TRENTON LINE ACCESS STUDY

Improving Pedestrian & Bicycle Access to Regional Rail Stations on the I-95 Corridor

FEBRUARY 2015

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REGIONAL
PLANNING COMMISSION

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Executive Summary

Ridership along SEPTA's Trenton Regional Rail Line (Trenton Line) is expected to grow in the coming years as the ongoing reconstruction of I-95 continues. This increase in additional peak demand will tax SEPTA's already-strained service capacity along the corridor. Although SEPTA is exploring a number of investments designed to increase the core capacity of its transit system along this corridor, improving pedestrian and bicycle access to SEPTA's system can also play a significant role in mitigating the impacts of this construction project.

The Delaware Valley Regional Planning Commission (DVRPC) has conducted this study to identify potential strategies to enhance pedestrian and bicycle access and connectivity in and around select stations along the Trenton Line as part of a comprehensive approach to mitigating congestion along the I-95 corridor. Improving nonmotorized access to transit has many benefits for transit providers and the municipalities that host stations. In this case, safe and more convenient access can help reduce parking demand at stations by enabling nearby residents to walk or bike to a station rather than drive and park. In general, planning for pedestrian and bicycle access is also a cost-effective way to expand overall transit use while reducing automobile dependence, traffic congestion, and air pollution.

This study focuses on five stations north of the I-95 construction zone with the greatest potential to absorb new riders: the Holmesburg Junction and Torresdale stations in Philadelphia; and the Cornwells Heights, Croydon, and Levittown stations in Bucks County. Throughout the study, DVRPC worked closely with a Study Advisory Committee comprised of representatives from SEPTA, the Pennsylvania Department of Transportation (PennDOT), Bucks County Planning Commission, Bicycle Coalition of Greater Philadelphia, the Philadelphia City Planning Commission, Mayor's Office of Transportation and Utilities (MOTU), and the Transportation Management Association of Bucks County (TMA Bucks). For each station, the study team worked with stakeholders to document barriers to access and identify potential improvements that could enable safe and convenient pedestrian access between stations and existing and proposed residential, employment, and recreation centers.

This document is the result of a planning process that began in September 2013 and builds on a number of recent and ongoing planning studies that have been conducted in the City of Philadelphia and portions of Bucks County. This report is designed to serve as a resource for SEPTA and local municipalities as they collaborate on future station access improvements.


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CHAPTER 1

Introduction

PennDOT's I-95 Section A project will reconstruct sections of I-95 north of Center City Philadelphia between now and 2023. This project will result in a decade of construction activity and is expected to generate new peak period transit riders, many of whom will use the Trenton Line as an alternative mode of travel. This increase in peak demand will tax SEPTA's already-strained service capacity along the corridor. SEPTA is exploring a number of investments designed to increase the core capacity of its transit system along this corridor, including a series a targeted investments in higher-capacity train cars, parking capacity, and platforms at select stations.

Improving pedestrian and bicycle access to SEPTA's system can also play a significant role in mitigating the impacts of this construction project. Enhancing nonmotorized access to transit can help reduce parking demand at stations by encouraging nearby residents to walk or bike to a station rather than drive. Furthermore, planning for pedestrian and bicycle access is a cost-effective way to expand overall transit use while reducing automobile dependence, traffic congestion, and air pollution. Over time, investments in pedestrian and bicycle infrastructure can be leveraged by surrounding communities to help improve mobility options and encourage placemaking.

Study Overview

DVRPC conducted this study to identify potential strategies to enhance pedestrian and bicycle access and connectivity in and around selected stations on SEPTA's Trenton Line. This document is the result of a planning process that began in September 2013. Throughout the study, DVRPC worked closely with a Study Advisory Committee (SAC) comprised of representatives from SEPTA, PennDOT, Bucks County Planning Commission, Bicycle Coalition of Greater Philadelphia, the Philadelphia City Planning Commission, the Mayor's Office of Transportation and Utilities (MOTU), and TMA Bucks.

