Lancaster County
Bicycle and Pedestrian
Transportation Plan

Phase II

Prepared by

The Lancaster County

Planning Commission

April 2004

ACKNOWLEDGEMENTS

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Executive Summary

Bicycling and walking are common modes of transportation in Lancaster County. Lancaster County residents go to work, to stores, to public transportation, and to other destinations by bicycle and on foot. Pedestrians take advantage of existing sidewalks in Downtown Lancaster and in many of the County's older boroughs and new developments. Both bicyclists and pedestrians use quiet neighborhood streets as well as rural roadways with wide shoulders such as PA 340. They also use multi-use trails like the Lititz-Warwick Trailway and the Lancaster Junction Recreation Trail to access destinations around the County. Compared to all six neighboring counties, Lancaster County has the highest percentage of people who bike and walk to work.

While there are many bicyclists and pedestrians in Lancaster County, conditions for bicycling and walking can be unsafe and uncomfortable. Many of the roads in the county were designed primarily for automobile travel, and have no sidewalks, no wide outside lanes, or no paved shoulders. Heavy, high-speed traffic makes many major roads in Lancaster County difficult or dangerous for bicyclists and pedestrians to cross.

Residential and commercial land development patterns of the past decades have also created barriers to bicycling and walking. Many new developments were designed as isolated pods. Bicycle and pedestrian trips between adjacent developments often require travel on arterial roads with heavy, high-speed traffic.

These conditions have had serious consequences. There were over 300 bicycle injuries and fatalities and over 500 pedestrian injuries and fatalities in Lancaster County during 1999 and 2000[a]. In those two years, there were over 40 percent more pedestrian and bicycle deaths as there were homicides in Lancaster County[b]. This Plan is therefore an important step in on-going efforts to make it safer and more enjoyable to bicycle and walk throughout Lancaster County.

[a] PENNDOT In Depth Accident Investigation / Safety Study Map. Taken from GIS Data for 1999 and 2000.

[b] Pennsylvania Department of Health. Birth and Death Statistics, 1990-2002. Online: http://www.dsf.health.state.pa.us/health/cwp/view.asp?a=175&Q=201652

Benefits of Non-Motorized Transportation

Implementation of this Plan will help improve conditions for bicycling and walking. These non-motorized modes of transportation provide many benefits to Lancaster County:

Transportation System
Replacing automobile trips with bicycle and pedestrian trips reduces the number of motor vehicles congesting Lancaster County roadways. By providing safer places to bicycle and walk, residents and visitors have a greater choice of transportation modes.

Environment
Replacing automobile trips with bicycle and pedestrian trips reduces air and water pollution from motor vehicles. Automobile emissions contribute to Lancaster County's unhealthy ozone levels and pollute the Susquehanna River and Chesapeake Bay.

Economic
Bicycling and walking are popular activities for tourists who want to experience unique aspects of Lancaster County. In addition, land owners adjacent to multi-use trails have benefited through increased property values.

Quality-of-Life
Bicycle- and pedestrian-friendly communities help attract businesses and workers. Improving the facilities for these modes of transportation allows people who don't drive the ability to access work, retail services, and other services.

Health
Bicycling and walking can help Lancaster County residents get the physical exercise that they need. Regular exercise through bicycling and walking can help prevent heart disease—the nation's number one killer—as well as diabetes and other chronic conditions. Because bicycling and walking contribute to better air quality, they can also make it healthier to exercise outdoors.

A more detailed list of benefits, including supporting statistics, can be found in Section 1 of the Plan.

Growing Support for Bicycle and Pedestrian Transportation

Picture courtesy of Dream Ride Projects/CYCLE SMART.

The completion of this Plan comes at a time of growing interest and support for bicycle and pedestrian transportation. Local municipalities are building multi-use trails, requiring sidewalks in new developments, and improving streetscapes for bicycle and pedestrian activity. Development is now becoming more focused

in the County's Urban and Village Growth Areas. Some specific examples of pedestrian and bicycle initiatives include:

- Sidewalks and street trees in new residential neighborhoods
- New bicycle racks on transit buses
- Enhanced pedestrian crossings in some areas of the County
- Bicycle and pedestrian safety education programs for youth and adult residents
- A new bicycle touring route in the northeastern part of the County

There has also been a significant shift in priorities within the Pennsylvania Department of Transportation (PENNDOT) that should hasten the development of future bicycle and pedestrian facilities. The agency now has a Bicycle and Pedestrian Checklist that requires bicycle and pedestrian issues to be considered during the planning and programming, scoping, and final design phases of a project. In the past, bicycle and pedestrian accommodations were viewed as amenities to PENNDOT roadway projects. Under the current policy, there must be justification if bicycle and pedestrian accommodations are *not* included in a project.

In context of this growing level of support, this Plan sets forward the steps that will be necessary to make bicycling and walking viable modes of transportation for residents and visitors.

Planning Process

The *Lancaster County Bicycle and Pedestrian Transportation Plan, Phase I* was adopted by Lancaster County in September 2000. It was the first County Plan to address both bicycle and pedestrian issues at a countywide level. The Phase I Plan began the process of institutionalizing bicycle and pedestrian planning efforts in Lancaster County. It established the Lancaster County Citizens Bicycle & Pedestrian Advisory Council (BPAC) and a designated Bicycle and Pedestrian Planner at the Lancaster County Planning Commission (LCPC).

The *Lancaster County Bicycle and Pedestrian Transportation Plan, Phase II* grew out of the Phase I effort. Detailed field work and a fully-developed list of recommendations were not included in the Phase I planning process. These elements have been incorporated into this second planning phase to develop a detailed, comprehensive plan. Important elements of Phase II included an inventory of the County's roadway system to determine needed physical improvements, specific recommendations for education programs, and a timeline for implementing plan recommendations.

The Phase II Plan was developed with input from many individuals and groups. The planning process included:

- Reviewing previous plans and existing geographic data
- Measuring roadway characteristics in the field
- Analyzing bicycling conditions with the Bicycle Level of Service Model
- Holding Community Workshops in Summer 2003 and Winter 2004

- Prioritizing recommendations for projects and programs
- Developing and revising the Plan document

The Lancaster County Citizens Bicycle & Pedestrian Advisory Council (BPAC) has been involved throughout the Phase II planning process and will continue to work with local municipalities to implement the Plan.

Organization of this Report

Section 1 describes the origin of this Plan and references other planning activities that complement this Plan at the national, state, and county levels. It also provides specific information about the transportation system, environmental, economic, and quality-of-life benefits of bicycling and walking.

Section 2 describes existing conditions for bicyclists and pedestrians in Lancaster County.

Section 3 outlines a vision to improve physical conditions, policies, and programs. It lists four goals in the areas of transportation improvements, education, multimodal access, and communications.

Section 4 provides detailed recommendations that should be implemented to meet the four goals. Included are strategies for making physical roadway and trail improvements, establishing new programs, and setting new policies to improve bicycling and walking in Lancaster County.

Section 5 provides a prioritized list of actions and identifies partnerships that will be needed to implement the recommendations. The last part of this section discusses funding and benchmarking.

"Lancaster County will be a place where people can safely and conveniently walk or bicycle everywhere."

-Vision Statement for the Lancaster County Bicycle and Pedestrian Transportation Plan

Summary of Goals and Recommendations

The Plan recommends a system of safe and convenient bicycle and pedestrian facilities throughout the County. This will require physical improvements to roadways, sidewalks, and trails. These physical improvements must be complemented by education for bicyclists, pedestrians and motorists, and by promotional programs for bicycling and walking. The recommendations also describe how Lancaster County can make bicycling and walking a regular part of the operations of government bodies, developers, and other groups.

The recommendations of the Phase II Plan are within four goal areas: 1) transportation improvements, 2) education, 3) multimodal access, and 4) communications. The section

below summarizes the Plan recommendations. Detailed strategies for achieving each of these recommendations are provided in Section 4 of this Plan.

Transportation Improvements Recommendations

1. Improve the system of bicycle and pedestrian accommodations that extends throughout Lancaster County.
2. Maintain bicycle and pedestrian facilities.

Education Recommendations

1. Work with Lancaster County schools to implement a pedestrian and bicycle safety education program for elementary school students.
2. Conduct a Bicycle and Pedestrian Safety Awareness Campaign.

Multimodal Access Recommendations

1. Implement safety improvements (sidewalks, crosswalks, etc.) for pedestrians and bicyclists near transit stops in the County.
2. Provide facilities for the security and comfort of bicyclists and pedestrians at transit stops and rail stations.
3. Promote land use decisions that make it more convenient to bicycle and walk to transit and other destinations.
4. Incorporate bicycle and pedestrian accommodations into county and municipal policies and development procedures.

Communications Recommendations

1. Seek support from local governments for the Lancaster County Bicycle and Pedestrian System
2. Increase community involvement in bicycling and walking issues, and expand BPAC's ability to communicate its message about improving Lancaster County for pedestrians and bicyclists.
3. Establish programs to increase the awareness of bicycling and walking in the school community, and encourage more kids to bicycle and walk regularly.
4. Promote bicycling and walking to Lancaster County organizations.
5. Distribute the Lancaster County Bike Map through a wide variety of outlets throughout the County.
6. Promote Lancaster County as a place where people can tour historic sites on foot and as a premier destination for bicycle vacations.

SECTION 1: INTRODUCTION

Bicycling and walking are used as a mode of transportation by many people in Lancaster County. Residents take advantage of these modes to avoid traffic congestion and parking, save money, and get exercise. Many people in the County who do not have access to a motor vehicle depend on bicycling and walking for transportation. Bicyclists and pedestrians are common in Lancaster City, the County's boroughs, Amish and Mennonite community areas, and in many other parts of the County. Bicycling and walking are also common forms of transportation for visitors. Bicycle tourism is a growing industry among vacationers who want to experience Lancaster County's rolling hills, historic covered bridges and other historic and cultural features.

Yet, due to rising traffic volumes and exurban growth it has become increasingly difficult to bicycle and walk in some areas of the County. Many of the roadways between Lancaster City and the surrounding suburban townships have heavy, fast-moving motor vehicle traffic. Bicycling is most difficult on arterial roadways with no wide outside through lanes or shoulder space, or that have poorly-maintained shoulders. Many roadways lack sidewalks and safe crossings. Sidewalks on other streets are incomplete, poorly maintained, or obstructed by utility poles and wide driveways.

This Countywide Plan recommends strategies to improve the physical condition of roadways and trails, to educate citizens, and to create policies that will encourage more people to walk and bike in Lancaster County. Bicycle and pedestrian improvements are recommended to help residents reach significant activity centers in all parts of the County and connect into surrounding counties.

Origins of the Phase II Plan

Phase I of the Lancaster County Bicycle and Pedestrian Transportation Plan was adopted by Lancaster County in September 2000. It was the first Lancaster County Plan to address both bicycle and pedestrian issues at a countywide level. Phase I included general recommendations for:

- new sidewalks in Urban and Village Growth Areas
- traffic calming
- managing land use to create walkable communities
- bicyclist safety education
- improving connections to transit and park & ride lots

Picture courtesy of Dream Ride Projects/CYCLE SMART.

- employer-based incentives for bike commuting
- working with municipalities to review master plans and subdivision plans and ensure bicyclists and pedestrians were accommodated
- working with PENNDOT to ensure bicyclists and pedestrians are included in new construction and retrofit projects

The Phase I Plan also began to institutionalize bicycle and pedestrian planning efforts in Lancaster County. It established the Lancaster County Citizens Bicycle & Pedestrian Advisory Council (BPAC) and a designated Bicycle and Pedestrian Planner at the Lancaster Planning Commission.

The *Lancaster County Bicycle and Pedestrian Transportation Plan, Phase II* grew out of the Phase I effort. Detailed field work and a fully-developed list of recommendations were included in the second planning phase to develop a detailed, comprehensive plan. Important elements of Phase II included an inventory of the County's roadway system to determine needed physical improvements, specific recommendations for education programs, and a timeline for implementing the plan recommendations.

Supporting Plans and Policies

This Plan complements a number of plans and policy documents adopted at the county, state, and federal level.

County

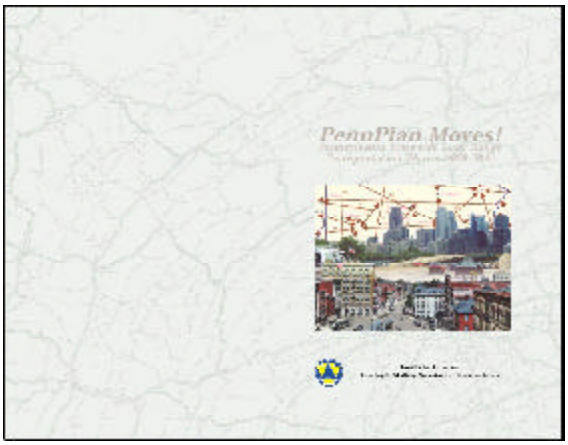
Lancaster County's vision for its future transportation system is set forward in the *Lancaster County Long-Range Transportation Plan* (LRTP) (2001-2025). The Plan envisions a transportation network that will "support the Lancaster County Comprehensive Plan by providing a balanced intermodal transportation system which enables mobility, strengthens the economy, and protects the environment." The LRTP includes major, long-term transportation projects identified by the Lancaster County Planning Commission (LCPC) and municipalities. This Bicycle and Pedestrian Transportation Plan is a component of the LRTP. Both the Bicycle and Pedestrian Transportation Plan and the LRTP are adopted by the County's Metropolitan Planning Organization (MPO)[c].

Every two years, a portion of the projects listed in the LRTP are included in the Lancaster County Transportation Improvement Program (TIP) for implementation. TIP projects are selected by LCPC and Lancaster County municipalities, and final approval is given by the MPO. The 2003-2006 TIP includes a multi-use trail on an abandoned railroad bed traffic calming, a greenway along the Conestoga River, and other bicycle and pedestrian facilities.

The *Lancaster County Comprehensive Plan* (1999) sets a transportation goal to "provide for the safe, efficient, and convenient movement of people and goods."[1] Improving conditions for bicyclists and

[c] The County's official MPO is the Lancaster County Transportation Coordinating Committee (LCTCC).

pedestrians and providing education and encouragement for biking and walking will help Lancaster County achieve this goal.



Two LCPC documents have addressed bicycle and pedestrian issues. The County outlined several ways to improve bicycle conditions in the *Lancaster County Non-Motorized Study* (1993). As described earlier, the *Lancaster County Bicycle and Pedestrian Transportation Plan, Phase 1* (2000) looked more comprehensively at both bicycle and pedestrian needs. For a summary of recommendations from the Comprehensive Plan and the Phase I Bicycle and Pedestrian Plan, see Appendix A.

State

The Commonwealth of Pennsylvania supports and is seeking to improve bicycle and pedestrian travel throughout the state. *Pennsylvania's Statewide Long-Range Transportation Plan (PennPlan)* (2000) has 10 statewide goals, three of which directly address non-motorized transportation:

- Develop transportation alternatives and manage demand.
- Promote smooth, easy connections between transportation alternatives.
- Ensure accessibility of the system and mobility for everyone.

The Pennsylvania Department of Transportation (PENNDOT) *Statewide Bicycle & Pedestrian Master Plan for Pennsylvania* (1996) adopted the goals of the *National Bicycling and Walking Study* (U.S. Department of Transportation, 1994) to double the percentage of trips by foot and bicycle, from a national average of 7.9 percent to 15.8 percent of all trips, and to reduce the number of injuries and fatalities suffered by bicyclists and pedestrians by 10 percent.

Pennsylvania Greenways: An Action Plan for Creating Connections (Pennsylvania Greenways Partnership Commission and Greenways Partnership Advisory Committee, 2001) recommends a network of greenways across the state that "will connect Pennsylvania's open space, natural landscape features, scenic, cultural, historic and recreational sites, and urban and rural communities." Greenways that include a trail component may also serve as transportation corridors for pedestrians and bicyclists in Lancaster County.

Federal

The Transportation Equity Act for the 21st Century (TEA-21) (1998) has seven planning factors, three of which are related to improving pedestrian and bicycle transportation. These include:

- Increase the safety and security of the transportation system for motorized and non-motorized users.
- Increase the accessibility and mobility options available to people and for freight.
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

TEA-21 continued the multi-modal emphasis of its predecessor, the Intermodal Surface Transportation Efficiency Act (ISTEA) (1991), further strengthening federal support for bicycle and pedestrian projects.

One of the key federal funding sources used for bicycle and pedestrian projects in Lancaster County is the Transportation Enhancements Program. This program was established in ISTEA and renewed under TEA-21. It provides matching funds for constructing bicycle and pedestrian facilities, improving streetscapes, refurbishing train stations, and other surface transportation projects. More information about the program can be found on the Internet at www.enhancements.org.

Institutionalizing Bicycle and Pedestrian Projects and Programs

Since the adoption of ISTEA and TEA-21, there has been greater emphasis on bicycling and walking as viable, sustainable, and healthy modes of transportation in the United States. Within Lancaster County, municipalities are building multi-use trails and sidewalks, Red Rose Transit is installing bicycle racks on buses, and "Yield to Pedestrian" signs are being placed at crosswalks.

PENNDOT Policy

There has recently been a significant shift in priorities within PENNDOT that should hasten the development of future bicycle and pedestrian facilities.

In the past, bicycle and pedestrian accommodations were viewed as amenities to PENNDOT roadway projects. Within the last two years, PENNDOT has shifted to a proactive approach to providing non-motorized transportation improvements. Under the current policy, there must be justification if bicycle and pedestrian accommodations are *not* included in a project. The agency has adopted a bicycle and pedestrian checklist (PENNDOT Design Manual, Part 1A, Appendix J) as a part of its official guidelines. This requires bicycle and pedestrian issues to be considered during the three phases of a project: planning and programming, scoping, and final design (see Appendix B).

Lancaster County should take full advantage of PENNDOT's support of bicycle and pedestrian facilities. This Plan will be successful if bicycle and pedestrian accommodations become a greater part of the regular operations of government bodies, developers, planners, designers, and engineers within Lancaster County. These groups must make a conscious effort to consider bicycling and walking in every step of their work. This includes making bicycle and pedestrian issues a regular part of:

- Policy-making
- Planning
- Programming
- Designing
- Engineering
- Maintenance
- Education
- Enforcement
- Promotion

The recommendations in Section 4 set forward more specific strategies for incorporating bicyclists and pedestrians into the areas listed above.

Benefits of Non-Motorized Transportation in Lancaster County

Bicycling and walking improvements will bring significant benefits to Lancaster County residents and visitors. These benefits show why there is strong support for bicycle and pedestrian travel at local, state, and national levels.

Transportation System Benefits

- Increasing pedestrian and bicycle travel will decrease the number of motor vehicles on Lancaster County roadways.
- By taking advantage of the opportunity to convert short automobile trips to the bicycle, the County will realize significant benefits in terms of healthier air and reduced traffic congestion.
- Improving intersections, completing sidewalks, and providing more paved, on-road space will reduce the potential for bicycle and pedestrian fatalities and injuries. These improvements will also improve safety for motor vehicle and buggy users.

Environmental Benefits

- Increased levels of bicycling and walking can play an important role in reducing air pollution. By substituting bicycling or walking trips for short auto trips, County residents can impact the amount of pollutants generated by automobiles. Short auto trips produce far more pollution per mile than longer trips[8].

- Vehicle emissions and other motor vehicle pollutants contribute to water pollution as well, which ends up in Lancaster County's streams, the Susquehanna River, and Chesapeake Bay. Increased levels of bicycling and walking and their associated reductions in auto use and pollution will have a positive impact on local and regional water quality.

Transportation System Statistics

- According to the Nationwide Personal Transportation Survey, nearly half of all travel trips taken in the U.S. are 3 miles or less in length; 28 percent are less than 1 mile[2].
- Over 88 percent of Lancaster County workers drive to work, either alone or in carpools[3].
- The American public saves from 5 to 22 cents per mile for every automobile displaced by walking and bicycling due to reduced pollution, oil import costs and costs due to congestion, such as lost wages and lost time on the job[4].
- There were 515 pedestrian-vehicle crashes and 316 bike-vehicle crashes reported to the police in Lancaster County between 1999 and 2000[5].

Environmental Statistics

- Air pollution is a serious threat to public health – an estimate from the Harvard School of Public Health states that air pollution contributes to the deaths of 70,000 people nationwide each year[6].
- Lancaster County is classified as a marginal non-attainment area for ground level ozone by the U.S. Environmental Protection Agency, which means the County does not meet federal health-based standards for clean air[7].

Economic Benefits

- The option of bicycling can improve the mobility of Lancaster County residents without access to a motor vehicle and allow some households with autos to own one vehicle instead of two.
- Pedestrian and bicycle transportation allow people to incorporate physical activity into their daily lives, which reduces health care costs.
- The Lancaster County tourism industry generates approximately $1.2 billion each year. By providing more opportunities for people to enjoy the County on foot and by bicycle, tourism will continue to be a significant source of income.
- Businesses invest in locations that have a high quality-of-life. Corporate employers have an easier time attracting highly skilled workers to these locations.
- According to a National Bicycle and Pedestrian Clearinghouse Brief, trails and greenways can have a positive effect on the value of nearby properties[13]. Recent studies of the preferences of new homebuyers indicate that there is a demand for more livable communities and, specifically, better bicycle and pedestrian facilities in the vicinity.

Economic Statistics

- A motor vehicle is the second-highest household expense, after housing itself[9].
- Total costs attributed to obesity (medical costs and lost productivity) amounted to an estimated $117 billion in the year 2000, 10% of total national health care costs. Poor nutrition and physical inactivity account for some 300,000 premature deaths in the United States each year[10].
- Outdoor activities, such as bicycling and walking, are the most popular activities for people on vacation from work. They are more popular than visiting museums or national parks, doing beach and water activities, and shopping[11].
- The Ghost Town Trail in Indiana, PA generated over $1.2 million in tourism revenue in its first two years, and revenues at the Allegheny Trail's six trailheads ranged from $5.4 million to $14.1 million in 1998[12].

Quality-of-Life Benefits

- Noise is a major complaint among residents of Lancaster County. Automobiles create a considerable amount of noise pollution. Replacing automobile trips with trips made by non-motorized modes will improve the quality of life in the County.
- Pedestrians add to the ambiance and security of streets.
- Pedestrian and bicycle transportation offer more opportunities for people to socialize than driving alone in automobiles.
- Providing a livable community is a necessary part of attracting and keeping businesses,

keeping young residents in Lancaster County, and ensuring local communities remain competitive in the 21st century. Opportunities to bicycle and walk comfortably and safely are integral to showing that Lancaster County is a friendly and welcoming community.

Health Benefits

- Research conducted in 1999 by the Centers for Disease Control found that "obesity and overweight are linked to the nation's number one killer – heart disease – as well as diabetes and other chronic conditions." The report also states that one reason for Americans' sedentary lifestyle is that "walking and cycling have been replaced by automobile travel for all but the shortest distances"[17].
- Numerous studies have shown tremendous benefits from even a brief amount of light but regular exercise each day[18].
- Biking to the store, school or work also provides a time-efficient way of attaining the United States Surgeon General's recommended daily allowance of physical exercise[19].
- Because bicycling and walking contribute to better air quality, they help make the air healthier for all residents to breathe.

Health Statistics

- In 1999, the Centers for Disease Control and Prevention estimated that 61 percent of U.S. adults were either overweight or obese. In 2000, a total of 38.8 million American adults could be classified as obese[14].
- Today, there are nearly twice as many overweight children and almost three times as many overweight adolescents as there were in 1980. Results of the National Health and Nutrition Examination Survey (1999) showed that 13 percent of children and adolescents were overweight[15].
- In Pennsylvania, the prevalence of obesity increased from 14.4 percent of adults to 21.4 percent of adults between 1991 and 2001[16]

Planning Process

The vision, goals, and recommendations of this Plan were developed with input from many individuals and groups. The Lancaster County Citizens Bicycle & Pedestrian Advisory Council (BPAC) played a central role in the planning process. Local citizens and representatives of municipalities within Lancaster County have also contributed to this Plan.

Lancaster County Citizens Bicycle & Pedestrian Advisory Council (BPAC)

The Lancaster County Citizens Bicycle & Pedestrian Advisory Council (BPAC) was formed in October 1999. The Council is an advisory body to and a voting member on the Lancaster County Transportation Technical Advisory Committee (TTAC), which reports to the County's Metropolitan Planning Organization (MPO). The MPO administers the federal funding the County receives to complete transportation projects and programs. BPAC has been involved throughout the Phase II planning process and will assist with the implementation of this Plan.

Other Contributors

In addition to informal interviews with a variety of community and municipal representatives (see Appendix C-1), Community Workshops were held during the summer of 2003. Lancaster County residents provided feedback at these workshops (see Appendix C-2). Comments were made verbally, on maps, through e-mail, and on survey forms (see Appendix C-3). LCPC hosted a third Community Workshop in January 2004 to receive public feedback on the draft Plan. The Plan was presented to TTAC and the MPO for adoption in April 2004.

Cooperative Effort for Plan Implementation

By adopting this Plan, the LCPC has taken a lead role in recommending specific projects and programs to benefit bicyclists and pedestrians throughout the County. However, roads, sidewalks, paths, signals, and other pedestrian and bicycle facilities are funded and maintained by many different agencies. PENNDOT maintains approximately 27 percent of all roadways in Lancaster County. The remaining roadways are maintained by individual townships, boroughs, and the City of Lancaster. Most sidewalks are installed by developers and maintained by adjacent landowners, including those that are adjacent to PENNDOT roadways. The ultimate success of this Plan will require extensive coordination between public agencies at all levels, and communication with private landowners as well.

SECTION 2: EXISTING CONDITIONS

This section describes land use and physical roadway conditions as well as local policies and programs that exist in Lancaster County today. The recommendations in Section 4 build upon the opportunities and constraints described in this section.

Land Use Characteristics

Lancaster County has over 470,000 residents and is Pennsylvania's second-fastest growing County[8]. Much of the growth in the past 30 years has been in suburban parts of the County outside Lancaster City. Until recently, residential neighborhoods in these areas tended to be separated from stores, offices, factories and other employment centers, and from other adjacent neighborhoods. Further, sidewalks were not provided inside many developments. The general result was a suburban landscape where a motor vehicle was necessary for most types of trips. As an indication of this, traffic has increased steadily on the primary roadways leading into and out of Lancaster City over the past few decades.

These land use trends began to change in the late 1990s. Lancaster County adopted a Comprehensive Plan to manage growth, and several new developments have been constructed with a mix of residential and retail land uses. Some municipalities have changed their policies to improve the continuity of neighborhoods and improve the convenience of bicycling and walking. A few of the municipalities that are changing their regulations include East Hempfield Township, Rapho Township, Manheim Township, Lancaster City, and Lititz Borough. Examples of pedestrian- and bicycle-supportive policies include requirements for sidewalks within residential developments and requirements for bike racks in non-residential developments. For more information on these new policies, refer to municipal comprehensive plans, zoning ordinances, and subdivision and land development ordinances. Recommendations for land use and subdivision policies are included under Multimodal Access in Section 4 of this Plan.

Urban and Village Growth Areas

Lancaster County began the process of establishing Urban and Village Growth Areas following the adoption of the County Comprehensive Plan in 1999. The purpose of these Growth Areas is to maintain unique, distinct, and compact communities by growing outward from urban and village centers to growth boundaries.

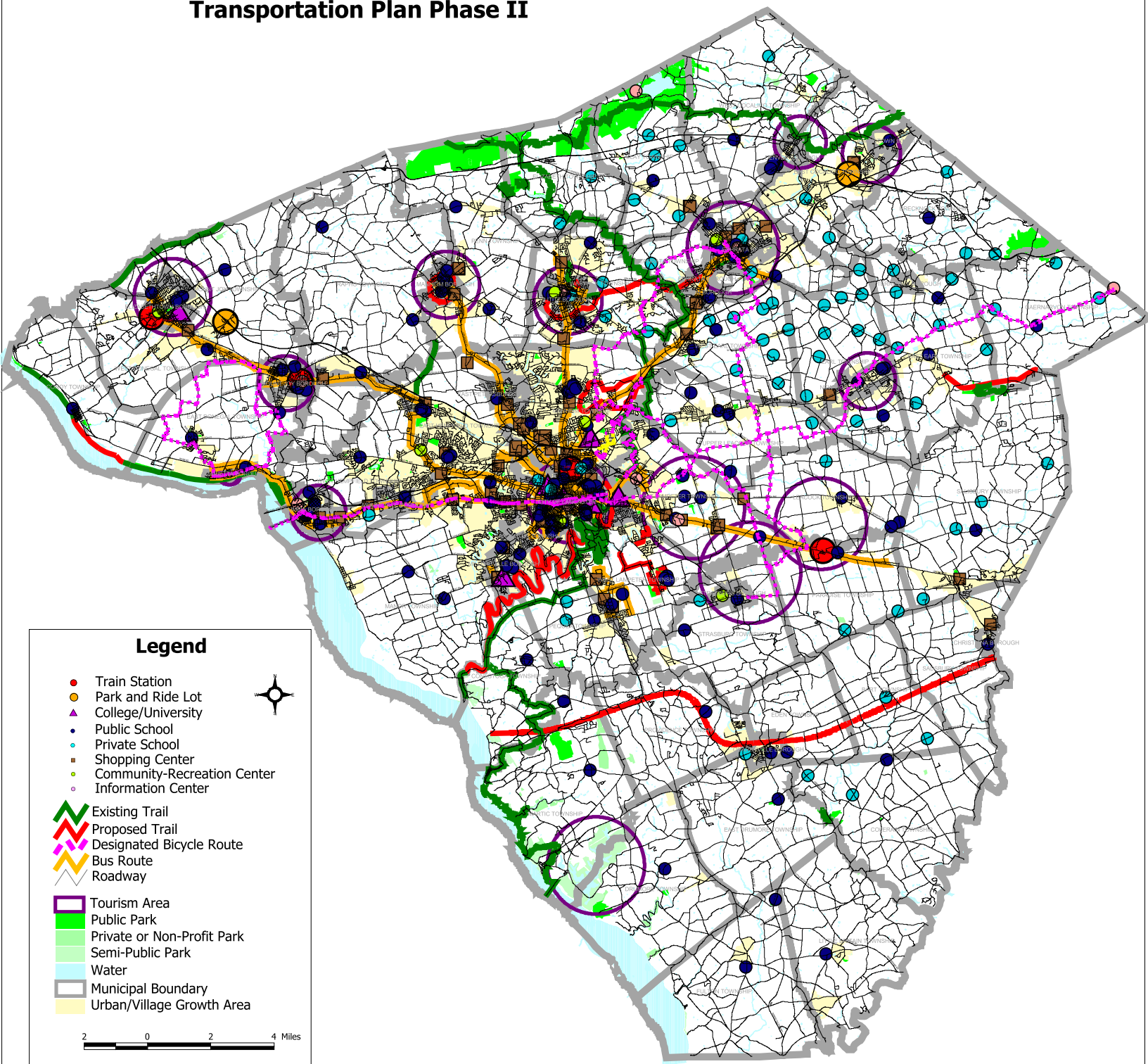
Most pedestrian and bicycle trip attractors are contained in Lancaster County's Urban and Village Growth Areas. Pedestrian and bicycle facility improvements should be focused in these areas to serve current and future locations of activity sites. Such improvements are vital to providing a full range of public facilities and services within these areas.

Pedestrian and Bicycle Trip Attractors

County residents bike and walk to work, to the bus, to school, and to other activities. Destinations for these activities are located throughout the County and should be accessible by non-motorized transportation modes (see Map 1. Lancaster County Bicycle and Pedestrian Attractors). Many of the destinations that attract bicyclists and pedestrians are concentrated in Lancaster County's Urban and Village Growth Areas, especially in downtowns and on Main Streets. These attractors were considered when determining locations for the pedestrian and bicycle improvements recommended in this Plan.

Map 1.
Lancaster County Bicycle and Pedestrian Attractors

Lancaster County Bicycle and Pedestrian Transportation Plan Phase II



Legend

- Train Station
- Park and Ride Lot
- College/University
- Public School
- Private School
- Shopping Center
- Community-Recreation Center
- Information Center

- Existing Trail
- Proposed Trail
- Designated Bicycle Route
- Bus Route
- Roadway

- Tourism Area
- Public Park
- Private or Non-Profit Park
- Semi-Public Park
- Water
- Municipal Boundary
- Urban/Village Growth Area

2 0 2 4 Miles

Toole Design Group
April 2004

Existing Roadway Conditions

People bicycle and walk in Lancaster County every day for transportation and recreation. According to Census 2000, about 0.45 percent of workers over age 15 in Lancaster County bike to work and over 4.35 percent walk to work[3]. These commuting rates are higher than each of the six neighboring counties and above both the state and national averages, as shown in the Bicycle Commuting and Walk-to-Work Rates Table below. Higher bicycle and pedestrian commute rates are due, in part, to the large number of people bicycling and walking in the Amish and Mennonite communities.

