



West Vincent Township Multi-modal Transportation Study



October 13, 2014

Prepared by:



Prepared for:



in association with:





1 Introduction



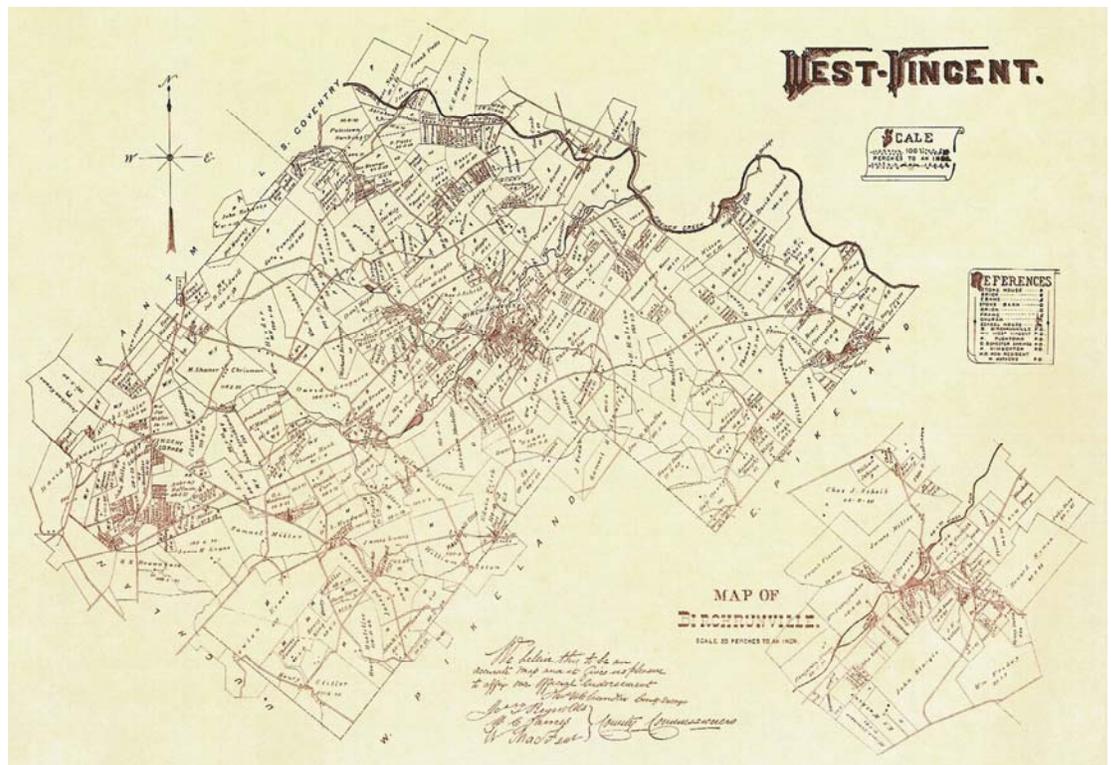
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1.1 | History

Transportation corridors in West Vincent Township were once well traveled by foot instead of cars. Initially, the Algonquin and Lenni Lenape Indian tribes *walked* on trails, known today as PA 401 (Conestoga Road) and the Horseshoe Trail. During the Revolutionary War, General Washington and his troops *marched* across West Vincent Township on their way to Valley Forge. In the late 1800s, students *walked* to one of five public school houses in the Township. With the popularity of the automobile, many of our transportation corridors have been re-engineered without accommodations for bicyclists and pedestrians. Undertaking the West Vincent Multi-Modal Study will help reinstate walking and biking as viable modes of travel in the Township. This study is the first step towards making it possible for West Vincent residents and visitors to once again be able to walk and bike safely to restaurants, stores, schools, houses of worship, and community centers. By providing these multi-modal connections, West Vincent Township intends to reduce traffic and ease

congestion, achieve sustainability goals, and enhance the quality of life for its residents.

The purpose of the study is to analyze the existing assets and constraints that effect bicycle, pedestrian and mass transit opportunities in the Township and to make recommendations to improve the transportation network for all users.



Source: ancestortracks.com

1.2 | Project Need

There are several important reasons for multi-modal transportation planning (planning for all users and abilities within the transportation network) and they are summarized below:

- By improving access for walking and bicycling, transportation will become less expensive for all users. Alternative transportation modes such as walking and bicycling use less energy and emit fewer greenhouse gases. These benefits are consistent with the Township's Sustainability Plan.¹
- In 2000, the Federal Highway Administration (FHWA) announced that bicycle and walking facilities will be incorporated into all transportation projects unless "exceptional circumstances" exist. Regional and County long-range plans also promote multi-modal transportation networks.²
- Well planned and designed multi-modal accommodations support both mobility and safety, and have been shown to reduce risks of pedestrian crashes particularly in residential areas.³ Approximately 15 percent of crashes involving pedestrians and vehicles in suburban and rural areas occur when a pedestrian is struck while walking along a roadway.⁴
- Walking and biking are healthy alternatives to automobile traffic. Over the past four decades, childhood obesity rates have drastically increased⁵ at a national level. Today, nearly one in three children in

America is overweight or obese. One third of all children born in 2000 or later will suffer from diabetes at some point in their lives; many others will face chronic obesity-related health problems.⁵ In addition, a 2011 research brief from Active Living Research notes that, according to a growing body of evidence, "the built environment can positively influence physical activity for both recreational and



transportation purposes."⁶ Broadly defined, the built environment includes the man-made surroundings that provide settings for physical activity, such as neighborhoods, streets, public transportation systems, commercial centers, schools, parks, trails, and other outdoor recreational spaces.

- Holistically speaking, well connected pedestrian and bicycle facilities allow neighbors to interact within the community. They also provide vital transportation links for non-drivers to destinations in the community.

1 - Federal Highway Administration (FHWA) Website: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/resources/data/benefits_reaserch.cfm

2 - Transportation Equity Act for the 21st Century (TEA-21), as noted in the *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, American Association of State Highway and Transportation Officials, July 2004.

3 - Knoblauch, RL, BH Tustin, SA Smith and MT Pietrucha. Investigation of Exposure-Based Pedestrian Accident Areas: Crosswalks, Sidewalks, Local Streets and Major Arterials. Report FHWA/RD-87-038, February 1987.

4 - Design and Safety of Pedestrian Facilities. Institute of Transportation Engineers, Washington, DC. March 1998.

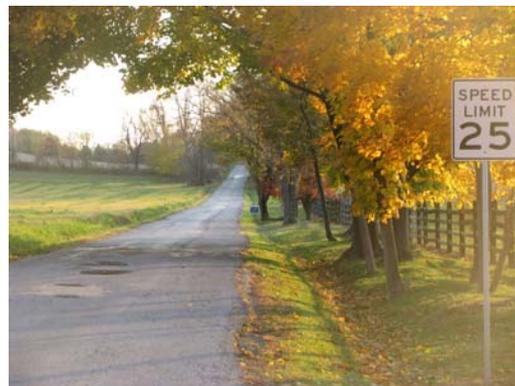
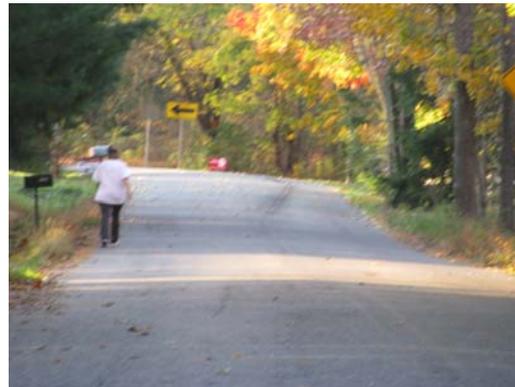
5 - Ogden, Cynthia Ph.D., Margaret D. Carroll, MSPH, Lester R. Curtin, Ph.D., Molly M. Lamb, Ph.D., Katherine M. Flegal, Ph.D. "Prevalence of High Body Mass Index in U.S. Children and Adolescents, 2007–2008." *JAMA*. 2010; 303(3): 242-249. doi:10.1001/jama.2009. 2012.

6 - The Built Environment and Youth Physical Activity: A Review Based on the Active Living Research Literature Database, Ding Ding, MPH, James Sallis, PhD, Jacqueline Kerr, PhD, Dori Rosenberg, PhD, Suzanna Lee, MPH, Carmen Cutter, MPH, Presentation at the 2011 Active Living Research Annual Conference February, 2011.

1.3 | Project Goals

The Study Task Force developed the following project goals for the Multi-Modal Transportation Study:

- Provide transportation alternatives to vehicular travel within the Township to achieve sustainability goals, reduce traffic and congestion, and enhance the quality of life.
- Provide a safe transportation network for all users (pedestrians, bicyclists, motorists, and future transit users).
- Provide a transportation system that connects users to key destinations, activity centers, and community assets, particularly, Ludwig's Corner, Birchrunville, and Kimberton.
- Develop recommendations for pedestrian and bicycle facilities that fit the character of the community.
- Identify challenges, potential solutions, and an implementation plan for the completion of the multi-modal transportation system.
- Provide a community-driven process that encourages participation from Township residents.



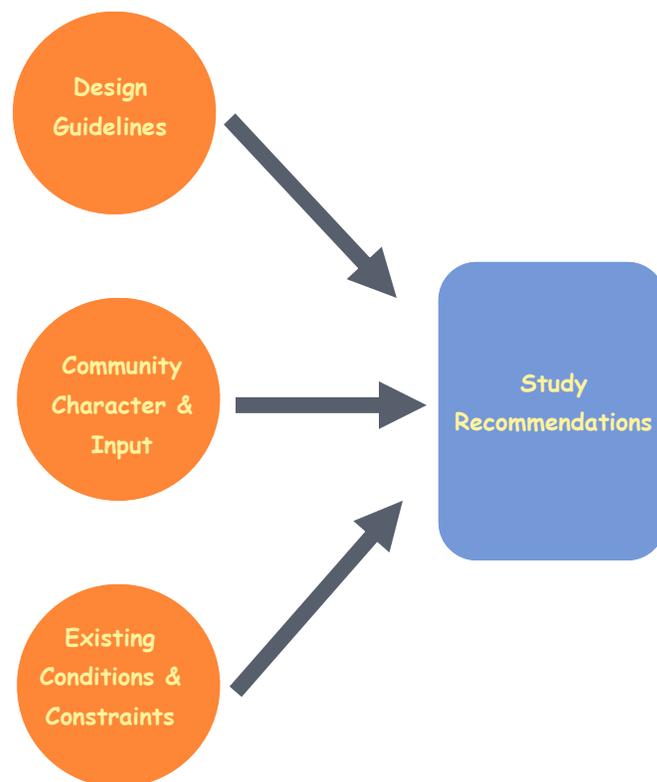
1.4 | Study Process

This Study is being completed with funding provided by West Vincent Township and through the Chester County Vision Partnership Program (VPP) Grant process. The VPP was established to promote cooperation between local municipalities and Chester County in the implementation of the County's Comprehensive Plan, *Landscapes 2*, and the County's Strategic Plan. The VPP typically funds various types of planning studies and efforts.

As noted above, one goal of this Study was to provide a community-driven process in order to solicit feedback from the residents of West Vincent Township. The study process utilized in the completion of this report relied upon close collaboration with a Study Task Force and feedback received through public outreach events and initiatives. Two public workshops were held to solicit input from the community during the Study process. The community was also able to provide feedback to the consultant team at the Township's 2013 Sustainability Fair and through an online survey.

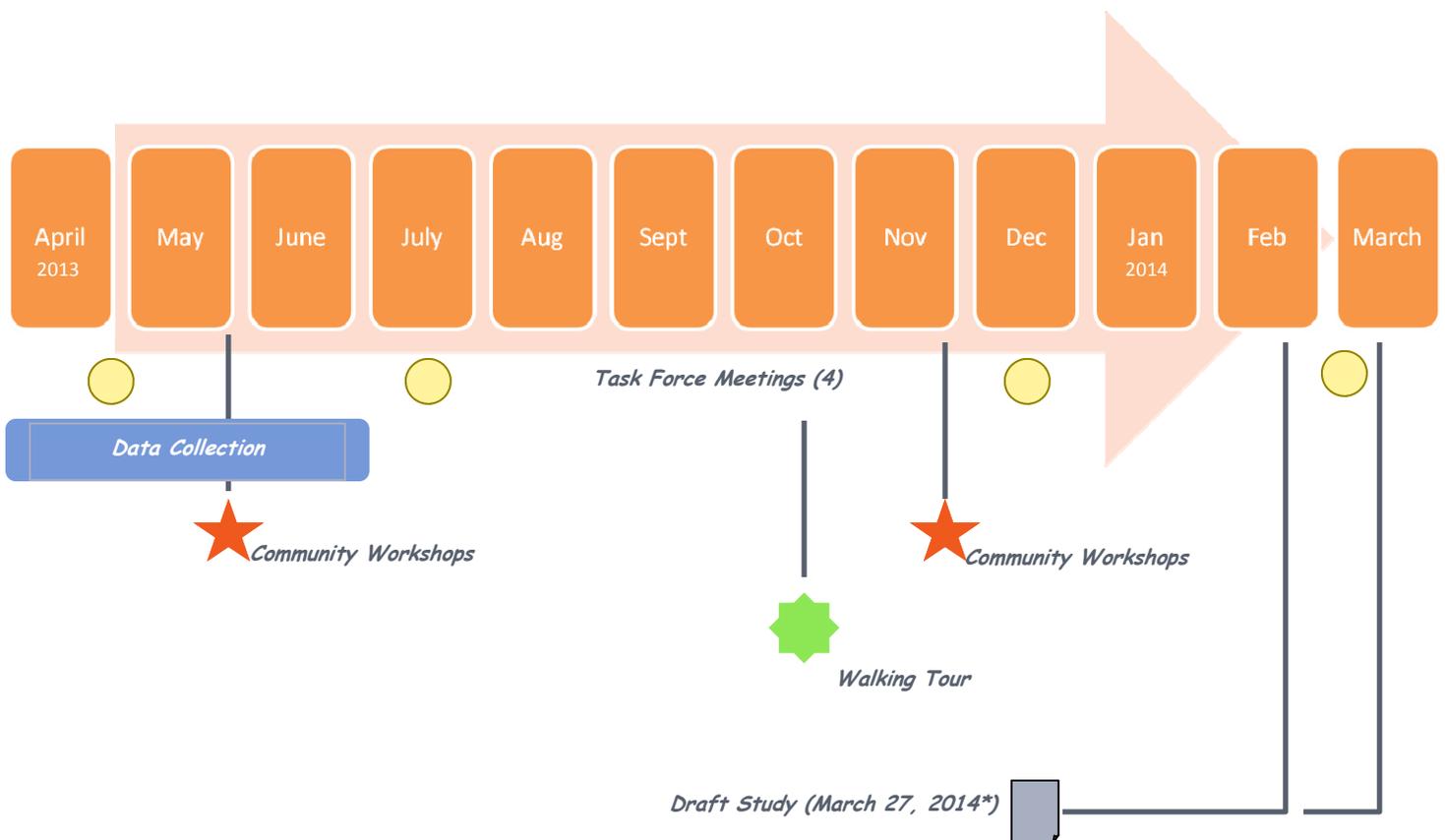
Recommendations and additional information gathered from the public outreach efforts are summarized later in this report.

The consultant team also provided preliminary recommendations based on various applicable design guidelines and criteria, upon which the Task Force and the community were able to comment. In the end, this process allowed for the final recommendations to reflect the community's character and vision for the future.



1.5 | Study Schedule

The overall study schedule is highlighted below. Key meetings and public outreach events are also illustrated. The Draft Study was completed and presented to the Township Board of Supervisors, Planning Commission, and Study Task Force, as well as the County in March 2014 for review. The Final Study was officially accepted by Township Board of Supervisors on October 13, 2014.



* Working Draft Study provided for Task Force and County preliminary review — this draft was posted on Township Website for public comment. Subsequently, revisions were made to the study to reflect comments provided by the Task Force, the County, the Township, and the public. A final Draft Study (August 14, 2014) was prepared and reviewed by the County, the Township, including the Board of Supervisors, and the Task Force.

1.6 | Previous Plans & Studies

West Vincent Township has taken an active role in utilizing planning tools to balance growth and preservation within the Township. Previously completed plans and studies served as the background and foundation for this Multi-Modal Study. The following key plans contain a wealth of information related to the Township's vision and goals, land use, transportation system, and community resources:

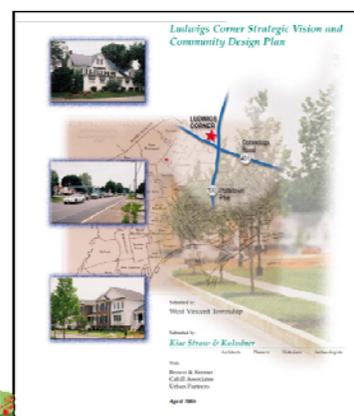
- *West Vincent Township Sustainability Plan (2011)*
- *Ludwig's Corner Strategic Vision and Community Design Plan (2005)*

West Vincent Township participates in the Federation of Northern Chester County Communities, which has produced:

- *Parks, Recreation, and Open Space Plan for the Federation of Northern Chester County Communities (2012)*

West Vincent Township is a member of the Phoenixville Area Regional Planning Committee, which implements the *Phoenixville Area Regional Comprehensive Plan*, adopted in 2008.