This study focuses on five stations north of the I-95 construction zone with the greatest potential to absorb new riders: the Holmesburg Junction and Torresdale stations in Philadelphia; and the Cornwells Heights, Croydon, and Levittown stations in Bucks County.

The SAC established several objectives for the study:

- Document the existing condition of bicycle and pedestrian facilities in and around selected Trenton Line stations.
- Identify and evaluate improvements that enable safe and convenient pedestrian and bicycle access between stations and existing and proposed residential, employment, and recreation destinations.

- Identify opportunities to better integrate stations with the regional trail network and the East Coast Greenway.

This study builds on a number of recent and ongoing planning studies that have been conducted in the City of Philadelphia and portions of Bucks County. Several relevant concepts and strategies identified in these plans are referenced in this document.

The remainder of this chapter provides background information on the Trenton Line, I-95 reconstruction, and a brief overview of the existing transportation and land use context of the Trenton Line Corridor. Chapter 2 identifies many of the barriers that pedestrians and cyclists typically face and includes a number of tools and techniques that can be used to improve pedestrian and bicycle facilities.

Chapters 3 through 7 contain profiles of each of the five Trenton Line Stations. These profiles include an analysis of existing conditions at each station and a list of prioritized recommendations. The recommendations presented in these chapters are prioritized to reflect a given improvement's potential impact on station access. Priority was evaluated based on several factors:

- potential impact on pedestrian and/or cyclist safety;
- potential ability to increase transit ridership;
- cost and feasibility; and
- secondary benefits to the station area in the form of placemaking or connections to regional trail networks.

The final chapter focuses on implementation and potential funding sources.

Figure 1: Regional Transit Context

Source: SEPTA, DVRPC

Trenton Line Background

Formerly known as the R7 Trenton Line, the Trenton Line is one of 13 Regional Rail lines operated by SEPTA (see Figure 1). This 36.4-mile route includes 15 stations and runs from Temple University through Center City to the Trenton Transit Center. For much of their route, Trenton Line trains use Amtrak's Northeast Corridor: running parallel to I-95 and the Delaware River in Northeast Philadelphia and Lower Bucks County before crossing the Delaware River near the Trenton Transit Center, which is also served by Amtrak and New Jersey Transit.

Trenton Line trains make 60 total trips each weekday and 38 and 37 trips on Saturday and Sunday, respectively. According to 2014 SEPTA route statistics, the Trenton Line carries an average of 12,157 riders a day, making it SEPTA's fourth busiest Regional Rail line. The Trenton Line runs between 4:15 AM and 1:20 AM with a base frequency of 60 minutes. Headways become more frequent during peak periods: 17 minutes during the AM peak; and 16 to 30 minutes during the PM peak.

Study Corridor

This study focuses on the corridor surrounding five stations along the Trenton Line: Holmesburg Junction, Torresdale, Cornwells Heights, Croydon, and Levittown (see Figure 2). These stations are located in Northeast Philadelphia and the Bucks County communities of Bensalem, Bristol Township, and Tullytown. Within this corridor, the Trenton Line passes through a variety of urban and suburban contexts which contribute to the character of each station.

Together, these five stations account for 4,022 (68 percent) of the 5,887 total inbound passengers boarding the train between Trenton and the North Philadelphia station on a typical weekday. Each station contains some dedicated commuter parking, although the amount varies dramatically across the stations. For example, the Cornwells Heights Station contains over 1,900 parking spaces, making it one of the largest park-and-ride facilities within SEPTA's system, while

Figure 2: Study Corridor

the Holmesburg Junction station contains only 37 spaces. Figure 3 compares six characteristics of each train station. Detailed information on each station is presented in chapters three through seven.

In addition to the Trenton Line, the study corridor contains a number of significant roadways and transportation facilities including I-95 and the East Coast Greenway. I-95 runs parallel to the Trenton Line through much of the study corridor before turning north and west above the Croydon Station. It is this proximity which puts these Trenton Line stations in the unique position to potentially absorb commuters displaced by congestion and delays on I-95.