Bicycle Commuting and Walk-to-Work Rates

Jurisdiction	Commute by Bicycle	Walk-to-Work	Combined Bike and Pedestrian	Total Bike & Pedestrian Work Trips per Day
United States	0.38%	2.93%	3.31%	4,247,479
Pennsylvania	0.25%	4.13%	4.39%	243,726
Philadelphia	0.86%	9.05%	9.91%	56,472
Lancaster County	*0.45%*	*4.35%*	*4.80%*	*11,129*
Berks County	0.22%	3.63%	3.85%	6,840
Chester County	0.08%	2.53%	2.61%	5,695
York County	0.27%	2.16%	2.43%	4,700
Dauphin County	0.19%	3.45%	3.64%	4,407
Lebanon County	0.28%	3.17%	3.44%	2,024
Cecil County, MD	0.05%	1.61%	1.66%	700

Source: Census 2000

In addition to these work commute trips, County roadways serve a variety of other types of pedestrian and bicycle trips: to parks, post offices, shopping, and other activities.

Safety

Crash data show that there were over 300 motor vehicle crashes resulting in bicycle injury and over 500 motor vehicle crashes resulting in pedestrian injury in Lancaster County during 1999 and 2000 (the latest statistics available)[5]. During this two year period, eight bicyclists and pedestrians were reported as injured or killed each week. There were over 40 percent as many pedestrian and bicycle deaths as there were homicides in Lancaster

Bicycle and Pedestrian Crashes with Motor Vehicles: 1999-2000

	Bicycle	Pedestrian
Total Reported Crashes	316	515
Total Reported Fatalities	5	33
Total Reported Injuries*	334	546

*There were several bicycle and pedestrian crashes that involved more than one bicyclist or pedestrian in the crash.
Source: PENNDOT In Depth Accident Investigation / Safety Study Map

County (38 bicycle and pedestrian fatalities compared to 27 homicides)[20,21,22] during these two years.

Physical Obstacles to Pedestrian and Bicycle Travel

Lancaster County has many areas that are not well suited for biking and walking. On the main roads that traverse the County, bicyclists and pedestrians use a transportation system that was designed primarily for automobile travel. Heavy, high-speed traffic makes many of the major roads uncomfortable for bicyclists and pedestrians. It is difficult to bicycle and walk along roadways like US 30 east of Lancaster City, US 222 south of Lancaster City, PA 72, PA 741, and PA 462. Crossing these roadways on foot or by bicycle can also be difficult, even at signalized intersections.

Interchanges along US 30, US 222, and PA 283 are also dangerous for pedestrians and bicyclists to cross. Freeway on- and off-ramps are designed to move motor vehicle traffic with as little delay as possible. This creates a situation where a pedestrian or bicyclist must cross several lanes of flowing motor vehicle traffic to safely navigate an interchange.

There are many intersections in the County that have "No Pedestrian Crossing" signs. Some of these signs are in residential neighborhoods. Others are close to destinations that nearby residents should be able to access on foot. Because the intersections are designated as illegal to cross, instead of being redesigned and improved, these signs deter residents from walking.

Residential and commercial land development patterns of the past decades have created considerable barriers to bicycling and walking. Many developments were designed as isolated pods. Frequently, streets within these developments end in cul-de-sacs and do not connect to adjacent streets or streets in neighboring developments. Bicycle and pedestrian trips in these areas have been made much longer and more indirect, and often require travel on an arterial road with heavy, high-speed traffic.

Pedestrian Obstacles

- Lack of sidewalks on main roadways
- Wide and heavily-traveled roadways creating difficult pedestrian crossings
- Fast speeds on residential streets
- Highway interchange ramp crossings
- "No pedestrian" signs
- Poorly-marked crosswalks
- Poorly-located and poorly-identified bus stops
- Americans with Disability Act deficiencies on existing sidewalks
- Intersections without curb ramps
- Cracked, uneven, narrow and incomplete sidewalks
- Sidewalks with utility poles and trees in the middle of the walking area
- Lack of pedestrian push-buttons and pedestrian signals at signalized intersections
- Lack of pedestrian-oriented signs
- Lack of benches, shelters, and other facilities for pedestrians waiting for the bus
- Dead-end streets and cul-de-sacs
- Frequent driveway crossings on commercial roadways

Bicycle Obstacles

- Lack of paved shoulders
- Narrow lanes on many roads
- Debris on roadway shoulders
- Poor pavement conditions
- Wide and heavily-traveled roadways creating difficult bicycle crossings
- Fast speeds on residential streets
- Narrow bridges
- Unsafe drainage grates
- Highway interchange ramp crossings
- Dead-end streets and cul-de-sacs
- Lack of signs to direct bicyclists along the best routes to destinations
- Lack of bike racks and bike lockers
- Frequent driveway crossings on commercial roadways

Bicycle Suitability

The Bicycle Level of Service (Bicycle LOS) Model was used to evaluate bicycle suitability on Lancaster County roadways. The Bicycle LOS Model is a scientifically-calibrated method of evaluating the comfort level of bicyclists on a roadway segment, given existing bicycling conditions in relation to motor vehicle traffic. It uses objective, quantitative data to produce a measure of the level of service perceived by a *typical*[d] bicyclist. Model inputs include measurable traffic and standard roadway factors such as:

- Lateral separation between bicyclists and adjacent motor vehicle traffic (measured by the width of the right-most lane and paved shoulder)
- Presence and width of a paved shoulder or bike lane
- Volume and speed of motor vehicle traffic
- Percentage of heavy trucks
- Number of travel lanes
- Presence of on-street parking
- Pavement condition

The Bicycle LOS Model uses letter grades to describe existing conditions. Level "A" reflects the best conditions for bicyclists; Level "F" represents the worst conditions. Appendix D provides a detailed description of the Bicycle LOS Model used in Lancaster County.

Bicycle Level of Service in Lancaster County

LCPC conducted a field inventory on 819 miles of Lancaster County roadways to evaluate Bicycle LOS and document sidewalk coverage in Summer 2003. The field analysis network represented about 20 percent of all roadway miles in the County. While all roads were not included, most of the major arterial and collector roadways in the County were analyzed in the field. These main roadways serve the most traffic and provide the best connectivity between neighborhoods and destinations, and require analysis to develop recommendations for improvement. Many of the minor roadways that were not included in the analysis are more conducive to bicycling because of lighter traffic volumes.

The Bicycle LOS results show that over one-third (38.3%) of the study network roadways have Bicycle LOS scores of "C" or better. However, most roads have grades of "D" or worse, indicating poor comfort for bicyclists (see Lancaster County Bicycle Level of Service Chart and Table 1. Roadway Inventory Summary Table, below). This is comparable to other counties similar to Lancaster County in Maryland, Virginia, and Delaware.

[d] The Bicycle Level of Service Model was developed using the perceptions of a diverse group of bicyclists. These cyclists represented a wide range of ages and experience levels. Each of the cyclists rated their own level of comfort as they rode on roadway segments with a wide variety of traffic conditions and street layouts. Their responses were combined using statistical modeling techniques to determine which measurable traffic and roadway characteristics had significant relationships to the comfort levels reported by all of the bicyclists. A quantitative model was developed from these data to predict, with the greatest possible accuracy, how a diverse set of bicyclists would feel on a roadway with any given combination of traffic and roadway characteristics. Therefore, a "typical" bicyclist is a bicyclist that is most closely represented by the wide range of ages and experience levels present in the original Bicycle Level of Service experiment. In general, it is expected that more experienced cyclists would independently rate roadways higher than a "typical" cyclist because they are more likely to be comfortable riding in more difficult conditions. Please see Appendix D for additional background on the Bicycle Level of Service Model.

Lancaster County Bicycle Level of Service

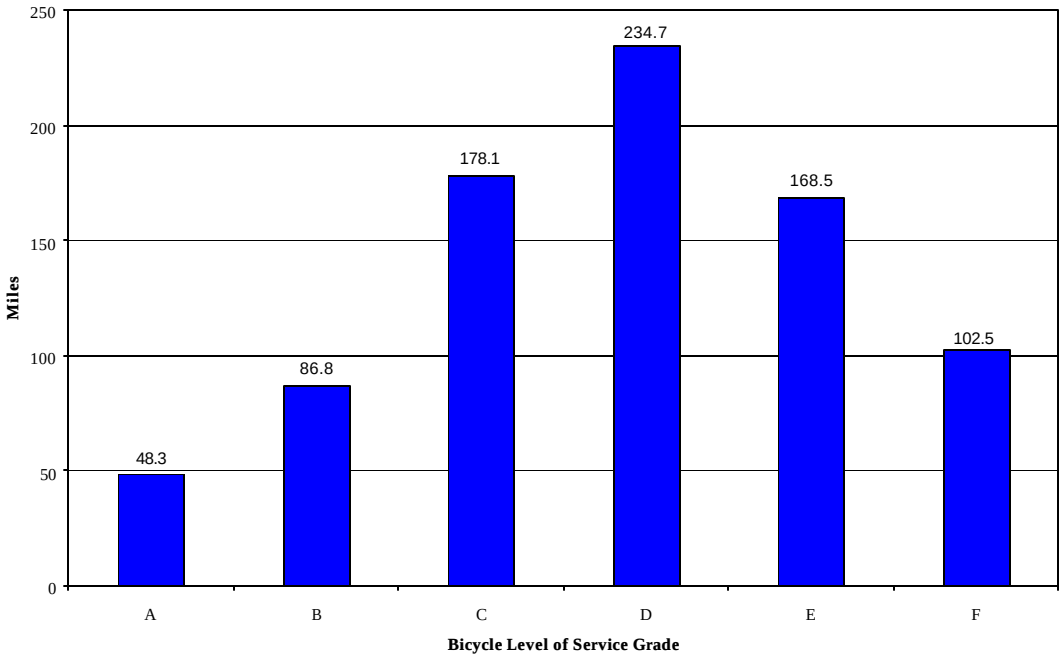


Table 1. Lancaster County Roadway Inventory Summary Table
Study Network Roadways

Total Study Network	Miles	% of Miles	Segments
	*818.8	100.0	747

Bicycle Level of Service	Miles	% of Miles	Segments
A	48.3	5.9	76
B	86.8	10.6	94
C	178.1	21.8	186
D	234.7	28.7	227
E	168.5	20.6	110
F	102.5	12.5	54
Total	**818.9**	**100.0**	**747**

	Miles	% of Miles	Segments
Segments designated as Bike Routes**	24.5	3.0	16
Segments with some Sidewalk on N/E side	170.5	20.8	294
Segments with some Sidewalk on S/W side	192.6	23.5	312
Segments with some Sidewalk	203.0	24.8	328
Segments with complete Sidewalk on Both Sides	86.4	10.5	207
Linear Miles of Sidewalk	257.9		

*Study network includes non-freeway major county roadways
**Segments with green "Bike Route" signs noted by data collectors —does not include the PA "S" Route

Fruitville Pike Bicycle Level of Service Alternatives Analysis

Route Name	From	To	Len. (Ls) (Mi)	Lanes (L) Th #	Lanes (L) Con.	Traffic Data Vol. (ADT) (vpd)	Traffic Data Pct. (HV) (%)	Post. Spd. (SPp) mph	Width of Pavement (Wt) (ft)	Width of Pavement (Wl) (ft)	Width of Pavement (Wps) (ft)	Occu. Park. N/E (%)	Occu. Park. S/W (%)	Rumb. Stps. (Y/N)	Pvmt Cond Lane (5..1)	Pvmt Cond Shdr (5..1)	Bicycle LOS Score	Bicycle LOS Grade (A..F)
Existing Conditions																		
Fruitville Pike	Petersburg Road	Buch Avenue	0.74	2	U	13,143	7	40	13.0	2.0	0.0	0	0	N	3.5	3.5	**5.17**	**E**
Alternatives Evaluation																		
Alternative A: Repaving																		
Fruitville Pike	Petersburg Road	Buch Avenue	0.74	2	U	13,143	7	40	13.0	2.0	0.0	0	0	N	5.0	5.0	**4.86**	**E**
Alternative B: Widening existing 2 foot shoulder to 4 feet																		
Fruitville Pike	Petersburg Road	Buch Avenue	0.74	2	U	13,143	7	40	15.0	4.0	0.0	0	0	N	5.0	5.0	**3.90**	**D**
Alternative C: Widening existing 2 foot shoulder to 8 feet																		
Fruitville Pike	Petersburg Road	Buch Avenue	0.74	2	U	13,143	7	40	19.0	8.0	0.0	0	0	N	5.0	5.0	**2.06**	**B**

L = Total number of through lanes
Con = Configuration of the road segment
ADT = Average Daily Traffic on the segment or link
HV = estimated percentage of trucks
Spd. Lmt. (SP_p) = Posted Speed Limt
W_t = total width of outside lane (and shoulder) pavement
W_l = width of paving between the outside lane stripe and the edge of pavement, if any
W_{ps} = width of parking
OSPA = percentage of segment with occupied on-street parking
PC_t = FHWA's five point pavement surface condition rating ("5" is new, "1" is poor)

In general, of the roadways evaluated, the highest Bicycle LOS grades are on local secondary (lower traffic volume) roadways in the boroughs and Lancaster City and on roadways with wide shoulders in rural areas. Many of the main roadways leading into Lancaster City score low Bicycle LOS grades (see Map 2. Lancaster County Bicycle Level of Service). This coincides with citizens' comments regarding the significant barriers to bicycling from suburban developments surrounding Lancaster City to Downtown Lancaster, where many activities are located. Rural roadways with high speeds and traffic volumes also tended to have low Bicycle LOS grades.

Other Bicycle Level of Service Applications

The Bicycle LOS Model can be used to evaluate bicycle suitability and prioritize bicycle improvements. Bicycle LOS grades are the basis of the bicycle suitability ratings that are shown on the Lancaster Bicycle LOS Map. The suitability ratings allow individual bicyclists to choose the most appropriate route for their level of experience. In addition, Bicycle LOS grades are one of several factors that have been considered in recommending Lancaster County roadways for improvement. Given similar bicycle trip attractors, public meeting suggestions, reconstruction opportunities, and other factors, roadways with lower BLOS grades are given a higher priority for improvement than roadways with higher BLOS grades.

Bicycle LOS can also be used to calculate how alternative scenarios for a proposed project would affect bicyclists. For example, one of the recommendations in this Plan is to improve bicycle conditions on Fruitville Pike. Currently, the section of Fruitville Pike between Petersburg Road and Buch Avenue receives a Bicycle LOS grade of E. The analysis below shows how the existing BLOS would change under three different scenarios: 1) repaving the roadway, 2) repaving the roadway and widening the existing 2-foot shoulder to 4 feet, 3) repaving roadway and widening the existing 2-foot shoulder to 8-feet.

In addition to Bicycle LOS, the analysis of alternatives should consider total cost and impacts on other modes, such as motor vehicles, public transit, and pedestrians. This level of analysis enables transportation decision-makers to determine the best alternative for a roadway cross-section.

Bicycle Level of Service Considerations

The Bicycle LOS Model should be used with the following considerations in mind:

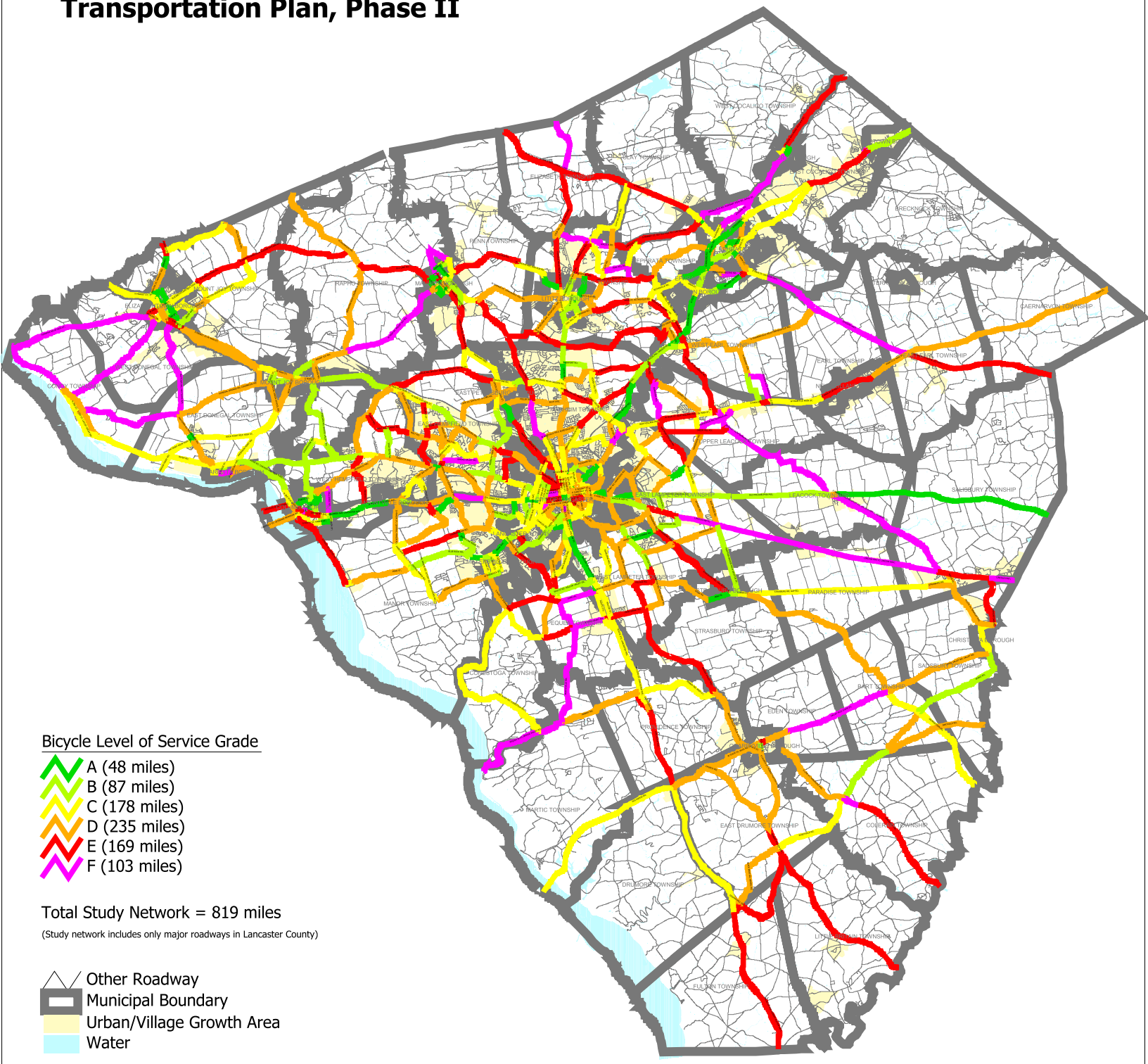
- BLOS grades represent the *perceived* level of comfort experienced by a *typical* bicyclist.
- BLOS grades are not associated with safety or reported crashes.
- The BLOS model is a roadway segment analysis; it does not apply to intersections.

Lancaster County Sidewalk Inventory

Sidewalk coverage was also collected during the field inventory of the 819-mile study network. Coverage was analyzed on a segment-by-segment basis. Only 10.5% of miles of roadway segments that were analyzed had continuous sidewalks on both sides (see Table 1. Lancaster Roadway Inventory Summary Table, above).

Map 2.
Lancaster County Bicycle Level of Service

Lancaster County Bicycle and Pedestrian Transportation Plan, Phase II



Bicycle Level of Service Grade

- A (48 miles)
- B (87 miles)
- C (178 miles)
- D (235 miles)
- E (169 miles)
- F (103 miles)

Total Study Network = 819 miles

(Study network includes only major roadways in Lancaster County)

- Other Roadway
- Municipal Boundary
- Urban/Village Growth Area
- Water

N W E S

2 0 2 4 Miles

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April 2004

In Urban and Village Growth areas only 20.2% of miles (84.1 of 415.7 miles) had continuous sidewalks on both sides.

Most Lancaster County sidewalks are located in Lancaster City and in the surrounding Boroughs (see Map 3. Lancaster County Sidewalk Coverage). In the past several decades, sidewalks have not been a part of regular roadway construction projects on collector and arterial roadways. While some municipalities in Lancaster County have recently begun to require developers to include sidewalks in new communities, there is a serious deficiency of sidewalks on main roadways between developments. These roadways connect residential communities to shopping, offices, parks, transit stops, and other important destinations. Pedestrian accommodation on these roadways, especially in suburban areas, will be critical to making Lancaster County a place where residents and visitors can walk safely and comfortably.

Recommendations for physical improvements to bicycle and pedestrian facilities are listed under Transportation Improvements in Section 4 of this Plan.

Bicycle Parking

Bicycle racks can be found at the train stations, colleges, and some businesses, government buildings, and parks in Lancaster County. In many locations, especially government building sites, bike racks are difficult to find because they are not visible from the street. Other bike racks are broken or do not provide adequate support for a bicycle. Recommendations for bicycle parking are included in Section 4 under Multimodal Access Strategies 2-A and 4-A.

Bicycle and Pedestrian Education and Promotion

Photo courtesy of Dream Ride Projects/CYCLE SMART

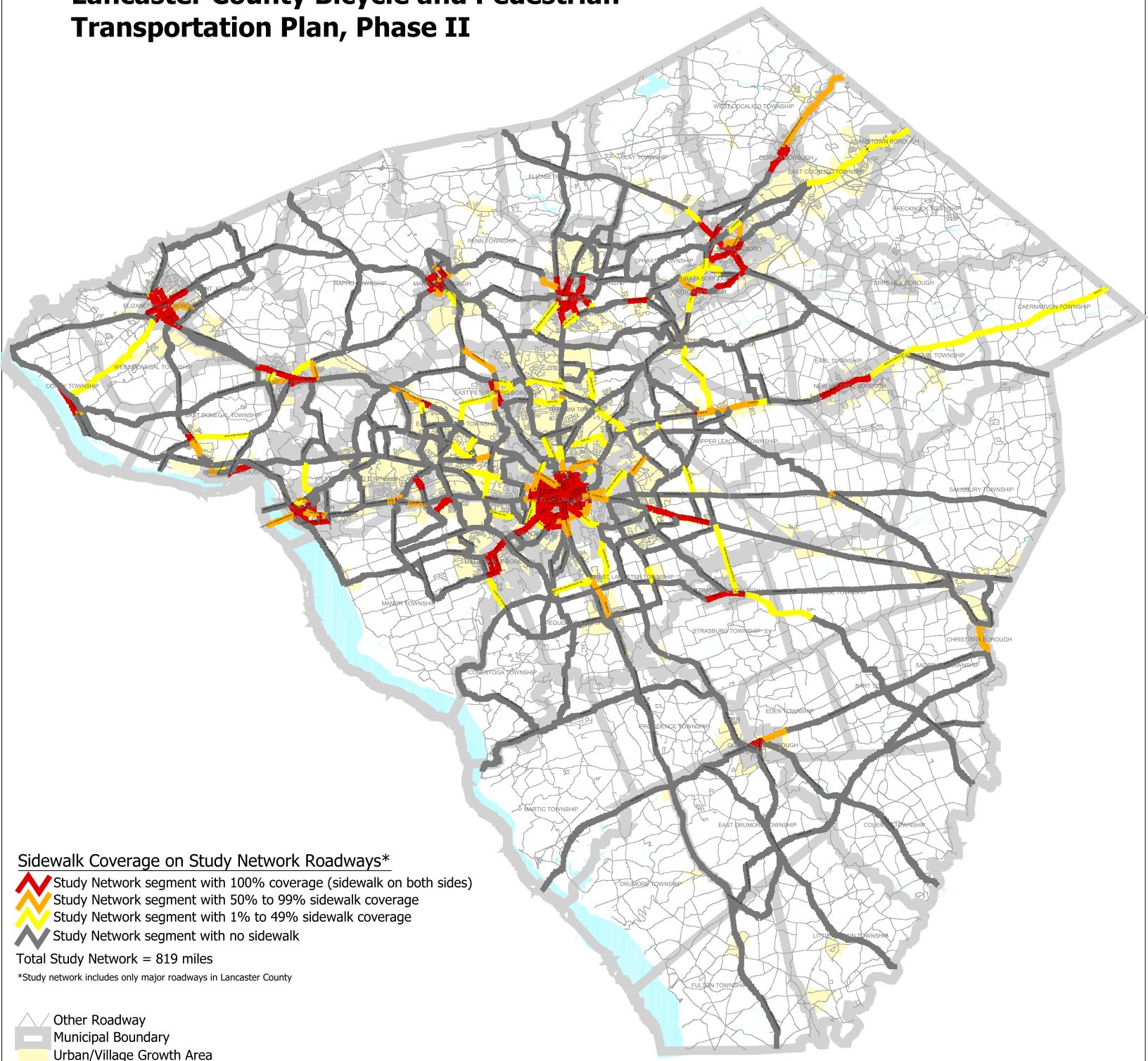
Lancaster County is fortunate to have a number of innovative bicycle and pedestrian education and promotional programs. Bicycle safety is currently taught through several youth education programs in Lancaster County. CYCLE SMART is a program that teaches the importance of proper helmet use, bicycle safety checks, and of the "rules of the road". It combines these elements with practical on-road riding experience supervised by a League of American Bicyclists Certified Instructor. The American Automobile Association (AAA) holds bike safety assemblies and rodeos for 3rd through 6th graders at 72 elementary schools in Lancaster County. These sessions, held once each year in the spring, teach about wearing a helmet, balance and control, and "rules of the road". Adult bicycle safety education courses are offered through the Manheim Township Parks and Recreation Department.

Recommendations for bicycle and pedestrian education programs are included under Education in Section 4

Several organizations offer bicycle tours, walking tours, and bike rides. Walking tours include the Historic Lancaster Walking Tour, Historic Lititz Walking Tour, and "Celebrate Christiana" Walking Tour. Specific bicycle rides include Pedal to Preserve (Lancaster

Map 3.
Lancaster County Sidewalk Coverage

Lancaster County Bicycle and Pedestrian Transportation Plan, Phase II



Sidewalk Coverage on Study Network Roadways*

- Study Network segment with 100% coverage (sidewalk on both sides)
- Study Network segment with 50% to 99% sidewalk coverage
- Study Network segment with 1% to 49% sidewalk coverage
- Study Network segment with no sidewalk

Total Study Network = 819 miles

*Study network includes only major roadways in Lancaster County

- Other Roadway
- Municipal Boundary
- Urban/Village Growth Area
- Water

N W E S

2 0 2 4 Miles

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Farmland Trust), the Dream Ride for Lancaster County (Dream Ride Projects), Nightmare Tour (Dream Ride Projects), and the Covered Bridge Metric Century (Lancaster Bicycle Club). The Lancaster Bicycle Club also organizes weekly rides and scenic tours of Lancaster County. Other rides are designated by signed bike routes, such as the Lancaster County Heritage Bike Route. The Wachovia Cycling Classic is a professional cycling race that draws approximately 15,000 spectators to Lancaster City. Recommendations to promote bicycling and walking are included under Communications in Section 4.

Successful Pedestrian and Bicycle Projects in Lancaster County

While there are challenging conditions for bicycling and walking in some parts of Lancaster County, bicycle and pedestrian conditions are being improved in many municipalities. Several municipalities were contacted to see what activities and projects they have done or are doing to improve bicycle and pedestrian conditions. The following is a list of their responses:

Columbia Borough

- Columbia has included sidewalks within developments and has been able to widen some roadway shoulders to provide more space for bicyclists.

Earl Township

- A climbing lane is provided in the uphill direction at one location on Hollander Road. This allows motorists to overtake bicycles and buggies without going into the opposing traffic lane.

East Hempfield Township

- Lancaster Junction trail from PA 283 to the north is a successful multi-use recreation trail.
- The Township is shifting to narrower residential streets to make design speeds slower and closer to the posted speed limit, which make bicycling and walking more comfortable.
- The Township is also building more connected streets, which make it more convenient to reach destinations on bicycle or on foot, and has the added benefit of making it easier to plow snow.

Ephrata Borough

- The Borough has installed several pedestrian improvements on Main Street. These improvements, including constructing lighting and pedestrian safety improvements, such as high-visibility crosswalks and curb extensions, have been a part of a commitment to supporting retail in Ephrata's central business district.

Ephrata Township

- Sidewalks and shoulder clearance for bicycles and buggies have been provided in a new development on Meadow Valley Road. They connect houses to each other and to nearby schools.

Lancaster City

- Sidewalks are required on both sides of the street
- Pedestrians must be considered when parking lots are designed.
- Curb extensions have been provided near Franklin and Marshall College and the Lancaster Regional Heath Center.
- "Yield to Pedestrians" bollards have been placed at key crosswalks in the downtown area.

Leacock Township

- May be interested in having sidewalks along PA 340 from center of Intercourse to the elementary school, park, and library site east of Intercourse.

Lititz Borough

- Borough has as ordinance requiring sidewalks.
- Developers have been positive about adding sidewalks and striped shoulder space to roadways.

Manheim Borough

- The Historical Society received funding to improve pedestrian access in the area of the local museum.

Manheim Township

- Up until 7 or 8 years ago, sidewalk requirements for developments in Manheim Township were usually waived; there is a much different approach now.
- The Township is planning numerous path systems to connect all schools and parks.

Mount Joy Borough

- Some new developments in the Borough have incorporated sidewalks and multi-use pathways.
- The Borough is planning four parks in its four quadrants that will be connected by greenways.

Rapho Township

- Pedestrian pathways are part of the open space requirement in the township subdivision and land development ordinance.
- A residential subdivision outside Mount Joy Borough will have pedestrian pathways / sidewalks throughout the development.

Warwick Township

- The Township established the Lititz / Warwick Trailway and the Southern Township Trailway System.
- The bicycle and pedestrian improvements that Warwick has implemented have been well-utilized by citizens living near them. Feedback from citizens about bicycle and pedestrian issues has been overwhelmingly positive.

West Hempfield Township

- There are numerous trails in the West Hempfield Township Comprehensive Plan, and a one-mile trail around Grubb Lake has been completed.
- The Township has taken advantage of County Transportation Grants and Growing Greener funds for greenways.

The descriptions above should not be construed as a complete list of all pedestrian and bicycle projects in the County. Many other relevant projects are underway, and are excellent examples of the contributions that both municipalities and private developers can make to improving bicycling and walking conditions throughout the County.

SECTION 3: VISION AND GOALS

This chapter outlines the vision and goals for the Plan. The vision is the "mission statement" for this Plan—it will serve as the guiding principle for all future efforts to support bicycling and walking in Lancaster County. The goals are general guidelines for achieving this vision.

Vision

Participants in the planning process set forth a vision for walking and bicycling in Lancaster County. The following vision statement will guide Plan implementation:

> ***"Lancaster County will be a place where people can safely and conveniently walk or bicycle everywhere."***
>
> ***-Vision Statement for the Lancaster County Bicycle and Pedestrian Transportation Plan***

Section 2 described the existing conditions for bicyclists and pedestrians in Lancaster County, and described many areas in need of improvement. Achieving the vision will require a coordinated, deliberate effort on the part of many different groups. Key contributors will be LCPC, BPAC, PENNDOT, local municipalities, and citizens.

Goals and Objectives

The four goal areas of this Plan are: 1) transportation improvements, 2) education, 3) multimodal access, and 4) communications. These goal areas have been selected to match the four committees of BPAC.

Several recommendations are listed under each goal. They provide more specific direction on how to achieve the four goals. The recommendations and strategies in Section 4 correspond with the goals set forward in this chapter. Each of the BPAC committees will be responsible for guiding implementation of the recommendations in its specific goal area.

1. Transportation Improvements Goal

Develop safe and convenient bicycle and pedestrian accommodations for every type of trip, and for all levels of ability.

Recommendations:

- Improve the system of bicycle and pedestrian accommodations that extends throughout Lancaster County.
- Maintain bicycle and pedestrian facilities.