In addition, the Township's current *Subdivision and Land Development Ordinance (SALDO)* and *Zoning Ordinance (ZO)* were reviewed for multi-modal transportation related regulations.





2 Public Engagement



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2.1 | Task Force Collaboration

The consultant team met regularly throughout the project process to review findings, community feedback and recommendations. The Task Force provided the consultant team with information on existing conditions and past initiatives related to multi-modal planning. Also, the Task Force helped to synthesize comments and concerns of the public and prioritized key routes and destinations, as well as improvement recommendations. In addition, the Task Force reviewed the *Draft Study* prior to its presentation to the Board of Supervisors and the community.

The Task Force also assisted the consultant team with the public engagement process by advertising events and seeking public input, and by participating in the community workshops, including facilitating group discussions during “working sessions”.

Multi-Modal Task Force Members

Kate Damsgaard, Chair

Planning Commission
Sustainability Committee

Clare Quinn

Township Supervisor

Ken Miller

Township Supervisor

Jim Wendelgass

Township Manager

Adrienne Boyance

Sustainability Committee

Brad Dyer

Park and Recreation Committee

Vic Laubach

Environmental Advisory Committee

Bill Dietrich

Planning Commission

Bob Phillips

Upper Uwchlan Representative
UUT Parks & Recreation Board

Rusty Strauss

East Pikeland Township Representative
Supervisor and Planning Commission

Ed Smith

West Vincent Elementary School
Principal

Jake Michael

Chester County Planning Commission

2.2 | Community Workshops

Two community workshops were held to obtain public input during two stages of the Study.

Workshop #1

The first community workshop was held on June 4, 2013. The focus of the workshop was to explain the process and goals of the study and to solicit feedback on desired travel routes, destinations, and concerns relative to the multi-modal opportunities in the Township.

The workshop attendees participated in a series of mapping exercises to define key destinations; desired travel routes for pedestrians, bicyclists, and equestrians; and perceived hazardous routes/locations. The results of the



mapping exercise are summarized in the Appendix and includes mapping of the key destinations and desired travel routes identified by the public.

Workshop #2

The second community workshop was held on November 12, 2013. The focus of the workshop was to review the Task Force's preliminary multi-modal improvement



recommendations with West Vincent neighbors and solicit feedback before finalizing the Study. The preliminary recommendations were developed by the consultant team and Task Force, and they focused on various types of pedestrian and bicycle accommodations on selected roadways within the Township. In addition, the community's input on various traffic calming measures were collected. Surveys (or community feedback workbooks) were made available at the Township building and posted on the Township website for residents who were unable to attend the workshop. Chapter 5 summarizes the recommended multi-modal improvements of this Study, as well as the public's feedback regarding the various recommendations.

2.3 | Task Force Walking Tour

A Walking Tour was held on October 26, 2013 with the Task Force and some key community stakeholders to view locations of various recommendations. This exercise allowed the team to visualize how preliminary recommendations could be implemented in the future at specific locations and along key roadways. The tour included stops in:

- the Ludwig's Corner area,
- along Fellowship Road (near Route 401),
- St Matthews Road,
- Camphill Village,
- the Kimberton Village area (providing the connection between West Vincent and East Pikeland),
- Kimberton Road (driving along road only),
- and Art School Road (driving along road only).





3 Existing Conditions

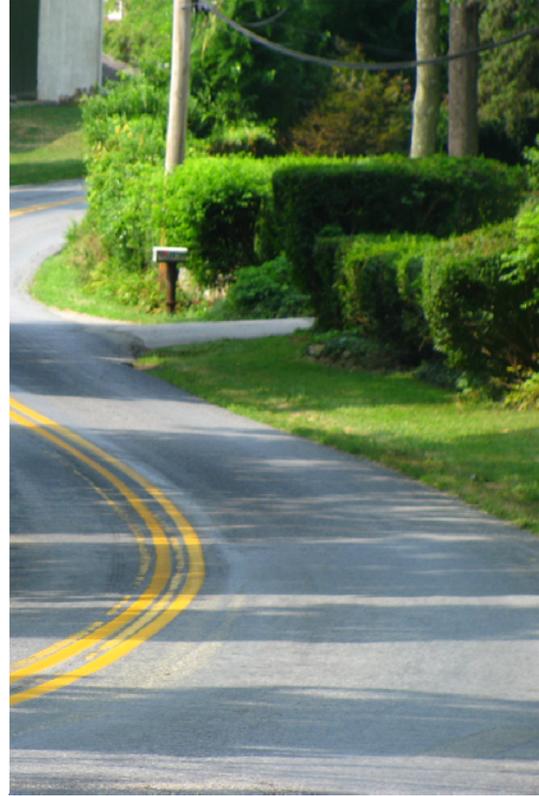


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3.1 | Existing Transportation Setting

West Vincent Township is located in northern Chester County (See **Map 1**), with the western portion of the Township situated at the crossroads of PA Route 100 and PA Route 401. West Vincent Township's rural character contributes to the quality of life for residents. Special attention and consideration regarding the design of bicycle and pedestrian facilities can help to ensure that improvements are appropriate and respectful of the Township's character. The Township's rural roadways are narrow and winding with buildings, utility poles, fences, and trees just beyond the edge of the pavement. These constraints present a challenge to adding and retrofitting bicycle and pedestrian facilities parallel to roadways, which will need to be explored.

- Speeding and high traffic volume can create an unsafe and uncomfortable environment for bicyclists and pedestrians, particularly on narrow and rural roadways. Improvements should focus on improving safety and minimizing conflicts among all users.
- Many of the roadways throughout the Township do not currently meet the Township's roadway design standards or PennDOT design guidelines.
- Ludwig's Corner has been developed with cluster designs that promote a walk-able environment. However, the sidewalk network in the Ludwig's Corner area has several significant gaps that may require retrofitting pedestrian facilities to connect key destinations.
- With respect to pedestrian travel, the rural character of the community and distance between destinations



lends itself to short-distance trips, shared road accommodations on lower traffic volume roadways, recreational use, and linkage to off-road pedestrian facilities to create a pedestrian network.

- West Vincent Township is not currently served by public transit and the Township's ordinances do not address the design and placement of transit facilities. Ludwig's Corner has the potential to support public transit in the future, particularly if municipal plans and ordinances are updated to support bus facilities and operations.



3.2 | Land Use Context

The predominant land uses in West Vincent Township are low-density residential, non-preserved and preserved, vacant land with no associated use or structure, and non-preserved and preserved agricultural land, as shown on **Map 2**. Two types of low-density residential development may be found in West Vincent Township: suburban subdivisions such as at Horseshoe Farm and Matthews Meadows; and large-lot rural development. Medium and high-density residential developments, such as Weatherstone and the Stone Rise apartments, are located near Ludwig's Corner.

In the entire Phoenixville Region, West Vincent Township has the highest percentages of vacant land. Non-preserved vacant properties consist of 2,127 acres within the township. Non-preserved agricultural land use includes 2,821 acres. These open landscapes help define the rural character of the township and contribute significantly to the aesthetics of the local roadways. The sizes of these land uses underscore the potential for future land development in West Vincent Township, including new residential subdivisions, roads, and trails.

Commercial, office, industrial, and institutional land uses are clustered near Ludwig's Corner (and the Route 100 corridor), Birchrunville, and to a lesser extent, at the northeastern corner of the township near Kimberton. Residents who participated in the first community workshop identified these areas as important destinations within the overall multi-modal network.



Three utility corridors cross the township along easements or utility rights-of-way that cross private property. The Texas Eastern Gas Pipeline and the Columbia Gas Pipeline easements run from north to south, and the Williams Gas Pipeline runs diagonally from the West Pikeland Township border to the East Vincent Township border. Since these corridors are eased and not owned by the utility companies, each individual landowner maintains control over access to their property for the purposes of trail planning.

West Vincent Township is classified by the Chester County Planning Commission as a "rural" community, while Ludwig's Corner is designated as a "rural center" according to the County's *Landscapes 2*. The Delaware Valley Regional Planning Commission has identified the Township primarily as a "Rural Landscape Area" according to *Connections 2040* with the Ludwig's Corner area designated as a "Rural Center". Also, a very small portion of southwest section of the Township is identified as a "Suburban Landscape".

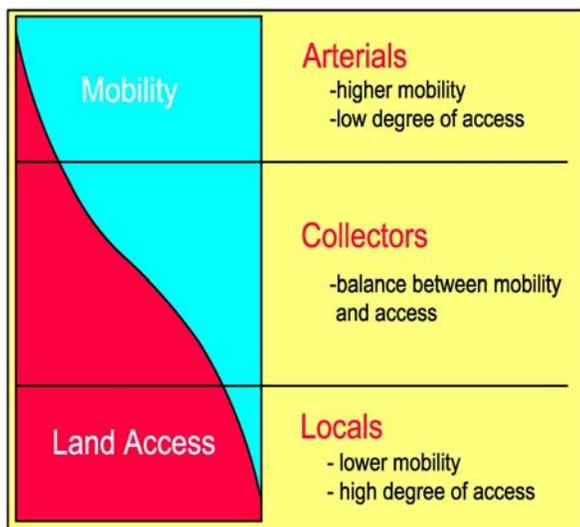
With the recent economic downturn, several proposed developments in the Township have been placed on-hold. This may offer a window of opportunity for the Township to update Zoning and SALDO ordinances to support implementation of bicycle and pedestrian facilities before development activity increases.



3.3 | Transportation Context

The transportation context within West Vincent Township considers the classification of a roadway, the types and actual design of transportation infrastructure, traffic volumes, and traffic operations. Defining the existing transportation context will provide guidance on what type of transportation improvements, including multi-modal accommodations, are appropriate for each roadway within the network.

The concept of road classification is important in transportation planning and for determining the traffic context. A roadway's classification, or type, identifies its overall purpose within the transportation network and how it relates to other roadways within the network. Traditionally, four primary types of road classification exist, including 1) expressways, 2) arterials, 3) collectors, and 4) local streets. Design parameters vary for each classification of roadway.



Source: Safety Effectiveness of Highway Design Features, Volume I, Access Control, FHWA, 1992

It is noted that some jurisdictions also have sub-classifications such as “major”, “minor”, “local”, and “community” to differentiate variations in the design and operational characteristics of roads within a single primary classification. These subcategories yield greater flexibility in determining design values. **Map 3** and **Figure 1** illustrate the current roadway classifications within West Vincent Township.

In 2008, PennDOT adopted the *Smart Transportation Handbook*, which expands upon the traditional roadway classifications and also considers the character (or land use context) of the surrounding roadway. This new criteria provides greater flexibility in design and avoids a “one size fits all” approach for a given classification. For the purposes of this Study and selecting appropriate design criteria for future improvements or in modifying design guidelines, the overall land use context for West Vincent is “rural” and the Ludwig’s Corner area has been planned to be developed as a “Town/Village Center” according to PennDOT’s Smart Transportation guidelines.

When evaluating existing multi-modal accommodations or planning future facilities, the following are key consideration in recommending improvements:

- roadway classification,
- existing roadway design,
- traffic volumes,
- vehicular travel speeds,
- surrounding land use context (See Chapter 3.2), and
- geometric/environmental features and constraints.

Figure 1. Current Roadway Characteristics

Road	Traditional Classification ¹	Smart Transportation Classification ²	ADT ³	Posted Speed	Cartway Width	Pavement Markings	Shoulders
Conestoga Road (Route 401)	Minor Arterial	Community Arterial	7,480	35-45 mph	22'	DYCL & WEL	1-2'
Pughtown Road	Major Collector	Community Collector	3,711	40 mph	22'	DYCL & WEL	1-1½'
Fellowship Road (west of Route 401)	Local Distributor	Neighborhood Collector	3,600	35 mph	22-24'	DYCL & WEL	1-2'
St Matthews Road	Minor Collector	Neighborhood Collector	2,076	40 mph	20-22'	DYCL	No
Hollow Road	Local Distributor	Local	971	35 mph	18½-21'	DYCL	No
Horseshoe Trail	Local Distributor	Local	746	30 mph	18-22'	Variable	No
Birchrund Road	Local Distributor	Local	436	35-40 mph	19-20'	DYCL	No
Flowing Springs Road	Local Distributor	Local	430	25 mph	17½-22½'	No	No
S. Chester Springs Rd	Local Distributor	Local	210	25 mph	18'	No	No
Kimberton Road	Local	Local	88	35 mph	20-22'	No	No
Art School Road	Local Distributor	Local	n/a	35 mph	21'	No	No
Fellowship Road (east of Route 401)	Local	Local	n/a	25 mph	18-20'	No	No
Hilltop Road	Local	Local	n/a	Not Posted	11½-13½'	No	No
Shady Lane	Local	Local	n/a	Not Posted	16½'	No	No
Sheeder Mill Road	Local	Local	n/a	30 mph	17½-25'	No	No
Miller Road	Local	Local	n/a	Not Posted	18'	No	No
Westover Lane	Local	Local	n/a	Not Posted	18-22'	No	No

1 - Road Functional Classification Technical Memorandum, Chester County Planning Commission, June 2004

2 - Estimated based on the guidelines contained in the *Smart Transportation Handbook*, PennDOT, March 2008.

3 - PennDOT iTMS data.

DYCL: Double Yellow Centerline; WEL: White (outside) Edge Line

3.4 | Traffic Volumes

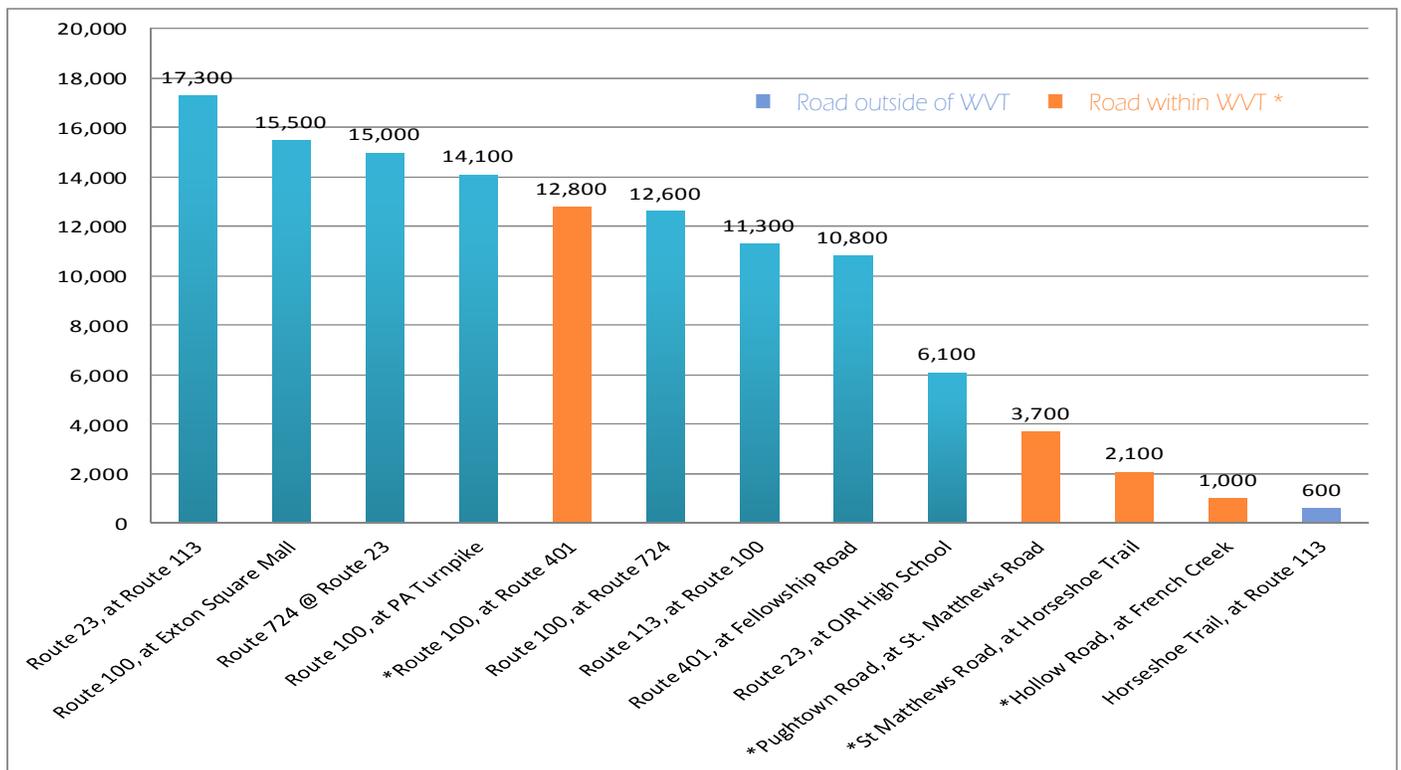
Vehicular traffic volume along a roadway is a key indicator of how pedestrians and bicyclists perceive the safety and comfort-level for non-vehicular travel. Accordingly, traffic volumes allow engineers and planners to determine appropriate roadway classification, design elements, and improvement recommendations. In this Study, average daily traffic (ADT) was considered when evaluating roadways.

Several roadways within West Vincent Township are regionally significant, and therefore, carry a substantial amount of non-local traffic that increases overall traffic volumes. However, there are many roadways within the Township that primarily serve local traffic and experience

relatively low traffic volumes as a result.