The East Coast Greenway is a trail network that links numerous local greenways into a unified 3,000 mile route from Canada to Key West, Florida. In Pennsylvania, the East Coast Greenway stretches for 55 miles through urban, suburban, and rural communities in Bucks, Philadelphia, and Delaware counties. Within the study corridor (see Figure 2), the existing and proposed segments of the local greenways that are a part of the East Coast Greenway often run parallel to the Trenton Line with some portions running along the Delaware Riverfront. The proximity of these trails to the Trenton Line creates opportunities to better link these recreation and transportation resources to the transit network.

I-95 Reconstruction

PennDOT's I-95 Section A project (partially shown in Figure 4) will reconstruct a portion of I-95 between the Betsy Ross Bridge and Cottman Avenue, one of the most highly-traveled stretches of the highway. Construction is expected to last through 2023 and estimates suggest that the congestion that results from reduced highway capacity could result in 1,800 to 2,600 new peak transit riders, depending on the number of lanes which remain open during construction.

As delays become more routine and travel times become less consistent, some motorists may be

Figure 3: Station Comparison

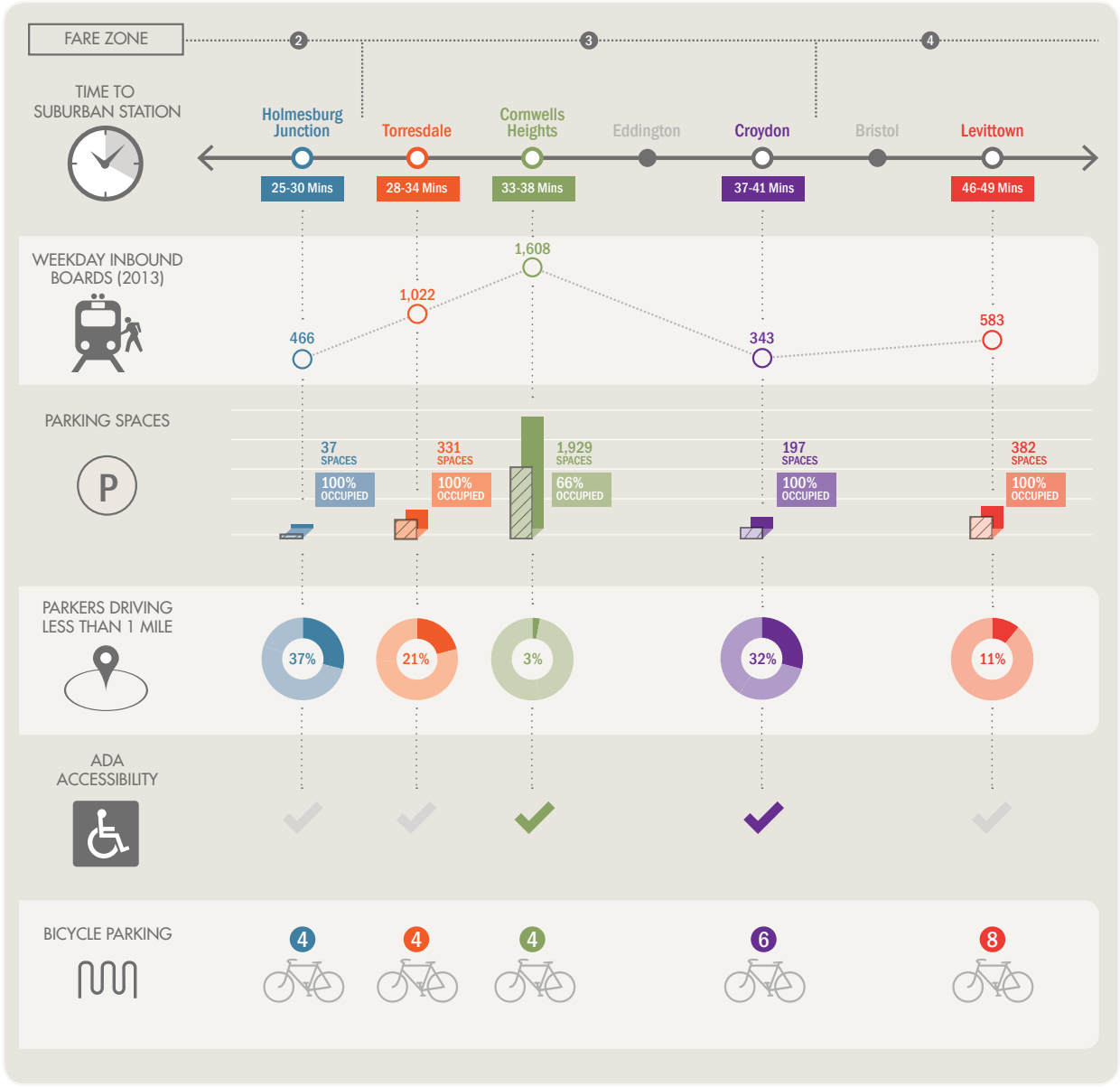
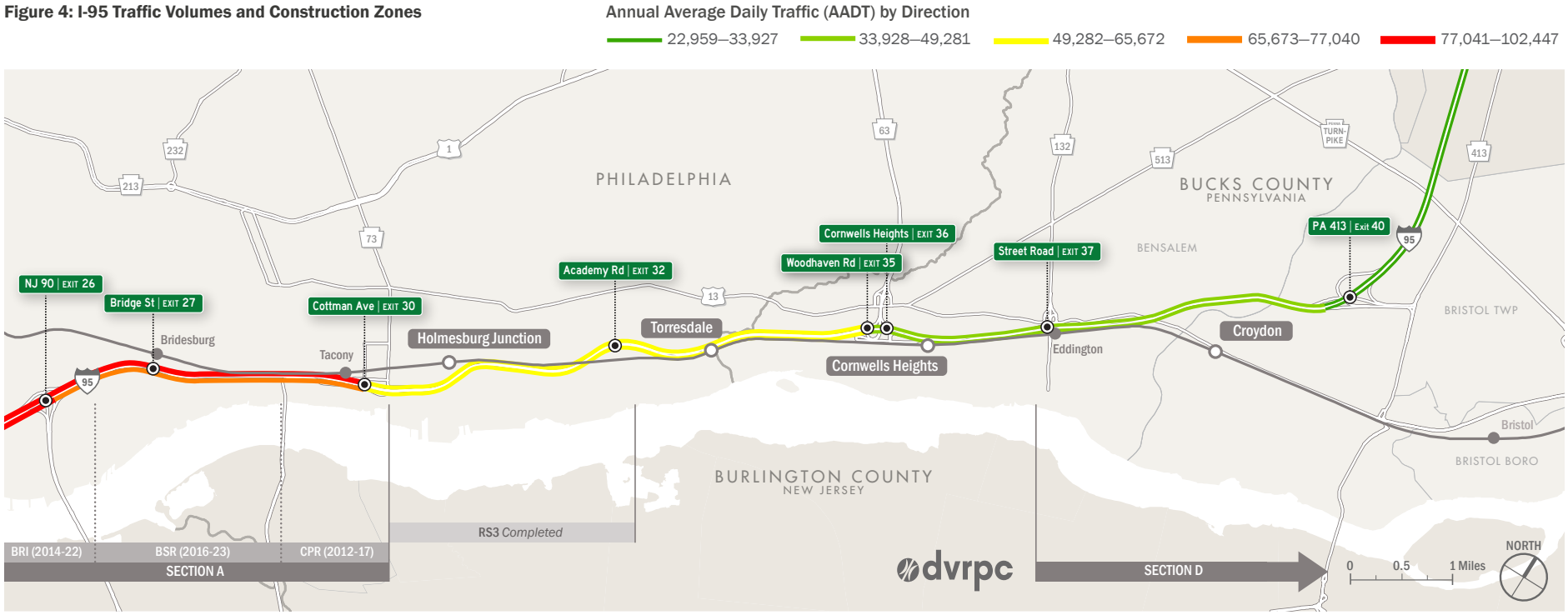