2. Education Goal

Establish educational programs that teach safe bicycling and walking skills to all ages, and promote safer driving behaviors among motorists, in order to reduce injuries and deaths

Recommendations:

- Work with Lancaster County schools to implement a pedestrian and bicycle safety education program for elementary school students.
- Conduct a Bicycle and Pedestrian Safety Awareness Campaign.

3. Multimodal Access Goal

Improve access to all forms of transportation for all people who bicycle and walk, in order to expand transportation options for residents and visitors to Lancaster County.

Recommendations:

- Implement safety improvements (sidewalks, crosswalks, etc.) for pedestrians and bicyclists near transit stops in the County.
- Provide facilities for the security and comfort of bicyclists and pedestrians at transit stops and stations.
- Promote land use decisions that make it more convenient to bicycle and walk to transit and other destinations.
- Incorporate bicycle and pedestrian accommodations into county and municipal policies and development procedures.

4. Communications Goal

Develop communication programs that increase bicycling and walking, and foster a pro-bicycle and pro-pedestrian awareness in individuals, private sector organizations, and all levels of government.

Recommendations:

- Seek support from local governments for the Lancaster County Bicycle and Pedestrian System
- Increase community involvement in bicycling and walking issues, and expand BPAC's ability to communicate its message about improving Lancaster County for pedestrians and bicyclists.
- Establish programs to increase the awareness of bicycling and walking in the school community, and encourage more kids to bicycle and walk regularly.
- Promote bicycling and walking to Lancaster County organizations.
- Distribute the Lancaster County Bike Map through a wide variety of outlets throughout the County.
- Promote Lancaster County as a place where people can tour historic sites on foot and as a premier destination for bicycle vacations.

SECTION 4: RECOMMENDATIONS

The goals and objectives of the previous section provide a general framework for improving bicycling and walking in Lancaster County. This section lists specific actions that should be taken to meet each objective. Together, they form a strategy for making physical roadway and trail improvements, establishing new programs, and setting new policies to improve bicycling and walking in Lancaster County. Section 5 establishes a timeline for implementation of the recommendations.

The recommendations are classified under the four goal areas: 1) transportation improvements, 2) education, 3) multimodal access, and 4) communications. All four goal areas are essential to achieving the vision of the Plan. Roadway users must be educated in order to use new pedestrian and bicycle facilities safely. Physical improvements to support bicycling and walking must ensure a balance among roadway users, and must coincide with land use policies that discourage sprawling suburban development. People need to be made aware of the benefits of bicycling and walking, so that they are encouraged to consider alternative modes of transportation. Thus, each of the four goal areas are essential to the overall success of the Plan.

Recommendations for Transportation Improvements

As described in Section 2, physical improvements are needed in order to better enable people in Lancaster County to bicycle and walk to destinations. Several approaches can be used to improve bicycle and pedestrian accommodations. These include:

Designating a system of key roadways for bicycle and pedestrian accommodations throughout the County.

- Focusing many physical improvements, especially pedestrian facilities, in Urban and Village Growth Areas.
- Identifying funding sources to assist boroughs and townships with important pedestrian and bicycle issues.
- Maintaining the system to ensure safe conditions.

Transportation Improvements Goal

Develop safe and convenient bicycle and pedestrian accommodations for every type of trip, and for all levels of ability.

Recommendations for these approaches are discussed below.

Recommendation 1: Improve the system of bicycle and pedestrian accommodations that extend throughout Lancaster County.

The Lancaster County Bicycle and Pedestrian System Maps (see Map 4. Lancaster County Bicycle System and Map 5. Lancaster County Pedestrian System) designate key road corridors and intersections to provide connectivity for biking and walking at a countywide level. These locations are the County's highest priority for implementing bicycle and

pedestrian projects. LCPC and other county agencies, municipalities, and state government agencies should give the highest levels of attention to projects that are a part of the Lancaster County Bicycle and Pedestrian System. A variety of sources of information were considered during the development of the County Bicycle and Pedestrian System, as shown in the box below.

The Proposed Bicycle and Pedestrian System – A Result of Analysis and Public Input

The following information was considered when selecting the Lancaster County Bicycle and Pedestrian System (order does not imply importance):

1) Phase I Lancaster County Bicycle and Pedestrian Transportation Plan routes
2) Bicycle Level of Service grades
3) Sidewalk inventory
4) Public comments during community workshops and interviews
5) Pedestrian and Bicycle Survey responses
6) Recommendations from representatives of the Bicycle and Pedestrian Advisory Council
7) Ideas from borough and township government representatives
8) Field observations
9) Urban / Village Growth Areas
10) Projects listed in the 2003-2006 Lancaster County Transportation Improvement Program (TIP)
11) Existing train stations, bus routes, park and ride lots, parks, and other pedestrian and bicycle attractors
12) Pedestrian and bicycle crash location

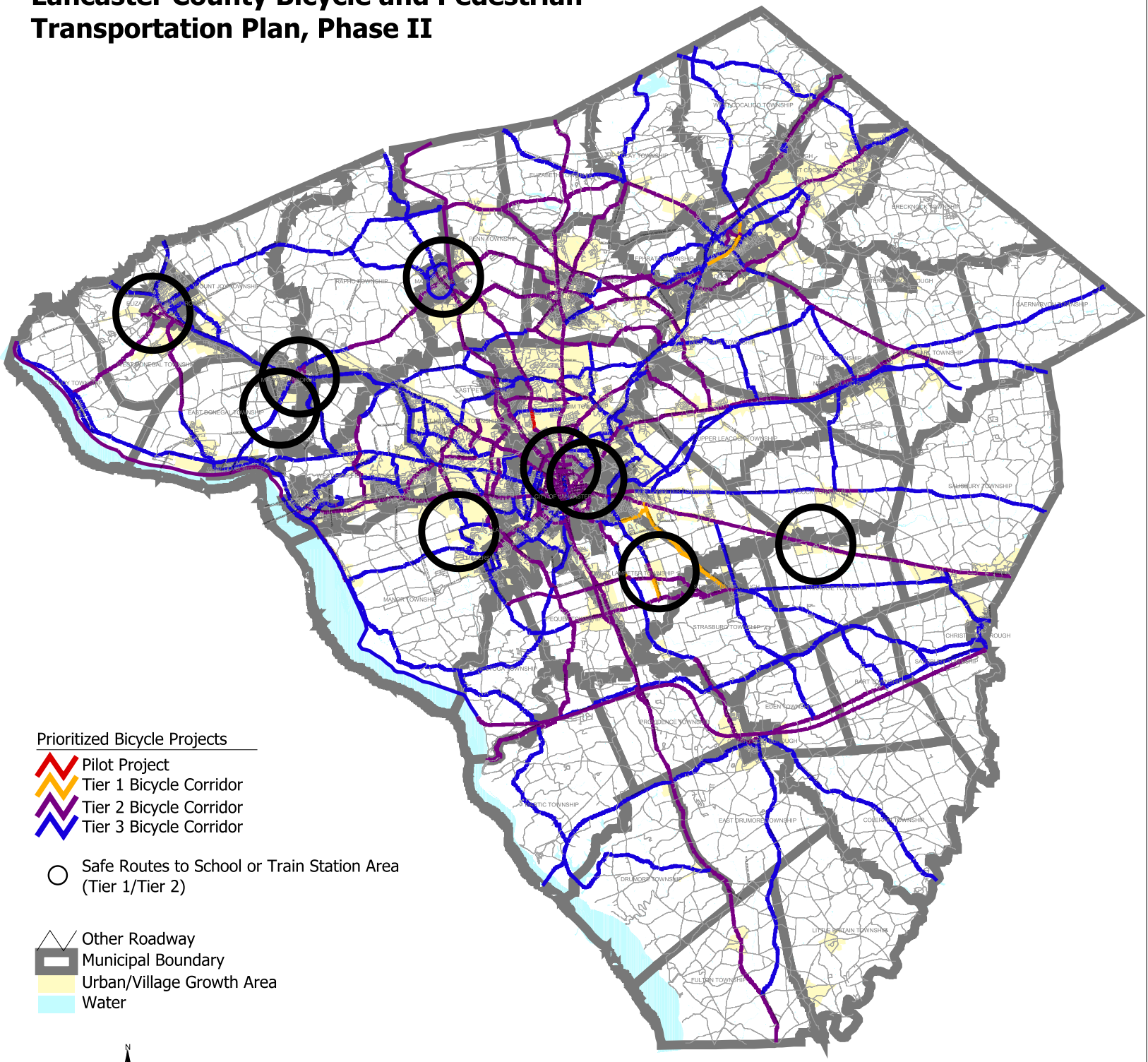
The designated bicycle system is approximately 850 miles, and the pedestrian system is approximately 360 miles. Physical improvements are needed on many miles of this system. When these improvements are made, they will provide a complete bikeway network consisting of collector and arterial roadways, multi-use trail corridors, and pedestrian improvement zones in key areas of Lancaster County. This bicycle and pedestrian system is designed to:

- Serve existing areas of the greatest population density, employment density, and concentration of activities, as well as areas of expected growth.
- Provide access to the bus system and train stations.
- Improve key crossings of major highway, river and/or railroad barriers (this includes working with PENNDOT and the Pennsylvania Turnpike Authority Commission on the design of underpasses, overpasses and interchange ramps).
- Serve areas of the County with populations that tend to rely on public transit and non-motorized transportation.
- Provide a major bicycle route within one half-mile of most of the major residential neighborhoods and communities.
- Provide connectivity between important activity centers within the County.

The Lancaster County Bicycle and Pedestrian System is divided into four categories: 1) Pilot Projects (to be completed within 2 years), 2) Tier 1 Projects (to be completed within 5 years), 3) Tier 2 Projects (to be completed within 10 years), and 4) Tier 3 Projects (to be completed within 20 years). These four types of projects will be implemented on different schedules (per the strategies identified below), but will all contribute to the complete system. The prioritization categories are shown on the Lancaster County Prioritized Bicycle System and Lancaster County Prioritized Pedestrian System Maps. The recommendations below define strategies for achieving this system.
(Primary Partners: LCPC, BPAC, PENNDOT and local municipalities)

Map 4.
Lancaster County Prioritized Bicycle System

Lancaster County Bicycle and Pedestrian Transportation Plan, Phase II



Prioritized Bicycle Projects

- Pilot Project
- Tier 1 Bicycle Corridor
- Tier 2 Bicycle Corridor
- Tier 3 Bicycle Corridor

Safe Routes to School or Train Station Area (Tier 1/Tier 2)

- Other Roadway
- Municipal Boundary
- Urban/Village Growth Area
- Water

N W E S

2 0 2 4 Miles

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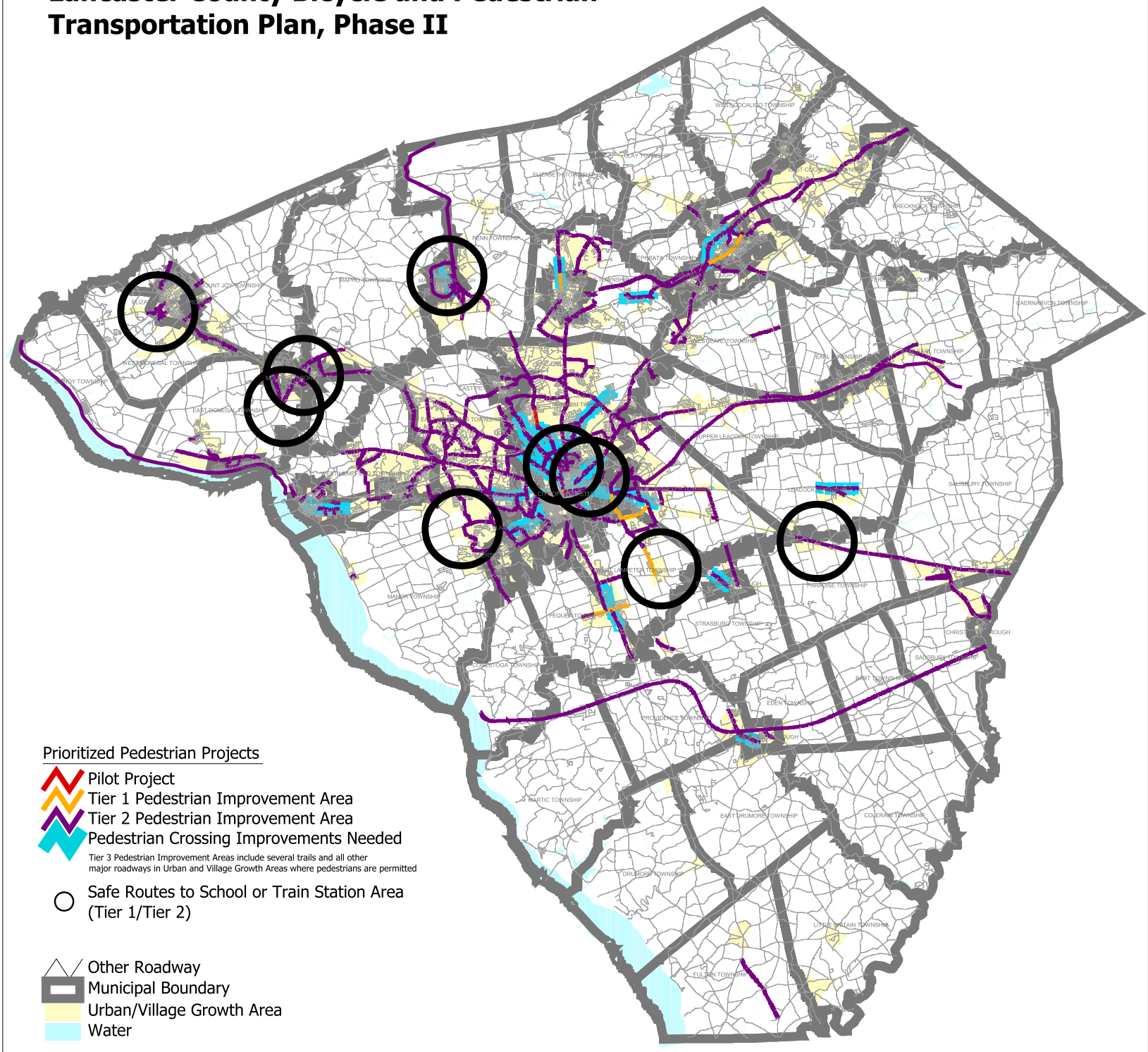
April 2004

Map 5.
Lancaster County Prioritized Pedestrian System

Lancaster County Bicycle and Pedestrian Transportation Plan, Phase II



Prioritized Pedestrian Projects

- Pilot Project
- Tier 1 Pedestrian Improvement Area
- Tier 2 Pedestrian Improvement Area
- Pedestrian Crossing Improvements Needed

Tier 3 Pedestrian Improvement Areas include several trails and all other major roadways in Urban and Village Growth Areas where pedestrians are permitted

- Safe Routes to School or Train Station Area (Tier 1/Tier 2)

- Other Roadway
- Municipal Boundary
- Urban/Village Growth Area
- Water

N W E S

2 0 2 4 Miles

Toole Design Group
April 2004

Strategy 1-A: Incorporate pedestrian and bicycle facilities as standard features in all transportation improvement projects.

Roadway and transit construction and re-construction projects offer excellent opportunities to incorporate safety improvements for pedestrians and bicyclists. It is less expensive to accomplish these projects simultaneously, than to initiate safety improvements later, as a "retrofit." Facilities that should be included in these projects are described in the box on the following page. Additional facilities are discussed in Appendix E.

The comfort and safety of pedestrians and bicyclists is dependent, to a great extent, on the speed, volume and proximity of motor vehicle traffic. Sidewalks are therefore a key ingredient of any pedestrian network, and are therefore *essential* on both sides of residential streets, collector and arterial roadways in Urban and Village Growth Areas. Traffic calming should be incorporated in areas where speeding is a problem. The County and its municipalities should establish policies to ensure that this basic level of accommodation is provided to all pedestrians.

On collector and arterial roadways (i.e. roads with higher speed traffic and larger volumes of vehicles), paved shoulders should be a standard feature. Because bicyclists commonly travel between villages, paved shoulders should be provided both within and outside of Urban and Village Growth Areas.

Roadway right-of-way may need to be expanded in the long term to accommodate both paved shoulders and sidewalks. In addition, any time a bicycle or pedestrian facility is provided, it should not be removed or severed as a part of a future project.

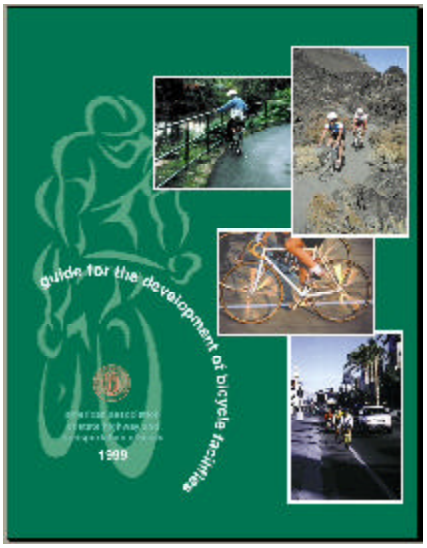
PENNDOT Bicycle and Pedestrian Checklist

In order to achieve the objectives above, LCPC and Lancaster County municipalities should fully support using the PENNDOT Bicycle and Pedestrian Checklist for all construction and retrofit projects. The County's Municipal Transportation Grant program should be amended to include the PENNDOT Bicycle and Pedestrian Checklist as part of the application. The PENNDOT Checklist is included as Appendix J of the *PENNDOT Design Manual, Part 1A* (see Appendix B of this Plan and see Multimodal Access Strategy 4-A, below). This checklist requires bicycle and pedestrian accommodations to be considered throughout the planning and programming, scoping, and final design phases of a project. LCPC should work with municipalities to ensure that PENNDOT follows this checklist on all projects, especially projects that are a part of the Lancaster County Bicycle and Pedestrian System (see description below).

Other Design Guidelines

This Plan provides a vision for future bicycle and pedestrian projects and programs. It includes some general recommendations for facility design, but it is not a design guide. Speed, traffic volume, adjacent land use, intersections, and many other factors must all be considered when constructing a facility. In addition to the PENNDOT Bicycle and Pedestrian Checklist, the County should reference the following documents when designing bicycle and pedestrian facilities:

- *Guidelines for the Development of Bicycle Facilities* (Association of American State Highway Transportation Officials (AASHTO) 1999)[23]
- *Innovative Bicycle Treatments* (Institute of Transportation Engineers (ITE)[24]
- *Traffic Calming: State of the Practice* (Institute of Transportation Engineers (ITE) and Federal Highway Administration (FHWA) 1999)[25]
- *Pedestrian Facilities Users Guide: Providing Safety and Mobility* (Federal Highway Administration (FHWA) 2002)[26]
- *Americans with Disabilities Act Accessibility Guidelines* (ADAAG) (United States Access Board 2003)[27].



Recommended Types of Bicycle and Pedestrian Facilities

Sidewalks

Sidewalks are the central ingredient of the pedestrian network. Sidewalk installation should be a routine part of road improvement and new construction projects in urban and suburban areas. Sidewalks should be included on both sides of roadways within Urban and Village Growth Areas and should be a minimum of 5-feet wide. Where a 5-foot minimum width can not be provided, the maximum possible sidewalk width is better than no sidewalk at all. Sidewalks should be separated from the roadway with a landscape buffer and should comply with the most recent ADA Accessibility Guidelines.

Pedestrian Crossing Treatments

Safe and convenient roadway crossings are essential to the Lancaster County pedestrian system. Marked crosswalks are used to designate optimal or preferred locations for pedestrians to cross. They should be marked with high-visibility markings (per the MUTCD) and be at least 6-feet wide[32]. Marked crosswalks are often more effective when they are complemented by good lighting, "Yield to Pedestrians" bollards, and traffic calming measures, such as median crossing islands and curb extensions. Raised crosswalks serve the dual purpose of slowing traffic and improving pedestrian visibility. Curb ramps are required at all marked and unmarked crosswalks.

Shared Roadways

Shared roadways are streets and roads where bicyclists can be served by sharing the travel lanes with motor vehicles. Usually, these are streets with low traffic volumes and / or low speeds, which do not need special bicycle accommodations in order to be bicycle-friendly.

Signed-Shared Roadways

A signed-shared roadway is shared roadway which has been designated by signing as a preferred route for bicycle use. Bike route signs can posted on key routes to indicate to bicyclists that particular advantages exist to using these routes compared with alternative routes.

Striped/Paved Shoulders

Paved shoulder space improves the safety and comfort of bicyclists. There is no minimum width for paved shoulders, however a width of at least 4 feet is preferred. The 1993 *Non-Motorized Vehicle Study* recommended 8-foot shoulders on the County's busiest roadways. On many roadways, motor vehicle travel lanes can be narrowed to provide more shoulder space. According to the AASHTO Guide for the Development of Bicycle Facilities (1999), "where 4-foot widths cannot be achieved, any additional shoulder width is better than none at all."[22] Paved shoulders also improve safety for motor vehicles, prevent pavement damage to the travel lanes, and provide space for pedestrians and buggies.

Bike Lanes

A bike lane is a portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists. Bike lanes are always located on both sides of the road (except one way streets), and carry bicyclists in the same direction as adjacent motor vehicle traffic. The minimum width for a bicycle lane is 4 feet; five- and six-foot bike lanes are typical for collector and arterial roads. Bicyclists retain the right to use the travel lanes on bike lane streets when the bike lane is unusable [even when a bike lane is present].

Shared-Use Pathways/Multi-Use Trails

Shared use pathways (multi-use trails) are an important component of a bicycle and pedestrian transportation system. They can provide a high quality walking and bicycling experience in an environment that is protected from motor traffic. Shared-use paths should be a minimum of ten-feet wide. They can be paved. Their width may be reduced to eight feet if there are physical or right-of-way constraints. These types of paths can be constructed within a roadway corridor right-of-way, in their own corridor (such as a greenway trail or rail-trail), or be a combination of both. Shared-use paths should not be used to preclude on-road bicycling but rather to supplement a system of on-road bicycle facilities. Bicyclists retain the right to use the roadway even if the path or trail is adjacent to it. Shared-use paths are most appropriate in corridors with few driveways and intersections because conflicts between turning motorists and bicyclists are less of a problem.

Other Facilities

The facilities described above should be complemented by other pedestrian and bicycle accommodations to make bicycling and walking safer and more convenient in Lancaster County. Other types of improvements are discussed in Appendix E.

LCPC and BPAC should continue to track the Transportation Improvement Program (TIP) and other lists of upcoming projects. As the TIP is updated in future years, pedestrian and bicycle improvements should be included in all programmed projects. Appendix F lists the connections to transit, park and ride lots, new construction roadway corridors, reconstruction roadway corridors, intersections, and bridges that are included in the 2003-2006 Lancaster County TIP.

LCPC and BPAC should also monitor the regular repaving schedules of PENNDOT and the local municipalities to identify opportunities to improve conditions for bicyclists and pedestrians. Special attention should be given to projects that are a part of the Lancaster County Bicycle and Pedestrian System.

Strategy 1-B. Implement the Pilot Projects listed in this Plan.

LCPC should work with PENNDOT and municipalities to implement the Pilot Projects listed in this Plan (see Section 5 – Implementation). The Pilot Projects are intended to be implemented quickly at a low cost during the first two years of the Plan. When these projects are implemented, LCPC and the BPAC should use them as examples to promote further pedestrian and bicycle improvements in other parts of the County. Pilot project locations are shown on the Lancaster County Prioritized Bicycle System and Lancaster County Prioritized Pedestrian System Maps.

Strategy 1-C. Establish an on-going program to eliminate critical gaps in the network through independent retrofit projects.

LCPC should work with PENNDOT and municipalities to initiate independent retrofit projects that create a seamless network of bicycle and pedestrian facilities in the County. The Tier 1 list (see Section 5 – Implementation) identifies good candidates for independent improvement projects. The Tier 1 list can build upon the success of the Pilot Projects.

These retrofit projects will need to go through the planning and programming process to be implemented. Projects must be included in the Countywide Transportation Improvement Program (TIP) or be on a municipal construction schedule.

Strategy 1-D: Improve pedestrian conditions through the active involvement of boroughs, townships, and neighborhoods throughout the County.

Pedestrian issues are of paramount concern in many boroughs and townships throughout the County, as well as in Lancaster City. In Urban and Village Growth Areas and rural residential developments, it is recommended that all roadways have sidewalks on

both sides. In addition to sidewalks, pedestrian crossing improvements, traffic calming features, and other physical improvements are needed to provide safe and convenient conditions for pedestrians. LCPC should provide planning assistance to municipalities that are interested in developing plans for making pedestrian improvements. LCPC should actively pursue funds for this program through PENNDOT's Supplemental Planning Funds (through the Unified Planning Work Program).

With this funding, LCPC should offer Community Design Assistance Grants (CDAG) to municipalities. Municipalities would compete for CDAG funds that would be used to develop a Pedestrian Improvement Plan for a specific area or neighborhood. This would be done through a walkability audit and a charrette-style public meeting. Local business leaders, municipal staff, and citizens would all be invited to the session. Recommendations from the charrette would be prioritized and cost estimates/funding options would be explored.

Strategy 1-E: Maintain existing signed bicycle routes and post signs on additional routes.
LCPC should work with municipalities to maintain existing and develop new signed bicycle touring routes. One existing signed touring routes are the Lancaster Loop Route (a 38-mile loop around Lancaster City) and the Museum Bike Route in the east-central part of Lancaster County. Many of the Lancaster Loop Route signs are missing, and new signs should be posted and maintained. New routes should be identified and signed as needed in the future.

Strategy 1-F: Employ new design strategies to improve pedestrian and bicycle access throughout the County.

Pedestrian Crossing Treatments
LCPC should work with municipalities to improve pedestrian crossing conditions throughout the County. All marked and unmarked crosswalks must have accessible curb ramps. Marked crosswalks should be highly-visible. Pedestrian crossings can be improved with treatments such as push-buttons, "Yield to Pedestrians" bollards, medians, countdown signals, and flashing crosswalks.

Push-buttons allow pedestrians to receive a full crossing interval at a signalized intersection. The push-buttons should include a small sign below the button that explains what pedestrian signal heads mean and which crossing direction the button is for. These are already included in many locations in the County, but more should be installed at key signalized crossings.

"Yield to Pedestrians" bollards are bright yellow signs placed in the middle of the road at marked crosswalks. They remind drivers of their responsibility to yield to pedestrians in the crosswalk. Pedestrian bollards are currently being used in Lititz, Ephrata, Manheim Borough, and Lancaster City, and should be tested in other communities. Pedestrian bollards will soon be included in the Manual on Uniform Traffic Control Devices (MUTCD) [28].

Medians or pedestrian crossing islands provide a refuge for pedestrians so they can cross one direction of traffic at a time. They are most beneficial on wide roadways and at intersections with heavy traffic. Many of the major roads in Lancaster County should receive this treatment.

Pedestrian countdown signals show how much time a pedestrian has remaining to cross the street. They can be designed to begin counting down at the beginning of the walk phase or at the beginning of the clearance (flashing "DON'T WALK") interval. Lancaster County should install these signals in several urban areas and test their effectiveness.

Countdown signals will soon be included in the Manual on Uniform Traffic Control Devices (MUTCD).

Flashing crosswalks have in-pavement lights that flash when a pedestrian is crossing within the crosswalk. The flashing lights make drivers more aware of crossing pedestrians. Lancaster should install these crosswalks in several urban areas and test their effectiveness. Flashing crosswalks will soon be included in the Manual on Uniform Traffic Control Devices (MUTCD).

Bicycle-friendly traffic signals.
LCPC should work with PENNDOT and municipalities to install traffic signals that meet bicyclists' needs, and to fully incorporate design guidelines established for this purpose in the AASHTO Guide for the Development of Bicycle Facilities, and the 2003 Manual on Uniform Traffic Control Devices. Bicycle detection systems allow bicyclists to trip the traffic signal so that they can proceed on a green light. Video detection and in-pavement loops are two technologies that can be used for this purpose. Video detection also has the potential to detect buggies and pedestrians.

In addition, signals should be designed to provide an adequate clearance interval for bicyclists who enter the intersection at the end of the green phase and a total crossing time long enough to accommodate bicyclists starting up on a new green phase. This is particularly important during periods of low traffic flow.

BPAC can assist with prioritizing signalized intersections that need these types of improvements.

Re-design and Re-construct Intersections and eliminate "No Pedestrian Crossing" signs.
LCPC should work with PENNDOT to re-design and re-construct intersections that are not safe for pedestrians. Many crossings at these intersections have "No Pedestrian Crossing" signs. Safety concerns should not be an excuse for not providing bicycle and pedestrian access through an intersection. Instead, intersections should be reconstructed to provide safe and convenient access to nearby activities for all pedestrians, including people with disabilities. Top priority should be given to intersections in areas where people live, and work, and often travel on foot. LCPC should ask for financial and technical assistance from PENNDOT to develop a methodology for systematically evaluating and improving intersections with "No Pedestrian Crossing" signs.

LCPC should also improve pedestrian crossings in locations without traffic signals. Well-marked crosswalks should be provided to improve driver awareness of crossing pedestrians and to direct pedestrians to the best crossing locations. These crosswalks should be supplemented with other treatments, such as median crossing islands, especially on roads with higher speeds and traffic volumes. To provide safe crossings, LCPC should adopt the Federal Highway Administration's recommendations for installing marked crosswalks and other needed pedestrian improvements at uncontrolled locations[29].

Implement other demonstration projects that show different ways of providing safer and more convenient bicycle and pedestrian crossings.
LCPC should work with municipalities and PENNDOT to implement innovative projects to improve bicycle and pedestrian crossings. Street intersections are significant barriers to pedestrians and bicyclists in Lancaster County. Shortening crosswalks, providing refuges in the middle of long crosswalks, and using tight turning radii to reduce vehicle turning speeds are treatments that can improve safety and comfort at intersections. Other appropriate intersection treatments include high visibility crosswalks, curb ramps, curb extensions, raised crosswalks, median refuges, pedestrian countdown signals, and more

(see Appendix F for descriptions of these pedestrian accommodations). Before and after studies should be conducted for each of these projects to document effectiveness. This evaluation should consider the impacts of these projects on emergency vehicles. Demonstration projects can make these treatments more familiar to municipalities throughout Lancaster County.

Strategy 1-G: Augment the on-road network with high quality off-road paths that offer novice cyclists an opportunity to become more confident, and provide pedestrians with a car-free alternative.

BPAC, LCPC, and municipalities should work with the Lancaster County Department of Parks and Recreation to encourage construction of multi-use trails in Lancaster County. The Conewago Recreational Trail, Lititz-Warwick Trailway, and Lancaster Junction Recreation Trail are some of the examples of successful trails in the County. Multi-use trails will complement the on-road system of bicycle and pedestrian facilities.

Multi-use trails have increased the quality of life and raised property values in many parts of the country, including the neighborhoods near the Lititz-Warwick Trailway and the Conewago Trail north of Elizabethtown. Several of these benefits are summarized in a report by the Trails and Greenways Clearinghouse[30]. Many multi-use trails are built on abandoned rail lines. If there is no abandoned rail line nearby, developers can contribute to the community by providing a trail along a linear park or waterway within the development.

Municipal involvement is essential to the development of off-road paths throughout the County because most of the new trails that have been proposed will be owned by the municipalities. Lancaster County currently owns only the Conewago and the Lancaster Junction Recreational Trails.

The following trail projects were supported by public comments during this Plan:

- Susquehanna River Trail System
- Atglen-Susquehanna Rail Trail
- Conestoga Greenway
- Manheim Township 12-Mile Bike Path
- Ephrata Trails along the Cocalico Creek and on the abandoned Conrail line
- Manheim Borough Loop Trail
- Akron-Warwick rail -trail

This list includes several proposed shared-use paths of countywide significance. There are many other existing and proposed projects throughout the County. Please refer to individual jurisdictions for details.

Recommendation 2: Maintain bicycle and pedestrian facilities.

LCPC should provide guidelines for municipal public works departments on the maintenance of bicycle and pedestrian facilities. These Maintenance Guidelines would apply to the roadway surface, roadway shoulders and bike lanes, sidewalks, and shared-use paths. Maintenance should include regular sweeping,

surface repairs, pavement overlays, vegetation, signs and stripes, drainage improvements, utility cuts, and snow removal. These maintenance items are described below.

