, water quality monitoring, and preparation of ordinances and zoning documents.

Application Procedure

Contact should be made as early as possible with Recreation and Park Advisors to help guide interested agencies through the application process. There is a limit of one application per project type per funding period. Applications are due yearly in the fall.

Contact

Pennsylvania Department of Conservation and Natural Resources
Southeast Regional Office
908 State Office Building
1400 Spring Garden Street
Philadelphia, PA 19130-4088
Website: www.dcnr.state.pa.us/brc/grants/

Carolyn Wallis
Recreation and Park Advisors
Tel: (215) 560-1183
Fax: (215) 560-6722
Email: cwallis@state.pa.us

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION (PENNDOT)

Program Congestion Mitigation and Air Quality Improvement Program (CMAQ)

Types of Assistance

The CMAQ Program is a federal program that was established in 1991 by ISTEA and is continued under the current legislation, SAFETEA-LU. CMAQ funds have been allocated to the Philadelphia metropolitan area for projects that contribute to the attainment of the Clean Air Act standards by reducing emissions from highway sources, particularly ozone, carbon monoxide (CO), and small particulate matter (PM-10).

Who is Eligible

Any federal or state agency, county or municipal government, or nonprofit organization.

Program Use

Eligible projects include those that will reduce transportation-related emissions, such as transit improvements, travel demand management strategies, traffic flow improvements, public fleet conversions to cleaner fuels, and bicycle and pedestrian improvements.

Application Procedure

CMAQ applications/funds are available every two years. Contact DVRPC for additional information on the application process.

Contact

Elizabeth Schoonmaker
Delaware Valley Regional Planning Commission
190 N. Independence Mall West, 8th Floor
Philadelphia, PA 19106-1572
Tel: (215) 238-2938
Fax: (215) 592-9125
Email: eschoonmaker@dvrpc.org
Website: www.dvrpc.org/CMAQ/

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION (PENNDOT)

Program Pennsylvania Infrastructure Bank

Types of Assistance

The Pennsylvania Infrastructure Bank is a PennDOT operated program of low-interest loans to assist in the funding of transportation improvements around the Commonwealth. The Bank provides a low-cost way to fund projects either in whole or in part. The Bank can provide the money to accelerate a construction schedule or to complete a funding package.

Who is Eligible

Municipalities, counties, and state government entities, public authorities, regional councils, and private groups making public improvements all may apply for financing to the Pennsylvania Infrastructure Bank.

Program Use

Most capital projects are eligible. They include new construction of, and improvements to, highways and bridges, transit and rail passenger facilities, and other transportation infrastructure. Construction projects receive the highest priority for funding.

Application Procedure

Submit a letter of interest to PennDOT outlining the project. If the project meets program criteria, an application for funding is provided and completed.

Contact

Hugh J. McGowan, PIB Manager
Pennsylvania Department of Transportation
Center for Program Development and Management
P.O. Box 3365
Harrisburg, Pennsylvania 17105-3365
Tel: (717) 787-5798
Fax: (717) 787-5247
E-mail: hmcgowan@state.pa.us
Website:
https://www.penndot.gov/ProjectAndPrograms/Planning/Pages/PA-Infrastructure-Bank.aspx

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION (PENNDOT)

Program Transportation Enhancement (TE) Program

Types of Assistance

Transportation enhancements are transportation-related activities that are designed to strengthen the cultural, aesthetic, and environmental aspects of the nation's intermodal transportation system. The transportation enhancements program provides for the implementation of a variety of nontraditional projects, with examples ranging from the restoration of historic transportation facilities, to bike and pedestrian facilities, education, and safety, to landscaping and scenic beautification, and to the mitigation of water pollution from highway runoff. Average funding amount is $500,000.

Who is Eligible

Any federal or state agency, county or municipal government, or nonprofit organization.

Program Use

Transportation enhancements are twelve different community focused activities defined in SAFETEA-LU. The twelve activities are: Pedestrian and Bicycle Facilities; Pedestrian and Bicycle Safety and Education Activities; Acquisition of Scenic or Historic Easements and Sites; Scenic or Historic Highway Programs, including Tourist and Welcome Centers; Landscaping and Scenic Beautification; Historic Preservation; Rehabilitation and Operation of Historic Transportation Buildings, Structures, or Facilities; Preservation of Abandoned Railway Corridors; Control and Removal of Outdoor Advertising; Archaeological Planning and Research; Mitigation of Highway Runoff and Provision of Wildlife Connectivity; and Establishment of Transportation Museums. The basic federal eligibility requirements for TE projects are that they be one of the 12 defined activities and be related to surface transportation.

Application Procedure

Applications are due in October every two years. More information and the application are available at https://www.dvrpc.org/TE/pa.htm.

Contact

Ryan Gallagher
Delaware Valley Regional Planning Commission
190 N. Independence Mall West, 8th Floor
Philadelphia, PA 19106-1572
Tel: (215) 238-2881
Fax: (215) 592-9125
Email: rgallagher@dvrpc.org
Website: www.dvrpc.org or www.enhancements.org

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION (PENNDOT)

Program Safe Routes to School

Types of Assistance

This program is designed to work with both school districts and pedestrian and bicycle safety advocates to make physical improvements that promote safe walking and biking passages to our schools. Collectively, these efforts would save on school busing costs and promote a healthy lifestyle for our children. In addition, some funding may be used for bicycle and pedestrian education efforts. Examples of these types of improvements include: sidewalks, crosswalks, bike lanes or trails, traffic diversion improvements, curb extensions, traffic circles, and raised median islands.

Who is Eligible

Any federal or state agency, county or municipal government, school district, or nonprofit organization.

Program Use

This program is intended to improve the quality of life in our communities. The Department of Transportation (PennDOT) recognizes the streets that run through the centers of our cities and towns as vital connections. PennDOT can contribute to the safety of our children by making improvements to the routes children take to school. This program has the primary objective of establishing, where feasible, safe walking routes for our children to commute to school and to promote healthy living.

Application Procedure

The application process begins in the summer with local workshops that interested bodies are strongly encouraged to attend. More information is available at http://www.dvrpc.org/SafeRoutes

Contact Ryan Gallagher
Delaware Valley Regional Planning Commission
190 N. Independence Mall West, 8th Floor
Philadelphia, PA 19106-1572
Tel: (215) 238-2881
Fax: (215) 592-9125
Email: rgallagher@dvrpc.org
Website: www.dvrpc.org/SafeRoutes or https://www.mpms.penndot.gov/MPMS/cpdm/

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION (PENNDOT)

Program Hometown Streets

Types of Assistance

The Home Town Streets program will include a variety of streetscape improvements that are vital to reestablishing our downtown and commercial centers. These projects will include activities undertaken within a defined "downtown" area that collectively enhance that environment and promote positive interactions with people in the area. Projects may include sidewalk improvements, planters, benches, street lighting, pedestrian crossings, transit bus shelters, traffic calming, bicycle amenities, kiosks, signage, and other visual elements. This program will not fund costs related to buildings or their façades or personnel costs related to a Main Street manager.

Who is Eligible

Any federal or state agency, county or municipal government, or nonprofit organization.

Program Use

This program is intended to improve the quality of life in our communities. The Department of Transportation (PennDOT) recognizes the streets that run through the centers of our cities and towns as vital connections. Sprucing up these streets will bring people back to our town centers and promote healthy living. This program has the primary objective to encourage the reinvestment in and redevelopment of our downtowns.

Application Procedure

The application process begins in the summer with local workshops that interested bodies are strongly encouraged to attend. More information is available at http://www.dvrpc.org/SafeRoutes

Contact Ryan Gallagher
Delaware Valley Regional Planning Commission
190 N. Independence Mall West, 8th Floor
Philadelphia, PA 19106-1572
Tel: (215) 238-2881
Fax: (215) 592-9125
Email: rgallagher@dvrpc.org
Website: www.dvrpc.org/SafeRoutes

ROBERT WOOD JOHNSON FUND (RWJF)

Program Active Living by Design

Types of Assistance

"Active living" is a way of life that integrates physical activity into daily routines, with the goal of accumulating at least 30 minutes of activity each day. Individuals may do this in a variety of ways, such as walking or bicycling for transportation, exercise, or pleasure; playing in the park; working in the yard; taking the stairs; and using recreational facilities.

Active Living by Design will provide grants of up to $200,000 total over five years to eligible entities. In addition, selected grantees will be eligible to apply for a Special Opportunities Fund award that can be used to provide support for related projects identified by the community.

Who is Eligible

Active Living by Design will accept proposals from local, regional, or state entities that demonstrate their readiness and ability to incorporate the goals of active living into ongoing local efforts. This entity must be a part of an interdisciplinary partnership.