PA Route 100, PA Route 401, Pughtown Road, and St Matthews carry the highest traffic volumes within West Vincent Township. Traffic on these roadways is composed of both local and pass-through (e.g., origin and destination outside of the Township) traffic. **Figure 2** compares daily traffic volumes of several area roadways within West Vincent Township, as well as several other area roadways outside of the Township for greater perspective. Figure 1 summarizes average daily traffic (ADT) volumes obtained from available PennDOT data with additional operation characteristics (i.e., cartway widths, posted speeds limits, pavement markings) for key roadways within West Vincent Township.

Figure 2. Comparison of Daily Traffic Volumes on Area Roadways



3.5 | Existing Bicycle and Pedestrian Facilities

On-road pedestrian facilities are limited within the Township today. Sidewalks are provided within the Weatherstone community, at the Shops at Ludwig's Village, Byers Station (Eagle Farms), and Fox Hollow Farms. Paved footpaths are provided in the Wetherill Estates and Matthews Meadows communities. Currently, there are no bicycle lanes within the Township and only a few roadways within the Township provide designated shoulders that provide for vehicle-bicycle separation. Thus, pedestrian and bicyclists share nearly all roads with both low and high traffic volumes.

In general, Township-owned roadways currently do not provide centerline pavement markings or outside edge line markings (which could be used by bicyclists and pedestrians for separation when walking along a roadway). Despite the lack of bicycle accommodations within the Township, a number of roadways are designated as bicycle routes (for various skill levels) including Conestoga Road (PA Route 401) (west of St. Matthews Road), Pughtown Road, Horseshoe Trail, Hollow Road, St Matthews Road, Sheeder Mill Road, Art School Road, and French Creek Road.

Although not the focus of this study, it is noted that there is an abundance of off-road trails throughout the Township, including dedicated trails, eased unimproved trails, and informal trails on private property used by permission of the owner. Today, these trails are used by pedestrians, mountain bikers, and equestrians. Trail construction and preservation has been an important focus in the Township for more than 20 years. For example, the West Vincent Township Land Trust has an active trail preservation program seeking easements for trail right-of-way.



Pictured: The northeast corner of the PA Route 100/PA Route 401 intersection. Crosswalks, pedestrian signal heads and push buttons, as well as ADA ramps are provided, however, there is a gap in the sidewalk network to safely accommodate pedestrians beyond the intersection.

3.6 | Bikeway Functional Classification

Several roadways within the Township are designated as key bicycle routes at both the State and County levels. PennDOT has identified statewide BicyclePA Routes for experienced (Group A) cyclists and particularly long-distance travel. The BicyclePA Routes are oriented for either north-south or east-west travel across the state and are designated with wayfinding signs. The Bicycle PA Route S overlaps with Pughtown Road through West Vincent Township. Aside from signage, there are no designated bicycle lanes or other accommodations associated with this bike route.

With respect to the “bike-ability” of a roadway, the Chester County Planning Commission states that the comfort of bicycling by beginner- and intermediate-skilled cyclists is usually influenced by one or both of the following factors:

1. **Roadway/shoulder width available for safe bicycling**—roadways with wide travel lanes (greater than 15 feet) or defined roadway shoulders (greater than 4 feet).
2. **Roadway traffic volume**—roadways with low to moderate traffic volumes (less than 10,000 vehicles per day).

According to the Chester County Recommended Bikeway Network Functional Classification Map (May 2011), the following roadways are classified for bicycle use:

- Conestoga Road (west of St Matthews Road) — Advanced
- Pughtown Road — Commuter/Collector
- Horseshoe Trail, Hollow Road, St Matthews Road, Sheeder Road, Art School Road (Horseshoe Trail to

Bicyclist Skill Level

The Federal Highway Administration (FHWA) historically classified cyclists into categories:

Group A—are advanced/experienced riders who can operate under most traffic conditions. These riders prefer direct access to destinations via existing streets and the ability to operate at maximum speeds. Separation from vehicular traffic is less important to these riders.

Group B—are basic or less confident adult riders who prefer comfortable access to destinations, residential streets with lower vehicular volumes and speeds, and if possible, separated access from cars on busy arterial and collector streets.

Group C—are children riders who may not travel as far as adult riders, but still require access to key destinations such as schools, convenience stores, and recreational facilities. Children do not have the same level of skills as adult riders. Residential streets with low vehicle speeds, linked with multi-use paths and busier streets with well-defined separation between bicycles and motor vehicles, can best accommodate children.

FHWA recommends that all streets (where bicyclists are allowed to operate) are designed for Group A cyclists, while selected streets, based on various criteria, are designed specifically for the needs of Group B/C cyclists.

Source: Guide for Development of Bicycle Facilities, AASHTO, 1999.

Kimberton Road through West Pikeland Township and continuing through East Pikeland Township), French Creek Road — Intermediate Recreation

- Art School Road (Historic Yellow Springs to Kimberton Road) — Beginner Recreation

3.7 | Regional Bicycle and Pedestrian Facilities

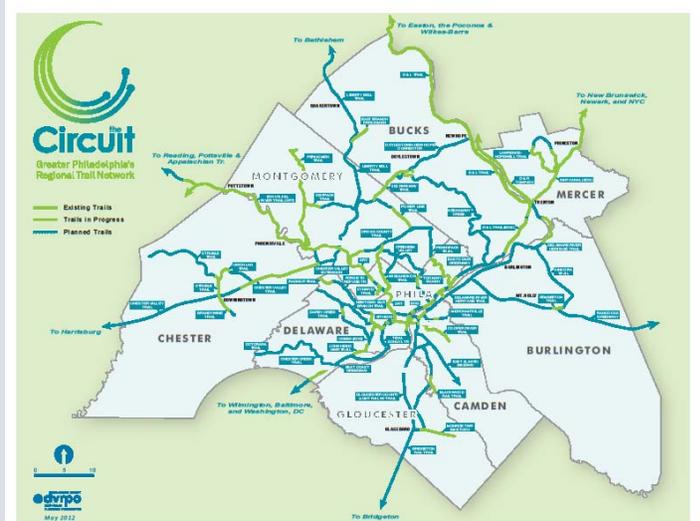
Regional trail facilities offer opportunities to link future West Vincent facilities to other existing and planned facilities, providing a much more extensive network for commuting as well as recreational use. Some notable regional bicycle and pedestrian facilities include:

- Chester Valley Trail — a multi-use trail alignment is being constructed to run through much of Central Chester County. Plans call for the Chester Valley Trail to connect the Struble Trail in Downingtown to the Schuylkill River Trail in King of Prussia. Portions of the trail are complete today. An extension west of Downingtown is also proposed, which would provide connections to the Lancaster region.
- Struble Trail — follows the East Branch of the Brandywine Creek as it flows from Upper Uwchlan Township towards Downingtown. Sitting in a historic rail bed of the Waynesburg Rail Line, the trail is generally flat and used for recreation and by some commuters. A northern extension is also proposed, which would connect to the Honey Brook area.
- Schuylkill River Trail — a multi-use trail that follows the Schuylkill River from Reading to Center City Philadelphia. Significant portions of the planned 130-mile trail are constructed (60 miles). A proposed extension of the trail would extend to Hamburg, PA. The trail is also planned to connect to other trails, including the East Coast Greenway, which is proposed to connect Maine to Florida.
- French Creek Trail — a natural surface trail that traverses southwestern East Pikeland Township along

the French Creek. The trail is primarily constructed, however, its western section is still being evaluated, including several potential alignments that terminate near the West Vincent Township border.

- Upper Uwchlan Trails— an extensive trail and sidewalk network has been established throughout this adjacent Township. The most practical connection from West Vincent Township would be via Fellowship Road. There is a multi-use trail along much of Fellowship Road in Upper Uwchlan Township today with future plans to extend it to PA Route 401.

The Circuit is an initiative of DVRPC to create 750 miles of connected trails throughout the greater Philadelphia Region and make our region stronger by providing a place for healthy transportation and recreation, connecting our communities to green space, and making our neighborhoods more attractive places to live and work. For trip planning and more information, visit: connectthecircuit.org

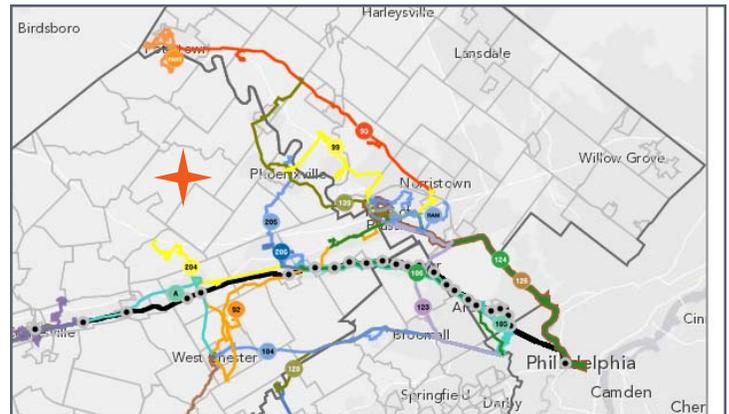


3.8 | Existing Transit & Ridesharing Opportunities

Based on data from the *American Community Survey 5-year Estimates, 2006-2011*, approximately nine percent of workers living in West Vincent Township use transit or carpool for their commute to work. This is significant, considering West Vincent Township is not directly served by transit and the Township does not have any designated facilities to support ridesharing.

Regional bus and rail services are located just beyond the Township's borders. SEPTA operates the Route 204 bus along PA Route 100 between Eaglevew and Exton and along US 30 Business between Exton, Great Valley, and Paoli. The closest bus stop to West Vincent Township is located within the Uwchlan Township portion of Eaglevew, and it is the last stop for SEPTA Route 204. Additional bus services close to the Township includes SEPTA Route 139 operating between King of Prussia and Limerick with service along PA Route 724 in East Vincent and East Pikeland Townships and SEPTA Route 205 operating between Paoli and Phoenixville with service along PA Route 29 in Charlestown and Schuylkill Townships. In addition to fixed route service, Rover Community Transportation provides transportation services particularly for people who no longer drive, have no other means of transportation, or need special assistance to travel. Although Rover is open to all users, the service caters to seniors, persons with disabilities, and medical assistance transportation.

For rail service, the Amtrak Keystone Corridor and SEPTA Paoli/Thorndale rail line are located south of West Vincent



Pictured: Current transit service in Chester County and lack of service in the West Vincent area as of March 2014.

Source: chescorideguide.org.

Township. Amtrak provides intercity rail service between Harrisburg, Philadelphia, and New York City with connections to the Northeast Corridor service between Boston and Washington, D.C. SEPTA provides regional rail service between Thorndale and Philadelphia and also offers connections to other regional rail and bus services. Three train stations on the Amtrak Keystone Corridor and SEPTA Paoli/Thorndale rail line are located less than 10 miles from West Vincent Township, including:

- Exton Amtrak/SEPTA Station
- Whitford SEPTA Station
- Downingtown Amtrak/SEPTA Station

Other convenient train stations along this regional rail line, particularly for commuting to/from Philadelphia, include the Malvern SEPTA Station and the Paoli Amtrak/SEPTA Station.

In terms of ride sharing, the closest official park-and-ride lot to West Vincent Township is located south of the Township near the intersection of PA Route 100 and PA Route 113. Additionally, there is a park-and-ride lot along US 422 at Lewis Road in Limerick Township.



4 Multi-modal Opportunities and Policies



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4.1 | Destinations

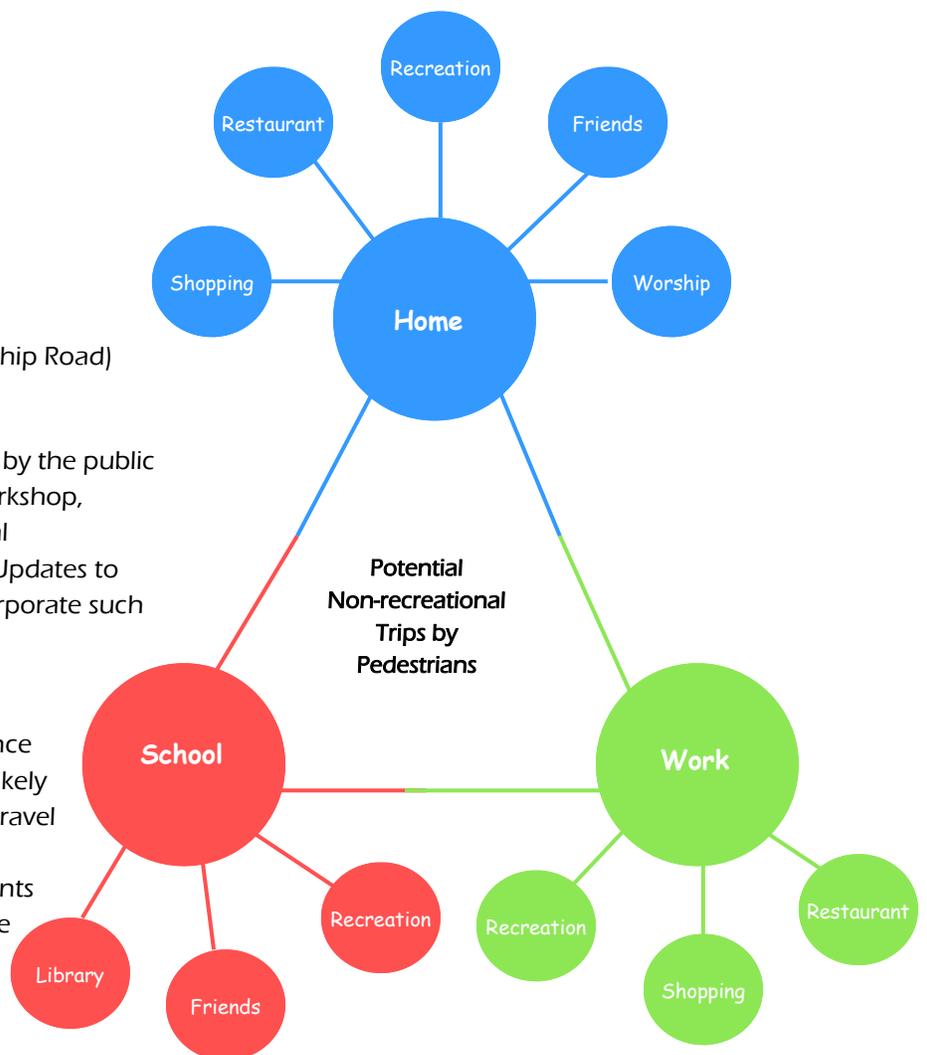
West Vincent Township and its surrounding municipalities offer a range of desirable destinations for pedestrians, bicyclists, and commuters. Through collaboration with the Study Task Force and public outreach process, the following key destinations within and around the Township (see also **Map 4**) were identified as:

- Ludwig’s Corner area
- Birchrunville Village
- Kimberton Village
- Andrew Evans Township Park
- West Vincent Elementary School
- Henrietta Hankin Library (Weatherstone)
- Upper Uwchlan Trail Network (via Fellowship Road)

Additional destinations, which were identified by the public (see Appendix) during the first community workshop, should be further considered once multi-modal infrastructure/facilities begin to be provided. Updates to this multi-modal transportation study can incorporate such destinations.

Due to the size of the Township and the distance between major destinations, bicycling would likely be the most utilized non-vehicular method of travel in the Township for a non-vehicular/non-recreational trip. It is unlikely that many residents would generally walk more than ½-mile (or five to 15 minutes) to reach a destination in most cases. However, that does not diminish the

need or goal of making the Township more walk-able. Shorter pedestrian trips will still occur and would likely increase if better accommodations were provided. For instance, a walk to a friends house or a walk to a recreational use (park, fields, natural area, or off-road trail), which is first a utilitarian trip before serving a recreation purpose, could benefit many residents.



Focus Area

Ludwig's Corner

Ludwig's Corner is located at the crossroads of two key regional corridors: PA 401 (Conestoga Road) and PA 100 (Pottstown Pike). Not only is Ludwig's Corner the traffic center of West Vincent Township, it is also the development center of the Township (i.e., where the highest density development has been planned). The characteristics of Ludwig's Corner present numerous opportunities to enhance the multi-modal transportation system of the Township. Additionally, the *Ludwig's Corner Strategic Vision and Community Design Plan* provides the foundation for the future development in the area, including the design of roadway cross-sections, new roadway linkages and a vibrant sidewalk network.

Today, there is an overall lack of well-connected pedestrian and bicycling facilities in Ludwig's Corner. Linking the many destinations within this focus area is a key to transforming Ludwig's Corner into a walk-able and bike-able community and supporting new development and existing land uses.

There is a strong community desire for elements of the master plan to occur, as well as for improving pedestrian accessibility between the West Vincent Elementary School and the Weatherstone community, in particular. Currently, four school busses for the elementary school serve the Weatherstone community, which is only a short walk away for most students.

