DECEMBER 2018

KING OF PRUSSIA RAIL PROJECT

Station Area Planning for the Norristown High Speed Line Extension to King of Prussia

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

The Delaware Valley Regional Planning Commission

is the federally designated Metropolitan Planning Organization for a diverse nine-county region in two states: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey.

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

DVRPC's vision for the Greater Philadelphia Region is a prosperous, innovative, equitable, resilient, and sustainable region that increases mobility choices by investing in a safe and modern transportation system; that protects and preserves our natural resources while creating healthy communities; and that fosters greater opportunities for all.

DVRPC's mission is to achieve this vision by convening the widest array of partners to inform and facilitate data-driven decision-making. We are engaged across the region, and strive to be leaders and innovators, exploring new ideas and creating best practices.

DVRPC is funded through a variety of funding sources including federal grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), the Pennsylvania and New Jersey departments of transportation, as well as by DVRPC's state and local member governments. The authors, however, are solely responsible for the findings and conclusions herein, which may not represent the official views or policies of the funding agencies.

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Cover Image Source: KOP–BID

FIGURES

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A conceptual rendering of the Norristown High Speed Line extension to King of Prussia as it travels along Mall Boulevard just north of the King of Prussia Mall.

Source: Bergmann Associates, PC 2016

KING OF PRUSSIA RAIL PROJECT

Station Area Planning for the Norristown High Speed Line Extension to King of Prussia

EXECUTIVE SUMMARY

The King of Prussia Rail (KOP Rail) project is a proposed extension of the Southeastern Pennsylvania Transportation Authority's (SEPTA's) Norristown High Speed Line (NHSL) to the King of Prussia area of Upper Merion Township in Montgomery County, Pennsylvania. Once constructed, this 4.4-mile extension will include five new stations and provide a rail transit link between King of Prussia and the destinations in Delaware and Montgomery counties served by the existing NHSL, including the Norristown Transportation Center and the 69th Street Transportation Center in Upper Darby Township, which offers connecting transit service to Center City Philadelphia.

Providing safe and convenient nonmotorized access to KOP Rail stations is one of the best and most cost-effective ways to maximize the overall usefulness of this transit investment and create value for Upper Merion Township residents, employees, and visitors. However, retrofitting the well-established suburban areas around these proposed stations into comfortable places to walk and bike is a long-term endeavor that will require an integrated and coordinated approach to station area planning and development.

This document is the culmination of a planning process led by the Delaware Valley Regional Planning Commission (DVRPC) that supports the KOP Rail project by exploring concepts related to pedestrian and bicycle access to transit, as well as transit-supportive land use and development in the areas surrounding the five proposed stations.

This study was designed to identify and evaluate a variety of factors that influence the environment for walking and biking in each station area. Based on these existing conditions and input from KOP Rail stakeholders, the study team developed a series of recommendations and identified a number of opportunities to enhance and extend the network of nonmotorized transportation infrastructure in King of Prussia. Key transportation infrastructure improvements recommended for KOP Rail station areas include new sidewalks, intersection and crossing amenities, bicycle facilities, and multi-use trails. Many of these strategies are worth pursuing even without the prospect of KOP Rail because they can help the township achieve a variety of important community and transportation goals.

In addition to these place-based recommendations, the document describes a series of broader planning principles that can help provide elected officials and partner agencies with a framework for the future planning and development of the KOP Rail Corridor.

This station area planning study was conducted simultaneously and collaboratively with the *KOP Rail Project Draft Environmental Impact Statement* and the *Upper Merion 2040 Comprehensive Plan Update*.

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CHAPTER 1

INTRODUCTION

A New Vision for King of Prussia

The KOP Rail project is a proposal to extend SEPTA's NHSL into the King of Prussia/Valley Forge area of Upper Merion Township. Once constructed, this roughly 4.4-mile extension will include five new stations and link King of Prussia to the communities and destinations in Delaware and Montgomery counties served by the existing NHSL, including the 69th Street Transportation Center in Upper Darby Township and the Norristown Transportation Center in Norristown (see Figure 1: Regional Transit Context).

This ambitious infrastructure proposal has the potential to improve mobility and accessibility for travelers throughout the region by providing new transit options. It also has the potential to shape land use and transportation planning in King of Prussia for decades to come. However, successfully integrating rail transit service into a well-established suburban context will require skillful planning and design. What will the introduction of rail transit mean for King of Prussia and Upper Merion Township? What principles should guide the future development of areas where stations have been proposed?

This document, and the planning process that informed it, is a first step in addressing these and a series of related questions. DVRPC undertook this study with the belief that fully realizing the benefits of KOP Rail will require the creation of a transportation system and built environment that support transit. Although an extension of the NHSL still requires additional study and design, it is not too early to begin exploring concepts for access, circulation, land use, development, public spaces, and key projects for the areas surrounding the proposed stations.

The primary objective of this study is to identify and evaluate strategies designed to enhance pedestrian and bicycle access to the proposed stations. These nonmotorized forms of transportation should form the foundation for any comprehensive, multimodal transit station access planning.

Additional objectives of this study include:

- documenting a variety of existing conditions of the proposed station areas as they relate to future transportation and land use planning; and
- identifying transit-supportive development opportunities.

This station area planning study was conducted simultaneously and collaboratively with the *KOP Rail Project Draft Environmental Impact Statement* and the *Upper Merion 2040*

Source: Bergmann Associates, PC 2016

The NHSL extension to King of Prussia is envisioned to run along an elevated concrete rail bed. This rendering shows what the rail line might look like as it travels along Mall Boulevard just north of the King of Prussia Mall.

Comprehensive Plan Update. Additionally, this document was informed by a number of recent municipal, county, and SEPTA planning efforts.

Throughout the study, DVRPC's work was guided by a Study Advisory Committee that included representatives from SEPTA, Upper Merion Township, Montgomery County, Greater Valley Forge Transportation Management Association (GVF), and the King of Prussia District (KOP-BID).

To gather additional input, DVRPC conducted a stakeholder workshop at the Upper Merion Township Building in May 2017 with Upper Merion Township residents, members of the Upper Merion Township Planning Commission, and representatives from the township's Economic & Community Development Committee. The study team also conducted an open house for local business and property owners at the KOP-BID office in June 2017. Both of these events were designed to gather feedback from stakeholders on a variety of issues related to land use and transportation in the proposed station areas. As a result of this outreach and coordination, this planning effort has emphasized strategies that can help the township achieve long-established pedestrian and mobility goals. Many of the specific recommendations identified in this document would be beneficial to residents, employees, and visitors even if the KOP Rail were not constructed.

Document Overview

The remainder of this chapter is dedicated to providing background on the KOP Rail project and context for the King of Prussia study area, including the five proposed stations. The second chapter describes a series of planning principles that have emerged during this process that can help to guide the future growth and development of the KOP Rail Corridor. Chapter 3 briefly describes the project team's approach to station area planning and how it was influenced by the principles described in Chapter 2.

Chapters 4–6 focus on individual station areas. For the purposes of this study, the five KOP Rail proposed stations have been organized into three station areas. The two stations proposed for First Avenue, near Moore Road and American Avenue respectively, are collectively referred to as the First Avenue stations and are considered in Chapter 4. The two stations that have been proposed for the King of Prussia Mall (KOP Mall) are discussed in Chapter 5. Chapter 6 is dedicated to the Henderson Road Station, proposed for a location near the intersection of Henderson Road and Saulin Boulevard. The report concludes with a series of recommendations for implementation and further study.

KOP Rail Project Background

Travel to King of Prussia currently occurs by automobile, bus, or a combination of high speed rail or regional rail with bus connections. Residents, employees, and visitors using transit to travel to or within King of Prussia are likely relying on one of six SEPTA bus lines operating there today. These lines, however, operate infrequently and represent some of the least reliable bus routes in SEPTA's system due to traffic congestion along arterial portions of their routes, such as the Schuylkill Expressway. All of these bus routes have "on-time" percentages—measured as arrivals within six minutes of a scheduled arrival—in the low 60s.

The KOP Rail project proposes adding a new elevated branch to the NHSL that extends approximately four miles west from a junction with the existing line between the Hughes Park and DeKalb Street stations (see Figure 2). The purpose of this extension is to provide faster, more reliable transit service and improve connections between major destinations in King of Prussia. The project also has the potential to

On May 17, 2017, the study team conducted a workshop designed to gather input from township residents and stakeholders on transportation and development issues around the proposed station locations. Workshop participants included representatives from the KOP Rail Community Working Group, the Upper Merion Township Planning Commission, and the Upper Merion Township Economic & Community Development Committee.

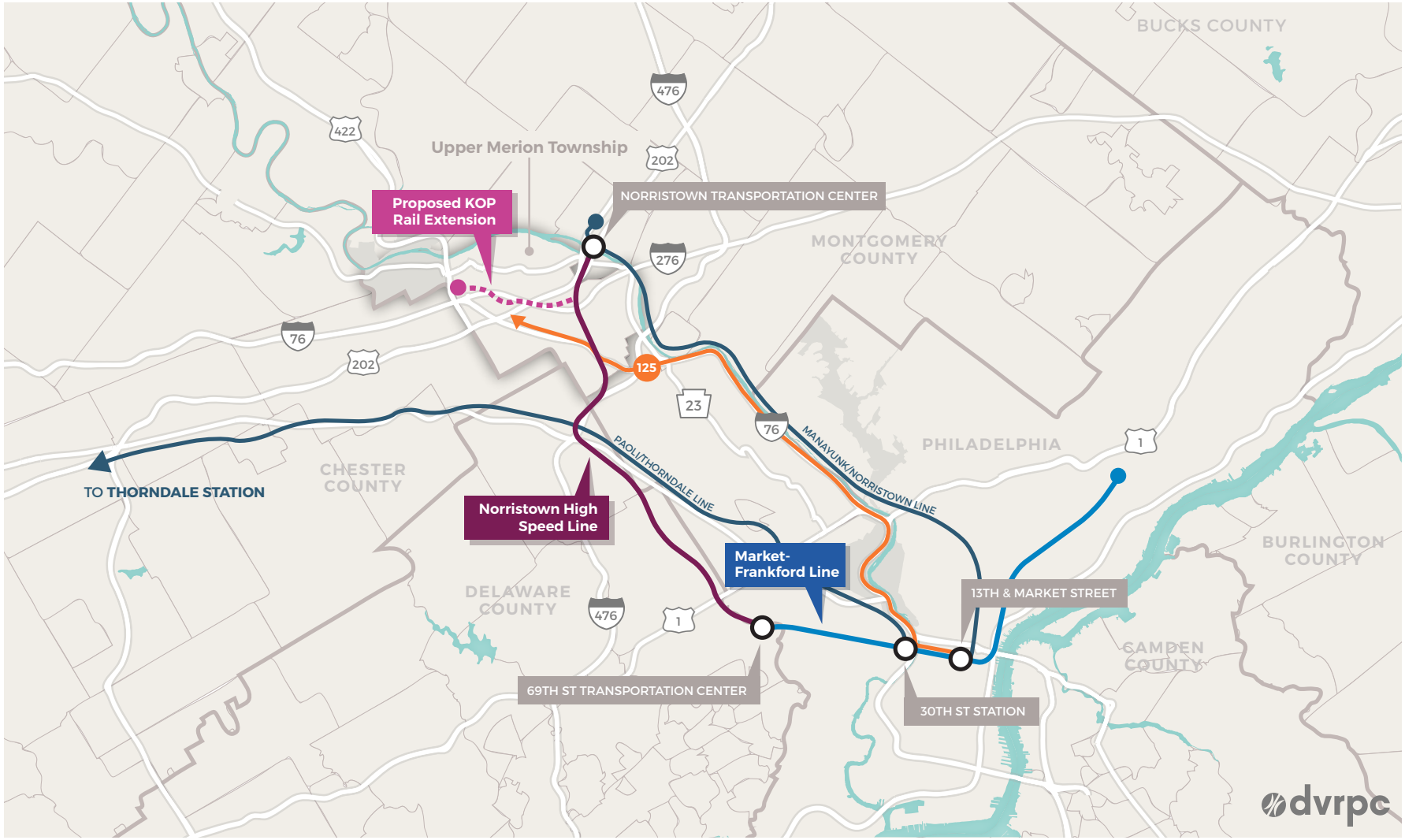


FIGURE 1: REGIONAL TRANSIT CONTEXT

Source: SEPTA

King of Prussia is located in the western portion of Upper Merion, a Montgomery County township located approximately 15 miles northwest of Center City Philadelphia. This area is served by six SEPTA bus routes, including Route 125 (shown in orange above), which provides service to Center City Philadelphia. A portion of the township is already served by the existing NHSL. The KOP Rail project proposes to extend the existing NHSL into King of Prussia, providing a "one-seat" ride to King of Prussia from either the 69th Street Transportation Center in Upper Darby or the Norristown Transportation Center in Norristown. The extension will provide more consistent transit service to the King of Prussia area than the existing network of buses, which often have unreliable travel times due to traffic congestion.

create a critical transit link between King of Prussia and Philadelphia, Norristown, and other destinations in Montgomery and Delaware counties.

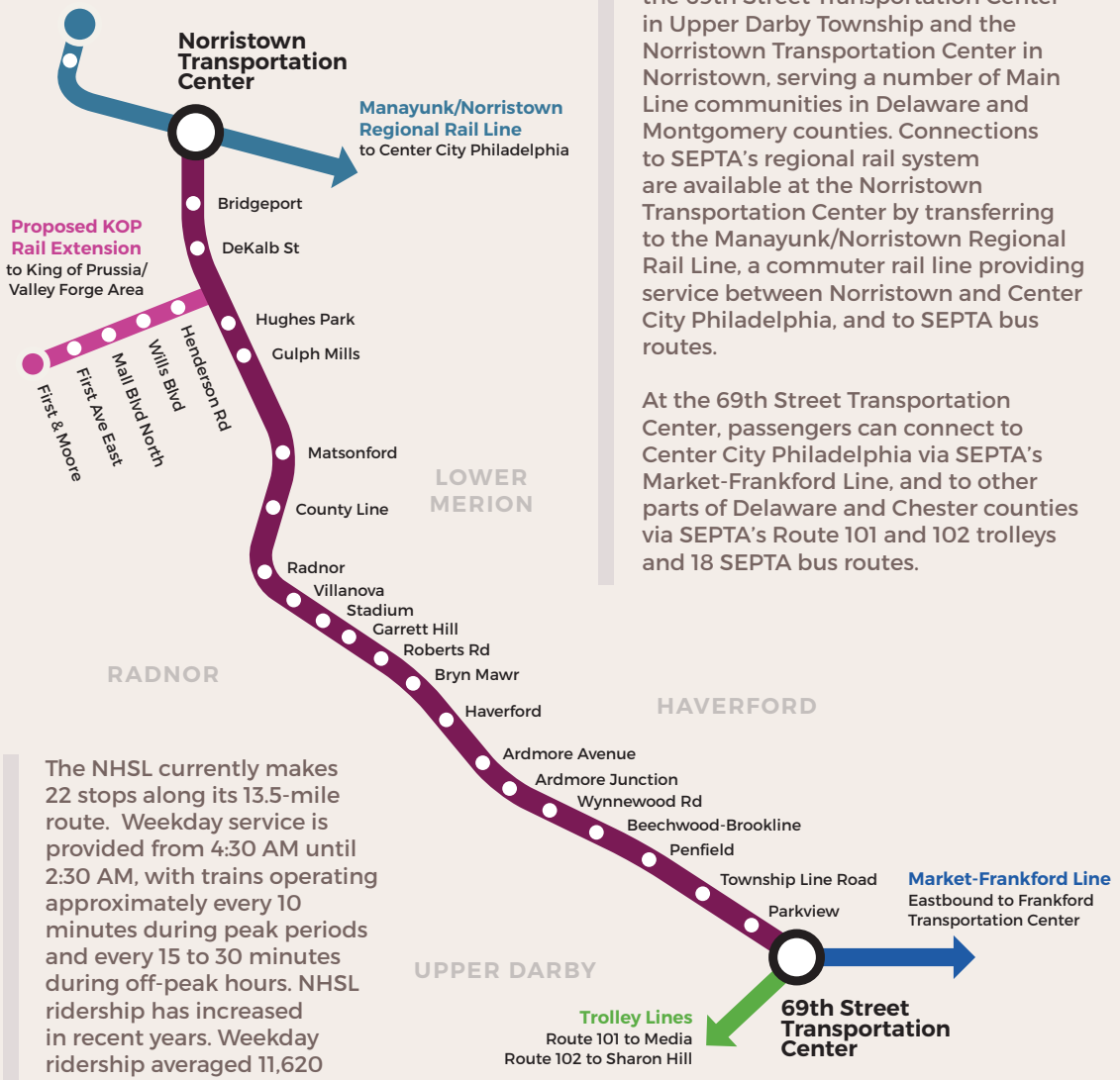
SEPTA initiated the KOP Rail project in 2012; however, enhancing transit access to King of Prussia and Valley Forge has been identified as an important regional priority for several decades. The concept first appeared in *The 1985 Delaware Valley Plan*, DVRPC's very first Long-Range Plan, which was adopted in 1969.

Ever since, improving transit access to King of Prussia has been a prominent theme in local, county, and regional planning documents. Upper Merion Township's *Vision 2020 Plan*, published in 2005, stresses the importance of alternative modes of transportation, such as mass transit, as essential to the future economic growth of the township. Similarly, the 2005 Upper Merion Township Land Use Plan cites the use of public transportation as a key strategy for improving traffic circulation and calls for supporting SEPTA in its efforts to extend the Norristown High Speed Line farther into the township.

Montgomery County officials have long recognized the key role that new transit service can play in connecting communities and supporting a vibrant regional economy. *MontCo 2040*, the comprehensive plan for Montgomery County, recognizes an extension of the NHSL to King of Prussia as a priority for public transportation expansion.

Furthermore, DVRPC has identified King of Prussia/Valley Forge as one of six Metropolitan Subcenters, areas of concentrated economic and commercial activity and supportive infrastructure that are particularly appropriate for continued investment. Accordingly, KOP Rail is one of several Regionally Significant Transit

FIGURE 2: THE NHSL TODAY



Formerly known as the Route 100, the NHSL currently operates between the 69th Street Transportation Center in Upper Darby Township and the Norristown Transportation Center in Norristown, serving a number of Main Line communities in Delaware and Montgomery counties. Connections to SEPTA's regional rail system are available at the Norristown Transportation Center by transferring to the Manayunk/Norristown Regional Rail Line, a commuter rail line providing service between Norristown and Center City Philadelphia, and to SEPTA bus routes.

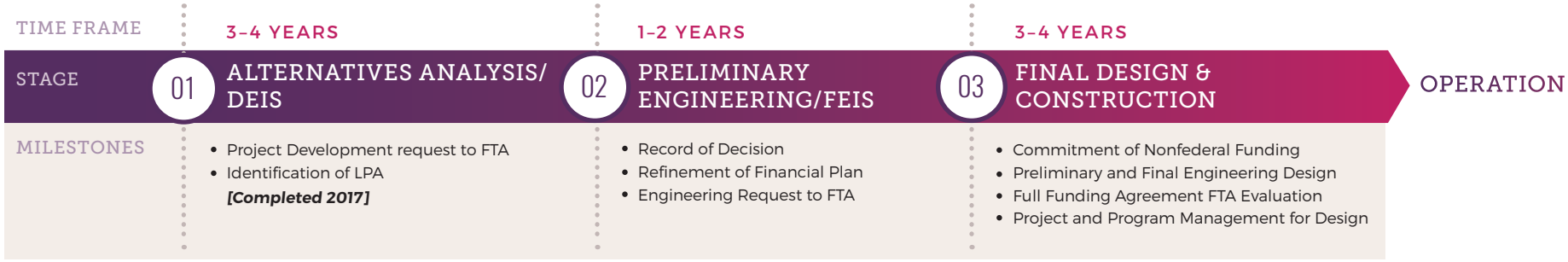
At the 69th Street Transportation Center, passengers can connect to Center City Philadelphia via SEPTA's Market-Frankford Line, and to other parts of Delaware and Chester counties via SEPTA's Route 101 and 102 trolleys and 18 SEPTA bus routes.

The NHSL currently makes 22 stops along its 13.5-mile route. Weekday service is provided from 4:30 AM until 2:30 AM, with trains operating approximately every 10 minutes during peak periods and every 15 to 30 minutes during off-peak hours. NHSL ridership has increased in recent years. Weekday ridership averaged 11,620 during Fiscal Year 2015, a 36 percent increase from Fiscal Year 2010.[1]

dvrpc

Source: SEPTA

FIGURE 3: KOP RAIL PROJECT DEVELOPMENT PROCESS



Source: DVRPC, adapted from the DEIS

Projects listed in *Connections 2045*, DVRPC's Long-Range Plan for Greater Philadelphia, because it has the ability to serve growing travel needs and support economic development.

SEPTA has previously explored specific transit concepts serving this area as part of its investigation of the proposed Cross-County Metro and Schuylkill Valley Metro systems.

In recent years, the need for new and improved transportation options in King of Prussia has only grown more acute. Today, King of Prussia is home to 4.4 million square feet of retail space, 17 million square feet of office and industrial space, and approximately 50,000 jobs.[2] King of Prussia is the economic center of Montgomery County and the largest employment center in the region outside of Philadelphia. Upper Merion Township is currently home to approximately 28,000 residents. Although the township's population is projected to grow to nearly 35,000 by 2045, an increase of 20 percent, residents will continue to be outnumbered by the roughly 54,000 employees who commute into the township on a typical weekday.[3] For more information on the history and evolution of King of Prussia, see the timeline on pages 16 and 17.

Aside from employment, King of Prussia continues to be a major destination for shoppers and tourists. Attractions such as the KOP Mall, Valley Forge National Historical Park, and the Valley Forge Casino Resort draw roughly 25 million visitors every year.[4] The combination of resident, employee, and visitor traffic has stressed a transportation system that primarily consists of autocentric streets and highways. The frequent traffic congestion that occurs in and around King of Prussia, particularly on the I-76, I-476, and U.S. 202 corridors, has resulted in unreliable travel times and threatens to limit the future economic growth and development of the area.

KOP Rail Project Process

Before the KOP Rail project can be constructed, it will need to satisfy three major phases of alternatives development and environmental screening that are required for any project hoping to use federal funding for construction: Draft Environmental Impact Statement (DEIS), Final Environmental Impact Statement (FEIS), and Engineering Design and Program Management (see Figure 3).

In fall 2012, SEPTA began working with the Federal Transit Administration (FTA) on an Alternatives Analysis and DEIS designed to evaluate potential transit alignments and environmental impacts. This study used a tiered screening process to narrow down the alternatives from an initial long list of 30 potential alternatives to a single recommended Locally Preferred Alternative (LPA). The DEIS also included the development of capital and operating costs, a simulation of service operations, environmental review steps as required by the National Environmental Policy Act, 3D modeling of the LPA, and significant outreach to the public and area stakeholders. For more information on the King of Prussia Project Development Process, please visit the official project website: www.kingofprussiarail.com.

The recommended LPA was announced in March 2016, and the Alternatives Analysis and DEIS were completed in fall 2017. The recommended LPA, also known as the PECO/ Pennsylvania Turnpike/First Avenue Alternative, is shown in Figure 4 and several subsequent exhibits. This elevated alignment branches off of the existing NHSL between the DeKalb Street and Hughes Park stations and extends

west along a PECO right-of-way before traveling along the north side of the Pennsylvania Turnpike (PA Turnpike). After crossing over the turnpike and Route 202/DeKalb Pike, the alignment travels north of the KOP Mall and crosses the turnpike again before traveling west along First Avenue. The LPA includes five stations: one at Henderson Road, two at the KOP Mall, and two in Moore Park KOP (the area formerly known as the KOP Business Park).

Understanding the KOP Rail Corridor

This study's focus on nonmotorized access and local development implications has naturally led the study team to focus on the areas immediately surrounding each of the five proposed train stations. Accordingly, much of the analysis described in Chapters 4–6 focuses on the area within one-half mile of each station because this catchment area is often cited as the distance people are willing to walk to transit. This area is also the zone over which a transit station may exert the most influence over the built environment.

However, effective station area planning requires an understanding of the larger context within which these stations are being planned. King of Prussia is a Census Designated Place that falls completely within the boundaries of Upper Merion Township. Perhaps better known than the municipality in which it is found, King of Prussia is generally considered to be the area of the township south of the Schuylkill River, east of Route 422, north of Route 202 and the PA Turnpike, and west of the existing NHSL tracks.

LAND USE AND COMMUNITY CHARACTER

Over the last five decades, King of Prussia has emerged as an economic powerhouse and one of the most important employment centers in the region, in part due to its location at the confluence of several major highways: the PA Turnpike, I-76, Route 422, and Route 202. The proposed alignment of the KOP Rail project largely transects the commercial center of the township (see Figure 5: KOP Rail Corridor Land Use [2015]).

When considered together, the overlapping areas within one-half mile of the five proposed stations (shown in Figures 5 and 6) total approximately 1,877 acres, representing roughly 17 percent of the land area of Upper Merion Township. Over 4,000 people (nearly 15 percent of Upper Merion's population) reside within one-half mile of a proposed station. However, more than 36,000 jobs are located within the same area, meaning that this relatively small portion of the township accounts for roughly 65 percent of the nearly 60,000 jobs found in Upper Merion Township. The lopsided employee-to-resident ratio found in the immediate KOP Rail station areas is understandable given the concentration of retail, office, and industrial in this portion of the township. Nonetheless, it is important to remember that in addition to the residential portions of the proposed station areas, numerous established, relatively dense residential neighborhoods can be found just outside the one-half-mile station areas. Providing a variety of ways for these residents to access the proposed stations must be a priority.

Upper Merion Township itself is classified as a Developed Community in *Connections 2045*. This classification reflects the fact that as a mature suburban municipality, Upper Merion Township has already experienced most of its population and employment growth. For Upper Merion Township, and many similar communities in our region, the greatest period of residential growth occurred during the 1950s and 1960s. Between 1950 and 1960, the township's population grew by over 10,000 residents (an increase of 167 percent). The legacy of this population boom can be found in older residential areas like the Abrams and Belmont neighborhoods located in the northern central portion of the township.

King of Prussia's origin as a commercial destination began in the 1950s with the construction of the PA Turnpike and Schuylkill Expressway interchange. In subsequent decades, King of Prussia evolved into a suburban development center that contains a concentration of business, shopping, and entertainment located outside of the region's central business district in Center City Philadelphia. These types of suburban centers developed outside many central business districts around the country in the second half of the 20th century, and typically incorporate suburban development patterns in which land uses are segregated and commercial and office developments are arranged linearly along major highways. These development patterns typically feature automobile-oriented design that makes walking or bicycling challenging.

OPEN SPACE AND TRAILS

Upper Merion Township is home to a generous park and trail system that includes a combination of historic and natural resources, including active and passive spaces and natural and managed landscapes. Many of these resources are shown in Figure 6: KOP Rail Corridor Open Space and Trails. Valley Forge National Historical Park, site of the Continental Army encampment during the Revolutionary War, is the largest open space in the township and a destination for roughly 2 million visitors each year. The park itself is spread over 3,500 acres and includes 26 miles of hiking and biking trails.

Maintaining and expanding the township's open space system remains a priority for Upper Merion Township. In particular, the township, along with its regional partners,

(continued on page 12)

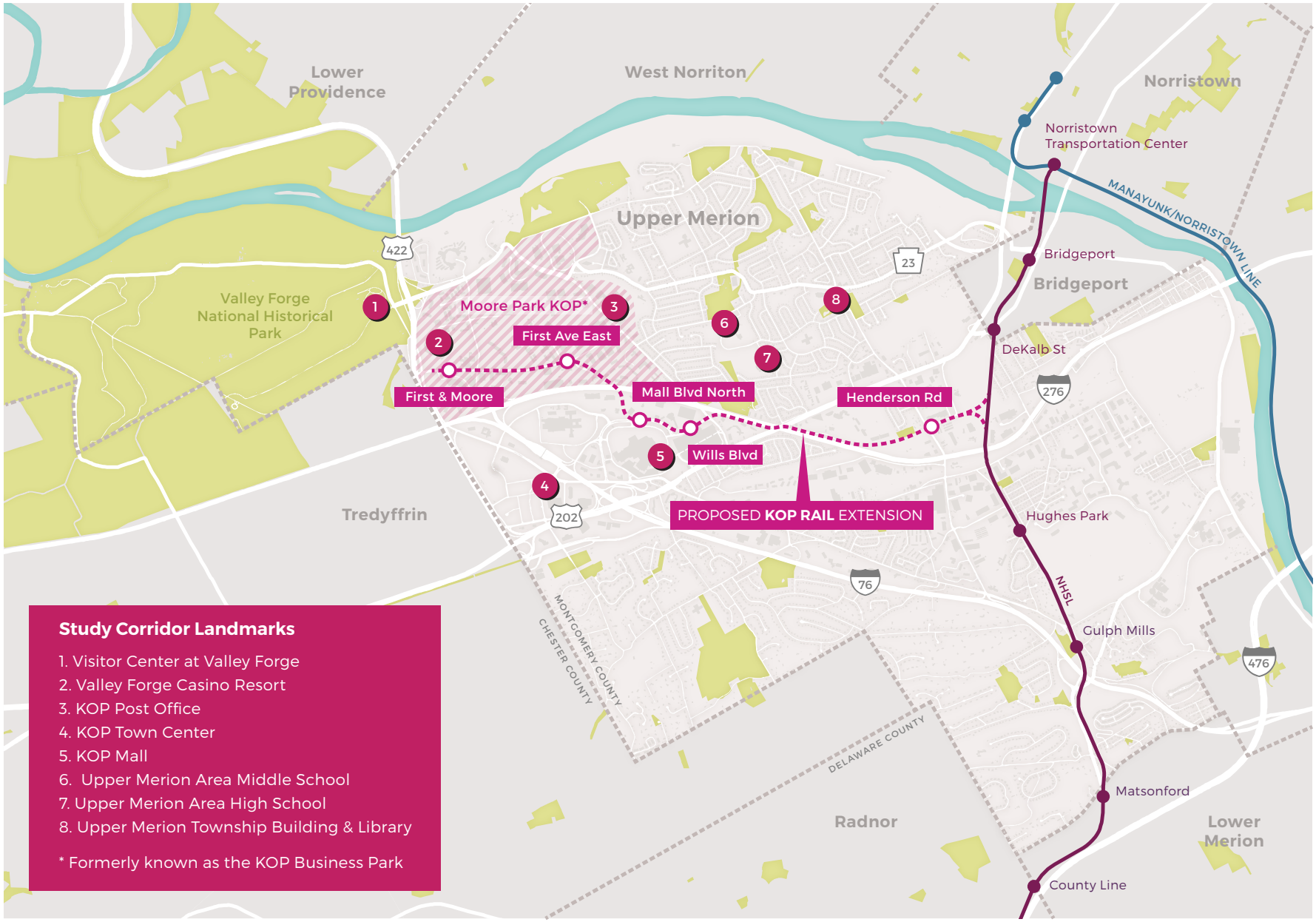


FIGURE 4: KOP RAIL CORRIDOR

Over the last 50 years, King of Prussia has evolved into one of Greater Philadelphia's most important centers for employment, shopping, and recreation. With nearly 50,000 jobs, King of Prussia is the largest suburban employment market in the region.

Land uses along the KOP Rail Corridor reflect the area's retail and employment focus. Over 50 percent of the land within one-half mile of the proposed stations is dedicated to commercial and light industrial uses. While residential uses account for only 16 percent of the study corridor, many residential neighborhoods exist just beyond these boundaries. Providing safe and convenient nonmotorized access from these neighborhoods and employment destinations to the stations will require a variety of pedestrian infrastructure investments.