Program Use

Active Living by Design will award grants to 25 interdisciplinary, community-oriented partnerships to develop and implement strategies in their communities that will increase opportunities for and remove barriers to routine physical activity. Proposed projects should address each of four strategies:

1. Create and maintain an interdisciplinary partnership;
2. Increase access to and availability of diverse opportunities for active living;
3. Eliminate design and policy barriers that reduce choices for active living; and
4. Develop communications programs that create awareness and understanding of the benefits of active living.

Application Procedure

The application process has three stages:

1. Submit an application and a brief proposal through the Grantmaking Online system.
2. If invited, submit a full proposal through the Grantmaking Online system.
3. If invited, participate in a final review and selection meeting.

Contact

Sarah L. Strunk, M.H.A.
Deputy Director
Active Living by Design
School of Public Health
University of North Carolina at Chapel Hill
400 Market Street, Suite 205
Chapel Hill, NC 27516
Tel: (919) 843-2523
E-mail: info@activelivingbydesign.org
Website: www.activelivingbydesign.org

ROBERT WOOD JOHNSON FOUNDATION (RWJF)

Application Procedure Contact below

Program General Foundation Grants

Contact Office of Proposal Management
Tel: (609) 627-5988

General Information
P.O. Box 2316
College Road East and Route 1
Princeton, NJ 08543
Tel: (877) 843-7953
Fax: (609) 627-6401
Website: www.rwjf.org

Types of Assistance

RWJF's mission is to improve the health and health care of all Americans. Amounts awarded and time periods vary widely and depend on the scope and significance of the project. Awards have ranged from $1,200 to $50,000,000 with time periods between one month and five years. Most grants run from one to three years, and the average award amount is around $300,000.

Who is Eligible

The foundation gives priority to nonprofit and public agencies but will consider for-profit organizations.

Program Use

The Foundation funds projects of many types, including service demonstrations, the gathering and monitoring of health-related statistics, training and fellowship programs, policy analysis, health services research, technical assistance, public education, communications activities, and evaluations. Grants could include funding for multi-use recreational trails and bicycle and pedestrian encouragement and educational programs.

ROBERT WOOD JOHNSON FOUNDATION (RWJF)

Program Local Initiative Funding Partners (LIFP) Program

Types of Assistance

Under LIFP, a local grantmaker proposes a funding partnership with RWJF on behalf of a local applicant for grant funds to support a project that is consistent with the Foundation's four goals. RWJF is particularly interested in programs that address childhood obesity, racial and ethnic disparities in health and health care, and services for vulnerable populations. LIFP provides grants of $200,000 to $500,000 per project, which must be matched dollar for dollar by local grantmakers such as community foundations, family foundations, corporate grantmakers, and others. The total award is paid out over a three- or four-year period. Grants are awarded through a competitive process that begins when a project is nominated by a local funder according to the guidelines specified in the Call for Proposals. More details on the call for proposal process are available on the website.

Who is Eligible

Public entities or nonprofit organizations that are tax-exempt under Section 501(c)(3) of the Internal Revenue Code and not classified as a private foundation under Section 509(a). Projects must offer community-based services that are new and innovative for that community, if not for the county, state, or nation. Significant program expansions, such as an ambitious expansion into new regions or to new populations, also are acceptable.

Local grantmakers supplying matching funds during the grant period may include corporate or private foundations, local charitable organizations, religious groups, special fund-raising entities, or individual benefactors. In-kind services and funds for capital costs may not be used to match RWJF funds.

Program Use

Projects may focus on assuring that all Americans have access to quality health care at reasonable cost, improving the quality of care and support for people with chronic health conditions, and promoting healthy communities and lifestyles, which could include bicycle and pedestrian education or encouragement. The primary concern is in reducing the personal, social, and economic harm caused by substance abuse – tobacco, alcohol, and illicit drugs.

Application Procedure

Online presentation is available at www.lifp.org. Following submissions of the regulation e-form online, applicants should download copies sent with the other Stage I materials. Early submissions of Stage I materials is encouraged. Notification will be mailed to all applicants who are invited to submit full Stage II proposals.

Contact

Local Initiative Funding Partners Program
c/o Health Research and Educational Trust of New Jersey
760 Alexander Road
Princeton, NJ 08543-0001
Tel: (609) 275-4128
Email: thardgrove@lifp.org
Website: www.lifp.org

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY (SEPTA)

Program SEPTA Capital Budget/Program

Types of Assistance

Capital grants from federal, state, and local governments for public transit facilities and vehicles. Bicycle-related improvements are generally funded through the Federal Transit Administration's Transit Enhancements program. Applications for this program are solicited every two years through the Delaware Valley Regional Planning Commission (DVRPC).

Who is Eligible

Capital grants are generally made directly to SEPTA, acting on behalf of its public sector partners, including counties, municipalities, and the Commonwealth of Pennsylvania.

Program Use

Bicycle-related improvements at transit stations, bus stops, and commuter parking facilities, including exterior bicycle racks on vehicles and at stations.

Application Procedure

Contact DCPD and SEPTA with suggestions for bicycle-related improvements at transit facilities or services.

Contact

Thomas Shaffer
Manager, Transportation Planning
Delaware County Planning Department
Court House and Government Center
201 W. Front Street
Media, PA 19063-2708
Tel: (610) 891-5217
Fax: (610) 891-5203
Email: Planning_Department@co.delaware.pa.us
Website: www.co.delaware.pa.us/planning/

Richard Burnfield
Senior Director of Budgets
Southeastern Pennsylvania Transportation Authority
1234 Market Street, 9th Floor
Philadelphia, PA 19107-3780
Tel: (215) 580-7411
Fax: (215) 580-7231
Email: rburnfield@septa.org
Website: www.septa.org

THE MCLEAN CONTRIBUTIONSHIP

Program General Grants

Types of Assistance

The Trustees focus on capital projects: bricks and mortar, endowment, or will provide seed money for purposes outlined below.

The Trustees are most likely to respond positively when the project stimulates a better understanding of the natural environment and encourages the preservation of its important features; encourages more compassionate and cost-effective care for the ill and aging in an atmosphere of dignity and self-respect; or promotes educational, medical, scientific, or, on occasion, cultural developments enhancing the quality of life.

Who is Eligible Unspecified

Program Use

Awards are extremely variable, most between $2,000 and $20,000 with some above $20,000. Program funds could be used for bicycle and pedestrian education or feasibility studies. The Contributionship does not fund the costs or expenses of existing staff allocated to a project it is asked to support.

Application Procedure

The Contributionship accepts the common grant application form of the Delaware Valley Grantmakers Association. Application also can be made by a letter which describes and justifies the project. A budget and timetable are required as well as a strategy for securing funding. Financial commitment to a project by a charity's trustees is an important indicator for the Contributionship. A financial statement for the latest year should accompany each application in addition to interim operating statements or budgets for future periods if appropriate. Evidence of tax-exempt status is required plus a list of officers and directors.

Applications are reviewed by the Trustees four times a year (March, June, September, December). If, in their judgment, the project falls within the framework of current priorities, more detailed information may be requested as well as a meeting or an on-site visit. Applications must be submitted at least six weeks before these meeting dates.

The recipient of a grant is expected to make periodic status reports as well as a detailed accounting of all disbursements at the conclusion of the project.

Contact Sandra L. McLean, Executive Director
The McLean Contributionship
945 Haverford Road, Suite A
Bryn Mawr, PA 19010
Tel: (610) 527-6330
Fax: (610) 527-9733
Website: www.fdnweb.org/mclean

THE PEW CHARITABLE TRUSTS

Program General Grants

Types of Assistance

Pew Charitable Trusts finance awards under 7 headings: culture, education, environment, health and human services, religion, public policy, and the venture fund. Although community redevelopment or assistance is not specifically stated, it might fall into one of the headings. Median grant size is $300,000.

Who is Eligible

The Trusts make grants only to organizations classified as tax-exempt under Section 501(c)(3) of the Internal Revenue Code. The vast majority of grants are awarded to public charities. The Trusts do not make grants to individuals or to for-profit organizations.

Program Use

The guidelines (found at the Trusts' website) lay out concisely each program's goals and objectives and the kinds of activities it will and will not consider.

In relation to health and education, program funds could be used for bicycle and pedestrian education or feasibility studies. The venture fund is also designed to allow for creativity in the awarding of grants to other worthy causes, which could include transportation.

Application Procedure

Submit a brief letter of inquiry, preferably less than three pages long. The Trusts will respond to all specific letters of inquiry but not to general solicitations for funds. The application period is rolling (reviewed year-round). The letter of inquiry should include the following information: **Who?** A description of the organization and the nature of its work, as well as a brief summary of the organization's achievements, particularly as they relate to the problem or issue to be addressed. **What and How?** A statement of the problem or need to be addressed and an explanation of how it will be addressed. Include a brief description of anticipated achievements or outcomes. **When?** The time frame for the proposed activities. **How much?** Estimated cost for the project or activity and the amount requested from the Trusts.