Ludwig's Corner Destinations

- Ludwig's Village Shoppes and Services
- Weatherstone
- West Vincent Elementary School
- Henrietta Hankin Library
- Sunoco & Other Retail Sites
- Weatherstone Commercial Village & future projects
- Stone Rise Apartments
- Connections to Andrew Evans Park



Source: Preferred Design Plan—Ludwig's Corner Strategic Vision and Community Design Plan



Focus Area

Kimberton

Kimberton Village is located less than one mile east of the municipal border in East Pikeland Township. West Vincent Township residents, particularly in the Camphill Village, are close enough to walk or bike to Kimberton. The Kimberton Business Association, in partnership with East Pikeland Township, developed a “Walkable Kimberton” initiative. The *Kimberton on Foot Community Plan* (2010) includes trails and pedestrian walkways that link key destinations within the village. “Walkable Kimberton” also envisions future connections to the Schuylkill River Trail and French Creek Trail.

Pughtown Road is one of the key connecting roadways, particularly to Saint Matthews Road, Kimberton Road, and the rest of West Vincent Township. Additionally, Pughtown Road is designated as PA Bicycle Route S and attracts both long and short distance cyclists. Other connections through nearby residential neighborhoods can provide desirable routes for pedestrians and less experienced bicyclists (Group B/C riders) due to lower traffic volumes and vehicular travel speeds. Such roads include Kimberton Road, Valley Road, and Valley Dell Road on the west side of Pughtown Road and Kimberbrae Road on the east side of Pughtown Road. It is noted that environmental and topographic constraints (including the pond) limit improvements along Pughtown Road between Kimberton Road and Valley Dell Road.

As Kimberton is located outside of West Vincent Township, East Pikeland Township will advance multi-modal improvements within this focus area; however, it is important for both municipalities to coordinate and plan for multi-modal connections.

Kimberton

Destinations

- Post Office
- Kimberton Whole Foods
- Kimberton Inn
- The Station Bistro
- Yoga Studio
- Kimberton Community Park
- St. Basil Church & School
- Connections to Schuylkill River Trail and French Creek Trail



Source: Excerpt from *Kimberton on Foot Community Plan*



Focus Area

Birchrunville

Birchrunville was once called “the hub of the universe” by Thomas B. Dewees, who built the Birchrunville General Store as a town hall, creamery, and post office. The small hamlet located in the center of West Vincent Township was developed as a stop along stage coach routes following Hollow Road and Schoolhouse Lane. It has retained its historic character and the Birchrunville General Store and Birchrunville Historic District are both listed on the National Register of Historic Places. In addition to the historic Birchrunville General Store (now home to the Café and Post Office), the Village includes the old school house building (and former Township building), some historic building remains, and several residences and farms.

The quaint and historic nature of Birchrunville attracts visitors, including bicyclists and pedestrians. The roadways through and around Birchrunville have not changed much over the years. Today, narrow rural roadways wind their way through the hilly terrain, without any special accommodations for pedestrians or bicycles. Luckily, automobile traffic through the Village is relatively low creating the setting for picturesque walks and bicycle rides. Given the narrow roadways, location of historic structures so close to the right-of-way, the strong community support to preserve Birchrunville’s character, and the topography in the area, there are very limited options for providing separate bicycle or pedestrian facilities in and around the Village. Additionally, separated facilities, such as sidewalks or trails, may not always be warranted or appropriate in the heart of Birchrunville. Improvement options must respect and complement the rural and historic character, so context-sensitive solutions will likely need to explore shared roadways or possibly usable “green” roadside shoulders to provide a safer and more comfortable experience for pedestrians. For example, a minimum-width stabilized turf shoulder could provide a balanced solution that can accommodate pedestrians or vehicle refuge area, as well as provide for better storm water management. In addition, because the Village is situated off the “beaten path,” provision of adequate wayfinding may be considered. For example, share-the-road signage or gateway signage might be appropriate improvements just outside of the Village limits to alert motorists that bicyclists and pedestrians will also be using the roadways.

Linking pedestrian and bicycle routes to Birchrunville will not only connect this historic Village to newer developed areas of the Township and, but it will also give residents and visitors a link to the past.

BirchrunvilleDestinations

- Historic District
- Birchrunville General Store Café and Post Office
- Future Park



4.2 | Desirable Routes

Through collaboration with the Study Task Force and through the public involvement process, desirable routes for multi-modal travel were identified.

At the first community workshop, the community mapped desirable travel routes between key destinations. Pedestrian travel, bicycle travel, and even equestrian travel were all considered during the public workshop. Following the workshop, the identified routes were further evaluated and prioritized by the Task Force.

The focus of this study is to develop recommendations for on-road improvements rather than off-road, natural trails. However, future off-road facilities can provide links between some on-road facilities and should also continue to be prioritized by the Township.

In addition to the local community, many roadways within West Vincent Township are already used by visitors and bicycle clubs during long-distance rides.

The composite desirable routes are noted below (see also **Maps 5 and 6** for bicycle and pedestrian routes):

Primary Routes

- Horseshoe Trail (Bartlett Road to Art School Road)
- Art School Road (Horseshoe Trail to Kimberton Road)
- Hollow Road
- Fellowship Road

- Westover Road
- Flowing Springs Road (Hilltop Road to Hollow Road)
- Birchrun Road

Secondary Routes

- St Matthews Road
- Sheeder Mill Road
- School House Lane

Utilization of pipeline and utility right-of-ways, as well as former railroad lines, was identified as a potential option for off-road connections. In general, topography, location and ownership of land would make the design and implementation of an off-road trail (that could be designed for all user skill levels) on these rights-of-way challenging. However, utilizing portions of the Texas Eastern and PECO power line easements that generally run parallel to St Matthews Road may provide the best opportunity for an off-road trail and should be further studied. Such a off-road multi-use trail could also serve as a significant regional connector through this section of the County creating a portion of the linkage between the Schuylkill River Trail and the Struble Trail.

Although the goal of this Study is not to identify recreational routes, it is recognized that most recommendations will provide a both a utilitarian and recreational accommodation. By providing ways for residents to easily and safely get from one place to another without an automobile, joggers, runners, hikers, horseback riders can all enjoy the added facilities and accommodations.

4.3| Toolbox of Bicycle Facilities

The AASHTO *Guide to Development of Bicycle Facilities, 2012, Fourth Edition*, highlights a number of bikeway types/facilities for various conditions depending on roadway characteristics like speed, traffic volume, classification location (e.g., urban, suburban, rural) and other considerations such as expected users, road conditions, topography, cost, etc. Based on the existing conditions along the desired routes within the study area, the potential bikeway facilities that were determined to be appropriate for consideration in West Vincent Township included, bike lanes, shared lanes (wide outside lanes), paved shoulders, and shared-use path (or multi-use trail). These treatments are further described on in the Bicycle Facility Toolbox in Section 4.3.

While special accommodations may not be provided on every roadway, all roads (except any that may prohibit bicycle access) should be designed as shared roadways for Group A (advanced) cyclists at a minimum. In Pennsylvania, roadways should be prioritized based on road geometry, traffic volumes, traffic generators, and destinations for Group B/C (beginner/intermediate/children) cyclists.

On shared roadways, AASTHO's Design Guide lists several reasons to use bike route designations (rather than leaving roads unmarked):

- To provide continuity between bicycle lanes, trails or other bicycle facilities;
- To mark a common route for bicyclists through a high-demand corridor.
- To direct cyclists to lower volume roads or those with a paved shoulder; and

- To direct cyclists to a particular destination.

Adequate signage and pavement markings, as described in the Bicycle Toolbox, can provide benefit to the cyclist on shared roadways and examples include:

- **Share The Road** signs—notify drivers that the road is a bicycle route. These signs can be deployed along major routes identified by this study where a separated bicycle accommodation is not provided.
- **Cyclist May Use Full Lane** signs—may be used on roadways where traffic lanes are too narrow for a bicycle and automobile may operate side by side or at locations where it is important to notify drivers that cyclists are entitled to use the full lane. Such examples in West Vincent could be at locations where sight distance for cyclist or motorist is not sufficient and passing would create a hazardous condition such as around curves or over vertical crests in the roadway.
- **Sharrow** pavement markings—is a type of shared lane marking indicating that cyclists can use the traffic lane.

Multi-Modal Transportation Toolbox

Bicycle Facilities

**Bike lane**

Bike lanes are designated travel lanes for exclusive use by bicyclists. Bike lanes are typically located on roadways in urban and suburban settings with moderate to high vehicular traffic volumes and moderate to high posted speed limits. A minimum width requirement for a bike lane is five feet. Specific pavement markings and signage are required to identify the bike lane. Bike lanes should not be used to accommodate vehicular or pedestrian traffic.

Paved Shoulder

A paved shoulder provides accommodation for bicyclists (and pedestrians) adjacent to the travel lanes. Paved shoulders can be located on urban or rural roadways with moderate to high vehicular traffic volumes and moderate to high posted speed limits. Paved shoulders for bicyclists range in width from five to six feet depending on the available pavement width and can be supplemented with "Share the Road" warning signs.

**Shared Roadway (limited, inconsistent, or no shoulder)**

A shared roadway accommodates the bicyclist and motorists in the same travel lane. This is the most prevalent bicycle facility in the County. Wide outside travel lanes (12 to 15 feet wide depending on the roadway context) are often desirable for shared lane facilities. A shared lane can be supplemented with warning signs and pavement markings, such as a "sharrow" (as pictured).

Shared-Use Path

A shared-use path or multi-use trail is a facility that is physically separated from the roadway and typically accommodates bi-directional travel by both bicyclists and pedestrians. The path can be situated within publicly owned right-of-way, an exclusive right-of-way, or an easement. Such trails that are located parallel and adjacent to a roadway are often referred to as side paths. Shared use paths typically have hard surfaces and a recommended width per AASHTO of 10 feet or wider for high-use facilities (a minimum eight-foot wide use can be used where space is constrained or located in environmentally sensitive areas). Some off-road trails do, however, restrict certain user types due to trail width, surface (many use-restricted trails are unpaved), topography, condition and potential user conflicts.



4.4 | Toolbox of Pedestrian Facilities

Given the size of the Township and distances between key destinations and the community's desire to retain its rural character, providing pedestrian linkages could require significant investment and resources. Focusing on lower cost options, project phasing, policy updates, and prioritizing actions will be key to accomplishing the Township's goals of encouraging functional trips by walking and bicycling.

According to the *AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, July 2004*, there is often a desire to retain a "rural atmosphere" in places that are not truly rural, but rather suburban or exurban. Through the public outreach process, this desire was echoed by the West Vincent community. The Township is situated in a transitional area within a primarily rural setting but near many typical suburban areas. Accordingly, the desire to retain the rural character of the Township, as well as other design factors, need to be considered in the selection of pedestrian facilities. To address both the goal of having safe places to walk and the community goal to retain a rural atmosphere, off-road path systems can be developed. AASHTO notes that some local roadways with traffic volumes less than 400 vehicles per day may not need sidewalks. In many cases, a paved shoulder or stabilized shoulder can accommodate pedestrians; however, separate pedestrian facilities are typically more desirable on higher travelled roadways with higher speeds.

PennDOT design guidelines for most roadways within the land use context of West Vincent Township would not require sidewalks but rather would recommend provision of shoulder upgrades that could provide for pedestrians

(and bicyclists). However, in some areas within West Vincent Township, it will still be appropriate to provide a pedestrian facility that is separated from the roadway due to traffic volumes and speeds.

The *AASHTO Guide for Planning, Design, and Operation of Pedestrian Facilities, July 2004* and other resources identify several accommodations for pedestrians which are described in the Pedestrian Facility Toolbox.

It is noted that paved sidewalks, trails, and roadway shoulders, which are part of a pedestrian access route, must be designed to meet American with Disabilities Act (ADA) requirements to the maximum extent feasible.



Multi-Modal Transportation Toolbox

Pedestrian Facilities

**Sidewalk**

Sidewalks are pedestrian routes that provide space to travel within the public right-of-way while physically-separated from vehicular traffic. Sidewalks are required to be five feet wide to comply with ADA requirements (a reduced four-foot width can only be provided under certain conditions).

Paths

A side path (or an off-road path) can be paved or unpaved and is often an appropriate facility to accommodate pedestrians in rural and low-density suburban areas. Typically, paths are not placed adjacent to a roadway, but rather offset by a natural buffer area or swale. In many cases, paths can deviate from their proximity to the roadway particularly in order to provide a more direct pedestrian route.

Shared-use paths are essentially off-road paths that are developed to accommodate both pedestrian and bicyclists.

**Shared Streets**

In some cases such as low-volume/low-speed roadways in rural or low-density areas, it may be possible to plan for shared use of a street for pedestrian and vehicular activity. When possible and practical, however, it is often desirable to separate pedestrians and motor traffic.

Wide paved shoulders (four to eight-foot wide), wide outside lanes (typically 14 to 16-foot wide), and shared lanes (no special provisions) are types of shared streets.

Intersection Accommodations

At signalized intersections, accommodations such as pedestrian signal heads and phasing, pedestrian-actuated push buttons, ADA handicap ramps, and painted crosswalks are utilized to service pedestrian travel through intersections.

Intersection design and special accommodations can also be used to enhance the pedestrian experience. Modern roundabouts are designed to safely accommodate pedestrian circulation by eliminating the number of conflict points at an intersection. Features such as narrower road crossings (with curb extensions) also improve pedestrian travel through an intersection.



4.5 | Transit, Shuttle, and Ridesharing

Given the rural and low-density land use context within West Vincent Township, the opportunities for future regular fixed-route transit services are limited today. PA Route 100 is the corridor with the greatest potential for future service, with potential connections either south to Exton or north to Pottstown. Such a route is envisioned by the 2014 horizon plan, and may possibly function as a limited-stop, express commuter type of service according to Chester County's *Public Transportation Plan* (draft April 2014). The West Vincent area, and possibly other areas along the PA Route 100 corridor, will ultimately need to provide enough density to generate a ridership base to justify the route. The SEPTA criteria is defined in their *Service Standards and Process* (revised July 2013).

If a fixed-route bus service was eventually provided along the Route 100 corridor, Ludwig's Corner would be the ideal location for future bus stops in the West Vincent Township area due to the plan for mixed use, higher density, and a walk-able community. Accordingly, areas for bus stops can be set aside as part of a roadway improvement project or land development in order to ensure that space will be available for bus stop facilities when service is initiated. Bus stop designs should be consistent with SEPTA's *Bus Stop Design Guidelines* and may include space for bus pull-off areas, bus stop shelters and other passenger amenities, and sidewalk connections. Additionally, since West Vincent Township may be the last stop on a particular bus route,



consideration should be given for turn around and layover areas. As development advances in Ludwig's Corner, planning for a future service and a bus stop should be coordinated with transit providers, such as SEPTA and TMACC, and Chester County.

An alternative to fixed-route bus services is specialized shuttle service. For West Vincent Township, there might be demand for a more direct and convenient connection of shuttle service to the Exton Train Station or Great Valley Corporate Center, possibly with service provided on the PA Turnpike using the All Electronic Interchange at PA Route 29. The Township should work with neighboring municipalities, potential shuttle service operators, such as TMACC, Chester County, and other regional partners to explore transit options and identify next steps to plan for future bus or shuttle service.

Park-and-ride facilities in West Vincent Township or in nearby municipalities, would also help support bus or shuttle service and carpooling. Ludwig's Corner is also an ideal location for a park-and-ride facility. The specific location of a park-and-ride lot should also be compatible with surrounding land uses and have appropriate access to PA Route 100, PA Route 401, and planned bus or shuttle routes. Additionally, West Vincent Township can coordinate with adjacent municipalities on potential opportunities for a regional park-and-ride lot, particularly near the PA Turnpike Interchange at PA Route 100 (in addition to the current park-and-ride facility along PA Route 113 near Sheree Boulevard). Such a new facility could potentially be planned and designed to be more accessible for all users (i.e., multi-modal), and include secure bicycle parking.

4.6 | Traffic Calming

Traffic calming is defined as the combination of measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users. Typically, these measures include mainly physical measures, as they are “self policing” and can influence traffic in the absence of police enforcement.

Some traffic calming measures reduce speeds while others target a reduction in traffic volume (targeting non-local, cut-through) traffic on neighborhood streets. Such reductions to speed and cut-through traffic increase the safety of the roadway for pedestrians and bicyclists, and can improve the quality of life within the community.

As part of the traffic calming process, the following “three E’s” should be considered:

- **Education:** communities can develop education programs to remind speeding drivers of the negative effects of their actions. Many times a community can also promote pedestrian and bicycle safety tips at the same time. Information on average speeds along area roadways compared to posted speed limits can be published. Educational campaigns can utilize a variety of strategies to spread this important message:
 - Community newsletters—emphasize the importance of obeying speed limits and traffic regulations, often by stressing the community’s children are most at risk.
 - Email blasts—similar to newsletters, but can be published more frequently.
 - Variable message boards—can be placed at problematic locations.
 - Bike rodeos—help to educate young bicyclists on bicycle safety and riding skills. Parents can also be targeted with information on bicycle

safety for themselves and their children, as well as driver safety tips.

- **Walking School Bus Events**—walking school buses are organized events where groups of students meet and walk to school and home (or to a designated location) from school. These events promote walking and driver awareness. Walking school buses can be informal and organized by parents or be a structured program administered by the school district.
- **Enforcement:** this involves more intensive police presence and allocation of resources, and typically, it is not practical to maintain a police presence at the level needed to permanently lower speeds. Luckily however, consistent visible enforcement does lead to respect of the speed limit by many motorists.
- **Engineering:** includes, but is not limited to traffic calming measures including signs, pavement markings, horizontal deflection devices and vertical deflection devices.