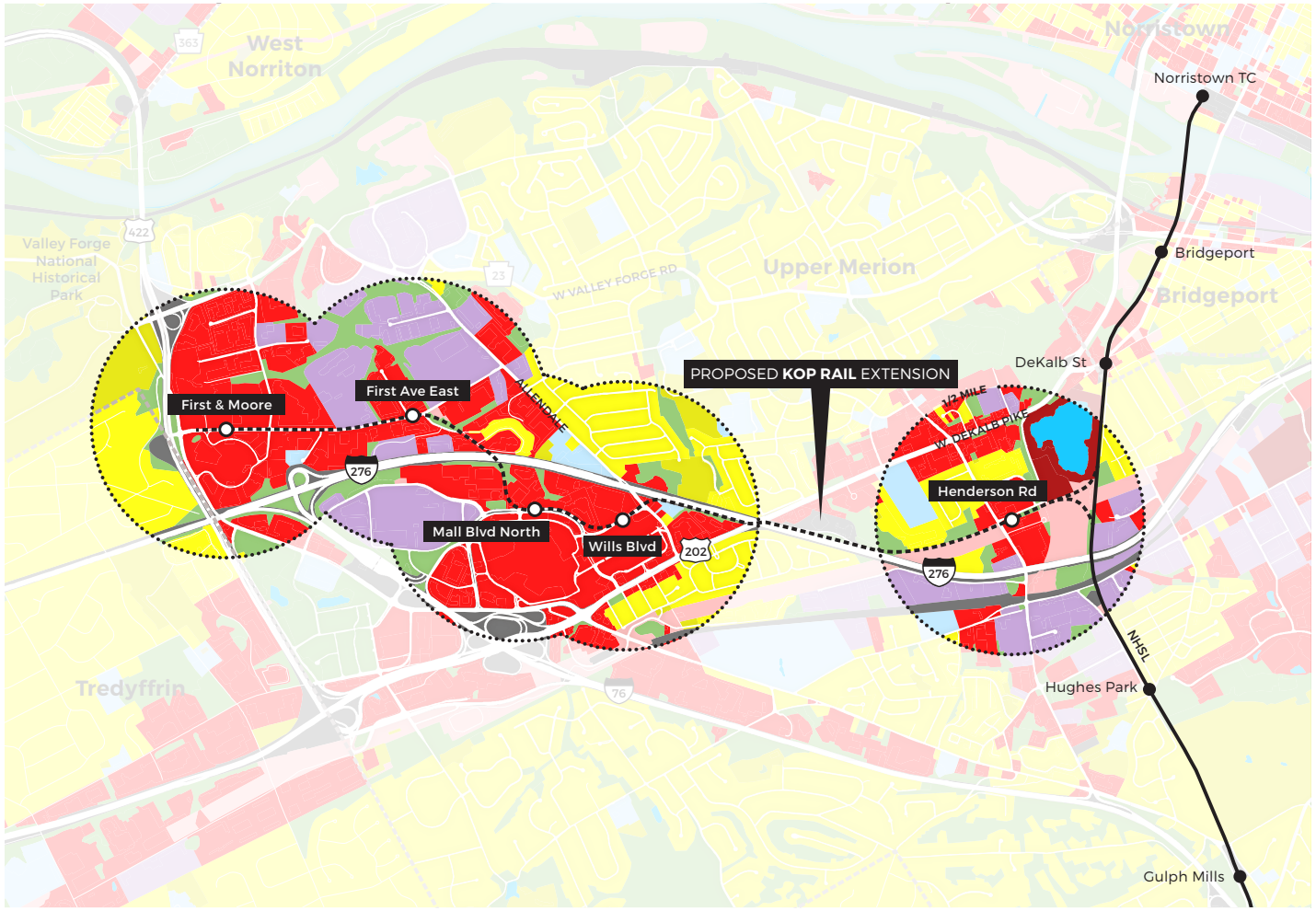


FIGURE 5: KOP RAIL CORRIDOR LAND USE (2015)

- Commercial
- Industrial
- Institutional
- Mining
- Recreation
- Residential
- Transportation
- Utility
- Water
- Wooded or Undeveloped

Source: DVRPC, 2015

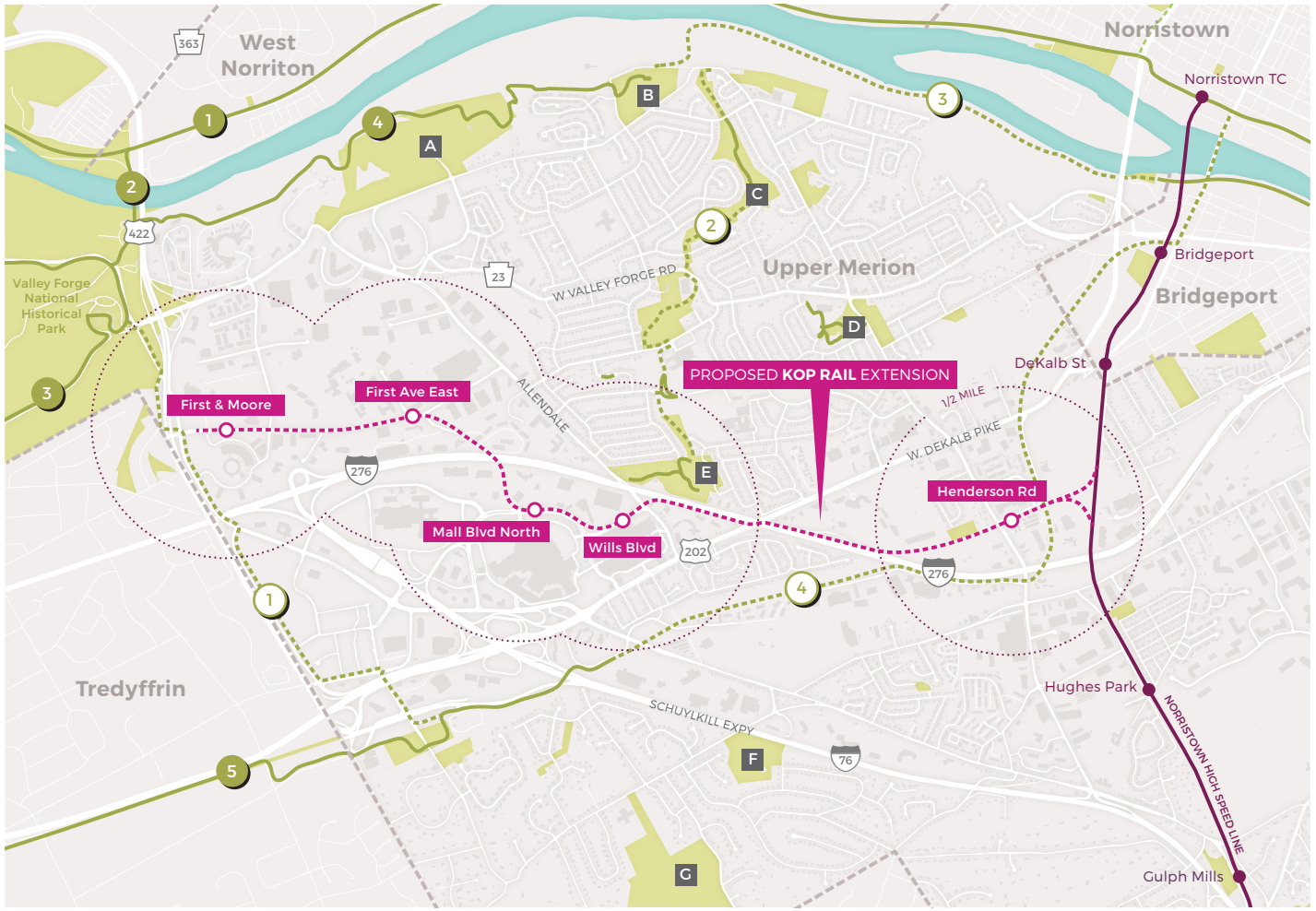


FIGURE 6: KOP RAIL CORRIDOR OPEN SPACE AND TRAILS

Existing Trail Segments

1. Schuylkill River Trail
2. Sullivan's Bridge
3. Valley Forge Loop
4. Schuylkill River West Trail
5. Chester Valley Trail

Proposed Trail Segments

1. N. Gulph Road Connector
2. Crow Creek Trail
3. Schuylkill River West Trail
4. Chester Valley Trail

Township Parks

A. Heuser Park
B. Bob Case Park
C. Sweetbriar Park
D. Upper Merion Township Park
E. Walker Field
F. Bob White Park
G. McKaig Nature Education Center

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0.5 MILE

NORTH

Source: Upper Merion Township

Enhancing and expanding Upper Merion's network of open spaces and trails can help the township achieve a variety of recreational, environmental, and public health goals. However, with the introduction of rail service, multi-use trails can also play a valuable role in providing access to transit.

has pursued opportunities to enhance connections to and between open spaces to create a network for recreation and nonmotorized transportation. These objectives are reflected in proposals for the Crow Creek Trail and extensions of the Chester Valley and Schuylkill River West trails. Where applicable, the potential role that existing and proposed trail infrastructure can play in providing enhanced nonmotorized access to the proposed KOP Rail stations is discussed in Chapters 4–6.

EXISTING TRANSIT NETWORK

Upper Merion Township currently hosts two existing NHSL stations (Hughes Park and Gulph Mills), and additional stations are located in adjacent portions of Lower Merion, Bridgeport, and Radnor. Direct transit service to the KOP Rail study area consists of a combination of SEPTA buses and local shuttle services.

Six SEPTA Suburban Division bus routes currently operate in King of Prussia, exceeding 6,300 passenger trips on a typical weekday (see Figure 7).[5] While they serve a variety of local and regional destinations, they share a common stop at the King of Prussia Transit Center. This transit center is located next to the former JC Penney in a portion of the KOP Mall formerly known as the Plaza. The transit center includes an interior waiting area and bus shelters. An extension of the NHSL to this area would likely inspire revisions to these existing routes, particularly routes that currently serve existing NHSL stations. SEPTA has worked with AECOM to evaluate potential route changes in light of the KOP Rail project. A preliminary assessment of these potential changes, entitled *Bus and Shuttle Service Improvement Plan Technical Memorandum*, was released in April 2015.

The KOP-BID operates two weekday commuter shuttle routes that provide connections between Moore Park KOP and nearby SEPTA stations: Wayne Station on the Paoli/Thorndale Regional Rail Line; and the Norristown Transportation Center, served by Manayunk/Norristown Regional Rail Line. These 14-passenger shuttles make 11 trips during the morning peak and 10 trips during the afternoon peak.

Upper Merion Township operates the Rambler, a community bus service designed to provide public transportation for township residents to area shopping centers, medical facilities, the Senior Center, and the township's municipal building. The Rambler service operates from 9:00 AM to 4:00 PM, Monday through Saturday, and features a combination of regular and "request" stops. Residents wishing to use a request stop call ahead to ensure service. See Appendix A for a map of shuttle services.

WALKING AND BIKING IN KING OF PRUSSIA TODAY

Like automobiles and trains, pedestrians and cyclists require infrastructure and facilities that enable safe movement and minimize conflict with vehicles. King of Prussia, like many suburban communities, was built with an emphasis on automobile travel that can make walking and biking inherently difficult.

Chapters 4–6 include a detailed assessment of each station's nonmotorized transportation infrastructure, including the identification of potential locations for pedestrian and bicycle improvements. However, we can get a broad sense of the state of the corridor's current walking and biking environment by examining a few nonmotorized accessibility metrics.

Walking is strongly intertwined with physical patterns of density, land uses, and block size. Figure 8 depicts the average block size for Census Block Groups along the KOP Rail Corridor. Blocks consisting of areas smaller than five acres are generally considered to be the most walkable. For reference, a rectangular block measuring 450 feet by 400 feet has an area of 4.1 acres.

Highly dispersed destinations and wide crossings make walking challenging in some parts of the study corridor.

Narrow sidewalks next to high-volume roads contribute to an unpleasant pedestrian environment.

Some shopping centers along the corridor have enhanced the environment by adding newer curb ramps and higher-visibility crosswalks.

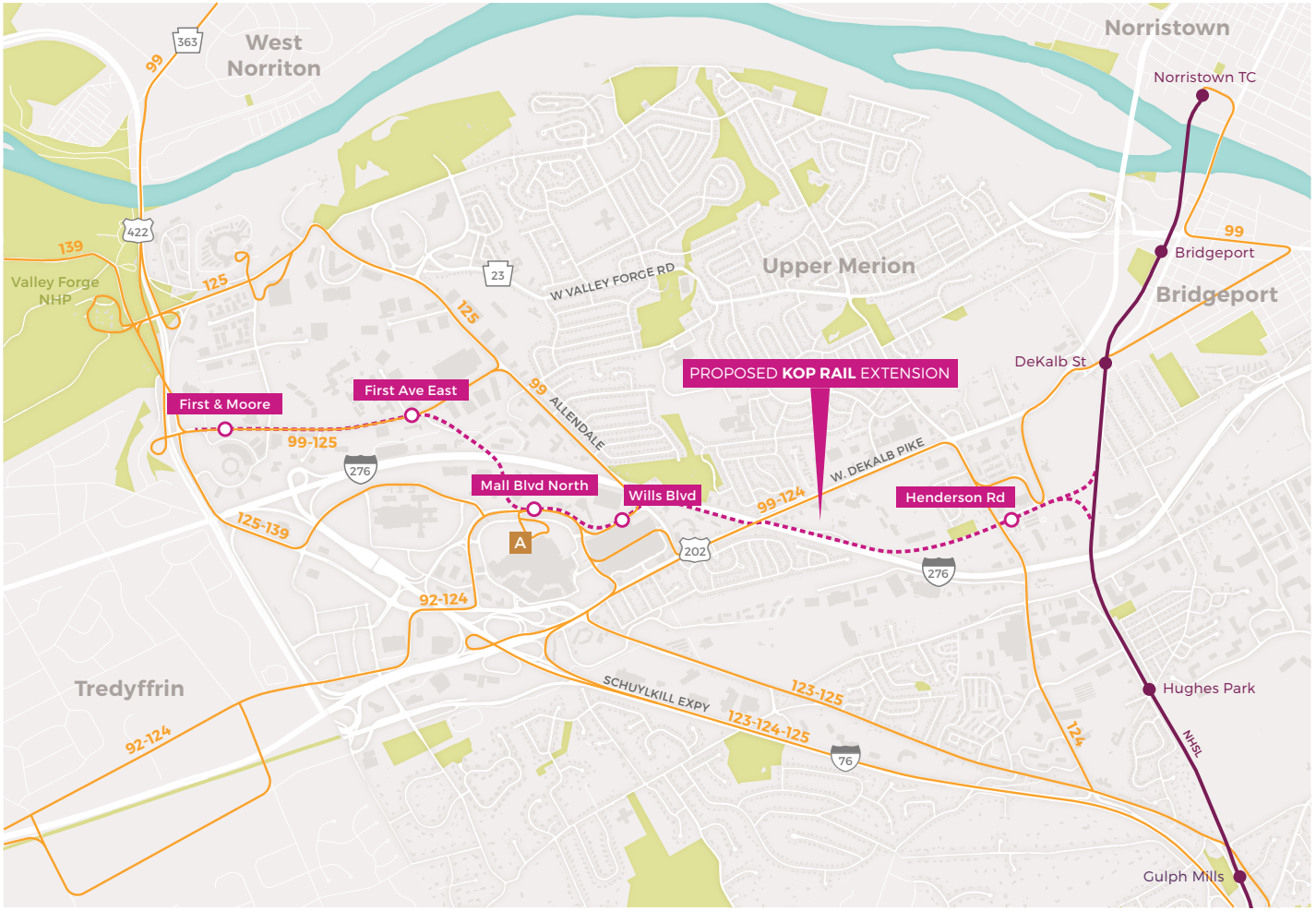


FIGURE 7: EXISTING SEPTA BUS ROUTES

SEPTA BUS ROUTE | *WEEKDAY TRIPS*

92 Exton to King of Prussia | *25*
99 Phoenixville to Norristown Transportation Center | *62*
123 Express King of Prussia to 69th Street Transportation Center | *51*
124 Express Chesterbrook and King of Prussia to 13th and Market | *59*
125 Express Valley Forge and King of Prussia to 13th and Market | *70*
139 Limerick to King of Prussia | *32*

Source: SEPTA

Along with the existing NHSL, Upper Merion Township is served by six SEPTA bus routes and three shuttles (see Appendix A). Today, these buses play a key role in getting individuals to jobs and services located in King of Prussia. Expanded rail service may be particularly beneficial for the roughly 4,600 people who rely on SEPTA Routes 123, 124, and 125 on a typical weekday. These routes offer connections between King of Prussia and the 69th Street Transportation Center and Center City Philadelphia, respectively. The reliability of these popular routes is often impacted by congestion on roadways, such as the Schuylkill Expressway.

KOP TRANSIT CENTER

In general, smaller block sizes make walking more efficient by creating quicker, more direct routes and increasing route options for pedestrians. Smaller blocks are accompanied by a larger number of intersections, creating places where cars must stop and pedestrians can cross. Smaller block sizes and a denser network of streets may also have the effect of dispersing traffic, potentially making streets more pleasant to walk along and easier to cross. The large block sizes (many in excess of 20 acres) found near many of the proposed stations help to illustrate some of the structural challenges to walking in the study area today.

Neighborhoods require more than small blocks to be considered walkable; they also need a variety of destinations (places of employment, schools, shops) within walking distance. Walk Score® is an independently developed assessment that can be used to measure the number of amenities near a location. The current Walk Scores for each of the five proposed stations are shown in Figure 8. Based on a 100-point scale, these scores can help identify the degree to which an individual can accomplish a variety of typical errands by walking, given existing conditions. Amenities within a five-minute walk (0.25 miles) are given the most points, and higher overall scores indicate areas of potentially greater walkability.

Using Walk Score's rating categories, three stations—Mall Boulevard North, Wills Boulevard, and Henderson Road—are classified as "Somewhat Walkable," meaning that some errands can be accomplished on foot. Based on current conditions, the two First Avenue stations are classified as "Car-Dependent," suggesting that most errands require the use of a car. Although Walk Score measures the distance to certain types of destinations, it does not evaluate other factors critical to walkability, such as road safety, the quality of

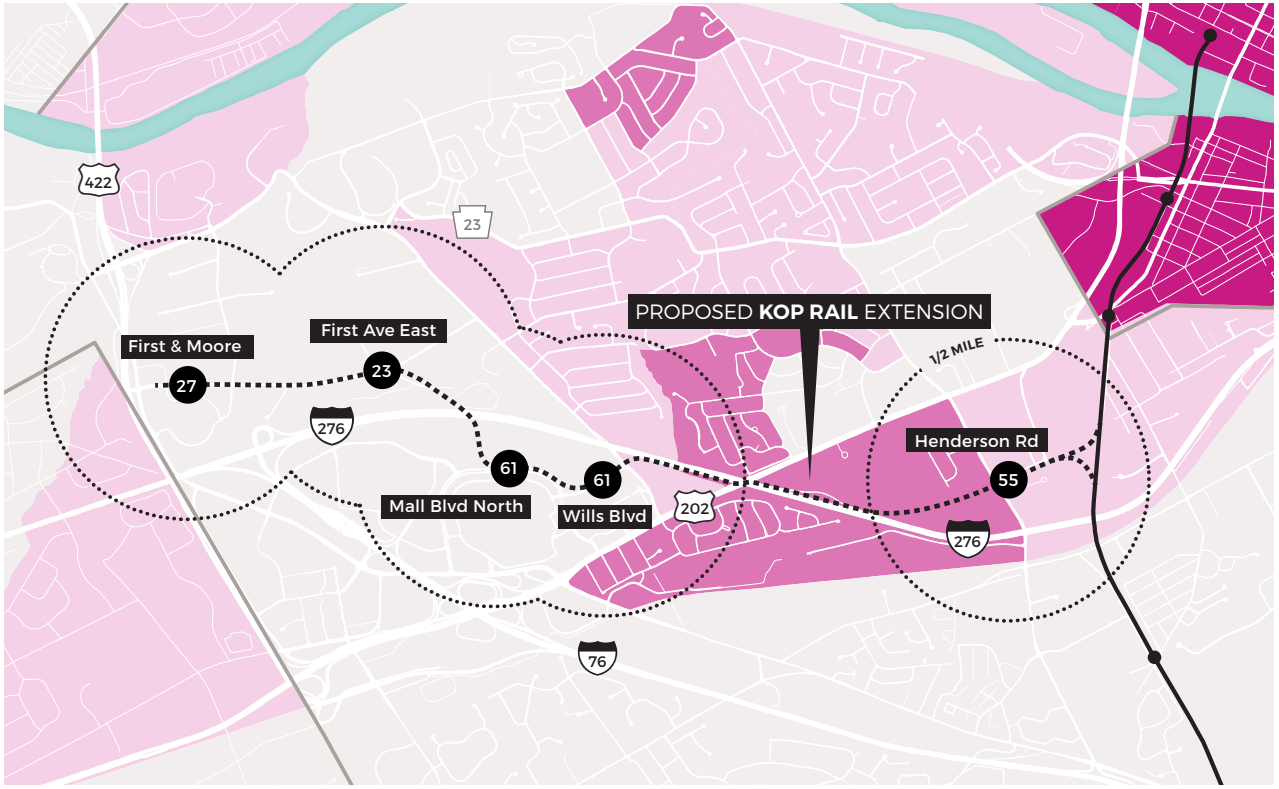


FIGURE 8: WALKABILITY MEASURES

Average Block Size by Census Block Group

WALKABILITY

- less than 5 acres
- 5 to 9 acres
- 10–19 acres
- 20 or more acres

Block size[6] is one potential indicator of walkability, with smaller blocks contributing to a more desirable walking environment.

Walk Score®

Walk Score measures the walkability of any address based on the distance to nearby places and pedestrian friendliness. For more information, please visit www.walkscore.com.

— Proposed station location

Walk Score of proposed station location

SCORE	DESCRIPTION
90–100	**Walker's Paradise** Daily errands do not require a car
70–89	**Very Walkable** Most errands can be accomplished on foot
50–69	**Somewhat Walkable** Some errands can be accomplished on foot
25–49	**Car-Dependent** Most errands require a car
0–24	**Car-Dependent** Almost all errands require a car

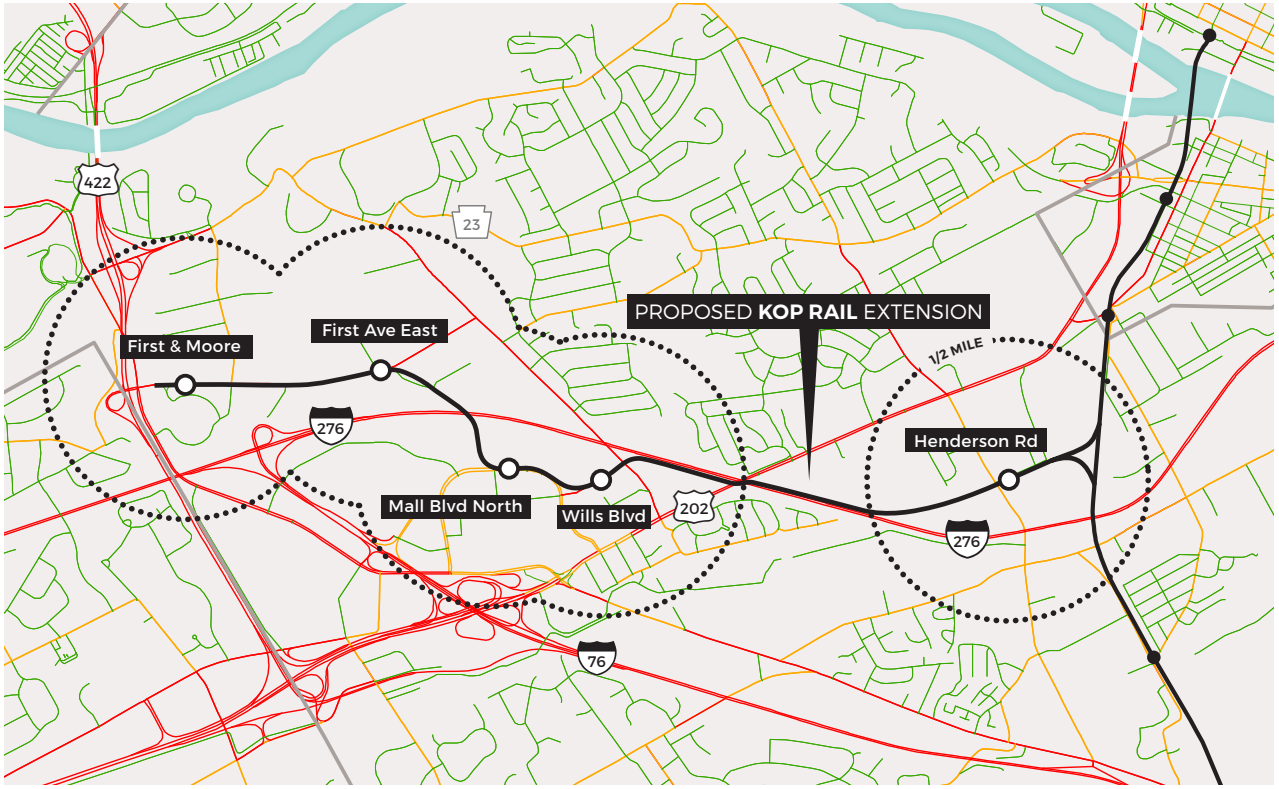


FIGURE 9: BICYCLE LEVEL OF TRAFFIC STRESS (LTS)

LTS Categories and Rider Types

- **LTS 1 & 2:** Roadway segments comfortable enough for "Most People" or those classified as "Interested, but Concerned"
- **LTS 3:** Roadway segments comfortable for cyclists classified as "Enthused and Confident"
- **LTS 4:** Roadway segments where cycling is prohibited or comfortable only for cyclists classified as "Strong and Fearless"

LTS is a road classification technique and bicycle accessibility measure based on the comfort of bicyclists on a given roadway. Using a framework ranging from LTS 1 (most comfortable) to LTS 4 (least comfortable), DVRPC recently completed a regional assessment of LTS based on a variety of roadway characteristics, including the number of lanes; effective vehicle speed; and the presence of bicycle facilities, such as bike lanes.

The LTS 1 and 2 segments identified above likely represent the streets on which cyclists would feel the most comfortable based on existing conditions. For more information, please visit: www.dvrpc.org/webmaps/BikeStress.

sidewalks, or the ease of crossing the street. More information on the factors that affect walkability can be found in Chapter 2.

Measuring the bikeability of an area can be a challenge, particularly in places with few dedicated bicycle facilities. It is also important to note that there are many different kinds of cyclists. While some small percentage is willing to ride under any conditions, the majority of cyclists, and those potentially interested in cycling, prefer facilities and treatments that provide additional safety.

Level of Traffic Stress (LTS) is one road classification technique that can be used to evaluate how comfortable a particular road is for cyclists. DVRPC recently conducted an LTS assessment of regional roads based on a variety of roadway characteristics, including the number of lanes, vehicle speed, and the presence of dedicated bicycle facilities.[7]

Using a methodology developed by the Mineta Transportation Institute, this assessment classifies road segments from LTS 1 (most comfortable, suitable for most people) to LTS 4 (highest stress, suitable for cyclists described as strong and fearless). Study area road segments rated LTS 1 and 2 are shown in green in Figure 9. This network of mostly local streets represents streets on which cyclists would feel the most comfortable and serves as a foundation for future bicycle planning.

However, this network of lower-stress cycling streets is limited and discontinuous due to the presence of several higher-stress collector and arterial roadways, as well as a number of freeways and interstates on which cycling is restricted. Roadway segments classified as LTS 3 recommend future potential targets for cycling improvements. Converting these streets into LTS 2 facilities can play a critical role in expanding the bicycle network in Upper Merion.

KING *OF* PRUSSIA

The Growth and Development of a Regional Center

The King of Prussia/Valley Forge area occupies only a portion of Upper Merion Township, yet this relatively small area has played an outsized role in the history of this country and, more recently, the economic prosperity of the region. Most of this document is focused on the future of King of Prussia; however, planning for the future of this area will be more successful if we understand how the evolution of this place has contributed to its current transportation and built environment.

With four major highways crossing through the area, King of Prussia's success has always been fueled by transportation access. Today, King of Prussia is often referred to as one of the region's edge cities because it is an urban center complete with its own major shopping and employment destinations that has emerged outside the bounds of a traditional downtown. Like other edge cities here and around the country, King of Prussia's spread-out, autocentric urban form reflects the time in which it matured.

The area's popularity and reliance on the automobile have combined to create congestion that has become synonymous with the name King of Prussia itself for daily commuters, shoppers, and tourists.
In recent years, township officials and regional stakeholders have responded to growth pressures and changing real estate and demographic trends by taking steps to create more traditional urban environments and a more balanced transportation system.

18th CENTURY Making History

1710 1720 1730 1740 1750 1760 1770 1780 1790

1713

Upper Merion Township incorporates.

1769

King of Prussia Inn opens.

King of Prussia takes its name from an inn and tavern opened in 1769. The King of Prussia Inn itself was named after Frederick II, a Prussian monarch who was known for his opposition to British imperialism. After the construction of US 202, the original building was relocated and restored. Today it serves as the home of the Montgomery County Chamber of Commerce.

1777–78

The Continental Army, led by George Washington, spends the winter of 1777–78 encamped at Valley Forge during the American Revolutionary War.

Valley Forge would become a state park in 1893 and national historic park on July 4, 1976.

1784

Montgomery County created.

1950

The King of Prussia interchange of the PA Turnpike opens.

Eight years later, the first businesses would begin locating in what would become known as the King of Prussia Business Park.

1963

The Plaza at King of Prussia opens.

The Plaza was originally built as an open-air shopping mall. It was eventually fully enclosed and was later joined by an adjacent mall, known as the Court, in 1981.

2010

The King of Prussia District (KOP-BID) is founded.

2016

First phases of The Village at Valley Forge open.

2016

Upper Merion begins its comprehensive plan update.

20th CENTURY Access and Commerce

1910 1920 1930 1940 1950 1960 1970 1980 1990

1907

The Norristown High Speed Line begins service as the Philadelphia and Western Railroad.

After various extensions, the route was absorbed by SEPTA in 1969. Formerly known as the Route 100, the purple color-coded line was officially changed to its current name in 2009.

1950s

The population of Upper Merion Township grows by 167 percent to over 17,000 during this decade.

21st CENTURY Evolution and Reinvention

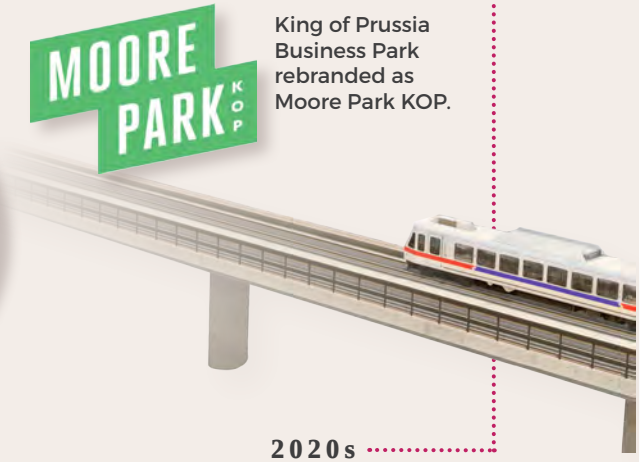
2010 2020 2030

2016

The KOP Mall Connector opens.

2018

King of Prussia Business Park rebranded as Moore Park KOP.



2020s

Anticipated opening of the NHSL extension to King of Prussia.

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CHAPTER 2

GUIDING PRINCIPLES

Extending rail transit service to an established community like King of Prussia will require additional years of study, design, and construction. Similarly, retrofitting the areas around these stations to make them safe, convenient, and comfortable places to walk and bike is a long-term endeavor that will require an incremental and coordinated approach to station area development.

This chapter presents four broad planning principles that can help guide the transportation and land use decisions that will shape the future character of the proposed station areas:

1. Make walking and biking as comfortable as possible.
2. Encourage development that supports transit.
3. Capitalize on placemaking opportunities.
4. Elevate the transit experience.

These four interrelated principles emerged during the course of this study and were informed by local priorities, stakeholder input, and best practices from the fields of urban planning and design. Although each station area presents distinct needs based on its network of streets, mix of land uses, and development context, they also share a common set of planning issues and challenges based on their proximity and collective history. These principles can help provide a common framework that elected officials, planners, and citizens can use to coordinate future land use and transportation investments across station areas and over time in a way that magnifies the benefits of KOP Rail for King of Prussia residents, employees, and visitors.

Each principle has direct and indirect implications for facilitating better nonmotorized access to transit. This chapter provides a brief overview of the four principles and highlights specific planning considerations related to active transportation and development across the KOP Rail Corridor. Not all of the potential strategies discussed will apply to each station area. To learn more about how these four principles influenced station area planning for the KOP Rail, see Chapter 3: From Principle to Practice. Additional documents and resources that explore the issues presented in this chapter are listed in Appendix B.

1 Make walking and biking as comfortable as possible

Creating environments in which walking and biking are convenient and safe transportation options benefits transit agencies and the communities that host transit stations.

WHY IS THIS PRINCIPLE IMPORTANT?

This straightforward principle may be obvious, but its importance cannot be overstated. Every transit trip begins and ends with a walk, no matter how short it may be. This means that every future KOP Rail rider will be a pedestrian at some point on their journey. Furthermore, the easier it is for people to walk to transit, the more likely they are to use it in their daily life.[1]

Providing safe and convenient nonmotorized access to KOP Rail stations is one of the best and most cost-effective ways to maximize the overall usefulness of this transit investment because it promotes ridership and extends the reach of transit in a sustainable manner. Walking and biking have no environmental impacts, and facilitating nonmotorized access is significantly less expensive than creating dedicated parking or providing feeder buses. Additionally, three of the five stations are being planned without parking for transit patrons—making walkable station areas an imperative.

Beyond promoting transit ridership, Upper Merion Township residents, employees, and visitors also benefit from active transportation investments. Improvements that make it safer and easier to walk and bike to transit also likely make it easier for people to walk in their daily life and can help to create the types of communities increasingly in demand today.[2]

KEY CONSIDERATIONS

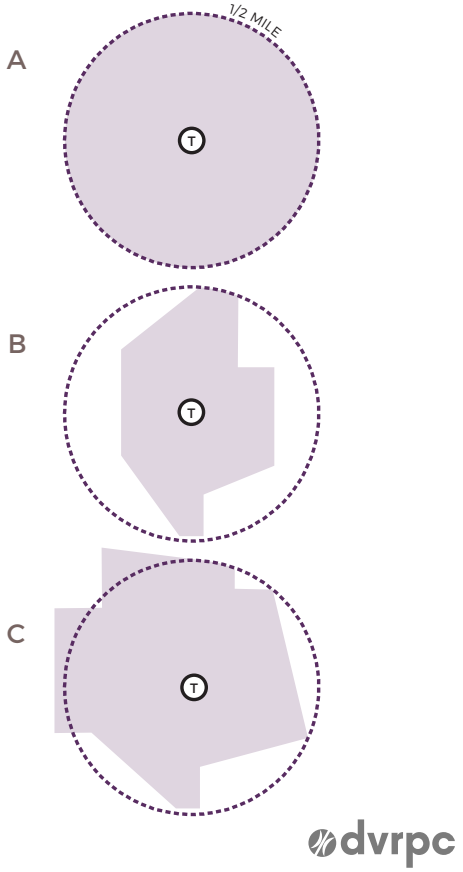
The primary factor influencing nonmotorized access to transit is distance. Planning research suggests that pedestrians are most willing to walk to transit if they live or work within a half-mile of a transit station—a distance typically covered in roughly 10 minutes.

Aside from distance, there are several physical and experiential factors that influence an individual's decision to walk. In some KOP Rail areas, pedestrian mobility is obstructed by physical factors, such as freeways, rail lines, and a limited street network that restricts the area accessible to walkers (see Figure 10). Potential strategies for overcoming some of these location-specific structural barriers are discussed in Chapters 4–6.

In other places, walking can be unsafe, inconvenient, or simply unpleasant based on quality of the existing pedestrian network. Missing or inadequate sidewalks, circuitous routes, heavy traffic, poor lighting, and intimidating crossings are all common characteristics of suburban areas that detract from the pedestrian environment in KOP Rail station areas.

Pedestrian improvements have long been a priority for Upper Merion Township, and there has been significant and steady progress in enhancing pedestrian infrastructure in recent years. New sidewalks and enhanced

FIGURE 10: PEDESTRIAN ACCESS PLANNING GOALS AND REALITIES



Pedestrian access to transit planning often focuses on the area within one-half mile of a station—the distance many people can walk in 10 minutes (**A**). In reality, the area that can be reached within a 10-minute walk of a station is limited by the existing network of streets and obstacles, such as freeways, rail lines, and large properties that impede walking (**B**). The goal of pedestrian access planning is to enlarge and improve the pedestrian network in ways that encourage walking to transit, even from distances greater than one-half mile (**C**).

Source: DVRPC, adapted from a graphic created by the Los Angeles County Metropolitan Authority[3]

intersection treatments have improved walkability along commercial corridors, near schools, and within neighborhoods. Although these types of improvements are already a priority for the township, the arrival of KOP Rail, and the new demands it will place on pedestrian infrastructure, reinforces the need to continue and expand these types of improvements.

FOCUS AREAS

Intersections

Sidewalks are the most obvious and critical elements of a pedestrian network. Accordingly, key locations for new or enhanced sidewalks are identified in each station area chapter. However, negotiating high-volume intersections, where traffic patterns and crossing distances make pedestrians feel vulnerable, can be the most challenging part of walking in suburban areas like King of Prussia.

The following techniques can be used to enhance pedestrian safety and comfort at key KOP Rail intersections.

- Install **high-visibility crosswalks**. Crosswalk markings that consist of two parallel lines are often less visible to drivers than continental, zebra, or ladder marking patterns. Textured crossings that employ nonslip bricks or colored pavers may be appropriate in certain locations to increase motorists' awareness through noise and vibrations.

- Increase the distance between crosswalks and **stop lines**. Vehicles that encroach beyond a stop line can obstruct walkways and block pedestrians from the view of other motorists. Providing **wider crosswalks** may be another way to discourage motorists from encroaching on pedestrian rights-of-way.

- Incorporate **bulb-outs** or **median refuge islands** into wide intersections to shorten the distance that pedestrians must cross. Also known as curb extensions, bulb-outs have the added benefits of making pedestrians more visible to motorists and slowing traffic through the use of tighter curb radii.

- Add **automatic pedestrian phases** to signal plans where pedestrian activity is expected. However, where pedestrian call buttons are necessary, using models that light up when activated can increase compliance with pedestrian signals by letting pedestrians know that the button is working properly. Many station area intersections already feature pedestrian countdown timers, but adding a **leading pedestrian interval** to transit-adjacent intersections can give pedestrians a head start across the intersection.

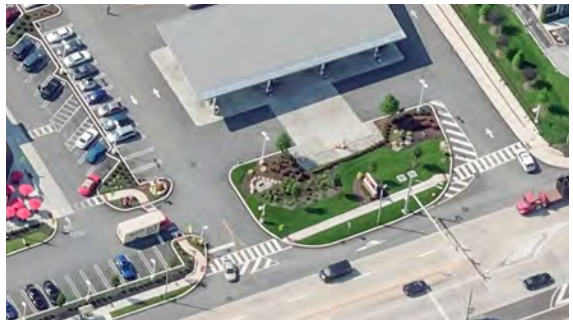
Driveways and Commercial Properties

Numerous large driveways serving commercial properties in King of Prussia function like unsignalized mid-block intersections that interrupt the pedestrian network. While a variety of access management techniques can be used to limit driveways on commercial corridors over time, these driveways should include treatments that ensure motorists understand they are crossing a pedestrian right-of-way.

In some places, sidewalks that remain level can extend across a driveway. In other locations, driveways should have clearly marked crosswalks for pedestrians. Where necessary, large surface parking lots should be retrofitted to include dedicated walkways, crosswalks, and traffic-calming measures, such as speed tables that can slow cars.