Contact

The Pew Charitable Trusts
One Commerce Square
2005 Market Street, Suite 1700
Philadelphia, PA 19103-7077
Tel: (215) 575-9050
Fax: (215) 575-4939
Email: info@pewtrusts.com
Website:
https://www.pewtrusts.org/en

UNITED STATES
FEDERAL HIGHWAY ADMINISTRATION (FHWA)

Program Surface Transportation Program (STP)

Types of Assistance

The STP, created under the Intermodal Surface Transportation Efficiency Act of 1991, provides flexible funding that may be used by states and municipalities for projects on any federal-aid highway, including the National Highway System (NHS), bridge projects on any public road, transit capital projects, and intracity and intercity bus terminals and facilities. Program funds are accessed through the TIP administered by DVRPC.

Who is Eligible States and municipalities.

Program Use

Funds may be used for a wide variety of projects that meet the program's goals, including:

- modifications of existing public sidewalks (regardless of whether the sidewalk is on a federal-aid highway right-of-way) to comply with the requirements of the ADA
- infrastructure based intelligent transportation system capital improvements
- environmental restoration and pollution abatement projects, including retrofit or construction of stormwater treatment facilities
- natural habitat mitigation, but specifies that if wetland or natural habitat mitigation is within the service area of a mitigation bank, preference will be given to use the bank
- privately owned vehicles and facilities that are used to provide intercity passenger service by bus
- sodium acetate/formate, or other environmentally acceptable, minimally corrosive anti-icing and de-icing compositions
- Bicycle routes used for transportation purposes

Program information can be found at www.fhwa.dot.gov/tea21/factsheets/stp.htm.

Application Procedure

Contact DCPD's Transportation Planning section for more information. The FHWA website (www.fhwa.dot.gov) contains up-to-date information, and the TIP process is explained with contact information at www.dvrpc.org/tip.

Contact

Thomas Shaffer
Manager, Transportation Planning
Delaware County Planning Department
Court House and Government Center
201 W. Front Street
Media, PA 19063-2708
Tel: (610) 891-5217
Fax: (610) 891-5203
Email: Planning_Department@co.delaware.pa.us
Website: www.co.delaware.pa.us/planning/

UNITED STATES
FEDERAL HIGHWAY ADMINISTRATION (FHWA)

Program Transportation and Community and System Preservation (TCSP) Pilot Program

Types of Assistance

This program is a comprehensive initiative of research and grants to investigate the relationships between transportation and community and system preservation and private sector-based initiatives. States, local governments, and metropolitan planning organizations are eligible for discretionary grants to plan and implement strategies that improve the efficiency of the transportation system; reduce environmental impacts of transportation; reduce the need for costly future public infrastructure investments; ensure efficient access to jobs, services, and centers of trade; and examine private sector development patterns and investments that support these goals. A total of $120 million was authorized for this program in FYs 1999-2003.

Who is Eligible

States, local governments, metropolitan planning organizations (MPOs), tribal governments, public transit agencies, air resources boards, and school boards are eligible to apply for TCSP Program funds. Nongovernmental organizations that have projects they wish to see funded under this program are encouraged to partner with an eligible recipient as the project sponsor.

Program Use

The FHWA solicits grant applications pursuant upon funds allocated in the general budget. Grant proposals should address how proposed activities will meet the following: improve the efficiency of the transportation system; reduce the impacts of transportation on the environment; reduce the need for costly future public infrastructure; ensure efficient access to jobs, services, and centers of trade; and encourage private sector development patterns.

Application Procedure

Contact the Program Manager for information on application solicitations.

Contact

Gary Jensen
TCSP Program Manager
Office of Planning
400 Seventh Street, S.W.
Washington, District of Columbia 20590Tel:
(202) 366-2048
Fax: (202) 366-3713
E-mail: gary.Jensen@dot.gov
Website: www.fhwa.dot.gov/tcsp/

UNITED STATES
NATIONAL PARK SERVICE (NPS)

Program Land and Water Conservation Fund Grants (through the Outdoor Recreation, Acquisition, Development, and Planning Program)

Types of Assistance

This program provides federal financial assistance to the states and municipalities for the preparation of Statewide Comprehensive Outdoor Recreation Plans (SCORPs) and acquisition and development of outdoor recreational areas and facilities for the general public to meet current and future needs. The average grant is $68,000, and not more than 50% of the project cost may be federally financed.

Who is Eligible

For planning grants, DCNR is responsible for the preparation and maintenance of a SCORP application. For acquisition and development grants, DCNR may apply for assistance for itself or on behalf of other state agencies or political subdivisions, such as cities, counties, and park districts. Individuals and private organizations are not eligible.

Program Use

Specific to transportation, acquisition, and development grants may be used for hiking and bike trails and support facilities such as roads. Facilities must be open to the general public and not be limited to special groups. Development of basic rather than elaborate facilities is favored, and funds are not available for the operation and maintenance of facilities. Grants are also available to states only for revising and updating existing SCORPs, preparation of new plans, and for statewide surveys, technical studies, data collection and analysis, and other planning purposes which are clearly related to SCORP refinement and improvement.

Application Procedure

The standard application forms furnished by the federal agency and required by 43 CFR Part 12, Subpart C, "Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments," must be used for this program. Applicants are required to furnish basic environmental information or evaluation. Applicants should consult the state office or designated official point of contact in their state for more information on the process the State requires to be followed in applying for assistance.

Project proposals are submitted to the NPS through the state liaison officer designated by the Governor. There are no deadlines for applications, and the range of approval/disapproval time is approximately 20 days for acquisition and development projects, 60 days for planning projects.

Contact

Helen Mahan
Rivers & Trails Assistance
National Park Service
200 Chestnut Street, Third Floor
Philadelphia, PA 19106
Tel: (215) 597-6483
Fax: (215) 597- 0932
Email: Helen_mahan@nps.gov
Website:www.nps.gov/lwcf

UNITED STATES
NATIONAL PARK SERVICE

Program Rivers, Trails, and Conservation Assistance Program

Types of Assistance

Rivers and Trails staff assistance includes help in building partnerships to achieve community-set goals, assessing resources, developing concept plans, engaging public participation, and identifying potential sources of funding. On occasion, Rivers and Trails provides its assistance in collaboration with nonprofit organizations to further local conservation initiatives. Although Rivers and Trails does not provide financial assistance, it does offer technical assistance to community partners to help them achieve their goals. Assistance is for one year and may be renewed for a second year if warranted.

Who is Eligible

Nonprofit organizations, community groups, and local, state, or federal governmental agencies.

Program Use

In the past, program use has included watershed studies, trail designation, heritage planning, National Historic Landmark designation, informational videos for multi-use trails, and river corridor action plans.

Application Procedure

Projects are selected annually on a competitive basis. It is recommended that applicants contact regional program staff to seek guidance before applying.

Contact

Helen Mahan
Program Leader
Rivers, Trails, and Conservation Assistance Program
National Park Service
200 Chestnut Street, Third Floor
Philadelphia, PA 19106
Tel: (215) 597-6483
Fax: (215) 597-0932
Email: Helen_mahan@nps.gov
Website:
www.nps.gov/ncrc/programs/rtca/index.html

UNITED STATES
NATIONAL PARK SERVICE (NPS)

Program Urban Park and Recreation Recovery Program (UPARR)

Types of Assistance
UPARR administers three types of grant assistance.

1. "Rehabilitation" grants assist with the cost of repairing deteriorated recreational facilities.
2. "Innovation" grants assist with the development and testing of new cost-effective ideas and approaches for operations, service delivery, and/or management of recreational programs. These are matching grants (70% federal/30% local) to local governments to cover costs of personnel, facilities, equipment, supplies, or services designed to demonstrate innovative and cost-effective ways to enhance park and recreational opportunities at the neighborhood level. They may be used to address common problems related to facility operations and the delivery of recreational services but not for routine operation and maintenance activities. Innovative grants nationwide are limited to 10% of the total annual authorization for the UPARR.
3. "Recovery Action Planning" grants assist with the cost of preparing a 5-year Recovery Action Plan (RAP). They are matching grants (50% federal/50% local) to local governments for the development of local park and recreational system recovery plans. They are chiefly intended to assist local efforts to develop priorities and strategies for overall recreational system recovery. State, local, and private funds may be used as the nonfederal share of project costs. Funds may not be used for routine maintenance and upkeep activities nor may they be used for acquisition.

Who is Eligible
Eligibility is based on need, economic and physical distress, and the relative quality and condition of urban recreational facilities and systems. Jurisdictions which are located within standard metropolitan areas that are not on the eligibility listing may apply for discretionary funds, provided that these grants are in accord with the intent of the program.

Program Use
A current RAP is the basic mechanism through which applicants qualify for program participation. Eligible activities include resource and needs assessments, coordination, citizen involvement and planning, and program development activities to encourage public definition of goals. These grants can be used for creating multi-use trails for alternative transportation purposes.

Application Procedure
Contact the NPS Regional Office for deadlines and procedural information. Grants for Rehabilitation and Innovation projects are selected through a nationwide competition

based in part upon an applicant's commitment to an integrated and continuing planning process.