Sweeping
Debris collecting on roadway shoulders is a significant maintenance issue in the County. LCPC should encourage municipalities to establish a seasonal sweeping schedule, sweep bikeways whenever there is an accumulation of debris on the facility, and provide extra sweeping in the fall in areas where leaves and debris accumulate in bike lanes and shoulders.

Surface Repairs
County sidewalks, roadways, and trails should be maintained with a smooth surface, free of cracks, potholes, bumps and other physical problems. The County should set up a hotline for citizens to request spot improvements and should also inspect roads regularly to note surface problems. The County should work with municipalities to make repairs as soon as possible.

Drainage Improvements
LCPC should work with PENNDOT and municipalities to replace all deficient drainage grates with bicycle-safe grates and raise catch basin grates flush with the pavement. PENNDOT and municipalities should also repair or relocate faulty drains at intersections where water backs up onto the curb cut or into the crosswalk.

Vegetation
Vegetation encroaching into sidewalks, roadways, and other bikeways creates hazards. LCPC should work with municipalities to cut back vegetation to prevent encroachment and control roots to prevent break-up of the surface. Adequate clearances and sight-distances should be maintained at driveways and intersections.

Utility Cuts
Utility cuts can leave a rough surface for cyclists if not back-filled carefully. LCPC should encourage municipalities to place cut lines in an area that will not interfere with bicycle travel. Cuts that are parallel to bicycle traffic should not leave a ridge or groove in the bicycle wheel track. Pavement overlays should extend the entire width of the shoulder.

Snow Removal
Snow stored on sidewalks (especially at intersections), bike lanes, shoulders, and shared-use paths impedes walking and bicycling in winter. Municipalities should strive to remove snow from these facilities during the winter[e]. Special attention should be given to intersections to make sure that snow banks do not block sidewalks and paths where they cross plowed roads. Snow banks must be removed where crosswalks connect to sidewalks (or other pedestrian access ways) and where crosswalks cut through median islands.

(Primary Partners: LCPC, BPAC, PENNDOT and local municipalities)

[e]Some shared-use pathways are used by cross country skiers during the winter and may be an exception to this recommendation.

Recommendations for Education Programs

Residents and visitors should be educated on how to use roadways, sidewalks, multi-use trails, and crosswalks safely as Lancaster County's system of bicycle and pedestrian facilities develops. Education of all roadway users is also important to creating a more comfortable environment for biking and walking. Automobile drivers should be aware of non-motorized roadway users, whether they are riding in travel lanes, walking on the shoulder, or crossing the street. Both pedestrians and bicyclists should behave safely when walking and biking along or across roadways. Bicyclists have the rights and duties of vehicle drivers, and should be given an equal right to use the roads. Cycling safely on the roads should be encouraged.

Education Goal

Establish educational programs that teach safe bicycling and walking skills to all ages, and promote safer driving behaviors among motorists, in order to reduce injuries and deaths.

Municipal police should enforce proper bicycling, walking, and driver behavior. Implementation of these recommendations will require the cooperation of the County, schools, police departments, employers, and other groups.

Recommendation 1: Implement a pedestrian and bicycle safety education program for elementary school students.

Strategy 1-A: Develop a Pedestrian and Bicycle Safety Education Program in Lancaster County and offer the program as a pilot.

LCPC should work with Lancaster County schools to develop a Pedestrian and Bicycle Safety Education Program that can be offered in the County's elementary schools. Lancaster County educators and law enforcement officers should be involved during development of the lessons. This program can build upon the current efforts of programs in the County, such as CYCLE SMART and AAA bike safety assemblies. It is important to have hands-on lessons that include both indoor classroom learning and outdoor skills training. LCPC should establish the Pedestrian and Bicycle Safety Education Program by pilot testing it at several schools.

Pedestrian and Bicycle Safety Education Programs have been developed and implemented in states such as Florida, Texas, Hawaii, Maine, and Maryland. These programs teach kids safe behaviors and hands-on skills that improve their safety. Safe Routes to Schools programs (see Communications Strategy 3-A below) and Super Biker and Super Walker encouragement programs (see Communications Strategy 4-B below) can be done at schools at the same time to address pedestrian and bicycle issues comprehensively.

(Primary Partners: LCPC, Lancaster County Public Schools, Lancaster County bicycle and pedestrian safety education organizations)

Strategy 1-B: Seek highway safety funds for bicycle and pedestrian safety programs.

LCPC and its education partners should aggressively seek highway safety funds from PENNDOT's Bureau of Highway Safety and Traffic Engineering (BHSTE). These funds could be used for the elementary school Pedestrian and Bicycle Safety Education Program (see above) or other pedestrian and bicycle safety efforts in Lancaster County. BHSTE's Crash Information Systems and Analysis Division is responsible for administrating state and federal grants for highway safety.

Bicycle and pedestrian safety have been under-funded in Pennsylvania, considering that bicycle and pedestrian fatalities represent 13 percent of all traffic fatalities in the Commonwealth[21]. Lancaster County should position itself to take advantage of increased funding at the state level to make bicycling and walking safer.

(Primary Partners: LCPC)

Photo courtesy of Dream Ride Projects/ CYCLE SMART

Recommendation 2: Conduct a Bicycle and Pedestrian Safety Awareness Campaign.

Strategy 2-A: Encourage all driver education and traffic school classes to devote more time to teaching safe operating behavior around bicycles and pedestrians.

LCPC should work with driver education instructors in the Lancaster County Public Schools and operators of traffic schools to encourage the inclusion of bicycle and pedestrian safety messages in their Drivers Education classes. These safety messages can be drawn from campaign materials that have been developed recently in the Washington, DC region.

(Primary Partners: LCPC, Lancaster County driver education groups)

Strategy 2-B: Distribute brochures and make public safety announcements about safe operating behavior near bicyclists and pedestrians.

LCPC should work with municipal police departments to distribute materials about safe driving behavior near bicyclists and pedestrians. These materials can also be drawn from the recent safety campaign in the Washington, DC region. Educational efforts should define the responsibilities of drivers and bicyclists and pedestrians. LCPC and the police could disseminate the safety message by distributing brochures or making public safety announcements.

(Primary Partners: LCPC, municipal police departments)

Messages for Bicyclists

- Wear a helmet—it's the law for kids under 12.
- As a vehicle driver, you have the same rights and responsibilities as a motorist.
- Obey all traffic signals, signs, and lane markings.
- Ride on the right side of the road with the flow of traffic—never against it.
- Pass slower moving or stopped vehicles on the left.
- Ride predictably and defensively. Use hand signals before turning.
- Stay visible, and use lights, reflectors and bright clothing when riding at night.
- Make eye contact with motorists and pedestria ns before crossing paths with them.
- Always yield to pedestrians, even when turning, and especially at a "right turn on red" intersection.
- Avoid cycling on sidewalks.

(Credit: Washington, DC region StreetSmart Campaign)

Bus Poster from StreetSmart—A Public Safety Program of the District of Columbia, Maryland, and Virginia

Strategy 2-C: Develop educational messages for bicyclists and pedestrians, and communicate them throughout the County.

LCPC and BPAC should work with a municipal police department to distribute key messages to bicyclists and pedestrians. These messages should be communicated through the Lancaster County Bicycle Map, on brochures, in newspaper or radio messages, or through other sources. Example messages are shown in the adjacent box.

(Primary Partners: LCPC, municipal police departments)

Messages for Pedestrians

- Cross the street at marked crosswalks and intersections.
- Stop and look every time before crossing streets, even when you have the right-of-way, and especially at intersections with "right turn on red."
- Before crossing, look left, right, then left again, and over your shoulder for turning vehicles.
- Begin crossing the street on "Walk" signals—never on a solid or flashing "Don't Walk."
- Use pedestrian push buttons to activate / extend the walk signal.
- Use sidewalks. If none, walk facing traffic so you see vehicles, and drivers see you.
- Make eye contact with drivers so they see you. Never assume they do.
- Stay visible after dark and in bad weather with light-colored or reflective clothing.

(Credit: Washington, DC region StreetSmart Campaign)

Strategy 2-D: Increase police enforcement of safe driver behavior around pedestrians and bicyclists and safe vehicle operation by bicyclists.
LCPC should work with municipal police departments to increase enforcement of safe driver behavior around pedestrians and bicyclists. For example, tickets could be given to drivers who do not yield to pedestrians in crosswalks (pedestrian crosswalk sting) and drivers who speed near schools. This can be done as a part of the Bicycle and Pedestrian Safety Awareness Campaign.

The educational messages could also define the responsibilities of drivers and bicyclists and pedestrians, describe the proper attire for safe bicycling and walking, and provide bicycle and pedestrian crash and injury statistics. Increased police enforcement of safe driver behavior around pedestrians and bicyclists and ticketing bicyclists who violate the vehicle code could accompany the campaign. LCPC should monitor the number of tickets given to motor vehicle drivers and bicyclists. This information can be used to identify changes in enforcement and improvements in behavior over time.

(Primary Partners: LCPC, BPAC, municipal police departments, Lancaster County bicycle and pedestrian safety education organizations)

Recommendations for Multimodal Access

Multimodal Access Goal

Improve access to all forms of transportation for all people who bicycle and walk, in order to expand transportation options for residents and visitors to Lancaster County.

Pedestrian and bicycle access is important to providing a seamless, multimodal transportation system in Lancaster County. Good-quality bicycle and pedestrian facilities near transit stops can make it more comfortable for residents to access the bus or train. Safe crossings, safe and secure bike parking, and comfortable conditions for waiting also make transit more attractive to potential riders. Dense, mixed-use developments near transit stops create shorter trip distances, which make it more convenient to walk and bike to transit and other destinations.

Recommendation 1: Implement safety improvements (sidewalks, crosswalks, etc.) for pedestrians and bicyclists near transit stops in the County.

Strategy 1-A: Establish minimum standards for bicycle and sidewalk facilities near transit stops and stations.

LCPC should work with municipalities to set minimum standards for sidewalk facilities and Bicycle Level of Service within a specified distance of a transit stop. Sidewalks should be required on both sides of all roadways within one-quarter mile of all bus stops and within one-half mile of all train stations, bus stations, and park-and-ride lots. All roadways within one-half mile of all bus stops and within one mile of all train stations, bus stations, and park-and-ride lots should have a minimum Bicycle Level of Service of "B".

(Primary Partners: LCPC and Municipalities)

Strategy 1-B: Conduct a field study of bicycle and pedestrian access to all transit stops and stations.

LCPC and Red Rose Transit Authority (RRTA) should study bicycle and pedestrian access to all transit stations and stops. This field study should identify locations where bus stops should be moved; bus stops that need improved signs, benches, and shelters; and roads near all transit stops and stations that need improved crossings. The study should generate a list of specific physical improvements to make bicycle and pedestrian access to these locations safer.

(Primary Partners: LCPC and RRTA)

Recommendation 2: Provide facilities for the security and comfort of bicyclists and pedestrians at transit stops and stations

Strategy 2-A: Provide secure bike parking at transit stops and stations.

LCPC should work with Red Rose Transit Authority (RRTA) and Amtrak to provide bike racks and bike lockers at major transit hubs in the County. Both types of parking facilities provide places for people to lock their bikes. Bike lockers offer long-term,

protected, and secure parking. Lockers are not appropriate at all locations, but they are especially useful at transit stations where people need to park their bikes for longer periods of time. These bike parking facilities should be placed in open locations with good lighting. If racks are provided, then the racks should be covered with a roof or canopy, if possible. The need for bike parking can be estimated from information about daily boardings at each stop or station. Lancaster County should reference the Association of Pedestrian and Bicycle Professionals *Bike Parking Guidelines*[31].

(Primary Partners: LCPC, RRTA, and Amtrak)

Strategy 2-B: Provide comfortable facilities for people waiting at transit hubs.

LCPC should work with Red Rose Transit Authority (RRTA) and Amtrak to provide comfortable facilities for pedestrians and bicyclists waiting at transit stops. Bus stop signs should be posted at all bus stops, and may be the only facility needed at stops where few riders access the bus. Benches should be provided at bus stops where more than 25 people access the bus per day. Shelters should be provided at bus stops where more than 50 people access the bus per day. Information should also be posted at each bus stop serving more than 50 people per day. This includes clear route maps and timetables as well as information about pedestrian and bicycle accommodations near other bus stops along the route. Transit stations should have places for passengers to sit and should also have heated and air conditioned areas to wait. All facilities at transit stops and stations should follow ADA guidelines. Recommendations from the field study of bus stops (see recommendation above) should be followed.

(Primary Partners: LCPC, RRTA, and Amtrak)

Recommendation 3: Promote land use decisions that make it more convenient to bicycle and walk to transit and other destinations.

Strategy 3-A: Adopt zoning policies and subdivision regulations that make it easier to bicycle and walk in Lancaster County.

LCPC and BPAC should encourage Lancaster County municipalities to adopt mixed-use zoning policies. Mixed-use zoning allows more people to live within biking and walking distance of shopping, work, and recreation activities. The municipalities should also update their subdivision regulations to include requirements for sidewalks, pedestrian-friendly intersections, driveway access management (consolidated driveways reduce motor vehicle turning conflicts with bicyclists and pedestrians), and shoulder space for bicycles on collector and arterial roadways. These mixed-use developments should have connected roadway systems instead of cul-de-sacs to provide bicycle, pedestrian, and motor vehicle connectivity. The Lancaster County Subdivision and Land Development Ordinance includes some of these recommendations. This document should be updated to enhance provisions for bicyclists and pedestrians (see Multimodal Access Strategy 4-B, below).

(Primary Partners: LCPC, BPAC, Municipalities)

Strategy 3-B: Ensure a bicycle- and pedestrian-oriented focus in Lancaster County's Urban and Village Growth Areas.

LCPC and BPAC should encourage all development within Lancaster County's Urban and Village Growth Areas to support bicycling and walking. Municipalities should develop and implement comprehensive sidewalk installation/improvement programs within Urban and Village Growth Areas so that sidewalks are included on both sides of all streets (see Multimodal Access Strategy 4-D, below). Other design strategies should be used to improve the bicycle and pedestrian environment in Urban and Village Growth Areas, such as encouraging tree-lined sidewalks with landscape buffers, tighter turning radii, shorter block lengths, eliminating blank walls and providing lighting along dark roadways, alleys, and intersections (see Design Guidelines cited in Transportation Improvements Strategy 1-A[22,23,30,34,35]). LCPC should also give extra emphasis to bicycle and pedestrian accommodation when reviewing transportation and development plans in Urban and Village Growth Areas.

Urban and Village Growth Areas require growth to be in specific areas, which allows people to live and work closer to areas that they can shop, recreate, or visit friends. Higher-density land use will make pedestrian and bicycle travel more attractive to residents who may otherwise drive. High-quality bicycle and pedestrian facilities are needed to serve people in these areas.

(Primary Partners: LCPC, BPAC, Municipalities)

Recommendation 4: Incorporate bicycle and pedestrian accommodations into county and municipal policies and development procedures.

Strategy 4-A: Lancaster County Municipalities should adopt the PENNDOT Bicycle and Pedestrian Checklist.

Municipalities should adopt the PENNDOT Bicycle and Pedestrian Checklist and apply it to roadway projects within their jurisdiction (see Appendix B for Checklist). This will ensure that bicyclists and pedestrians are considered during all phases of local roadway projects.

Municipalities should update their local roadway and subdivision and land development ordinances to include the bicycle elements of the PENNDOT Bicycle and Pedestrian Checklist. Some of the key elements of this checklist are shown in the box below.

Elements of the PENNDOT Bicycle and Pedestrian Checklist

Bicycle Elements

Planning and Programming

- Giving priority to projects that are identified as part of a master plan
- Giving priority to projects that provide continuity with existing and proposed bike facilities
- Giving priority to projects that are in high-density land use areas and close to destinations such as schools and transit stops

Scoping

- Bike lane width of 6 feet standard or 5 feet adjacent to a curb
- Maximize width of shoulders
- Connectivity to other bike lanes and shared-use trails
- Bridge access provided / pinch points avoided
- Minimize crossing distance
- Considerations for bikes making turns
- Review of bike crash history
- Traffic calming to curb speeding and cut-through traffic

Final Design

- Bicycle-safe grates and utility hole covers and inlets flush with roadway surface
- Conflicts eliminated with turns at intersections, driveway aprons, and through movements (this includes providing a bike lane or other striped space between the right-turn lane and other lanes for straight-moving bicyclists to reduce turning conflicts).
- Appropriate signage and striping

Pedestrian Elements

Planning and Programming

- Giving priority to projects that are identified as part of a master plan
- Giving priority to projects that provide continuity with existing and proposed pedestrian facilities
- Giving priority to projects that are in high-density land use areas and close to destinations such as schools and transit stops

Scoping

- Sidewalk width of 5 to 7 feet residential, commercial or industrial areas, 8 feet in high use areas or CBDs, and 7 feet for bridges
- Connectivity to other pedestrian facilities
- Minimize crossing distance
- Applicability of planter or buffer strips
- Observe pedestrian patterns for special needs such as midblock crossings, islands and refuges, and night crossing activity
- Two curb ramps per corner at intersections and ADA needs and concerns
- Crosswalks provided and marked
- Length of pedestrian signal phase and availability of pedestrian push buttons at signalized intersections
- Review of pedestrian crash history
- Traffic calming to curb speeding and cut-through traffic

Final Design

- Crosswalks at least 10-feet wide and prominently marked with at least a 6-inch line
- Maximize pedestrian visibility at crossings
- Proper lighting type and placement
- Textured curb ramps

Revised municipal guidelines should also include bike parking facilities requirements. Bike parking should be easy to locate from the street and be in a secure, well-lighted place. More detailed information about bike parking can be found in the Association of Pedestrian and Bicycle Professionals' *Bike Parking Guidelines*[32]. Pedestrian walkways should be required within parking lots, and pedestrian access should be provided to transit stops.

(Primary Partners: LCPC, Municipalities)

Strategy 4-B: Update County and municipal roadway and subdivision and land development ordinances to include better accommodations for bicyclists and pedestrians.

Lancaster County should update its roadway and subdivision and land development ordinances to include better accommodations for bicyclists and pedestrians, such as requiring sidewalks on both sides of roadways. These guidelines should include all elements of the PENNDOT Bicycle and Pedestrian Checklist. By adopting improved guidelines, Lancaster County can lead municipal governments to take similar action.

Bicycle and pedestrian circulation should be incorporated as a component of the Transportation section of all municipal comprehensive plans. The bicycle and pedestrian section should include a detailed inventory of facilities and capital improvements that should be programmed into the municipal budget.

All other municipal transportation and development guidelines and policies should be updated to require bicycle and pedestrian accommodations. Municipal roadway and subdivision and land development ordinances should follow the guidelines of the PENNDOT Bicycle and Pedestrian Checklist. LCPC should offer technical assistance in updating these guidelines to address pedestrian and bicycle needs.

(Primary Partners: LCPC, Municipalities)

Strategy 4-C: Establish minimum Bicycle Level of Service standards for Lancaster County roadways.

All streets and roads in Lancaster County should be planned to accommodate bicyclists. LCPC should work with municipalities and PENNDOT to establish minimum Bicycle Level of Service (Bicycle LOS) targets. Bicycle LOS is one of the measures that should be used in accordance with the PENNDOT Bicycle and Pedestrian Checklist to assess bicycle needs for a project. It can help determine the best combination of wide outside through lane, bike lane, or shoulder width and traffic calming measures to use on the project, given the available right-of-way and budget.

The table below shows minimum Bicycle LOS targets that should be adopted by Lancaster County and Municipalities.

Location of Roadway Grade	**Minimum BLOS**
Outside Urban and Village Growth Areas	C
Inside Urban and Village Growth Areas	B

Raising the Bicycle LOS for a deficient roadway can be done in many ways, including providing more shoulder space, slowing motor vehicle speeds, and improving pavement condition. On a major thoroughfare, such as US 30 east of Lancaster City, it may not be possible to increase Bicycle LOS to the desired level with any of these roadway treatments. In these cases, LCPC and municipalities should evaluate the possibility of providing a parallel shared-use pathway within or near the roadway corridor to facilitate bicycle access. The frequency of intersections and driveways should be considered when choosing between providing additional shoulder space and constructing a shared-use pathway adjacent to the roadway. Shared-use paths are most appropriate in corridors with few driveways and intersections because conflicts between turning motorists and bicyclists are less of a problem than in corridors with many turning motor vehicles. In locations where a shared-use path is provided, bicyclists retain the right to use the roadway.

(Primary Partners: LCPC, Municipalities and PENNDOT)

Strategy 4-D: Establish sidewalk requirements for Lancaster County roadways.

LCPC should encourage municipalities to develop and implement comprehensive sidewalk installation and improvement programs. In Urban and Village Growth Areas and rural residential developments, it is recommended that all roadways have sidewalks on both sides. Therefore, sidewalks should be provided any time a property is developed in the Urban and Village Growth Areas. Per PENNDOT standards (see Appendix B, PENNDOT Bicycle and Pedestrian Checklist), these sidewalks should be a minimum of 5-feet wide.

Communities throughout the United States have realized the benefits of setting a minimum sidewalk width of 5 feet. The PENNDOT 5-foot minimum standard is supported by the Federal Highway Administration and the Institute of Transportation Engineers[26,32]. Five feet is the minimum width that allows two pedestrians to walk comfortably side-by-side and allows individual pedestrians to pass each other comfortably. In places where it is not possible to provide a 5-foot sidewalk, a sidewalk of the maximum possible width is better than no sidewalk at all. All projects must meet accessibility guidelines of the Americans with Disabilities Act. This Plan recommends that all Lancaster County and municipal guidelines adopt this 5-foot standard.

All commercial areas along arterial roadways in Urban and Village Growth Areas should have sidewalks on both sides with a minimum width of 6 feet. Vegetative buffers of 5 feet or greater between the roadway and sidewalk should be provided when space allows. Street trees should be provided to improve pedestrian comfort.

Sidewalks should be included when roads are improved. This will require cooperation between the County, municipalities, and PENNDOT. All streets and roads in Lancaster County (other than limited access highways where pedestrians are prohibited) should be planned and designed with pedestrian use in mind. In rural areas, outside of Urban and Village Growth Areas and away from developments, providing sidewalks for pedestrians is typically not desirable or cost effective, though narrowing motor vehicle lane widths and providing striped shoulders can improve conditions for pedestrians and bicyclists, as well as motor vehicle and buggy operators along rural roads.

Municipal waivers to sidewalk requirements should not be allowed except in a case where there would be unavoidable damage to a sensitive environment or historic structure. Where buildings, valuable trees, historic characteristics or other factors present physical constraints, sidewalks may be narrowed or limited to one side.
(Primary Partners: LCPC and Municipalities)

Recommendations for Communications

Communications Goal

Develop communication programs that increase bicycling and walking, and foster a pro-bicycle and pro-pedestrian awareness in individuals, private sector organizations, and all levels of government.

This section describes elements of a Marketing Campaign that will encourage more people to bicycle and walk in Lancaster County. Components of this campaign include distributing the new Lancaster County Bike Map, developing partnerships between public agencies and other public and private groups, working with local political and business leaders, formalizing advocacy efforts, increasing formal bicycle tours, and promoting the State bicycle route in the County.

Recommendation 1: Seek support from local governments for the Lancaster County Bicycle and Pedestrian System.

LCPC should seek the support of municipalities for the Lancaster County Bicycle and Pedestrian System (see Recommendation 1). Municipalities should be asked to adopt the Countywide system routes within their jurisdiction and give them top priority for improvements. The municipalities should also ensure that the PENNDOT Bicycle and Pedestrian Checklist guidelines are followed on all projects within the System.

(Primary Partners: LCPC, municipalities)

Recommendation 2: Increase community involvement in bicycling and walking issues, and expand BPAC's ability to communicate its message about improving Lancaster County for pedestrians and bicyclists.

Strategy 2-A: Establish a full-time County Bicycle and Pedestrian Coordinator and an assistant Bicycle and Pedestrian staff member.

LCPC should establish a full-time County Bicycle and Pedestrian Coordinator and hire an assistant Bicycle and Pedestrian staff member. Both staff members should devote 100 percent of their time to bicycle and pedestrian issues and implementing the recommendations of this Plan.

The function of bicycle and pedestrian staff is to be a resource on County bicycle and pedestrian projects and programs. This includes working with BPAC and communicating with PENNDOT and municipalities.

(Primary Partner: LCPC)

Strategy 2-B: Collect before and after data as bicycle and pedestrian projects and programs are implemented.

LCPC should collect before and after data as bicycle and pedestrian projects and programs are implemented. Safety data and increases in bicycling and walking are important to track. LCPC can incorporate bicycle and pedestrian data collection into periodic roadway inventories and studies that are already being done. Note that bicycle and pedestrian data collection is a long-term effort—it can take several years to produce statistics that show safety improvements and large increases in bicycling and walking.

(Primary Partners: LCPC, BPAC)

Strategy 2-C: Update the bicycle and pedestrian field inventory to determine changes in Bicycle Level of Service grades and sidewalk coverage.

To complement efforts to benchmark progress on Plan implementation, LCPC should update the bicycle and pedestrian field inventory periodically to determine changes in Bicycle Level of Service grades and sidewalk coverage. Updating the inventory will keep the data accurate. This can either be done independently or in conjunction with other standard field inventory efforts.

(Primary Partners: LCPC, BPAC)

Strategy 2-D: Attend regular meetings at the municipal and county level to educate officials about bicycle and pedestrian issues and respond to local comments and needs.

BPAC members and LCPC bicycle and pedestrian staff should attend and present at at least one meeting in all the County municipalities each year. This will increase the awareness of bicycle and pedestrian issues in general at the local level. BPAC members should review municipal meeting agendas and attend meetings where bicycle- and pedestrian-related issues are on the agenda.

(Primary Partners: BPAC, LCPC)

Strategy 2-E: Work closely with the Lancaster County Inter-municipal Committee to ensure transportation projects in their jurisdictions accommodate bicycles and pedestrians.

LCPC should work with the Lancaster County Inter-municipal Committee to ensure land development and roadway projects in Lancaster City and the surrounding townships accommodate bicycles and pedestrians. BPAC representatives should attend meetings of the Lancaster County Inter-municipal Committee and communicate regularly with its members. Each jurisdiction on the Committee should be aware of the projects that this Plan recommends in their jurisdiction. LCPC should work with the municipalities to make key, roadway, trail, sidewalk, and road crossing linkages in the County network.

The area covered by the 12 jurisdictions on the Committee is critical to the successful implementation of this Plan. 43 percent of the County's residents live in this area. These

jurisdictions must cooperate with LCPC and with each other on pedestrian and bicycle projects.

(Primary Partners: LCPC, BPAC, Lancaster County Inter-Municipal Committee)

Strategy 2-F: Continue to seek input from the Amish and Mennonite Communities on bicycle and pedestrian issues.

LCPC must actively seek input from the Amish and Mennonite Communities to ensure the County's bicycle and pedestrian transportation system continues to serve their needs. LCPC has worked successfully with the Mennonite Safety Committee, and should continue to seek input from this group. Census 2000 data showed that some of the highest levels of bicycling and walking to work were in the eastern part of the County where these groups are concentrated.

Strategy 2-G: Host training workshops to educate transportation professionals in Lancaster County about bicycle and pedestrian planning and guidelines.

In partnership with PENNDOT, LCPC should host training workshops to educate planners, engineers, landscape architects, designers, and other transportation decision-makers in Lancaster County about bicycle and pedestrian planning and guidelines. These workshops should be offered to municipal government employees, consultants, and state workers. Their content could include discussion of this Plan, bicycle and pedestrian design, innovative treatments, and other topics. Educating the people who work on Lancaster County transportation issues on a regular basis will make them more likely to include high-quality bicycle and pedestrian accommodations in their work. These training workshops could be held during the Lancaster County Bicycle and Pedestrian Summit (see Communications Strategy 2-I, below).

(Primary Partners: LCPC, PENNDOT)

Strategy 2-H: Write an annual State of Bicycling and Walking Report to benchmark progress on implementing this Bicycle and Pedestrian Transportation Plan.

BPAC should write a short annual report on the State of Bicycling and Walking in Lancaster County to benchmark progress on implementation of this Plan. This report should address the following performance measures:

Education

- Number of Lancaster County Public Schools offering pedestrian and/or bicycle safety lessons during the school year, and the quality of those lessons

Transportation Improvements

- Number and percent of routine roadway construction/reconstruction projects that include bicycle facilities
- Number and percent of routine roadway construction/reconstruction projects that include pedestrian facilities

Multimodal Access

- Percent of transit stations and park and ride lots with bicycle racks and lockers

Communication

- Number of bicycle maps distributed throughout the County

- Number of municipalities represented at the annual Lancaster County Bicycle and Pedestrian Summit
- Number of schools participating in Walk our Children to School Day

BPAC should set specific goals for the coming year for each of these performance measures.

(Primary Partner: BPAC)

Strategy 2-I: Organize an Annual Lancaster County Bicycle and Pedestrian Summit.

LCPC should organize an Annual Lancaster County Bicycle and Pedestrian Summit and invite representatives of all municipalities in the County; agencies such as RRTA and PENNDOT; and health, school, and other organizations to the event. The purpose of the Bicycle and Pedestrian Summit would be for people to share information about specific pedestrian and bicycle initiatives and to receive training programs.

Representatives should be asked to speak about success stories in their municipalities. Workshops could also be held to discuss specific bicycle and pedestrian issues and questions in the county. An award should be given to the municipality that had made the most progress on projects and programs to support bicycling and walking during the year. The Summit would also provide an opportunity for the participants to review the projects in the Transportation Improvement Program to make sure they accommodate bicyclists and pedestrians. The LCPC Bicycle and Pedestrian Coordinator and the bicycle and pedestrian staff assistant would organize the conference, and BPAC would help out with promotion and logistics. As the Summit grows in size, it can be held every other year. LCPC should partner with PENNDOT to fund the Summit.

(Primary Partners: LCPC, BPAC, PENNDOT)

Strategy 2-J: Organize an Annual Lancaster "Celebrate Fitness" Festival.

LCPC and BPAC should organize an annual Lancaster County "Celebrate Fitness" Festival on the same day as an established bike ride or race. This one-day event would be geared toward the general public, especially County residents who do not typically bicycle or walk. It would promote bicycling and walking as fun and healthy activities and as viable transportation options.

Example Training Topics at Summit
- Funding
- Liability
- ADA design
- Trail design
- Safe Routes to Schools
- Shoulder and bike lane design
- Intersection design
- On-road accommodation

In addition to the featured bike ride or race, bicycling and walking games could be organized, and participants could go on bicycling and walking tours. Food and prizes would be provided to add to the fun atmosphere of the event. LCPC and BPAC members could be available to discuss progress on this Plan and could staff informational booths on bicycle and pedestrian safety and Safe Routes To Schools programs. Participants could also be asked to provide input on ways to improve bicycling and walking in Lancaster County.

(Primary Partners: LCPC, BPAC)

Recommendation 3: Establish programs to increase the awareness of bicycling and walking in the school community, and encourage more kids to bicycle and walk regularly.

Strategy 3-A: Establish a Safe Routes to School Program in Lancaster County schools.

LCPC should collaborate with several schools in the County to pilot a Safe Routes to School Program. The program should include at least four components:

1) Educate children how to ride and walk safely
2) Make physical improvements to sidewalks, crosswalks, trails, and roadways near each school to improve safe bicycle and pedestrian access to the school
3) Provide safe bicycle storage—either racks or lockers
4) Encourage more students to bicycle and walk to the school

Many schools in the County would benefit from a Safe Routes to Schools Program. Schools that have been suggested by BPAC and the public as pilot test sites for the program include:

- Lampeter-Strasburg School Campus
- Manor Middle School and High School
- Donegal School District
- Manheim Central Middle School and Stiegel Elementary School area
- McCaskey High School, McCaskey East High School, Lincoln Middle School, and Wickersham Elementary School area (Lancaster City)

The program may include establishing parent-supervised walk or bike to school groups. Classrooms can have competitions to see which have more students who walk and bike to school. Students can be given certificates for participating in Walk Our Children to School Day or Lancaster County's Bicycling and Walking Month. LCPC should track before and after data to determine increases in the number of children walking and biking to school.

Schools can complement their Safe Routes to Schools program by offering Pedestrian and Bicycle Safety Education Program lessons (see Education Recommendation 1, above) and establishing Super Biker and Super Walker encouragement programs (see Communications Strategy 4-B, below).

(Primary Partners: LCPC, Lancaster County schools)

Recommendation 4: Promote bicycling and walking to Lancaster County organizations.