> "Walking should be easy for everyone—it doesn't take a special skill or fancy equipment, other than a comfortable pair of shoes. But in much of Montgomery County, walking is challenging when there are no sidewalks, development makes walking unappealing, or driving is easier. Many people want to walk but can't do so safely, conveniently, or comfortably. And for those who can't walk, accessibility is a challenge every day."
>
> *Walk Montco*
> Montgomery County Walkability Study

Even when sidewalks are present, large intersections with minimal crosswalks can make walking uncomfortable in some station areas.



Source: Microsoft Bing Maps, 2018

Newer sidewalks and crosswalks make navigating portions of DeKalb Pike easier for pedestrians.

Mid-Block Crosswalks

Large blocks and disconnected street networks make it harder for pedestrians to travel through a neighborhood. Mid-block crosswalks may be appropriate in locations where blocks are particularly long (approaching 600 feet or more) and the location of pedestrian generators makes it unlikely that people will walk to the next intersection to cross the street.

Where appropriate, curb extensions, high-visibility crosswalks, Yield to Pedestrian signs, and HAWK or other pedestrian hybrid beacons can help draw attention to pedestrians.

On- and Off-Street Bicycle Facilities

Dedicated bike lanes designate exclusive space for cyclists through the use of pavement markings and signage. These types of facilities afford cyclists greater comfort and confidence when traveling on busy streets. To date, the only dedicated on-street bicycle facilities in the KOP Rail Corridor were those recently installed along First Avenue in Moore Park KOP as part of the First Avenue Road Diet (see below for more information about road diets). Cyclists in other parts of KOP must share the road with vehicles or make use of the multi-use trail network.

Although riding with traffic may work for many cyclists on the low-stress cycling streets identified in Figure 9, it is not a safe option for many of the higher-volume, higher-speed streets in King of Prussia. Multi-use trails, however, can play an important role in facilitating nonmotorized access to KOP Rail stations. Several trail expansion initiatives, including planned extensions of the Chester Valley and Crow Creek trails, as well as the proposed N. Gulph Road Connector, pass through KOP Rail station areas and may be the best strategy for improving bicycle mobility along the corridor.

In some places, these shared-use pathways are planned for locations adjacent to roadways on which bike lanes are not appropriate. Wide enough to be used by both pedestrians and cyclists, these types of paved routes may be appropriate in other locations throughout the KOP Rail Corridor to help connect existing and emerging residential neighborhoods to transit while limiting exposure to some high-volume streets.

Road Diets

Creating space for pedestrians and cyclists on streets created for cars can be challenging. Road diets, like the one recently installed on First Avenue in Moore Park KOP, modify the layout of a roadway to better accommodate nonmotorized travelers. Most commonly, road diets convert a four-lane roadway into two through lanes with a two-way left-turn lane and two bike lanes. Pedestrian refuges can be created if physical medians are provided. In addition to creating a designated facility for bicyclists, these reconfigurations reduce the number of lanes pedestrians must cross, reduce speeding, and improve safety for all road users.

New Streets

Based on market trends favoring more walkable environments, portions of Moore Park KOP may be poised for larger-scale redevelopment, even without the prospect of new transit service. Where appropriate, neighborhood plans and/or the Official Map for the township should include new roadways designed to create smaller blocks and a more connected street network that facilitates opportunities for compact, mixed-use development around transit. More information about the role that Official Maps can play in active transportation is presented in Chapters 4 and 7.

The First Avenue Linear Park demonstration project incorporates a shared-use path wide enough to accommodate walkers and bikers.

Dedicated paths, landscaping, and traffic-calming elements can help pedestrians navigate large parking areas.

The KOP Town Center combines a variety of elements, such as building design, continental crosswalks, signage, and curb extensions, to prioritize pedestrian mobility.

2 Encourage development that supports transit

The land use and development patterns that promote transit ridership also help create vibrant neighborhoods and manage growth.

WHY IS THIS PRINCIPLE IMPORTANT?

While good sidewalks and crosswalks are essential to enhancing walkability and transit access, the experience of being a pedestrian is also dependent on adjacent land uses.

Development that supports transit use is commonly referred to as Transit-Oriented Development or TOD. TOD is a holistic approach to land use and development around transit stations that enables residents and workers to drive their cars less while walking, biking, and taking mass transit more often. TOD is generally defined as medium- to high-density, mixed-use development within an easy walk of a transit station, typically five minutes or one-quarter mile.

Orienting development toward transit can help to integrate transit facilities with the surrounding community, increase transit ridership, and enhance nonmotorized access to transit. Development that supports transit can also help communities manage growth in a way that meets local economic development, environmental, and transportation goals.

Upper Merion Township is projected to see steady residential and employment growth. Between 2015 and 2045, the township is expected to add over 5,800 residents (20.5 percent growth) and nearly 9,500 jobs (16.6 percent growth).[4] The township's recent *Act 209 Land Use Assumptions Report* (2014) estimated vacant land at 5 percent, suggesting that most future development in the township will have to take the form of infill and redevelopment. Concentrating this development on appropriate sites near the proposed stations can allow Upper Merion to accommodate future growth in a way that preserves the character of existing residential neighborhoods and reduces the impact of growth on existing congestion.

KEY PLANNING CONSIDERATIONS

Simply locating development adjacent to transit is not enough to foster TOD. Building successful TOD requires collaboration across a variety of subject areas, including urban design, zoning, community development, and infrastructure investment. The potential for transit-supportive redevelopment varies across the proposed KOP Rail station areas based on a variety of factors. TOD works best where there is a strong market, community and political support, and where medium- to high-density development already exists or where developable land is available. Conversely, development sites on which access to the proposed station is constrained by existing development, major highways, or other physical barriers represent less compelling opportunities for TOD. Regardless of their potential for TOD, all of the proposed station areas can benefit from implementing some of the development strategies listed below. Special consideration for office parks and shopping malls are discussed on page 25.

FOCUS AREAS

Land Use

Placing more intense land uses around the station can maximize the ridership gains from surrounding development while helping to generate pedestrian activity throughout the day. By concentrating a mix of complementary, well-integrated land uses within walking distance of a station, residents and employees will be able to meet more of their daily needs without always needing to rely on a car.

- Encourage **transit-supportive land uses**, such as medium- to high-density residential and offices, along with appropriate retail, restaurant, and personal services. Consider locating civic facilities, such as libraries, post offices, police substations, and educational facilities, adjacent to stations.
- Discourage inherently **automobile-dependent uses**, such as drive-through facilities, warehouses, gas stations, and strip malls.
- Set appropriate **minimum density standards** for the areas closest to a station. The intensity of development can taper off away from the station to create appropriate transitions to the surrounding neighborhoods.

Parking

Providing adequate parking is critical to the success of a development; however, parking that is excessive or carelessly designed can discourage transit use, waste valuable developable land, and hinder walkability. Transit-supportive development along the KOP Rail should strive to accommodate cars without detracting from the pedestrian environment.

- Consider **reducing parking standards** or consider parking maximums for developments within an appropriate distance of transit.
- Provide **on-street parking** that can serve a variety of purposes throughout the day.
- Incorporate **car sharing programs** into new development.
- Locate **parking lots** behind or to the side of buildings rather than placing parking spaces between the front of a building and the street.
- Explore opportunities for **shared parking facilities** that allow adjacent or nearby property owners with different peak parking periods to share parking spaces.
- Investigate the potential for **centralized parking structures** that can serve a combination of residents, shoppers, employees, and transit users. Parking structures on major streets should be designed to include active uses on the ground floor where possible. Where appropriate, liner buildings with active uses can shield the garage from view.
- Use **walls and/or landscaping** to screen large surface parking lots along key pedestrian frontages.

Building Design

Conventional suburban development with large setbacks and significant space between buildings is not compatible with TOD. Instead, new development in KOP Rail station areas should be designed to help create an inviting, walkable, human-scaled environment.

- Design buildings with **shallow setbacks** that front onto public streets or open spaces in order to create a continuous "street wall" that helps to define a proper walking environment.
- Locate **building entrances** so that they are clearly identifiable and minimize walking distance to transit facilities.
- Use windows and doors on street-facing facades to create a **visual connection** between public and private spaces and activate the streets.
- Consider establishing **design standards** to govern other aspects of building articulation, fenestration, and site design to ensure new development contributes to the creation of attractive and safe places.

Source: DVRPC

This mixed-use parking garage in Arlington, Virginia, includes ground-floor retail uses and was designed to blend in with the surrounding buildings.

Source: Dayal Branding & Graphics

Large-format retailers and commercial spaces can be integrated into walkable neighborhoods through site design and building placement. Shown here, the Mosaic District is a mixed-use town center in Fairfax, Virginia.

Diversifying Commercial Areas

REINVENTING OFFICE PARKS

As the office market shifts and tenant preferences evolve, some traditional suburban office parks are increasingly becoming obsolete.[5] The ongoing effort to rezone, rebrand, and revitalize Moore Park KOP (formerly known as the KOP Business Park) is just one example of a community responding to these trends by attempting to create walkable, live-work-play environments that remain vibrant after normal working hours.

As shown in a conceptual rendering of a revitalized Great Valley Corporate Center in Malvern, Pennsylvania (right, top), updating suburban office parks may mean: integrating new uses, such as retail (a), higher-density residential (b), and hotels (c); making multimodal transportation investments (d); and incorporating open and recreational spaces (e).

Source: Liberty Property Trust

THE EVOLUTION OF SHOPPING MALLS

King of Prussia is occasionally compared to Tysons, an automobile-oriented "edge city" located in suburban Virginia, approximately 12 miles outside of Washington, DC. Tysons, home to two super-regional shopping malls and over 26 million square feet of office space, is a regional retail and employment destination. After plans for the Silver Line, an extension of the Washington Metrorail, were announced, the Fairfax County Board of Supervisors adopted a new comprehensive plan designed to help transform Tysons into a walkable, vibrant urban center while reinforcing its role as an economic driver for the region. Key objectives of the plan included:

- promoting more mixed use;
- enhancing pedestrian connections throughout Tysons;
- increasing the residential component of the density mix; and
- providing for amenities and aesthetics in Tysons, such as public spaces, public art, parks, etc.

One of the signature developments to date is The Plaza at Tysons Corner Center (right). Elevated 32 feet in the air, The Plaza functions as a pedestrian bridge that connects a Metro station to a hotel, residential tower, and an office building. The 1.5-acre open space also serves as focal point for the community by hosting concerts, festivals, and holiday events.

Source: Rios Clementi Hale Studios

3 Capitalize on placemaking opportunities

Transit-oriented places require a great public realm, complete with thoughtfully designed and integrated open spaces

> A successful public space is easy to walk around in, provides comfortable places for sitting, and incorporates shade and landscaping, attractive lighting, water fountains, and public art.
>
> **Station Area Planning: How to Make Great Transit-Oriented Places**
> Reconnecting America and the Center for TOD

WHY IS THIS PRINCIPLE IMPORTANT?

High-quality public spaces that foster informal social interaction naturally attract people and can help make transit-oriented places feel safer and more comfortable. Furthermore, lively public spaces and streets can generate more economic activity for nearby businesses while providing opportunities for active and passive recreation for neighborhood residents and employees.

Although some interior portions of the KOP Mall may function as informal gathering places, the lack of central public spaces along the planned KOP Rail Corridor was cited as one of the corridor's limitations during the planning process. As shown in Figure 6, most parks and recreation areas in Upper Merion are located outside of the proposed KOP Rail station areas. Upper Merion Township's *2004 Open Space and Environmental Resource Protection Plan* states that the provision of open space should remain an important planning objective along major transportation corridors, despite the intensity of commercial development.

FOCUS AREAS

Public Space Design

Transit-oriented neighborhoods should incorporate different types of public spaces to meet the needs of residents and employees and help define the station areas as focal points for the community.

Attractive and functional transit plazas can help establish KOP Rail stations as centerpieces of the neighborhood. Transit plazas should accommodate customer access to and from the station by providing direct pedestrian connections to station entrances and comfortable and efficient waiting and drop-off areas. However, transit plazas can also enhance the station area by including places to sit, landscaping, public art, pedestrian-scale lighting, wayfinding information, and space for bicycle storage.

Public plazas, containing active and passive spaces, may also be appropriate close to buildings in other high-activity areas. Active spaces can consist of pedestrian walkways, play areas, and space for programming or temporary activities, such as concerts, farmers' markets, or other performances. Passive spaces can include café seating, benches, and landscaped areas.

Smaller-scale community parks should be integrated into transit-oriented neighborhoods where residents often trade smaller living spaces and private outdoor space for convenience and higher-quality public amenities. Community parks may include uses such as playgrounds, gathering spaces, or recreational facilities, but the dimensions and design will vary based on the available space and the needs of nearby residents.

Streetscaping

Streetscaping treatments, such as street trees, decorative street lights, street furniture, and public art, can help extend the placemaking themes established in station area parks and plazas along streets with high pedestrian activity.

Street trees are a fixture in many of the most walkable and vibrant downtowns in our region because they are one of the most effective and cost-efficient tools for enhancing the overall attractiveness of the streetscape. Developing a landscaping plan that includes regularly spaced street trees on key pedestrian streets in each KOP Rail station area can provide a powerful green unifying element while providing shade, filtering the air, moderating temperatures, and reducing stormwater runoff. Street trees should be selected to provide shade and create a pleasant walking environment without obscuring visibility.

Source: DVRPC

This transit plaza outside the Decatur, Georgia, MARTA station serves as a central gathering place in the city's business district.

Source: DVRPC

Neighborhood green spaces can provide amenities valued by residents, shoppers, and employees.

Source: DVRPC

Street trees, generous sidewalks, and opportunities for outdoor seating can help to create memorable places.

4 Elevate the transit experience

Station design and access planning play a large role in creating a positive and convenient transit experience.

WHY IS THIS PRINCIPLE IMPORTANT?

In addition to the time a passenger spends on a transit vehicle itself, the experience of using transit is shaped by the design of transit facilities and the ease with which transit riders can navigate the station area. All transit stations should be designed with basic service-related objectives in mind, such as facilitating safe internal station circulation and convenient transfers. However, each new KOP Rail station also represents an opportunity to shape the community's perception of transit and the station environment. Attractive and well-designed stations serve multiple purposes. By offering shade, shelter, places to sit or lean, and useful information, they make waiting for the train more comfortable. Stations that are fully integrated into their community can also help establish a strong identity that promotes economic growth.

The needs of transit riders and the experience of riding transit also extend well beyond the station. In addition to an environment that supports walking, bicycling, and other forms of transit, signs, wayfinding elements, and design features (such as gateways) can make traveling between the station and nearby destinations simple, convenient, and pleasant.

FOCUS AREAS

Station Design

The design of each individual KOP Rail station will reflect station access priorities that are established by the station's location, development patterns, local densities, and community objectives. Ultimately, the physical layout of each station site should reflect anticipated access mode splits and be consistent with local priorities. However, all KOP Rail stations should prioritize pedestrian access throughout station sites and incorporate universal design guidelines that reflect the needs of all users, including the young and elderly riders, as well as those with disabilities.

- Create visible **direct pedestrian pathways**, where appropriate, through parking facilities with sidewalks or surface markings. Install crosswalks at all vehicular crossings.
- Enhance the **safety of station users** by ensuring pedestrian paths are located in well-lit, highly visible locations.
- Locate **bicycle racks** in covered, well-lit, visible areas to provide weather protection and discourage theft and vandalism.[6]

- Provide **bicycle parking** as close to station entrances as possible to make biking convenient and to discourage cyclists from locking bicycles to railings, trees, or other objects closer to the station.
- Install **bicycle lockers** or bicycle stations (a locked room or structure) in areas of high demand or to attract a higher level of use.
- Provide **car sharing services** with preferential placement because they play a critical role in extending the reach of transit beyond the conventional station area.
- Limit the distance between **station entrances** and the boarding and alighting points for connecting transit modes. Facilitate quick and **easy transfers** between transit modes through intuitive and direct pedestrian connections and signage.

Kiss-and-Ride Facilities

Kiss-and-ride facilities at transit stations are playing an increasingly important role in transit access. Primarily used for picking up and dropping off passengers, kiss-and-ride facilities may need to accommodate a variety of transportation services, including taxi stands, private shuttle buses and vans, paratransit vehicles, short-term parking, car sharing vehicles (e.g., Zipcar), and ride-hailing services (e.g., Uber and Lyft).[7] Transit agencies and municipalities benefit from these services because they can strengthen ridership, extend transit service coverage, and reduce dependency on single-occupancy vehicles.

However, the combination of multiple travel modes and pedestrian activity, particularly at peak times, can lead to congestion, competition for limited curb space, and conflicts between pedestrians and moving vehicles. Kiss-and-ride facilities that are not convenient to use, too congested, or too remote from the station entrance, may encourage passengers to be picked up or discharged at other locations on the property or on adjacent streets.

To the extent possible, the size, orientation, and allocation of space among modes at kiss-and-ride facilities should reflect the anticipated demand for these services based on surrounding land uses, parking capacity, and peak-hour ridership volumes. Drop-off/pick-up facilities at the new KOP Rail stations should be designed to maximize vehicle turnover, facilitate traffic flow, and minimize traffic conflicts. Design strategies that can help achieve these goals include siting facilities close to a station with a direct visual connection to the station entrance. In some instances, passenger drop-off and pick-up may be better accommodated by providing multiple curbside areas, rather than a single dedicated lot that motorists have to get to.

Wayfinding and Information Systems

Individual stations serve as gateways to both the larger transit system and the community in which they are located. KOP Rail stations will ultimately be used by three types of passengers: daily transit commuters, occasional riders, and first-time passengers. Designing stations with clear information that serves as an introduction to the larger transit system can save people time and bolster ridership.

Source: Sam Winfield

Each Indego bicycle share station in Philadelphia includes a local area map highlighting streets and destinations within a five-minute walk.

Source: SEPTA

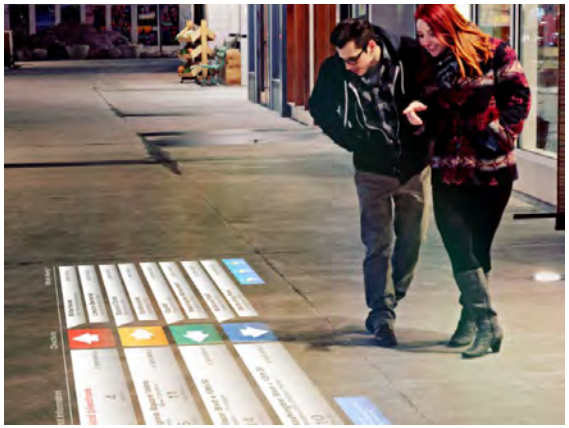
Covered bicycle parking, shown here at the Swarthmore Regional Rail Station, can make biking to transit more appealing.

Source: DVRPC

In Denver's West Colfax District, wayfinding signs and a companion mobile app help direct visitors to transit stations, trails, and local destinations.

Source: TransitScreen

Concierge stations at the Colony Square development in Atlanta include real-time information on local transit options.



Source: Brenner Vasquez, TransitScreen

Conceptual rendering of a projection system that can be used to provide directions to nearby transit and other destinations.

Source: Sasaki, City of Alexandria

In 2010, the City of Alexandria, Virginia developed a comprehensive signage system that was designed to project a consistent image for the city, reduce visual clutter, and promote alternative forms of travel. The system includes directional signs for vehicles (a and b), informational visitor kiosks (c), and wayfinding signage for sidewalks and shared-use paths (d).

Similarly, new transit service to King of Prussia will enable first-time visitors to the corridor. Signage directing these visitors to local businesses and attractions and information about connecting transportation services can provide a sense of arrival and help these visitors orient themselves.

- Provide **static and real-time information** about the transit services available at a station. Information useful to travelers includes route and system maps, schedules of service, and dynamic updates on train departures. Information displays at the station should be located so as to avoid impeding pedestrian flows.
- Install signs guiding motorists, pedestrians, and cyclists along primary access streets to direct traffic safely and efficiently to the station site. On station property, **directional signage** should be clearly visible wherever travelers need to choose their direction. The size, orientation, placement, and spacing of wayfinding signage should be customized by arrival mode and context of the station area.
- Display **local area maps** in each station that enable transit users to locate nearby transit connections, transportation services, destinations, and suggested walking routes.

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CHAPTER 3

FROM PRINCIPLE TO PRACTICE

Chapters 4–6 are largely dedicated to discussing specific issues and opportunities related to nonmotorized accessibility within each of the three proposed KOP Rail station areas. The study team identified these issues and opportunities by conducting a seven-step planning process (see Figure 11) that was informed by the Guiding Principles discussed in Chapter 2. Several steps in this process were designed to highlight and document the existing character of each station area, focusing on a variety of factors that influence the environment for walking and biking. Based on these existing conditions and input from KOP Rail stakeholders, the study team identified opportunities and potential strategies designed to enhance and extend the network of nonmotorized transportation infrastructure that will support transit access and overall station area mobility.

The station area chapters that follow include a series of figures that illustrate critical aspects of each station area. Key elements of each figure are briefly described on the following pages. In addition to helping planners, public officials, and developers better understand each station area, these figures are designed to help stakeholders translate the Guiding Principles into more concrete place-based recommendations. Depending on the audience and the objective, certain aspects of the station area planning process may be more or less valuable.

FIGURE 11: STATION AREA PLANNING PROCESS

STEP 1
Identify **Points of Interest**

STEP 2
Map **Existing Land Use**

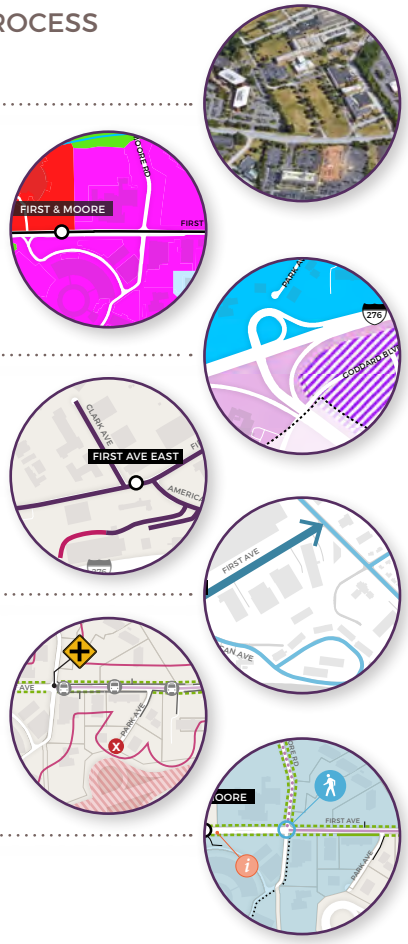
STEP 3
Map **Existing Zoning**

STEP 4
Determine **Pedestrian Walksheds**

STEP 5
Identify **Active Transportation Routes**

STEP 6
Synthesize **Access Issues**

STEP 7
Identify **Potential Strategies**



dvrpc

STEP 1

IDENTIFY POINTS OF INTEREST

Each station area chapter begins with a **Points of Interest** map that highlights major employers, community facilities, and other landmarks located within one-half mile of a proposed station. In addition to helping establish the context of a station area, these points of interest represent key potential origins and destinations for transit riders. These figures also include recent and approved development designed to illustrate local development trends.

STEP 2

MAP EXISTING LAND USE

Land use and neighborhood characteristics are strong determinants of transit ridership. **Existing Land Use** maps illustrate the distribution of commercial, residential, and other uses across each station area. These maps, along with photographs taken by the study team, help to establish the existing context of each station area.

STEP 3

MAP EXISTING ZONING

Zoning is one of the basic components of land use planning and establishes allowable uses, standards, and development intensity in distinct areas. The **Existing Zoning** maps shown in subsequent chapters identify Upper Merion Township Draft Zoning Districts as of September 1, 2016. These zoning classifications establish the framework for future growth and development around the proposed stations.

STEP 4

DETERMINE PEDESTRIAN WALKSHEDS

Walksheds are used in station area planning to illustrate the area where walking may be possible given a specific starting point—in this case, the proposed location of KOP Rail stations. As opposed to generic one-half-mile buffers that represent straight-line distances from the proposed station locations, the realistic linear walksheds shown in each **Pedestrian Walkshed** figure highlight the distances that the average person can walk in five (one-quarter-mile walkshed) and 10 (one-half-mile walkshed) minutes from the proposed stations using public streets. In doing so, these diagrams help to reveal structural barriers and access limitations that result from each station area's unique street grid.

Half-Mile (10-Minute) Station Buffers appear on many figures throughout the report and help to define each station area. For the First Avenue and KOP Mall station areas, a singular half-mile boundary was created from the two overlapping buffers.

Quarter-Mile (Five-Minute) Walking Distance represents the distance that can be covered by the average pedestrian in five minutes.

Half-Mile (10-Minute) Walking Distance represents the distance that can be covered by the average pedestrian in 10 minutes.

STEP 5

IDENTIFY ACTIVE TRANSPORTATION ROUTES

If walksheds identify where walking is theoretically possible based on the existing street grid, the routes identified in each **Key Active Transportation Routes** figure illustrate the most likely pedestrian and bicycle paths to and from these stations. These routes are based on the street and trail network, as well as the location of important origins and destinations like commercial districts, residential neighborhoods, and community facilities. Borrowing from the language of highway engineering, these routes are identified as active transportation arterials and collectors.

Active Transportation Arterials are the routes that are expected to provide primary access to a station for pedestrians and cyclists. These arterials represent the most appropriate locations for investments in nonmotorized transportation facilities, such as new sidewalks, improved crosswalks, and bicycle facilities; and streetscaping improvements, such as landscaping and lighting.

Active Transportation Collectors are routes that feed into arterials while also supporting general pedestrian and bicycle circulation throughout a station area.

STEP 6

SYNTHESIZE ACCESS ISSUES

The study team then evaluated these active transportation routes to document potential barriers to nonmotorized travel. Additionally, each **Access Issues and Observations** figure identifies station area assets, such as existing sidewalks and trails that represent a foundation for access planning. The types of access barriers identified in the document include:

- The **Half-Mile (10-Minute) Walking Distance** reminds us that distance is one of the most important factors affecting an individual's decision to walk. In this diagram, this barrier is depicted as a catchment area;
- **Highways and Railroads** that physically limit the area accessible to pedestrians and cyclists;
- **Challenging intersections** where pedestrian movements are limited or intimidating due to crossing distances or other aspects of the intersection;
- **Connectivity gaps**, such as dead-end streets, that serve to limit the travel network of walkers and bikers; and
- **Street conditions**, such as high vehicular speeds or traffic congestion, that make walking unpleasant.

STEP 7

IDENTIFY POTENTIAL STRATEGIES

The final diagram in each station area chapter, **Opportunities and Strategies**, depicts a set of potential transportation improvements designed to expand nonmotorized access in each station area. These improvements include a mix of discrete infrastructure recommendations and broader mobility concepts. In addition, these maps identify transit-supportive strategies like potential opportunities for transit-supportive development and locations for wayfinding and information. Many of these placed-based strategies and recommendations build on the concepts discussed in Chapter 2.

- **New sidewalks** that enable pedestrian access or enhance the pedestrian experience;
- **Enhanced pedestrian crossing** treatments that can include new high-visibility crosswalks, pedestrian countdown timers, or curb extensions.
- Existing and new proposals for **multi-use trails** that can serve the transportation needs of walkers and cyclists near the proposed stations.
- Potential locations for **new bike lanes** that improve the safety, visibility, and comfort of cyclists in a station area.
- **Traffic-calming measures** that decrease vehicular speeds along a street so that all users feel more comfortable.
- **New connections** across existing barriers. These conceptual connections will require additional study.
- Potential sites for transit-supportive **development opportunities**, based on location, site conditions, or market activity.
- Potential locations for **wayfinding and information**.

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CHAPTER 4

FIRST AVENUE STATIONS

Two KOP Rail stations are proposed for First Avenue in the area formerly known as the KOP Business Park: First Avenue and Moore Road and First Avenue East. Spaced approximately 0.7 mile apart, these stations are being collectively evaluated in this study as the First Avenue Station Area.

Originally established in the late 1950s, the KOP Business Park was rebranded as Moore Park KOP in spring 2018. Today the area is home to 20,000 employees, five hotels, and over 3.5 million square feet of commercial office space. The name change and rebranding are part of efforts to diversify and revitalize the business park in response to trends favoring mixed-use development over more homogeneous commercial districts. These efforts are being led by the KOP-BID and township supervisors and include the creation of a new mixed-use zoning district and a variety of infrastructure projects designed to provide better access.

Although much of the First Avenue Station Area is dedicated to the commercial, industrial, and warehouse uses typically found in business parks, the area around the proposed stations also includes apartment complexes, established residential neighborhoods, shopping centers, and attractions such as the Valley Forge Casino Resort and the Valley Forge National Historical Park.

Both of the First Avenue stations have been proposed for locations within the median of First Avenue. The First Avenue and Moore Road Station is the terminus of the KOP Rail extension and is proposed for a site approximately 1,000 feet west of the intersection of First and Moore, immediately south of the Valley Forge Casino Resort. A structured parking facility has been proposed for this station. This park-and-ride facility would be designed to accommodate both transit commuters and visitors to the Valley Forge Casino Resort.

The entrance to the Valley Forge National Historical Park lies approximately 0.6 mile from the proposed station; however, the lack of pedestrian or bicycle facilities in the area currently limits nonmotorized access to Valley Forge.

The First Avenue East Station is proposed for a location between Clark Avenue and American Avenue, just north of the Extended Stay America Hotel. This station is being designed as a walk-up station, meaning that no dedicated parking for transit users will be provided.

STATION AREA PROFILE

DEMOGRAPHICS*

Total Population: 1,019
Average Household Size: 2.17
Housing Units: 503
Owner-Occupied: 24.3 percent
Renter Occupied: 65.8 percent
Median Household Income: $80,433
Median Home Value: $353,846
Median Age: 33.1
Total Employees: 15,087

STATION CHARACTERISTICS

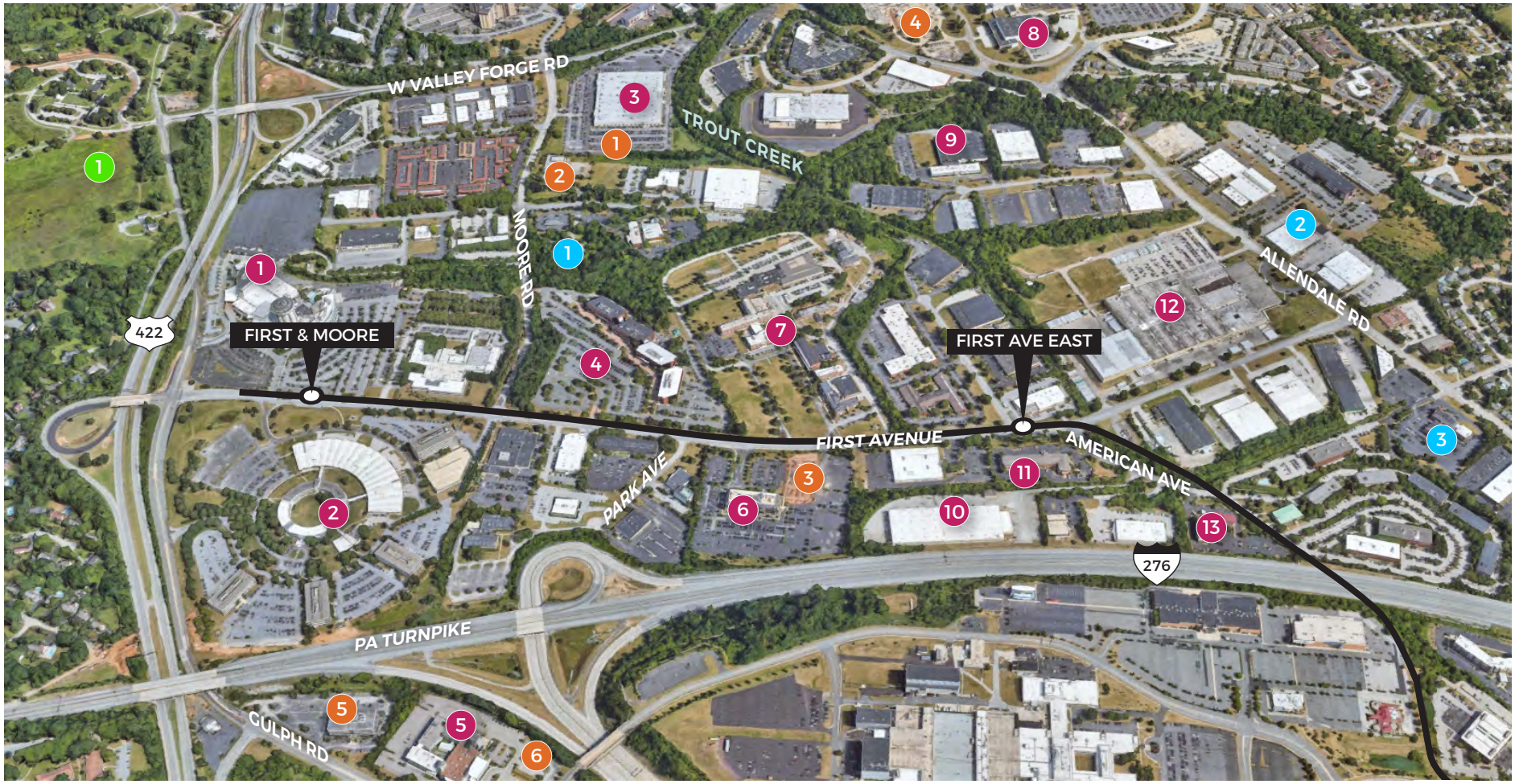
Existing Bus Service: Routes 99, 125, 139
First & Moore: Park-and-Ride Station
First Ave. East: Walk-Up Station

ACCESSIBILITY MEASURES

First & Moore Walk Score: 27/100
First Ave. East Walk Score: 23/100

Source: Esri Community Profile forecasts for 2017 based on Census 2010 Summary File 1.

FIGURE 12: FIRST AVENUE STATION AREA POINTS OF INTEREST



Major Employers/Destinations

1. Valley Forge Casino Resort
2. Freedom Business Center
3. BNY Mellon
4. Maschellmac Office Complex
5. Sheraton Valley Forge
6. Radial
7. Arkema
8. Tech Tube, Inc.
9. Lilly Pulitzer
10. Amazon Flex Warehouse
11. Extended Stay America
12. First Quality Retail Services
13. Hyatt Place Philadelphia/KOP

Parks/Recreation

1. Valley Forge National Historical Park

Community

1. Former Burgess Arboretum/ Moore-Irwin House
2. King of Prussia Post Office
3. King of Prussia Medical Center

Recent/Approved Developments

1. BNY Mellon Parking Garage
2. Skye 750 Apartments
3. 933 First Avenue: GeoBlue Office Building
4. 751 Vandenberg Boulevard: Park Square Residential Development
5. 500 N. Gulph Road: CSL Behring Office Redevelopment
6. 480 N. Gulph Road: Element Hotel

Sources: Upper Merion Township, Google Maps, 2018

STATION AREA IMAGES

A. Pedestrian crossings are currently restricted to the south and east legs of the intersection of First and American avenues.

B. Plans for the First Avenue and Moore Road Station call for a parking structure located on an existing surface parking lot in front of the Valley Forge Casino Resort.

C. In May 2017, a 450-foot section of the First Avenue Linear Park opened near Park Avenue. This demonstration project highlights sidewalk and streetscaping treatments proposed along currently underutilized private lawns in Moore Park KOP.

D. 933 First Avenue is a recently constructed office building, now home to GeoBlue, a provider of health insurance for travelers.

E. Looking west from the intersection of First Avenue and American Avenue. The Extended Stay America property can be seen on the left, while the lawn in front of 840 First Avenue can be seen on the right. Both properties currently lack sidewalks.

F. The Valley Forge Towers, a condominium and apartment complex owned by the Galman Group, are located at the intersection of Moore Road and Valley Forge Road, just north of the station area. Improved facilities along Moore Road could help residents make the 15-minute walk or roughly five-minute bike ride to the First Avenue and Moore Road Station.