Often times, traffic calming measures are employed to address unforeseen problems that arise after roadways are constructed. However, good planning and design can reduce the need for traffic calming and provide a safer environment for pedestrians, bicyclists, and motorists.

The **Traffic Calming Toolbox** (see next page) highlights some of the many traffic calming measures that may be most appropriate to the roadways and character of West Vincent Township. In denser locations such as around the Ludwig’s Corner area, additional measures such as raised crosswalks, raised intersections, and speed tables could be considered on Township roadways in the future. It is noted that PennDOT currently does not typically support vertical deflection devices on State roads.

Multi-Modal Transportation Toolbox

Traffic Calming

**Gateway Treatments**

Special entrance treatments, including landscaping and signage, that identify a community and emphasize a change in environment.

Reduced Lane Widths

Reduce vehicular travel lane widths in order to provide a more constrained feeling for motorists through application of yellow centerlines and white edge lines. A reduction in travel lane widths can provide added space for other non-motorized users such as bicyclists or pedestrians.

**Raised Medians, Pedestrian Refuges, and Pedestrian Safety Enhancement Devices**

A raised island (with or without landscaping) can be designed between travel lanes to narrow the lane widths and slow traffic. In some cases, the median can provide a mid-point refuge for pedestrian crossings. Additional pedestrian safety enhancement devices such as in-roadway warning lights and intersection control beacons can be further accommodate pedestrians and slow traffic, and can be used in conjunction with or independent of a raised median at mid-block locations.

Curb Extensions

Extensions of the sidewalk and curb used to narrow travel lanes or reduce the pedestrian crossing distance. These applications are applicable to areas that provide sidewalks and may be most appropriate in the Ludwig's Corner area, as well as near the West Vincent Elementary School, and in dense residential and commercial areas.

**Speed Humps and Speed Lumps (Cushions)**

A speed hump is a rounded or flat surface of the roadway that is 12' to 22' long. Speed humps are typically used on residential or minor streets and should be placed in a series. A speed lump is a modified hump that is installed across the width of a roadway to permit wider axle emergency vehicles to pass without slowing down. Speed lumps are appropriate for local residential streets or on major emergency response routes.

Multi-Modal Transportation Toolbox

Traffic Calming



Police Enforcement

Enforcement involves a more intensive police presence and greater allocation of time and resource to enforce posted speed limits. Although enforcement will not permanently lower speeds, consistent visible enforcement does lead to greater respect for speed limits.

Speed Carts

Mobile speed carts can be employed to supplement police enforcement. Radar alerts motorists of their travel speed and the posted speed limit. Speed carts should be used on a regular basis at various locations throughout the Township, particularly where known speeding occurs. Some equipment can record traffic data such as speeds and volume, which can be important data for engineering and planning.



Chicanes

Chicanes are a series of mid-block curb extensions on alternating sides of the road, which forces motorists to negotiate the narrowed roadway in a snake-like fashion.

In-road Yield to Pedestrian Signs

At pedestrian crosswalks, in-road signs emphasizing State law that motorists must yield to pedestrians within the crosswalk.

Additional Signage

Supplemental signage can be employed to further increase awareness of multi-modal traffic on roadways within the Township. Pedestrian warning signs, bicycle warning signs, share the road signs are some examples.



Speed Tables

A speed table is variation of the speed hump that is achieved with a change in pavement texture (noticeable to motorists) rather than a vertical deflection. Speed tables are often used in conjunction with gateway median treatments.

Multi-Modal Transportation Toolbox

Traffic Calming



Neighborhood Roundabout

A raised island (usually circular) is located in the center of a typical unsignalized intersection and all traffic must circulate the center island in a counterclockwise direction, while yielding to traffic within the circle. Roundabouts reduce travel speeds, the number of severe collisions, and significantly reduce conflict points within an intersection.

Raised crosswalk

Raised crosswalks are marked and elevated pedestrian areas that are an extension of the sidewalk at mid-block locations or intersections. They have a similar design to a typical speed hump, but a crosswalk is provided across the flat portion of the hump, approximately 10 feet wide. These types of crosswalks should be considered at locations with high pedestrian crossing activity.



4.7 | Local Policies

A municipality's ordinances and policies truly shape the character of the community over time. Clear standards, regulations, and guidelines can bring a community's vision for itself to reality. By ensuring that local ordinances consider multi-modal traffic and complete street design concepts, all users can eventually be safely accommodated by the road network. The following three documents provide guidelines for new roadway design that incorporate complete street principles:

Design Manual 2, PennDOT

Smart Transportation Guidelines, PennDOT

Neighborhood Street Design Guidelines

Recommended Practice, ITE

There are numerous provisions throughout the Township's *Subdivision and Land Development Ordinance (SALDO)* and *Zoning Ordinance (ZO)* that support multi-modal transportation and "complete street" design (accommodating all users); however, some policy changes will be recommended for consideration and are described later in this Study.





5 Multi-modal Recommendations



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5.1 | Roadway

As previously noted, many of the roadways within West Vincent Township do not meet current PennDOT design guidelines for their respective roadway classification due to a lack of sufficient roadway width (particularly with respect to travel lanes and shoulders). Secondly, the horizontal and vertical curvature along many roadways also appears not to meet current design standards causing undesirable conditions particularly with respect to sight distances for all roadway users. Third, some roadways may benefit from an evaluation of posted speed limits given the noted roadway characteristics and in order to achieve a “multi-modal appropriate” desired operating speed that matches the posted speed limit.

It is recommended that the following roadway design criteria be updated to better incorporate multi-modal design considerations. Additional measures specifically for bicycle and pedestrian accommodations are summarized in subsequent subsections of this Chapter.

- **Roadway width:** The Township’s current roadway width standards are typically less than the widths recommended by PennDOT. The narrower roadway width and travel lanes provide less width to accommodate pedestrians or bicyclists within the road.
- **Right-of-Way:** Required rights-of-way along various roadway classifications are identified and provisions are noted for dedication of additional right-of-way during land development when insufficient exists.
- **Shoulder:** There are no requirements for shoulders in the Township design guidelines. Shoulders provide many benefits and help preserve roadway integrity. Since shoulders (and increased road width) may encourage higher travel speeds at times, a balanced approach should be given when considering shoulders. PennDOT Design Manual 2 would recommend shoulders on all but local roads within the Township. At a minimum, shoulders should be required along all roadways identified in this study for bicycle and pedestrian routes. Also, stabilized turf shoulders can also be considered for lower volume roadways and where some level of pedestrian accommodation outside of the road travelway is desirable. However, turf shoulders do not provide pedestrian accessibility to all user abilities.
- **Roadside grade:** The current maximum roadside grade is 1:12 requires a relatively flat area alongside the roadway. It is recommended that a minimum “flat” area be at least five feet and free of obstructions for pedestrians on shared roadways (see Section 5.3). When it is not feasible to meet the minimum requirement, other accommodations for pedestrian travel along a property frontage must be provided.
- **Horizontal grades:** New roadways should be designed with horizontal grades as identified by PennDOT or AASHTO. As it may not be practical to realign the many horizontal curves found on existing roadways throughout the Township, provisions for safe pedestrian and bicycle travel can be made. For example, providing shoulders and clear sight lines through clearing of vegetation and obstructions can improve safety along the such curves. Also, “Share the

Road” and “Bicycles May Use Full Lane” signs can be added near curves.

- **Curb Radii:** Excessive curb radii at driveways and intersections should be discouraged as large radii encourage higher turning speeds and increase pedestrian crossing distances. At driveways, emergency vehicles and the largest expected vehicle to routinely access the site should be accommodated.
- **Inlets:** Bicycle-safe inlets should be required within the SALDO.
- **Connectivity (cul-de-sac streets/multiple access points):** While connectivity is important for all modes of travel, it is key to providing convenient pedestrian routes. Future developments should provide convenient connections to surrounding roadways, trails, and other multi-modal accommodations.

Other recommended roadway improvements include the following:

- Evaluate the need for all-way stop control at the St. Matthews Road/Horseshoe Trail intersection. The horizontal curvature of St. Matthews Road through the intersection is undesirable and the travel speeds in this area are perceived to be high. PennDOT approval would need to be obtained for an all-way stop, as St. Matthews Road is a state roadway.
- Consider realignment of the PA Route 401/Fellowship Road intersection, such that the Fellowship Road approaches intersection PA Route 401 at more of a 90 degree angle. Warrant criteria for the installation of

separate left-turn lanes along PA Route 401 should be evaluated. Consideration of a roundabout is recommended for this location. It is noted that this intersection is located in Upper Uwchlan Township.

- Upon completion of the final improvement phase for the PA Route 100/Nantmeal Road intersection, pedestrian crossing accommodations should be installed and provide connections to the Ludwig’s corner area.
- Relocate the school crossing at West Vincent Elementary School to the PA Route 401/Lexington Boulevard signalized intersection. A small section of sidewalk on the south side of PA Route 401, between the traffic signal and the existing sidewalk along the school frontage, will also be necessary.
- Evaluate the Pughtown Road/Kimberton Road/Valley Dell Road/Coldstream Road area for multi-modal improvements, which could include modified traffic control, minor realignment, installation of pedestrian crossings, etc. This intersection is located within East Pikeland Township.

5.2 | Bicycle Accommodations

The comfort of a roadway for bicyclists is most impacted by traffic volumes, vehicular speeds, pavement condition, and topography. These factors also typically determine how well a roadway supports bicycle travel. Additional or separate accommodations may be appropriate to increase the comfort level for bicycle travel if roadway conditions do not provide adequate accommodations due to high vehicular traffic volumes or speeds, or undesirable pavement conditions or grades.

PennDOT’s *Smart Transportation Handbook* provides design guidelines for consideration of bike lanes, shoulders, and lane widths based on the classification of a roadway and surrounding land use context (See Chapter 2). In addition, PennDOT’s *Design Manual 2* and its 3R maintenance guidelines provide a range of acceptable roadway design dimensions, which are dependent upon

roadway classification and other operational characteristics. However, PennDOT currently does not provide any warrant criteria for determining when bicycle facilities are needed.

DVRPC attempted to establish some guidance on appropriate bicycle facility selection in their publication entitled, *Pedestrian and Bicycle Friendly Policies, Practices, and Ordinances* for urban areas. The DVRPC guidelines were based on criteria adopted by the Minnesota Department of Transportation (MinnDOT), which identified guidelines for both urban and rural areas. As such, these rural guidelines were evaluated for the key bicycle routes to determine preliminary bicycle accommodation recommendations. These preliminary accommodations should be considered as planning level recommendations, as detailed engineering design will determine if the recommendations are feasible and if additional or alternate measures are necessary.

Figure 3. Bikeway Design Selection for Rural Cross Section

Vehicular Average Daily Traffic		<500	500-1,000	1,000-2,000	2,000-5,000	5,000-10,000	>10,000
Vehicular Speed	25 mph	PS = 4 ft or SL	PS = 4 ft or SL	PS = 4 ft or WOL	PS = 4 ft	PS = 4 ft	Not Applicable
	30 mph	PS = 4 ft or SL	PS = 4 ft or WOL	PS = 4 ft	PS = 4 ft	PS = 6 ft	PS = 6 ft
	35-40 mph	PS = 4 ft or SL	PS = 4 ft or WOL	PS = 6 ft	PS = 6 ft	PS = 6 ft	PS = 8 ft
	45 mph and greater	PS = 4 ft	PS = 4 ft	PS = 6 ft	PS = 8 ft	PS = 8 ft	SUP or PS = 10ft

Source: Adapted from the Minnesota DOT *Bikeway Facility Design Manual, March 2007* as referenced in the Delaware Valley Regional Planning Commission publication, *Pedestrian and Bicycle Friendly Policies, Practices, and Ordinances, November 2011*.

Legend: PS = Paved Shoulder | SUP = Shared-Use Path | WOL = Wide Outside Lane | SL = Shared Lane | BL = Bicycle Lane

In cases of poor sight distance due to vertical or horizontal roadway curvature, it may be necessary to provide additional improvements such as roadway re-profiling, cutting back of embankments, vegetation clearing, providing wider shoulders (to accommodate bicyclists and pedestrians) or a combination thereof.

Figure 4 and **Map 5** summarize the recommended bicycle facility accommodations along the key roadways within the Township. In most cases, the recommendations followed the guidelines in Figure 3; however, in some cases a lesser order bicycle facility was recommended based upon topographic constraints and upon consultation with the Study Task Force.

Focus Areas

Ludwig's Corner - With implementation of the bicycle improvements recommended by this Study, bicyclists will be able to reach this focus area via a combination of improved roads (shoulder upgrades) and multi-use trails, as well as shared roads. Within the focus area, a multi-use trail is recommended along the future bypass road around the PA Route 100/PA Route 401 intersection and extend northward to Horseshoe Trail, as well as along Conestoga Road (PA Route 401). As development in this area progresses, the recommendations should be revisited and re-evaluated based on future traffic characteristics.

Kimberton - Bicyclists can continue to reach Kimberton via Pughtown Road (PA Bicycle Route S) as they do today or via an alternative route such as Kimberton Road (a low-volume shared roadway) or Kimberbrae Drive. Improvements along the nearby Saint Matthews Road corridor, whether it be shoulder upgrades or a multi-use trail, will connect many other bicycle routes and neighborhoods to Kimberton in the east, as well as ultimately Ludwig's Corner (via PA Route 401) farther to the west.

Birchrunville - Given the hilly terrain around this area, Hollow Road and Flowing Springs Road (only between Hilltop Road and Hollow Road due to steep grades) were determined to be the most appropriate bike routes to reach Birchrunville (and possibly in one direction only). Due to the narrowness of Schoolhouse Road, it is recommended to consider one-way traffic flow between Hollow Road and Flowing Springs Road, which should reduce vehicle conflicts and improve walk-ability and bike-ability along this section of road.

Figure 4. Recommended Bicycle Accommodations

Roadway ¹	Recommended Bicycle Facility
Conestoga Road	Separate Path/Trail ²
Pughtown Road	Wide Shoulder
Fellowship Road (west of Linden Ave)	Separate Trail/Path
St Matthews Road	Separate Path/Trail ²
Hollow Road	Shared Lane
Horseshoe Trail	Shared Lane
Birchrun Road	Shared Lane ³
Flowing Springs Road	Shared Lane
Kimberton Road	Shared Lane
Art School Road	Shared Lane
Fellowship Road (east of Linden Ave)	Shared Lane
Miller Road	Shared Lane
Sheeder Mill Road	Shared Lane
Westover Lane	Shared Lane

1 - See Map 5 for limits of improvement.

2 - Provide wide shoulders where separate trail is not feasible or to better accommodate Group A riders.

3 - Two off-road (unpaved or paved) options may offer an alternative route between Horseshoe Trail and Ludwig's Corner area. Further study is required.

Defining Key Bike Routes

Upon review of the various bicycle routes (Map 5), a clear pattern exists as there are several potential routes to travel across the Township. As the Township moves forward with implementation of the necessary improvements, it would be helpful to group the various roadways into *trek routes* in order to prioritize implementation and to fund smaller-sized projects. Two potential trek routes could include:

1. A *northern trek* could include Hollow Road (at Pughtown Road) to Birchrun Road, Birchrun Road to Horseshoe Trail, Horseshoe Trail to Birchrun Road, Birchrun Road to PA Route 100 and the Ludwig's Corner area.
2. A *southern trek* could include Kimberton Road (at Pughtown Road) to Art School Road, Art School Road to Horseshoe Trail, Horseshoe Trail to Fellowship Road, Fellowship Road to either continue into Upper Uwchlan Township or divert to Westover Lane and Birchrun Road to the Ludwig's Corner area.

Public Feedback on Recommendations

The preliminary recommendations for bicycle accommodations were presented to the public at the Community Workshop on November 12, 2013. A survey was given for the public to provide their preferred bicycle accommodations for various roadways. This survey was also available online following the workshop. Feedback from the survey is summarized on the next page.



Pictured: The two locations show roads with poor visibility around horizontal curves. Clearer sight lines around curves would provide better (more) visibility of bicyclists and pedestrians within the roadway or on the roadside.

Community Survey Results

The community reviewed the preliminary recommendations for bicycle accommodations and provided their feedback, which is summarized below:



Shared Lane

Community Survey Results: Fellowship Road (east of Linden Ave), Hollow Road, Horseshoe Trail, Birchrun Road, Art School Road, Kimberton Road, Miller Road, Westover Lane, Sheeder Mill Road



Moderate Shoulder

Community Survey Results: This accommodation was not selected as a top choice for any of the key study roadways by the community.



Wide Shoulder

Community Survey Results: Pughtown Road and St Matthews Road



Bike Lane

Community Survey Results: This accommodation was not selected as a top choice for any of the key study roadways by the community.



Separate Trail/Path

Community Survey Results: Conestoga Road (Route 401) and Fellowship Road (west of Linden Ave)

Public Feedback Summary

The results of the community surveys indicate that the respondents agreed with the Study recommendations for bicycle facility types along the key roadways. Of note, most respondents selected wider shoulders to accommodate bicyclists along St. Matthews Road. Due to the speeds and vehicular traffic volumes, the Study will continue to recommend a separate path/trail, as feasible.