Strategy 4-A: Develop radio and newspaper advertisements and promotional fliers that explain the benefits of bicycling and walking.

LCPC should develop radio and newspaper advertisements and promotional fliers that explain the benefits of bicycling and walking to Lancaster County residents and visitors. These easy-to-understand informational messages will be distributed on the Bike Map around the County. They should cover transportation system, environmental, economic, health, and quality-of-life benefits, as described at the beginning of this Plan. Pedestrian and bicycle safety should also be a key component of these messages.

Photo courtesy of Dream Ride Projects/CYCLE SMART

(Primary Partners: LCPC, BPAC)

Strategy 4-B: Foster partnerships between different groups in Lancaster County to help promote bicycling and walking

LCPC should team with other Lancaster County groups to promote bicycle and pedestrian activity. These partnerships can be established between LCPC or municipal governments and health care organizations, public or private schools, colleges, and transit agencies.

- LCPC should work with health organizations around the County to establish a partnership to promote physical activity through bicycling and walking. The health community promotes physical activity to prevent obesity and disease, which complements the efforts of transportation planners to promote bicycling and walking as a means to reduce traffic congestion, pollution, and social isolation.

- The Lancaster County Community Health District, Lancaster General Health Campus, Lancaster Regional Health Center, Ephrata Community Hospital, or Community Hospital of Lancaster could all be excellent partners for a program that encourages people to keep track of their physical activity, which includes bicycling and walking, each day. This could be done in the form of walking or bicycling clubs in workplaces, who could receive promotional t-shirts, water bottles, and pedometers (measuring the number of steps a participant takes) from the General Health Campus

- LCPC can also work with the Lancaster Health Community to address issues on the relationship between automobile pollution and pedestrian and bicycle exercise. Bicycle and pedestrian trips do not produce emissions. While people who bicycle and walk outdoors reduce overall pollution levels, they breathe emissions produced by others, especially when they are in close proximity to motorized traffic. The transportation and public health communities can work together to address this problem. Solutions include providing the public with accurate information about the level of risk for different types of people, for different levels of exercise, and at different time periods (e.g., ozone pollution has the greatest effect on children and people with asthma and people doing more vigorous exercise, and tends to be most serious during the summer during mid-day hours), restricting routes that can be used by vehicles that produce the most pollution (such as trucks), and lobbying for long-term anti-pollution policies, such as setting more stringent emission standards for motor vehicles. The Susquehanna Valley Ozone Action Partnership provides information about ways to reduce ozone and precautions to take on Ozone Action Days.

- The Lancaster County health community can work with the school community to establish Super Biker and Super Walker encouragement programs in several elementary and middle schools around the County. Students would be asked to keep track of how often they bicycled, walked, ran, or played outside during the week, and receive points for the amount of time they spent doing each physical activity. Extra points could be given for distance bicycled or walked to school. The points could be used to earn prizes, ribbons, field trips, or pizza parties. The points could be tallied individually or for entire classrooms. The program could be set up by physical education or regular classroom teachers.

- This type of program could be done in accordance with or separately from Pedestrian and Bicycle Safety Education lessons (see Education Recommendation 1, above) or a Safe Routes to School effort (see Communications Strategy 3-A, above).

- LCPC should approach Millersville University, Elizabethtown College, and Franklin and Marshall College to establish bicycling and walking promotional programs. The programs could focus on bicycle and pedestrian safety issues on campus as well as offering incentives (reduced-price tickets to college activities, free food coupons, etc.) to commuters who choose to bike or walk instead of driving.

- LCPC should partner with the Red Rose Transit Authority to promote bicycling and walking. Bicycling and walking and public transit are complementary modes of transportation. LCPC should promote walking or biking to transit as an easy way to get recommended amounts of exercise. Advertisements for biking and walking should be put on the sides of RRTA buses.

(Primary Partners: LCPC, Lancaster County health organizations, Lancaster County schools, Lancaster County colleges, and RRTA)

Strategy 4-C: Establish promotional programs for bicycling and walking within Lancaster County organizations.

LCPC should target five large employers in the County to set up a program for employees to bike or walk to work.

LCPC should use an informational brochure to provide advice and assistance to businesses, agencies, clubs, and other groups that are interested in establishing promotional programs for bicycling and walking. LCPC should adapt the Employer Guide from Chicago for use in Lancaster County.

(Primary Partners: LCPC, Lancaster County businesses, Lancaster County government agencies)

Strategy 4-D: Establish a QuickBike program at government buildings to allow employees to ride bicycles to errands or exercise over their lunch breaks.

LCPC should purchase or obtain donated bikes and helmets and provide bike racks and/or lockers at several government building demonstration sites for a QuickBike program. This program would allow employees to check out a bike and use it during the day to run errands or get exercise. Having government employees ride on bikes during the day will reduce short car trips and will make bicycling a more visible activity. Though the program may be most effective in Lancaster City where many short trips can be made, LCPC should help establish the program with any organization that is enthusiastic about the program.

(Primary Partners: LCPC, Lancaster County government agencies)

Strategy 4-E: Ensure that all new and redeveloped non-residential properties provide bike parking.

The Lancaster County Subdivision and Land Development Ordinance requires that all non-residential land uses provide bicycle parking. LCPC should work with municipalities

to ensure that this regulation is followed. This will make bicycling more attractive to all types of bicyclists.

(Primary Partners: LCPC, Municipalities)

Strategy 4-F: Establish an efficient program for businesses and government agencies to purchase bicycle racks.

LCPC should set up a program for businesses, non-profit organizations, government agencies, and other property owners to do one-stop shopping for bike parking. LCPC could have one staff member be the point of contact for all bike rack requests from around the county, and set up a procedure for application and installment of the racks. This procedure would include procurement, site evaluations, determining the number of racks that are needed, and installing the racks. LCPC may need to coordinate with PENNDOT or municipal public works departments for installation. Bike rack installation should follow the Association of Pedestrian and Bicycle Professionals Bike Parking Guidelines[31].

The program should be designed to simplify procurement by consolidating it for many County agencies, the Townships and Boroughs, other public entities, and other private groups and realize cost savings by applying a countywide economy of scale.

(Primary Partner: LCPC)

Recommendation 5: Distribute the Lancaster County Bike Map throughout the County.

The *Lancaster County Bike Map – A Guide to Bicycling, Walking and Transit* includes information about road conditions for bicyclists, pedestrians, and transit users. It also provides information about recreational rides, the benefits of bicycling and walking, bicycling rules and proper education for riding, bicycle parking, and organizations promoting the use of bicycles for commuting and recreation.

The map can be seen both as a navigational tool and as a symbol of the importance of having walkable, bikeable, and transit-friendly communities in Lancaster County.

The Bike Map should be distributed through a wide variety of outlets:

- Libraries
- Bicycle shops
- Schools
- Transit centers
- Visitors centers
- Other organizations, such as bicycle clubs, businesses, and realtors
- Online

The maps should be publicized in three ways:

- LCPC should hold a press conference with local media to announce the release of the new map.
- The back panel of the map will include information about ordering the maps. As distribution points run low on maps, they should be encouraged to request additional maps.
- Visibility of the maps is important. When the maps are delivered, they should be accompanied by a display stand.

LCPC should track map distribution. It should maintain a database of distribution points that includes the following information: organization name, type, address, phone numbers, quantities delivered, dates delivered, comments, and a contact name. BPAC should contact each of the distribution points every three months to determine if more maps are needed. Tracking distribution will help the planning commission assess demand and the effectiveness of reaching the community.

(Primary Partners: LCPC, BPAC)

Recommendation 6: Promote Lancaster County as a place where people can tour historic sites on foot and as a premier destination for bicycle vacations.

Outdoor recreation is the second most popular activity for leisure travelers, behind shopping. About 27 million travelers took bicycling vacations in the past five years, making bicycling one of the top three most popular outdoor vacation activities[33].

Tourists who come to Lancaster County to bicycle and walk benefit the local economy. A 1997 survey found that bike tourists in Delaware spend between $35 and $85 per day[34]. In Pennsylvania, the Ghost Town Trail generated over $1.2 million in tourism revenue in its first two years, and revenues at the Allegheny Trail's six trailheads ranged from $5.4 million to $14.1 million in 1998. Lancaster County is in a prime position to attract bicyclists from surrounding counties and major metropolitan areas such as New York, Philadelphia, Baltimore, and Washington, D.C.

Strategy 6-A: Work with tourism organizations to promote bicycling and walking to Lancaster County visitors.

LCPC should identify tourism organizations that can help promote bicycling and walking to visitors and make sure they are aware of the potential for increasing bicycle tourism opportunities in the County. These groups may include the Pennsylvania Dutch Convention and Visitors Bureau, the Susquehanna Valley Chamber of Commerce, and LancasterOutdoors.com. They should promote opportunities for bicycling and walking on their websites and distribute bike maps and other promotional materials to visitors. Tourists should receive the message that bicycling and walking are excellent ways to experience Lancaster County.

LCPC should also work with these groups to advertise Lancaster County bicycling and walking opportunities in the Philadelphia and Baltimore papers. BPAC should ask bicycle and pedestrian organizations in Philadelphia, Baltimore, New York and Washington, D.C. to post information about Lancaster County on their websites.

Tourists who arrive by car or bus should be encouraged and able to walk and/or bike to multiple destinations. Tourist-oriented maps should identify pedestrian and bicycle facilities near lodging and or eating establishments in tourist areas. Walking conditions for tourists should also be improved by requiring parking lots to have pedestrian walkways and reducing building setbacks so that pedestrians do not need to cross large parking lots to reach building entrances.

(Primary Partners: LCPC, Lancaster County tourism organizations)

Strategy 6-B: Promote Pennsylvania State Bike Routes in Lancaster County.

LCPC should work with PENNDOT and neighboring counties to designate and promote the existing Pennsylvania State Bike Route "S" and future official State Bike Routes. Official State Bike Routes in Lancaster County should be signed according to the PENNDOT *Guidelines for Shared-Roadway Bicycle Route Designation and Signing* (2000).

(Primary Partners: LCPC, PENNDOT)

Strategy 6-C: Coordinate signage improvements with the Lancaster County Regional Signing District Study and Wayfinding Plan. LCPC should coordinate the development of all signed bicycle routes with the future Lancaster County Regional Signing District Study and Wayfinding Plan.

SECTION 5: IMPLEMENTATION

The recommendations in this Plan describe how to make Lancaster County a place where people can safely and comfortably bicycle and walk for all types of trips. This section outlines how to implement the recommendations and achieve the Plan's vision. It establishes priorities by giving a timeline for implementation of the recommendations.

Implementation will take a coordinated, cooperative effort on the part of LCPC, BPAC, PENNDOT, municipalities, citizens, and other groups. The success of the Plan also depends on support from local and county officials.

Implementation Schedule

The implementation schedule identifies the parties that should provide support to LCPC for implementing the recommendations. It also shows when the recommendations should be implemented.

Implementation Schedule

Lancaster County Bicycle and Pedestrian Transportation Plan, Phase II

1. TRANSPORTATION IMPROVEMENTS	LCPC	Implementation Schedule										
Recommendations	**Partners**	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Years 11-20
Monitoring Construction and Paving Projects	**B, P, M**											
Pilot Projects	**M, P**											
Tier 1 Projects	**M, P**											
Tier 2 Projects	**M, P**											
Tier 3 Projects	**M, P**											
Facility-Specific Projects	**M, P**											
Community Design Assistance Grants												
Signage System and Trail Improvements	**M, P, N, G**											
Adopt Maintenance Guidelines	**PW**											

A = Amtrak
B = Lancaster County Bicycle and Pedestrian Advisory Council
BU = Lancaster County businesses
C = Lancaster County colleges and universities
D = Lancaster County driver education organizations
H = Lancaster County health organizations
L = Lancaster County government agenicies (all levels)
M = Local municipalities
N = Neighboring counties
P = PENNDOT
PD = Municipal police departments
PW = Municipal public works departments
R = Red Rose Transit Authority
S = Lancaster County schools
T = Lancaster County tourism organizations

Implementation Schedule

Lancaster County Bicycle and Pedestrian Transportation Plan, Phase II

2. EDUCATION	LCPC	Implementation Schedule										
Recommendations	**Partners**	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Years 11-20
Elementary School Pedestrian & Bicycle Safety Program	**S, B**											
Seek Safety Program Funds from PennDOT	**P**											
Driver Education	**D**											
Bicycle and Pedestrian Safety Messages	**B, PD**											
Police Enforcement	**PD, B**											

A = Amtrak
B = Lancaster County Bicycle and Pedestrian Advisory Council
BU = Lancaster County businesses
C = Lancaster County colleges and universities
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H = Lancaster County health organizations
L = Lancaster County government agenicies (all levels)
M = Local municipalities
N = Neighboring counties
P = PENNDOT
PD = Municipal police departments
PW = Municipal public works departments
R = Red Rose Transit Authority
S = Lancaster County schools
T = Lancaster County tourism organizations

Implementation Schedule

Lancaster County Bicycle and Pedestrian Transportation Plan, Phase II

3. MULTIMODAL ACCESS/LAND USE POLICY	LCPC	Implementation Schedule										
Recommendations	**Partners**	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Years 11-20
Sidewalk&BLOS Standards near Transit Facilities	**M**											
Transit Facility Field Study	**M, R**											
Bike Parking at Transit Facilities	**R, A**											
Transit Facility Site Improvements	**R**											
Adoption of Mixed-Use Zoning Policies	**B, M**											
Adopt PennDOT Bike and Ped Checklist	**M**											
Update County Road and Subdivision Guidelines												
Update Municipal Road and Subdivision Guidelines	**M**											
Establish Minimum Bike and Ped Facility Standards	**M**											

A = Amtrak
B = Lancaster County Bicycle and Pedestrian Advisory Council
BU = Lancaster County businesses
C = Lancaster County colleges and universities
D = Lancaster County driver education organizations
H = Lancaster County health organizations
L = Lancaster County government agenicies (all levels)
M = Local municipalities
N = Neighboring counties
P = PENNDOT
PD = Municipal police departments
PW = Municipal public works departments
R = Red Rose Transit Authority
S = Lancaster County schools
T = Lancaster County tourism organizations

Implementation Schedule

Lancaster County Bicycle and Pedestrian Transportation Plan, Phase II

4. COMMUNICATIONS	LCPC	Implementation Schedule										
Recommendations	**Partners**	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Years 11-20
Adopt County Bicycle and Pedestrian System Routes	**M**											
County Bicycle and Pedestrian Planning Staff												
Before and After Studies	**B**											
Field Inventory of Sidewalks and BLOS	**B**											Periodic Updates
Bicycle and Pedestrian Training Workshops	**P**											
Community Design Assistance Grants	**P**											
Annual Bicycle and Pedestrian Report	**B**											
Annual Bicycle and Pedestrian Summit	**B, P**											
Annual "Celebrate Fitness" Festival	**B**											
Safe Routes to School Program	**S**											
Promotional Fliers and Advertisements	**B**											
Partnerships to Promote Biking and Walking	**H,R,S,BU,G**											
QuickBike Program	**L**											
Requirements for Bike Parking Facilities	**M**											
Distribution of Bike Map	**B**											
Promotion of Bike Tourism	**T**											
Promotion of State Bike Routes	**P**											

A = Amtrak
B = Lancaster County Bicycle and Pedestrian Advisory Council
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Physical Improvements

LCPC should work with PENNDOT and municipalities to create the Lancaster County Bicycle and Pedestrian System (see Section 4 – Recommendations). The bicycle and pedestrian improvements that are needed to create this System are classified into 1) Pilot Projects, 2) Tier 1 Projects, 3) Tier 2 Projects, and 4) Tier 3 Projects. These projects are shown on the Lancaster County Bicycle and Pedestrian System Maps.

Pilot Projects

LCPC should work with PENNDOT and municipalities to complete Pilot Projects during the first 2 years of Plan implementation. Pilot projects can be implemented quickly at a low cost during the first two years of the Plan. When these projects are implemented, LCPC and the BPAC should use them as examples and promote further pedestrian and bicycle improvements in other parts of the County. These projects include:

- Fruitville Pike in Manheim Township (re-stripe roadway from Granite Run to Delp Road to provide equal-sized shoulders on both sides of the road)
- College Avenue / Pearl Street / Columbia Avenue intersection in Lancaster City (change pedestrian signal timing)
- Market Street and Orange Street intersection in Lancaster City (change responsiveness of pedestrian push-button and pedestrian signal timing)
- Add bike racks to remaining Red Rose Transit Authority (RRTA) bus fleet
- Make bus stop improvements in areas served by RRTA (identify bus stop locations that should be moved; bus stops that need improved signs, benches, and shelters; and roads near bus stops that need improved crossings)

Tier 1 Projects

LCPC should work with PENNDOT and municipalities to complete Tier 1 Projects during the first 5 years of Plan implementation. These projects tend to be small in scope and many are currently being discussed and planned by local municipalities. LCPC and BPAC can also use these projects to help build momentum for implementing other bicycle and pedestrian projects. Some of the projects in this category have undergone a high level of research and planning at the municipal level while others have been discussed on a more conceptual basis.

- Streets surrounding Stiegel Elementary School and Manheim Central Middle School in Manheim Borough (Provide sidewalks on both sides of streets, construct median crossing islands, reduce curb radii, and install high-visibility crossings as part of a Safe Routes to Schools program when properties are developed)
- North Church Avenue between the Cocalico Creek Bridge and PA 272 in Ephrata Borough (Pave the shoulder to connect downtown Ephrata to industrial and commercial properties on PA 272)
- Ephrata Conrail Rail Trail (construct a 1.5-mile rail-trail on the old Conrail line)

- Broad Street from Orange Street to the northern borough limit in Lititz (widen sidewalks)
- Add a climbing lane for bikes and buggies in the eastern and southern parts of the County (this could be similar to the climbing lane on Hollander Road near Peters Road)
- Millport Road between Lampeter Road and Strasburg Pike in West Lampeter and East Lampeter Townships (pedestrian and bicycle improvements)
- Penn Grant Road between Millwood Road and Hans Herr Road in Pequea and West Lampeter Townships (pedestrian improvements)
- Lampeter Road between Lincoln Highway and Millport Road and between Rockvale Road and PA 741 in West Lampeter Township (pedestrian improvements)
- Lampeter Road between Village Road and Penn Grant Road in West Lampeter Township (bicycle improvements)
- Strasburg Pike between PA 462 and West Main Street in West Lampeter, East Lampeter, and Strasburg Townships and Strasburg Borough (bicycle improvements)
- Gypsy Hill Drive between Morningside Drive and Beaver Valley Pike in West Lampeter Township (bicycle improvements)

Tier 2 and Tier 3 Projects

Many longer-term improvements will be needed to connect homes, workplaces, and other locations of activity throughout Lancaster County. When added to the Pilot Projects and Tier 1 Projects, Tier 2 and Tier 3 projects will complete the countywide system of safe and convenient bicycle and pedestrian facilities.

LCPC should work with PENNDOT and municipalities to complete Tier 2 projects during the first 10 years of Plan implementation. Tier 2 Projects were selected to:

- Address comments and ideas from the Community Workshops and pedestrian and bicycle surveys
- Solve problems in locations with poor Bicycle Level of Service ratings
- Improve safety in areas with high concentrations of pedestrian and bicycle crashes
- Take advantage of construction opportunities (see Appendix F)

The most important Tier 2 Projects are:

- Harrisburg Pike in Lancaster City and Manheim Township—part of James Street Improvement District (provide sidewalks on both sides of the roadway, widen existing sidewalks, narrow motor vehicle lanes, stripe shoulders or bike lanes, add a raised median or median crossing islands at crosswalks, install pedestrian countdown signals, and construct raised crosswalks)
- Susquehanna River Trail (design and construct a 10-foot multi-use trail)
- McGovern Avenue and other streets near the Lancaster Amtrak Station (provide bicycle lockers, widen sidewalks along roadways and add a raised median or median crossing islands at crosswalks, and install pedestrian countdown signals)
- Elizabethtown, Mount Joy, Lancaster, and Paradise Amtrak Station areas (provide bicycle parking and pedestrian and bicycle accommodations on streets near the station)

- Fruitville Pike in Manheim Township (pedestrian and bicycle improvements, especially near the K-Mart Plaza and Hawthorne Plaza)
- Oregon Pike in Manheim Township (pedestrian and bicycle improvements near US 30 interchange)
- PA 501 in Manheim Township (pedestrian and bicycle improvements)
- PA 501 in Warwick Township between Winfield and Newport Road (pedestrian and bicycle improvements)
- PA 772 intersections in Rothsville (improve pedestrian crossings to complement the sidewalks that were constructed recently. This may include changing pedestrian signal timing or installing pedestrian countdown signals)
- Centerville Road in East Hempfield Township (add sidewalks and wide shoulders to both sides of the new bridge when it is constructed)
- Atglen-Susquehanna Rail Trail (design and construct a 10-foot multi-use trail)
- PA 340 in Intercourse (Leacock Township) (rebuild broken sidewalk and improve existing sidewalk sections to provide accessible pedestrian zone free of poles and other obstructions on both sides of roadway, reduce curb radii, and install high-visibility crossings as part of a Safe Routes to Schools program)
- PA 462 through Columbia (add curb, shoulder, and sidewalks and improve driveway crossing conditions between 9th and 16th Streets)
- King and Orange Streets in Lancaster City (improve pedestrian crossings)
- South Duke Street in Lancaster City (traffic calming and pedestrian crossing improvements)
- Area of Lancaster General Health Complex in East Hempfield Township (pedestrian improvements)
- Mid-block crossing of Queen Street between Chestnut and Orange Streets in Lancaster City (pedestrian crossing improvments. Integrate improvements with Lancaster Square project.)

A list of other Tier 2 bicycle and pedestrian projects is provided in Appendix G.

LCPC should work with PENNDOT and municipalities to complete Tier 3 projects during the first 20 years of Plan implementation. Tier 3 Projects were selected to complete the connections that are necessary to have a continuous bicycle network and establish pedestrian facilities in all activity centers in Lancaster County.

A list of all Tier 3 bicycle and pedestrian projects is provided in Appendix G.

Monitoring/Benchmarking

BPAC should assess the County's progress implementing this Plan on an annual basis (see recommendation above). This can be done through the State of Bicycling and Walking in Lancaster County report, which will evaluate each of the performance measures in the Goals section. BPAC should also speak with municipal representatives, business leaders, and politicians around the county to get their feedback on implementation of the Plan. It should share this feedback with LCPC.

Funding Sources

The physical improvements and programs recommended in this plan will be made possible with funding from federal, state, and county sources, municipal budgets, and the private sector. Phase I of the Lancaster County Bicycle and Pedestrian Transportation Plan and the *Citizens' Guide to Transportation Planning in Lancaster County*, available from LCPC, describe many of the funding opportunities available to municipalities to implement bicycle and pedestrian projects. They provide details about eligible projects, matching funds, and funding sources. These sources include:

Public Sector

Federal and State (subject to change per Transportation Equity Act (TEA-3) legislation)

- Transportation Enhancements Program
- Transportation and Community and System Preservation Pilot Program
- National Highway System Funds
- Surface Transportation Program
- Congestion Mitigation and Air Quality Improvement Program
- Recreational Trails Program
- Federal Lands Highway Program
- National Scenic Byways Program
- Job Access and Reverse Commute Grants
- Transit Enhancement Activity Program
- Highway Safety Programs (Section 402)
- Community Conservation Partnerships Program (Pennsylvania Department of Conservation and Natural Resources)
- Home Town Streets and Safe Routes to School Program.

Several other state sources can be found on the Pennsylvania Greenways website (http://www.pagreenways.org/funding-PA.htm)[35]. They include:

- Growing Greener (Pennsylvania Department of Environmental Protection)
- Main Street Program
- Keystone Historic Preservation Grants

Lancaster County

- Municipal Transportation Grant Program
- Community Parks Initiative
- Recreation Grants

Municipalities are given transportation funds through PENNDOT's Fuel Tax Liquid Fuels Reimbursement. Boroughs and Townships can also raise their own money for sidewalk and roadway improvements. However, local governments can also take advantage of private sector funding. Municipalities could require developers to contribute funds for sidewalks and trails as well as improvements to roadways and intersections, especially in parts of the County experiencing strong pressure to develop.

Private Sector

Just as the use of public transportation funding for bicycle and pedestrian projects has been on the increase throughout the 1990's, private sector funding has become more plentiful. For example, the environmental land trust movement has mushroomed in the past twenty years and many of these organizations have raised funds for purchase of land where trails are built, especially rail-trails. In recent years, local corporations and businesses

from the bicycling and outdoor recreation industry have supported local projects and programs.

Community Fundraising and Creative Partnerships

- In Ashtabula, Ohio the local trail organization raised one-third of the money they needed to buy the land for the trail by forming a "300 Club." Three hundred acres were needed for the trail and they set a goal of finding 300 people who would finance one acre each. The land price was $400 per acre, and they found just over 100 people to buy an honorary acre, raising over $40,000.

- The Bear Creek Greenway Foundation sold symbolic "yards" of the trail and placed donor's names on permanent markers at each trailhead in Jackson County, Oregon. At $40 a yard, they raised enough in private cash donations to help match their $690,000 Transportation Enhancements program award for the 18-mile Bear Creek trail linking Medford, Talent, Phoenix and Ashland.

- Selling bricks for local sidewalk projects, especially those in historic areas or on downtown Main Streets, is increasingly common. Donor names are engraved in each brick, and a tremendous amount of publicity and community support is purchased along with basic construction materials. Portland, Oregon's downtown Pioneer Square is a good example of such a project.

- A pivotal 40-acre section of the Ice Age Trail between the cities of Madison and Verona, Wisconsin, was acquired with the help of the Madison Area Youth Soccer Association. The soccer association agreed to a 50 year lease of 30 acres of the parcel for a soccer complex, providing a substantial part of the $600,000 acquisition price.

Corporate and Business Community

- In Evansville, Indiana a boardwalk is being built with corporate donations from Indiana Power and Light Co. and the Wal-Mart Foundation.

- In Arizona, trail directional and interpretive signs are being provided by the Salt River Project, a local utility. Other corporate sponsors of the Arizona Trail are the Hughes Missile Systems, BHP Cooper, and Pace American, Inc.

- Recreational Equipment, Inc. has long been a financial supporter of local trail and conservation projects.

- The Kodak Company now supports the American Greenways Awards program of The Conservation Fund, which was started in partnership with the Dupont Company. This annual awards program provides grants of up to $2,500 to local greenway projects for any activities related to greenway advocacy, planning, design or development.

For further details and tips for accessing the corporate and business community contact the Trails and Greenways Clearinghouse at the Rails-to-Trails Conservancy: 1-877-GRNWAYS (476-9297), or on the Internet at: www.trailsandgreenways.org.

Foundations

A wide range of foundations have provided funding for bicycling and walking. A few national and large regional foundations have supported the national organizations involved in bicycle and pedestrian policy advocacy. One example is the Robert Wood Johnson Foundation, which seeks to achieve its public health goals by encouraging physical activity in local communities. Their web site can be found at: www.rwjf.org. However it is usually regional and local foundations that get involved in funding particular bicycle, pedestrian or trail projects. These same foundations may also fund statewide and local advocacy efforts as well. The best way to find such foundations is through the research and information services provided by the national Foundation Center. They maintain a huge store of information including the guidelines and application procedures for most foundations and their past funding records. They can be reached on the Internet at: www.fdncenter.org.

The Bicycle Industry—Bikes Belong Coalition

The Bikes Belong Coalition is sponsored by member companies of the American bicycle industry. The Coalition's stated goal is to put more people on bikes more often through the implementation of TEA-21. One of the Coalition's primary activities is the funding of local bicycle advocacy organizations that are trying to ensure that TEA-21-funded bicycle or trail facilities get built. Grants are awarded for up to $10,000 on a rolling basis. By June 2000, almost $200,000 has been awarded to advocacy organizations in the District of Columbia; Marin County, CA; Milwaukee, WI; Dallas, TX; Los Angeles, CA; New York City, NY; Portland, Maine and others. Information about the Coalition, including grant applications and related information, is on the Internet at: www.bikesbelong.org.

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APPENDIX A: SUMMARY OF PREVIOUS PLANS

NON-MOTORIZED VEHICLE STUDY (1993)

- Recommended a 215-mile system of safer roads to connect activity centers and serve as the County's the non-motorized network
- Recommendations included paving and widening shoulders, smoothening surfaces, replacing dangerous grates and utility covers, and shifting and narrowing lanes
- 8-foot shoulders on both sides
- Designation of bike routes with highway markers and painted lines
- Recreational trails: Conewago Recreational Trail, Lancaster Junction Recreational Trail
- Municipalities should revise park and recreation and transportation plans to incorporate bike travel
- Bike parking, storage, showers, locker rooms in subdivision and model development requirements
- Bicycle safety education, especially for kids

BICYCLE AND PEDESTRIAN TRANSPORTATION PLAN, PHASE I (2000)

- Need new sidewalks and ADA accommodations, especially in urban and village growth areas
- Traffic calming
- Manage land use to create walkable communities
- Cycle safety education; enforce safe behavior of both bicyclists and drivers
- Improve pedestrian and bicycle facilities on roadways and improve connections to transit and park & ride lots
- Create system that complements greenways
- Better pedestrian and bicycle facilities in tourist areas
- Employer-based incentives for bike commuting (provide parking and showers)
- Emphasized taking advantage of the recommendations of the 1996 Pennsylvania Bicycle and Pedestrian Plan
- Outlined funding methods and accountability for implementation
- Lancaster County Bicycle and Pedestrian Task Force to guide the MPO
- Municipalities should review their master plans and subdivision plans to make sure they incorporate bicycle and pedestrian issues; county should revisit ordinances to make sure they include consideration of pedestrians and bicyclists
- The County should make sure pedestrian and bicycle projects are in the Transportation Improvement Program (TIP) and in the recommendations of the Lancaster County Transportation Authority
- The County should work with the PENNDOT state office and District 8 to ensure pedestrian and bicycle accommodations are included in new construction and retrofit projects

APPENDIX B: PENNDOT BICYCLE AND PEDESTRIAN CHECKLIST

FINAL B/P FACILITIES CHECKLIST - PENNDOT
July 16, 2001

Planning and Programming Checklist

Project_____
SR_____ Segment_____ Offset_____
Team Members_____
Date _____

Item	Considerations	Check	Comments
1.Consistency with Bicycle/Pedestrian Planning Documents	Is the transportation facility included in or related to bicycle and pedestrian facilities identified in a master plan? • MPO/LDD RPO bike/ped plan. • Local planning documents. • BicyclePA Routes. • Statewide Bicycle and Pedestrian Master Plan		
	Will the transportation facility provide continuity and linkages with existing or proposed bicycle/pedestrian facilities?		
	Is the transportation facility included in or related to a regional/local recreational plan? • Rails-to-Trails • Greenways • Local, State, National Parks.		
2. Existing and Future Usage	Do bicycle/pedestrian groups regularly use the transportation facility? • Bike clubs. • Bicycle commuters. • Hiking, walking, or running clubs. • Skateboarding or rollerblading groups. • Bicycle touring groups. • General tourism/sightseeing.		

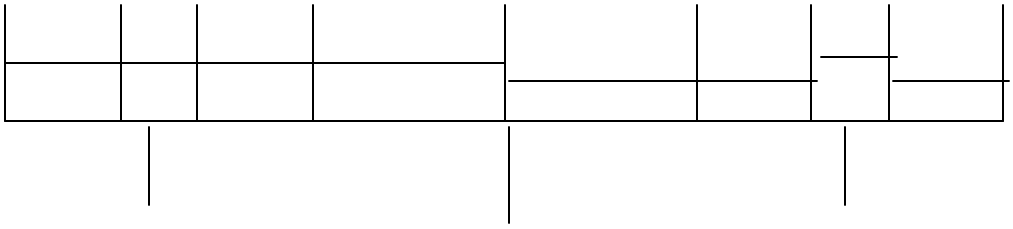
	Does the existing transportation facility provide the only convenient transportation connection/linkage between land uses in the local area or region?		
	Could the transportation facility have favorable or unfavorable impacts upon the bike tourism/economy of an area/region? Consider: • Local businesses • Chamber of Commerce. • Tourism Promotion Agencies.		
Existing and Future Usage (cont'd)	Are there physical or perceived impediments to bicycle or pedestrian use of the transportation facility?		
	Is there a higher than normal incidence of bicycle/pedestrian crashes in the area?		
3. Safety	Is the transportation facility in a high-density land use area that has pedestrian/bike/motor vehicle traffic?		
	Is there a high amount of crossing activity at intersections? • Midblock • Night crossing activity • Adequate lighting		
	Would the transportation facility (and all users) benefit from widened or improved shoulders or improved markings (shoulders, crosswalks)?		
4. Community and Land Use	Is the transportation facility in a city, town, municipality or village?		
	Is the transportation facility within/near a community or neighborhood?		
	Is the transportation facility the "main street" in a community or town?		
	Could bicycle or pedestrian usage impact economic development?		
	Are sidewalks needed in the area? • Presence of worn paths along the facility. • Adjacent land uses generate pedestrian traffic. • Possible linkages/continuity with other pedestrian facilities.		