G. This eastbound SEPTA bus stop is located on the south side of First Avenue, near the proposed First Avenue and Moore Road Station. This photo shows the view looking west towards the intersection of N. Gulph Road and First Avenue.

Existing Land Use

The land use patterns found in the First Avenue Station Area reflect its decades as a suburban business park. East of Route 422, the First Avenue and Moore Road Station is primarily surrounded by a mix of commercial uses, including office space in a variety of configurations. Industrial uses, including warehousing, distribution, and light manufacturing, are more common in the area surrounding the First Avenue East Station. Land dedicated to transportation infrastructure, as well as wooded areas, some of which reflect the legacy rail lines that formerly served these properties, are interspersed throughout the station area.

West of Route 422, the station area includes residential areas of Tredyffrin Township and a portion of the Valley Forge National Historical Park. Just north of the core station area, along Moore Road, lies the Valley Forge Towers, a multifamiliy residential complex that is home to nearly 600 apartments and condominiums. Another multifamily complex, Valley Forge Suites, is located at the end of American Avenue.

Although parking is not broken out as a separate land use in Figure 13, surface parking lots (visible in the aerial imagery found in Figure 12) associated with the commercial and other uses found in the station area consume a large amount of land. Based on a GIS analysis of land uses from 2015, land devoted to parking accounts for over 200 acres, approximately 23 percent, of the First Avenue Station Area.

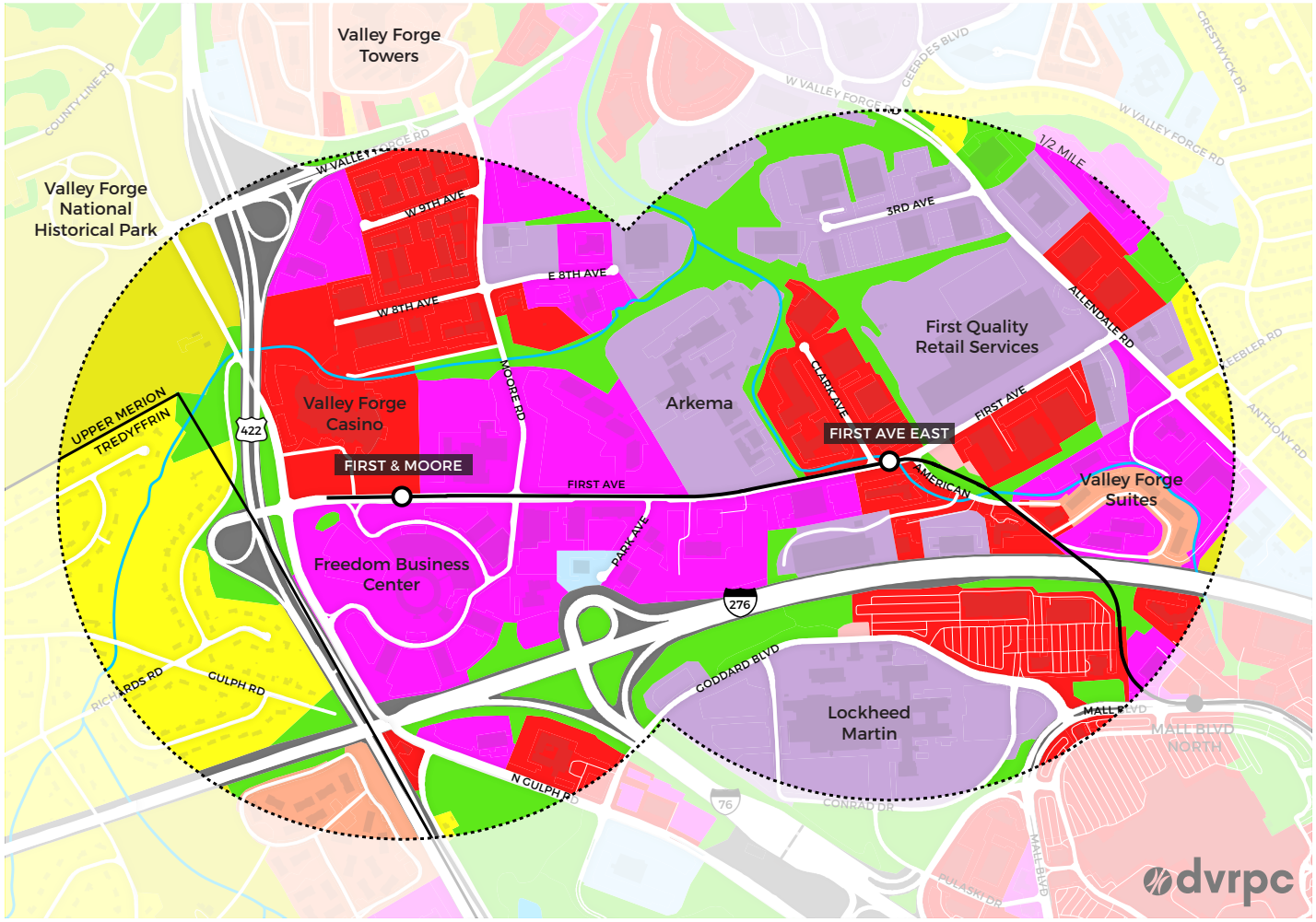


FIGURE 13: FIRST AVENUE STATION AREA EXISTING LAND USE (2015)

- Commercial: General
- Commercial: Office
- Industrial
- Institutional
- Recreation
- Residential: Single-Family Detached
- Residential: Multifamily
- Transportation
- Utility
- Wooded/Undeveloped

NORTH
0 250 500 1,000
FEET

Source: DVRPC, 2015

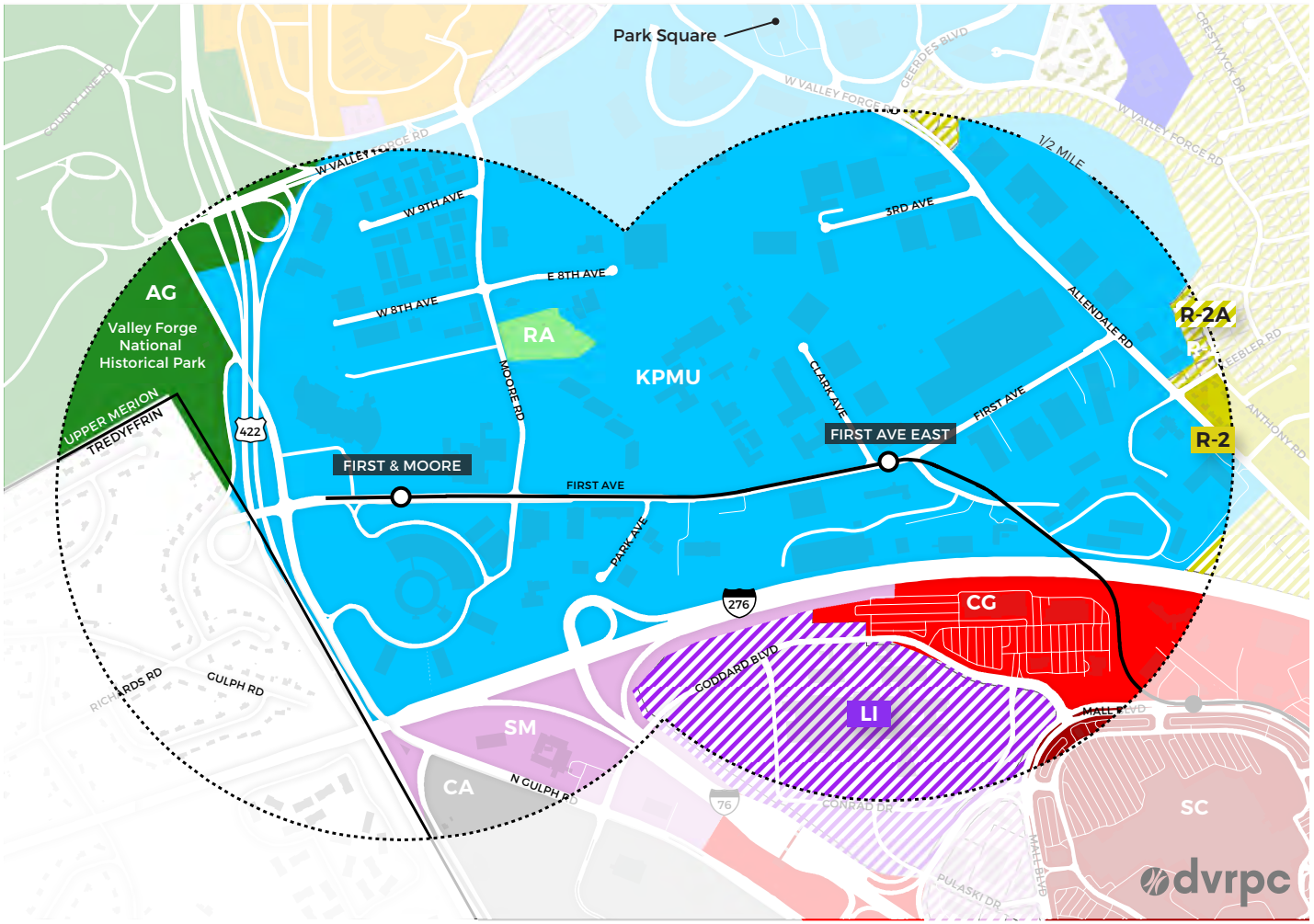


FIGURE 14: FIRST AVENUE STATION AREA DRAFT ZONING DISTRICTS

- **AG** | Agriculture
- **CG** | Commercial General
- **CA** | Court Approved
- **KPMU** | KOP Mixed-Use
- **LI** | Limited Industrial
- **RA** | Recreation Area
- **R-2** | Single-Family Residential, 10,000 sq. ft.
- **R-2A** | Single-Family Residential, 12.5–15.5k sq. ft.
- **SC** | Shopping Center
- **SM** | Suburban Metropolitan: Light Manufacturing, two acres

Source: Upper Merion Township

Existing Zoning

The majority of land within the First Avenue Station Area falls within the King of Prussia Mixed Use (KPMU) district, shown in blue on the map in Figure 14. The KPMU district was added to Upper Merion's zoning code in 2014 in an effort to revitalize the business park.

As the name implies, this new district is intended to encourage high-quality, mixed-use developments, including multifamily residential and appropriate retail uses. This designation is particularly compatible with future transit infrastructure because it is designed to promote street-level activity and an environment that is more conducive to walking and biking. Specifically, the district promotes 25- to 50-foot easements along First Avenue and Moore Road for the purpose of locating an eight-foot-wide pedestrian/bicycle way and other amenities, such as plazas, bus stops, landscaping, lighting, and seating areas. Sidewalks at least six feet wide are required along all other streets. Finally, the KPMU district provides height bonuses to mixed-use developments that incorporate LEED (Leadership in Environment and Engineering Design) standards.

Park Square, a four-story apartment building under construction at 751 Vandenburg Boulevard, is one of the first developments to take advantage of the revised zoning code.

Pedestrian Walkshed

The purple and pink lines in Figure 15 represent the distance that the average pedestrian can walk from the First Avenue stations in five and 10 minutes, respectively, using the existing network of public streets. While all First Avenue destinations are located in close proximity to a station, the overall walkshed is limited due to highways that divide the station area, dead-end streets that limit connectivity, and large properties without pedestrian cut-throughs. For example, the station area is divided into a series of islands by the three major highways that pass through it: US Route 422, the PA Turnpike (276), and the Schuylkill Expressway (76). The divisions created by these highways limit the connectivity of the local street network, effectively restricting pedestrian activity in the station area to the area north of the PA Turnpike and east of US 422. The limited street grid also means that pedestrians have few legal opportunities to cross First Avenue, the station area's central east-west connection.

This analysis suggests that the primary pedestrian catchment area for the First Avenue and Moore Road Station extends north along Moore Road and south through the Freedom Business Center and along N. Gulph Road. Portions of Allendale Road, as well as properties along Clarke Avenue and American Avenue, including the Valley Forge Suites Complex, are also located within a 10-minute walk of the First Avenue East Station.

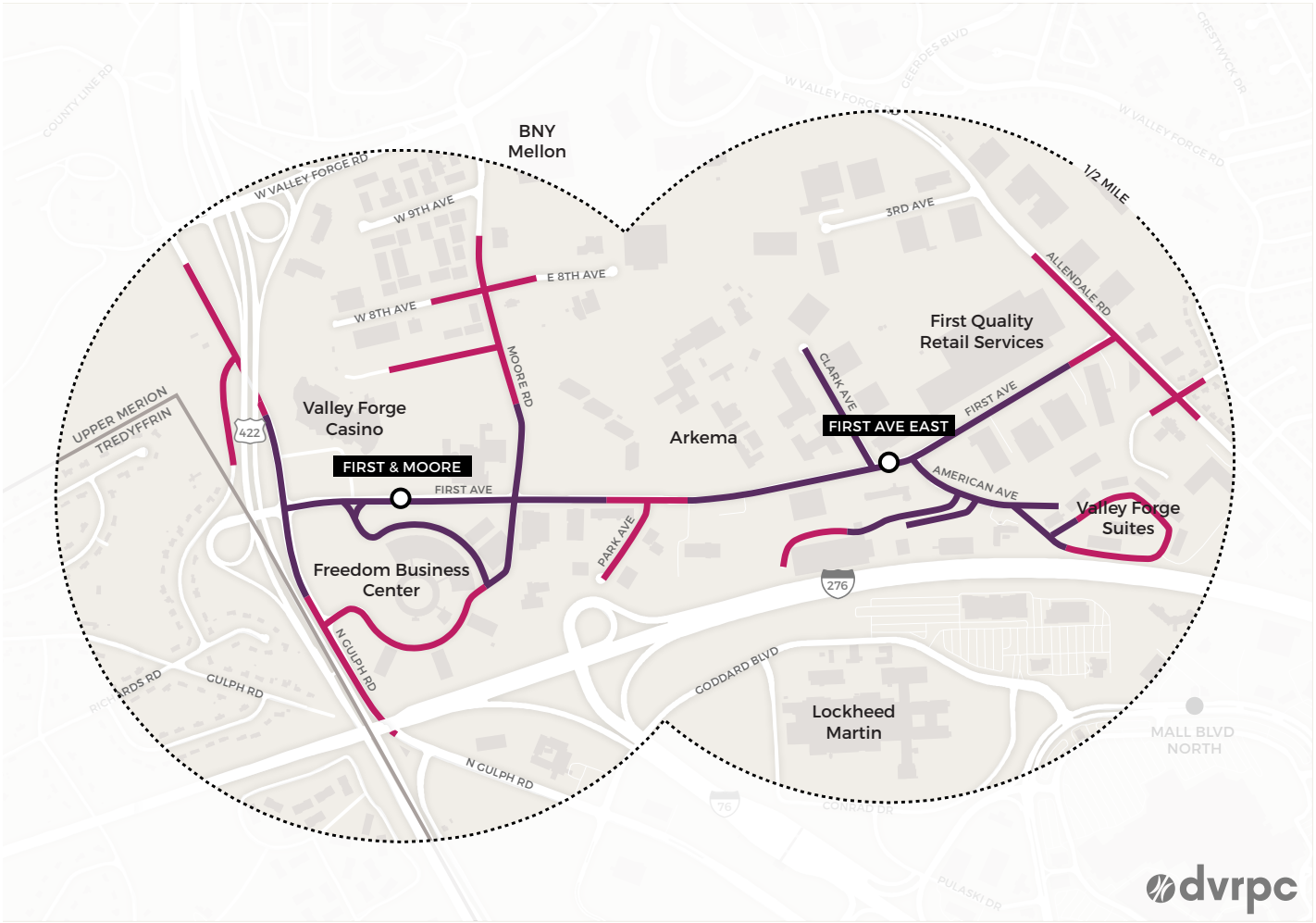


FIGURE 15: FIRST AVENUE STATION AREA PEDESTRIAN WALKSHED

Quarter-Mile (Five-Minute) Walking Distance

Half-Mile (10-Minute) Walking Distance

NORTH

0 250 500 1,000

FEET

Source: DVRPC

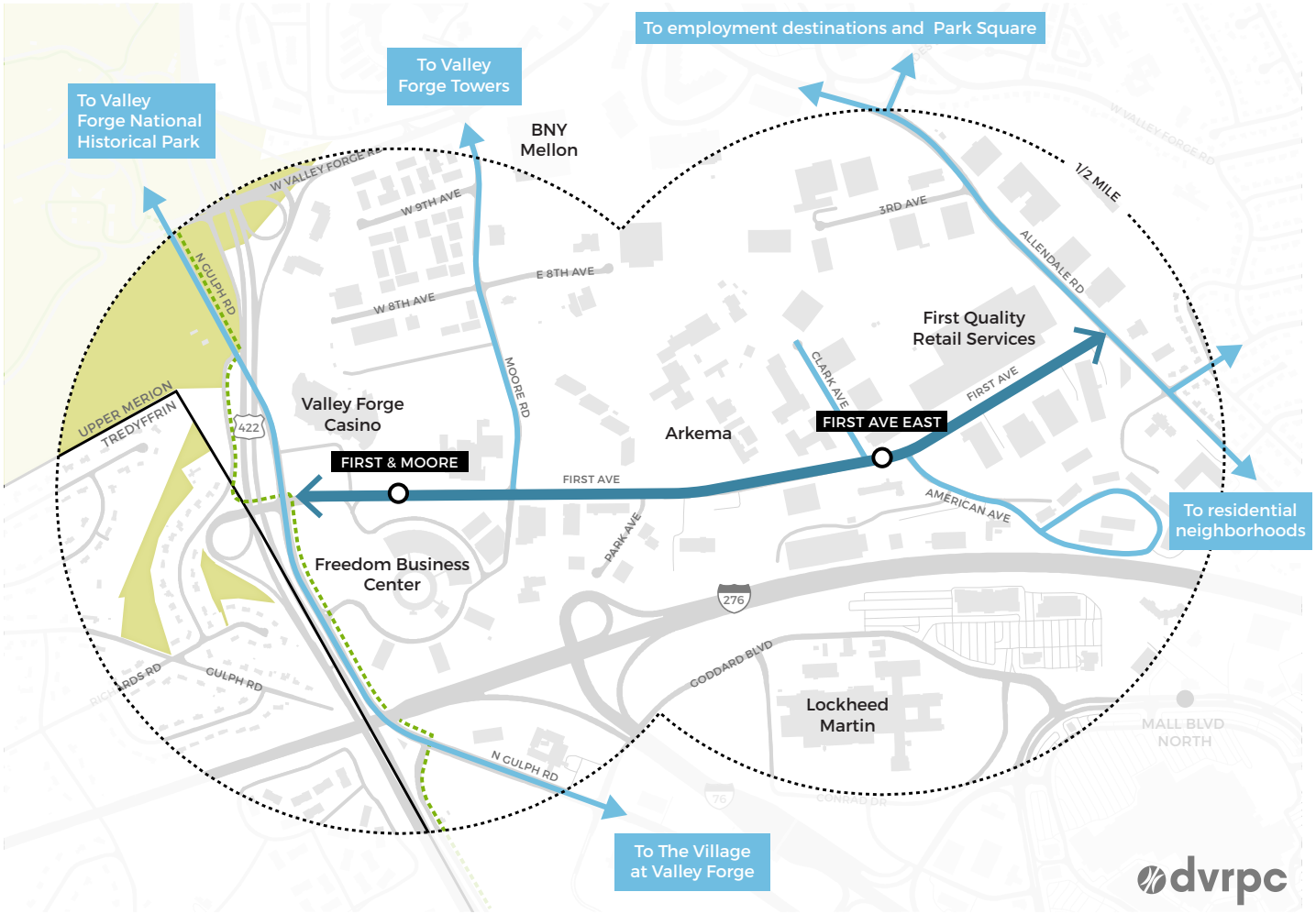


FIGURE 16: FIRST AVENUE STATION AREA KEY ACTIVE TRANSPORTATION ROUTES

- Active Transportation Arterial: Route that is expected to provide the primary nonmotorized access to and from a station.
- Active Transportation Collector: Route that feeds into an active transportation arterial and supports nonmotorized circulation throughout a station area.
- Existing Multi-Use Trail
- Proposed Multi-Use Trail

Source: DVRPC

Key Active Transportation Routes

Figure 16 builds on the pedestrian walkshed analysis depicted on page 40 by identifying the routes most likely to be used by pedestrians and cyclists to access the proposed First Avenue stations based on the existing network of streets and multi-use trails.

Referred to as active transportation arterials and collectors, these routes were selected based on the distribution of destinations, as well as input from stakeholders. In some cases, these routes allude to locations outside of the core station area that represent important origins and destinations for transit riders.

Based on their potential to connect the proposed stations to key origins and destinations, these routes, and the intersections along them, represent the most appropriate locations for nonmotorized transportation investments.

The KOP Rail's alignment along First Avenue ensures that all transit riders, regardless of mode, will travel along First Avenue to reach the station. The importance of First Avenue for all users is reflected in ongoing efforts to implement the First Avenue Road Diet and linear park. These efforts will play a key role in supporting nonmotorized access to the stations and general circulation. N. Gulph Road, Moore Road, and Allendale Road all represent key north-south active transportation collectors in the station area.

Nonmotorized Access Barriers and Assets

Figure 17 summarizes issues related to nonmotorized access in the First Avenue Station Area. The map identifies a variety of access barriers and assets within and beyond the 10-minute walkshed. Additional location-specific observations are documented in the accompanying table.

ACCESS BARRIERS

As noted on page 40, several structural barriers currently limit opportunities for walking and biking in the First Avenue Station Area. Converging highways (shown in red hatch) result in large portions of the station area being disconnected from each other. Dead-end streets, such as W. 9th Avenue, E. and W. 8th Avenue, and 3rd Avenue, represent critical connectivity gaps that limit the usefulness of the street network. These factors are reflected in the compressed shape of the 10-minute walkshed. Furthermore, although First Avenue extends approximately 1.25 miles between N. Gulph Road and Allendale Road, pedestrians are only legally permitted to cross at two locations: Moore Road and American Avenue. This lack of crossing opportunities limits the choices pedestrians have and may encourage unsafe mid-block crossings.

Nonmotorized access within the station area is further constrained by a discontinuous sidewalk network, a series of challenging intersections, and the hilly terrain found in portions of the station area. In Figure 17, the location of existing sidewalks is depicted with a thin black line. Largely present on the residential streets north and east of the Allendale and W. Valley Forge roads, the lack of sidewalks within Moore Park KOP makes walking difficult and unpleasant on key active transportation routes, such as First Avenue, Moore Road, and N. Gulph Road.

Although many station area intersections include basic crosswalks and pedestrian countdown timers, several intersections still pose challenges for pedestrians. In some places, these challenges are related to the lack of sidewalks and/or curb ramps, which mean that pedestrians must wait on grass, rocks, or the street before crossing because no sidewalks are present. In other places, pedestrian crossings are restricted on one or more legs of an intersection. For example, pedestrians are only permitted to cross the northern leg of the intersection of First Avenue and N. Gulph Road. While this arrangement may make sense at this heavily trafficked intersection, crossing restrictions at the intersections of First and Moore and First and American make walking less convenient and direct.

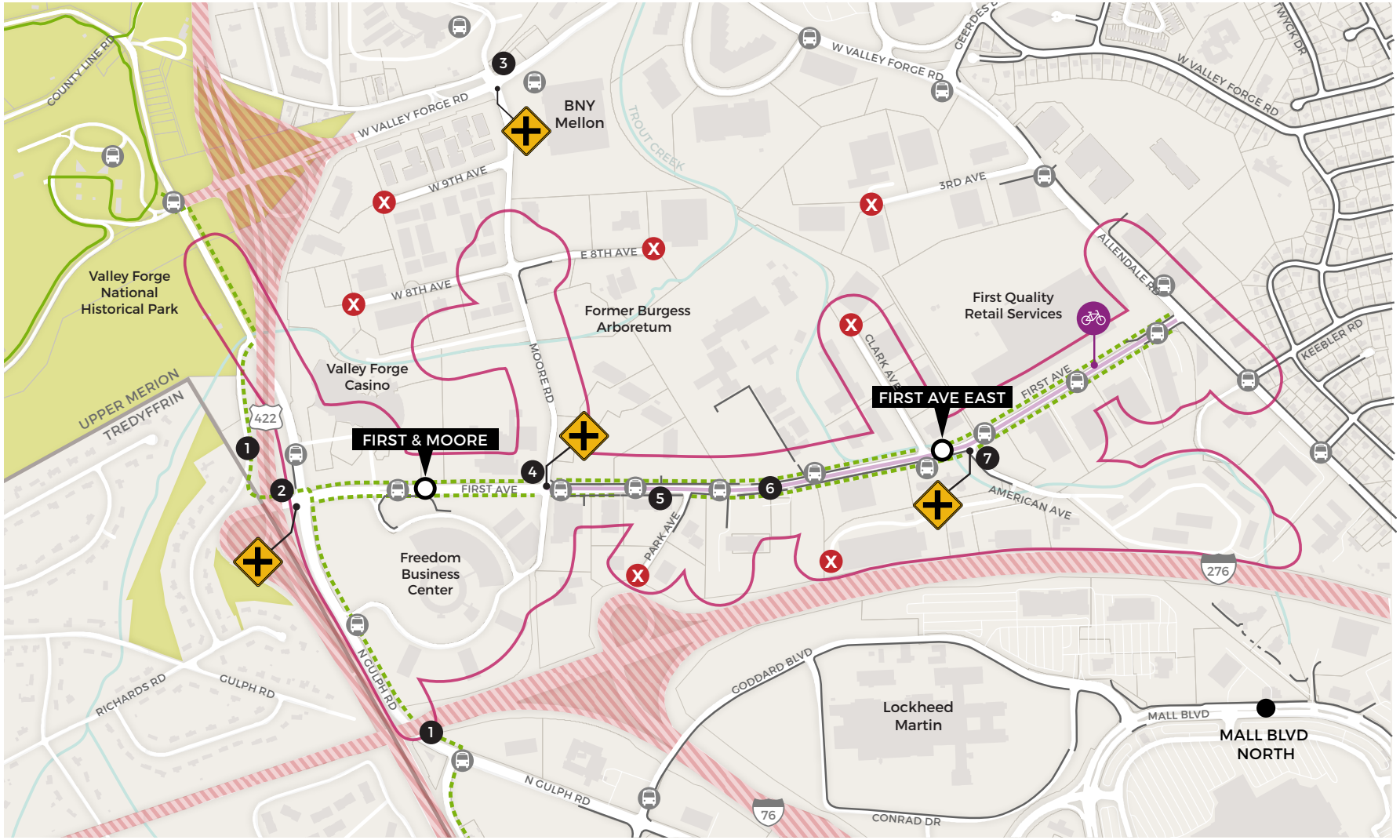
ASSETS

In addition to the existing network of sidewalks, multi-use sidewalks and trails represent key opportunities to enhance mobility in Moore Park KOP. Ongoing efforts to install multi-use sidewalks along First Avenue between Moore Road and Allendale Road, part of a project known as the First Avenue Linear Park, represent a strong foundation for future access improvements. Shared-use paths along this roughly one-mile stretch will be complemented by the First Avenue Road Diet, which reconfigures the roadway to one travel lane in each direction with a center-turning lane and bike lanes on each side of the street.

N. Gulph Road is currently being evaluated by the Valley Forge Park Alliance as a connection between the Chester Valley Trail and the Valley Forge Loop. This route is potentially critical to the KOP Rail because N. Gulph Road is currently the only option for traveling "across" the barriers of US 422 and the PA Turnpike in the station area. An eventual trail in this location would link important destinations, such as the Valley Forge National Historical Park and The Village at Valley Forge, to Moore Park KOP and the First Avenue stations.

Station Area Issues and Observations	
1	The N. Gulph Road Connector is a proposed trail extension that would connect the Chester Valley Trail to the Valley Forge Loop Trail. Currently being studied by the Valley Forge Park Alliance, this trail extension can play a key role in connecting the KOP Rail to Valley Forge National Historical Park and The Village at Valley Forge. One conceptual alignment proposes routing the trail over US 422 near First Avenue before turning north on Richards Road.
2	Pedestrian crossings restricted to the north leg of the intersection.
3	Intersection lacks sidewalks and curb ramps.
4	Pedestrian crossings prohibited on the west leg of the intersection.
5	In May 2017, a 450-foot section of trails, landscaping, and seating opened near Park Avenue. These improvements function as a demonstration project for the larger First Avenue Linear Park—a project that will eventually add multi-use sidewalks, landscaping, and a variety of pedestrian amenities to First Avenue between N. Gulph Road and Allendale Road.
6	There are currently only two locations to cross First Avenue between N. Gulph Road and Allendale Road: Moore Road and American Avenue.
7	Intersection lacks pedestrian countdown timers, and crossing is prohibited on the west and south legs of the intersection.

FIGURE 17: FIRST AVENUE STATION AREA ACCESS ISSUES AND OBSERVATIONS



Barriers

- 10-Minute Walkshed
- Highway
- Connectivity Gap
- Challenging Intersection

Assets

- Existing Sidewalk
- Existing Bus Stop
- Existing Multi-Use Trail
- Proposed Multi-Use Trail
- Existing Bike Lane

Issues and Observations

- # See page 42 for details

dvrpc

0 250 500 1,000 FEET

NORTH

Sources: DVRPC, SEPTA, Upper Merion Township

Opportunities and Strategies

The environment for walking and biking in the First Avenue Station Area is rapidly improving. In the short term, completing pedestrian and bicycle improvements along First Avenue remains the highest priority. Future efforts should further explore strategies for extending nonmotorized access on Moore Road and seek to leverage future multi-use trail segments for station access purposes.

TRANSPORTATION IMPROVEMENTS

Sidewalks

Install new sidewalks on a number of active transportation collectors throughout the station area. Key segments include:

1. **W. 9th Avenue**;
2. **E. and W. 8th Avenue**;
3. **Clarke Avenue**;
4. **3rd Avenue**; and
5. portions of **Allendale Road** between Geerdes Boulevard and Crossfield Road.

Intersections

Install high-visibility crosswalk markings on each of the six intersections identified in Figure 18. Additional considerations for specific intersections are listed below.

6. **Moore Road and 8th Avenue:** This unsignalized intersection does not contain any pedestrian amenities. As pedestrian demand grows along Moore Road, new crosswalks can help alert motorists to the presence of pedestrians in the area. Due to the lack of signals, additional countermeasures, such as in-street pedestrian crossing signs or Advance Stop Here for Pedestrian signs, can be used to enhance pedestrian safety. Moore Road itself is a candidate for a road diet configuration that may alter the character of this intersection. See Bicycle Facilities below for more information.
7. **First Avenue and Moore Road:** Consider permitting pedestrian crossing on all legs of the intersection. Add pedestrian countdown signals with automatic pedestrian phases.
8. **First Avenue and American Avenue**: Consider permitting pedestrian crossing on all legs of the intersection. Add pedestrian countdown signals with automatic pedestrian phases.

Multi-Use Trails

Multi-use trails can serve a critical transportation function in the First Avenue Station Area. Taking the form of shared-use paths adjacent to roadways in many locations, the existing and new trail proposals identified in Figure 18 can help connect the First Avenue stations to the regional trail system and emerging destinations.

The initial phase of the First Avenue Linear Park Project is scheduled to begin construction in 2019. Two additional phases are expected in order to complete the work along First Avenue.

The Valley Forge Park Alliance is currently conducting a feasibility study of the N. Gulph Road Connector, which could provide nonmotorized transportation connections between First Avenue and the Valley Forge National Historical Park, portions of The Village at Valley Forge, and the Chester Valley Trail.

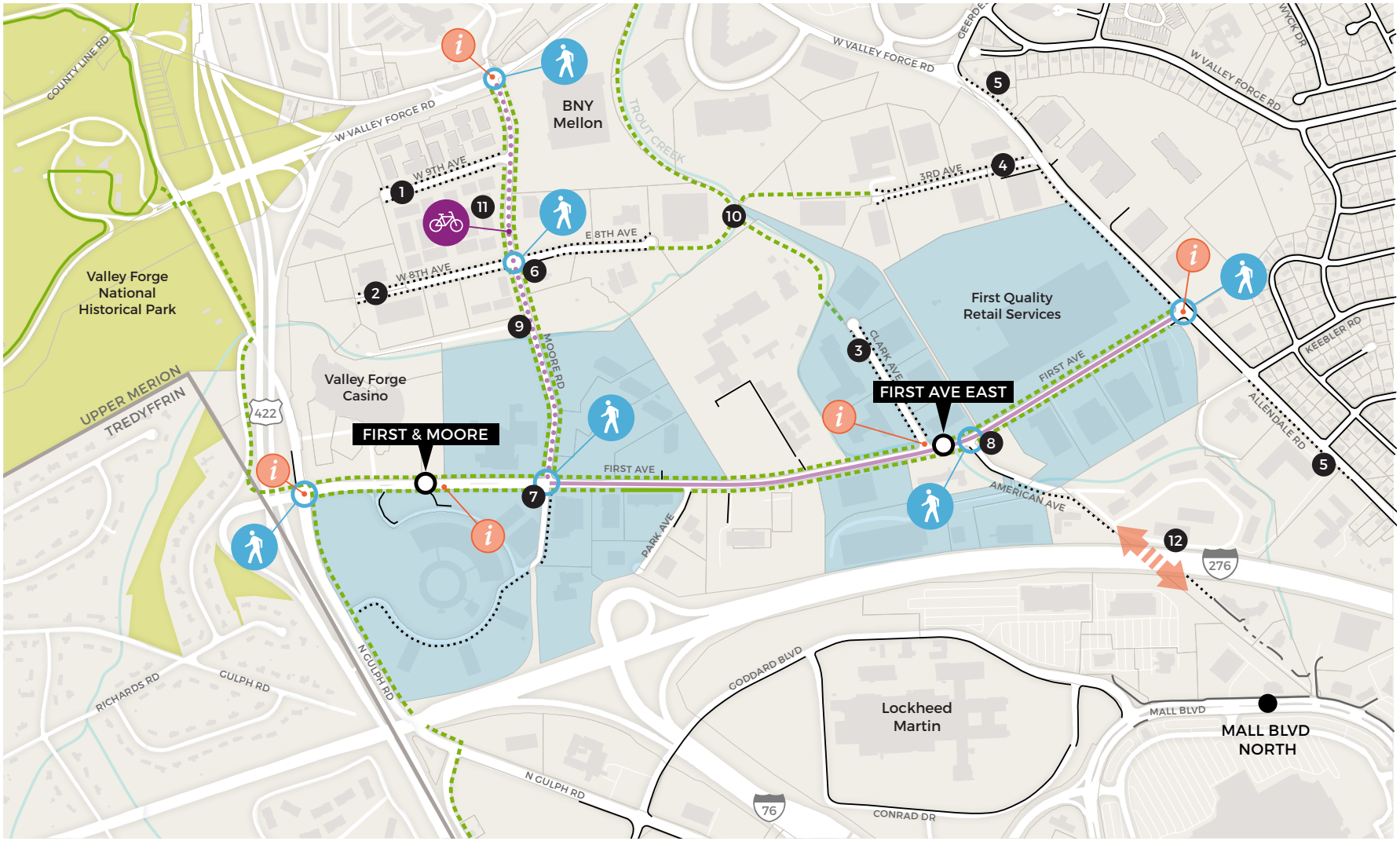
Additional trail segments that can improve accessibility in the station area include:

9. **Moore Road**: Due to the distance between First Avenue and destinations along and near Moore Road, biking may be a more realistic nonmotorized alternative on this corridor. A key provision of the KOP Mixed-Use zoning district is the creation of an easement along Moore Road to include a shared-use path and other amenities, much like those planned for First Avenue. The construction of this trail could occur incrementally through the redevelopment or be accelerated as funding opportunities arise. See page 47 for more discussion about potential improvements for Moore Road.
10. **Trout Creek Trails**: A portion of the conceptual trails along Trout Creek are identified as "Potential Off-Road Paths" in the township's 2005 *Feasibility Study for the Pedestrian and Bicycle Network*. The proposed alignment shown here is guided by the goal of creating new east-west and north-south nonmotorized connections through the portion of the station area bounded by Moore Road, First Avenue, and Allendale Road.