5.3 | Pedestrian Accommodations

The recommended pedestrian accommodations in this section are based on AASHTO and PennDOT design guidelines for sidewalks, as well as consideration of the community's desire to retain its rural character. Many roadways with lower traffic volumes (less than 400 vehicles per day) will remain shared streets, while recommendations for separate paths/trails and wider shoulders are recommended on most of the more regularly travelled roadways within West Vincent, as feasible.

Recommendations for sidewalks are limited to the Ludwig's Corner area, around the existing elementary school (or future schools), and within most new residential and commercial developments. **Figure 5** highlights the recommended pedestrian accommodation on the key routes of this study, which are also illustrated in **Map 6**.

Along Pughtown Road, wide shoulders can generally accommodate both bicycle and pedestrian traffic. However, as Pughtown Road approaches Kimberton, topographic and environmental characteristics (including the Gotwalds Pond and Kimberton Dam) create a pinch point in the roadway that cannot be easily widened for shoulders. In this general area, a future connection to the French Creek Trail and diversion through adjacent neighborhoods could serve as more desirable routes. Pedestrians (and less experienced bicyclists) can divert to residential streets such as Kimberbrae Drive, Kimberton Road, Valley Road, and Valley Dell Road. Within East Pikeland Township, it would be desirable to improve the alignment and traffic control of the Pughtown Road/Kimberton Road/Valley Dell Road intersection to provide more comfortable conditions for pedestrians and bicyclists.

Figure 5. Recommended Pedestrian Accommodations

Roadway ¹	Recommended Pedestrian Facility
Conestoga Road	Separate Path/Trail ²
Pughtown Road	Wide Shoulder
Fellowship Road (west of Linden Ave)	Separate Trail/Path
St Matthews Road	Separate Path/Trail ²
Hollow Road	Shared Lane
Horseshoe Trail	Shared Lane
Birchrund Road	Shared Lane ³
Flowing Springs Road	Shared Lane
Kimberton Road	Shared Lane
Art School Road	Shared Lane
Fellowship Road (east of Linden Ave)	Shared Lane
Miller Road	Shared Lane
Sheeder Mill Road	Shared Lane
Westover Lane	Shared Lane

1 - See Map 5 for limits of improvement.

2 - Provide wide shoulders where separate trail is not feasible.

3 - Two off-road (unpaved or paved) options may offer an alternative route between Horseshoe Trail and Ludwig's Corner area. Further study is required.

Public Feedback on Recommendations

The preliminary recommendations for pedestrian accommodations were presented to the public at the Community Workshop on November 12, 2013. A survey was given for the public to provide their preferred pedestrian accommodations for various roadways. This survey was also available online following the workshop. Feedback from the survey is summarized on the next page.

Focus Areas

Ludwig's Corner - With implementation of the pedestrian improvements recommended by this Study, pedestrians will be able to reach the area via a sidewalk network along area roads, improved roads (shoulder upgrades), and off-road trails. Within the focus area, the Village Master Plan sets forth design standards for a highly walk-able village that will be constructed in association with new development.

Kimberton - Pedestrians will be able to reach this area via improved roads (shoulder upgrades to Pughtown Road specifically) and via nearby residential roads such as Kimberton Road, Valley Road, Valley Dell Road, and Kimberbrae Drive. East Pikeland Township's *Walkable Kimberton* identifies various pedestrian and traffic improvements to make the area more walk-able.

Birchrunville - Traffic volumes are low along the roadways surrounding Birchrunville so it is anticipated that pedestrians will continue to use shared roadways to reach the area. Hilly terrain and environmental constraints also preclude extensive pedestrian accommodations, as does the desire to preserve this area's identity. Stabilized turf shoulders along the roadside could provide a safer alternative to walking within the roadway, and should be considered. Traffic volumes and travel speeds should be monitored in the area to assure that lower traffic volumes and travel speeds are maintained, or effective countermeasures are provided. If a multi-use trail is ultimately provided on the Texas Eastern pipeline easement, then a convenient pedestrian connection or route to and from Birchrunville should be provided.

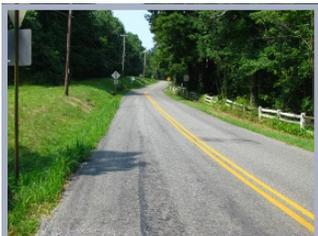
Community Survey Results

The community reviewed the preliminary recommendations for pedestrian accommodations and provided their feedback, which is summarized below:



Level Grass Area

Community Survey Results: Although not a preferred accommodation on its own, the level grass area should be considered in conjunction with shared lane accommodations in order to provide pedestrians a safe and comfortable area to step off the road as vehicular traffic approaches. Stabilized turf shoulders could also be considered in conjunction with level grass areas



Shared Lane

Community Survey Results: Hollow Road, Birchrun Road, Shared Lane, Art School Road, Sheeder Mill Road, Miller Road, Fellowship Road (east of Linden Ave), Westover Lane, and Kimberton Road.



Moderate Shoulder

Community Survey Results: This accommodation was not selected as a top choice for any of the key study roadways by the community.

Wide Shoulder

Community Survey Results: Pughtown Road



Sidewalk

Community Survey Results: This accommodation was not selected as a top choice for any of the key study roadways by the community.



Separate Trail/Path

Community Survey Results: Conestoga Road (Route 401), St Matthews Road, and Fellowship Road (west of Linden Ave)

Public Feedback Summary

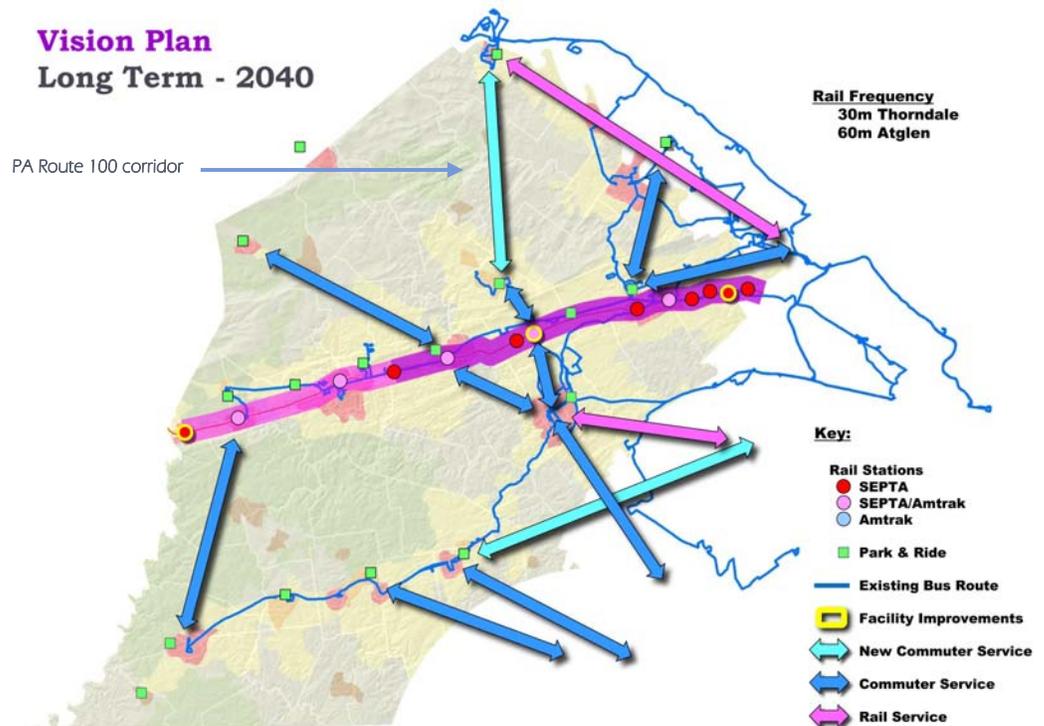
The results of the community surveys indicate that the respondents agreed with the Study recommendations for pedestrian accommodations along the key roadways. The survey results indicate a similar choice for both pedestrian and bicycle accommodations along most roadways. Although respondents differed between desired pedestrian and bicycle accommodations along St. Matthews Road. Due to the speeds and vehicular traffic volumes, the Study will continue to recommend a separate path/trail, where feasible, for both user types although a wide shoulder would be beneficial in constrained areas.

5.4 | Transit, Shuttles, and Ridesharing

As development expands in Ludwig’s Corner, planning for future service and a bus stop is recommended to be coordinated with transit providers, such as SEPTA and TMACC, and Chester County. Although fixed-route transit service is not expected in the near-term, planning for future service is important particularly as development continues, especially in the Ludwig’s Corner area. As previously noted, bus service along the PA Route 100 corridor is envisioned in the County’s long-term planning (see map below).

There may be opportunities to implement park-and-ride facilities in West Vincent Township through the land development process. It is recommended to modify the Township’s subdivision and land development ordinance to include an option or incentive to dedicate a number of parking spaces for a park-and-ride facility as part of a new development. Additionally, West Vincent Township should coordinate with Upper Uwchlan and Uwchlan Townships and other partners on potential opportunities for a regional park-and-ride lot, particularly near the PA Turnpike Interchange at PA Route 100.

It is further recommended that West Vincent Township study the demand for a more direct and convenient shuttle connection to the Exton Train Station or Great Valley Corporate Center. The Township can potentially work with neighboring municipalities, potential shuttle service operators (i.e., such as TMACC, Chester County), and other regional partners to explore transit options and identify next steps to plan for future bus or shuttle service.



Long-term vision plan for Chester County.

Source: *Chester County Public Transportation Plan* (draft April 2014).

5.5 | Traffic Calming

No specific traffic calming improvements will be recommended by this Study, as implementation of physical traffic calming improvements needs to be done on a case by case basis. Accordingly, appropriate traffic calming measures should be considered when evaluating specific multi-modal improvement projects in the future to determine what measures will be most effective and appropriate for each measure at a specific area.

It is noted that many municipalities have adopted Township-wide traffic calming policies that lay out guidelines on how and when traffic calming improvements will be considered, implemented, and funded. West Vincent Township should consider adopting such a policy.

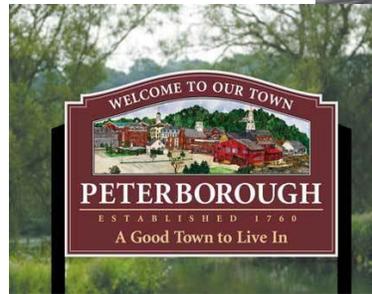
Based on the community survey, the most popular traffic calming measure to the public at this time included the following:

- Additional signage
- Police enforcement
- Pavement markings
- Speed carts
- In-road signage

The above traffic calming measures are the least disruptive to a motorist and in some cases less effective than other physical traffic calming measures. Although less favorable, it may be necessary in some situations to consider more

effective (and less popular) traffic calming devices to achieve a targeted speed reduction.

Throughout the public engagement process of this study, it is noted that many residents commented that they would like to see more police enforcement in West Vincent Township. Gateway signage was also a popular traffic calming measure mentioned in earlier discussions with the public, particularly when it involved messages to share the road.



Pictured: Various traffic calming measures.

5.6 | Environmental Screening

A preliminary screening of environmental issues was completed as part of this Study. The results are summarized in **Figure 6** and as follows.

Bicycle Accommodations

Several roads within the Township are recommended to maintain shared travel lanes for cars and bicycles. Signage and striping/re-striping improvements are typically required along these routes. Shared facilities have little environmental impact since they require minimal disturbance to the surrounding landscapes. However, it is important to carefully consider the placement of new signs and their impact on the aesthetics of the rural character of the Township.

Future shared use/multi-use trails and paved shoulder expansions can potentially have an impact on surrounding resources. Such proposed bicycle facilities are shown on **Map 5** and they are recommended by this Study along several routes where there is potential for environmental impact, as outlined below. In all cases, the environmental impacts to wetlands, floodplains, steep slopes and Pennsylvania Natural Diversity Inventory (PNDI) sites are anticipated to be minor in scope. A more detailed analysis of impacts on existing vegetation and scenic views should be conducted during the feasibility study phase of each improvement project.

Historic and cultural features are illustrated on **Map 7**. Natural features and protected lands within West Vincent Township are also illustrated on **Maps 8** and **9**, respectively.



Pedestrian Accommodations

Future shared use/multi-use trails and paved shoulder expansions intended for bicycle travel may also serve as pedestrian facilities where no other facilities are available or feasible.

The pedestrian routes are illustrated on **Map 6**. Several unpaved roads within the Township will serve as suitable routes for most pedestrians and equestrians to share with motor vehicles. These shared roads need no improvements except for discreet signage and will have little or no environmental impact. However, it is important to carefully consider the placement of new signs and their impact on the aesthetics of the rural character of the Township. (It is noted that unpaved roads are not handicap accessible.)

The West Vincent Land Trust and the Township have been actively cultivating trail easements for many years, and a number of pedestrian trail easements currently exist. Some of the trail easements will become important routes or connections for pedestrian travel while others will be used for recreation. The off-road footpaths are envisioned as paved or unpaved routes for pedestrian travel only (no bicycle use) and some are proposed where trail easements are already in place. In all cases, the environmental impacts to wetlands, floodplains, steep slopes and PNDI sites will be minor in scope. A more detailed analysis of impacts on existing vegetation and scenic views should be conducted during the feasibility study phase of the project. The potential environmental impacts of the proposed off-road footpaths are listed in **Figure 6**.



Figure 6. Potential Environmental Impact Issues

Primary User	Facility Type	Location		Potential Impact Issues
Bicyclists and Pedestrians	Separate Path/Trail	Route 100	Horseshoe Trail to Nantmeal Road	· Wetlands disturbance
		Fellowship Road	Linden Avenue to Eagle Farms Road	· Steep slope disturbance
		Conestoga Road	Fellowship Road to West Vincent Township Park	· Steep slope disturbance · Habitat disturbance
		Saint Matthews Road	Schoolhouse Lane to Pughtown Road	· Steep slope disturbance · Floodplain disturbance
		Texas Eastern Easement	Conestoga Road to Pughtown Road	· Steep slope disturbance · Floodplain disturbance · Habitat disturbance
Primarily Bicyclists and Pedestrians (where other facilities not present)	Wide Shoulder (6')	Conestoga Road	Route 100 to Fellowship Road	· Woodlands disturbance
		Saint Matthews Road	Conestoga Road to Pughtown Road	· Steep slope disturbance · Floodplain disturbance · Habitat disturbance
		Pughtown Road	Hollow Road into Kimberton area	· Steep Slope disturbance · Floodplain disturbance · PNDI site disturbance · Wetland disturbance
	Moderate Shoulder (4')	Conestoga Road	Route 100 to Fellowship Road	· Woodlands disturbance
Primarily Pedestrians (Off-Road footpaths are not ADA/handicap accessible)	Sidewalks	Ludwig's Corner Area	Various	· See Note 1.
		Conestoga Road	Lexington Boulevard to S. Pinehurst Drive	· None anticipated
	Off-Road Footpath ²	Malehorn Road	Fox Pointe to Mill Road	· Steep slope disturbance
		French Creek Trail ³	French Creek Road to Bertolet School Road	· Steep Slope disturbance · Floodplain disturbance · PNDI site disturbance · Wetland disturbance

1 - It is anticipated that improvement will be provided in conjunction with future land development (or other project) and upon completion of detailed engineering and environmental evaluations.

2 - The focus of this Study was on-road facilities (or within close proximity of the roadway); however, some preliminary off-road connections were identified.

3 - Connection through East Vincent Township to Kimberton Area (East Pikeland Township) is also envisioned.

Source: This preliminary analysis was based on data by Chester Co. GIS and CCPC data 2011; FEMA 2007; NWI 2012; DVRPC 2005.

Note: Future projects should complete detailed site analysis and environmental impact analysis for each individual project.

5.7 | Policy Changes

Recommended SALDO Modifications: The following policy changes require the Township to amend the current Subdivision and Land Development Ordinance (SALDO):

1. Require sidewalks, trails, paved shoulders and other accommodations based on the recommendations of this Study. Maintenance responsibilities should also be clearly defined.
2. Reduce the minimum block width from 800 feet to 500 feet, particularly in the village and mixed-use districts.
3. Permit new cul-de-sacs only when there are compelling reasons, such as sensitive environmental features.
4. Update Street Design standards in accordance with PennDOT's Design Manual 2 (which encompasses the PennDOT's Smart Transportation policies) design standards.
5. Modify sidewalk design requirements (particularly increasing the minimum width to five feet) for consistency with current State and Federal requirements for accessibility as set forth in the U.S. Access Board, *Public Right-of-Way Accessibility Guidelines (PROWAG)* of the *Accessibility Guidelines of Buildings and Facilities (ADAAG)*, PennDOT Design Manual Part 2, Chapter 6, and PennDOT Standards for Roadway Construction).
6. Encourage multi-modal connectivity through new developments. (Expand upon current requirement to preserve existing trails within developments.)
7. Define the terms for bicycle and pedestrian facilities. Terms and definitions should be provided for the following (at a minimum):
 - bike lane
 - bus shelter
 - crosswalk
 - internal walkway/path
 - shared roadway
 - shared-use path/multi-use trail,
 - sharrow
 - sidewalk
 - traffic impact study
 - use-restricted trail
8. Define terms for traffic calming and appropriate measures such as the following (at a minimum):
 - chicane
 - curb extension
 - gateway treatment
 - neighborhood roundabout
 - speed hump/lump/cushion/table
 - raised median
 - raised crosswalk
9. Review roadway classifications and update, as appropriate. Provide reference to source to the current

roadway classifications (e.g., Comprehensive Plan, Official Map, etc.).