	Is the transportation facility a link between complementary land uses? • Residential and commercial. • Residential and business.		
	Is the transportation facility in close proximity to hospitals or elderly care facilities, or the residences or businesses of persons with disabilities?		
	Is the transportation facility within or near educational institutions?		
	Is the transportation facility in close proximity to transit stops or multi-modal centers (including airports, rail stations, intercity bus terminals, and water ports)?		
5. Transit	Is the transportation facility on a transit route?		
	Is the transportation facility near park-and-ride lots?		
	Are there existing or proposed bicycle racks, shelters or parking available? Are there bike racks on buses?		
6.Traffic Calming	Is the community considering traffic calming as a possible solution to speeding and cut-through traffic?		

Scoping Checklist
July 16, 2001

Project_____
SR_____ Segment_____ Offset_____
Team Members_____
Date _____

Right-of-Way Needs Diagram



Sidewalks Shoulder/ Bike lane Lane(s) Lane(s) Shoulder/ Bike lane Sidewalk
Planter/Buffer Strips Median Planter/Buffer Strips

Element	Number Required	Width Required	Total Width
Sidewalks			
Buffer Strips			
Shoulders			
Lanes			
Median			
Total Right-of-Way Required			

Pedestrian Facilities

Item	Considerations	Check	Comments
1. Sidewalks	Appropriate width: • 1.5 m – 2.1 m (5'-7') for residential, commercial, and industrial. • 2.5 m (8') minimum for high use areas/CBD. • 2.1 m (7') width for bridges. • 0.6 m (2') shy distance for vertical barriers. • 1.2 m – 2.1m barrier separating traffic from pedestrians on bridges.		
	Applicability of planter or buffer strips.		
Sidewalks (cont'd)	Connectivity with other pedestrian facilities.		
	Proximity to transit bike/ped generators: • Transit stops. • Schools. • Park & rides • Nursing homes • Offices • Business environments • Athletic fields • Recreation facilities		
	Observe pedestrian patterns for special needs such as: • Midblock crossings. • Islands and refuges. • Night crossing activity.		
	ADA needs and concerns.		
2. Signalized Intersections	Crosswalks provided and marked.		
	Intersection bike/ped crash history reviewed.		
	Is there a dedicated pedestrian phase, if so how long?		
	Crossing distance is minimized.		
	Ped heads and ped pushbuttons provided.		
	ADA needs and concerns.	Retirement homes	
		Schools	
		Medical facilities	
3. Traffic Calming	Is the community considering traffic calming as a means to curb speeding and cut-through traffic?		

Bicycle Facilities

Item	Considerations	Check	Comments
1. Bikelanes/Paved Shoulders	Appropriate width of bike lane: • 1.5m (5') adjacent to curb. • 1.8m (6') standard		
	Connectivity with other facilities. • Bike lanes • shared use trails • trail heads/parking areas		
	Maximize width of shoulders and provide appropriate markings as per *AASHTO Green Book*.		
	3 m (10') vertical clearance from fixed obstructions (excluding road signs).		
	Angle and smoothness of railroad crossings. Avoid angles of incidence of <70 degrees or redesign		
	Bridge accesses provided/pinch points avoided.		
	Parking parallel or angled.		
2. Signalized Intersections	Inventory existing bicycle facilities.		
	Intersection bike/ped crash history reviewed.		
	Crossing distance is minimized.		
	Considerations for bikes making turns.		
	Bike detection.		
	Elevated push buttons		
3. Traffic Calming	Is the community considering traffic calming as a means to curb speeding and cut-through traffic?		

Final Design Checklist

July 16, 2001

Project_____
SR_____ Segment_____ Offset_____
Team Members_____
Date _____

Pedestrian Facilities

Item	Considerations	Check	Comments
1. Sidewalks and Signalized Intersections	Crosswalks are at least 3 m (10') wide.		
	Crosswalks are prominently marked using continental style markings.		
	Pedestrian signals are provided.		
	Pushbuttons are provided and accessible.		
	Minimize crossing distance.		
	Maximize pedestrian visibility at crossings.		
	Coordination of turn phases with walk/don't walk signs.		
	Proper lighting type and placement.		
2. ADA Requirements	Pushbuttons accessible.		
	Pushbutton height 1.0 m – 1.1m (3.5'-4.0').		
	Large pushbuttons used.		
	1.5m (5') recommended passage (sidewalks).		
	5% maximum grade recommended (sidewalks).		
	2% cross-slope maximum		
	Curb cuts include "truncated dome" texturing along lower 24 inches.		
	2 curb cuts per corner at intersections.		
	Curb cuts flush with street surface 0.6 cm. (1/4") tolerance		
	Running slope of new curb cuts 1 in 12 max.		
	Longer signal cycles.		
	Audible crossing signals.		
	Level landings on perpendicular curb ramps.		
	Proper head/shoulder clearance for visually impaired.		
	Coordinate utilities with ADA requirements.		
	Proper lighting.		
	Analyze landscaping growth potential for future obstructions.		

ADA Requirements (cont'd)	Any conflicts with minimal distance that should be included in the project.		
	Coordinate and minimize signage conflicts.		
3. Traffic Calming	Consider traffic calming as a means to improve pedestrian and general traffic safety.		

Bicycle Facilities

Item	Considerations	Check	Comments
1. Bikelanes/ Bikeways	Bicycle safe grates, RC-34, Sheet 3 of 9.		
	Manhole covers flush with roadway surface.		
	Inlets flush with roadway surface.		
	Rumble strips type and placement.		
	Driveway aprons.		
	Conflicts eliminated with: • Turns at intersections. • Through movements. • Bicycle and pedestrian conflicts. • Parked cars, angled vs. parallel. • Driveway aprons.		
2. Signage	3 m (10') vertical clearance from signs and structures.		
	"Share the Road Signs".		
	"Wrong Way Signs".		
	Lane stenciling.		
	Bike lane designation signs.		
	No parking signs.		
	Bike lane striped.		
	Transition from bike lane to bikeway.		
	Consistent width on roadways, bridges, and intersections.		
	Overlap bike lane/shoulder stripe over pavement joints.		
	Meet or exceed AASHTO criteria.		
3. Traffic Calming	Consider traffic calming as a means to improve pedestrian and general traffic safety.		

APPENDIX C-1: SUMMARY OF INTERVIEWS

This section summarizes responses that were given in phone interviews with leaders in the Lancaster County pedestrian and bicycle community during June 2003.

BICYCLE SHOP EMPLOYEES

- Willing to post flyers, would like to get involved, "will do whatever it takes"
- Will post flyers and donate items for public meetings
- Biggest issue is lack of wide enough shoulders (not referring to back roads with little traffic). i.e. Rt. 272 has a portion with no shoulder. Need more dedicated bike paths
- Will post flyers and donate items for public meetings
- Shoulders need to be widened
- Better roadway design needed to accommodate bicycles
- Need to connect neighborhoods without forcing bicyclists to go out to main roads
- Need more rail-trails
- Gets customers in riding for recreation and work
- Problem with stones and debris on shoulders in rural areas
- Need to get rid of road rage against bicyclists
- Cyclists need more power, if cars hit bikes the drivers only get a slap on the wrist
- There are not enough shoulders, or shoulders are not wide enough (should be able to fit 2 riders abreast). When there are shoulders they are covered with stones, glass, nails—wind up with flat tires.
- Used to have many road races and triathlons. Only a few still supported locally – have to fight with townships to get roads closed
- Need to make more room for horses. Rt. 23 needs improvements, should be wider

COLLEGES AND UNIVERSITIES

- None of the college or university representatives that were interviewed said that they offered bike safety programs. Most students supposedly do not ride bikes, and many schools are adult/continuing education.
- Just began a 'cops on bikes' program at Millersville, have 3 officers participating (one for each shift). The campus is small with limited vehicle access so do not have to worry about cars not yielding to students. Most students drive from local neighborhoods.
- Will post flyer for public meetings
- Some problems on Millersville campus are that there are no bike lanes, sidewalks are not continuous or are in disrepair, and a lack of ramps
- A trail in Buchanan park would be nice, for kids
- Would like clearly striped lanes for bikes—there is not enough existing roadway width
- Campus and urban areas need designated roadway space for bicyclists and pedestrians
- When there is not enough road width for bikes, their pedals can hit the curb—safety hazard. When there are narrow lanes, vehicles can scare younger/less experienced riders into the curb.
- Drivers don't give bicycles the space that they deserve

- Drivers that are in a hurry cause a problem because they don't yield to pedestrians and cyclists trying to cross in crosswalks (but this is getting a little better)
- If students walk to class instead of driving, they help the parking situation on campus
- Like the idea of flashing crosswalks and better lighting on campus at night

LANCASTER BICYCLE CLUB

- Improve pavement conditions
- Provide signal detectors for bicyclists; bike accessibility should be included in standard / guideline process
- The County has some dangerous sewer grates –some in middle of intersections
- Pavement overlay does not always include shoulder-pavement should be feathered so that there is a smooth transition from lane to shoulder
- Pedestrian "no pedestrian crossing signs" –make those intersections accessible
- Delineation of pedestrian traffic along roadway – segments
- Use ID Asphalt treatment rather than oil + chip (costed out over life)

PENNSYLVANIA COMMONWEALTH OF STATE POLICE - LANCASTER

- Do not themselves have a bike safety program, but work with AAA who runs one for local elementary schools (grades 3-6). Dorie Weik, 717-390-2194
- PA vehicle codes does not make special provision for bikes – they are treated the same as cars.
- Need bigger roadway shoulders and bike lanes. Roads in Lancaster are so old that it is often difficult to make them more conducive to bikes
- PA state does not have a "cops on bikes" program – too rural (they do have motorcycles)

COFFEE SHOPS

- Will post flyers, "anything we can do, just let us know"
- Get a lot of tourists (many Europeans) looking for places to rent bikes to tour the area
- Landlord of their small mall would be willing to donate space for bike facilities / lockers
- Pedestrians don't use crosswalks, dangerous

SCHOOL SAFETY EDUCATION PROGRAMS

- AAA works on safety education in 72 of the 104 schools in all districts of Lancaster County.
- AAA Teaches balance and control, rules of the road, sharing sidewalks with pedestrians, using helmets, etc.
- AAA Program is held once a year (Spring) in each school.
- Greatest priority for plan should be making roads with wider shoulders, especially on rural roads where people have a false sense of security because traffic volume is low.

APPENDIX C-2: SUMMARY OF COMMUNITY WORKSHOP FEEDBACK

Two Community Workshops were held to provide information about the Lancaster County Bicycle and Pedestrian Transportation Plan and to receive initial ideas and recommendations for the plan from the public. Approximately 11 people participated in the June 30, 2003 meeting in Manheim and approximately 27 people participated in the July 1, 2003 meeting in the City of Lancaster. The Community Workshops consisted of an informal drop-in period for attendees to ask questions, a formal presentation about the plan, a question and answer period, a group mapping exercise, and then a group gathering to talk about what had been marked on the maps. Participants provided their comments during the discussion periods and mapping exercise as well as by filling out separate pedestrian surveys and bicycle surveys.

A third Community Workshop was held on January 21, 2004 in the City of Lancaster near the end of the planning process. At least thirty-three people participated in the meeting. Participants were shown maps of the recommended Pedestrian and Bicycle Systems and given a formal presentation on the Draft Plan. Comments were provided before and after the formal presentation and on comment sheets.

SUMMARY OF COMMENTS

The comments received at the three Community Workshops can be generalized into several key themes. Overall themes coming from the discussion periods, map work, comment sheets, and surveys are:

- A "cultural" change is needed in Lancaster County to increase the awareness of the benefits of pedestrian and bicycle transportation and to increase the actual amount of residents who walk and bicycle.
- Better physical pedestrian and bicycle conditions are needed to make more residents feel safe and comfortable enough to choose to walk and bike in the County.
- Pedestrians and bicyclists need more roadway space, including more sidewalks and more wide shoulders.
- Education of drivers, as well as pedestrians and bicyclists, is one of the keys to creating a safe pedestrian and bicycle transportation system, regardless of physical roadway conditions.
- Areas around schools are a top priority for pedestrian and bicycle improvements.
- Better maintenance of roadways and sidewalks is needed to ensure comfort for pedestrians and bicyclists over time.
- Bicyclists of different skill-levels should have a choice to ride on the roadway in the safest and most comfortable place for them.
- Safety of the roadway/roadside and travel time are two of the most significant factors that play a role in whether or not survey respondents walk or bike.

- The land use pattern that has developed outside the older city areas is unfriendly to pedestrians and bicyclists. New developments should be mixed-use so that there are nearby destinations for residents to walk and bike to. There should also be a connected system of roads within and between developments.
- Major roadway arteries leading into and out of Lancaster City should receive special attention for pedestrian and bicycle improvements. These are often commercial strips and shopping center developments that have little, if any, shoulder space and incomplete, poorly maintained sidewalks. Vehicles turn frequently across pedestrian and bicycle travel areas, and many sections have few trees or other features that make the streetscape attractive to any type of roadway user.

OPEN DISCUSSION COMMENTS

The list below summarizes the comments from the community participants during the open discussion periods. Some are general suggestions, and others are specific to a roadway or an area in the county. The general suggestions are categorized into the four goal areas of education, transportation improvements, multimodal access/land use policy, and communications, and a final category was added for comments related to policy.

General Suggestions for Plan

Education

- Education is needed for pedestrians and bicyclists using the transportation system.
- Drivers need to have better awareness of pedestrians and bicyclists and to be educated on how to operate safely near these two types of roadway users.
- Education will help reduce the perception of danger associated with bicycling in the County.
- Lancaster County should embrace a structured program that can make parents less afraid to have their kids walk and bike in their neighborhoods and also teach kids how to walk and bike safely.
- It is dangerous for bicyclists when motorists encroach on shoulders to make right turns.
- Police need to enforce driver yielding to pedestrians and bicyclists.
- "Parents are terrified to let their kids out of the yard." We need to provide both education and physical pedestrian and bicycle improvements to combat this fear.
- Many teachers have the energy to teach pedestrian and bicycle safety education in their classes.
- Bicycle safety and other concepts, such as carpooling, should be taught in school
- It is fairly easy to educate kids about safe bicycling and walking behavior. How do we educate motorists about safe driving behavior near pedestrians and bicyclists?
- Many more roads seem dangerous to inexperienced bicyclists
- Middle school students do not like to wear bike helmets because they are "uncool".
- Do not assume that bicycling skill is equal to safety.
- Mountville Borough Police do a little safety education program at the beginning of each school year.

- Educate the public on the cost of tire and innertube replacement. Debris on shoulders increases the chances a bicyclist will get a flat tire, which costs time and money to replace.
- Educate the public about clipless pedals—extra care should be taken when driving around bicyclists because they are "locked in".

Transportation Improvements

- All skill levels should be accommodated when making pedestrian and bicycle roadway improvements.
- Lancaster County needs a Safe Routes to Schools program.
- School students should be more involved in biking, but parents feel they can't take kids out because roadway facilities are not safe.
- Sidewalks need to be provided near schools.
- Roadways in the urban areas should be designed to send drivers the message: "You come in the city, you slow down."
- Shoulders need better maintenance.
- The Plan should promote development of the Atglen-Susquehanna Trail.
- The Plan should reference the Conewago, Conestoga, Horseshoe, and other trails in the northwest part of Lancaster County.
- Trees and bushes should be trimmed back to provide adequate shoulder space, ensure adequate sight distance, and allow people to use the entire sidewalk.
- Awareness of pedestrians crossing the street can be improved with crossing signs, brightly-painted crosswalks, "Yield to Pedestrians" bollards placed in crosswalks, and better illumination of the crosswalk.
- Pedestrian crossing of multi-lane highways can be improved by adding a raised island refuge in the middle of the multi-lane road, breaking the crossing into two smaller crossing steps.
- Extending the curb into the road area (curb extensions or bulbouts) has been done in areas with parked cars, but in areas where there is no on-street parking, it would take away the cyclist/buggy travel clearance and should be avoided.
- "No Pedestrian Crossing" signs should be removed throughout the County.
- If vehicle traffic is heavy and crossing needs are great, a light which the crosser can press to stop the vehicle traffic is quite effective.
- A raised speed table extending the entire width of the roadway is effective both in slowing the motor traffic and increasing pedestrian crossing visibility when the top of the speed table is a crosswalk. There are limitations on speed tables on PENNDOT roadways, but they can be effective in slowing motorist near parks or schools on side streets where speed limits might otherwise be ignored.
- Wider shoulders or a hill-climbing lane should be provided when driver sight-distance is limited at the tops of hills so that slower traffic has more clearance.
- Abandoned rail lines provide the most cost-effective means of providing recreational open space for walking, jogging, cycling, horseback riding, or cross-country skiing, but many adjacent property owners fear they might be liable if the lines are used for recreational trails and users go off the trail onto their property. The Plan should refer to the findings available through Rails-To-Trails that owners are NOT liable for folks

wandering off the trail, that going off a trail is a rare occurrence, and that nearby recreational trails have increased the quality-of-life and raised property values in many locations (which include the Lititz-Warwick trail neighborhood, and the area near the Conewago Trail north of Elizabethtown.

- Fix drainage grates that have bars that are far enough apart to trap a bicycle wheel. The gaps should be perpendicular to the direction of bicycle travel.
- Rumble strips should not be used.
- Connect the street grid. Suburban areas with dead ends and cal-de-sacs should have cut-through paths for pedestrians and bicyclists. Continue the rectangular grid that was established in Lancaster City and in the downtowns of the older boroughs.
- The County should add more 8-foot shoulders. Narrow roads are dangerous when there is no "escape route" for bicyclists.
- The County needs to provide shoulders that are 2 feet or wider on its roadway.
- Shoulders that are 3 to 4 feet wide are sufficient, but it is nice when the shoulders are wider.
- Shoulders provide benefits to other roadway users besides bicyclists, such as pedestrians, buggies, and motor vehicles.
- Provide bike lanes everywhere.
- Tractor-trailer drivers wave when they see me biking in an 8-foot shoulder because they don't have to worry about passing too closely.
- PENNDOT needs to provide wider, well-maintained shoulders.
- Roads in the northeast part of the county are good for biking, in general.
- County should aim to create places where people want to be. Beautiful buildings and streetscapes will be enjoyed by residents and bring visitors to these places.
- Small malls and strip shopping centers have no pedestrian and bicycle amenities—these are needed.
- Parking lots are very unfriendly for walking and biking; they should have trees, lanes for pedestrians, and connections to adjacent parking lots.
- Lancaster County roadways need more street trees.
- Sidewalk conditions need to be improved.
- The word "facilities" is not the appropriate word to use for bike lanes and paved shoulders.
- There should be less focus on providing bicycle "facilities" in this plan because we already have a system of bike facilities—they are called roads.
- Avoid designing roadways that imply that there is only one appropriate place for bicyclists to ride.
- Are pedestrian facilities needed more than bike facilities in Lancaster County? If so, we should give a significant focus to them in the plan.
- New developments should not encroach on the shoulders of existing roadways.
- Heavy truck traffic can make it much less comfortable to walk and bike.
- People with disabilities must be accommodated on the County's roadways.
- Subdivisions should be designed so that there are nearby destinations for people to walk to.
- Design roads to be wider when traffic volumes are higher.
- Roadway corridors need consistent, good conditions for bicycles, pedestrians, and motor vehicles.

- Pedestrian connections should be provided between parking lots on adjacent properties.
- The new baseball stadium development will provide a great opportunity to make great pedestrian and bicycle connections to a major destination.
- There need to be safe and convenient crossings of the major traffic arteries in the County. "They are like walls."
- The one-way streets in Lancaster City and other downtowns should be converted to two-way streets.

Multimodal Access

- More planning needs to be done to make the transit system serve the needs of county residents—Red Rose Transit is still operating on a hub and spoke system.
- Provide bike access on Amtrak.
- Free delivery services should be available so that people can walk or bike to shop for large items and not have to worry about carrying them home.
- The Red Rose Transit Bike Access policy should be listed on the County website.
- Establish bicycle stations at appropriate locations to provide secure indoor bike parking, scooter and car-sharing rental opportunities, bike repairs, and bike accessory sales (article on bicycle stations was submitted at the third Community Workshop).

Communications

- Lancaster County has reached a tipping point where there is an openness to making pedestrian and bicycle conditions better in general.
- Some of the benefits of walking and biking are that they provide an inexpensive alternative to driving a motor vehicle, reduce motor vehicle congestion, have less of an impact on transportation infrastructure than motor vehicles, produce less pollution, provide exercise and improve health, and are faster then driving (in some cases).
- Bicycle / Pedestrian Map should encourage people to walk and bike for their chores—it should provide the destinations in people's neighborhoods; it should say how long it will take a person to bike / walk from place to place.
- People should be able to complete errands by bicycling and walking, especially when destinations are nearby
- Community action is important—parents need to be motivated to walk their kids to schools.
- Lancaster County is light-years ahead of many other counties in Pennsylvania—we commend you for getting this event done (attendee from PA Bicycle Access Council). Lancaster County's effort can be looked at as a model.
- There is energy in the County to make improvements for pedestrians and bicyclists, but a greater "pedestrian and bicycle presence" needs to be created to overcome tradition and obstacles. Residents need to hear the message that pedestrians and bicyclists are good for the community and to see that there are many people who walk and bike in the County.
- The Bicycle Map will be a great resource for tourists—showing them many destinations that they can reach by bicycle.

- The Bicycle Map should indicate the amount of time it would take a typical bicyclist to travel between destinations and on loop rides at a specific speed.
- Lancaster Bicycle Club has several scenic tours and other ride routes that could be considered as recommended county routes for signage and inclusion in the bike map
- Lancaster residents should be motivated to walk and bike
- The County needs a pedestrian advocacy group
- More outreach and promotion programs are needed in general for bicycling and walking
- Air quality issues must be taken seriously in Lancaster County. Bicyclists and pedestrians breathe in pollutants from motor vehicles. Partnerships with groups like the American Cancer Society are important for addressing this issue.
- Work with the Pennsylvania Department of Conservation and Natural Resources, Lancaster Parks and Recreation Department, and Senior Olympics in Lancaster County and across the State to get seniors out bicycling (same recommendation for kids).

Policy

- PENNDOT can be a great partner for implementing this plan. They are now in the sidewalk business. Use them to get more sidewalks in Lancaster County.
- PENNDOT's new Bicycle and Pedestrian Checklist will change policy so that pedestrian and bicycle facilities do not have to be justified as part of a road improvement project. Instead, there must be justification for NOT including pedestrian and bicycle facilities.
- Emphasize the importance of the Lancaster County Inter-municipal Committee to the success of this Bicycle and Pedestrian Plan.
- Park and Recreation agencies should allow increased bicycle and pedestrian access to gamelands, parks, etc.
- Sidewalks are not mandated by law. Each municipality decides. Manheim Borough can require sidewalks, but there are many exceptions. Why should a property owner / developer build a sidewalk if there are not any others around for it to connect to? The overall system needs to be developed—it must not be piecemeal.
- Borough of New Holland did a comprehensive sidewalk refurbishment—this should be viewed as a leading example for the County.
- The Plan should contain specific, ready-to-implement regulations for developers.
- There should be specific turn-lane requirements in the Plan, with foot-by-foot descriptions of proper designs.
- Existing shoulder space should never be eliminated, even if it is for the purpose of adding a sidewalk.
- The Plan should not recommend using curb extensions or reducing turning radii.
- The Plan should not recommend removing snow from trails or require paved trails.
- The Plan should not recommend that new sidewalks be provided in front of existing homes, except on the highest-priority stretches of roadway.
- While Bicycle Level of Service should be used at the Countywide planning level, LCPC should avoid using by-the-letter Bicycle Level of Service Grades.
- The Plan should recommend ways to reduce motor vehicle speeds in problem areas; however, speed limits should not be lowered arbitrarily to meet a Bicycle Level of Service target.

- The Plan should encourage a connected street pattern and avoiding cul-de-sacs.
- Municipalities should not waive sidewalk requirements for any new developments.
- Sidewalks should be provided any time a property is developed within an Urban / Village Growth Area.
- Driveways should be consolidated to reduce conflicts between turning motor vehicles and pedestrians and bicyclists.
- Additional shoulder width should be added, where possible, any time a roadway is repaved.
- Roadway lanes should be kept to a minimum width, and additional right-of-way space should be given to shoulders and sidewalks.
- It is important to work with the Pennsylvania Turnpike Authority Commission. Their Charter prohibits bicyclists and pedestrians on their facilities; however, overpasses, underpasses, and interchanges should provide connections for non-motorized modes.
- There will be very limited participation from the Mennonite Community in public meetings, but there are many safety issues with Amish and Mennonite community members bicycling, walking, rollerblading, riding scooters, etc. on roadways. It is essential to continue to seek input from the Mennonite Safety Committee.
- Every property owner is responsible for maintenance of sidewalks and is assessed for sidewalk improvements—some people are not able to do this; others are unaware of their responsibility. There should be policies to help people maintain sidewalks. (PENNDOT gives maintenance responsibility to municipalities, which in almost all cases, pass that responsibility to the property owners.)
- Old trees need to be replaced. The City of Lancaster will pay to put a new street tree in, but the property owner must pay to take it out.
- There should be funding programs for pedestrian and bicycle improvements in municipalities that have PENNDOT-owned roads.
- BPAC is now "at the table" as a member of the Transportation Technical Advisory Committee (TTAC).
- Context Sensitive Solutions have the potential to improve the pedestrian and bicycle environment significantly.
- Bicycle licensing could be used to help contribute to roadway construction and maintenance costs. However, this would discourage bicycling. Maybe there should be a competence license instead.
- Engineers should go out and see conditions of roads in the field.
- Incentives should be used to motivate residents to walk and bike.
- The County should provide a best practices report for pedestrian and bicycle design for the municipalities to follow.
- County should help provide funding to townships to create wider rural roads in areas with more traffic.

Location-Specific Recommendations

- Make Harrisburg Pike (and the James Street Improvement District) pedestrian-friendly, especially to serve Franklin and Marshall College, Lancaster Hospital, and the new stadium area.
- Columbia Avenue should be improved between Lancaster and Columbia

- Main roadway "spokes" on the outside of town (Such as Harrisburg Pike, Lititz Pike, Oregon Pike, etc.) need sidewalks and street trees.
- The area around the Lancaster City train station needs to be improved for both bicyclists and pedestrians.
- There should be a detour for the PA Bicycle Route "S" that goes around the south side of Lancaster City—divide Route "S" into a main route and a business route through the city.
- Ridge Road (east of Elizabethtown) is important to improve, since it is heavily traveled
- Driveways should be consolidated on PA 72 to reduce conflicts between pedestrians and bicyclists and turning vehicles.
- PA 272 (Oregon Pike) needs to be improved. It is in the Transportation Improvement Program for repaving
- Kids at Doe Run Elementary (Rapho Township) are not allowed to ride to school—better accommodations for pedestrians and bicyclists should be provided in the area and this policy should be changed.
- Potential locations for Safe Routes To Schools projects include the Lampeter Strasburg School Campus, Manor Middle and High School, and Donegal School District.
- Lancaster City needs to take a stand and say that it will make conditions better for pedestrians.
- South Duke Street in Lancaster City needs bike lanes.
- There is a significant safety issue, especially with kid bicyclists, on Valley Road in Manheim Township between Oregon Pike (PA 272) and Lititz Pike (US 501).

MAP COMMENTS

Community comment maps were provided for the northwest, northeast, and south parts of Lancaster County as well as the Lancaster City area. Meeting participants marked where the best and worst places where they walked and biked and also marked locations where they would like to see physical improvements for pedestrians and bicyclists. The following list summarizes these comments.

- In general, meeting participants wanted better connections between Downtown Lancaster and the surrounding suburbs and countryside.
- The major roadway arteries into Lancaster City were most often marked as areas needing improvement, both for walking and bicycling.
- The most common places that people walked were in Downtown Lancaster or within a suburban subdivision. Few people crossed major roadway arteries.
- Several roadway intersections on the southeast and northwest edges of Lancaster City were marked as particularly difficult for pedestrians.
- People often biked on loop routes in the country and used PA Bike Route S through Lancaster City.
- People noted that the areas to the northwest, northeast, and south of Lancaster City and its suburbs are excellent for bicycle riding.
- Several rural roadways were noted as having inadequate shoulder width for bicycling.
- Participants suggested adding scenic roadways and route numbers to maps.

SURVEY COMMENTS

The comments in the surveys addressed similar topics as were raised during the open discussion periods. However, they provide some initial data about pedestrian and bicycle trip purposes, factors that influence individual decisions to walk and bike, walking and biking to transit, and safety training.

Pedestrian Survey

Nine (9) pedestrian surveys were completed and turned in at the community workshops. The pedestrian survey respondents had the following characteristics:

- Pedestrian trips were made most often to go to a social / recreational activity or to go to work. Though they made fewer trips each week for shopping purposes, seven of the nine respondents also reported walking for this purpose.
- The most common factors that influenced whether or not they walked were travel time (8), the safety of the roadside (6 responses), the need for exercise (5), and the presence of street trees and benches (4).
- None of the respondents had walked to a Red Rose Transit bus in the past week.
- None of the respondents had ever received formal pedestrian safety instruction.

Bicycle Survey

Twenty-one (21) bicycle surveys were completed and submitted. The bicycle survey respondents had the following characteristics:

- Bicycle trips were made most often for touring or training, to go shopping or run errands, to go to social and recreational activities, and to go to work.
- The most common factors that influenced whether or not they bicycled were the safety of the roadside for bicyclists (12 responses), weather (11), travel time (11), the need for exercise (7), and theft / bike security (7).
- The types of bicycle facilities that the respondents would like to use when riding to a destination were paved shoulders (16), shared-use paths (12), wide vehicle travel lanes (11), designated bicycle lanes (11), and vehicle travel lanes (4).
- The most common areas reported as needing more / better bicycle parking were shopping centers, transit stops / stations, and downtown areas.
- Two (2) of the respondents had brought his / her bike on a Red Rose Transit bus.
- Ten (10) of the respondents had received formal bicycle safety instruction. The most common safety instruction course was Effective Cycling.

APPENDIX C-3: PEDESTRIAN AND BICYCLE SURVEY FORMS

PEDESTRIAN SURVEY

1. How many TIMES PER WEEK do you walk for the following purposes? (write number in each blank) To work: ____ To shopping or errands: ____ To school: ____
To social or recreational activities: ____ Touring or training, i.e., non destination walking: ____

2. Which roads in Lancaster County are best for pedestrians? (use back of page if more lines are necessary)

_____From:_____To:_____
_____
Road/Street name Intersecting Road/Street Intersecting Road/Street

_____From:_____To:_____
_____
Road/Street name Intersecting Road/Street Intersecting Road/Street

_____From:_____To:_____
_____
Road/Street name Intersecting Road/Street Intersecting Road/Street

3. On which roads in Lancaster County would you like to see physical changes made to improve conditions for pedestrians? (use back of page if more lines are necessary)

_____From:_____To:_____
_____
Road/Street name Intersecting Road/ Street Intersecting Road/Street

_____From:_____To:_____
_____
Road/Street name Intersecting Road/Street Intersecting Road/Street

_____From:_____To:_____
_____
Road/Street name Intersecting Road/Street Intersecting Road/Street

4. Where are improved pedestrian roadway crossings needed?

_____ _____
_____
Location name Location name Location name

5. Which of the following factors plays a role in whether or not you walk to a destination? (check as many as apply)

☐ Travel Time ☐ Street trees and benches ☐ Safety of roadside for pedestrians ☐ Road crossings
☐ Costs of other travel modes ☐ Need for exercise ☐ Availability of showers/changing facilities ☐ Weather
☐ Hills ☐ Other (please explain)_____

6. Have you walked to take a Red Rose Transit Bus in the past week? ☐ Yes ☐ No

7. Have you ever received formal pedestrian safety instruction? ☐ Yes ☐ No

If yes, briefly describe the class/course:

_____
_____

(8.-11. Optional)

8. Age (Under 10, 10-20, 20-30, etc.): ____ **9. Gender** (F or M): ____

10. Township/Borough (List Name): _____

11. Please provide any other ideas you have for improving pedestrian accommodations in Lancaster County in the space below or on the back of this survey form.