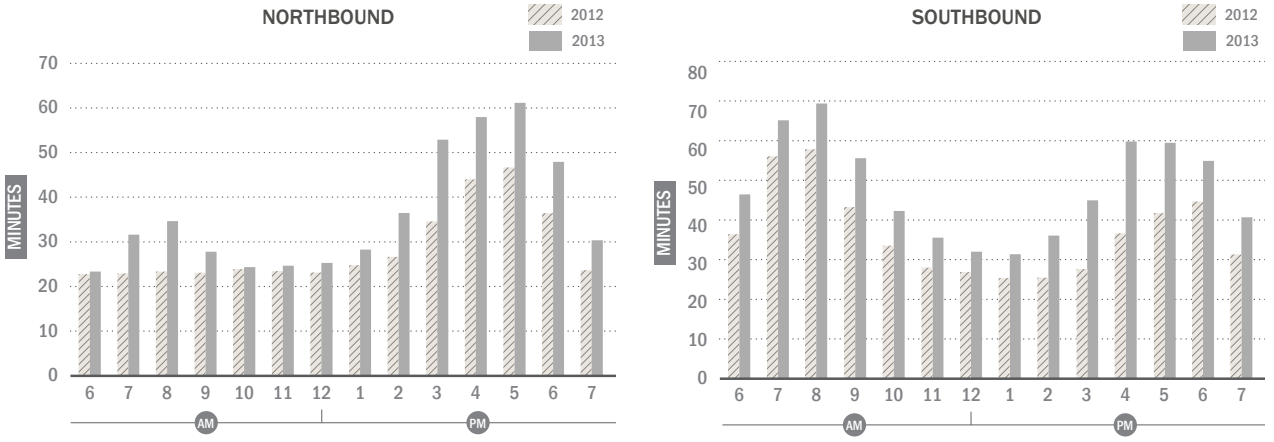
Figure 4: I-95 Traffic Volumes and Construction Zones



Source: DVRPC using PennDOT data, 2013

Figure 5: Planning Time for I-95 Between I-676/Exit 22 and US 1/PA 413/Exit 44

Planning Time is a performance metric that refers to the total time a traveler should allow to ensure on-time arrival. The charts to the right compare planning times (in minutes) from 2013 and 2012 for a 21-mile stretch of I-95 between exits 44 and 22. The additional time required to make this trip in 2013, when more construction activity was occurring, indicates the significant impact that construction and traffic incidents can have on travel times.



Source: RITIS, University of Maryland CATT Lab

persuaded to find alternative methods of travel. Traffic incidents can also have an outsized impact during construction due to the reduced roadway capacity. Various measures can be used to track the impact of construction and traffic incidents on travel times. Figure 5 compares one of these metrics, *Planning Time*, for a 21-mile stretch of I-95 between I-676 and US 1/PA 413.

Commuting Patterns

The study team used Journey to Work data from the American Community Survey to analyze commuting modes for an extended study area. The area within five miles of the Trenton Line is home to 650,034 people, including 286,391 working residents.

Like much of the region, the dominant method of commuting along the study corridor is the automobile. Nearly 83 percent of these residents commute via automobile, with the vast majority of those commuters driving alone. Figure 6 below visualizes the density of commuters using other modes of travel.