10. Modify the Traffic Impact Study (TIS) requirements to clearly require evaluation of existing needs and future impacts to multi-modal travel. Current PennDOT guidelines (PennDOT Publication No. 282) provide some guidance for pedestrian impacts. All TIS reports should provide current and future (pre- and post-development) ADT and prevailing speeds for all study roadways in order to evaluate multi-modal needs and impacts.
11. Discourage unnecessarily wide streets that promote speeding, which impacts safety for all road users and increases maintenance costs. Consider allowing on-street parking on both sides of lower-volume local access roads with the addition of only eight (8) feet of additional cartway width in most cases or unless the Township Engineer determines that specific characteristics of a road require more width to support parking on both sides of the street.
12. Provide for pedestrian travel along property/development frontages by providing relatively level areas where no sidewalks or trails exist. Natural or required berms and buffers shall incorporate such provisions. Stabilized shoulders should be considered when paved shoulders are not required.

Recommended Zoning Modifications: The following policy changes require the Township to amend the current Zoning Ordinance (ZO):

13. Require bicycle parking as part of new commercial, institutional, and multi-family residential developments.
14. Prohibit cul-de-sacs in village streets.
15. Permit on-street parking and allow it to count towards off-street parking requirements in more areas of the Township.
16. Increase the minimum sidewalk width to five feet for consistency with federal requirements for accessibility (ADA).
17. Provide incentives for park-and-ride spaces, shared parking, and access management.

5.8 | Jurisdictional Coordination

In order to provide a truly multi-modal transportation network that is well connected to key destinations within the Township and beyond, coordination with other jurisdictional authorities, including nearby municipalities, is necessary and recommended. It is also important to coordinate future planning and implementation efforts with Chester County, PennDOT, SEPTA and other area transit providers, as well as the Owen J. Roberts School District.

Based on the recommendations contained in this Study, connections to nearby trail networks in Upper Uwchlan Township (for Fellowship Road), West Pikeland Township (for Art School Road and Kimberton Road), and East Pikeland Township (for French Creek Trail and Pughtown Road) require further municipal coordination.

Improvements to State roadways will require further coordination with PennDOT. In the case of sidewalks and trails, the Township (or adjacent property owners) will most likely be required to maintain these facilities, as PennDOT will not assume these responsibilities even along State roadways.

It is recommended that West Vincent Township coordinate periodically with SEPTA and other service providers, as well as Chester County, in order to monitor need and potential ridership. Although transit service to West Vincent Township is not anticipated in the short-term, future coordination will become important as development within the municipality (particularly in the Ludwig's Corner area) and northern Chester County continues.



Pictured: Multi-use trail along Graphite Mine Road in Upper Uwchlan Township.

Coordination with the Chester County Planning Commission regarding the implementation and funding of the Township's multi-modal transportation improvements is recommended. In order for a project to be added to the State's Transportation Improvement program (TIP), the project will need to be reviewed by the County before it is added to the County's Transportation Improvement Inventory (TII).

Coordination with the School District will be important as non-vehicular routes are established near the elementary school and if modifications to the existing school crossing (PA Route 401) are pursued. Future school facilities within the Township, if any, should be planned with a strong consideration for multi-modal access.

In addition to coordinating with other jurisdictions, the Township should coordinate with property owners and developers with respect to improvements that may be required along their property frontage or within future developments.

5.9 | Other considerations

Many additional supportive measures and initiatives can be taken by West Vincent Township in order to improve the bike-ability and walk-ability of the community. A few such initiatives could include the following:

- Continue to promote off-road trail planning and implementation. A network of established off-road trails could link some neighborhoods and isolated residents to other on-road facilities.
- Mapping (available to the public), trailblazer signage, and trail-head parking could also promote trails use to increase multi-modal travel in the municipality.
- While many of the recommendations of on-road facilities can accommodate equestrian traffic on local roadways, the most desirable routes for this type of travel would generally include off-road facilities or travel on unpaved (low volume) roadways. Consideration of equestrian travel should continue to be promoted by the Township and accommodated by future development, as practical (e.g., parking, trails, stalls, etc.).



5.10 | Potential Costs

Detailed costs of for the recommended multi-modal improvements will eventually be need to be determined after further engineering is completed for each individual project. However, having a sound preliminary cost estimate is important for budgeting and seeking funding sources. Preliminary cost estimates for various multi-modal initiatives are provided below and, unless otherwise noted, are based on the University of North Carolina (UNC) Highway Safety Research Center publication, *Costs for Pedestrian and Bicyclist Infrastructure Improvements: A Resource for Researchers, Engineers, Planners, and the General Public*, October 2013. Also, all costs presented below are in current 2013 dollars and reflect the average unit costs identified by the UNC report. Some costs have been approximated based on recent local projects and are marked with an asterisk (*). The average costs include engineering, design, mobilization, construction/ installation, and materials. Right-of-way, utilities, special structures, easements, permitting and legal fees are not included in the cost estimates.

Actual costs can vary significantly based on location, site conditions, project scale, funding sources, permitting requirements, and several other factors. The potential costs are provided for planning level purposes only.

Bicycle Facilities

Bike Rack.....	\$660 each
Bicycle Lane.....	\$133,170 per mile
Signed Bicycle Route ¹	\$25,070 per mile

Minor Shoulder widening ² ...	\$1.5 to \$2.4M per mile
Moderate Shoulder widening ³	\$2.5M to \$3.5 M per mile

Traffic Calming

Chicanes.....	\$9,960 to \$40,000* each
Curb Extensions ⁴	\$26,000 to \$80,000* per corner
Gateway (sign) ⁵	\$15,000 to \$25,000 each*
Median Island.....	\$10 per square foot
Raised Crosswalk.....	\$8,170 each
Raised Intersection.....	\$50,540 each
Roundabout (mini).....	\$85,370 each
Speed hump.....	\$2,640 to \$5,000* each
Speed table.....	\$2,400 each
Speed trailer.....	\$9,510 each

Pedestrian Accommodations

ADA Curb ramp.....	\$6,500 each*
High Visibility Crosswalk.....	\$2,540 each
Striped Crosswalk.....	\$770 each
or.....	\$8.52 per linear foot
Sidewalk (5', concrete).....	\$75 per square foot*
Sidewalk (5', asphalt).....	\$5.56 per square foot
Railing.....	\$100 per linear foot

Shared Accommodations

Multi-use Path (paved).....\$481,140 per mile

Multi-use Path (unpaved).....\$121,390 per mile

Transit

Bus shelter.....\$11,560 each

Signals/Signs

Stop/yield.....\$300 each

Flashing beacon.....\$10,010 per location

Pavement Markings

Double Yellow Centerline (4") \$1.50 per linear foot

White Edge Line (6").....\$1.00 per linear foot

Pedestrian Crossing.....\$360 each

Shared Lane (Sharrow).....\$180 each

School Crossing.....\$470 each

Notes:

1– range of costs varies significantly due to project specifications and the scale and length of treatment (maximum cost: \$64,330 per mile; minimum cost: \$5,360 per mile).

2– cost for minor shoulder widening assumes four-foot wide shoulders on both sides of roadway.

3– cost for moderate shoulder widening assumes six- to eight-foot wide shoulders on both sides of roadway.

4– assumes bump-out on both corners of intersection with ADA accommodations or a mid-block location with two extensions from each side of the roadway.

5– assumes landscaping with gateway treatment.



6 Implementation



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6.1 | Action Plan

Numerous resources will need to be identified, mobilized, and synchronized in order to implement the recommendations and infrastructure improvements of this Study. Therefore, it is important that an initial action plan be clearly identified and put into use immediately in order to lay the groundwork for these changes. The recommended action plan should be re-evaluated periodically as individual projects/initiatives are completed or as funding sources and levels change.

The action plan for this Study is broken down into five categories: 1) organizational, 2) regulatory, 3) financial, 4) advocacy/education, and 5) future studies, design, engineering. Responsible parties for each action item are shown in brackets,

Board of Supervisors [BOS], Township Staff [Staff] Planning Commission [PC] Township Engineer [ENGR] Multi-Modal Transportation Committee [MMTC] Road Master [RM] Owen J Roberts School District [OJRSD] Township Police [Police] Park and Recreation Committee [PR] Legal Staff [LEGAL] Individual Property Owners [PO] Consultant [CONSULTANT]	KEY
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● Organizational Action Items

1. **Form a Multi-modal Transportation Committee.** The goal would be to champion the recommendations of this study, as well as address routine issues related to traffic. The Committee should include Township Supervisors and Planning Commission members. Representatives from the Park and Recreation Committee, Sustainability Committee, and Open Space Committee should also be considered to promote collaboration on shared goals and projects. [BOS]
2. **Coordinate with adjacent municipalities and regional planning organizations, including the Federation of Northern Chester County and the Phoenixville Regional Planning Committee.** Several of the bicycle and pedestrian routes were identified based on connections to neighboring municipalities and regional multi-modal facilities. Continue coordination with adjacent municipalities, particularly on regional trail alignments



and connections. [MMTC, BOS, STAFF, and Phoenixville Regional Representative]

3. **Coordinate with Chester County Planning Commission (CCPC) and Delaware Valley Regional Planning Commission (DVRPC).** CCPC and DVRPC both play key roles in programming federal and state funds for transportation improvement projects, including bicycle and pedestrian facilities. Coordinate with CCPC regarding the inclusion of priority capital improvement needs on the County's Transportation Improvements Inventory (TII). Coordinate with both CCPC and DVRPC regarding potential federal and state transportation funding for improvements, including competitive grant programs and updates to the region's Transportation Improvement Program (TIP). [MMTC, STAFF]
 4. **Coordinate with PennDOT.** PennDOT plays a key role for both capital improvements and maintenance of state owned roadways. Coordination with PennDOT is important for both capital projects and development projects, both of which may require a Highway Occupancy Permit (HOP) from PennDOT. Also, if the necessary right-of-way is available, PennDOT may be able to provide shoulder improvements as part of maintenance projects, which are key recommendations for some roadways. [ENGR, MMTC, PC, STAFF]
 5. **Coordinate with key stakeholders.** Property owners, business owners, and developers are key partners for implementation. For capital improvement projects, it will be important to coordinate with property and business owners on design details and construction schedules. Additionally, for improvements that can be implemented through the land development process, it will be important to coordinate with developers regarding the integration of multi-modal transportation improvements into land development plans. Lastly, the Township can be proactive in acquiring additional right-of-way and easements, as necessary. [MMTC, BOS, STAFF]
 6. **Coordinate with bike clubs.** Area bike clubs can provide valuable feedback and input on routes within West Vincent Township with regard to needed improvements and maintenance. Bike clubs may also offer a valuable partnership in educational and advocacy efforts. [MMTC]
- **Regulatory Action Items**
1. Modify the Township SALDO to incorporate the previously identified recommendations. Some specific changes to the SALDO have been suggested in the Study (Chapter 5) while some more general recommendations have been provided. [BOS, STAFF, PC, LEGAL]
 2. Modify the Township's Zoning Ordinance to incorporate the previously identified recommendations. Some specific changes to the ZO have been suggested in the Study (Chapter 5) while some more general recommendations have been provided. [BOS, PC, STAFF, LEGAL]
 3. Modify the Traffic Impact Study (TIS) requirements of the Township to require an evaluation of vehicular impacts as well as impacts to pedestrian and bicycle travel. [BOS, PC, LEGAL]
 4. Adopt an Official Map of the Township that depicts all current and future roadways, rights-of-ways, and on-road/off-road public trails/paths. [BOS, PC]
 5. Deny requests seeking to not provide pedestrian accommodations due to the lack of activity/connectivity in the area of their project. In order to fulfill the Township's long-term multi-modal vision, the Township should not accept such reasoning as a justification for a waiver for not providing pedestrian accommodations. [BOS, PC]
 6. Update the Comprehensive Plan to incorporate the

recommendations of this Study, as appropriate, or future multi-modal planning efforts. [BOS, PC]

7. Adopt ordinances to designate appropriate posted speed limits, installation of regulatory/ informational/ warning signage that promotes multi-modal travel throughout the Township or along a particular roadway. [BOS]
8. Adopt an overall traffic calming policy for the Township to consider, evaluate, and implement traffic calming measures. [MMTC, PC, BOS, CONSULTANT]
9. Incentivize park-and-ride parking, access management, and shared parking. [BOS, PC, CONSULTANT, LEGAL]

● **Financial Action Items**

1. Identify and track funding sources, which have historically changed based on Federal and State priorities and legislation. Section 6.3 identifies some current potential funding sources. [MMTC, STAFF]
2. Pursue grants to assist in the funding of further engineering and feasibility studies, construction of pedestrian and bicycle accommodations, as well as advocacy and safety programs. [MMTC, STAFF]
3. Identify funding resources to advance multi-modal recommendation and priorities. Local match dollars can make grant applications more competitive. In some cases, services (i.e., engineering, planning, right-of-way acquisition, etc.) in lieu of a monetary contribution can be considered. [BOS, STAFF]
4. Combine construction of new multi-modal facilities and accommodations during routine maintenance projects when feasible. [BOS, RM]
5. Identify opportunities for public-private partnerships, which can often provide a savings to all involved parties. Engineering and acquisition of right-of-way can often be considered as a local match obligation for certain grants. By prioritizing and dedicating funding, the Township will demonstrate its commitment to the project. [BOS, MMTC]

● **Educational & Advocacy Action Items**

1. Hold a Walking School Bus event. Walking school busses are groups of school age children that meet at a designated location and walk in line to school. Such events promote walking, safety, and improves driver awareness of walking school children. [MMTC, OJRSD]
2. Distribute educational materials such as newsletters, email blasts, website postings, and pamphlets promoting multi-modal travel and safety (including speeding awareness). [MMTC, BOS, STAFF]
3. Hold bike rodeos to focus on providing school age children bicycle safety and riding tips. [MMTC, PR]
4. Hold bike tours on key bike routes throughout the Township and adjoining areas. Bike tours could be led by knowledgeable bicyclists that live within the Township or possibly in conjunction with local bike groups. [MMTC, PR]
5. Promote walking groups within the Township. Walking tours can be led by knowledgeable residents to promote walking within the community. [MMTC, PR]
6. Work with the School District to promote walking, biking, and physical activity among elementary school children. Currently, West Vincent Elementary School provides several programs that encourage walking and fitness among its students. [MMTC, OJRSD]

● **Additional Studies, Design, Engineering Action Items**

1. Monitor and record daily traffic volumes and travel speeds along the key roadways throughout the Township. Traffic volumes and travel speeds are key

determinants in multi-modal accommodation selection as well as roadway design. By providing a routine update of these key data, the Township can better monitor its multi-modal needs. [BOS, POLICE]

2. Conduct a feasibility study for the off-road trail parallel to St. Matthews Road on the gas line and electrical easement. An additional level of engineering evaluation is needed to determine if this off-road trail is practical to serve as a cross-community link. [BOS, ENGR, CONSULTANT]
3. Provide detailed engineering of future bicycle and pedestrian accommodations and facilities as each individual project progresses. [BOS, ENGR]
4. Undertake a multi-modal review of all other future projects that may have an impact on the local transportation network. Multi-modal considerations should be part of the recommendations whenever feasible. [BOS, MMTC, PC]
5. Provide roadway maintenance to improve ride-ability for bicyclists. Clear sight line obstructions around horizontal curves along key roadways. Clearing of overgrown vegetation, clearing of debris, and removal of obstructions can provide safety improvements for all roadway users. [BOS, RM]
6. Develop a wayfinding signage system and provide signage to key destinations within the Township and area for all users. [BOS, MMTC, CONSULTANT]



Pictured: The existing school crossing at the West Vincent Elementary School.

6.2 | Priorities

The recommendations of this Study will need to be implemented over time. The following are priorities for implementation of the Action Plan presented in Section 6.1. Recommended responsible parties and categories of actions are cross-referenced for each priority. Several priorities combine or relate to multiple action types and require collaboration between project partners.



Pictured: Multi-use trail along PA Route 401 along the Vineyards Church property, which currently terminates at the St. Matthews Church property. in Upper Uwchlan Township.