BICYCLE SURVEY

1. How many TIMES PER WEEK do you ride a bicycle for the following purposes? (write number in each blank) To work: ____ To shopping or errands: ____
To school: ____
To social or recreational activities: ____ Touring or training, i.e., non destination riding: ____

2. Which roads in Lancaster County are best for bicyclists? (use back of page if more lines are necessary)

_____From:_____To:_____
Road/Street name Intersecting Road/Street Intersecting Road/Street

_____From:_____To:_____
Road/Street name Intersecting Road/Street Intersecting Road/Street

_____From:_____To:_____
Road/Street name Intersecting Road/Street Intersecting Road/Street

3. On which roads in Lancaster County would you like to see physical changes made to improve conditions for bicyclists? (use back of page if more lines are necessary)

_____From:_____To:_____
Road/Street name Intersecting Road/Street Intersecting Road/Street

_____From:_____To:_____
Road/Street name Intersecting Road/Street Intersecting Road/Street

_____From:_____To:_____
Road/Street name Intersecting Road/Street Intersecting Road/Street

4. Where is more/better bicycle parking needed?

_____ _____
_____
Location name Location name Location name

5. Which types of bicycle facilities would you like to use when riding to a destination in Lancaster County? (check one or many)
☐ Paved Shoulders ☐ Shared-use paths (greenway trails) ☐ Vehicle Travel Lanes
☐ Designated Bicycle Lanes ☐ Wide Vehicle Travel Lanes (wide curb lanes)

6. Which of the following factors plays a role in whether or not you ride your bike to a destination? (check as many as apply)
☐ Travel Time ☐ Availability of bike parking ☐ Safety of route for bicyclists ☐ Traffic
☐ Costs of other travel modes ☐ Need for exercise ☐ Availability of showers/changing facilities ☐ Weather
☐ Hills ☐ Theft/bike security ☐ Other (please explain)_____

7. Have you ever taken your bicycle on a Red Rose Transit Bus? ☐ Yes ☐ No

8. Have you ever received formal bicycle safety instruction (i.e. Bike Rodeo, Effective Cycling Course)? ☐ Yes ☐ No **If yes, briefly describe the class/course:** _____
_____
_____

(9.-12. Optional)

9. Age (Under 10, 10-20, 20-30, etc.): ____ **10. Gender** (F or M): ____

11. Township/Borough (List Name): _____

12. Please provide any other ideas you have for improving bicycle accommodations in Lancaster County in the space below or on the back of this survey form.

APPENDIX D: BICYCLE LEVEL OF SERVICE SUMMARY

Prepared by

Toole Design Group
Washington DC- Baltimore

for the

Lancaster County Bicycle and Pedestrian Plan, Phase II

June 2003

Background

Level of Service (LOS) is a framework that transportation professionals use to describe existing conditions (or suitability) for a mode of travel in a transportation system. The traffic planning and engineering discipline has used LOS models for motor vehicles for several decades. Motor vehicle LOS is based on average speed and travel time for motorists traveling in a particular roadway corridor. In the 1990s, new thinking and research contributed to the development of methodologies for assessing levels of service for other travel modes, including bicycling, walking, and transit. Specific methodologies for bicycle level of service have been developed and used by a number of cities, counties, and states around the U.S. since the mid-1990s. This Plan adopts the Bicycle Level of Service (Bicycle LOS) Model assessment method.

When considering level of service in a multi-modal context, it is important to note that LOS measures for motor vehicles and bicycles are based on different criteria and are calculated on different inputs. Motor vehicle LOS is primarily a measure of speed, travel time, and intersection delay. Bicycle LOS is a more complex calculation, which represents the level of comfort a bicyclist experiences in relation to motor vehicle traffic.

Bicycle Level of Service Model

The *Bicycle Level of Service Model (Bicycle LOS Model)* is an evaluation of bicyclist perceived safety and comfort with respect to motor vehicle traffic while traveling in a roadway corridor. It identifies the quality of service for bicyclists or pedestrians that currently exists within the roadway environment.

The statistically calibrated mathematical equation entitled the *Bicycle LOS Model*[1] *(Version 2.0)* is used for the evaluation of bicycling conditions in shared roadway environments. It uses the same measurable traffic and roadway factors that transportation planners and engineers use for other travel modes. With statistical precision, the *Model* clearly reflects the effect on bicycling suitability or "compatibility" due to factors such as roadway width, bike lane widths and striping combinations, traffic volume, pavement surface condition, motor vehicle speed and type, and on-street parking.

The *Bicycle Level of Service Model* is based on the proven research documented in *Transportation Research Record 1578* published by the Transportation Research Board of the National Academy of Sciences. It was developed with a background of over 150,000 miles of evaluated urban, suburban, and rural roads and streets across North America. Many urban planning agencies and state highway departments are using this established method of evaluating their roadway networks. The Virginia Department of Transportation is using the *Bicycle LOS Model* in both the Richmond and Northern Virginia regions. The model has also been applied in Anchorage AK, Baltimore MD, Birmingham AL, Buffalo NY, Gainesville FL, Houston TX, Lexington KY, Philadelphia PA, Sacramento CA, Springfield MA, Tampa FL, Washington, DC, and by the

[1]Landis, Bruce W. et.al. "Real-Time Human Perceptions: Toward a Bicycle Level of Service" *Transportation Research Record 1578*, Transportation Research Board, Washington, DC 1997.

Delaware Department of Transportation (DelDOT), Florida Department of Transportation (FDOT), New York State Department of Transportation (NYDOT), Maryland Department of Transportation (MDOT) and many others.

Widespread application of the original form of the *Bicycle LOS Model* has provided several refinements. Application of the *Bicycle LOS Model* in the metropolitan area of Philadelphia resulted in the final definition of the three effective width cases for evaluating roadways with on-street parking. Application of the *Bicycle LOS Model* in the rural areas surrounding the greater Buffalo region resulted in refinements to the "low traffic volume roadway width adjustment". A 1997 statistical enhancement to the *Model* (during statewide application in Delaware) resulted in better quantification of the effects of high speed truck traffic [see the $SP_t(1+10.38HV)^2$ term]. As a result, *Version 2.0* has the highest correlation coefficient ($R^2 = 0.77$) of any form of the *Bicycle LOS Model.*

Version 2.0 of the *Bicycle Level of Service Model (Bicycle LOS Model)* has been employed to evaluate collector and arterial roadways within Lancaster County. Its form is shown below:

Bicycle LOS = $a_1 \ln (Vol_{15}/L_n) + a_2 SP_t(1+10.38HV)^2 + a_3(1/PR_5)^2 + a_4(W_e)^2 + C$

Where:

Vol_{15} = Volume of directional traffic in 15 minute time period

$Vol_{15} = (ADT \times D \times K_d) / (4 \times PHF)$

where:

ADT	=	Average Daily Traffic on the segment or link
D	=	Directional Factor (assumed = 0.565)
K_d	=	Peak to Daily Factor (assumed = 0.1)
PHF	=	Peak Hour Factor (assumed = 1.0)

L_n = Total number of directional *through* lanes

SP_t = Effective speed limit

$SP_t = 1.1199 \ln(SP_p - 20) + 0.8103$

where:

SP_p = Posted speed limit (a surrogate for average running speed)

HV = percentage of heavy vehicles (as defined in the 1994 Highway Capacity Manual)

PR_5 = FHWA's five point pavement surface condition rating

W_e = Average effective width of outside through lane:

where:

$W_e = W_v - (10 \text{ ft} \times \% OSPA)$	and $W_l = 0$
$W_e = W_v + W_l(1 - 2 \times \% OSPA)$	and $W_l > 0$ & $W_{ps} = 0$
$W_e = W_v + W_l - 2(10 \times \% OSPA)$	and $W_l > 0$ & $W_{ps} > 0$ and a bikelane exists

where:

W_t	=	total width of outside lane (and shoulder) pavement
OSPA	=	percentage of segment with occupied on-street parking
W_l	=	width of paving between the outside lane stripe and the edge of pavement
W_{ps}	=	width of pavement striped for on-street parking
W_v	=	Effective width as a function of traffic volume

and:

$W_v = W_t$ if ADT > 4,000veh / day

$W_v = W_t(2\text{-}0.00025 \times ADT)$ if ADT ≤ 4,000veh / day,

and if the street / road is undivided and unstriped

a_1: 0.507 a_2: 0.199 a_3: 7.066 a_4: - 0.005 C: 0.760

(a_1 - a_4) are coefficients established by the multi-variate regression analysis.

The Bicycle LOS score resulting from the final equation is pre-stratified into service categories "A", "B", "C", "D", "E", and F" ("A" is best, and "F" is worst), according to the ranges shown in Table 1, reflecting users' perception of the road segments level of service for bicycle travel. This stratification is in accordance with the linear scale established during the referenced research (i.e., the research project bicycle participants' aggregate response to roadway and traffic stimuli). The *Model* is particularly responsive to the factors that are statistically significant. An example of its sensitivity to various roadway and traffic conditions is shown on the following page.

Because the model represents the comfort level of a hypothetical "typical" bicyclist, there are some bicyclists who may feel more comfortable and others who may feel less comfortable than the Bicycle Level of Service calculated for a roadway. A poor Bicycle Level of Service grade does not mean that bikes should be prohibited on a roadway.

Bicycle Level-of-Service Categories

LEVEL-OF-SERVICE	Bicycle LOS Score
A	≤ 1.5
B	> 1.5 and ≤ 2.5
C	> 2.5 and ≤ 3.5
D	> 3.5 and ≤ 4.5
E	> 4.5 and ≤ 5.5
F	> 5.5

The Model represents the comfort level of a hypothetical "typical" bicyclist. Some bicyclists may feel more comfortable and others may feel less comfortable than the Bicycle LOS grade for a roadway. A poor Bicycle LOS grade does not mean that bikes should be prohibited on a roadway. It suggests to a transportation planner that the road may need other improvements (in addition to shoulders) to help more bicyclists feel comfortable using the corridor.

Application

The *Bicycle LOS Model* is used by planners, engineers, and designers throughout the US and Canada in a variety of planning and design applications. Applications include:

1) Conducting a benefits comparison among proposed bikeway / roadway cross-sections
2) Identifying roadway restriping or reconfiguration opportunities to improve bicycling conditions
3) Prioritizing and programming roadway corridors for bicycle improvements
4) Creating bicycle suitability maps
5) Documenting improvements in corridor or system-wide bicycling conditions over time

Bicycle LOS Model Sensitivity Analysis

Bicycle LOS = $a_1 \ln (Vol_{15} / Ln) + a_2 SP_t(1+10.38HV)^2 + a_3(1 / PR_5)^2 + a_4 (W_e)^2 + C$

where:	a_1: 0.507	a_2: 0.199	a_3: 7.066	a_4: -0.005	C: 0.760
T-statistics:	(5.689)	(3.844)	(4.902)	(-9.844)	

Baseline inputs:

ADT	=	12,000 vpd	% HV	=	1	L	= 2 lanes
SP_p	=	40 mph	W_e	=	12 ft	PR_5	= 4 (good pavement)

	BLOS	% Change
Baseline BLOS Score (Bicycle LOS)	3.98	N / A

Lane Width and Lane striping changes

W_t =	10 ft	4.20	6% increase
W_t =	11 ft	4.09	3% increase
W_t =	12 ft -- (baseline average) -------	3.98	- - - - no change
W_t =	13 ft	3.85	3% reduction
W_t =	14 ft	3.72	7% reduction
W_t =	15 ft (W_l = 3 ft)	3.57 (3.08)	10%(23%) reduction
W_t =	16 ft (W_l = 4 ft)	3.42 (2.70)	14%(32%) reduction
W_t =	17 ft (W_l = 5 ft)	3.25 (2.28)	18%(43%) reduction

Traffic Volume (ADT) variations

ADT =	1,000	Very Low	2.75	31% decrease
ADT =	5,000	Low	3.54	11% decrease
ADT =	12,000	Average - (baseline average) --	3.98	- - - - - no change
ADT =	15,000	High	4.09	3% increase
ADT =	25,000	Very High	4.35	9% increase

Pavement Surface conditions

PR_5 =	2	Poor	5.30	33% increase
PR_5 =	3	Fair	4.32	9% reduction
PR_5 =	4	-- Good - (baseline average) - - -	3.98	- - - -- no change
PR_5 =	5	Very Good	3.82	4% reduction

Heavy Vehicles in percentages

HV =	0	No Volume	3.80	5% decrease
HV =	1	--- Very Low - (baseline average) --	3.98	- - - - - - no change
HV =	2	Low	4.18	5% increase
HV =	5	Moderate	4.88	23% increase[a]
HV =	10	High	6.42	61% increase[a]
HV =	15	Very High	8.39	111% increase[a]

[a]Outside the variable's range (see Reference *(1)*)

APPENDIX E: EXAMPLE BICYCLE AND PEDESTRIAN TREATMENTS

Bicycle treatments

Section 4 discusses shared roadways, shoulders, and bike lanes. These facilities can be complemented by other bicycle accommodations to make bicycling safer and more convenient in Lancaster County.

1. Bike-friendly traffic calming

Slowing motor vehicle speeds helps improve the Bicycle LOS of a road. Traffic circles and medians are examples of facilities that can be added to a roadway to slow motor vehicles. Edgelines are another bike-friendly traffic calming technique. Edgelines are pavement stripes that narrow the motor vehicle travel lanes to 10- or 11-feet wide and provide a shoulder or a wide striped parking lane that bikes can use. This defines the space for automobiles, slows traffic, and results in a marginal increase in Bicycle LOS. While this treatment is not an official bikeway type, it is supported by the AASHTO Guide for the Development of Bicycle Facilities (1999), which states, "…where four-foot [paved shoulder] widths cannot be achieved, any additional shoulder width is better than none at all" (p. 16)[20].

2. Bike-friendly traffic signals

Bike-friendly traffic signals can detect bicyclists waiting at a red light. They are used at intersections where the automobile traffic on the minor intersecting street is low and the light does not turn from red to green unless an automobile is waiting at the signal. Bicycles can be detected by loop sensors in the pavement or traffic cameras posted on poles at the intersection. Bike push-buttons may also be provided. These are similar to pedestrian push-buttons at crosswalks, but the buttons are moved closer to the roadway so that they are within reach of a cyclist stopped at the light. These detection systems allow bicyclists to trip the traffic signal so that they can proceed on a green light.

3. High-visibility bicycle warning signs

Advance warning signs can be posted to make drivers more aware of trail and other key bike route crossings. "Share the Road" signs can be posted on roads that bicyclists use regularly. These signs can increase awareness of bicyclists, especially in areas where bicyclists may not be expected or where many drivers are tourists. A new fluorescent yellow / green color has been is approved in the national Manual on Uniform Traffic Control Devices and can be used on these signs. Signs may also be accompanied by flashing lights, in appropriate situations, to grab the attention of drivers. Signs should be used judiciously—too many signs can cause visual clutter and lead to non-compliance.

4. Bicycle racks and bicycle lockers

Bike parking can be provided by bike racks or bike lockers. Secure bicycle parking located close to building entrances and transit entry points can make bicycling more attractive to potential cyclists. It also reduces the risk of bicycle damage or theft. Bike rack design and site location are discussed in the *Bicycle Parking Guidelines*, developed by the Association of Pedestrian and Bicycle Professionals[22]. Bike lockers provide added protection from theft and weather. Bike parking is important at destinations such as town centers, historic sites, transit stations and park-and-ride lots. It is also good to have bike parking available near business entrances and at employment sites. Bike parking reduces the need for vast surface parking lots.

5. Bicycle-in-arrow roadway markings

Bicycle-in-arrow roadway markings can be used to mark bike routes and show the proper direction for cycling on the road and provide a visual cue that bikes are welcome on the road. They can be used on roadways where there is not enough space to provide standard, 5-foot-wide bike lanes. Because they do not require as much paint, these markings are also less expensive than bike lanes. These markings have been used in Denver, CO, Gainesville, FL, and San Francisco, CA.

Pedestrian treatments

Section 4 discusses using sidewalks, crosswalks, and pedestrian-friendly intersection design in Lancaster County. Other facilities can be used to complement these basic facilities and enhance the pedestrian system.

1. Curb extensions

Curb extensions (also known as bulb-outs or neckdowns) extend the curb out into the parking lane, which reduces the effective street width. This reduces the pedestrian crossing distance and makes pedestrians more visible to approaching vehicles. Curb extensions also visually narrow the roadway, which reduces motor vehicle speeds. They are only appropriate when there is an on-street parking lane. Ephrata and Lancaster City have both used this treatment.

2. Raised crosswalks

Raised crosswalks provide a continuous route for pedestrians at the same level as the sidewalk. Approaching vehicles must slow down to go over raised crosswalks comfortably. This encourages motorists to yield and makes crossing the street safer for pedestrians. Pedestrians are also positioned slightly higher than the road surface, which makes them more visible to approaching motorists. Pavement markings on the slope of the raised crosswalk can improve the visibility of the raised crosswalk to motorists.

3. Medians or pedestrian crossing islands

Medians or pedestrian crossing islands can be provided at intersections with high volumes of motor vehicles and/or pedestrians and long pedestrian crossing distances. They should be given strong consideration at locations where crossing distance exceeds 60 feet. The desirable minimum width for medians or crossing islands is eight feet. Twenty feet is the recommended minimum length. All crossing islands must be accessible to persons with disabilities.

4. Pedestrian countdown signals

Pedestrian countdown signals provide pedestrians with amount of time that they have available to complete crossing the street. They can be designed to begin counting down at the beginning of the walk phase or at the beginning of the clearance (flashing "DON'T WALK") interval. Countdown signals will soon be included in the Manual on Uniform Traffic Control Devices (MUTCD).

5. Curb ramps

Curb ramps (wheelchair ramps) are required at all pedestrian crossings. Two curb ramps should be provided per corner at all intersections. Curb ramps provide access between the sidewalk and the street for people using wheelchairs, riding scooters, and pushing strollers. The five basic components of curb ramp design are approach, ramps, gutters, landings, and flares. In most cases, two ramps should be provided on each corner.

6. High-visibility crosswalks

Marked crosswalks indicate pedestrian crossings and help designate where motorists should yield to pedestrians. Crosswalks can be marked at intersections or at mid-block crossings. Crosswalk lines should be at least six inches wide, and they can be marked with a pattern that is visible to approaching vehicles. Thermoplastic and inlay tape should be used to mark crosswalks because they are more visible and less slippery than paint when wet. A crosswalk should be at least as wide as the sidewalk or path leading to it.

7. Flashing crosswalks

Flashing crosswalks have in-pavement lights that flash when a pedestrian is crossing within the crosswalk. The flashing lights make drivers more aware of crossing pedestrians. Lancaster should install these crosswalks in several urban areas and test their effectiveness. Flashing crosswalks will soon be included in the Manual on Uniform Traffic Control Devices (MUTCD).

8. Pedestrian bollards

Pedestrian bollards are bright yellow signs placed in the middle of the road at marked crosswalks. They remind drivers of their responsibility to yield to pedestrians in the crosswalk. Pedestrian bollards are currently being used in Manheim Borough, Ephrata Borough, Lititz

Borough, and Lancaster City, and should be tested in other communities. Pedestrian bollards will soon be included in the Manual on Uniform Traffic Control Devices (MUTCD).

9. High-visibility advance warning signs

Advance warning signs can be posted to make drivers more aware of key pedestrian crossings. These signs can increase awareness of pedestrians, especially in areas where pedestrians may not be expected or where many drivers are tourists. A new fluorescent yellow / green color has been is approved in the national Manual on Uniform Traffic Control Devices and can be used on these signs. Signs may also be accompanied by flashing lights, in appropriate situations, to grab the attention of drivers. Signs should be used judiciously—too many signs can cause visual clutter and lead to non-compliance.

10. Reduced turning radii

The turning radius at the corner of an intersection should be the smallest possible for the circumstances, rather than designed for the largest possible design vehicle. Large corner radii allow high vehicle turning speeds and increase pedestrian crossing distances, both of which negatively impact pedestrians.

11. Midblock HAWK signals

Midblock HAWK signals are pedestrian-activated traffic signals that can be used at key crossing points of major roads, such as a trail crossing or between shopping centers and apartments. The traffic light stays green for roadway traffic until a pedestrian pushes the button. When the button is pushed, the traffic light turns to yellow and red like a typical traffic signal, and the pedestrian signal gives the pedestrian time to cross before roadway traffic is allowed to proceed. LCPC should consult the Manual on Uniform Control Devices to help determine appropriate locations for this treatment.

APPENDIX F: CONSTRUCTION OPPORTUNITIES

Lancaster County roadways are constantly being constructed and upgraded. It is cost-effective to take advantage of these projects and include bicycle and pedestrian facilities during the construction process. The projects in the following list are taken from the 2003-2006 Lancaster County Transportation Improvement Program (TIP). As the TIP is updated in future years, pedestrian and bicycle improvements should be considered in all programmed projects.

- Connections to Transit
  - Lancaster Amtrak Station
  - Downtown Lancaster Transit Center
  - Relocated Mount Joy Amtrak Station
  - Paradise Rail Station near Paradise Village (Paradise)
- Park and Ride Lots
  - PA 283 & Cloverleaf Road (Mount Joy Township)
  - US 222 & I-76 Turnpike Interchange (East Cocalico Township)
- New Construction Roadway Corridors
  - Relocation of PA 441 (Columbia)
  - PA 896 Strasburg Borough Bypass (Strasburg Borough and Twp.)
- Reconstruction Roadway Corridors
  - Irishtown Road and new roads connecting to Ronks and Harvest Roads (Leacock & East Lampeter)
  - PA 23 Corridor from US 30 to US 322 (Manheim, East Lampeter, Upper Leacock, West Earl, Earl, East Earl, New Holland Borough)
  - US 30 from PA 896 to PA 41 (East Lampeter, Paradise, Salisbury)
  - Widening of PA 41 from truck climbing lane to Dutchman's Market (Salisbury)
  - Adding lane to PA 41 from US 30 to Chestnut Street (Salisbury)
  - PA 72 Alternatives Analysis near Manheim Borough and East Petersburg Borough (Manheim Borough, East Petersburg Borough, Penn, East Hempfield, Manheim)
  - US 30 from PA 772 to PA 41 (Salisbury)
  - PA 272 from PA 741 to Smithville (W. Lampeter, Pequea & Providence)
  - PA 272 from Friendly Dr. to Providence Twp. Signalization and connecting roads (Drumore, E. Drumore)
  - Centerville Rd. widening (East Hempfield Twp.)
  - Fruitville Pike widening and adding shoulders from PA 722 to Granite Run Drive (Manheim Twp.)
  - PA 462 design (Mountville)
  - PA 501 from US 30 to Newport Rd. improvements (Elizabeth, Warwick, Manheim Twp., Lititz)
  - Steinmetz Road realignment and reconstruction from Wallups Rd. to W. of Kline Rd. (W. Cocalico)
  - S. Duke Street Traffic calming and road improvements from Church to Chesapeake St. (Lancaster)

    - Stony Battery Rd. widening and shoulder and intersection improvements from Donnerville Rd. to US 30 (W. Hempfield)
- Intersections
    - PA 72 & Fruitville Pike intersection improvements (Manheim)
    - US 222 & PA 272 & PA 772 intersection improvements—Schaums Corner (West Earl)
    - US 222 & Spur Road intersection and ramp improvements (East Cocalico)
    - PA 23 & Snake Hill Road (Upper Leacock)
    - PA 23 & Glenola Dr. (Upper Leacock)
    - PA 23 & Groffdale Rd. (Upper Leacock)
- Bridges
    - Replacement of US 222 bridge over Amtrak rail line (Lancaster)
    - PA 230 bridge over Little Chickies Creek ped walkway (Mount Joy Borough)
    - PA 324 bridge over Peqeua Creek (Conestoga and Martic)
    - 3rd St. Bridge over US 30 (Columbia)
    - PA 272 bridge over Cocalico Creek (E. Cocalico)
    - PA 722 bridge over Lititz Creek (Manheim)
    - PA 772 bridge over PA 283 (Rapho)
    - PA 772 bridge over Amtrak (Mt. Joy Borough)
    - Dillerville Rd. bridges over Amtrak (Lancaster)
    - PA 897 bridge over Pequea Creek (Salisbury)
    - PA 897 bridge over Mill Race (Salisbury)
    - Strasburg Pike bridge over Mill Creek (E. Lampeter)
    - Mount Airy Rd. Bridge over Middle Creek (Clay)
    - Mt. Pleasant Rd. bridge over tributary of Little Chickies Creek (Mt. Joy Twp.)
    - Centerville Rd. bridge widening over US 30 (E. Hempfield Twp.)
    - Eby Chiques Rd. bridge over Big Chickies Creek (Rapho)
    - Newcomer Rd. bridge over Big Chickies Creek (Rapho)
    - Garfield Rd. bridge over Big Chickies Creek (W. Hempfield and Rapho)
    - Conestoga Creek Road bridge (East Earl)
    - Rettew Mill Road bridge (East Earl)
    - Eby Chiques railroad bridge (Rapho)
    - Ridge Road bridge over Little Cocalico Creek (E Cocalico)
    - Old Mill Rd. bridge over Cocalico Creek (Ephrata)
    - Bell Rd. Bridge over Octoraro Creek (Colerain Twp.)

APPENDIX G: TIER 2 BICYCLE, TIER 3 BICYCLE, TIER 2 PEDESTRIAN, AND PEDESTRIAN CROSSING PROJECTS

Tier 2 Bicycle Corridors

#	Road Name	From	To	Municipality
1	Becker Rd.	E. Millport Rd.	Log Cabin Rd.	Warwick & Manheim Twps
2	Bethany Rd.	Akron RD.	E. Main St. (Ephrata)	Ephrata Twp & Borough
3	Main Street	PA 272	Akron RD.	Akron Borough
4	Brubanker Valley Rd.	Newport Rd.	US 322	Elizabeth Twp
5	Brunnerville Rd.	Newport Rd.	Clay Rd.	Warwick & Elizabeth Twps
6	Brushong Rd./Quarry Rd.	PA 272	PA 23	Manheim & Upper Leacock Twps
7	Buch Ave.	Fruitville Pike	PA 501	Manheim Twp
8	Centerville Rd.	PA 23	Harrisburg Pike	East Hempfield Twp
9	Chesapeake St./Broad St.	Queen St.	Orange St.	City of Lancaster
10	Chestnut St.	College Ave.	Shippen St.	City of Lancaster
11	Clay St.	Plum St.	New Holland Ave.	City of Lancaster
12	Colebrook Rd.	Dairy Rd.	Old Harrisburg Pike	East Hempfield Twp
13	College Ave.	PA 462	Harrisburg Ave.	City of Lancaster
14	Dauphin St.	Duke St.	Broad St.	City of Lancaster
15	Dillerville Rd.	Harrisburg Ave.	Fruitville Pike	City of Lancaster
16	Doe Run Rd.	Manheim Borough	Penn Valley Dr	Penn Twp
17	E. High St.	PA 72	Penn Twp	Manheim Boro
18	Lincoln Rd	Penn Valley Rd	Arrowhead Dr.	Warwick Twp
19	W. Lincoln Ave	Arrowhead Dr.	PA 501	Lititz Boro
20	Millport Rd.	PA 501	Becker Rd.	Manheim & Warwick Twps
21	Ephrata Cocalico Creek Trail	Main St. (Ephrata)	Church Rd. (Ephrata)	Ephrata Boro
22	Fordney Rd.	PA 501	Pleasure Rd.	Manheim Twp
23	Fruitville Pike	PA 72	Lititz Rd.	Penn Twp
24	Good Dr.	US 30	PA 462	East Hempfield Twp
25	Graystone Rd.	Sundra Dr.	PA 72	East Petersburg Boro
26	King St. (Lancaster)	Columbia Ave.	Prince St. (Lancaster)	City of Lancaster
27	Lampeter Rd.	Pioneer Rd.	PA 741	West Lampeter Twp
28	Lancaster-New Holland Trail	PA 322	Money Rocks Park	Earl & Caernarvon Twps
29	Lemon St.	Graystone Rd.	PA 722	East Petersburg Boro
30	Lime St.	Church St.	Dauphin St.	City of Lancaster
31	Lime St/Queen St./Highland Ave.	Clay St. (Lancaster)	US 222 Merge S. of Lancaster	Lancaster City, Twp,& West Lampeter Twp
32	Log Cabin Rd.	Becker Rd.	Rose Hill Rd.	Warwick Twp
33	Long Ln.	Stehman Rd.	PA 741	Manor & Pequea Twps
34	Manheim Borough Loop Trail	Around Manheim Borough		Manheim Boro
35	Manheim Central Trail	Manheim Borough	Lebanon County Line	Rapho & Penn Twps
36	Miller Rd./Buch Ave	PA 72	Fruitville Pike	East Petersburg Boro, East Hempfield & Manheim Twps

Tier 2 Bicycle Corridors

#	Road Name	From	To	Municipality
37	Millport Rd.	Lampeter Rd.	Strasburg Pike	West & East Lampeter Twps
38	Millway Rd.	Newport Rd.	Meadow Valley Rd.	Warwick Twp
39	N. Water St. (Lititz)	E. Main St. (Lititz)	Newport Rd.	Lititz Boro
40	New Holland Ave.	Ross St.	US 30	Lancaster City & Manheim Twp
41	Newport Rd.	PA 501	PA 772	Warwick Twp
42	Old Harrisburg Pike	PA 722	PA 741	East Hempfield Twp
43	Orange St. (Lancaster)	Columbia Ave.	Prince St. (Lancaster)	City of Lancaster
44	PA 23	US 30	US 322	Manheim, East Lampeter, Upper Leacock, West Earl, Earl & East Earl Twps & New Holland Boro
45	PA 230	PA 241	Schwanger Rd.	Elizabethtown Boro
46	PA 241	PA 441	Masonic Dr. (Elizabethtown)	Conoy, East Donegal Twps & Elizabethtown Boro
47	PA 272	US 222	E. Clay St. (Lancaster)	City of Lancaster
48	PA 272	US 30	Jake Landis Rd.	Manheim Twp
49	PA 272	W. Church St. (Reamstown)	Jason Ave. (Adamstown)	East Cocalico Twp & Adamstown Boro
50	PA 324	Bridge Valley Rd. (Pequea)	PA 741	Pequea Twp
51	PA 340	PA 462	Greenfield Rd.	East Lampeter Twp
52	PA 462	16th St. (Columbia)	PA 23	Columbia Borough, West Hempfield Twp, Mountville Borough ,Manor Twp, East Hempfield Twp & lancaster City
53	PA 462	Broad St. (Lancaster)	US 30	Lancaster & East Lampeter Twps
54	PA 501	Newport Rd.	Lebanon County Line	Warwick & Elizabeth Twps
55	PA 72	Colebrook St. (Manheim)	Gramby St.	Manheim Boro
56	PA 72	Ferdinand St. (Manheim)	Stiegel St.	Manheim Boro
57	PA 722	Oregon Rd. W.	Kissel Hill Rd.	Manheim Twp
58	PA 741	PA 722	Harrisburg Pike	East Hempfield & Manheim Twps, & East Petersburg Boro
59	PA 741	US 30	PA 896	East Hempfield & Lancaster Twps, Millersville Boro, Pequea, West Lampeter & Strasburg Twps & Strasburg Boro
60	PA 743	Donegal Springs Rd.	PA 230	East Donegal, West Donegal Twps & Elizabethtown Boro
61	PA 772	Breneman Rd.	PA 501	Rapho Twp, Manheim Boro, Penn Twp, Warwick Twp & Lititz Boro