Contact

Rivers & Trails Assistance
National Park Service
200 Chestnut Street, Third Floor
Philadelphia, PA 19106
Tel: (215) 597-6483
Fax: (215) 597- 0932
Email: Helen_mahan@nps.gov
Website: www.nps.gov/uprr

WILLIAM PENN FOUNDATION

Program General Grants

Types of Assistance

To promote vital communities within a healthy regional ecosystem. Strategies include:

- Developing and implementing a comprehensive, asset-based stabilization and revitalization strategy for targeted communities.
- Strengthening the capacity of technical and support organizations to provide strategic assistance to community-building groups.
- Promoting policies and systems change to leverage and stimulate private sector investment.

Grants are extremely variable, from a few thousand to several million dollars.

Who is Eligible

Organizations eligible for funding are located and/or serve constituents within the Foundation's grant making region, have been certified as tax-exempt under Section 501(c)(3) of the Internal Revenue Code, are not private foundations, and have sufficient income to meet the public support tests of the Internal Revenue Code.

Religious organizations may be eligible to receive funding for nonsectarian purposes, and governmental agencies are occasionally funded if there is no suitable 501(c)(3) that can do the work.

National organizations are eligible in selected cases.

Program Use

New programs or expansion of ongoing successful programs; replication in this region of successful national practices; research, policy-related work, and advocacy; project evaluation; strategic planning; organization capacity building; capital expenditures; publications and other public information projects; collaborative efforts with other nonprofits; and in some unusual circumstances, the Foundation awards grants for endowments. Feasibility studies for bicycle and pedestrian trails have been funded in the region using these funds, but bicycle and pedestrian educational programs and planning for infrastructure improvements are also eligible.

Application Procedure Rolling acceptance.

Contact Geraldine Wang, Program Director
Two Logan Square
11th Floor
100 N. 18th Street
Philadelphia, PA 19103-2757
Tel: (215) 988-1830
Fax: (215) 988-1823
Email: moreinfo@williampennfoundation.org
Website: http://www.williampennfoundation.org

Appendix G

Comments on the Draft Plan

Comment	Organization	Chapter	Pg	Changes Made
Under "Title Pages" section, page 4, under *Delaware County Cycling Advisory Committee: change to Steve D'Antonio, SEPTA*	SEPTA	Title Pages		Asterisks added if person is no longer in their position
Karl Kieffer, PennDOT retired	PennDOT	Title Pages		Asterisks added if person is no longer in their position
Acknowledgement Page - Delaware County Cycling Advisory Committee - insert as SEPTA's representative Brian Vitulli, SEPTA Senior Operations Planner	SEPTA	Title Pages		Asterisks added if person is no longer in their position
Karl Kieffer is retired, update who is retired and no longer in the region	Delaware County Parks & Recreation	Title Pages		Asterisks added if person is no longer in their position
Unsafe! What are accident causes? More bike education needed? Enforcement? Don't like paragraph! What is the bottom line?	PennDOT	ES	ES-1	Changed wording throughout
It is equally important to educate bicyclists about the role of motorists on the road.	PennDOT	ES	ES-2	Changed wording
On page 2 of Executive Summary, under 1. Engineering and Planning change last sentence to be "It also involves providing bicycle facilities at destinations, such as bicycle parking, showers and changing facilities…"	SEPTA	ES	ES-2	Changed wording
Wants to know why the feds don't mandate bicycle planning. It would help people get over the fear that people have about bicyclists.	Attendee of Marple Township Planning Commission		1 1-2	added information about federal requirements related to bicycle planning
Oppose a bike path through the borough of Aldan and oppose the entire expenditure of monies to develop the plan	Aldan Borough Council		1 1-2	added information about federal requirements related to bicycle planning
The plan follows accepted practice by encompassing the "four Es:" engineering, education, enforcement and encouragement. The description of this approach, however, is regrettably relegated to Chapter 5, after the chapters on the on-road bikeway network and shared use trails. Since the 4-E approach is the conceptual heart of the plan, it should be moved up to Chapter 2.	DVRPC		2 2-2	added to chapter 2
Vision statement is the weakest link in this plan and hard to visualize - lack of measurable goals and does not conform to FHWA planning guidance nor commit the county to achieve specific progress - most common measurable goals are cited in "national Bicycle and Walking Study" double the trips by bicycle while reducing the number of reported crashes by 10%	Bicycle Coalition		2 2-2	Refined relationship between vision, goals, objectives (recommendations) and performance measures.
Relate third bullet point to education	PennDOT		2 2-2	Changed wording
"with respect to pedestrian & motorists' rights" on the fifth bullet point	PennDOT		2 2-2	Changed wording
Strengthening the vision statement and adding complete streets will put this plan above and beyond most other existing bike plans	Bicycle Coalition		2 2-2	Complete Streets concept added throughout

Comment	Organization	Ch	Pg	Changes Made
Providence road through Aldan can not safely support automotive and bicycle traffic. Any obstructions at the four main intersections immediately cause traffic backups. Cannot provide committed services to residents while taking on responsibility of a bike path because of limited police resources. Some of the issues are enforcement of the "Helmet Law", monitoring young children using the path without adult supervision, people riding at opposing traffic, users not staying in designated lanes, bicycles not equipped with proper safety and warning devices for evening and night riding and traffic sign and signal violation enforcement.	Aldan Borough Council	2	2-4	Included text in Chapter 2 about liability. Expanded education and enforcement components of chapter 5 to discuss these issues
Add more information about bicyclist responsibilities under bicyclists are legal road users section	PennDOT	2	2-4	Added Information Why
wasn't the 1978 plan implemented	PennDOT	2	2-4	Added Information Did
the Leiper Smedley trail meet bicycle standards when it was built?	PennDOT	2	2-4	Changed wording
Would like to see current bicycle use in Philadelphia for a comparison	Marple Township Planning Commission	2	2-6	Added information about DVRPC's upcoming study. There is little information available currently, but will look to add during revisions
Why don't they use Oak Ave. PENNDOT has a larger unpaved right-of-way than paved on that road because of possible road widening. It's a narrow road until you pass the cemetery where it almost constricts. So from Collingdale cemetery where concrete plants are, they could come in and pave that. Leave the roadway alone and just pave it on the side; it's already PENNDOT's property.	Aldan Borough Planning Commission	2	2-6	Oak Lane is on the bicycle network and this would be a strategy to look at during implementation
Please label and show PA DOT State Bike Routes - Example "Bike Route E"	DCNR	2	2-6	PA Bicycle Routes E & L added throughout the plan
Does Delaware County plan to link up with other existing routes, such as BicyclePA Route E?	Swarthmore Borough Planning Commission	2	2-6	PA Bicycle Routes E & L added throughout the plan
No references to PA Bicycle Route "E" which is PA's on-road portion of the ECG until off-road portions are built - signs need to go up for bicycle route E	East Coast Greenway Alliance	2	2-6	PA Bicycle Routes E & L added throughout the plan
Where did the information about the lack of shoulders and the seldom sweeping of shoulders come from?	PennDOT	2	2-6	Changed wording
PA Recreation Plan gives statistical data on bike participation rates and you can call Bill Elmendorf who will give County raw data - add this data to help define market of bike users - also how many bikes are owned and sold annually in Delaware county and how many bikers are in the service area of the bike route system - what percentage currently uses the system	DCNR	2	2-10	Unable to find contact. Will look for information in updates.
I would like to see the results of a survey asking the question "In a perfect world, would you ride a bike to work? For errands? As an activity." The survey here looks more like excuses rather than reasons.	PennDOT	2	2-12	It may be helpful in constructing future surveys

Comment	Organization	Ch	Pg	Changes Made
Motor vehicle operators and people who bicycle now need more education alongwith better, safer facilities.	PennDOT	2	2-12	Changed wording
Surveys, regional, national, and international data was very evident and informative throughout - supported overwhelming need for on-road bicycle improvements throughout county. Great absorption of empirical data	Montgomery County Planning Commission	2	2-13	none
There is great support for bike safety in Delaware County. Bicycling, in addition to being a recommended physical activity, is a positive family outing in good weather, reduces pollution, and assists in the promotion of a better environment.	Delaware County Intermediate Unit	2	2-13	none
Bike routes can serve multiple purposes on one route (Transportation, Recreation, Education, Greenway, Environmental improvement, Health Improvement, Tourism, A route can tell a story for a benefit, etc.). Each route and the system has the opportunity to serve multiple uses and benefits. Adding statements regarding vision, philosophy, mission, goals of the bike route systems noting primary secondary, and tertiary uses of the bike routes opens doors to gaining optimum efficiency and effectiveness of the route, and opens opportunities for revenue generation on the routes through design options and programming. Please consider investigating vision statements, philosophy of operations, mission statements for the routes/system, goals of the routes/system.	DCNR	2	2-14	significantly added to benefits of bicycling section to include these points in more detail.
Emphasize the liability and energy conservation issues harder in the plan	Delaware County Planning Department	2	2-14	added information in economic section including gasoline prices under benefits of bicycling. Liability language strengthened throughout the plan.
Consider a section denoting “hotspots” of high incidents of bike injuries and accidents	DCNR	2	2-17	because of data inconsistencies it isn't included in the plan, but it may be included in future revisions.
Sa-05-002 is a pedestrian safety guide and countermeasure selection system, bicycle interactive journey	Delaware County Parks & Recreation	2	2-17	Document was reviewed, but most information already included in the plan
How does the plan suggest safety?	Consortium of Governments - Springfield Township	2	2-17	Safety sections strengthened in parts
No reference to complete streets in the plan - needs to be clear to everyone that network is thought of as a prioritization list and not exclusive list for improvements. If nothing else the concept of complete streets should be introduced in the executive summary and explained in more detail in the bike network chapter	Bicycle Coalition	3	3-2	significantly added to benefits of bicycling section to include these points in more detail.
Add “be educated of” to first sentence	PennDOT	3	3-2	Changed wording
Thinks that accidents should be given more weight. At best votes should only be given 1/3 weight	PennDOT	3	3-2	Included that as a potential method of calculating on-road network and why it wasn't chosen.