● Organizational Action Item ● Regulatory Action Item ● Financial Action Item
● Educational and Advocacy Action Item ● Additional Studies, Design, Engineering, Action Item

KEY

Short-term | Recommendations to be completed within the next three years:

Township-wide

1. Designate a multi-modal committee to advance the recommendations contained in this report; monitor implementation progress; establish and monitor performance measures; identify and seek funding sources; and collaborate with other relevant Township committees. [BOS] ●
2. Review Township Ordinances and make updates, as recommended. Adopt or amend the Township Official Map to include multi-modal improvements. [BOS, PC, LEGAL] ●
3. Document prevailing travel speeds along key roadways within the Township in order to define speeding problems and verify recommendations of this study. [BOS, POLICE] ●
4. Develop public awareness and educational campaigns to focus on multi-modal travel and safety, as well as to discourage speeding. [MMTC, PR, OJRSD] ●
5. Provide maintenance to roadways to improve ride-ability for bicyclists. Clear sight line obstructions around horizontal curves along key roadways. Clearing of overgrown vegetation, clearing of debris, and removal of obstructions can provide safety improvements for all roadway users. [BOS, RM, PennDOT] ●

6. Select a preferred bike route (or trek) and designate with wayfinding signing and pavement markings. Provide safety and sight distance improvements at needed locations. Shared roadways should be prioritized as they should generally be the easiest to implement. [MMTC, BOS, PC] ●
7. Adopt a comprehensive traffic calming policy that identifies how and when traffic calming is considered in the community, as well as what types of measures will be considered by the Township. [BOS, POLICE, RM] ●

Ludwig's Corner

1. Complete the trail/path from Fellowship Road to Andrew Evans Park through the St. Matthews Church property. The design should be completed and funding should be allocated or secured. [BOS, STAFF, PR] ●●
2. Provide (design and seek funding for) sidewalk on the south side of Conestoga Road (PA Route 401) from the West Vincent Township Elementary School to the PA Route 401/Lexington Boulevard intersection in order to provide a school pedestrian crossing at the existing traffic signal. In the meantime, in-road yield to pedestrian in crosswalk signs should be provided for the existing crossing. [STAFF, BOS] ●●
3. Monitor land development in the Ludwig's Corner area continually in order to ensure walk-ability. [PC, BOS] ●
4. Complete a feasibility study to examine an alternative off-road connection from Wetherill Estates to Ludwig's Corner, and then ultimately design (and seek funding for) this alternative connection. [MMTC, BOS, PC] ●●

Kimberton

1. Coordinate with PennDOT, East Pikeland Township, and landowners for preliminary design of widened shoulders along Pughtown Road from Camphill Village to Kimberton Center. [BOS, PC, ENGR, PennDOT] ●●

Birchrunville

1. Conduct a traffic calming study within the Birchrunville area to document travel speeds and identify appropriate measures to reduce travel speeds, as necessary. Consider one-way flow on Schoolhouse Road between Flowing Springs Road and Hollow Road. [BOS, ENGR] ●

St. Matthews Corridor

1. To the extent development occurs, use the opportunity to provide multi-modal infrastructure from School House Road to Beaverhill Road, as well as within the development. [BOS, PC] ●●

Intermediate | Recommendations to be completed within the next three to five years:

Township-wide

1. Select the next preferred bike route (or trek) to designate with signing, pavement markings. Provide safety/sight

● Organizational Action Item ● Regulatory Action Item ● Financial Action Item
● Educational and Advocacy Action Item ● Additional Studies, Design, Engineering, Action Item

KEY

- distance improvements at needed locations. [BOS, MMTC, PennDOT] ●
2. Provide shoulder improvements on selected key roadways, as recommended. These improvements will likely need to be phased over time. [BOS, RM, PennDOT] ●
 3. Develop a multi-modal map of on-road and off-road routes and accommodations for use by the public. [MMTC, CONSULTANT] ●
 4. Install bicycle parking at existing destinations such as the three study focus areas, educational institutions, libraries, places of worship, and recreational facilities. [BOS, PO] ●
 5. Develop and implement a wayfinding signing program for the Township for all users of the transportation network. [BOS, MMTC, CONSULTANT] ●
 6. Identify and obtain right-of-way and easements necessary to implement the recommendations of this study. Coordination with property owners will be required. In some cases, securing the rights-of-way and easements can be considered (or partially considered) a local match obligation for some funding sources. [BOS, ENGR, LEGAL] ●●●
 7. Adopt a Traffic Signal Specification complete with appropriate multi-modal considerations such as pedestrian signals and actuation buttons. Traffic Signal Specifications are adopted so that all future traffic signals, or upgrades to existing traffic signals, meet the requirements of the Township. [BOS, ENGR, MMTC] ●

Ludwig's Corner

1. Collaborate with Upper Uwchlan Township to provide extension of the Fellowship Road trail/path to PA Route 401. The design should be completed and funding should be allocated or secured. [BOS, STAFF] ●●●
2. Collaborate with Upper Uwchlan Township to pursue geometric and operational improvements to the PA Route 401/Fellowship Road intersection. [BOS, STAFF] ●●●

Kimberton

1. Collaborate with East Pikeland Township to provide extension of the French Creek Trail and other alternative connections between West Vincent Township and the Kimberton area. [BOS, STAFF] ●●●

St. Matthew's Corridor

1. Collaborate with PennDOT to perform a safety evaluation and all-way stop warrant analysis for the St. Matthews Road/Horseshoe Trail intersection. [BOS, STAFF] ●
2. Seek funding to complete a feasibility study for the multi-use trail that would parallel St. Matthews Road along the existing gas and electrical easements. [MMTC, STAFF, BOS] ●●

● Organizational Action Item ● Regulatory Action Item ● Financial Action Item
 ● Educational and Advocacy Action Item ● Additional Studies, Design, Engineering, Action Item

KEY

Long-term | Recommendations to be completed within the next five to ten years:

Township-wide

1. Continue to collaborate with Chester County and transit providers to monitor ridership potential for bus service in West Vincent Township. [STAFF] ●
2. Design and construct, if feasible (see Intermediate Priorities: St Matthew's Road #2), a multi-use trail along the existing gas and electrical easements that parallel St. Matthews Road. As this route could have regional significance, additional funding sources may be available for implementation. [MMTC, BOS] ●
3. Continue to provide shoulder improvements on selected key roadways, as recommended. [BOS, RM, ENGR, PennDOT] ●
4. Update this multi-modal transportation study as improvements are made and recommendations are implemented. The update can track progress and review established performance measures, as well as identify the next level of multi-modal improvements that may be appropriate. [MMTC, BOS] ●

Ongoing | Recommendations requiring continual effort or undertaken on an as-needed basis are shown below. In some cases, these priorities are also listed under short-term, intermediate or long-term priorities when they require ongoing action or follow-up.

1. Coordinate with Chester County on the implementation of bike routes, bike route classifications, and wayfinding (for consistency). [STAFF] ●
2. Advance Township improvements onto Chester County's Transportation Improvement Inventory (TII) and DVRPC's TIP (Transportation Improvement Plan). This action is needed in order to be designated as a regional priority and secure funding on the County and DVRPC long-range improvement plans. The County seeks municipal input biannually and West Vincent Township should include its multi-modal improvement projects in its response. [STAFF] ●
3. Provide maintenance to roadways to improve ride-ability for bicyclists. Clear sight line obstructions around horizontal curves along roadways on bike routes (or treks) to improve visibility and safety. Maintenance on any designated bike routes (or treks) should be prioritized. [RM, MMTC] ●
4. Continue to sponsor public awareness and educational campaigns to focus on multi-modal travel and safety, as well as speeding. [MMTC] ●
5. Monitor land development, especially in the Ludwig's Corner area, in order to ensure walk-ability. [PC, BOS] ●

● Organizational Action Item ● Regulatory Action Item ● Financial Action Item
 ● Educational and Advocacy Action Item ● Additional Studies, Design, Engineering, Action Item

KEY

6.3 | Funding Opportunities

Given the variety of improvements identified, funding will likely be needed for the next stage of implementation, ranging from feasibility studies to design and construction. Highlighted below are several potential funding sources at the federal, state, and regional level for future capital projects.

Federal

Moving Ahead for Progress in the 21st Century Act (MAP-21) is the federal transportation bill that was signed into law in July 2012 for fiscal years (FY) 2013 and 2014. Multi-modal improvements are eligible for federal funding through several core highway funding programs highlighted below. Programming of federal transportation funds for specific projects is done at a regional level, with some projects awarded federal funds through competitive grant processes. (See the Regional funding section for more information on recent or anticipated grant programs.) Most federal funding programs require 20 percent of the project costs to be funded through non-federal sources, such as state or local funds.

- **National Highway Performance Program (NHPP):** The NHPP program provides funding for improvements to the National Highway System (NHS), which includes Pottstown Pike (PA Route 100) in West Vincent Township. Eligible activities include roadway reconstruction and improvements, safety improvements, and bicycle transportation and pedestrian walkway improvements along NHS corridors.
- **Congestion Mitigation and Air Quality Improvement Program (CMAQ):** The CMAQ program provides funding to reduce emissions and improve air quality to meet National Clean Air Act standards. Projects must demonstrate emissions benefits either directly or by reducing congestion. Eligible projects include traditional traffic flow improvements and bicycle and pedestrian facilities that are not exclusively recreational and reduce vehicle trips. A portion of the region's CMAQ funds have historically been awarded through a competitive grant process.
- **Surface Transportation Program (STP):** The STP program provides flexible funding for improvements on federal-aid highways, bridges and tunnels on any public road, bicycle and pedestrian infrastructure, and transit capital projects. STP funds are programmed on the region's Transportation Improvement Program (TIP). A portion of the STP funds are set aside for the Transportation Alternatives program described below.
- **Transportation Alternatives (TA):** The TA program provides funding to support a variety of alternative modes of transportation, including walking and bicycling. Eligible activities include planning, design, and construction of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990. A portion of the state and region's TA funds will be awarded through a competitive grant process.

State

- **Transportation Funding Bill:** Pennsylvania's Transportation Funding Bill, known as Act 89 of 2013, was signed into law in November 2013 and provides stable and long-term funding for Pennsylvania's transportation system, including highways, roads, bridges, mass transit and other modes. Overall, it will provide an additional \$2.3 billion per year by Fiscal Year 2017-2018. It will provide a 60 percent increase in Liquid Fuels allocations to municipalities for local roads and bridges by the fifth year. Additionally, a new multi-modal fund was created to provide dedicated funding for multimodal transportation projects, which may include freight rail, passenger rail, ports and waterways, aviation, pedestrian, and bicycle facilities. The multimodal fund will provide a minimum of \$2 million annually statewide for programs related to bicycle and pedestrian facilities. Grants will be awarded on a competitive basis and require a local match of at least 30 percent of the non-federal share of the project costs.
- **Automated Red Light Enforcement (ARLE) Grant Program:** PennDOT administers a grant program to distribute a portion of the revenue generated by Automated Red Light Running Enforcement (ARLE) in the state. The ARLE grant program is focused on improving safety and mobility and there is an annual application period. Eligible projects include roadway capacity upgrades, such as auxiliary turning lanes, and pedestrian safety and mobility improvements. The ARLE grant program does not require a local match, but all project funding must be identified at the time of the application.
- **Community Recreation and Conservation Program:** The Department of Conservation and Natural Resources (DCNR) provides grants for trail and greenway projects through two Community Conservation Partnerships Program (C2P2) grant programs. The C2P2—Community Recreation and Conservation Program requires a 50 percent match and eligible projects include feasibility studies, trail studies, master site development plans, and comprehensive recreation, park and open space and greenway plans; land acquisition for trails; and new development and rehabilitation of parks, trails and recreation facilities. The C2P2—Recreational Trails Program requires 20 percent match (except for land acquisition projects, which require a 50 percent match) and eligible projects include development, rehabilitation and improvements to public parks, recreation areas, greenways, trails. There is an annual application period for all C2P2 grants.
- **Act 13 (Marcellus Shale Impact Fee) - Greenways, Trails and Recreation Program (GTRP):** The Commonwealth Financing Authority (CFA) administers the Greenways, Trails, and Recreation Program (GTRP) for the development, rehabilitation and improvements to public parks, recreation areas, greenways, and trails utilizing Act 13—Marcellus Shale Impact Fees. Grants are awarded annually and most projects require a 50 percent local match for the total project cost.

Regional

The Delaware Valley Regional Planning Commission (DVRPC) has historically sponsored several competitive grant programs for municipalities and other entities in the Greater Philadelphia region based on federal, state, and private funding programs. Two anticipated regional competitive grant programs that are applicable for multi-modal improvements are the Transportation Alternatives (TA) program and the Congestion Mitigation and Air Quality (CMAQ) program. Both programs utilize a portion of the region's share of federal funds for TA and CMAQ projects and general eligibility for projects are described in the previous Federal funding section.

DVRPC announces specific grant rounds when funding is available and coordinates project applications and selection. In previous funding rounds, grants have required local matching funds and/or local funding for all pre-construction activities. Applications are often more competitive if the sponsor can provide additional matching funds and if the design is advanced or complete.

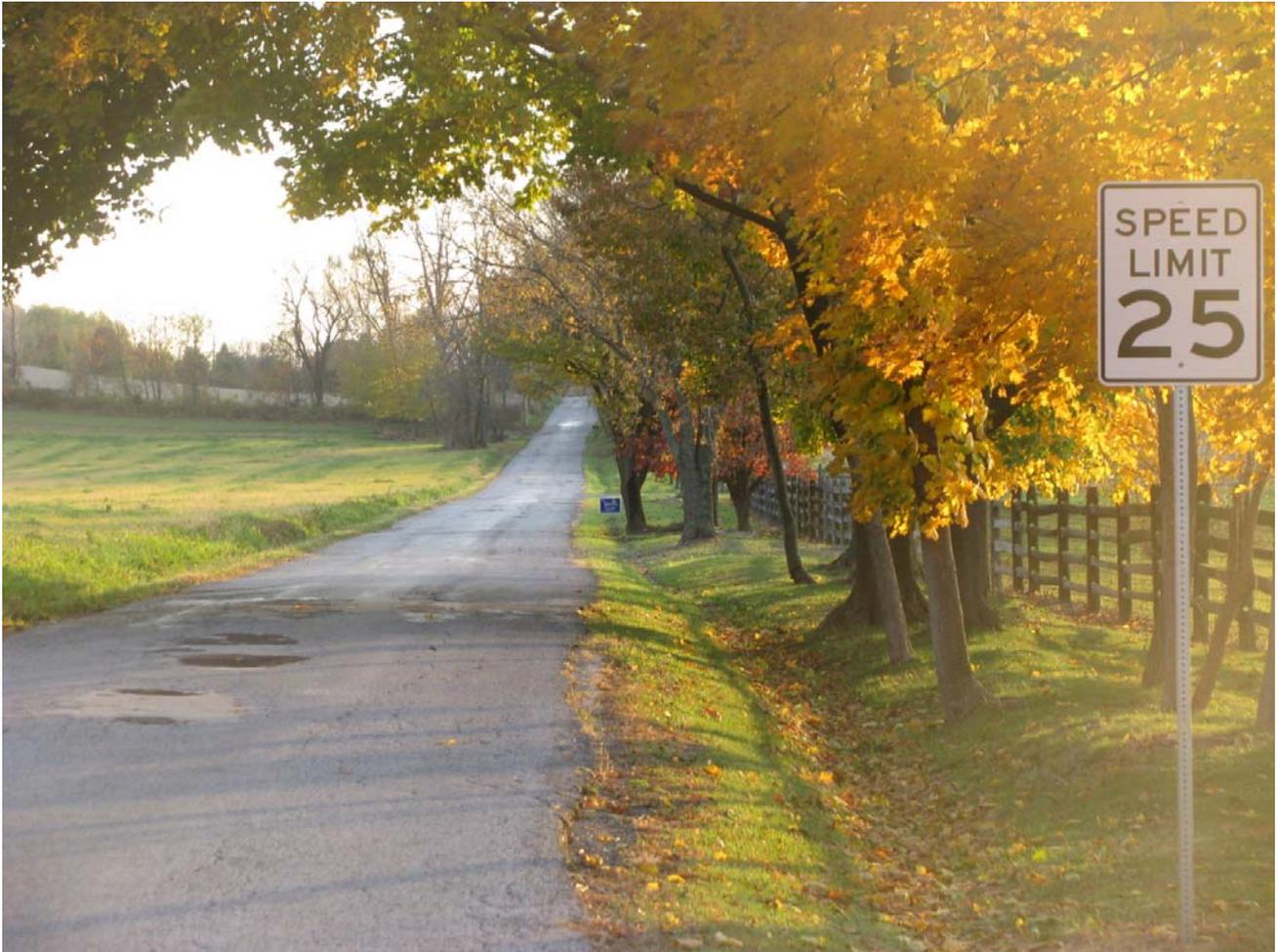
Maintenance

With proper planning and collaboration, it may also be possible to implement certain projects/recommendations as part of a routine roadway maintenance program by the municipality or by PennDOT. Prioritized projects, such as widening for improved shoulders, could be implemented during routine roadway maintenance in some cases.

6.4 | Performance Measures

Achieving a true multi-modal transportation network will take time, as many projects and initiatives will need to be completed over many years. Accordingly, both short-term, intermediate, and long-term projects and initiatives have been identified and prioritized. In order to measure how well the Township is making the community bike- and pedestrian-friendly, a set of performance measures should be established and monitored annually. Such performance measures could include the following:

- Total miles of designated bike-able routes
- Linear feet of new pedestrian accommodation (sidewalks, paved trails)
- Crosswalk and intersection improvements
- Number of transit stops
- Number of park-and-ride parking spaces
- Decrease in crash rates by mode
- Rate of children walking to school
- Rate of children bicycling to school
- Number of visual obstructions reduced
- Number of educational events and outreach initiatives (bike rodeos, bike training, bike tours, newsletter articles)



- 1 Aerial Photograph
- 2 Existing Land Use
- 3 Roadway Functional Classification
- 4 Destinations
- 5 Recommended Bicycle Routes
Ludwig's Corner Area Inset (5A)
- 6 Recommended Pedestrian Routes
Ludwig's Corner Area Inset (6A)
- 7 Historic and Cultural Features
- 8 Natural Features
- 9 Protected Lands