Bicycle Facilities

11. **Moore Road Road Diet**: In addition or as an alternative to the possibility of accommodating bicycle travel on multi-use trails on each side of the roadway, a road diet, much like the one implemented on First Avenue in 2018, could be used to directly

FIGURE 18: FIRST AVENUE STATION AREA OPPORTUNITIES AND STRATEGIES



Existing Sidewalk
New Sidewalk
Existing Multi-Use Trail
New Multi-Use Trail
Existing Bike Lane
New Bike Lane
Enhanced Pedestrian Crossing
New Connection
Wayfinding and Information
Potential Redevelopment Opportunity
Transportation Improvement Locator (see text for details)

dvrpc

0 250 500 1,000 FEET

NORTH

Source: DVRPC

integrate on-street bicycle lanes on Moore Road. Currently consisting of two travel lanes in each direction, Moore Road's typical 40-foot cross-section could be refashioned as two 10-foot travel lanes, a 10-foot center-turning lane, and two five-foot bike lanes. This possibility is discussed further on page 47.

New Connections

The PA Turnpike represents the largest and least permeable barrier between the First Avenue and KOP Mall station areas. The most direct opportunity to connect these areas may be the integration of pedestrian facilities into the eventual KOP Rail bridge (**12**) that will span the turnpike south of American Avenue. Incorporating facilities for nonmotorized transportation designed to accommodate cyclists and pedestrians into the design of this new KOP Rail bridge represents one of the largest accessibility gains that can be created in either of these station areas. For more information, see the sidebar on this page.

OTHER TRANSIT-SUPPORTIVE STRATEGIES

Wayfinding and Information

Key locations for wayfinding signage directing pedestrians and cyclists to the First Avenue stations are identified in Figure 18. These locations include where First Avenue meets key active transportation collectors like N. Gulph Road, Moore Road, and Allendale Road.

Redevelopment Opportunities

Moore Park KOP represents the largest area of potential redevelopment in Upper Merion Township. Based on shifting market preferences, a rezoning that allows multifamily development and service retail for the first time, and the accessibility gains promised by KOP Rail, this area contains large amounts of land that represent potential opportunities for transit-supportive development in the coming years. The parcels identified in blue in Figure 18 were selected because they exhibit higher susceptibility to change based on current usage, age of structure, or property owner plans.

Fostering transit-supportive land uses, densities, and building forms can all play a key role in the ongoing revitalization of Moore Park KOP. However, because of the large size of many of the properties identified here, the potential redevelopment of these sites represents a unique opportunity to significantly enhance the overall connectivity of the station area through the creation of new streets. See page 48 for an illustration of how new streets could be introduced to Moore Park KOP.

FOCUS AREA: PA TURNPIKE PEDESTRIAN BRIDGE

Although bridges carrying a combination of transit and pedestrians are relatively rare, bridges catering to pedestrians and cyclists are becoming increasingly common. This trend recognizes the growing importance of biking and walking as transportation modes and the unique ability of bridges to overcome barriers, such as highways and railroads.

Shown here, a pedestrian bridge over I-495 in Delaware connects the SEPTA Claymont Regional Rail Station to a nearby residential neighborhood (A).

Several pedestrian bridges were built during the construction of the Silver Line of the Washington Metro in suburban Virginia. The bridge over VA-123 (B) carries pedestrians over 10 lanes of traffic and connects the Tysons Corner Metro Station to a bus station and a variety of retail, office, and residential destinations.

The Berkeley Bike Bridge (C) crosses 14 lanes of I-80 traffic and allows pedestrians and cyclists to travel between downtown Berkeley and the Berkeley Marina and a nearby state park. The bridge opened in 2002 and is wide enough to carry emergency vehicles.

A CLAYMONT REGIONAL RAIL STATION
Claymont, Delaware

Source: Microsoft Maps, 2018

B TYSONS CORNER METRO STATION
McLean, Virginia

Source: Google Maps, 2018

C BERKELEY BIKE BRIDGE
Berkeley, California

Source: Microsoft Maps, 2018

FOCUS AREA: MOORE ROAD

The lack of infrastructure for pedestrians and cyclists on Moore Road represents a major gap in the First Avenue Station Area. Cross-section diagrams illustrating existing conditions (A) and two potential improvements are illustrated to the right.

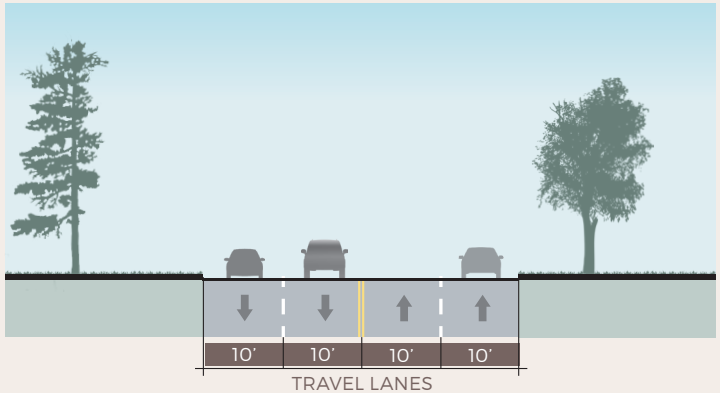
Adding multi-use trails on each side of the road (B) can enhance nonmotorized mobility without altering the roadway. However, the limited width of the existing Moore Road bridge over Trout Creek (approximately 600 feet south of 8th Avenue) represents one physical challenge to implementing these trails. Any new trails will also need to consider the area's rolling topography, existing landscaped berms, and the existing placement of utility poles along the corridor.

Additional space for pedestrians and cyclists can be created by instituting a road diet on Moore Road. A road diet would convert Moore Road from four lanes to three while adding bicycle lanes (C). This possibility was studied by Pennoni as part of the *First Avenue & Moore Road Diet & Pedestrian/Bicycle Improvement Feasibility Study* in 2013. This study evaluated the combined impact of road diets on First Avenue and Moore Road on six area intersections. According to this study, the largest impact in terms of delay and queuing would occur at the intersection of First Avenue and Moore Road. An updated assessment of the road diet concept will need to consider recent and anticipated development along Moore Road, travel generated by KOP Rail, and lessons learned from the First Avenue Road Diet.

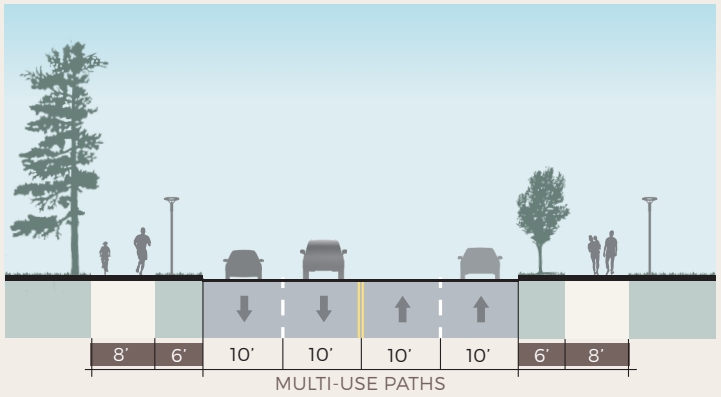
Moore Road represents a critical north-south connection in the First Avenue Station Area. New multi-use trails and/or bicycle lanes represent potential strategies for improving nonmotorized access between First Avenue and W. Valley Forge Road.

dvrpc

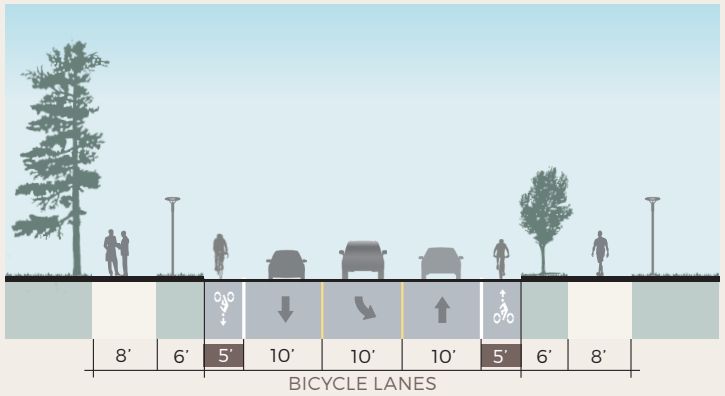
A MOORE ROAD: TYPICAL CROSS-SECTION



B MOORE ROAD: CONCEPTUAL MULTI-USE PATHS



C MOORE ROAD: CONCEPTUAL ROAD DIET



FOCUS AREA: MOORE PARK KOP NEW STREETS

Moore Park KOP's existing street network (depicted in A) limits the mobility of motorists, pedestrians, and cyclists. The redevelopment potential of this area and the arrival of rail transit create an opportunity to consider the role that new streets can play in creating a more connected street network and smaller, more walkable blocks.

Figure B illustrates one conceptual future block pattern for the station area. In this concept, new streets, shown as dashed lines, have been added to create a more grid-like network of blocks and streets. Streets such as these can enhance connectivity by creating more frequent crossings and alternative direct routes for pedestrians, cyclists, and automobile traffic while also facilitating the creation of development nodes around each station.

The most effective way to design for enhanced future connectivity may be through the use of an Official Map. An Official Map is a combined map and ordinance designed to implement the goals set forth in a comprehensive plan. The Official Map shows the location of future facilities and public lands for transportation, recreation, or other community purpose.

In this case, an Official Map could be used to denote new streets or the future extension of a dead-end street through a property. This designation notifies developers and property owners that the area mapped is of interest to a municipality for public purposes sometime in the future. Once a property owner or developer notifies a municipality of their intention to build, subdivide, or perform other work on land that is located on an Official Map, the municipality has one year to either purchase the land, come to a mutual agreement with the developer, condemn the land through eminent domain, or decide not to pursue the acquisition of the land. In coordination with the municipality, the developer may also decide to construct the improvement shown on the Official Map, in which case development can begin sooner than one year, as the necessary approvals are received.

A EXISTING BLOCK PATTERN

B CONCEPTUAL FUTURE BLOCK PATTERN

Existing Streets
Conceptual New Streets
Conceptual New Trails

500 FEET

dvrpc

CHAPTER 5

KOP MALL STATIONS

Two KOP Rail stations, spaced approximately 0.4 mile apart, are proposed in the vicinity of the KOP Mall: Mall Boulevard North and Wills Boulevard. Each station is envisioned as a "walk-up" station without dedicated parking. Both stations will be located within the center median of the ring road for which they are named.

The Mall Boulevard North Station is proposed for a location just east of the intersection of Mall Boulevard North and King of Prussia Plaza, south of the Capital Grille, and north of a portion of the KOP Mall formerly referred to as the Plaza. The Wills Boulevard Station is proposed for a location approximately 400 feet west of Allendale Road, south of Costco, and just north of a portion of the KOP Mall formerly known as the Court. Due to their proximity, these stations are being considered as part of a combined KOP Mall Station Area.

Since opening as the Plaza at King of Prussia in 1963, the KOP Mall, now home to over 400 stores, has evolved to become one of the most successful and largest shopping malls in the United States. A 155,000 square-foot expansion corridor was completed in 2016 to connect the Court and Plaza into a unified mall. With over 7,000 employees and 20 million annual visitors, the KOP Mall represents the single largest destination along the KOP Rail.

The KOP Mall is part of the larger commercial core of the station area defined by the three highways that bisect it: the PA Turnpike, US Route 202, and the Schuylkill Expressway. In addition to the mall, this commercial core is home to other employment destinations, such as the Lockheed Martin Complex and a variety of standalone retail establishments, restaurants, entertainment venues, and hotels.

The station area is also currently home to the KOP Transit Center. Located next to the former JC Penney department store, the KOP Transit Center is a bus terminal serving six SEPTA Suburban Division buses that provide connections to Center City Philadelphia and destinations in Delaware, Montgomery, and Chester counties.

A portion of the KOP Mall Station Area north of the PA Turnpike and west of Allendale Road overlaps the First Avenue Station Area. Although these overlapping areas remain largely disconnected due to the PA Turnpike, Allendale Road provides a key north-south connection between these areas for motorists, pedestrians, and cyclists.

STATION AREA PROFILE

DEMOGRAPHICS*

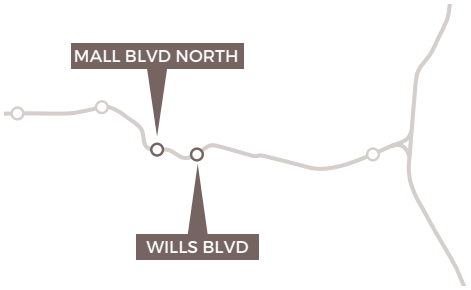
Total Population: 1,821
Average Household Size: 2.68
Housing Units: 747
Owner-Occupied: 62.7 percent
Renter Occupied: 28.2 percent
Median Household Income: $86,465
Median Home Value: $339,679
Median Age: 39.2
Total Employees: 9,793

STATION CHARACTERISTICS

Existing Bus Service: Routes 92, 99, 123, 124, 125, 139
Mall Boulevard North: Walk-Up Station
Wills Boulevard: Walk-Up Station

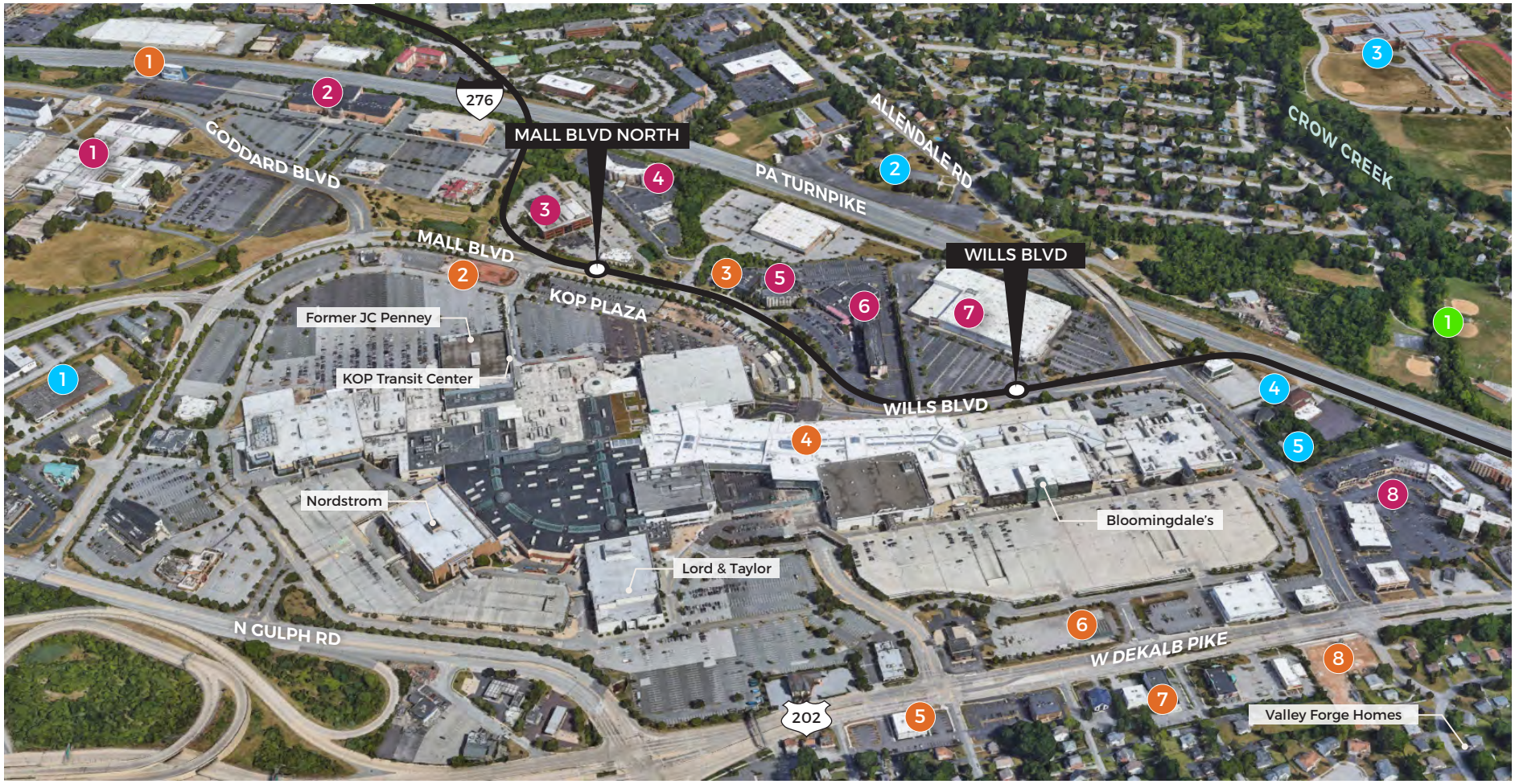
ACCESSIBILITY MEASURES

Mall Boulevard North Walk Score: 61/100
Wills Boulevard Walk Score: 61/100



**Source: Esri Community Profile forecasts for 2017 based on Census 2010 Summary File 1.*

FIGURE 19: KOP MALL STATION AREA POINTS OF INTEREST



Major Employers/Destinations

1. Lockheed Martin
2. United Artists KOP 16
3. 234 Mall Blvd. Office Building
4. Hyatt House
5. Fairfield Inn
6. Crown Plaza Hotel
7. Costco
8. Courtside Square Apartments and Commercial Complex

Parks/Recreation

1. Walker Park

Community

1. Philadelphia Hand to Shoulder Center
2. Mother of Divine Providence Church/ Mother Teresa Regional Catholic School
3. Upper Merion Area Middle School
4. KOP Volunteer Fire Company and 9/11 Memorial
5. Elwood Powell House

Recent/Approved Developments

1. iFLY KOP
2. True Food Kitchen
3. J. Alexander's Restaurant
4. KOP Mall Connector
5. Verizon
6. Eddie V's Prime Seafood
7. Porcelanosa
8. Bassett Home Furnishings

Sources: Upper Merion Township, Google Maps, 2018

STATION AREA IMAGES

A. The most direct route for residents living south of DeKalb Pike to the Wills Boulevard Station travels through the KOP Mall's Parking Deck E and Bloomingdale's.

B. This photo shows the view down Mall Boulevard looking east from the intersection with Goddard Boulevard. The parking lots on the north side of the KOP Mall are visible on the right side of the photo.

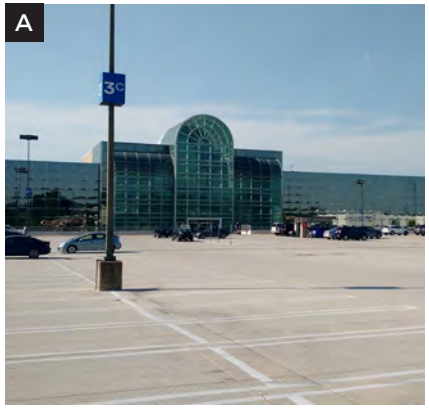
C. The Mall Boulevard North Station is proposed for a location near the 234 Mall Boulevard Office Building and the Capital Grille. New pedestrian facilities through the parking lot on the north side of the mall can help to connect this station to the mall.

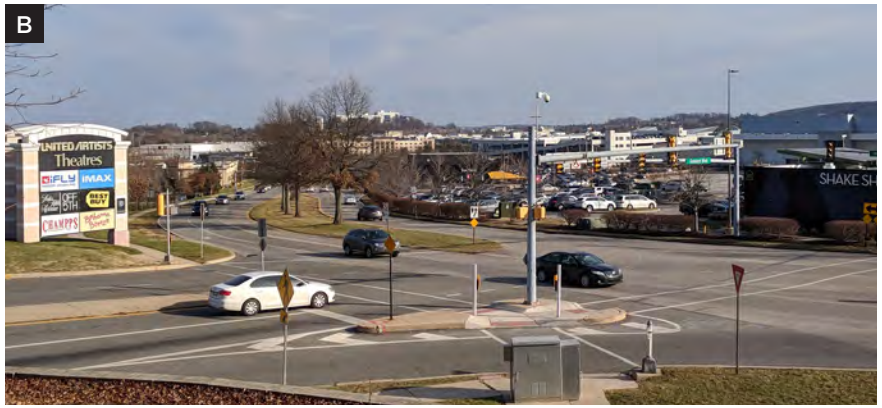
D. Sidewalks currently exist on the north side of Mall Boulevard and Wills Boulevard between Goddard Boulevard and Allendale Road. Portions of the sidewalk (shown here in front of the Capital Grille) include a planting strip that separates pedestrians from moving traffic.

E. The Wills Boulevard Station is proposed for the median of Wills Boulevard between Costco and the back side of the former KOP Court. The recently completed KOP Mall Connector is visible in the distance on the left.

F. The KOP Transit Center is located on the north side of the mall near the former JC Penney department store. The Transit Center is currently served by SEPTA bus routes 92, 99, 123, 124, 125, and 139.

G. Lockheed Martin, which sits on a slight hill west of the intersection of Goddard Boulevard and Mall Boulevard, is one of the major employers near the proposed Mall Boulevard North Station.





Existing Land Use

The area bound by the PA Turnpike, US Route 202, and the Schuylkill Expressway represents the commercial core of the KOP Mall Station Area. Although this area is home to Lockheed Martin and a small number of office and institutional properties, the area is dominated by retail, restaurant, hotel, and entertainment uses. Aside from the mall building itself, these uses largely take the form of standalone structures surrounded by large areas of surface parking. Accordingly, parking occupies roughly 40 percent of the highway-bound portion of the station area.

Single-family residential neighborhoods can be found north of the PA Turnpike and east of Allendale Road and south of DeKalb Pike. The Upper Merion Area Middle and High schools are located east of Crow Creek, just beyond the northeast bounds of the station area.

Multifamily housing development in and around the station area includes the KOP Arms Apartments, Courtside Square Apartments, and Abrams Run Apartments. The Valley Forge Suites Apartments are located in a portion of the station area that overlaps with the First Avenue Station Area. Residents of the Valley Forge Suites Apartments might choose to use the First Avenue East Station based on its proximity.

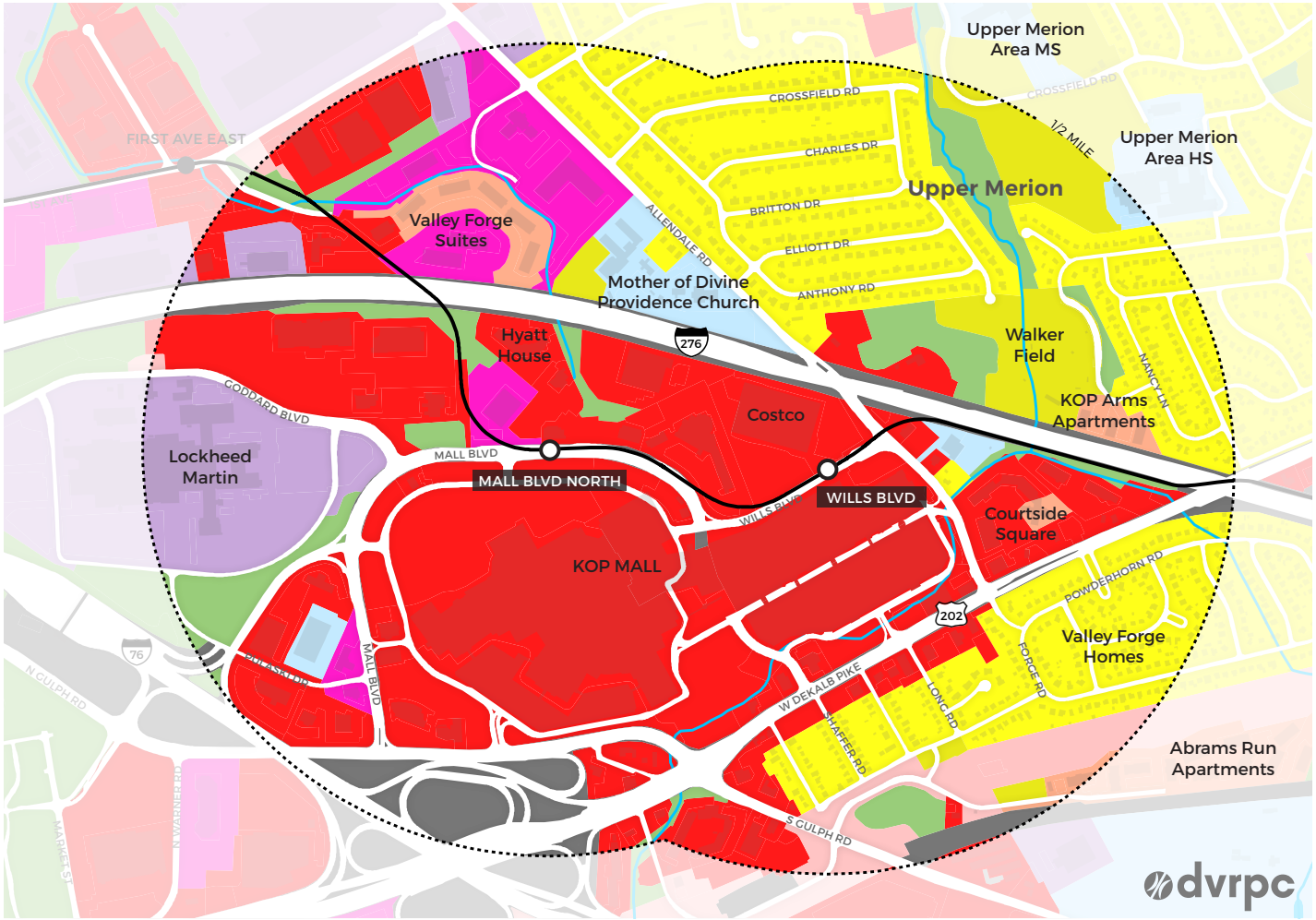


FIGURE 20: KOP MALL STATION AREA EXISTING LAND USE (2015)

- Commercial: General
- Commercial: Office
- Industrial
- Institutional
- Recreation
- Residential: Single-Family Detached
- Residential: Multifamily
- Transportation
- Utility
- Wooded/Undeveloped

NORTH

0 250 500 1,000 FEET

Source: DVRPC, 2015

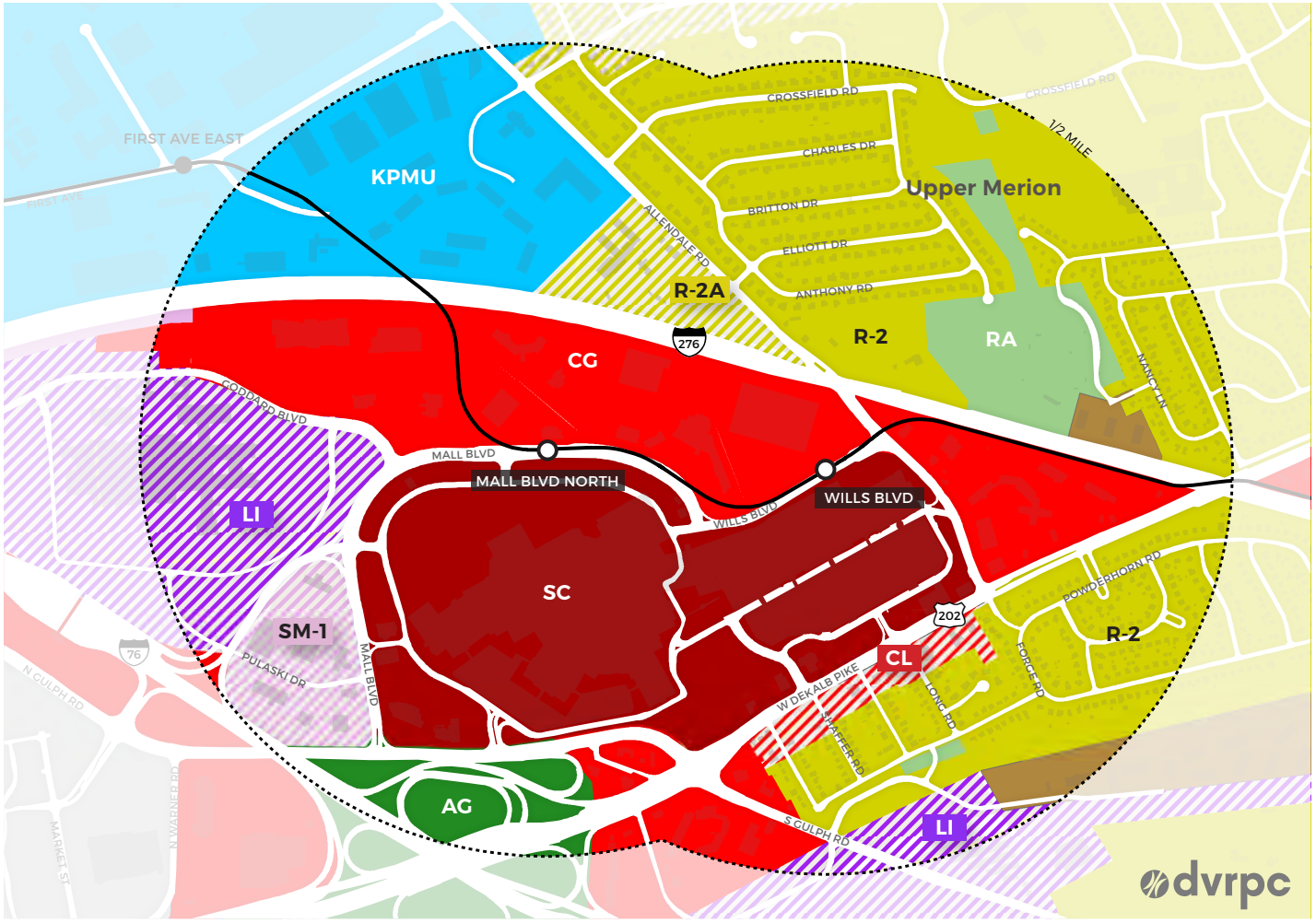


FIGURE 21: KOP MALL STATION AREA DRAFT ZONING DISTRICTS

- **AG** | Agriculture
- **CG** | Commercial General
- **CL** | Limited Commercial
- **KPMU** | KOP Mixed-Use
- **LI** | Limited Industrial
- **RA** | Recreation Area
- **R-2** | Single-Family Residential, 10,000 sq. ft.
- **R-2A** | Single-Family Residential, 12,500–15,000 sq. ft.
- **SC** | Shopping Center
- **SM-1** | Suburban Metropolitan: Light Manufacturing, one acre

NORTH

0 250 500 1,000
FEET

Source: Upper Merion Township

Existing Zoning

The KOP Mall is zoned Shopping Center (SC; shown in dark red on the map to the left). The area between the PA Turnpike and Goddard Boulevard/ Mall Boulevard/Wills Boulevard, as well as the triangular area west of Allendale Road, is zoned Commercial General (CG).

The current Lockheed Martin site on the western edge of the station area is zoned Limited Industrial (LI; shown in purple hatching).

The area west of the mall near Pulaski Drive is zoned Suburban Metropolitan; Light Manufacturing (SM-1; shown in pink hatching).

A concentration of health-related businesses, like Einstein Healthcare Network, Moss Rehab, Philadelphia Hand to Shoulder Center, Wellness Quest Chiropractic, CrossFit Valley Forge, and a Dental Wellness Centre, can be found here. There are also several restaurants surrounded by parking lots, like Ruth's Chris Steakhouse and Hooters, as well as a Holiday Inn Express and Suites hotel.

A small area of Commercial Limited (CL; shown in red hatching) can be found along the south side of DeKalb Pike, which includes an assortment of banks, realtors, specialty home stores, and cell phone service providers.

Pedestrian Walkshed

The purple and pink lines in Figure 22 represent the distance that the average pedestrian can walk from the KOP Mall stations in five and 10 minutes, respectively, using the existing network of public streets and multi-use trails. The KOP Mall itself, as well as the ring roads that encircle it, all lie within the 10-minute walkshed. However, beyond the mall, the walkshed is compressed by the PA Turnpike to the north and the US 202/ Schuylkill Expressway Interchange to the south. In between these highways, the walkshed extends west along Goddard Boulevard and Conrad Drive and south and east along DeKalb Pike and neighborhood streets in the Valley Forge Homes development. As the only place to cross the PA Turnpike in the station area, Allendale Road plays a key role in connecting destinations along Allendale and neighborhood residents north of the turnpike to the Wills Boulevard Station.

Based on the ubiquity of surface parking lots in this station area, the KOP Mall walkshed appears smaller than it truly is. Many of the stores, hotels, and restaurants located north of Wills and Mall boulevards are accessible to pedestrians even though the formal street network is limited in these locations. Pedestrians wishing to access these destinations must navigate a network of access drives and parking lots.