Comment	Organization	Ch	Pg	Changes Made
It should be stated that the plan provides the rational basis for making bikeway improvements incidental to other highway improvements. Such incidental improvements, requiring no special financial resources, will be the principal means of implementing the network.	DVRPC	3	3-2	Added wording
Want to know percentage of crash data involving motor vehicles	PennDOT	3	3-3	Included more information about source of crash data.
Sort out fatality rates and MV accidents	PennDOT	3	3-3	Included more information about source of crash data.
Recommended primary and secondary bike routes match with Montgomery County's proposed primary and secondary bike routes linking our counties between our borders - appear logical and consistent with Mont. Co. Bike Mobility Plan	Montgomery County Planning Commission	3	3-5	Connecting routes were added to insure links were made
How does the road map connect with off-road routes?	Consortium of Governments - Middletown Twp	3	3-5	Connecting routes were added to insure links were made
Naperville's first mile of bike lane is intended as a link between the touristy shopping node downtown and a nearby recreational greenway. It vaguely follows the "riverwalk" upon which bikes are not allowed. It is important to put bike lanes into the picture is to begin by linking them to recreational, multi-use facilities. I'm hoping Naperville will extend the new lane eventually to an apartment complex that lies about two miles west of downtown and one mile west of the greenway. Practical bicycling is a concept that suburbanites need to be eased into.	City of Chicago	3	3-12	linking of recreational facilities with bike lanes included and explained further. Updates of plan should update completed off road facilities.
Request that WILMAPCO and DelDot post signs to Wilmington, DE for a clear route between Philadelphia and Wilmington and Delaware County would be the halfway break spot	East Coast Greenway Alliance	3	3-12	added in recommendation section
Consider indicating existing/proposed connections to adjoining bike and trail routes to adjacent counties and states	DCNR	3	3-12	linking of recreational facilities with bike lanes included and explained further. Updates of plan should update completed off road facilities.
The method used to prioritize roadways for bikeway improvements provides a sound basis on which to justify such improvements coincident with roadway widening, resurfacing and reconstruction projects. It is through such incidental improvements that the plan will be implemented. Apparently a trail network plan was beyond the scope of this project. It remains a need that I hope will be filled soon. Chapter 4 provides a sound framework for creating such a plan.	DVRPC	4	4-2	Add paragraph about plans for an off road trail network.
To state that the Leiper-Smedley Trail receives "considerable use" is questionable. I walk the trail regularly with my dog, and rarely do I encounter another human being.	DVRPC	4	4-3	Changed wording

Comment	Organization	Ch	Pg	Changes Made
Mont. County has a separate document (Montgomery County Trail Plan) focusing on a county-wide trail system from Open Space Plan, they have build the foundation and the support of the municipalities to implement a complete, linear park/trail system throughout the county - suggest exploring possibility to develop a separate trail plan that would set the state for an accomplished bicycle and pedestrian system	Montgomery County Planning Commission	4	4-3	Add paragraph about plans for an off-road trail network.
The Complementary Role of Shared Use Paths is a substantial component to bicycle plans as it typically explores the off-road element of bicycling - multiple opportunities to create a Delaware County trail system that would potentially enhance your overall bike network as depicted in Map 4-1.	Montgomery County Planning Commission	4	4-3	Add paragraph about plans for an off-road trail network.
SEPTA and Delaware County are negotiating a proposed lease under which the County would lease the part of the Chester Creek Branch for a public trail. The term of the proposed lease is 30 years. Delaware County has acknowledged that SEPTA will retain substantial rights, including the right of recapture. Upon request, SEPTA can provide copies of these proposed leases which protect SEPTA's interest.	SEPTA	4	4-4	Updated information
"[t]he Cobbs Creek Trail is nearing construction." That trail was completed and opened in the Spring of 2005.	DVRPC	4	4-5	Updated information
Some routes have multiple names - please indication additional/alias/alternate names for the routes such as PA bike Route E is also ECG and Delaware County Industrial Heritage Trail	DCNR	4	4-5	Added some text of relation between the routes as well as map to show all routes.
Philadelphia is the only city along ECG with an airport - concentrate more time on this topic - consider how to make it safe and easy for an airport passenger to immediately become a bicycle tourist - Delaware County is a good candidate for the start of a bicycle tour	East Coast Greenway Alliance	4	4-6	Added more information about airport under Tinicum Fort Mifflin Trail section of Chapter 4.
Information on page 4-5 concerning the Tinicum-Fort Mifflin trail is accurate - detailed feasibility study would be published in August 2005 for the segment that connects with Governor Printz Park in Essington - runs mostly off-road and will eventually serve as a segment of the PA East Coast Greenway	Clean Air Council	4	4-6	Worked with Clean Air Council to include most up to date information about the Tinicum Fort Mifflin Trail
Consider changing last sentence on page 4-5 so it reads something like "Upon completion of the detailed feasibility study in August 2005, funds will be sought for design, engineering and construction of the Tinicum Fort Mifflin Trail segment that links Governor Printz Park in Essington to the Philadelphia County border at Fort Mifflin." Or something like that, depending when you're looking to finalize the bicycle plan, you may even be able to reference the detailed feasibility study.	Clean Air Council	4	4-6	Worked with Clean Air Council to include most up to date information about the Tinicum Fort Mifflin Trail
We will be beginning a second detailed feasibility study of another high-priority segment of the Tinicum-Fort Mifflin Trail later this summer that links to John Heinz National Wildlife Refuge to Cobbs Creek Bikeway on the Philadelphia County side, following Darby and Cobbs Creeks	Clean Air Council	4	4-6	Worked with Clean Air Council to include most up to date information about the Tinicum Fort Mifflin Trail
Radnor Township has an old P&W line that's abandoned, but we do not have one similar to that. The Newtown Square line has been developed. I can see some secondary or tertiary roads developed for bicycles but not on 252. I think you should look into things further and reevaluate.	Marple Township Planning Commission	4	4-7	Include plans from the former I-476 bikeway plan. Discuss the wide range of possibilities for bicycle facilities in chapter 5.

Comment	Organization	Ch	Pg	Changes Made
There was some interest in Springfield making Nether Providence Bikeway along the Blue Route, which is not even mentioned on the plan. There's currently a bikeway along a part of it but that should continue and link it further up the Blue Route to Marcus Hook with the one along the Delaware and then link it to the Radnor trail as well. Did anyone look to see what's available on the Newtown line?	Marple Township Commissioner	4	4-7	Include plans from the former I-476 bikeway plan. Add paragraph about plans for an off road trail network.
For some of the off-road trails, do the utility companies get some kind of release on liability?	Swarthmore Borough Planning Commission	4	4-9	Information on utility liability and lease agreements included in Chapter 4, liability needs to be worked out with the lease agreement
Trail Design: cite the AASHTO *Guide for the Development of Bicycle Facilities (1999).*	DVRPC	4	4-10	Updated information
If SEPTA owns a right-of-way and has not abandoned it for railroad purposes, then Delaware County cannot take the right-of-way or convert it to a trail without SEPTA's permission. SEPTA may condition its permission upon terms that protect the future needs of railroads and public transportation	SEPTA	4	4-10	Added text about how rail use is preferred where feasible.
Talking above pavement, are there any ways to allow trails to have an impervious surface?	Swarthmore Borough Planning Commission	4	4-10	Added Information about Pervious surfaces in Chapter 4.
Delaware County has not really been a leader with this. It is tough to do, because bike lanes cross many municipalities. What do you think will happen with possible and proposed trails in terms of who is going to deal with them?	Consortium of Governments	4	4-1	Mention made of maintenance, but this will be decided on a trail by trail basis. Challenges of multiple municipalities discussed in Chapter 2
Find off-road facilities like the Radnor trail when available.	Aldan Borough Planning Commission	5	5-3	Discuss about the range of bicycle users and what facilities they prefer in Chapter 5.
New Roads. FHWA provides excellent guidance on the application of Title 23, Section 217 of the United States Code, which requires the consideration of bikeways and walkways in federally funded transportation projects. The code and guidance should be cited here.	DVRPC	5	5-3	Added reference to federal codes in this section.
The state can say all they want but it's not reality. If we're going to put bicycle lanes in let's not do it on a small strip of land, let's engineer it, or it's going to fail	Aldan Borough Planning Commission	5	5-3	Added information that bicycle facilities should meet accepted guidelines set forth by AASHTO and others throughout the plan.
The "Engineering and Planning" section should be more explicit about current planning and design guidance, and describe the key guidance documents (AASHTO, FHWA, MUTCD). There is no need for the county to create its own design guidance. However, some guidance is needed as to identification of the design user, i.e. when to design for Groups A, B or C (p. 5-3).	DVRPC	5	5-3	Added information that bicycle facilities should meet accepted guidelines set forth by AASHTO and others throughout the plan.
Change "bicyclists" to "travelers" in goal box of engineering and planning	PennDOT	5	5-3	The signs may benefit non-bicyclists, but as a bicycle plan signs should be engineered for their use
~~Need to break down groups to show accident relations~~	~~PennDOT~~	5	5-4	~~This data isn't available~~