Over 34,000 residents (12 percent) of the expanded study area commute to work by some form of public transit. Residents commuting via public transit are more heavily concentrated in Philadelphia than Bucks County. Bus and trolley users (19,948 people, not shown) make up the largest share of residents commuting by public transit. Railroad users account for 6,635 residents (2.3 percent of total commuters). These riders tend to reside in the census tracts in closest proximity to both the Trenton and West Trenton Regional Rail lines. Although some commutes involve multiple transportation modes, American Community Survey respondents are asked to indicate the single travel mode used for the longest distance. Accordingly, this data does not distinguish between transit riders that drive to a station and those that bike or walk there.

Residents who walk or bike to work total 8,377 (2.9 percent of total commuters). Walking commuters are largely concentrated in Philadelphia census tracts, while cyclists are fairly well distributed throughout the five-mile area.

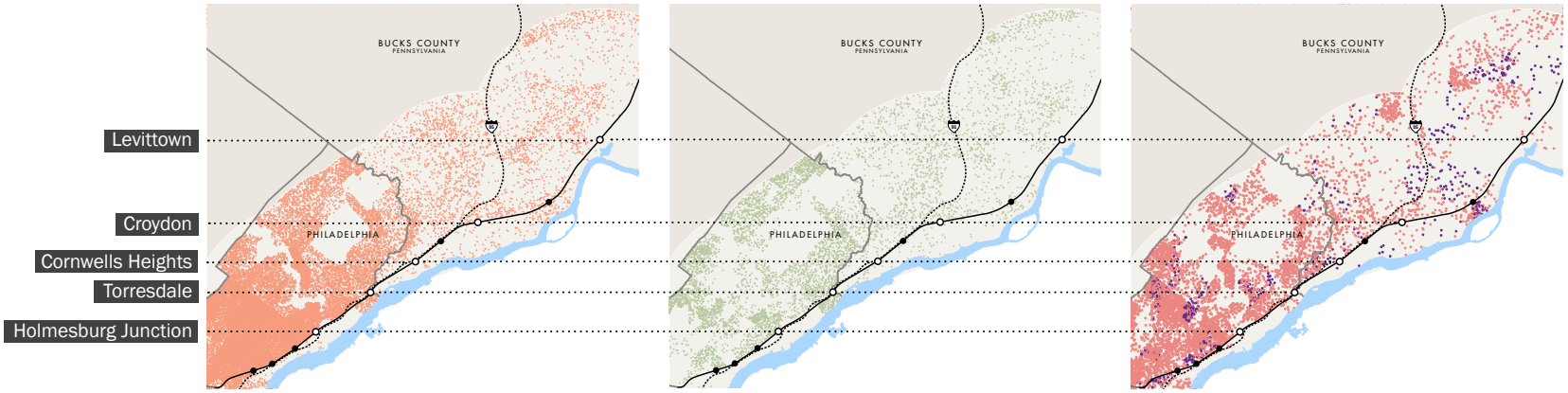
Who Is Using the Trenton Line?

Journey to Work data can help determine how many people are using transit within a given area; however, it does not indicate which transit services people are using. To answer this question, the study team used information from license plate surveys of local park-and-ride facilities to define catchment area boundaries

Figure 6: Commuting Mode (One Dot Equals One Commuter)

Total Commuters
286,391

	All Public Transit	Railroad	Walk	Bike
Number of Commuters	34,266	6,635	7,711	666
Percentage of Total Commuters	**12.0%**	**2.3%**	**2.7%**	**0.2%**



Source: DVRPC, American Community Survey 2007-2011

between relevant rail lines within the study area (more information on license plate surveys can be found below).

Figure 7 displays half-kilometer (0.31-mile) square cells colored according to the transit line used by a majority of park-and-ride customers originating within that cell. These catchment areas show the relative drawing power of each line and can help direct and prioritize access improvements to the areas most likely to benefit from them.

Shown in orange, the Trenton Line catchment area extends roughly one mile from the Holmesburg Junction Station to nearly three miles near the Cornwells Heights and Croydon stations. Stations, such as Holmesburg Junction, along the southern edge of the study area compete with the Frankford Transportation Center, the northern terminus of the Market-Frankford Line.