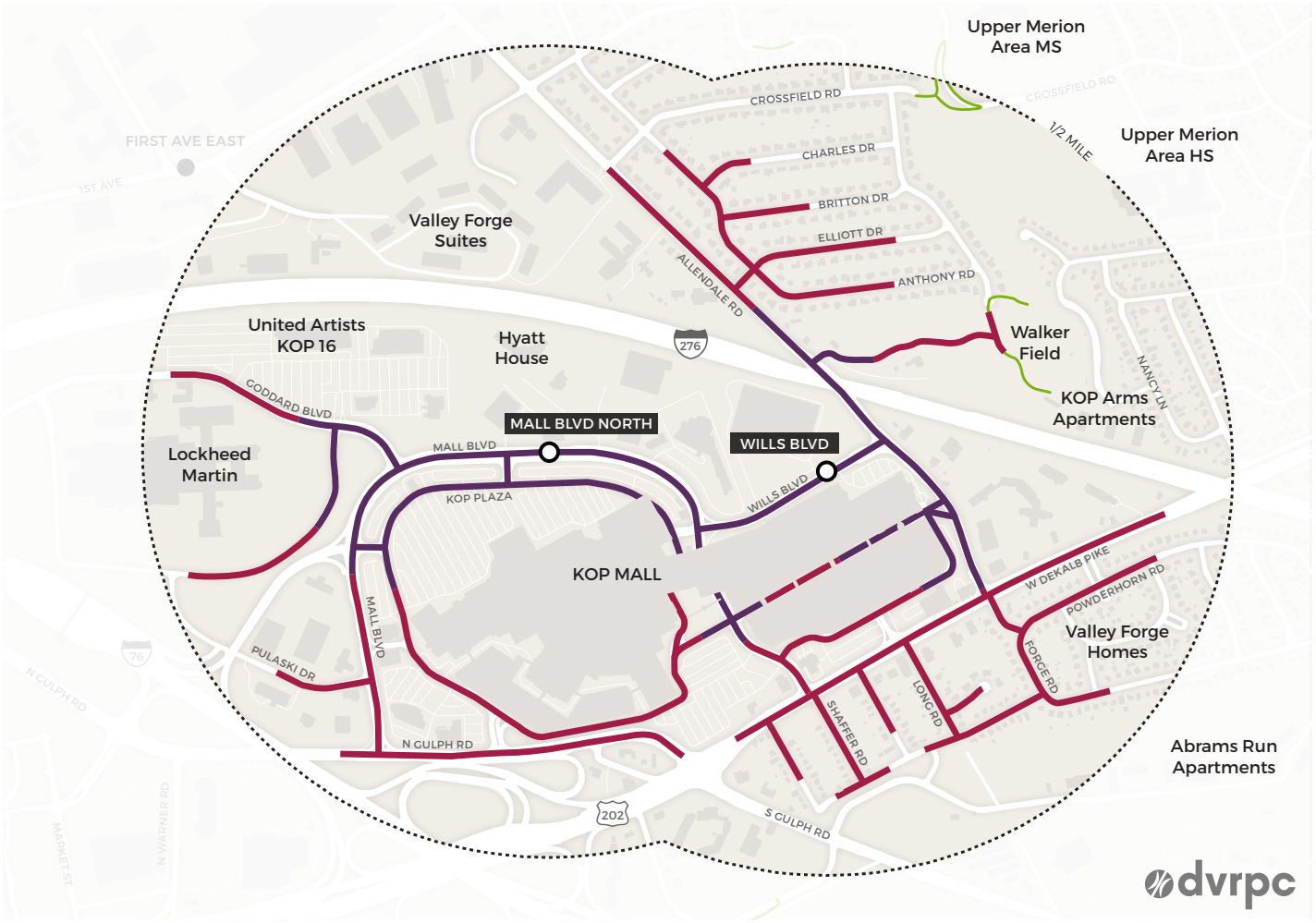


FIGURE 22: KOP MALL STATION AREA PEDESTRIAN WALKSHED

Quarter-Mile (Five-Minute) Walking Distance

Half-Mile (10-Minute) Walking Distance

Source: DVRPC

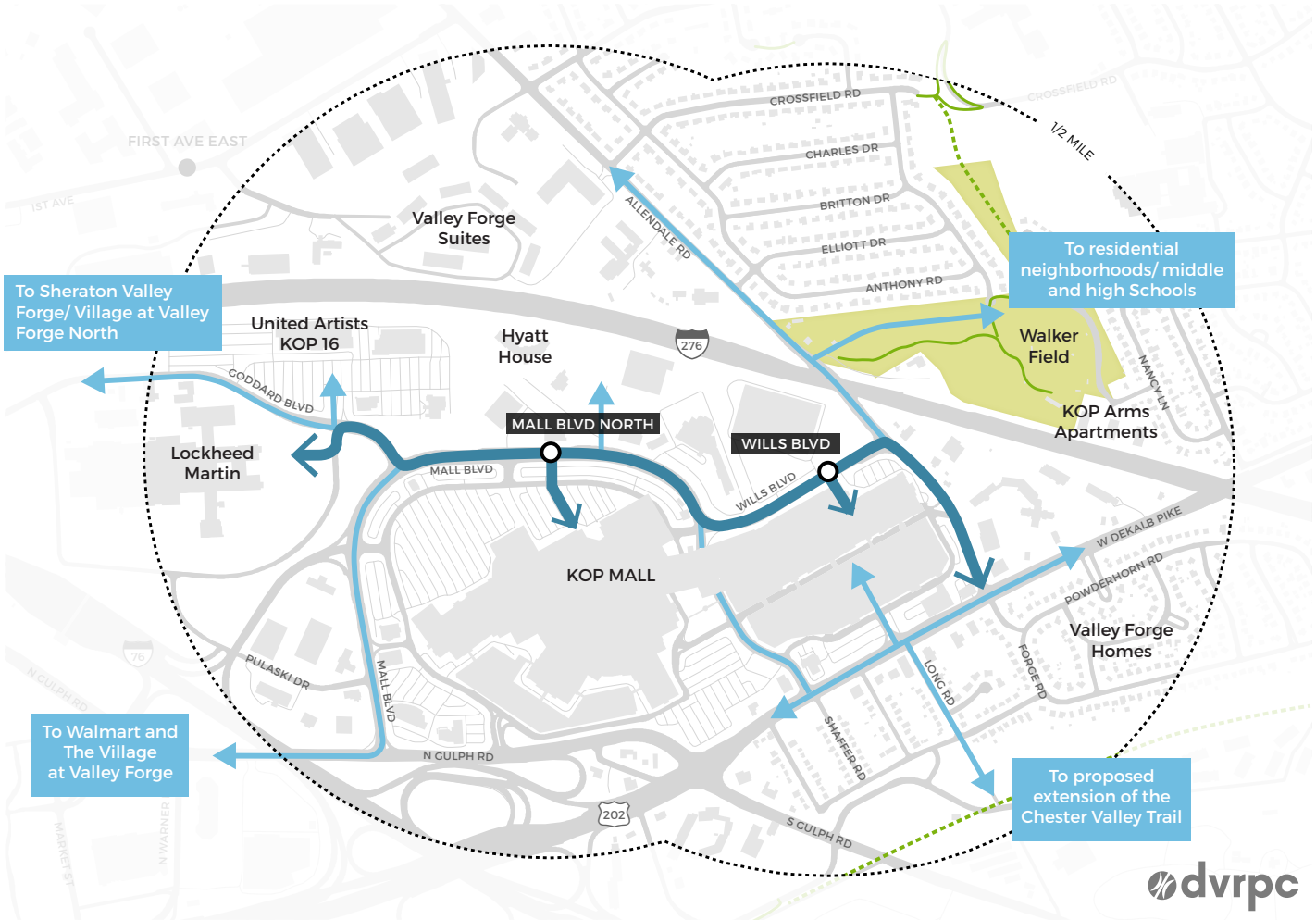


FIGURE 23: KOP MALL STATION AREA KEY ACTIVE TRANSPORTATION ROUTES

- Active Transportation Arterial: Route that is expected to provide the primary nonmotorized access to and from a station.
- Active Transportation Collector: Route that feeds into an active transportation arterial and supports nonmotorized circulation throughout a station area.
- Existing Multi-Use Trail
- Proposed Multi-Use Trail

Source: DVRPC

Key Active Transportation Routes

Figure 23 identifies the routes pedestrians and cyclists are most likely to use to access the KOP Mall stations based on the existing network of streets and multi-use trails. In some cases, these routes allude to destinations outside of the core station area that represent important origins or destinations.

Based on their potential to connect the proposed stations to key employment and retail centers, as well as residential neighborhoods, these routes, and the intersections along them, represent the locations where nonmotorized transportation investments may be most impactful.

The active transportation arterials in this area reflect the importance of connecting each station to the KOP Mall and also extend along portions of Allendale Road, Wills Boulevard, and Mall Boulevard between DeKalb Pike and Lockheed Martin. From this spine, Goddard Boulevard and N. Gulph Road serve as active transportation collectors that connect The Village at Valley Forge to the Mall Boulevard North Station. DeKalb Pike and Allendale Road represent active transportation collectors that connect residents and visitors in the southeastern and northeastern portions of the station area to the Wills Boulevard Station. During business hours, transit riders traveling to destinations south of the mall may choose to cut through the mall itself rather than taking more circuitous routes along Allendale Road or Mall Boulevard.

Nonmotorized Access Barriers and Assets

Figure 24 summarizes issues related to nonmotorized access in the KOP Mall Station Area. The map highlights obstacles to nonmotorized access, as well as station area assets that help facilitate walking and biking. Additional location-specific observations are documented in the accompanying table.

ACCESS BARRIERS

Structural barriers shaping this station area include the highways and interchanges that limit nonmotorized travel north and south of the KOP Mall stations. Although the station area has few dead-end streets, the distance between destinations, the large footprint of the KOP Mall itself, and the circular nature of the street network within the highway-bound portion of the station area result in a challenging environment where walking routes are often long and circuitous. Travelers wishing to take more direct routes may be forced to cut through parking garages or surface lots that lack formal pedestrian infrastructure.

Sidewalks, shown with a thin black line in Figure 24, are present in many locations along key nonmotorized routes, such as Mall Boulevard, Wills Boulevard, Allendale Road, and DeKalb Pike. Nonetheless, pedestrians may not always feel comfortable on these streets due to sizable curb cuts that interrupt the sidewalk network and sidewalks that are located immediately next to high-volume travel lanes.

Standard crosswalks, curb ramps, and pedestrian countdown timers help to facilitate pedestrian crossings at many intersections. However, long crossing distances, wait times, and crossing restrictions at some intersections detract from the pedestrian experience.

The station area lacks any dedicated bicycle facilities. As shown on Figure 9 in Chapter 1, the roadway segments that are most comfortable for cyclists exist primarily within the residential areas of the station area. High vehicular speeds, traffic volume, and limited shoulders on Allendale Road, N. Gulph Road and DeKalb Pike restrict bicycle travel in the area.

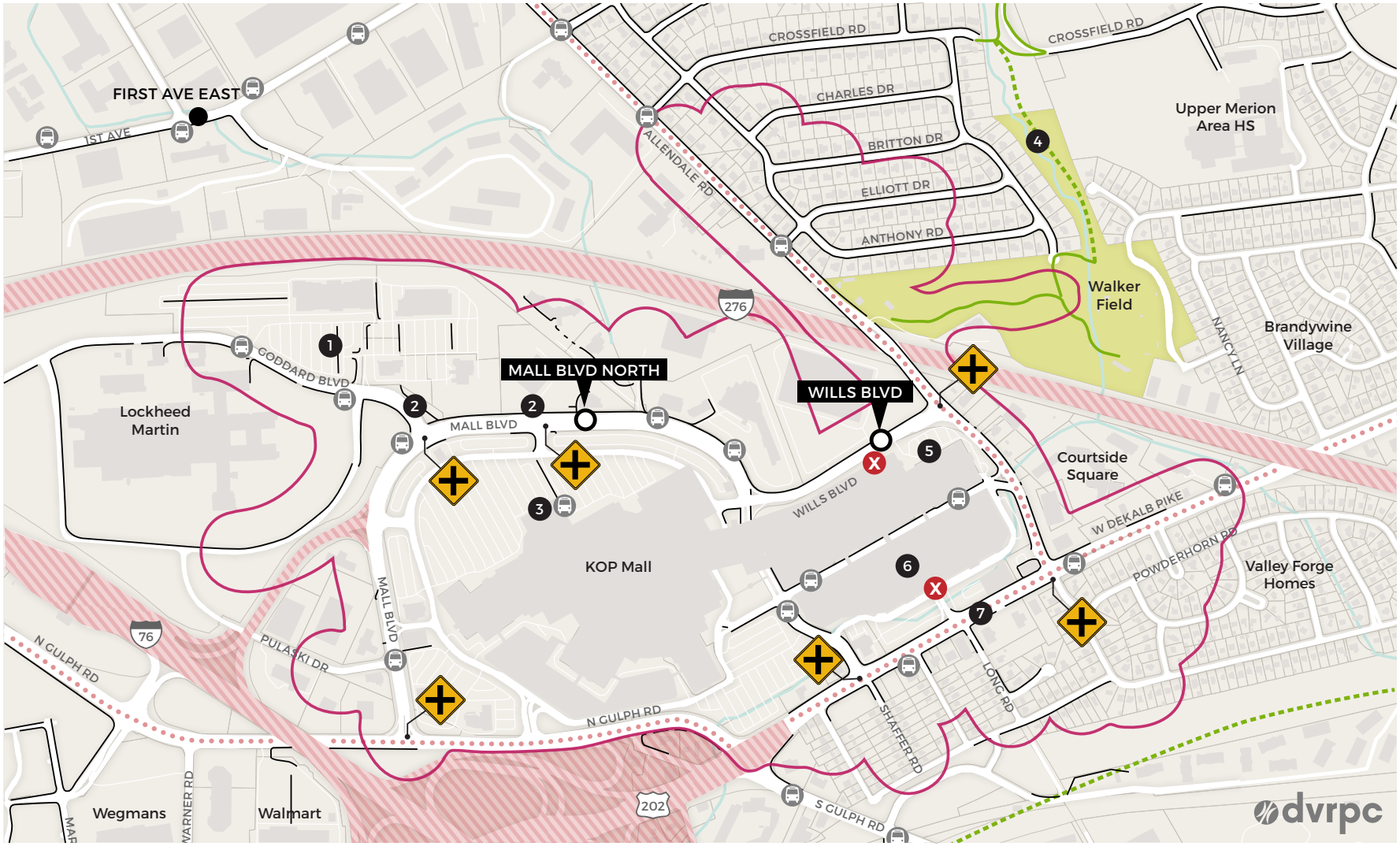
ASSETS

Recent pedestrian improvements, including sidewalks and crossing amenities, have helped make DeKalb Pike more accessible to pedestrians. In particular, the intersection of US 202 and Long Road represents a potential model for taming challenging intersections along the KOP Rail Corridor. Here, pedestrians actuate signals, and a pedestrian refuge island in the median breaks the task of crossing DeKalb Pike into two manageable pieces.

A planned expansion of the Crow Creek Trail can also help provide neighborhood connections to the Wills Boulevard Station. In addition to improving connectivity between the community center complex and the middle and high schools, neighbors residing in residential areas northeast of the station area can use a combination of neighborhood streets, the Crow Creek Trail, and Allendale Road to reach the Wills Boulevard Station.

Station Area Issues and Observations	
1	Some parking lots in this station area, like the one at the United Artists KOP 16, integrate sidewalks and crosswalks to help pedestrians navigate large parking lots.
2	Large crossing distances and long wait times make crossing Mall Boulevard at Goddard Boulevard and King of Prussia Plaza challenging.
3	Each of the six SEPTA bus routes operating in the study area serve the KOP Transit Center. Access to the lower level of the KOP Mall is provided through an adjacent entrance.
4	An extension of the Crow Creek Trail can help connect neighborhood residents and employees of the middle and high schools to the Wills Boulevard Station.
5	Although the Wills Boulevard Station is proposed for a location immediately adjacent to the KOP Mall, the closest existing entrance is located at the DSW Shoe Warehouse approximately 500 feet away.
6	A large parking deck outside of Bloomingdale's creates a barrier for pedestrians between DeKalb Pike and the mall, obstructing the potentially most direct route to transit for some residents and employees.
7	Traffic volumes and vehicles speeds can make walking along DeKalb Pike unpleasant. However, new sidewalks with planting strips that buffer pedestrians from traffic and intersection treatments, particularly the median refuge island at Long Road, have improved the environment.

FIGURE 24: KOP MALL STATION AREA ACCESS ISSUES AND OBSERVATIONS



Barriers

- 10-Minute Walkshed
- Highway
- Connectivity Gap
- Challenging Intersection
- Street Condition

Assets

- Existing Sidewalk
- Existing Bus Stop
- Existing Multi-Use Trail
- Proposed Multi-Use Trail

Issues and Observations

- # See page 56 for details

0 250 500 1,000 FEET

NORTH

Sources: DVRPC, SEPTA, Upper Merion Township

Opportunities and Strategies

Enhancing nonmotorized access and transportation in the KOP Mall Station Area will require expanding the sidewalk network and improving strategically located intersections. Shorter-term improvements can focus on creating facilities that make it easier for future transit riders to navigate many of the large parking areas and driveways found in the station area. Longer-term initiatives can explore opportunities for redevelopment that introduce a more regular network of streets.

TRANSPORTATION IMPROVEMENTS

Sidewalks

The sidewalk network along key active transportation routes in this station area can be completed by adding the following sidewalk segments:

1. the south side of **Mall Boulevard** between Goddard Boulevard and Wills Boulevard;
2. the west side of **Allendale Road** near Crossfield Road;
3. portions of **Mall Boulevard** between Goddard Boulevard and N. Gulph Road;
4. portions of **Wills Boulevard and Allendale Road** just east of the Wills Boulevard Station; and
5. **Mall Connection from Mall Boulevard North**: Sidewalks already exist next to the new True Food Kitchen and along the KOP Transit Center, creating a pedestrian connection between the mall and the intersection of Mall Boulevard and King of Prussia. Plaza. However, based on the location of the Mall Boulevard North Station, a more direct pedestrian path between the station and the mall entrance near Rite Aid may be required.

Intersections

Nearly all the intersections that are critical to pedestrian circulation in this station area prohibit pedestrian movements on one or more legs of the intersection. These restrictions may make sense given the existing location of sidewalks and current land use patterns and traffic conditions. However, as the KOP Rail and new sidewalk segments are constructed, pedestrian mobility can be enhanced by formalizing crossings on all legs of the intersections closest to the stations. Potential candidates for expanded crossings could include: Mall Boulevard and Goddard Boulevard, Mall Boulevard and King of Prussia Plaza, Wills Boulevard and Allendale Road, and Mall Boulevard and N. Gulph Road.

In the meantime, each of the intersections identified in Figure 25 can be upgraded through the installation of high-visibility crosswalks, automated pedestrian signal phases, and leading pedestrian intervals.

In addition to signalized intersections, commercial driveways create obstacles for pedestrians along streets like Mall Boulevard, Allendale Road, and DeKalb Pike. Installing high-visibility crosswalks in locations such as Mall Boulevard across driveways for the Hyatt House/J. Alexander's (**6**) and the Fairfield Inn/Crown Plaza (**7**) can making walking along these key routes safer.

Multi-Use Trails

Two planned extensions of multi-use trails, Crow Creek and Chester Valley, can help expand nonmotorized transportation options in the station area. South of DeKalb Pike, trail access to the KOP Mall and the Wills Boulevard Station can be enhanced by creating a connection between the Chester Valley Trail Extension and the intersection of Long Road and Kingwood Road through the PECO electric utility right-of-way (**8**). Such a connection would also serve as a more direct cut-through for residents of the Abrams Run Apartments.

New Connections

Discussed on page 46, adding pedestrian facilities to the KOP Rail bridge (**9**) that will cross the PA Turnpike between the Mall Boulevard North and First Avenue East stations represents a chance to more directly tie the First Avenue and KOP Mall station areas together.

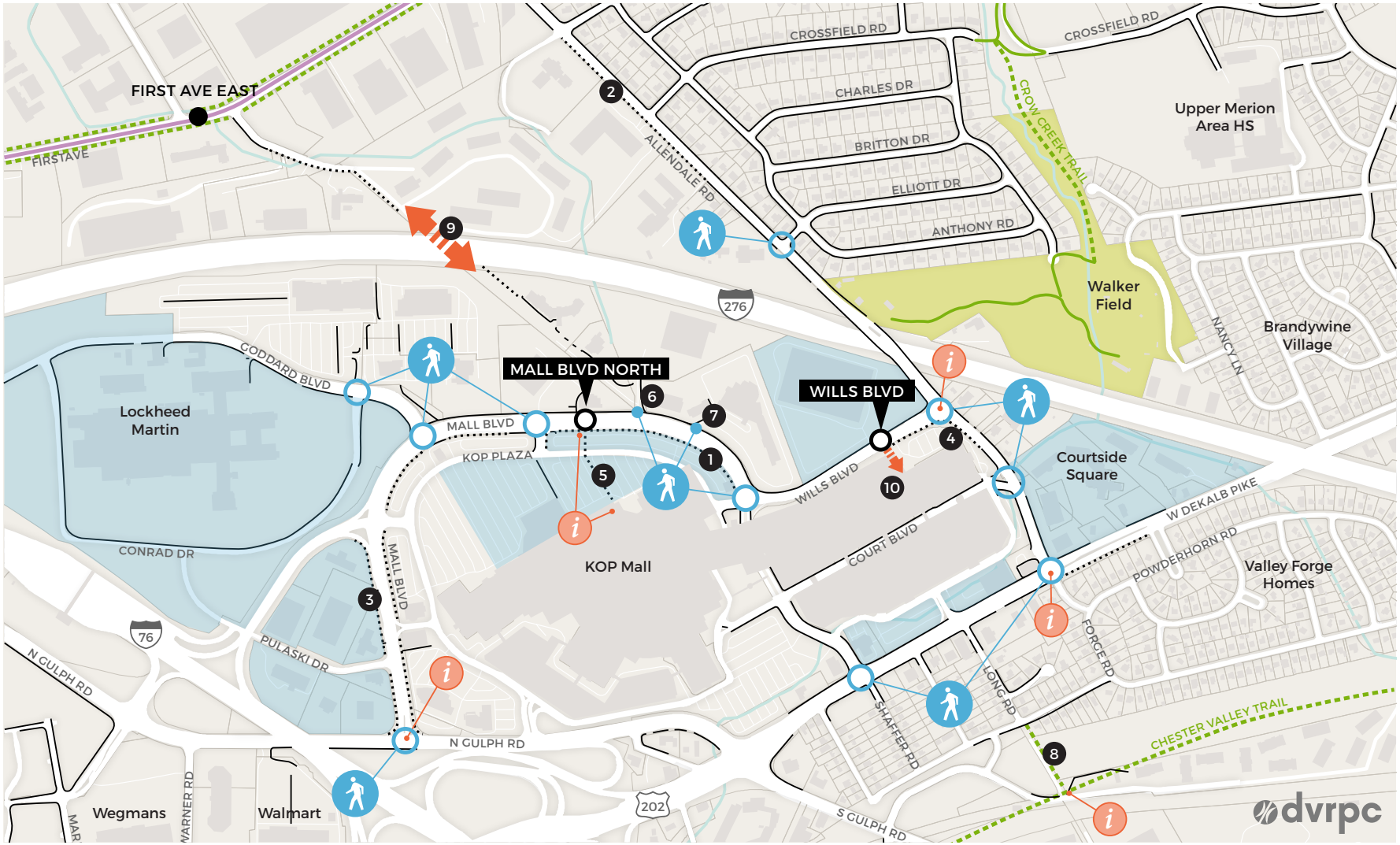
Furthermore, maximizing the usefulness of the Wills Boulevard Station will require creating a direct connection from the station into the KOP Mall (**10**). A direct link from the station platform into the mall leverages the proximity of the KOP Rail alignment to this portion of the mall and provides employees and visitors with a seamless connection to one of the most important destinations on the corridor. A direct pedestrian connection would require a new entrance into the mall on the mid-level and the reconfiguration of space currently allocated to stores.

OTHER TRANSIT-SUPPORTIVE STRATEGIES

Wayfinding and Information

Key locations for wayfinding signage directing pedestrians and cyclists to the KOP Mall stations are identified in Figure 25. These locations include key decision points for travelers as they approach the station from DeKalb Pike, Allendale Road, and N. Gulph Road.

FIGURE 25: KOP MALL STATION AREA OPPORTUNITIES AND STRATEGIES



Source: DVRPC

Redevelopment Opportunities

Constantly evolving, the KOP Mall and the commercial properties surrounding it represent the most dynamic portion of Upper Merion Township. It is reasonable to expect that future development in this area will in part be influenced by the arrival of KOP Rail. The parcels identified in blue in Figure 25 represent potential transit-supportive redevelopment opportunities based on their proximity to the proposed stations, current vacancies, and/or existing lower-intensity land uses.

Even though the KOP Mall remains one of the most successful malls in the country, it continues to diversify its offerings based on shifting consumer preferences and new competition. For example, roughly three years after completing a 155,000 square-foot connection between two parts of the mall, Simon Properties announced it would be undertaking a major interior renovation to the former Plaza section of the mall.

Future initiatives designed to capitalize on the enhanced transit access provided by the KOP Rail may seek to expand the mall's offerings outward toward the Mall Boulevard North Station on land currently used for parking. Two potentially relevant development examples are discussed on pages 60–61.

New office, residential, hotel, or institutional uses designed in a mixed-use walkable town center format can help the station area offer outdoor, streetfront shopping experiences to complement the mall. While preserving an appropriate amount of parking for customers will remain a priority, future development in this area should seek to connect station area anchors through a network of continuous, functional, and enjoyable pedestrian connections and open spaces.

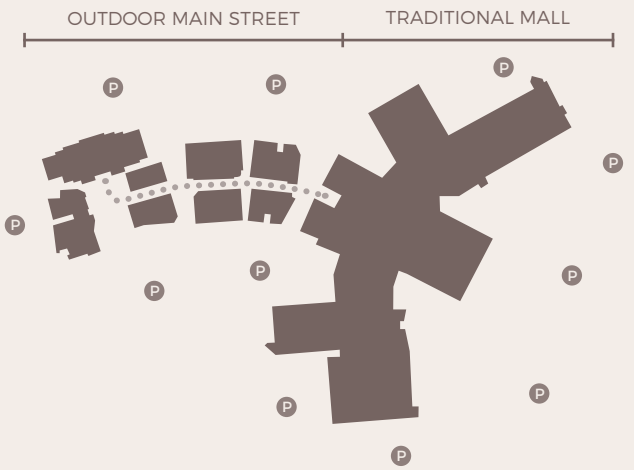
FOCUS AREA: KOP MALL DEVELOPMENT

Despite an evolving retail landscape, the KOP Mall is well positioned to continue thriving based on its strategic location and continued investment. Future initiatives may wish to leverage the KOP Rail by expanding public spaces and experiential opportunities and promoting new uses that complement shopping. In addition to the Tysons Corner Mall (discussed on page 25), inspiration for the future of the KOP Mall may come from malls and shopping centers around the country. Two of them are discussed below.

The Streets at Southpoint is a shopping mall located in Durham, North Carolina, that combines retail, dining, and entertainment. Opened in 2002, the Streets at Southpoint was designed and developed by Urban Retail Properties as a hybrid mall that includes a traditional enclosed mall and an outdoor Main Street component (A). The two portions of the mall are separated by a 70-foot glass wall. Throughout the property, the buildings and public spaces incorporate design cues intended to evoke the atmosphere of downtown Durham and local history.

The Streets at Southpoint represents a potentially useful precedent for the KOP Mall because of the attention paid to placemaking and the pedestrian experience throughout the property. Decorative lighting and paving, fountains, and sculptures enliven the outdoor wing of the mall and help ensure that pedestrians have a seamless experience throughout the indoor and outdoor portions of the mall (B and C). Although cars can travel across the Main Street in two locations, pedestrian movements are prioritized through the use of signage and large decorative crosswalks.

A STREETS AT SOUTHPOINT SITE PLAN



B AERIAL VIEW OF OUTDOOR PORTION OF THE MALL

Source: Google Maps, 2018

C ENTRANCE TO INTERIOR PORTION OF THE MALL

Source: GGP

D AERIAL VIEW OF NORTHGATE MALL AND THORNTON PLACE

Source: Google Maps

E AERIAL AND GROUND-LEVEL VIEWS OF THORNTON PLACE

Source: SvR Design Company

Source: Stellar Holdings

Special events and programming, such as the Music on Main Summer Concert Series, take place on a plaza in front of a movie theater.

Whereas the Streets at Southpoint fuse indoor and outdoor shopping, Thornton Place (D, E) illustrates an approach to development near shopping malls served with transit. Built on an overflow parking lot near the Northgate Mall in northern Seattle, Thornton Place is a dense, mixed-use development that is centered on 2.7 acres of new open space.

The development includes apartments, condominiums, 50,000 square feet of commercial space, and a movie theater. The development is bisected by the Thornton Creek Water Quality Channel, a daylit stormwater channel designed to manage and treat stormwater runoff from the surrounding area.

A portion of the parking for this development is shared with the nearby Northgate Transit Center, which is currently served by 15 buses. The Northgate Link Extension is a transit project designed to connect the Northgate Transit Center to downtown Seattle via light rail by 2021.

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CHAPTER 6

HENDERSON ROAD STATION

The Henderson Road Station Area is located just west of the existing NHSL as it travels between the Hughes Park and DeKalb Street stations. Branching off of the existing NHSL, the proposed alignment of the KOP Rail travels west through this area along a PECO electric utility corridor and the PA Turnpike.

Unlike the other study areas considered in this report, the Henderson Road Station Area is centered on a single station. Proposed for a location near the intersection of Henderson Road and Saulin Boulevard, the Henderson Road Station will be built on land that is currently occupied by a storage facility. This station is envisioned as a park-and-ride facility with daily car parking areas for transit patrons, as well as drop-off areas for buses, shuttles, and kiss-and-ride passengers.

The Henderson Road Station Area is the most diverse of the three KOP Rail station areas in terms of land use and composition. The area includes shopping centers; single-family residential neighborhoods; apartment complexes; and a variety of industrial, warehousing, and distribution facilities. The McCoy Quarry site is a distinctive feature of the station area. Formerly home to a limestone quarry, the area is now used by Aqua Pennsylvania, Inc. (formerly known as Philadelphia Suburban Water Company).

The station area's structure is derived from the network of streets, highways, and railroads that bisect the area. Henderson Road divides the station area into east and west halves. DeKalb Pike and the PA Turnpike cross east-west through the upper and lower portions of the station area, respectively. In addition to the existing NHSL, Conrail's Morrisville Line is a low-activity, elevated railroad that travels through the study area between the PA Turnpike and Church Road.

Other major infrastructure proposals for this area include a new PA Turnpike Interchange at Henderson Road. This interchange would connect to the intersection of Henderson Road and Saulin Boulevard using land west of Henderson Road and south of the KOP Rail alignment.

STATION AREA PROFILE

DEMOGRAPHICS*

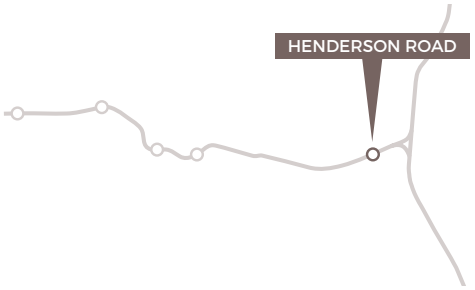
Total Population: 1,460
Average Household Size: 2.22
Housing Units: 945
Owner-Occupied: 25.0 percent
Renter Occupied: 44.8 percent
Median Household Income: $75,682
Median Home Value: $248,333
Median Age: 34.8
Total Employees: 2,134

STATION CHARACTERISTICS

Existing Bus Service: Routes 99, 124
Henderson Road: Park-and-Ride Station

ACCESSIBILITY MEASURES

Walk Score®: 55/100



Source: Esri Community Profile forecasts for 2017 based on Census 2010 Summary File 1.

FIGURE 26: HENDERSON ROAD STATION AREA POINTS OF INTEREST

Major Employers/Destinations

1. DoubleTree Hotel
2. Target
3. Frito Lay
4. H.J. Heinz
5. King of Prussia Center
6. Henderson Square Shopping Center
7. Colonial Electric Supply

Community

1. St. Augustine Cemetery
2. SS. Peter and Paul Cemetery

Recent/Approved Developments

1. Valley Forge Car Wash
2. Wawa
3. Chick-fil-A
4. Pep Boys
5. 24 Hour Car Wash
6. Workhorse Brewing Company

Sources: Upper Merion Township, Google Maps, 2018

STATION AREA IMAGES

A. The Henderson Square Shopping Center backs up to the north side of the proposed station. The stores, which include a Giant grocery store, CVS pharmacy, and Avalon Flooring—seen here from the east side of Henderson Road—are oriented away from the station and toward a surface parking lot on the opposite side.

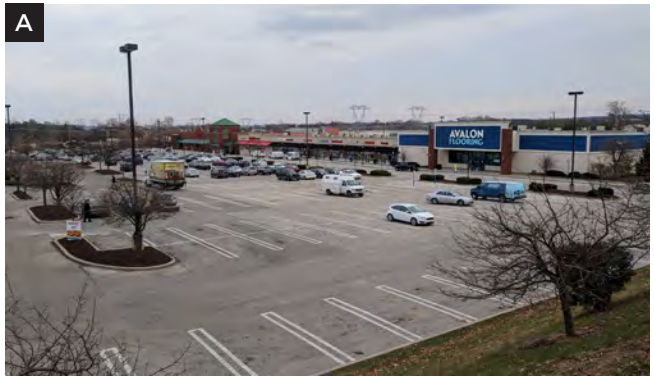
B. Sidewalks currently exist on the east side of Henderson Road between Saulin Boulevard and DeKalb Pike; however, pedestrians must walk immediately adjacent to passing traffic.

C. Sidewalks are set back from busy DeKalb Pike, shown here on eastbound US 202 just east of Henderson Road, making walking more comfortable along this busy arterial.

D. Nearly all pedestrians traveling from the Henderson Road Station to destinations along DeKalb Pike will travel through the intersection of Route 202 and Henderson Road (shown here looking south from the northwest corner of the intersection).

E. The Target store in the Valley Forge Shopping Center opened in 2014. This view from the second floor shows the parking lot along DeKalb Pike and the Chick-fil-A and a Wawa on the south side of the street. The 251 DeKalb apartment complex is visible in the distance.

F. A variety of commercial and industrial properties are located along Henderson Road south of the PA Turnpike. Looking south from the Hansen Access Road, a railroad bridge for the Morrisville Line and bus stop for SEPTA's Route 99 are visible.



Existing Land Use

Overall, the mix of land uses in the Henderson Road Station Area is more diverse and balanced than the other proposed stations. The land immediately north and south of the proposed station primarily consists of commercial uses, including the Henderson Square Shopping Center. DeKalb Pike in this station area is also home to a number of auto-oriented commercial properties and shopping centers, including the Valley Forge Center just west of Henderson Road. Unlike the retail uses in and around the KOP Mall, which attract visitors from throughout the region, the commercial areas in the Henderson Road Station Area provide goods and services that cater more directly to neighborhood and township residents.

Single-family homes are located in the Henderson Square neighborhood off of Henderson Road. The station area is home to two multifamily complexes: 251 DeKalb, a five-building, 638-unit complex renovated in 2015; and the Henderson Square Apartments, a garden-style complex containing 160 units.

The area south of the PA Turnpike primarily consists of industrial properties and warehouses, including property owned by Republic Services, a provider of solid waste and recycling services, and a distribution center for Colonial Electric Supply.