Comment	Organization	Ch	Pg	Changes Made
Remove worse as it is a loaded term	PennDOT	5	5-4	Changed wording
Group b and c riders need education	PennDOT	5	5-4	Added text about level of riders
Best and good not referenced	PennDOT	5	5-4	Changed wording
You had talked about striping the sides of roads. What's the minimum width for the roads?	Swarthmore Borough Planning Commission	5	5-6	added under shoulder section 5-6
It is often impossible to provide 4' & 5' shoulders in a developed area where there is only 33' right of way . 2 11' lanes with 4' shoulders equals 30' w only 1.5' on each side remaining for utilities with the row, signs, and roadway	PennDOT	5	5-6	stressed that there are many roads in Delaware County that don't have the right-of way for shoulders and that it is PennDOT's policy to include them where it is economically feasible.
On Yale Avenue to the train station, they used to have painted lane, which was really nice. They were painted over, literally blacked out and no longer exist. I think if a bike lane is to be a real bike lane, then number one, it should be painted as such, and number two, people shouldn't be able to park on them. Perhaps a bicycle lane on one side and not on the other could work.	Swarthmore Borough Planning Commission	5	5-7	Was unable to see the painted over line on this street. Include information about how bike facilities should meet AASHTO standards, which include painted lines.
Change "where it suits the convenience of the road builder"	PennDOT	5	5-7	Changed wording
Cyclists have to share in the responsibility, same as motorists, We do not build specific facilities for travelers who don't or won't drive on expressways or large bridges.	PennDOT	5	5-9	Stressed that bicycle boulevards still allow automobile traffic, but don't encourage it
Then the inverse should apply, I.e. there should be roadways for motor vehicles only. Not a good solution when we are trying to get bikes and cars to coexist on our transportation system	PennDOT	5	5-9	Stressed that bicycle boulevards still allow automobile traffic, but don't encourage it.
Don't promote bicycling through the main thoroughfares but find alternative routes instead	Aldan Borough Planning Commission	5	5-9	Added information about how bicycle boulevards can help circumvent busy through streets for cars by creating ones for bicycles
Designation of sidewalks as bicycle facilities. The conditions cited are not supported by AASHTO. See the *Guide for the Development of Bicycle Facilities* , page 20. The last sentence should be corrected to read that sidewalk bicycling is *more* dangerous than riding on the road.	DVRPC	5	5-10	Updated information
A 10 year old is too young to ride on the roadway and can cause serious problems on the sidewalk. Everyone (motorists, bicyclists, and pedestrians need education. In today's society, everyone has a mentality that it is the other persons responsibility to "watch out" for them. Thank the lawyers!	PennDOT	5	5-10	Reworded sidewalk portion.

Comment	Organization	Ch	Pg	Changes Made
col. 1, para. 1, railroad crossings. This statement is not supported by AASHTO. Regardless of how smooth the crossing is, a railroad poses two serious hazards to bicyclists: the flangeway, in which a wheel can get caught; and the rail itself, which becomes extremely slippery when wet. In all cases bicyclists should receive advance warning of the crossing. If possible, accommodations should be made to facilitate bicyclist crossing at or near a 90 degree angle to the tracks. - col 1, driveways. Gravel driveways should be paved a minimum of 10 feet beyond the intersection with the roadway (AASHTO, p. 55). - col. 2, rumble strips. The recommendation that the rumble strip be placed inside of the fog line probably contravenes PENNDOT and FHWA guidance. See AASHTO Guide, p. 17.	DVRPC	5	5-11	Updated information
Costs too low	PennDOT	5	5-11	Reworded costs portions to say that these costs appear to be low. Added link to estimate cost for local projects
Ice is a bigger problem than snow with after night freezing.	PennDOT	5	5-13	Added ice as a hazard
Action Agenda. Request that PENNDOT consider abolishing the Bikeway Occupancy Permit as a condition for installing bicycle lanes on state highways.	DVRPC	5	5-14	Added information about Bicycle Occupancy Permit
Businesses and the airport should encourage bicycling and provide bicycle racks - told that 17,000 people work in the airport area - currently no way to bicycle - Boeing and the refiners are also a good place to request bicycle racks	East Coast Greenway Alliance	5	5-15	Added that incentive programs for bicycle facilities should be put in place for new and existing employers
Are there any incentives in the plan for bike racks at stores and such?	Swarthmore Borough Planning Commission	5	5-16	Add bicycle parking incentives and requirements
Why don't people at the train station put their rear wheel into the racks like I do?	Swarthmore Borough Planning Commission	5	5-16	Add information about why u racks are better bike racks
Bicycle parking. Offer guidance as to where bicycle lockers are most appropriate.	DVRPC	5	5-17	Added guidance on when to use covered racks or bike lockers
Who is responsible for bike racks at the station? -[Interested in replacing older racks with better racks that will not hurt people's wheels - apparently a big problem in Swarthmore Train Station]	Swarthmore Borough Planning Commission	5	5-17	Add suggestions on bodies who could provide or maintain bicycle faculties
Second bullet point- For clarification, bike lockers were installed in the mid-1990s at Wayne and Bryn Mawr Stations on the R5 Paoli/Thorndale Line and Fox Chase Station on the R8 Fox Chase Line	SEPTA	5	5-17	Updated information
One way to get greater security out of plain old U racks or wave racks is to install them inside the transit station. In Chicago, Many stations already had room to bold a couple of U racks into the concrete. Most of these U racks are located "past" the turnstile, in the area for customers who have already paid. Regardless of what side of the turnstile the racks are on, they are in view of the attendant's booth, giving cyclist the feeling that their bikes are more secure.	City of Chicago	5	5-18	Added secure racks to list of options

Comment	Organization	Ch	Pg	Changes Made
Vertical bike storage on transit is cool looking, and reminds me of the bay area commuter rail. Still, all elevated lines are open to bikes at all times except am and pm rush hours, and none of the CTA trains have vertical storage. There seems to be very little problem with storage as most cyclists wheel their bikes into the handicapped area on the train.	City of Chicago	5	19	List hours when bikes can go on trains, but vertical storage is more compact and sets place aside for bikes
5-14, 1st bullet point - add Broad Street line to the list of trains allowing bicycles on board	SEPTA	5	19	Updated information
5-13, third bullet point - update the section to reflect current conditions - All Victory Division bus routes are bicycle accessible. Current list of bicycle accessible bus routes is on www.SEPTA.org/service/bike_ride.html and 100% of SEPTA's bus fleet is supposed to be bike accessible in 2006	SEPTA	5	19	Updated information
Col. 2: Nearly all of SEPTA's Delaware County bus lines are now bicycle-accessible.	DVRPC	5	19	Updated information
Third bullet point - Update this section to reflect current conditions. All Victory Division Bus routes are bicycle accessible. It is expected that SEPTA's bus fleet will be 100 percent bike accessible in 2006	SEPTA	5	19	Updated information
Bicycle Accessible Transit Routes - This statement is not accurate. All transit routes serving Delaware County are now bike accessible. (For further information, please refer to our website at http://www.septa.org/policy/bike.html)	SEPTA	5	19	Wording updated to reflect current conditions
Consider a section noting facilities for the bike route/system users like restrooms, repair shops, etc.	DCNR	5	20	Added recommendation and performance measure
Map 5-1 is inaccurate. All transit routes serving Delaware County are now bike accessible (see www.SEPTA.org/service/bike_ride.html)	SEPTA	5	21	Map updated to reflect current conditions
Racks on buses seems like a great use of resources. All CTA buses have them, and they are aging all right. The hydraulic arm that goes over the front wheel tends to get weak after a few years, but is still usable. I've heard the racks do get bent up a bit when buses need to be towed. Rather than using number of trains with racks as a performance measure, why not use number of train lines allowing bikes during off-peak hours?	City of Chicago	5	22	Added Transit lines allowing bicycles on board as a performance measure
Okay, I understand the point of identifying roads that "should" have bike facilities… So why not include "miles of bike lanes" as one of the performance measures? Bike routes is in there.	City of Chicago	5	22	Added miles of bicycle lanes
The Delaware Valley Share the Road Campaign. This project has concluded. A five-minute video (in VHS and DVD) and various collateral items are still available. The website will remain indefinitely and be updated periodically.	DVRPC	5	26	Updated information
Education section needs to be more aggressive	PennDOT	5	28	Education section augmented significantly.
Goal of providing access to information only educates those who are looking for the information. Everyone needs to be educated	PennDOT	5	28	Added goal
Share the road signs are not education	PennDOT	5	28	Share the road and other bicycle signs increase motor vehicle operator's awareness about the presence of bicycles on the road