Tier 2 Bicycle Corridors

#	Road Name	From	To	Municipality
62	PA 772	PA 501	PA 23	Lititz Boro, Warwick, West Earl & Upper Leacock Twps
63	PA 999	N. Prince St. (Millersville)	W. King St. (Lancaster)	Millersville Boro, Lancaster Twp & City
64	Penn Grant Rd.	PA 324	PA 741	Pequea, West Lampeter & Strasburg Twps
65	Pleasure Rd./Fountain Ave.	Fordney Rd.	New Holland Ave.	Manheim Twp
66	Prince St.	Clay St. (Lancaster)	US 222 Merge S. of Lancaster	Lancaster City, Twp,& West Lampeter Twp
67	Prospect Rd.	PA 462	Garfield Rd.	West Hempfield Twp
68	Queen St. (Lancaster)	Clay St. (Lancaster)	Chesapeake St.	City of Lancaster
69	Ridge Ave.	US 322	E. Church St. (Reamstown)	Ephrata Boro. Ephrata, & East Cocalico Twps
70	Ridge Rd.	Interstate 76	Berks County Line	Denver Boro, West & East Cocalico Twps
71	Rose Hill Rd.	Log Cabin Rd.	PA 272	West Earl Twp
72	Roseville Rd.	Fruitville Pike	PA 272	Manheim Twp
73	Ruby St. (Lancaster)	PA 999	PA 462	City of Lancaster
74	S. Broad St. (Lititz)	W. Orange St. (Lititz)	Landis Valley Rd.	Lititz Boro, Warwick & Twps
75	Spring Valley Rd.	Centerville Rd.	Sylvan Rd.	East Hempfield Twp
76	State St. (Quarryville)	4th St.	Church St.	Quarryville Boro
77	Stevens Rd./Line Rd./Lancaster Ave.	Grandview Ave. (Ephrata)	Main St. (Denver)	Ephrata & East Cocalico Twps & Denver Boro
78	Stony Battery Rd.	PA 462	PA 23	Mountville Boro & West Hempfield Twp
79	Strasburg Pike	PA 462	PA 741	East Lampeter, West Lampeter, Strasburg Twp & Boro
80	Strawberry St. (Lancaster)	King St.	Water St. (Lancaster)	City of Lancaster
81	Sylvan Rd.	Old Harrisburg Pike	Nolt Rd.	East Hempfield Twp
82	US 222	Bunker Hill Rd.	Buck Rd. (Quarryville)	Quarryville Boro, Providence & Strasburg Twps
83	US 222	MD State Line	PA 272	Fulton Twp
84	US 222	US 222 Merge S. of Lancaster	Village Rd.	West Lampeter Twp
85	US 30	Hensley Ave.	Chester County Line	Paradise, Salisbury & Sadsbury Twps
86	US 30	PA 462	Black Horse Rd.	East Lampeter & Paradise Twps
87	US 322	Clay Rd.	Market St. (Ephrata)	Clay & Ephrata Twps & Ephrata Boro
88	US 322	US 222	Sheep Hill Rd.	Ephrata, West Earl, Earl, East Earl Twps
89	Valley Rd.	Groff Ave.	PA 896	Quarryville Boro, Eden & Bart Twps
90	Vine St. (Lancaster)	Strawberry St.	Church Ave.	City of Lancaster
91	W. Millport Rd.	Woodcrest Ave.	PA 501	Warwick Twp
92	Walnut St. (Lancaster)	Race Ave.	Shippen St.	City of Lancaster
93	West End Ave.	Wabank St.	Walnut St.	City of Lancaster
94	Woodcrest Ave.	Erb's Quarry Rd	W. Second Ave. (Lititz)	Warwick Twp & Lititz Boro

Tier 3 Bicycle Corridors

#	Road Name	From	To	Municipality
1	2nd St. (Bainbridge)	PA 441 (N)	Locust Grove Road	Conoy Township
2	Abbeyville Road	Schoolhouse Road	Wilson Rd	Lancaster Township
3	Apple Alley	Market Street/PA230	Chestnut Street	Elizabethtown Borough
4	Atglen-Susquehanna Rail Trail	Conestoga, Martic, Providence, Eden, Bart, Sadsbury Twps. & Quarryville Borough		
5	Bridge Valley Road	Marietta Ave (PA 23)	Pinkerton Road	West Hempfield & Rapho Townships
6	Buck Rd (PA 372)	Lancaster Pike/PA272	PA 222 (4th Street)	Strasburg & Providence Townships
7	Butter Rd	Euclid Dr	Creek Road	Manheim Township
8	Campus Road	College Ave	Cloverleaf Road	Mount Joy Township
9	Beaver Valley Pike/PA222	Gypsy Hill Road	Bunker Hill Road	West Lampeter & Strasburg Townships
10	Chestnut Grove Rd	River Road	River Road	Manor Township
11	Christiana Pike/PA 372	White Oak Rd	High Street	Sadsbury Township & Christiana Borough
12	Church Street	E. Main Street	N. Stony Battery Rd	East Hempfield Township
13	Church Street	W. 4th Street/PA 222	E State Street/PA 372	Quarryville Borough
14	Clay Road	Lititz Run Rd	E. Newport Rd	Warwick Township
15	Clay Rd	Hopeland/Mt Airy Rd	28th Division Hwy/US322	Clay Township
16	Clay St.	Orkney Road	Stony Battery Rd	Mountville Borough
17	Cocalico Rd.	Mount Airy Rd. (Schoeneck)	Lebanon Co Line	West Cocalico Township
18	Colebrook St	Penn Street	PA 72	Manheim Borough
19	College Avenue	Mount Joy Street	Campus Road	Elizabethtown Borough
20	Concordia Rd	Prospect Rd	Kennel Ave	West Hempfield Township
21	Decatur Street	River Road/PA441	Market Street	East Donegal Township & Marietta Borough
22	Delp Road	Manheim Pike/PA72	Lititz Pike/PA501	Manheim Township
23	Diller Avenue	W. Main St/PA23	King Court	New Holland Borough & Earl Township
24	Druid Hill Rd	Marietta Ave (PA 23)	Orkney Road	West Hempfield Township
25	E Oregon Rd/PA722	Lititz Pike/PA501	Oregon Pike/PA272	Manheim Township
26	E State Street/PA 372	Church Street	Borough Line/Valley Road	Quarryville Borough
27	E. Church St	N. Reading Road/PA272	Ridge Avenue	East Cocalico Township
28	E. High Street	Market Street/PA 230	White Oak Road	Elizabethtown Borough, Mount Joy & Rapho Twps.
29	E. Jackson St.	Railroad Avenue	Ranck Road	New Holland Borough
30	E. Main Street	7th Street/PA272	Farmersville Rd	Akron Borough
31	E. Main Street/PA230	Barbara Street	Eshbenshade Road	Mount Joy Borough & Rapho Township
32	E. Main Street	N. Decatur Street/PA896	PA 741/PA896 split	Strasburg Borough
33	E. Market (Marietta)	Waterford Avenue	River Road/PA441	Marietta Borough
34	East Earl Rd	Ranck Road	28th Division Hwy/US322	East Earl Township
35	Eden Rd	Oregon Pike (PA 272)	New Holland Pike/PA23	Manheim Township
36	Essex St.	Decatur Street	Bridge Street	Marietta Borough
37	Euclid Drive	Eden Rd	Butter Rd	Manheim Township
38	Fairview Ave.	Manor St.	New Danville Pike/PA 324	City of Lancaster

Tier 3 Bicycle Corridors

#	Road Name	From	To	Municipality
39	Farmersville Road E & W	E. Main Street (Brownstown)	28th Division Hwy/US322	West Earl & Earl Townships
40	Farmingdale Road	Marietta Avenue/PA 23	Harrisburg Pike	East Hempfield & Manheim Townships
41	Gap Rd/Strasburg Rd/PA 741	E. Main St.	Rt. 41	Strasburg Borough & Strasburg, Paradise, & Salisbury Twps.
42	Glenola Dr.	Newport Road/PA772	West Main Street/PA23	Upper Leacock Township
43	Graystone Road	Manheim Pk	Fruitville Pike	East Petersburg Borough & Manheim Township
44	Groff Ave	Main Street	River Road	Conestoga Township
45	Gypsy Hill Rd	Eshelman Mill Road	Beaver Valley Pike	West Lampeter Township
46	Hartman Bridge Rd/PA 896	Lincoln Hwy US 30	Valley Road/PA372	East Lampeter, Strasburg, Paradise & Bart Townships
47	Hersey Road/PA743	Conewago Creek	Pike Alley	Mount Joy Township & Elizabethtown Borough
48	Hollander Rd	King Court	Old Philadelphia Pike/PA 340	Earl, Upper Leacock, & Leacock Twps.
49	PA 372/Holtwood Rd/Buck Rd	Susquehanna River	W. 4th Street	Martic, Drumore, & East Drumore Townships
50	Hopeland Rd in Middle Creek	Lebanon Co Line	Kleinfeltersville Road	Clay Township
51	Horseshoe Rd	PA 340	Newport Road/PA772	East Lampeter & Upper Leacock Townships
52	Ironville Pike	N. 12th Street	Marietta Avenue/PA 23	Columbia Borough & West Hempfield Township
53	Kennel Ave	Concordia Rd	Wildflower Lane	West Hempfield Township
54	Kissel Hill Rd	Millport Road	Valley Road	Manheim Township
55	Kleinfeltersville Road	Hopeland Rd in Middle Creek	Sunvalley Road	Clay Township
56	Lampeter Road	Lincoln Hwy/PA 462	Penn Grant Rd	West Lampeter Township
57	Landisville Road/Graystone Rd	Spooky Nook Rd	East Petersburg Borough limit	East Hempfield Township
58	Lititz Run Rd	Rothsville Road/PA772	Clay Road	Warwick Township
59	Little Britain Church Hwy	Fulton Inn Road	Black Barren Road	Fulton Township
60	Locust Street	Third St.	N. 12th street	Columbia Borough
61	Longenecker Rd	Pinkerton Road	E. Main Street/PA230	Rapho Township
62	Main St/New Danville Pike	Prince Street/US222	River Road	Lancaster, Pequea & Conestoga Townships
63	Manheim Borough Loop Trail			Manheim Borough
64	Marietta Avenue/PA23	River Road/PA441	College Ave (Lancaster)	East Donegal, West Hempfield, East Hempfield, & Manheim Townships
65	Meadow Lane	Lititz Pike/PA501	Valley Road	Manheim Township
66	Mount Joy Street	E. High Street	Schwanger Rd	Elizabethtown Borough
67	N. 12th Street	Locust Street	Ironville Pike	Columbia Borough
68	N. Hershey Avenue	W. Farmersville Road	E. Main Street/PA23	Upper Leacock & West Earl Townships
69	President Avenue	Columbia Avenuew/PA462	Harrisburg Avenue	Lancaster & Manheim Townships
70	N. Railroad Ave	28th Division Hwy/US322	E. Jackson Street	Earl Township & New Holland Borough
71	N. Reading Road/PA272	Route 897	Berks Co. Line	East Cocalico Township & Adamstown Borough
72	N. State St/Reamstown Rd	E. Main Street/US322	E. Church St.	Ephrata Borough, Ephrata & East Cocalico Townships

Tier 3 Bicycle Corridors

#	Road Name	From	To	Municipality
73	Stony Battery Road	Main Street	Marietta Avenue/PA 23	East & West Hempfield Townships
74	Nolt Road	Stony Battery Road	Sylvan Rd	East Hempfield Township
75	Old Harrisburg Pike	Eshbenshade Road	State Road/PA722	East Hempfield Township
76	Old Line Pike	Penn Street	N. Colebrook Road	Manheim Borough & Rapho Township
77	Old Philadelphia Pk PA 340	Greenfield Rd	Old Leacock Road	East Lampeter & Leacock Townships
78	Old Philadelphia Pk PA 340	Hatville Road	Chester County line	Leacock & Salisbury Townships
79	Oregon Pike PA 272	Creek Rd	Rothsville Road	Akron & Ephrata Boroughs, Manheim & West Earl Townships
80	Owl Hill Road	S. Broad St. (Lititz)	Pierson Rd	Quarryville Boro, Eden & Bart Twps
81	Petersburg Road/PA722	Fruitville Pike	W. Oregon Road	Manheim Township
82	Robert Fulton Hwy/PA222	W. 4th Street/PA 222	Lancaster Pike/PA272	Quarryville Borough, East Drumore, Little Britain, & Fulton Twps.
83	E. Main Street/PA23	28th Division Hwy/US322	Chester Co. Line	East Earl & Caernarvon Townships
84	N. Market Street/PA 230	Dauphin County Line	High Street	West Donegal Townsip & Elizabethtown Borough
85	S. Market Street/PA 230	Schwanger Road	Manheim Street/PA772	Mount Joy Township & Mount Joy Borough
86	28th Division Hwy/PA322	Clay Road	Lebanon Co Line	Clay & Elizabeth Townships
87	PA 441	Dauphin County Line	Locust St. (Columbia)	Conoy & East Donegal Twps. & Columbia Borough
88	PA 472	W. State Street	Chester County line	Quarryville Borough, Eden & Colerain Townships
89	PA 72	Lebanon Co Line	Colebrook St.(Manheim)	Rapho & Penn Townships & Manheim Borough
90	Mount Joy-Manheim Rd/PA 772	Old Market Street	Breneman Road	Mount Joy Borough & Rapho Township
91	Marietta Mount Joy Pike/Anderson Ferry Road/PA 772	New Haven Street	Front Street	Mount Joy & Marietta Borough, East Donegal Township
92	Maytown Road/PA 743	Donegal Springs Rd.	Essex Street	East Donegal Township & Marietta Borough
93	Blue Rock Road/PA 999	River Road/PA441	N. Prince St	Manor Township & Millersville Borough
94	Pennsy Road	Marticville Road	Main St. in New Providence	Martic & Providence Township
95	Pierson Rd	Owl Hill Rd	Rothsville Road/PA772	Warwick Township
96	Pinetown Rd	Creek Road	Bushong Rd	Manheim Township
97	Pitney Road	Greenfield Rd	King Street/PA462	East Lampeter Township
98	Race Ave	Columbia Ave	Harrisburg Ave	City of Lancaster
99	River Road	Penn Street/Blue Rock Rd/PA999	Lancaster Pike/PA272	Manor,Conestoga, Martic, & Drumore Townships
100	Rothsville Road	Newport Road/PA772	State Street/PA272	Warwick & Ephrata Township
101	Swartzville Road/Route 897	Lebanon Co Line	No. Reading Road/PA272	West & East Cocalico Townships
102	Ruby Street	Manor Street	Columbia Ave	City of Lancaster
103	Running Pump Road	Marietta Avenue/PA 23	Columbia Avenue/PA462	East Hempfield Township
104	S. Decatur Stree/May Post Office Rd	Main Street	Valley Road/PA372	Strasburg Borough & Strasburg Township
105	State Street	S. Reading Road	E. Church St.(Reamstown)	Ephrata Borough, Ephrata & East Cocalico Townships
106	Schoeneck Road	Reading Road/PA 272	Steinmetz Road	West Cocalico Township
107	Schoolhouse Rd	Columbia Ave	Manor Street/PA999	Lancaster Township
108	Schwanger Rd	Mount Joy Street	Market Street/PA 230	Mount Joy Township

Tier 3 Bicycle Corridors

#	Road Name	From	To	Municipality
109	Spencer Ave	Atkins Avenue	Columbia Avenue/PA462	Lancaster Township
110	Spooky Nook Rd	Eby Chiques Road	Shenck Road	West & East Hempfield Townships
111	Spring Valley Road	Sylvan Road	Rohrerstown Road/PA741	East Hempfield Township
112	Stonemill Rd	Millersville Road/PA741	Schoolhouse Road	Manor & Lancaster Townships
113	Old Strasburg Road	Strasburg Road/PA 741	Mine Road	Salisbury Township
114	Sunvalley Road	Kleinfeltersville Road	Mount Airy Rd	Clay Township
115	Upper Valley Rd	Georgetown Road/PA 896	Noble Road	Bart & Sadsbury Townships
116	Landis Valley Road	Kissel Hill Road	Paper Mill Road	Manheim Township
117	Main Street/US322	Market Street	US222	Ephrata Borough & Ephrata Township
118	W. Meadow Valley Rd	Millway Rd	S. Reading Road/PA272	Ephrata & Warwick Townships
119	West Apple	Essex Street	E. Market(Marietta)	Marietta Borough
120	White Oak Rd	Beaver Valley Pike	Upper Valley Rd	West Lampeter Twp
121	Wildflower Lane	Kennel Avenue	Druid Hill Road	West Hempfield Township
122	Willow Rd (Lancaster)	New Holland Pike	Horseshoe Rd	Leacock Township
123	Wilson Avenue	Abbeyville Road	Harrisburg Ave	Lancaster Township

Tier 2 Pedestrian Improvement Areas

#	Road Name	From	To	Municipality
1	13th St.	Ironville Pike	Locust St.	Columbia Borough
2	Anchor Rd./Harrisburg Ave.	PA 230	Nolt Rd	Mount Joy & East Donegal Twps
3	Anchor Rd./Harrisburg Ave.	Nolt Rd	Mill Rd	Mount Joy & West Donegal Twps
4	Angle St./Union School Rd.	PA 230	PA 772	Mount Joy Borough
5	Apple Ave. (Marietta)	Bridge St.	PA 772	Marietta Borough
6	Atkins Ave.	Schoolhouse Rd.	PA 462	Lancaster Township
7	Bowman Rd.	Church St.	PA 230	West Hempfield Township
8	Bridge St. (Marietta)	Market St. (Marietta)	PA 441	Marietta Borough
9	Brunnerville Rd.	Market St. (Lititz)	Lincoln Rd.	Warwick Township
10	Bushong Rd.	PA 272	Snakehill Rd.	Manheim Township
11	Butter Rd.	PA 23	Jake Landis Rd.	Manheim Township
12	Centerville Rd.	PA 23	PA 230	East Hempfield Township
13	Centerville Rd.	PA 462	Charlestown Rd.	Manor Township
14	Charles Rd.	PA 999	Wabank St.	Lancaster City & Lancaster Twp
15	Charlestown Rd.	Ironstone Ridge Rd.	PA 741	Manor Township
16	Chestnut St./Lexington Rd./Pine Hill Rd.	Loop Rd.	Orchard Rd.	Warwick Township
17	Church St.	Stony Battery Rd.	PA 230	East Hempfield Township
18	College Ave./Stony Battery Rd.	Locust Rd.	Church St.	Mountville Borough, West Hempfield & East Hempfield Twps
19	Conard Rd/Windy Hill Rd.	Lampeter Rd.	Strasburg Pike	West Lampeter & Strasburg Twps
20	Dillerville Rd.	Harrisburg Ave.	Fruitville Pike	Lancaster City & Manheim Twp
21	Donegal Springs Rd.	Musser Ave.	S. Angle St.	Mount Joy Township
22	Donnerville Rd.	Hempland Rd.	Weaver Rd.	East Hempfield & ManorTwps
23	E. Airport Rd.	PA 501	PA 722	Warwick Township
24	Eden Rd.	PA 272	PA 23	Manheim Township
25	Ephrata Cocalico Creek Trail	Main St. (Ephrata)	Church Rd. (Ephrata)	Ephrata Borough
26	Farmingdale Rd.	PA 23	Harrisburg Pike	East Hempfield & Manheim Twps
27	Fordney Rd.	US 222/PA 501	Juliette Ave.	Manheim Township
28	Glen Moore Cir.	Maple La.	PA 501	Manheim Township
29	Graystone Rd.	PA 72	Fruitville Pike	East Petersburg Borough & Manheim Twp
30	Greenfield Rd.	Hempstead Rd.	PA 462	East Lampeter Township
31	Groff Ave./Ridge Rd.	PA 230	PA 283	Elizabethtown Borough & Mount Joy Twp
32	Hamaker Rd.	PA 72	Hershey Dr.	Rapho Township
33	Hempstead Rd.	Pitney Rd.	Greenfield Rd.	City of Lancaster

Tier 2 Pedestrian Improvement Areas

#	Road Name	From	To	Municipality
34	High St. (Elizabethtown)	Gerald Dr.	Ridgeview Rd.	Elizabethtown Borough & Mount Joy Twp
35	High St. (Maytown)	Martha Dr.	PA 743	East Donegal Township
36	Ironstone Ridge Rd.	Charlestown Rd.	PA 999	Manor Township
37	Ironville Pike	8th St. (Columbia)	Malleable Rd.	Columbia Borough & West Hempfield Twp
38	Ironville Pike	Prospect Rd.	PA 23	West Hempfield Township
39	Lampeter Rd.	PA 462	PA 741	West Lampeter Township
41	Lefever Rd.	PA 772	PA 230	Mount Joy Borough & Rapho Twp
42	Lincoln Rd.	Brunnerville Rd.	Clay Rd.	Warwick Township
43	Line Rd.	Garden Spot Rd.	Jefferson Ave. (Denver)	Clay & East Cocalico Twps
44	Lititz Run Rd.	PA 772	Clay Rd.	Warwick Township
45	Locust St. (Columbia)	8th St. (Columbia)	13th St. (Columbia)	Columbia Borough
46	Main St. (Akron)	Diamond St.	Akron Rd.	Akron Borough
47	Main St. (Brownstown)	PA 272	PA 772	West Earl Township
48	Manheim Borough Loop Trail	Around Manheim Borough		Manheim Borough
49	Manheim Central Trail	Manheim Borough	Lebanon County Line	Rapho & Penn Twps
50	Maple La.	Fruitville Pike	Glen Moore Cir.	Manheim Township
51	Maple St. (Columbia)	PA 441	6th St. (Columbia)	Columbia Borough
52	Miller Rd./Buch Ave.	PA 72	PA 501	Manheim Township
53	Millport Rd.	Rockford Rd.	Strasburg Pike	Lancaster City, West Lampeter & East Lampeter Twps
54	Millport Rd.	Woodcrest Ave.	PA 501	Warwick Twp
55	Musser Ave.	Donegal Springs Rd.	Wood St.	Mount Joy Twp & Borough
56	N. Duke St.	PA 999	Letort Rd.	Manor Twp & Millersville Borough
57	N. Stony Battery Rd.	PA 230	Nolt Rd.	West & East Hempfield Twps
58	New Charlotte St./Fruitville Pike	Stiegel St.	Bucknoll Rd.	Manheim Borough & Penn Twp
59	New Holland Pike	Lemon St.	Snakehill Rd.	Lancaster City, Manheim, East Lampeter & Upper Leacock Twps
60	Nissley Rd.	Bowman Rd.	Centerville Rd.	East Hempfield Township
61	Nolt Rd.	N. Stony Battery Rd.	Sylvan Rd.	East Hempfield Township
62	Oak St. (Manheim)	PA 72	PA 772	Manheim Borough
63	Oakview Rd.	PA 340	US 30	East Lampeter Township
64	Old Strasburg Rd.	PA 741 (W)	PA 741 (E)	Salisbury Township
65	Owl Hill Rd.	PA 501	Kissel Hill Rd.	Warwick Township
66	PA 23	Bridge Valley Rd.	Wilson Dr.	West Hempfield, East Hempfield & LancasterTwps

Tier 2 Pedestrian Improvement Areas

#	Road Name	From	To	Municipality
67	PA 23	Chestnut St.	Pleasure Rd.	Lancaster City & Twp & Manheim Twp
68	PA 23	Whisper La.	US 322	New Holland Borough, Earl & East Earl Twps
69	PA 230	Camp Meeting Rd.	PA 741	East Hempfield Township
70	PA 230	Lefever Rd.	Eby Chiques Rd.	Mount Joy Borough
71	PA 272	Bunker Hill Rd.	Berks County Line	East Cocalico Twp & Adamstown Borough
72	PA 272	Jake Landis Rd.	Bushong Rd.	Manheim Township
73	PA 272	Main St. (Akron)	Church Rd. (Ephrata)	Akron & Ephrata Boroughs
74	PA 272	Main St. (Brownstown)	Oak St.	West Earl Twp & Akron Borough
75	PA 272	Penn Grant Rd.	Herrville Rd.	Pequea & West Lampeter Twps
76	PA 272	US 30	PA 722	Manheim Township
77	PA 272/US 222	Highland Ave.	Penn Grant Rd.	Pequea, West Lampeter & Lancaster Twps & Lancaster City
78	PA 324	Wildflower La.	US 222	Lancaster & Pequea Twps
79	PA 340	PA 462	PA 896	East Lampeter Township
80	PA 41	US 30	Chester County Line	Salisbury Township
81	PA 441	Klinesville Rd.	US 30	Columbia Borough & West Hempfield Twp
82	PA 441	Vinegar Ferry Rd.	PA 23	Marietta Borough & East Donegal Twp
83	PA 462	College Ave.	Spring St.	Mountville Borough
84	PA 462	Donnerville Rd.	Wilson Dr.	Manor, East Hempfield & Lancaster Twps
85	PA 462	Lampeter Rd.	Strasburg Pike	East Lampeter Township
86	PA 462	Prospect Rd.	Pearl St.	West Hempfield Twp & Mountville Borough
87	PA 472	PA 372	Cloverhill Rd.	Quarryville Borough
88	PA 501	Newport Rd.	Loop Rd.	Warwick Township
89	PA 72	Miller Rd.	Stiegel St	Manheim Borough
90	PA 72	Stiegel St.	Auction Rd.	Penn Twp & Manheim Borough
91	PA 722	PA 501	Kissel Hill Rd.	Manheim & Warwick Twps
92	PA 722	PA 72	Graystone Rd.	East Petersburg Borough
93	PA 722	Shaub Rd.	PA 23	Manheim Township
94	PA 741	Larch Ave.	Harrisburg Pike	Manheim & East Hempfield Twps & East Petersburg Boro
95	PA 741	Old Strasburg Rd. (W)	PA 41	Salisbury Township
96	PA 741	US 30	Wabank Rd.	Millersville Boro, Manor & East Hempfield Twps
97	PA 743	Engles Toll Gate Rd.	PA 441	East Donegal Township
98	PA 743	Spring Garden St.	PA 283	Elizabethtown Borough & Mount Joy Twp

Tier 2 Pedestrian Improvement Areas

#	Road Name	From	To	Municipality
99	PA 772	Apple Ave. (Marietta)	PA 441	Marietta Borough & East Donegal Twp
100	PA 772	Clay Rd.	Pierson Rd.	Warwick Township
101	PA 772	Cocalico Rd.	Main St. (Brownstown)	West Cocalico Township
102	PA 772	Market St.	PA 283	Mount Joy Borough & Rapho Township
103	PA 772	PA 340	Carriage Dr.	Leacock Township
104	PA 772	Union School Rd.	Lumber St.	Mount Joy Boro & Rapho Twp
105	PA 896	Bluegrass La.	PA 741	East Lampeter Twp & Strasburg Twp & Borough
106	PA 896	PA 340	Rockvale Rd.	East Lampeter Township
107	PA 999	Ironstone Ridge Rd.	Prince St. (Millersville)	Manor Twp & Millersville Borough
108	PA 999	PA 441	2nd St. (Washington)	Manor Township
109	PA 999	PA 741	Pilgrim Dr.	Manor Twp & Millersville Borough
110	Parkview Heights Rd.	PA 272	Bethany Rd.	Ephrata Twp & Borough
111	Penn Grant Rd.	Millwood Rd.	Hans Herr Rd.	Pequea & West Lampeter Twps
112	Petersburg Rd.	Fruitville Pike	PA 501	Manheim Township
113	Pierson Rd.	Kissel Hill Rd.	PA 772	Manheim Township
114	Pilgrim Dr.	PA 999	Wabank St.	Millersville Borough
115	Pitney Rd.	PA 462	Hempstead Rd.	Lancaster Twp & Lancaster City
116	Pleasure Rd.	New Holland Ave.	PA 23	Lancaster City & Manheim Twp
117	Prospect Rd.	PA 23	PA 462	West Hempfield Township
119	Roseville Rd.	Fruitville Pike	PA 272	Manheim Township
120	Rothsville Rd.	PA 772	PA 272	Warwick & Ephrata Twps & Akron & Ephrata Boroughs
121	Running Pump Rd.	PA 23	PA 462	East Hempfield Township
122	S. Duke St./Slackwater Rd./Stehman Rd.	PA 999	Long Ln.	Millersville Borough & Manor Twp
123	S. Lime St. (Lancaster)	Church St.	Dauphin St.	City of Lancaster
124	Schoolhouse Rd.	Stone Mill Rd.	PA 999	Lancaster Twp
125	Second Lock Rd.	Hoover Dr.	PA 324	Lancaster Township
126	Simmontown Rd.	Strasburg Rd.	PA 41	Sadsbury Township
127	Spencer Ave.	Schoolhouse Rd.	PA 462	Lancaster Township
128	Spring Valley Rd.	Centerville Rd.	Sylvan Rd.	East Hempfield Township
129	State Rd.	Harrisburg Pike	PA 741	East Hempfield & East Petersburg Boro
130	Stiegel St.	PA 72	Oak St. (Manheim)	Manheim Borough
131	Stone Mill Rd.	PA 741	PA 462	Lancaster Twp
132	Strasburg Pike	Edisonville Rd.	PA 741	Strasburg Twp & Borough

Tier 2 Pedestrian Improvement Areas

#	Road Name	From	To	Municipality
133	Strasburg Pike	PA 462	Windy Hill Rd/Millstream Rd	East Lampeter Twp
134	Sylvan Rd.	Old Harrisburg Pk	Spring Valley Rd.	East Hempfield
135	US 222	PA 272	Hans Herr Rd.	West Lampeter Twp
136	US 222	Pilottown Rd.	Little Britain Rd.	Fulton, Little Britain & East Drumore Twps
137	US 222	Ponderosa La.	Church St. (Quarryville)	Quarryville Borough, East Drumore & Providence Twps
138	US 222	Refton Rd.	Orchard Rd.	Strasburg Twp
139	US 30	La Park Ave.	Black Horse Rd.	Paradise Twp
140	US 30	London Vale Rd.	Chester County Line	Salisbury Twp
141	US 322	Bethany Rd.	US 222	Ephrata Boro
142	US 322	Wood Corner Rd.	Market St. (Ephrata)	Clay & Ephrata Twps & Ephrata Borough
143	W Farmersville Rd.	N. Farmersville Rd.	Fairmount Rd.	West Earl Twp
144	W. Oregon Rd.	Petersburg Rd.	PA 501	Manheim Township
145	Wabank St.	PA 741	Charles Rd.	Lancaster Township
146	White Oak Rd.	Doe Run Rd	Prospect Rd.	Rapho Township
147	Willow Rd.	PA 23	Greenfield Rd.	East Lampeter Township
148	Wilson Dr./Abbyville Rd.	PA 23	Schoolhouse Rd.	Lancaster Township
149	Woodcrest Ave.	Millport Rd.	2nd Ave. (Lititz)	Warwick Twp & Lititz Borough

Pedestrian Crossing Improvements

#	Road Name	From	To	Municipality
1	Duke St. (Lancaster)	Church St.	Delaware St.	City of Lancaster
2	Fruitville Pike	Granite Run Dr.	Dillerville Rd.	Manheim Township
3	Harrisburg Pike	US 30	Prince St.	Manheim Township & Lancaster City
4	King St. (Lancaster)	Prince St.	Broad St.	City of Lancaster
5	New Holland Avenue	Lemon Street	US 30	City of Lancaster
6	Orange St. (Lancaster)	Prince St.	Broad St.	City of Lancaster
7	PA 272	PA 501	Suncrest Rd.	Manheim Township
8	PA 272	Rothsville Rd.	Pleasant View Dr.	Ephrata Borough & Ephrata Township
9	PA 272	Long Lane/Beaver Valley Pike	Boehms Rd.	West Lampeter & Pequea Twps.
10	PA 340	Clearview Rd.	Hatville Rd.	Leacock Township
11	PA 462	Chestnut St. (Columbia)	Locust Grove Rd.	Columbia Borough & West Hempfield Twp.
12	PA 462	PA741/Millersville Rd.	Ruby St.	East Hempfield, Manor & Lancaster Twps. & Lancaster City
13	PA 462	Broad St.	US 30	Lancaster & East Lampeter Twps.
14	PA 501	Newport Rd.	PA772/Orange St.	Warwick Twp. & Lititz Borough
15	PA 501	US 30	Fordney Rd.	Manheim Township
16	PA 72	Colebrook St.	Shimp St.	Manheim Borough & Penn Twp.
17	PA 72	Delp Rd.	Fruitville Pike	Manheim Township
18	PA 772	Groff Ave.	Homestead Dr.	Warwick Township
19	PA 999	PA741/Millersville Rd.	Prospect St.	Manor Township
20	Strasburg Pike	Edisonville Rd.	Main Street	Strasburg Twp. & Strasburg Borough
21	US 222	State St.	Church St.	Quarryville Borough