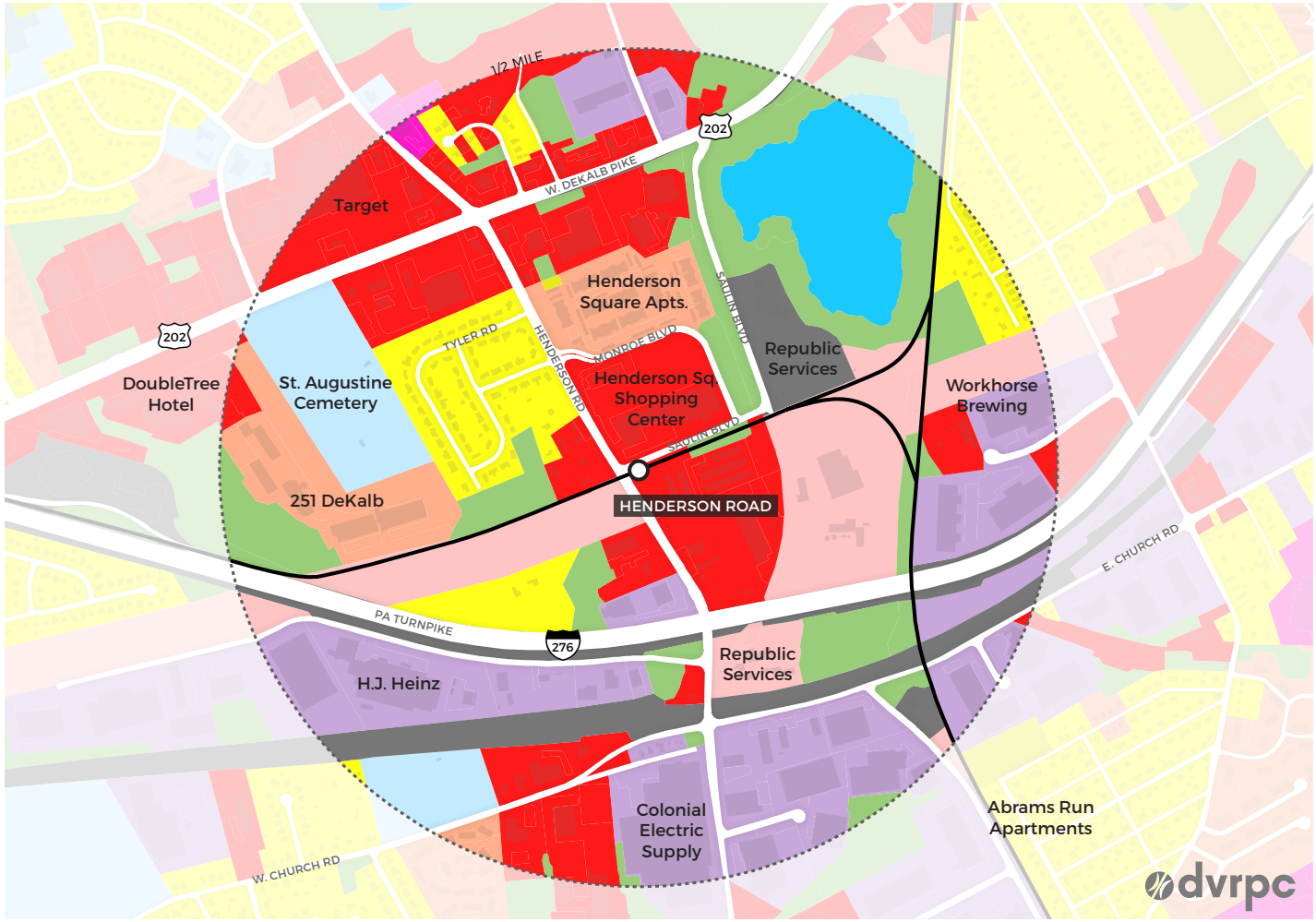


FIGURE 27: HENDERSON ROAD STATION AREA EXISTING LAND USE (2015)

- Commercial: General
- Commercial: Office
- Industrial
- Institutional
- Residential: Single-Family Detached
- Residential: Multifamily
- Transportation
- Water
- Utility
- Wooded/Undeveloped

NORTH

0 250 500 1,000 FEET

Source: DVRPC, 2015

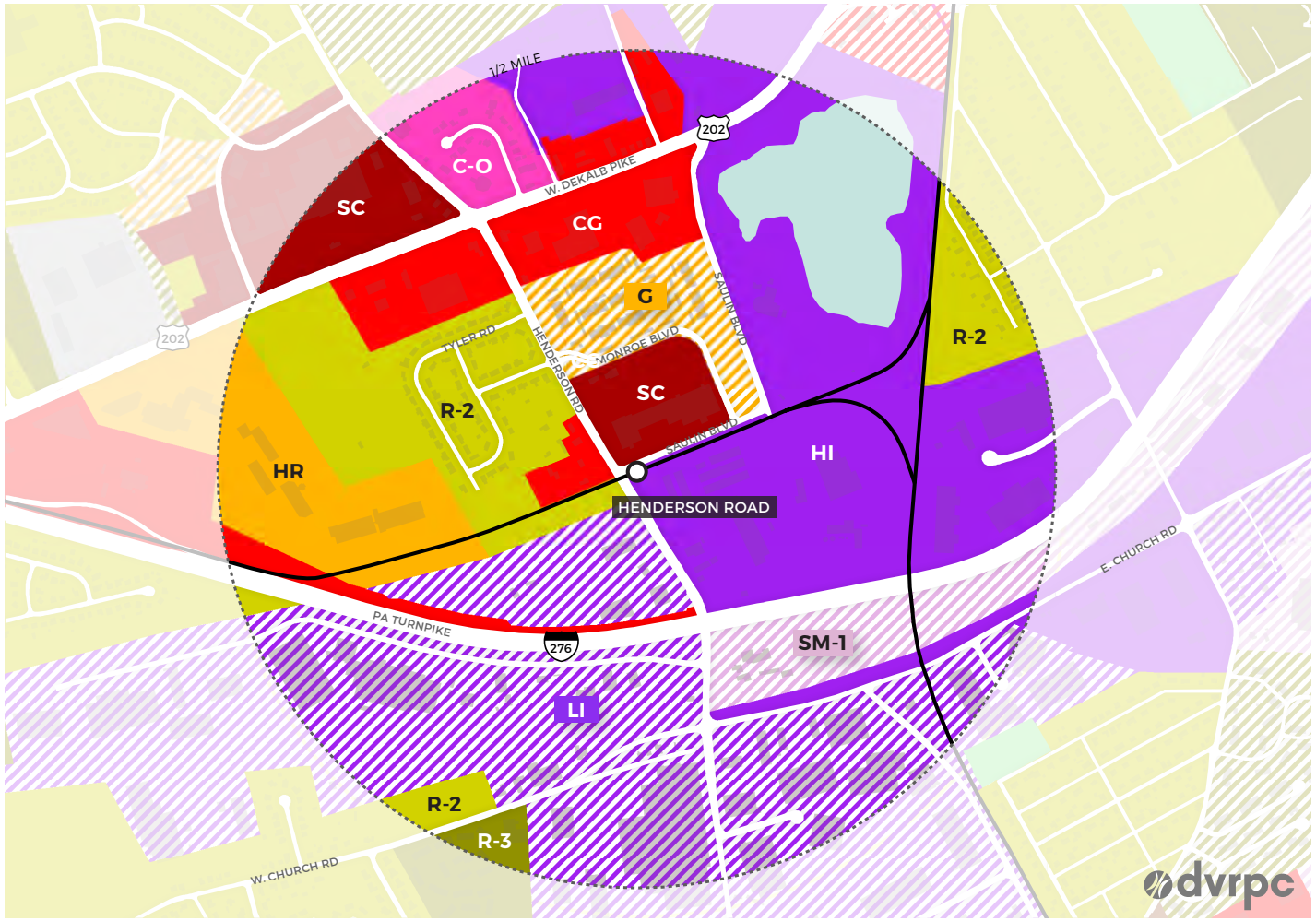


FIGURE 28: HENDERSON ROAD STATION AREA DRAFT ZONING DISTRICTS

- **CG** | Commercial General
- **C-O** | Commercial Office
- **G** | Garden-Style Multifamily
- **HI** | Heavy Industrial
- **HR** | High-Rise Multifamily
- **LI** | Limited Industrial
- **SC** | Shopping Center
- **R-2** | Single-Family Residential, 10,000 sq. ft.
- **R-3** | Single-, Two-Family, and Multifamily
- **SM-1** | Suburban Metropolitan: Light Manufacturing, one acre

0 250 500 1,000 FEET

NORTH

Source: Upper Merion Township

Existing Zoning

The area west of the proposed Henderson Road Station is zoned HI for heavy industry. The area south of the proposed station is predominantly zoned LI for Limited industrial and SM-1 for light manufacturing.

The area just north of the proposed station is zoned for a shopping center, as well as Garden-Style Multifamily apartments.

The west side of Henderson Road is zoned for R-2 single-family residential, while the 251 DeKalb apartments are zoned HR for high-density multifamily dwellings.

The northwest corner of Henderson Road and DeKalb Pike is zoned for a shopping center, while the northeast corner is zoned Commercial-Office (C-O). The south side of DeKalb Pike and north side of DeKalb Pike west of Ivy Lane are zoned Commercial General.

Pedestrian Walkshed

The purple and pink lines in Figure 29 represent the distance that the average pedestrian can walk from the Henderson Road Station in five and 10 minutes, respectively, using the existing street network. The lack of north-south streets within the station area results in a narrow walkshed that extends along Henderson Road, from north of DeKalb Pike to just south of Queens Drive. The walkshed extends east and west along DeKalb Pike and streets such as Monroe Boulevard, Saulin Boulevard, Hansen Access Road, and Church Road.

In addition to the presence of the PA Turnpike, which divides the station area in two, the shape and extent of the street network is restricted by the existing NHSL tracks, Conrail's elevated Morrisville Line, and a PECO electric utility easement, which bisect the station area. Of these structural barriers, the existing NHSL poses the most severe barrier to mobility in the area. The rail line, in combination with several large industrial properties that abut it, creates a barrier that can only be crossed by using DeKalb Pike and Church Road. Residents and employees seeking access to transit from origins and destinations east of the existing NHSL would likely choose one of the nearby existing stations, DeKalb Street or Hughes Park, based on their location.

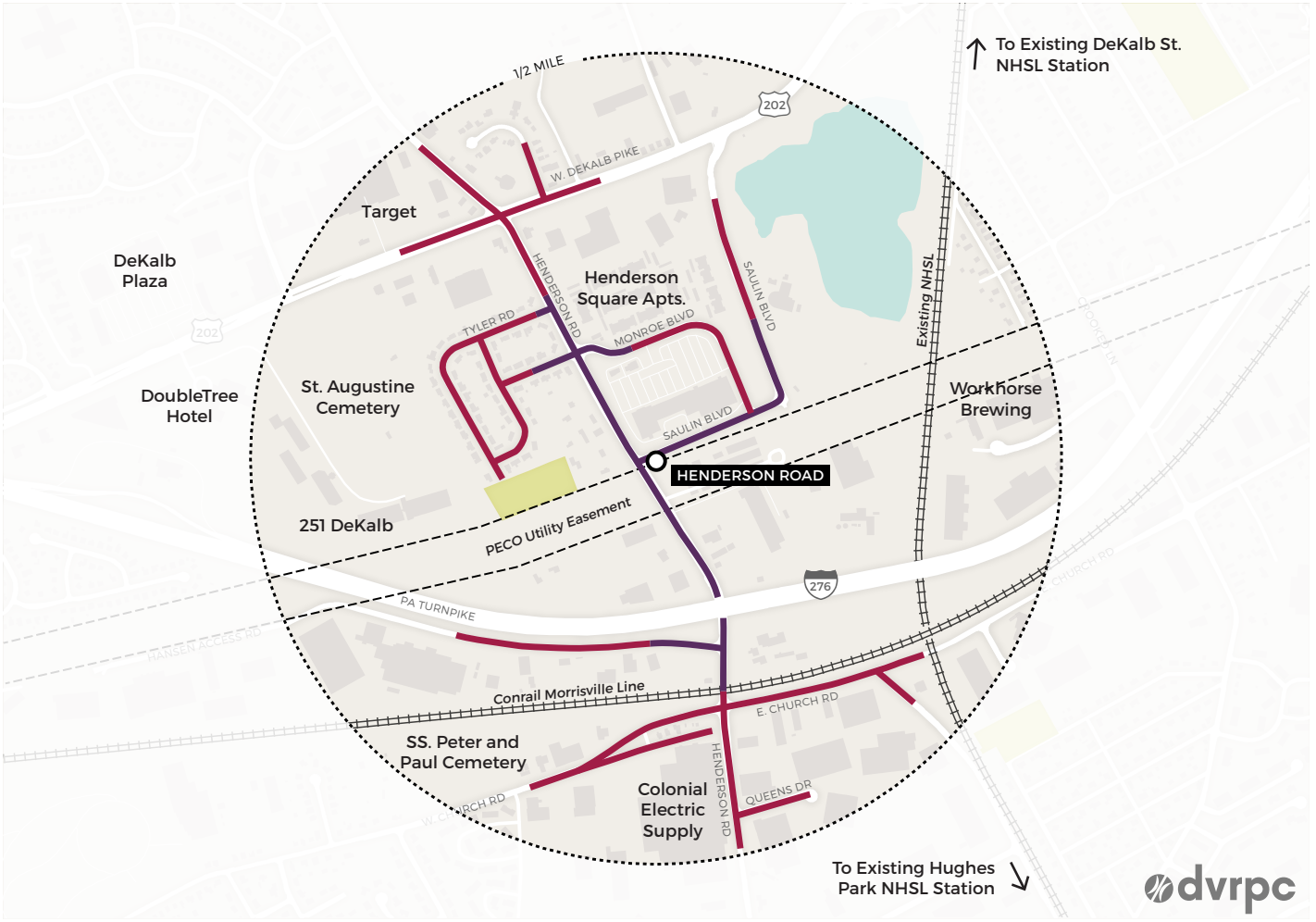


FIGURE 29: HENDERSON ROAD STATION AREA PEDESTRIAN WALKSHED

Quarter-Mile (Five-Minute) Walking Distance

Half-Mile (10-Minute) Walking Distance

Source: DVRPC

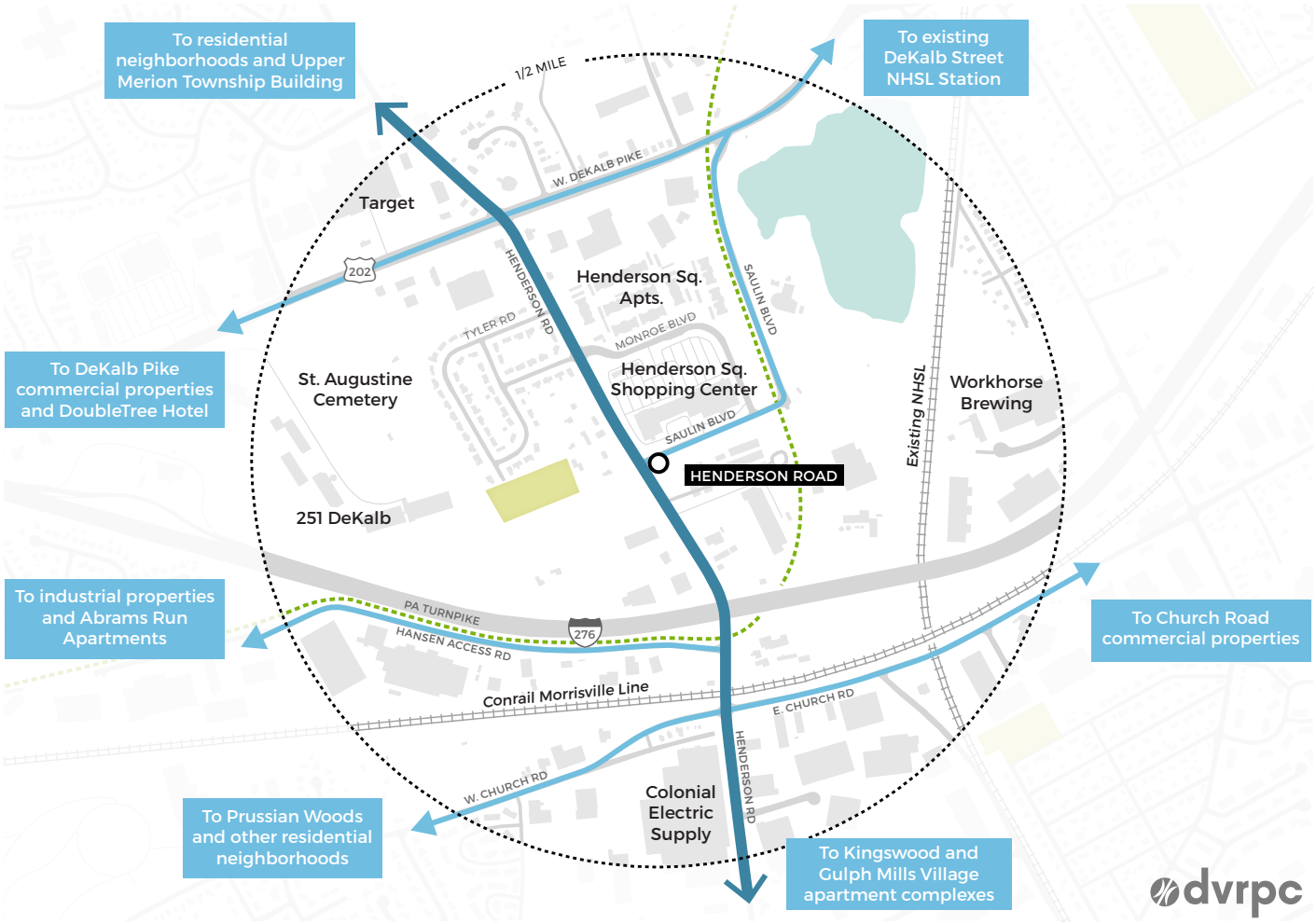


FIGURE 30: HENDERSON ROAD STATION AREA KEY ACTIVE TRANSPORTATION ROUTES

- Active Transportation Arterial: Route that is expected to provide the primary nonmotorized access to and from a station.
- Active Transportation Collector: Route that feeds into an active transportation arterial and supports nonmotorized circulation throughout a station area
- Existing Multi-Use Trail
- Proposed Multi-Use Trail

Source: DVRPC

Key Active Transportation Routes

Given the existing street network and other station area conditions, Figure 30 highlights the routes that pedestrians and cyclists would most likely use to access the Henderson Road Station. In addition to connecting nonmotorized travelers to the most important destinations within the station area, these routes also allude to potentially important destinations located beyond the core station area.

As the only north-south street that extends throughout the station area, Henderson Road represents the most important active transportation route for the Henderson Road Station. Unless they are able to reach their destination by using Saulin Boulevard, all Henderson Road Station users will travel along Henderson Road during their journey.

North of the PA Turnpike, DeKalb Pike and Saulin Boulevard serve as active transportation collectors, while Church Road and the Hansen Access road serve as active transportation collectors south of the turnpike.

Nonmotorized Access Barriers and Assets

Figure 31 summarizes issues related to nonmotorized access in the Henderson Road Station Area. The map highlights obstacles to nonmotorized access, as well as station area assets that help facilitate walking and biking. Additional location-specific observations are documented in the accompanying table.

ACCESS BARRIERS

Due to structural barriers created by existing rail lines, the PA Turnpike, and the PECO easement, pedestrians and cyclists have few routes to choose from in the Henderson Road Station Area. These limitations mean that the pedestrian experience in this station area will largely be dictated by the walking conditions along Henderson Road and DeKalb Pike, due to the density of commercial activity along this corridor. The inconsistent quality of the sidewalk network and street conditions, including traffic volumes and vehicle speeds, results in a mixed experience on these streets.

Sidewalks, shown with a thin black line, are present along the east side of Henderson Road between DeKalb Pike and Saulin Boulevard; however, their placement adjacent to speeding traffic can leave pedestrians feeling exposed. South of Saulin Boulevard, sidewalks are located on the west side of Henderson Road. However, the lack of buffers, the need to cross under two bridges, and the largely industrial context detract from the pedestrian environment.

Similar to the KOP Mall Station Area, DeKalb Pike in this area is a wide, high-volume arterial lined with shopping centers and commercial properties. The sidewalk network is largely complete along DeKalb Pike between Saulin Boulevard and the DeKalb Plaza shopping center. However, walking is most comfortable along portions that contain a landscaped buffer from the traffic and driveways featuring marked crosswalks for pedestrians. Several commercial properties are set back from the street; however, interior sidewalks and crosswalks help pedestrians navigate large parking areas in many locations.

Several intersections along the Henderson Road spine are currently challenging for pedestrians. For example, at the intersection of Henderson Road and DeKalb Pike, crossing distances, long signal wait times, and crossing restrictions on the west leg of the intersection all detract from walking in this area. At the intersection of Henderson Road and Saulin Boulevard, crosswalks are faded and pedestrian crossings are only permitted on the south and east legs of the intersection.

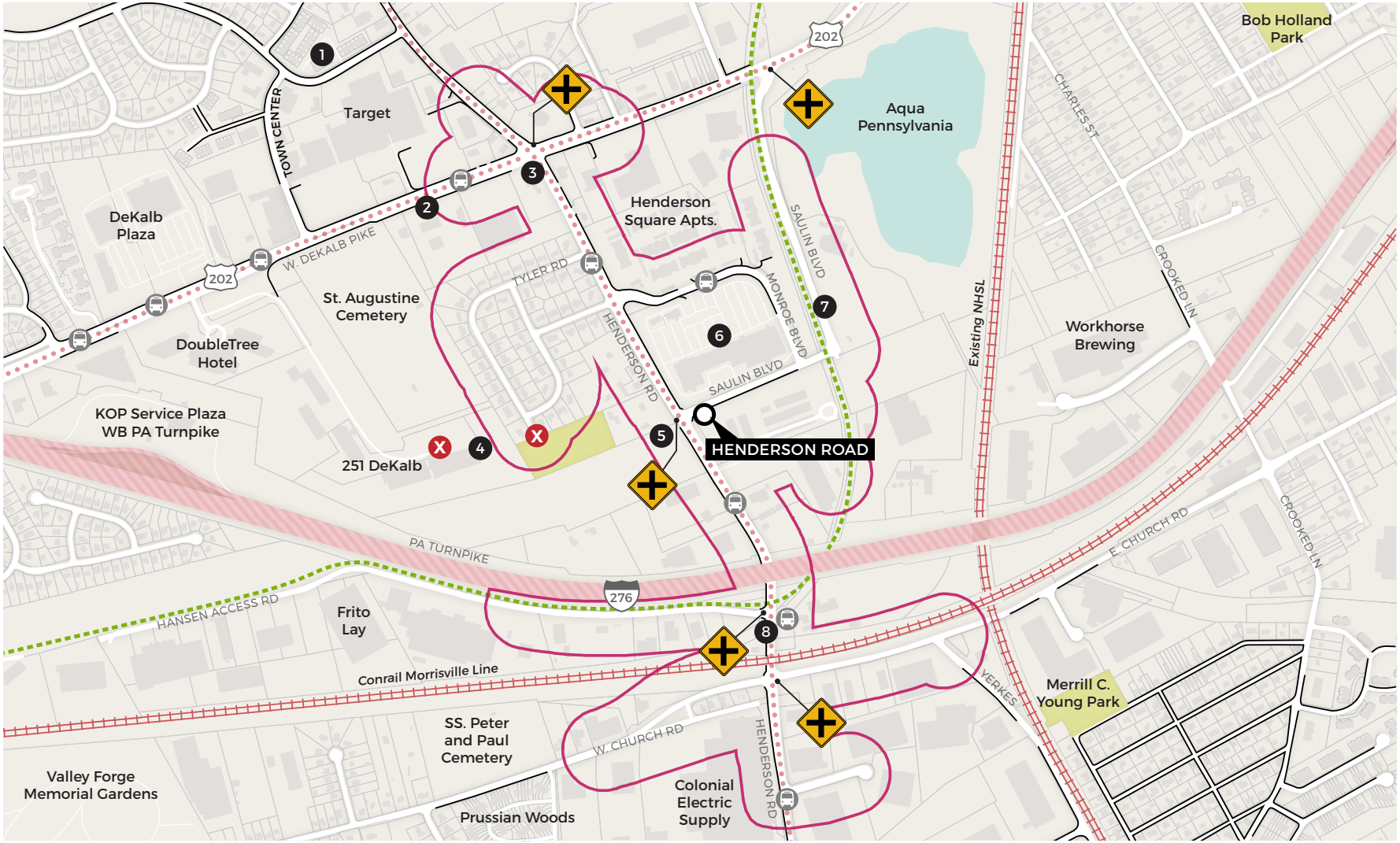
ASSETS

Pedestrian infrastructure investments along DeKalb Pike represent effective strategies for enhancing walkability to large-format retailers and along auto-oriented commercial corridors.

The Henderson Road Station Area lacks any dedicated bicycle facilities, and adding facilities to Henderson Road or DeKalb Pike may be precluded by roadway widths and characteristics. Nonetheless, the proposed alignment of the Chester Valley Trail extension along Saulin Boulevard and the Hansen Access Road provides an intriguing opportunity to create an alternative route to the station for pedestrians and cyclists.

Station Area Issues and Observations	
1	Potential KOP riders, including those living in the Courts at Henderson I and II, reside in the neighborhoods north of DeKalb Pike and west of Henderson Road.
2	Ladder-style crosswalks installed on the driveways used to access Wawa and Chick-fil-A help alert motorists to the potential presence of pedestrians in the area.
3	Long crossing distances and signal cycles, along with crossing restrictions on the west and south leg of the intersection, can make traversing the intersection of Henderson Road and DeKalb Pike cumbersome.
4	Some residents of 251 DeKalb live less than 0.4 mile from the proposed station, yet they would need to walk nearly a full mile to reach the station using existing streets.
5	The proposed Henderson Road Turnpike Interchange will add a fourth leg to the intersection of Henderson Road and Saulin Boulevard and create an opportunity to comprehensively upgrade the pedestrian facilities at this important intersection.
6	Partially set below the grade of Henderson Road, the Henderson Square Shopping Center is oriented away from the proposed station location.
7	The proposed extension of the Chester Valley Trail along Saulin Boulevard can help create an alternative route for walkers and cyclists to and through the station area.
8	Walking south along Henderson Road, pedestrians must travel under both the turnpike and Morrisville Line bridges. While neither is particularly unpleasant, underpasses in general can deter pedestrians.

FIGURE 31: HENDERSON ROAD STATION AREA ACCESS ISSUES AND OBSERVATIONS



Barriers

- 10-Minute Walkshed
- Highway
- Railroad
- Connectivity Gap
- Challenging Intersection
- Street Condition

Assets

- Existing Sidewalk
- Existing Bus Stop
- Existing Multi-Use Trail
- Proposed Multi-Use Trail

Issues and Observations

- # See page 70 for details

NORTH

0 250 500 1,000 FEET

dvrpc

Sources: DVRPC, SEPTA, Upper Merion Township

Opportunities and Strategies

Creating a better environment for walking and biking in the Henderson Road Station Area will require a combination of new and improved sidewalks, more convenient crossings, and strategic trail extensions. In the near term, treatments that make crossing commercial driveways safer can be expanded and techniques that make navigating key intersections more convenient can be explored. Longer-term efforts can consider more comprehensive treatments for Henderson Road and implementation strategies for the Chester Valley Trail.

TRANSPORTATION IMPROVEMENTS

Sidewalks

Completing the sidewalk network on key active transportation routes in this station area will require new sidewalks in the following locations:

1. the west side of **Henderson Road** between DeKalb Pike and Saulin Boulevard;
2. the east side of **Henderson Road** between Saulin Boulevard and Church Road; and
3. portions of **Church Road** between the Prussian Woods development and Yerkes Road.

Intersections

Improvements at five Henderson Road intersections identified in Figure 32 can make walking to and from the Henderson Road Station safer and more convenient. As pedestrian activity increases, each of these intersections can be enhanced by the installation of high-visibility crosswalks and automatic pedestrian phases. In some cases, it may make sense to remove existing restrictions on pedestrian crossings as new sidewalks are installed, redevelopment occurs, or other infrastructure projects are completed.

For instance, pedestrian crossings are currently only permitted on the south and east legs of the DeKalb Pike/Henderson Road intersection (**4**). Near the proposed station, pedestrian crossings are currently only permitted on the south and east legs of the Henderson Road and Saulin Boulevard intersection (**5**). Potential improvements designed to give pedestrians full access to these critical Henderson Road intersections are discussed in more detail on page 74.

Multi-Use Trails

The planned extension of the Chester Valley Trail (**6**) can help expand nonmotorized transportation options in the station area by serving as a potentially more attractive alternative to Henderson Road for pedestrians and cyclists. Maximizing the benefit of this trail for station access purposes will require a safe and convenient crossing of DeKalb Pike, connection to the Henderson Square Apartments, and station design features that effectively integrate trail access into the station.

Traffic Calming

As currently constructed, Henderson Road is a four-lane, undivided street that is unpleasant to walk on and dangerous to bike on due to the proximity to fast-moving traffic. Similar to First Avenue and Moore Road in Moore Park KOP, portions of Henderson Road (**7**), particularly north of the station, may be a candidate for a road diet that is designed to help manage traffic speed while gaining critical spaces for new or wider sidewalks. Any speed management measures like this on Henderson Road will need to begin with a capacity analysis that incorporates anticipated volume generated by the Henderson Road Turnpike Interchange.

New Connection

8. **251 DeKalb Cut-Through**: create a pedestrian connection between the 251 DeKalb apartment complex and the Henderson Road Station. From the easternmost edge of 251 DeKalb, this connection would need to pass through a municipally owned open space and a commercially zoned parcel that fronts onto Henderson Road.

OTHER TRANSIT-SUPPORTIVE STRATEGIES

Wayfinding and Information

Key locations for wayfinding signage directing pedestrians and cyclists to the Henderson Road Station are identified in Figure 32. These locations include Henderson Road at DeKalb Pike and Church Road, as well as the future extension of the Chester Valley Trail near DeKalb Pike.

Redevelopment Opportunities

The introduction of a park-and-ride facility in this station area is not envisioned as a major driver of redevelopment. Much of the land that is identified as susceptible to change in this station area is located along the Henderson Road corridor in areas south of the station and the PA Turnpike. These sites include several large industrial, warehousing, and distribution centers that may be candidates for redevelopment in the coming years. The need for enhanced nonmotorized access to these areas will only grow as retail, office, and service uses are added to this area.

FIGURE 32: HENDERSON ROAD STATION AREA OPPORTUNITIES AND STRATEGIES

- Existing Sidewalk
- New Sidewalk
- Existing Multi-Use Trail
- New Multi-Use Trail
- Traffic Calming
- Enhanced Pedestrian Crossing
- New Connection
- Wayfinding and Information
- Potential Redevelopment Opportunity
- # Transportation Improvement Locator (see text for details)

0 250 500 1,000 FEET

NORTH

dvrpc

Source: DVRPC

FOCUS AREA: HENDERSON ROAD INTERSECTIONS

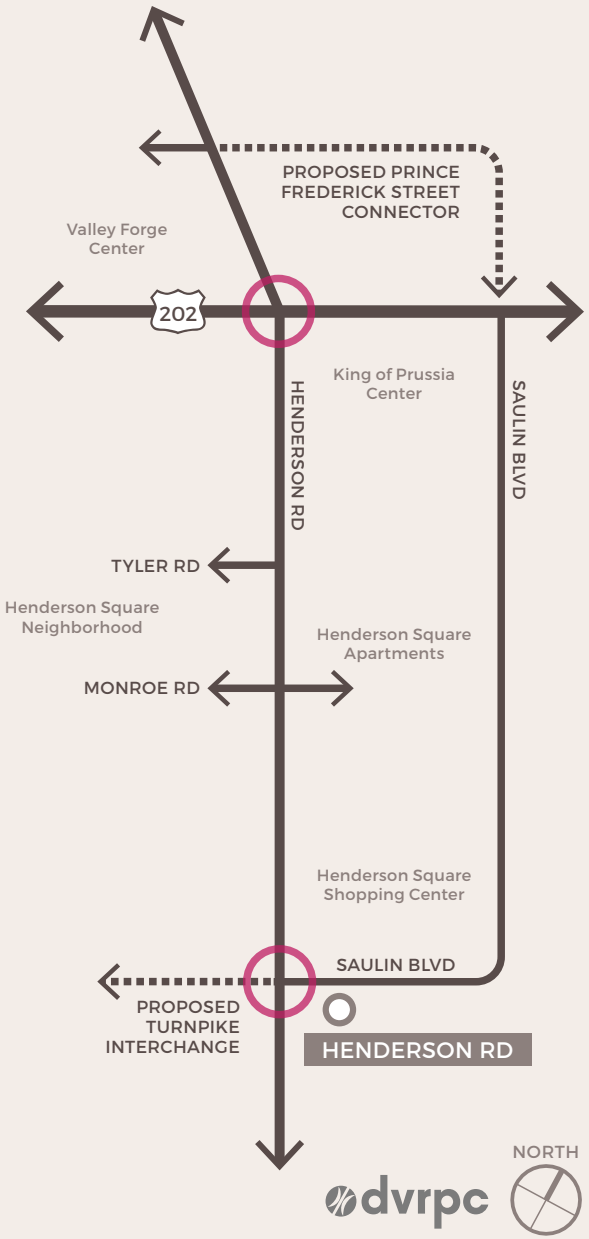
Many pedestrians traveling between the Henderson Road Station and local destinations will need to traverse one or more intersections along Henderson Road (A). The challenges to and potential remedies for improving pedestrian mobility in this station area can be illustrated by taking a closer look at two of these intersections: DeKalb Pike and Saulin Boulevard. The concepts presented here explore opportunities to safely give pedestrians full access to each intersection.

Pedestrian mobility at the intersection of **Henderson Road and DeKalb Pike** is hampered by long crossing distances, lengthy signal cycles, and pedestrian crossing restrictions on the west and south legs of the intersection. The intersection's current configuration is driven in part by a split phasing signal scheme that separates vehicles conflicts by assigning the right-of-way sequentially to two opposing approaches. In this case, the north- and southbound Henderson Road approaches each contain an exclusive left-turn lane plus a shared left/through lane. To operate safely, these two opposing left-turn movements have to be separated, lengthening the intersection's signal cycle and complicating pedestrian movements.

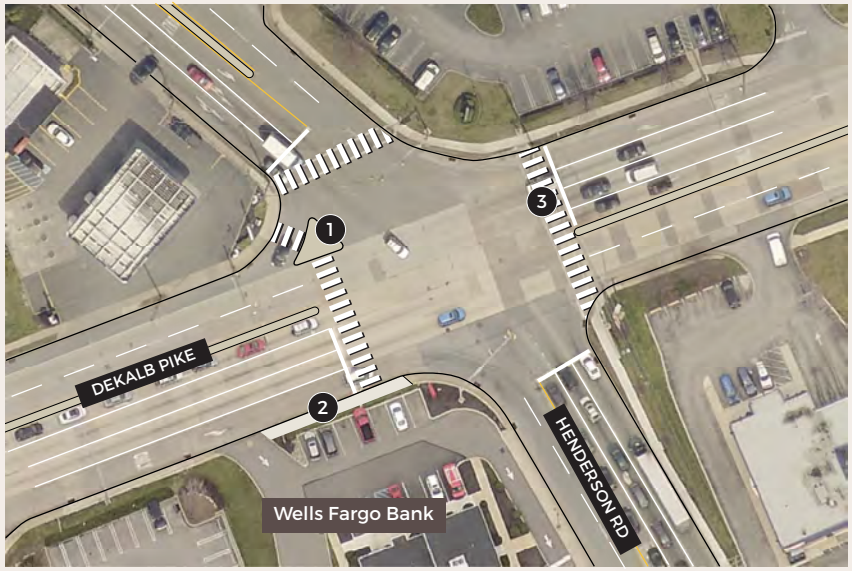
Accordingly, any pedestrian improvements at this intersection, including removing the crossing restrictions on the west and south legs of the intersection, will require pedestrian timing treatments that are compatible with corridor and local signal needs. Aside from these signal considerations, incremental physical improvements to the intersection of Henderson Road and DeKalb Pike are shown in Figures B and C. In the short-term concept (B), pedestrian crossings can be facilitated by the addition of a right-turn-only lane island (B1) and a new sidewalk along DeKalb Pike (B2). Similar to the intersection of N. Gulph Road and Mall Boulevard, right turns onto westbound DeKalb Pike can be designed as a slip lane separated from the through lane by a pedestrian refuge island. This corner island breaks up a long crossing for pedestrians while accommodating turning movements. In this configuration, pedestrians must cross a single lane of uncontrolled right-turning traffic at a marked crosswalk. These types of crossings can be made reasonably safe if the approaching right-turn-only lanes are designed for good visibility and motorists are notified of the crossing location in advance. Pedestrian visibility can be enhanced through the use of high-visibility crosswalk treatments on all legs of the intersection (B3).

A longer-term concept for the intersection could be contingent upon a redevelopment of the Wells Fargo property (C). A reconfiguration of buildings on this site could create space for a new sidewalk on Henderson Road (C1) and, in turn, enable pedestrian crossings on the south leg of the intersection (C2). This concept also envisions a curb extension (C3) that reduces the overall crossing distance for pedestrians. A curb extension in this location would remove a right-turn-only lane from the intersection, and require the creation of a shared through/right-turn lane. Operational concerns about the removal of this lane, or other changes to this intersection, may be assuaged by the potential redistribution of traffic in the area based on the opening of the Prince Frederick Street Connector. This connector road is a conceptual extension of Prince Frederick Street that is being discussed as part of the potential development of the Glasgow Tract. As illustrated in Figure A, the connector would extend from behind Target to the intersection of DeKalb Pike and Saulin Boulevard.