Comment	Organization	Ch	Pg	Changes Made
All of my concerns seem to have been addressed. I do believe education is extremely important and if the school districts would implement the Safe Routes to School program it would be helpful. I like the idea of having after school bike activities to help educate as well as get the children interested in riding their bikes safely. The only other thought I have right now is maybe when this gets going there could be incentives for students as well as adults to bike to school/work.	Delaware County Highway Safety Program	5	5-29	significantly added to education section to include these points in more detail.
Education in particular should be accorded greater importance in the plan. I know it's a tough sell to school districts, but on-road instructional programs are critical in creating a population skilled and competent enough to use the emerging bicycle network safely, while as motorists knowing how and why to share the road with bicyclists.	DVRPC	5	5-29	significantly added to education section to include these points in more detail.
How do school districts get involved with biking to school programs – especially when no one is currently encouraging it?	Swarthmore Borough Planning Commission	5	5-29	significantly added to education section to include these points in more detail.
Schools are very anxious to get sidewalks, because they don't have them and would like them. They need to bus people very small distances because of the lack of sidewalks. - [And the entire planning commission showed extreme interest in a bike or walk to school program]	Swarthmore Borough Planning Commission	5	5-29	significantly added to education section to include these points in more detail.
Is there mention of schools educating the students about bike rules?	Swarthmore Borough Planning Commission	5	5-29	significantly added to education section to include these points in more detail.
Education/enforcement: we have a person who warns or tickets motorists parked in bike lanes. Even though he's an intern, the department of revenue figured out some way to let him issue real tickets, I guess. But what's real cool is Mayor Daley's Bicycling Ambassadors (MDBA). It's run by the local non-profit advocacy group, Chicagoland Bicycle Federation. They provide consultant work for the city, that's the way MDBA works. MDBA rides all over the city and does education stuff with people of all ages. They give good "bike to work" talks. They even do motorist education.	City of Chicago	5	5-29	added information about the Bicycling Ambassador Program
I'm not sure if bicycle lanes educate drivers about a bicyclist's right to be on the road. A good number of Motor Vehicle Operators may interpret bicycle lanes as the only roads where bikes should ride. Motor Vehicle operators may think bikes should not be on roads without bike lanes. Need education and enforcement.	PennDOT	5	5-31	Added sentence to this affect and added that education programs should accompany bike lane installations
Enforcement part and those Es are important. What's the likelihood of the laws being enforced. Police don't enforce it; they don't care except when the bicyclist goes to the hospital. (Drunk drivers have hit me and if I'm not hurt they don't care.) I've been told to drive on the sidewalk from police.	Swarthmore Resident	5	5-32	added information about police training on bicycle laws and Massachusetts program to do that
change wording of bicyclist/motorist training programs	PennDOT	5	5-32	Changed wording
miles of bike lanes is not education	PennDOT	5	5-32	Removed
perhaps the insurance industry would be receptive to providing an insurance premium discount to those who complete an instruction course successfully.	PennDOT	5	5-32	Added recommendation and performance measure
DUI and Reckless driving apply to both motorists and bicyclists. Some bicyclists are bicyclists because they have been convicted of a DUI	PennDOT	5	5-33	Changed wording

Comment	Organization	Ch	Pg	Changes Made
More guidance at the municipal level such as 1. Calling on municipalities and or multi municipal planning districts to appoint bicycle and pedestrian advisory committees (There is a direct correlation in this region between existing facilities and the presence of municipal advisory committees.) and 2. Encourage municipalities to develop standards for developers to provide accommodations for bicyclists such as bike parking or interconnecting development recreation paths.	Bicycle Coalition	6	6-2	Added County wide bicycling committee as well as recommendations given here.
Show implementation time lines noting proposed funding source, proposed project management agency, and project scope of work for proposed improvements for the bike system in short and long term	DCNR	6	6-2	That is outside the scope of this general plan. This will be required when more detailed facility improvement planning is done.
Add section with information related to projected maintenance costs, projected human resources needs, and equipment needs for the routes/system in the short term and long term an possible sources of these resources	DCNR	6	6-2	That is outside the scope of this general plan. This will be required when more detailed facility improvement planning is done.
Greater detail in Chapter 6, Conclusions and Next Steps, is needed. Specifically, the Action Agenda should be directed to the Delaware County Planning Board, and staged into short-, medium- and long-term actions. This would help focus the Planning Department and Board, create a realistic timetable, and lend clarity to the agenda. At the top of the agenda, the Planning Department should take the plan on the road, presenting it to municipal governing bodies across the county.	DVRPC	6	6-2	Many of these recommendations are continuous. Time frame recommendations will be made internally.
Provide revenue and income opportunities through design and programming for the routes and system. Draft or recommend revenue policy statements for the routes/system. What are the possible projections for revenue generation for the bike routes/system?	DCNR	6	6-4	That is outside the scope of this general plan for facility improvement. We recommend looking at this for specific projects
Would the county be able to step up? In one part of a trail the back of homes is adjacent to the trail and so is the SAP property that is worth one to two million dollars. Fences will be needed if these trails go in.	Consortium of Governments - Marcus Hook Borough	6	6-6	County funds are also limited, but included under the funding category.
SEPTA will do periodic bike-on-transit estimates	SEPTA	6	6-6	Changed wording
PA Dept. of Conservation and Natural Resources funding programs are not listed in the funding section. See www.dcnr.state.pa.us click on grants for information on DCNR funding. Many additional PA state funding programs are available but are not listed	DCNR	6	6-6	DCNR Funding added in chapter
Your section on funding lists only governmental sources. Recommend investigation to foundations, revenue policy, corporate investments	DCNR	6	6-4	Information on non-government sources included in appendix F and efforts to look for non traditional sources included.
"Vehicle—" add that pedalcycles are included in the definition.	DVRPC	Glossary		Changes made
Include the following: Establish school-based on-road bicyclist training (perhaps replacing #2, Establish school-based education workshops); Provide professional development courses on bikeway planning and design for engineers and planners.	DVRPC	A		Changes made

Comment	Organization	Ch	Pg	Changes Made
Suggestions to change some PennDOT leadership roles to supporting roles	PennDOT	A		Changes made
"Where do you usually ride?" This question does not appear on the "Preference Survey of Bicycle Facilities" survey form on page B-1.	DVRPC	B		Scanned appropriate draft of the survey
Elements in the plan, like the BLOS and bike boulevards are excellent	Bicycle Coalition	C		Added appendix about blos
Consider adding a matrix of funding that would be useful to municipal and other partners implementing the bike route system	DCNR	F		Include an appendix of funding sources, will consider matrix in future updates
The listed bicycle related improvements on page F-25 is part of SEPTA's capital budget/program - Program: SEPTA Capital and Operation Budgets (delete reference to operating budgets) - Types of Assistance (Delete: Operating assistance from federal, state, and local governments for transit service. Add: Bicycle related improvements are generally funded through the Federal Transit Administration's Transit Enhancements program. Applications for this program are solicited every two years through the Delaware Valley Regional Planning Commission.) - Who is eligible (Delete: Operating grants) - Program Use (Replace with: Bicycle related improvements at transit stations, bus stops, and commuter parking facilities, including exterior bicycle racks on vehicles and at stations) - Applications Procedure (Replace with: Contact DCPD and SEPTA to request for consideration, suggestions for bicycle related improvements at transit facilities or services.)	SEPTA	F		Changed wording
So it's in the initial state to gather the overall idea about where you want to be. A lot of people are on board for the plan, but we're worried about how it will hit our pocket books.	Marple Township Planning Commission	F		No additional changes made, though some funding resources are mentioned in Appendix F and Chapter 5 discusses some ways municipalities can encourage change through non-monetary incentives
The assertion that any road in the county is unsafe" has no basis in fact. Despite the fact that some roads feel unsafe to some bicyclists does not override the fact that we just don't have the data to make a determination regarding the safety of specific roadways. DVRPC's upcoming regional bicycle travel survey will generate some of the needed missing data. In addition, much of the safety problem adheres to bicyclist and motorist behavior independent of roadway characteristics.	DVRPC	All		Changed wording throughout
No comments at this time	Folcroft Borough	All		none
Detailed-oriented, factual, thorough, and most of all practical for your County	Montgomery County Planning Commission	All		none

GLOSSARY

AADT − Average Annual Daily Traffic volume. A statistical estimate of the number of vehicles that pass a particular section of roadway during a period of 24 consecutive hours averaged over a period of 365 days. The AADT is the average traffic volume of the road independent of hourly or seasonal variations.

AASHTO − American Association of State Highway and Transportation Officials

APA − American Planning Association

ARS − Accident Record System

BCGP − The Bicycle Coalition of Greater Philadelphia

BEEP − Bicycle Education and Enhancement Program

Bicycle − See *Pedalcycle*. Pedalcycle is the legal terminology for a bicycle in Pennsylvania.

Bicycle Boulevard − Local streets modified to function as a through street for bicycles. Local access for automobiles is maintained, but through traffic is discouraged.

Bicycle Facilities − A general term denoting improvements and/or provisions to accommodate or encourage bicycling, including all bikeways, shared use paths, bike lanes, bike routes, shared roadways whether or not specifically so designated, parking facilities, signing, and pavement markings.

Bicycle Lane − A portion of roadway striped with pavement markings and signed for exclusive use of bicycles. These must meet certain standards for width, striping, signing, and marking.

Bicycle Level of Service − Measures used to indicate bicyclist comfort level for specific roadway geometries and traffic conditions.

Bicycle Path − See *Shared Use Path*. All "Bicycle Paths" are actually shared with pedestrians, in-line skaters, etc.

Bicycle Route − Any combination of paths, lanes, trails, or streets which are designated for bicycle travel by mapping or signing as a preferential travel route for alternate modes, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Bicycling Ambassadors − A program started in Chicago where a team of trained bicyclists informs the public through demonstrations and printed materials.

Bikeway − Any road, path, trail, or passage which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

BTA − Bicycling Transportation Alliance

C2P2 − Community Conservation Partnership Program

CAC − Clean Air Council

Center Turn Lane − See two-way left-turn lane

CMAQ − Congestion Mitigation and Air Quality Improvement Program

Complete Streets − Streets which are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists, and transit riders of all ages and abilities are able to safely move along and across a complete street.

CRS − Crash Record System

DCED − Department of Community and Economic Development

DCNR − Department of Conservation and Natural Resources

DCTMA − Delaware County Transportation Management Association

DOT − Department of Transportation

DRPA − Delaware River Port Authority

DVRPC − Delaware Valley Regional Planning Commission

Edge Line − A line which is used to show the outside edge of the travel lane for cars.

Flangeway − The narrow space next to the rails of railroad tracks which allows the flanges of the train's wheels to pass through a level crossing or other raised areas. These can pose a threat to bicyclists as tires can often get caught in the flangeway.

FHWA − Federal Highway Administration

Grade Separation − An underpass, bridge, or overpass. Allows motorized and non-motorized modes to avoid any interaction at intersections or street crossings. (75 PA Consol. Stat. Ann. § 102)

Intermodal − Use of more than one mode to accomplish a trip.

ISTEA − Intermodal Surface Transportation Efficiency Act of 1991. Federal legislation that is the precursor to TEA-21 and SAFETEA-LU.

ITE − Institute of Transportation Engineers

KAZ − Keystone Active Zone

K&T Trail − Kensington and Tacony Trail

LOS − Level of Service

MassBike − The Massachusetts Bicycle Coalition

Mode of Travel − Means by which a person's mobility is powered and accomplished. This could be feet, bicycle, car, bus, train, horse, plane, skates, etc.

MPO − Metropolitan Planning Organization

Multi-moda1 − Facility which provides for shared use by several modes, such as a park-and-ride lot with both car and bicycle parking.

Multi-use Trail − See "Shared Use Path"

MUTCD – Manual of Uniform Traffic Control Devices. A manual approved by the FHWA as a national standard for placement and selection of all traffic control devices on or adjacent to all highways open to public travel.

NHANES – National Health and Nutrition Examination Survey

NHTSA – National Highway Traffic Safety Administration

NPS – National Park Service

Off-road Facilities – Sidewalks, shared use paths or trails, or any facility which is not suitable for motorized vehicle use.

PANA – Pennsylvania Advocates for Nutrition and Activity

Pavement Marking – Painted or applied lines or legends for regulating, guiding, or warning traffic.

Pedalcycle – Commonly known as bicycle. The Pennsylvania Consolidated Statutes use the word pedalcycle defined as a vehicle propelled solely by human-powered pedals. The term does not mean a three-wheeled human powered pedal-driven vehicle with a main driving wheel 20 inches in diameter or under and primarily designed for children 6 years of age or younger. (75 PA Consol. Stat. Ann. § 102)

Pedestrian – Pedestrians are defined in PA Consolidated Statutes as a natural person afoot. (75 PA Consol. Stat. Ann. § 102)

PennDOT – Pennsylvania Department of Transportation

PSAs – Public Service Announcements

Reverse Angle Parking – On-street angled parking where the vehicle backs into the spot instead of the more traditional front angle parking. This allows for greater visibility when reentering the flow of traffic. Reverse angle parking is similar to parallel parking in that the driver must first go past the parking space, then reverse into the parking spot.

Right-of-way − A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to some public purpose.

Roadway − Roadways are defined in the Pennsylvania Consolidated Statutes as that portion of a highway improved, designed, or ordinarily used for vehicular travel, exclusive of the sidewalk, berm, or shoulder even though such sidewalk, berm, or shoulder is used by pedalcycles. In the event that a highway includes two or more separate roadways, the term "roadway" refers to each roadway separately but not to all such roadways collectively. (75 PA Consol. Stat. Ann. § 102)

RTC − Rails to Trails Conservancy

SAFETEA-LU − Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users. Federal legislation that is the successor to ISTEA and TEA-21.

SEPTA − Southeastern Pennsylvania Transportation Authority

Shared Roadway − All roads which do not have bike lanes or wide curb lanes where bicyclists and motor vehicles share the same roadway.

Shared Use Path − A paved path used exclusively by human-powered modes and separated from motor vehicles by an open space or barriers. It can be within the highway right-of-way or an independent right-of-way. Bicyclists, pedestrians, skaters, joggers, and other non-motorized users will use shared use paths at the same time. Motorized wheelchairs are typically allowed on shared use paths.

Shoulder − A portion of a highway contiguous to the roadway primarily for use by pedestrians, equestrians, bicyclists, and stopped vehicles for use in emergencies.

Shy Distance − Space left between vehicles or pedestrians as they pass each other. The amount of shy distance required for safety tends to increase with speed.

Sidewalk − Sidewalks are defined in the Pennsylvania Consolidated Statutes as that portion of a street between curb lines or the lateral lines of a roadway and the adjacent property lines, intended for use by pedestrians. (75 PA Consol. Stat. Ann. § 102)

TE − Transportation Enhancements Program

TEA-21 − Transportation Equity Act for the 21st Century. Federal legislation that is the precursor to SAFETEA-LU and successor to ISTEA.

TIP − Transportation Improvement Program

Title 23 U.S.C. §217 − Title 23 of the United States Code Section 217: Bicycle Transportation and Pedestrian Walkways

TMA − Transportation Management Association

Traffic Calming − The combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users.

Traffic Control Devices − Signs, signals, pavement markings, or other fixtures, permanent or temporary, placed on or adjacent to a travelway by authority of a public body having jurisdiction to regulate, warn, or guide traffic.

Traffic Volume − The number of vehicles which pass a given point in a given amount of time.

Travel Generators − Particular areas or locations which represent trip destination points of the utilitarian bicyclist; for example, libraries, schools, recreational areas, and work centers.

Trip Attractors − Potential trip destinations, such as schools, recreational areas, shopping areas, and employment centers.

TWLTL − See two-way left-turn lane.

Two-way Left-turn Lane − Central lane that allows left-turning movements to both sides of the street.

USDOT − United States Department of Transportation

Vehicle − The Pennsylvania Consolidated Statutes define the word vehicle as “Every device in, upon, or by which any person or property is or may be transported or drawn upon a highway, except devices used exclusively upon rails or tracks. The term does not include a self-propelled wheelchair or an electrical mobility device operated by and designed for the exclusive use of a person with a mobility-related disability.” This definition also clearly includes bicycles. (75 PA Consol. Stat. Ann. § 102)

Walking School Bus− A group of children walking to school with one or more adults and a common element of Safe Routes to School programs.

Wide Curb Lane − A road constructed with extra width in the outside lane so cars and bikes can share the same lane.

WILMAPCO − Wilmington Area Planning Council

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