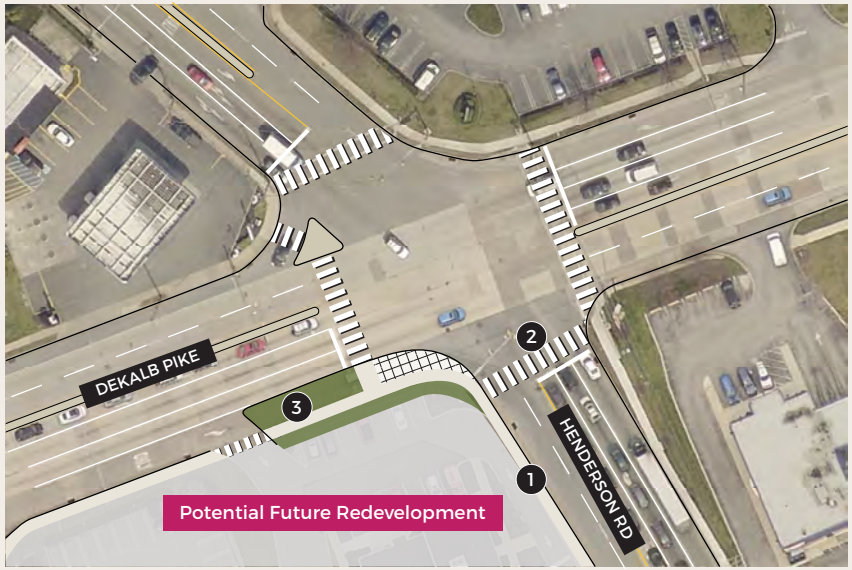
A HENDERSON ROAD CORRIDOR



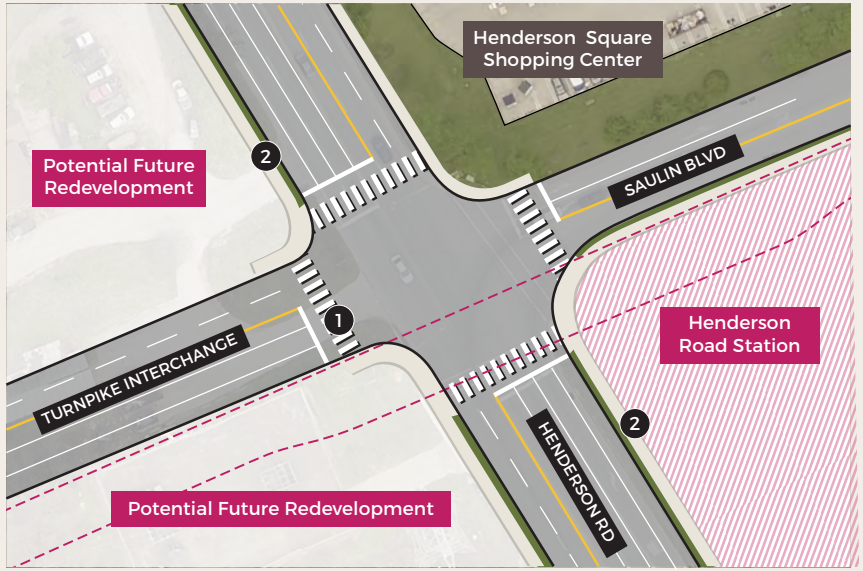
B HENDERSON AND DEKALB: SHORT-TERM CONCEPT



C HENDERSON AND DEKALB: LONG-TERM CONCEPT



D HENDERSON AND SAULIN CONCEPT



Based on its proximity to the proposed Henderson Road Station, the character of the intersection of **Henderson Road and Saulin Boulevard** will have a direct influence on walkability in the station area. Aside from the station itself, this intersection is the proposed location of a new interchange that would connect Henderson Road to the PA Turnpike. Currently, pedestrian crossings are only permitted on the north and east legs of the intersection. These potential investments offer the opportunity to comprehensively integrate pedestrian mobility and safety concerns into this important intersection.

The concept illustrated above (D) features high-visibility crosswalks on all legs of the intersection (D1) and new sidewalks on Henderson Road (D2) that help to complete the local pedestrian network.

Aerial Imagery Source: Southeastern Pennsylvania Regional Task Force, 2017

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CHAPTER 7

NEXT STEPS

Enhancing pedestrian and bicycle mobility in the proposed KOP Rail station areas is one of the best ways that local and regional stakeholders can prepare for the arrival of rail transit in King of Prussia. Creating environments that support active transportation can maximize the usefulness and benefits of KOP Rail by promoting ridership without adding congestion to local roadways or requiring costly parking spaces. Accordingly, the preceding chapters identify locations where new sidewalks, intersection treatments, bicycle facilities, and multi-use trails can make walking and biking to transit more convenient. Local residents, as well as King of Prussia employees and visitors who plan to walk to or from KOP Rail stations, are the obvious beneficiaries of physical improvements in the vicinity of a station.

However, it is important to remember that all members of the King of Prussia community, even those that do not use transit, can benefit from streets that are safer and easier to cross. Investments that create better walking and biking environments by adding or widening sidewalks, extending trails, planting street trees, calming traffic, and adding street lighting also help communities stay vibrant, promote healthy lifestyles, and attract private investment. Simply put, many of the strategies and recommendations outlined in this document make sense for Upper Merion Township to pursue even without the prospect of KOP Rail because they can help the township achieve a variety of important community and transportation goals.

Prioritizing Improvements

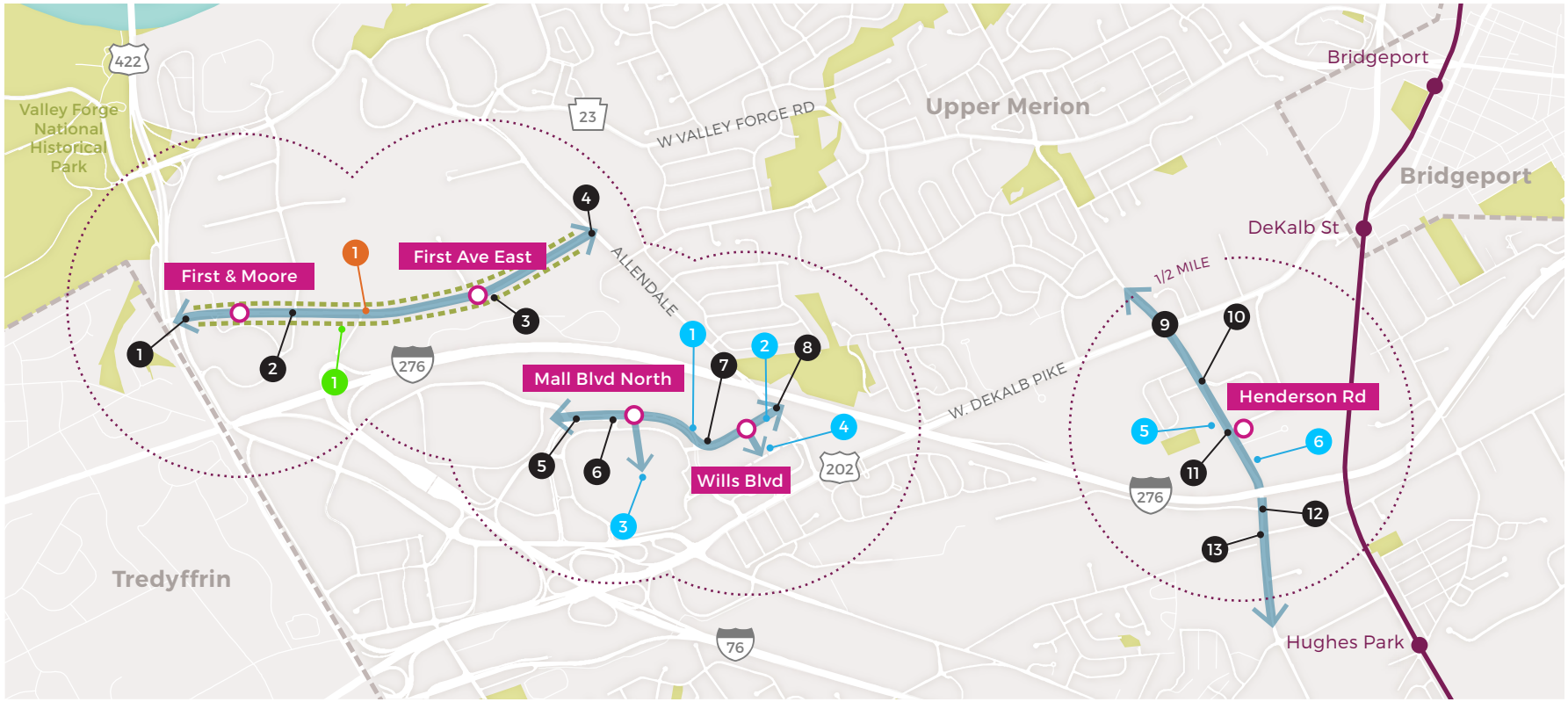
Creating transit-supportive neighborhoods around KOP Rail stations will require incremental changes to the built environment that will only be possible through strong leadership, continued proactive planning, and aggressive collaboration. Many Upper Merion Township stakeholders have already undertaken significant efforts to promote pedestrian and bicycle mobility within the KOP Rail study corridor. This document can serve as a resource for continuing these efforts.

A potential framework for prioritizing the improvements in this document is embedded in the Key Active Transportation Routes figures for each station area (Figures 16, 23, and 30). These figures highlight the existing routes, referred to as active transportation arterials and collectors, that are expected to provide primary and secondary access to stations for pedestrians and cyclists.

The active transportation arterials for each station area, along with the pedestrian and bicycle opportunities identified for those routes in this study, are highlighted in Figure 33 on page 78. The 19 potential nonmotorized transportation improvements depicted on this map include new sidewalks, multi-use trails, and bicycle facilities, as well as intersections that are candidates for enhanced pedestrian amenities. Based on the existing network of streets and the distribution of important origins and destinations, these potential improvements represent many of the most impactful locations for investments in nonmotorized transportation facilities. The full list of potential transportation strategies for each station area can be found in Figures 18, 25, and 32.

However, because pedestrian and bicycle improvements will need to be made over a number of years, and the planning and design of the KOP Rail itself is still ongoing, KOP Rail and township stakeholders will need to be flexible and opportunistic in their implementation activities. In some cases, local pedestrian and bicycle improvements may be able to be incorporated into construction activities related to the building of the KOP Rail itself. In other cases, Upper Merion Township may be able to coordinate with the

FIGURE 33: PRIORITY NONMOTORIZED TRANSPORTATION IMPROVEMENTS



Active Transportation Arterial: Route that is expected to provide the primary nonmotorized access to and from a station.

dvrpc 0.5 MILE NORTH

Priority Nonmotorized Transportation Improvements

NEW SIDEWALKS/ PEDESTRIAN CONNECTIONS

1. Mall Blvd. Sidewalks
2. Wills Blvd. Sidewalks
3. KOP Mall Parking Lot Connection
4. KOP Mall Direct Connection
5. 251 DeKalb Cut-Through
6. Henderson Rd. Sidewalks

NEW MULTI-USE TRAILS

1. First Avenue Linear Park

NEW BICYCLE FACILITIES

1. First Avenue On-Street Bike Lanes

ENHANCED PEDESTRIAN CROSSINGS

1. First Ave. & N. Gulph Rd.
2. First Ave. & Moore Rd.
3. First Ave. & American Ave.
4. First Ave. & Allendale Rd.
5. Mall Blvd. & Goddard Blvd.
6. Mall Blvd. & King of Prussia Plaza
7. Mall Blvd. & Wills Blvd.
8. Wills Blvd. & Allendale Rd.
9. Henderson Rd. & DeKalb Pike
10. Henderson Rd. & Monroe Blvd.
11. Henderson Rd. & Saulin Blvd.
12. Henderson Rd. & Hansen Access Rd.
13. Henderson Rd. & Church Rd.

Source: DVRPC

Pennsylvania Department of Transportation (PennDOT) or Montgomery County to potentially include pedestrian and bicycle enhancements during scheduled repaving and maintenance programs. In general, the ability of Upper Merion Township and relevant agencies and organizations to implement improvements will, in part, be determined by evolving real estate conditions, eventual KOP Rail design considerations, the pace of redevelopment activities, and potential funding opportunities.

Municipal Strategies to Promote Active Transportation

The provision of pedestrian and bicycle infrastructure can be hastened by a policy and regulatory framework that supports transit use and active transportation. The arrival of rail transit in King of Prussia provides Upper Merion Township with an excellent opportunity to reevaluate how nonmotorized transportation can be incorporated into the planning and development process. In addition to the topics discussed below, a variety of planning resources that may be useful to township officials are presented in Appendix B.

MUNICIPAL COMPREHENSIVE PLAN

The Upper Merion 2040 comprehensive planning process kicked off in 2016 and will provide a framework for managing the continued growth of the township. This document and the planning process that has informed it will influence how Upper Merion prioritizes investments over the next two decades. Although active transportation can play an important role in how residents and visitors travel through each of the nine neighborhood planning areas identified in the plan, establishing pedestrian and bicycle access to KOP Rail stations should emerge as an important theme. In addition to this DVRPC station area planning study, two recent Montgomery County Planning Commission studies, *Walk Montco* and *Bike Montco*, serve as precedents for integrating walking and biking into a comprehensive transportation system for Upper Merion Township.

OFFICIAL MAP

Discussed as a potential strategy for Moore Park KOP in Chapter 4, an Official Map legally establishes the location of existing and proposed public land and infrastructure, including parks, multi-use trails, and roads. Enabled by Article IV of the Pennsylvania Municipalities Code (Act 247), an Official Map gives the municipality the right of first refusal to purchase land necessary to facilitate identified public improvements and may delay a development for up to one year.

An Official Map can help Upper Merion Township plan for active transportation improvements in KOP Rail station areas. Representing improvements such as sidewalks on an Official Map can give the township an additional tool to negotiate for desired improvements shown on a map when development occurs. However, future roads, sidewalks, and trails shown on an Official Map typically only represent general alignments for specific improvements. These alignments should include some degree of flexibility to adapt to future development as it is proposed.

TRANSPORTATION DEMAND MANAGEMENT (TDM) PLANNING

TDM is a set of strategies that looks to reduce congestion, improve the efficiency of the transportation network, manage demand, and encourage the use of multi-modal transportation options. KOP Rail station areas can benefit from additional TDM planning that seeks to make these areas more attractive and accessible to multi-modal users. The *Fort Washington Office Park Transportation Demand Management Plan* is one recent planning effort that may be a useful precedent for Upper Merion Township. Upper Dublin Township developed this plan in a partnership with GVF and a consultant to outline strategies that are designed to modernize the office park, provide current business park employees with enhanced transit options, and attract future businesses and investments.

One potential way of incorporating the appropriate regulatory framework for TDM in the development review process is through the creation of Trip Reduction Ordinances (TROs). TROs require developers, employers, and/or building managers to provide amenities and/or incentives that encourage occupants or employees to use alternative modes of transportation. Ordinances implemented by jurisdictions take many different forms but often require a certain reduction in trips with rewards and penalties set for achievement or nonattainment of goals. Trip reduction plans are required as part of the building permit process and establish various strategies or building design elements that will reduce auto trips and encourage alternative modes.

Examples of TDM-supportive site amenities include:

- secure bicycle parking (racks, lockers, or bike station);
- showers and lockers;
- site design that facilitates transit use, walking, and cycling, such as transit stops, bike and pedestrian pathways, landscaping, benches, lighting, etc.;
- off-site amenities such as transit shelters, sidewalk improvements, bike network improvements, intersection improvements, etc.;
- parking maximums; and

- priority parking for high-occupancy vehicles.

COMPLETE STREETS POLICY

Complete Streets is a term for transportation planning that seeks to make streets safe and accessible for all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. In recent years, many communities have adopted Complete Streets policies to formalize a community's intent to plan, design, and maintain streets that accommodate all anticipated users. There is no singular definition for Complete Streets. Similarly, a Complete Street located in a suburban area will look different than one located in an urban area; however, both should be designed to balance safety and convenience for everyone using the road.

Upper Merion Township may wish to investigate opportunities for achieving Complete Streets, particularly in KOP Rail station areas. The intention to create more complete streets can be established in a variety of ways, including through ordinances and resolutions, inclusion in the comprehensive plan, or policies adopted by township supervisors.

IDENTIFYING OPPORTUNITIES FOR ON-STREET BICYCLE FACILITIES

Retrofitting suburban streets to safely accommodate cyclists can be a challenge. DVRPC's recently developed Bicycle LTS and Connectivity Analysis Tool (introduced on page 15) can help Upper Merion identify potential opportunities for bike-friendly treatments, such as marked or buffered bike lanes, sharrows, and striped shoulders.

As stated in Chapter 1, Upper Merion's network of lower-stress cycling streets, identified as LTS 1 and 2, is largely confined to residential neighborhoods, creating islands of bicycle access cut off from each other. In some locations, targeted bicycle improvements to LTS 3 streets could help connect destinations and expand the bicycle network in Upper Merion.

In the coming years, Upper Merion may have the opportunity to coordinate on-street bicycle improvements that fit into the existing cartway with PennDOT through the PennDOT Connects Bike-Friendly Resurfacing Program for Maintenance Projects. Upper Merion Township officials and planners can prepare for this opportunity by evaluating the Suburban LTS 3 Connections layer on DVRPC's Bicycle LTS and Connectivity Analysis webmap: www.dvrpc.org/webmaps/BikeStress/.

ZONING AND SUBDIVISION AND LAND DEVELOPMENT ORDINANCE (SALDO) REGULATIONS

Many recent pedestrian improvements in Upper Merion have been constructed due to sidewalk requirements that are triggered during the redevelopment of a property. In addition to these pedestrian design standards, the township's relatively new KOP Mixed-Use zoning district is an example of regulations that support transit and active transportation.

As part of its preparation for KOP Rail, Upper Merion Township may wish to review zoning and SALDO regulations to ensure that new development in KOP Rail station areas will contribute to vibrant transit-oriented neighborhoods. Some questions to consider include:

- Does the zoning allow for the appropriate intensity and mix of transit-supportive uses, such as offices, residential, and retail, within one-half mile radius from a station?
- Do regulations sufficiently result in the creation of walkable places by creating a network of sidewalks, crosswalks, and multi-use trails?
- Do standards encourage transit-supportive site design and building forms?

Funding Sources

In addition to establishing a strong transit-supportive policy framework, Upper Merion Township can look for strategic opportunities to expand its active transportation network through its municipal capital improvements program with assistance from a variety of funding opportunities. Many of the pedestrian and bicycle improvements identified in this study may be eligible for the funding sources listed below.

Multimodal Transportation Fund—PennDOT and Pennsylvania Department of Community and Economic Development (DCED)

Established through Act 89, Multimodal Transportation Funds are available for transportation projects that feature one or more of the following components: coordinating local land use with transportation assets; streetscaping projects, including lighting, sidewalk enhancements, and pedestrian safety; improvements to connectivity or utilization of existing transportation elements; and TOD projects.

MATCH REQUIREMENTS/AWARDS

Minimum of 30 percent. Project awards range from $100,000 to $3 million.

AVAILABILITY

PennDOT—applications typically are due annually in December; and

PA DCED—applications due annually on July 31.

WEBSITES
PennDOT: www.penndot.gov/ProjectAndPrograms/MultimodalProgram/Pages/default.aspx
DCED: https://dced.pa.gov/programs/multimodal-transportation-fund/

Transportation Alternatives Set-Aside Program—PennDOT

The Transportation Alternatives Set-Aside Program provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving nondriver access to public transportation and enhanced mobility, community improvement activities, environmental mitigation, recreational trail program projects, and Safe Routes to School projects.

MATCH REQUIREMENTS/AWARDS
Awards are for 100 percent construction and are reimbursed (not a grant program). No specific match is required; however, project sponsors are responsible for all other preconstruction costs (engineering, permit approvals, etc.), which are approximately 20 percent of total project costs, but could be more depending on project complexity. Minimum award for construction is $50,000, maximum award $1 million. Projects are eligible for both regional and statewide funds.

AVAILABILITY
Next round expected in 2019.

WEBSITE
www.dvrpc.org/tap/pa/

Automated Red Light Enforcement (ARLE) Program—PennDOT

The ARLE program was established by Pennsylvania state legislation enacted in 2002, with the grant program being enacted in 2010. It uses net revenue from ARLE-levied fines to fund pedestrian safety improvements at traffic signals, such as countdown timers, easily accessible pushbuttons, crosswalk striping, pedestrian signing, pedestrian mobility improvements, upgrading, modernization or improvements to traffic control signals, roadway or intersection signing, and pavement restriping.

MATCH REQUIREMENTS/AWARDS
No match is required. Average award per project since 2010 equals approximately $150,000.

AVAILABILITY
Applications due annually on June 30th.

WEBSITE
www.dot.state.pa.us/Portal%20Information/Traffic%20Signal%20Portal/FUNDARLE.html

Montco 2040 Implementation Grant Program

The Montco 2040 Implementation Grant Program is intended to assist municipalities in making targeted physical improvements that achieve real progress toward the goals of the plan. The program focuses on supporting local projects that specifically further the goals of the county comprehensive plan and the plan's themes of Connected Communities, Sustainable Places, and Vibrant Economy.

MATCH REQUIREMENTS/AWARDS
Grant amounts are available between $10,000 and $200,000, 20 percent match.

AVAILABILITY
Check website.

WEBSITE
www.montcopa.org/2453/Montco-2040-Implementation-Grant-Program

Congestion Mitigation and Air Quality Program (CMAQ)

DVRPC's Competitive CMAQ Program seeks to fund transportation projects that will improve air quality and reduce traffic congestion in the DVRPC region. CMAQ-eligible projects will demonstrably reduce air pollution emissions and will help the DVRPC region meet the federal health-based air quality standards.

MATCH REQUIREMENTS/AWARDS

The minimum project request for construction projects is $250,000. The funds awarded by this program are on a cost-reimbursement basis. The CMAQ Program is not a grant program. The sponsor does not receive grant funds to start the project; rather, the sponsor is reimbursed for costs incurred after receiving funding authorization for the project and a notice to proceed.

AVAILABILITY

Check website.

WEBSITE

www.dvrpc.org/CMAQ

Greenways, Trails, and Recreation Program—Pennsylvania DCED

Act 13 of 2012 establishes the Marcellus Legacy Fund and allocates funds to the Commonwealth Financing Authority for planning, acquisition, development, rehabilitation and repair of greenways, recreational trails, open space, parks, and beautification projects.

MATCH REQUIREMENTS/AWARDS

Minimum 15 percent match, maximum award $250,000.

AVAILABILITY

Applications due annually on May 31st.

WEBSITE

https://dced.pa.gov/programs/greenways-trails-and-recreation-program-gtrp/

DVRPC Regional Trails Program (RTP)

With financial support from the William Penn Foundation, DVRPC's RTP provides planning assistance and financial support to trail developers, counties, municipalities, and nonprofit organizations to complete the Circuit, Greater Philadelphia's 800-plus-mile network of multi-use trails.

MATCH REQUIREMENTS/AWARDS

For planning and feasibility studies, a minimum match equivalent to 20 percent of the total project cost is required. In-kind services are an eligible form of match for these projects.

For design and engineering studies, the program will prioritize projects that provide a match. However, since applicants often subsequently seek and obtain other (non-RTP) funds for construction, a minimum match for design and engineering projects is not required.

Construction awards can only be used for projects that are not part of the federal process. For these construction projects, a minimum nonfederal match equivalent to 20 percent of the total project cost is required.

Individual RTP awards may not exceed $500,000. Additional funding from the federal Transportation Alternatives Set-Aside may be available to construct projects that have been selected to receive a design and engineering award in southeastern Pennsylvania.

AVAILABILITY

Applications for the most recent round of the RTP were due in December 2018. Check the website for future rounds.

WEBSITE

www.dvrpc.org/trails/RegionalTrailsProgram/

ENDNOTES

Chapter 1: Introduction

[1] SEPTA, *KOP Rail Project Draft Environmental Impact Statement* (2017), 3–5, www.kingofprussiarail.com/DEIS/.

[2] Economy League of Greater Philadelphia, *Connecting KOP: The Benefits of SEPTA's King of Prussia Rail Project* (2015), 10, www.koprail.com/docs/Connecting_KOP_Dec_2015_Full_Report.pdf.

[3] Employment inflow data for Upper Merion Township gathered from the U.S. Census Bureau, *On the Map* Application, http://onthemap.ces.census.gov.

[4] Economy League of Greater Philadelphia, *Connecting KOP: The Benefits of SEPTA's King of Prussia Rail Project* (2015), 10, www.koprail.com/docs/Connecting_KOP_Dec_2015_Full_Report.pdf.

[5] SEPTA, *KOP Rail Project Draft Environmental Impact Statement* (2017), 1–8, www.kingofprussiarail.com/DEIS/.

[6] The average block sizes depicted here were calculated by the Center for Neighborhood Technology (CNT). Average block size is one of the variables calculated by the CNT as part of their Housing and Transportation Affordability Index. For more information, please visit: https://htaindex.cnt.org.

[7] For more information on DVRPC's Bicycle LTS and Connectivity Analysis, please visit: www.dvrpc.org/webmaps/BikeStress/.

Chapter 2: Guiding Principles

[1] TransitCenter's *Who's On Board 2016* discusses the relationship between walking and transit use. According to their research, just over half of commuters, those who regularly take transit to work, and occasional riders, those taking transit once in a while, walk to transit. An overwhelming 80 percent of all-purpose riders, those who take transit regularly for multiple purposes, walk to transit. For more information, please visit: www.transitcenter.org/publications/whos-on-board-2016/.

[2] The National Association of Realtors' *Community Preference Survey* suggests that shifting demographics and citizen preferences are supporting a growing demand for less car-dependent lifestyles. In 2017, when asked what factors will be important when deciding where to live next, 80 percent of respondents felt that "Being within an easy walk of other places and things in a community, such as shops and park" was a very or somewhat important factor. Similarly, 87 percent rated "Sidewalks and places to take walks" as important factors. For more information, please see: www.nar.realtor/reports/nar-2017-community-preference-survey.

[3] Los Angeles County Metropolitan Transportation Authority–Metro, *First Last Mile Strategic Plan & Planning Guidelines* (2014), 12, www.metro.net/projects/first-last/.

[4] DVRPC, *County and Municipal-Level Population Forecasts, 2015-2045,* and *County and Municipal-Level Employment Forecasts, 2015-2045,* www.dvrpc.org/webmaps/popforecast/, www.dvrpc.org/webmaps/empforecast/.

[5] The Chester County Planning Commission examined a variety of issues shaping the future of office parks in our region in their Commercial Landscapes Planning Series. For more information, see *Reinventing Office Parks for the 21st Century,* available at www.chescoplanning.org/MuniCorner/ComLand/overview.cfm.

[6] For more information on bicycle parking, including guidelines for placement, spacing, and installation, please see resources developed by the Association of Pedestrian & Bicycle Professionals: www.apbp.org/page/Publications.

[7] For a more robust discussion of the opportunities and challenges that public transit faces based on technology-enabled mobility services, see *Shared Mobility and the Transformation of Public Transit*. This research study was conducted for the American Public Transportation Association by the Shared-Use Mobility Center and can be accessed at www.apta.com/resources/reportsandpublications/Documents/APTA-Shared-Mobility.pdf.

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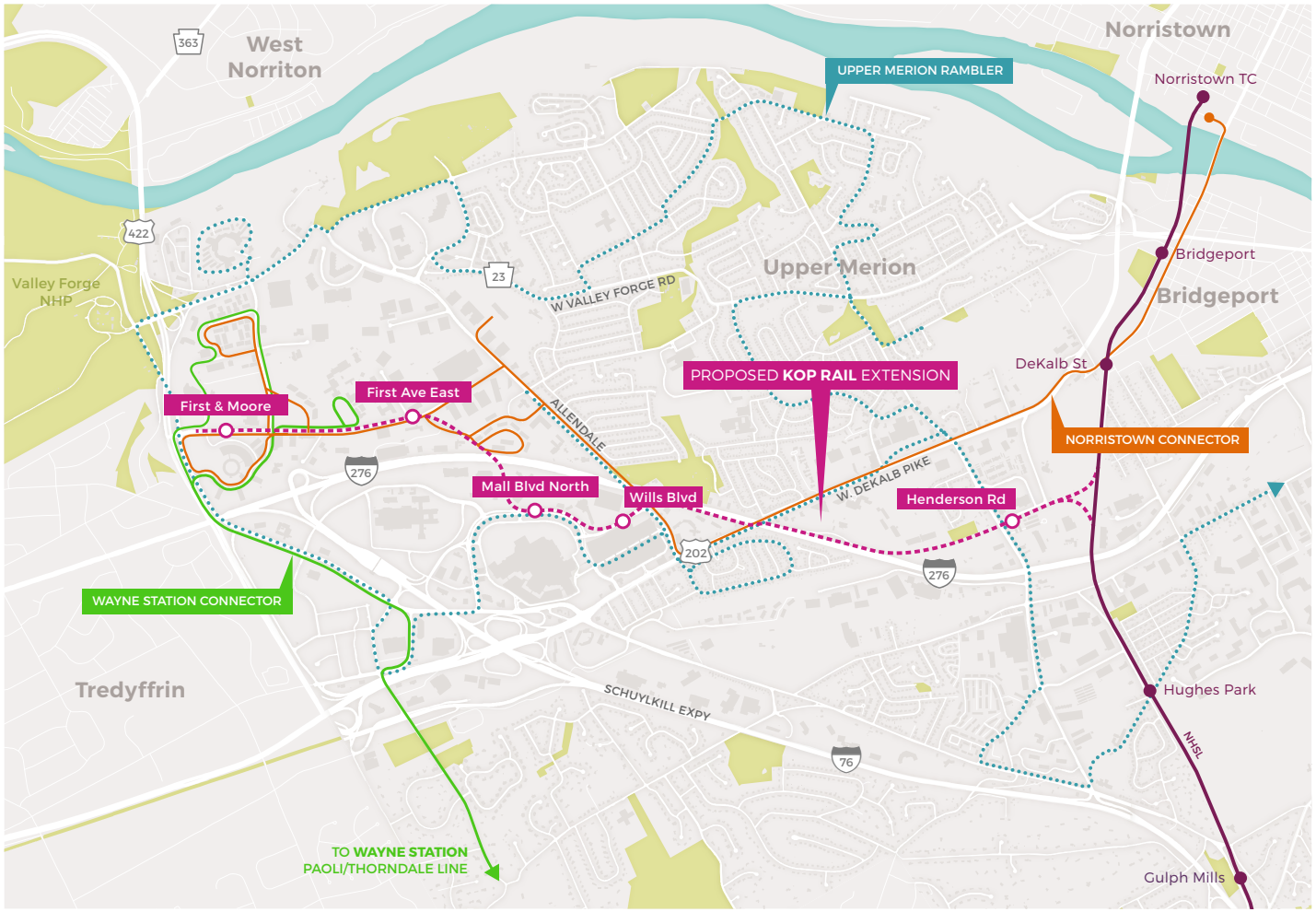
APPENDIX A EXISTING TRANSIT NETWORK—SHUTTLES



Wayne Station Connector Shuttle Weekday service during AM and PM peaks

Norristown Transportation Center Connector Shuttle Weekday service during AM and PM peaks

Upper Merion Township Rambler Shuttle Community shuttle operating between 9:00 AM and 4:00 PM

Sources: KOP-BID, Upper Merion Township

Three shuttle routes provide township residents and employees with additional transportation options. KOP-BID operates two weekday commuter shuttles that provide connections between the Moore Park KOP and nearby SEPTA stations: Wayne Station on the Paoli/ Thorndale Regional Rail Line, and the Norristown Transportation Center.

Upper Merion Township also operates a community bus service, known as the Rambler, that provides public transportation for township residents to area shopping centers, medical facilities, the Senior Center, and the Upper Merion Township municipal building.

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APPENDIX B STATION AREA PLANNING RESOURCES

Walk Montco

Montgomery County Planning Commission

The Walk Montco study focuses on walkability opportunities and challenges throughout Montgomery County. It recommends standards for improving walkability in general and offers specific recommendations for four selected focus areas. The plan also provides guidance on how to implement and fund walking improvements.

www.montcopa.org/2109/Walk-Montco

Bike Montco

Montgomery County Planning Commission

The plan, which includes design improvements and key policies for bicycle safety, fully addresses the current bicycle needs of the county by examining existing conditions and focusing on bicycling destinations and preferred routes and the countywide bicycle network utilizing state, county, and local roads, and trails.

www.montcopa.org/2684/Bike-Montco

Smart Transportation Guidebook: Planning and Designing Highways and Streets that Support Sustainable and Livable Communities

New Jersey Department of Transportation (NJDOT), PennDOT

Jointly developed by NJDOT and PennDOT, The goal of the guidebook is to integrate the planning and design of streets and highways in a manner that fosters development of sustainable and livable communities.

www.state.nj.us/transportation/community/mobility/pdf/smarttransportationguidebook2008.pdf

Improving Connectivity and System Function through Local Planning

PennDOT

This handbook is intended as a resource for Pennsylvania's county and municipal leaders and professional planners who seek practical guidance in more effectively implementing the land use and transportation recommendations from their comprehensive plans. Specifically, this handbook is designed to provide the guidance necessary to enhance vehicular, bicycle, and pedestrian connectivity, thereby improving overall transportation system functionality and safety.

www.dot.state.pa.us/public/pubsforms/Publications/PUB%20731.pdf

Resource Guide for Implementing Infrastructure Recommendations of Walkability Assessments

Pennsylvania Department of Health

This guidebook provides a compendium of funding opportunities offered by Pennsylvania state agencies and programs for communities seeking financial assistance with implementing the recommendations of the walkability assessments.

https://www.health.pa.gov/topics/Documents/Programs/Walk%20Works/WalkWorks_Resource_Guide_2017.pdf

Pennsylvania's Traffic Calming Handbook

PennDOT

PennDOT has created the *Traffic Calming Handbook* (Publication 383) to provide new and additional information on traffic calming and how it can be used on the roadways of Pennsylvania. This handbook contains information on various traffic-calming issues such as legal authority, liability, funding, impacts on emergency services, as well as many others that were in the original publication.

www.dot.state.pa.us/public/PubsForms/Publications/PUB%20383.pdf

The Official Map: A Handbook for Preserving and Providing Public Lands and Facilities

PennDOT

This handbook is intended as a resource for Pennsylvania's county and municipal leaders and professional planners who seek practical guidance in more effectively implementing the land use and transportation recommendations from their comprehensive plan efforts by adopting an Official Map.

www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_006241.pdf

TOD 202: Station Area Planning: How to Make Great Transit-Oriented Places

Center for Transit-Oriented Development, Reconnecting America

This manual is intended to help with simplifying the complex decisions that surround planning for TOD projects and station areas by providing details about the scales of development likely to occur in different places, as well as station area planning principles and TOD plan checklists.

www.todresources.org/resources/tod-202-station-area-planning-how-to-make-great-transit-oriented-places/

Getting the Wheels Rolling: A Guide to Using Policy to Create Bicycle Friendly Communities

Change Lab Solutions

Getting the Wheels Rolling: A Guide to Using Policy to Create Bicycle Friendly Communities provides a roadmap to making all types of communities bicycle friendly. This guide helps policymakers figure out where to start, and spells out how to effectively use policy to promote bicycling.

www.changelabsolutions.org/bike-policies

Integrating Transportation Demand Management into the Planning and Development Process: A Reference for Cities

San Diego Association of Governments (SANDAG) and HNTB

This guide defines the value of TDM programs, describes how TDM can be integrated into many jurisdictional plans, and identifies how a wide range of strategies can be applied at different stages of the development process.

www.icommutesd.com/documents/TDMStudy_May2012_webversion_000.pdf

KING OF PRUSSIA RAIL PROJECT

Station Area Planning for the Norristown High Speed Line Extension to King of Prussia

Publication Number 17023

Date Published December 2018

Geographic Area Covered King of Prussia, Greater Philadelphia, Montgomery County, Upper Merion Township

Key Words Nonmotorized Transportation, Pedestrian and Bicycle Planning, Transit-Oriented Development, TOD, Smart Growth, Walkability, Transit, Development, Transportation, Land Use, NHSL

Abstract

The King of Prussia Rail (KOP Rail) project is a proposed extension of SEPTA's Norristown High Speed Line to the King of Prussia area of Upper Merion Township in Montgomery County, Pennsylvania. Providing safe and convenient nonmotorized access to KOP Rail stations is one of the best and most cost-effective ways to maximize the overall usefulness of this transit investment and create value for Upper Merion Township residents, employees, and visitors. This study was designed to identify and evaluate a variety of factors that influence the environment for walking and biking in each station area. Based on these existing conditions and input from KOP Rail stakeholders, the study team developed a series of recommendations and identified a number of opportunities to enhance and extend the network of nonmotorized transportation infrastructure and create a more transit-supportive built environment.

Staff Contact

Andrew Svekla, AICP
Associate Manager, Office of Smart Growth
(215) 238-2810
asvekla@dvrpc.org

Delaware Valley Regional Planning Commission
190 N Independence Mall West, 8th Floor
Philadelphia, PA 19106-1520
Phone: (215) 592-1800
Fax: (215) 592-9125
Internet: www.dvrpc.org

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8th Floor
Philadelphia, PA 19106-1520
215.592.1800 | fax: 215.592.9125
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