South of the Pennsylvania Turnpike, US 1/Roosevelt Boulevard and the Northeast Philadelphia Airport act as a dividing line for park-and-ride commuters using the Trenton and West Trenton lines. North of the Turnpike, the divide between these train lines is more ambiguous and is likely impacted by other barriers, such as Neshaminy Creek and I-95.

Commuter Sheds

License plate surveys can also be used to determine catchment areas, or station commuter sheds, for specific stations along the Trenton Line. Figure 8 illustrates the distribution of park-and-ride patrons among specific study corridor stations. When conducting a license plate survey, DVRPC works with PennDOT to map the origin of cars parked at a station. Each color-coded dot corresponds to the origin of a car parked at a particular station. License plate surveys for the Cornwells Heights and Croydon stations were conducted in July 2013, while the Holmesburg Junction, Torresdale, and Levittown stations were surveyed in 2005.

Figure 7: Dominant Rail Line Analysis

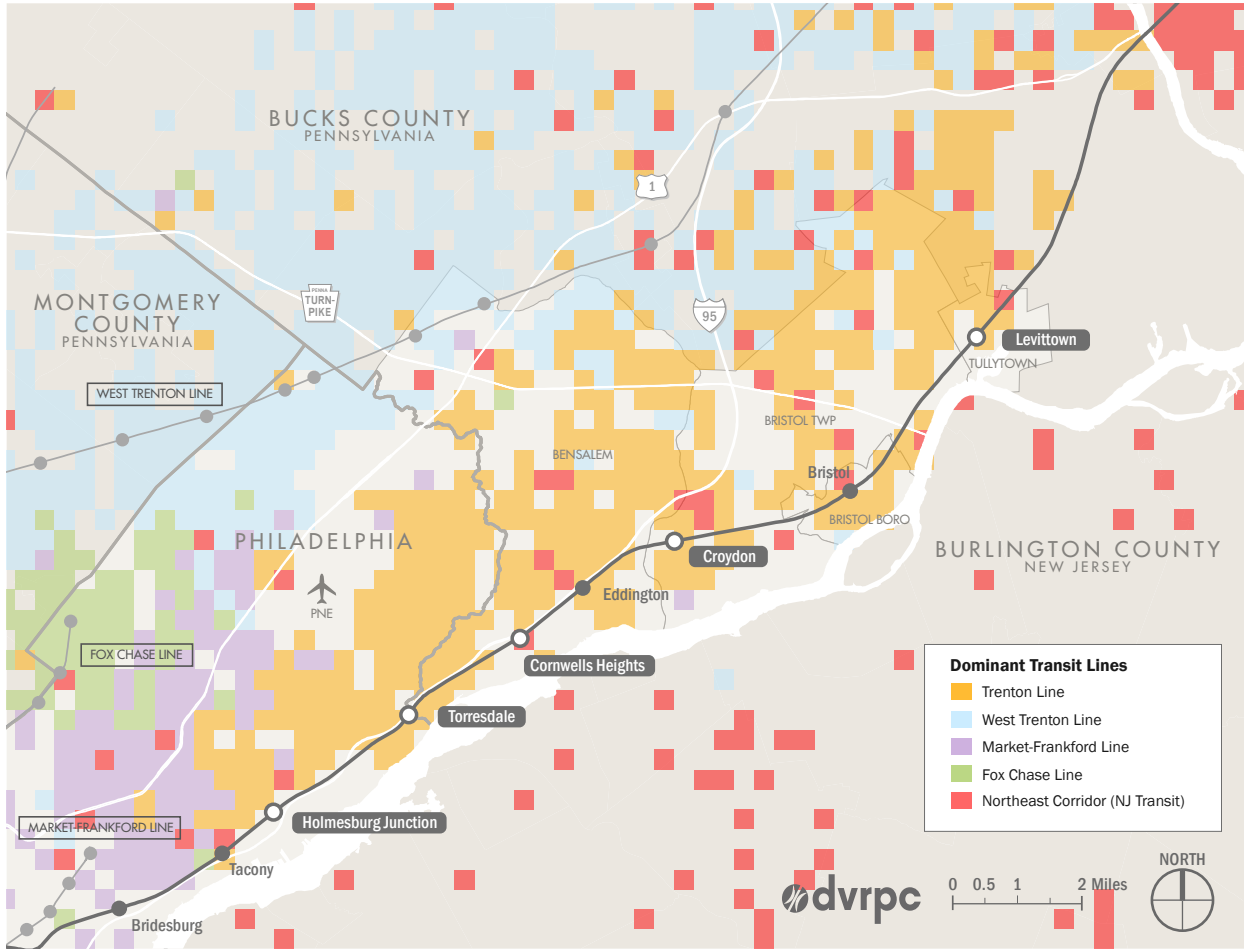


Figure 8: Trenton Line Commuter Sheds

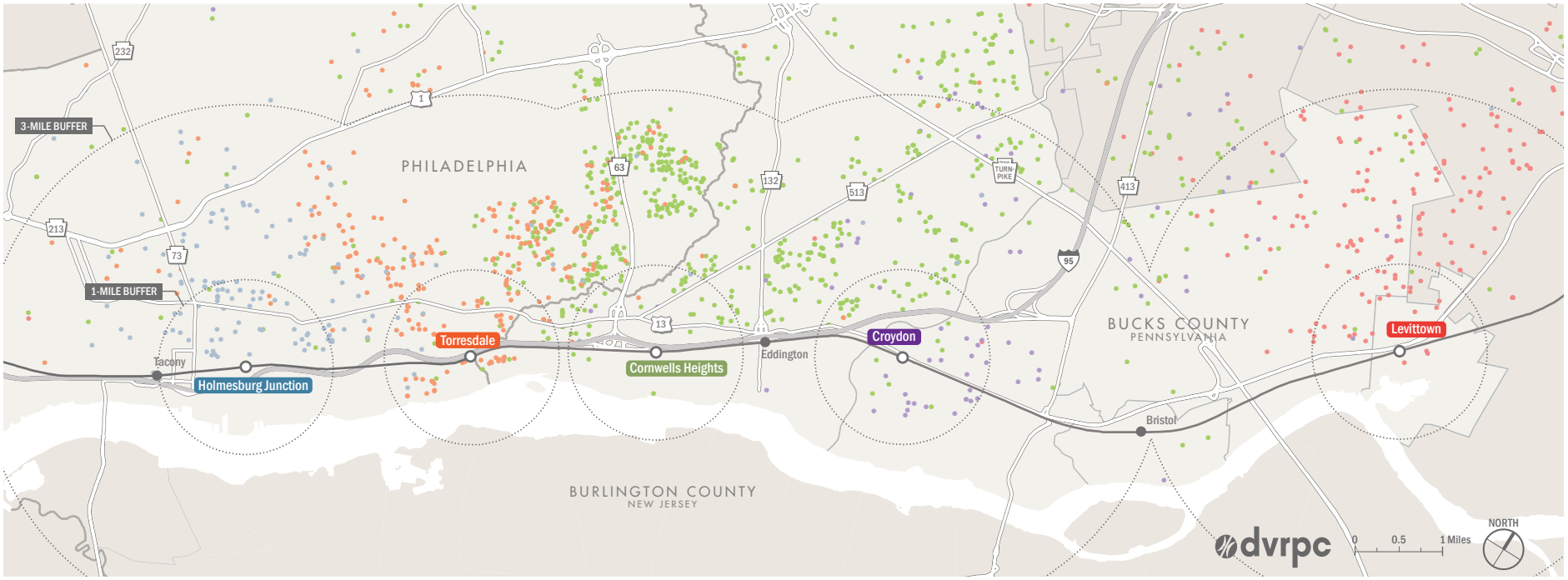
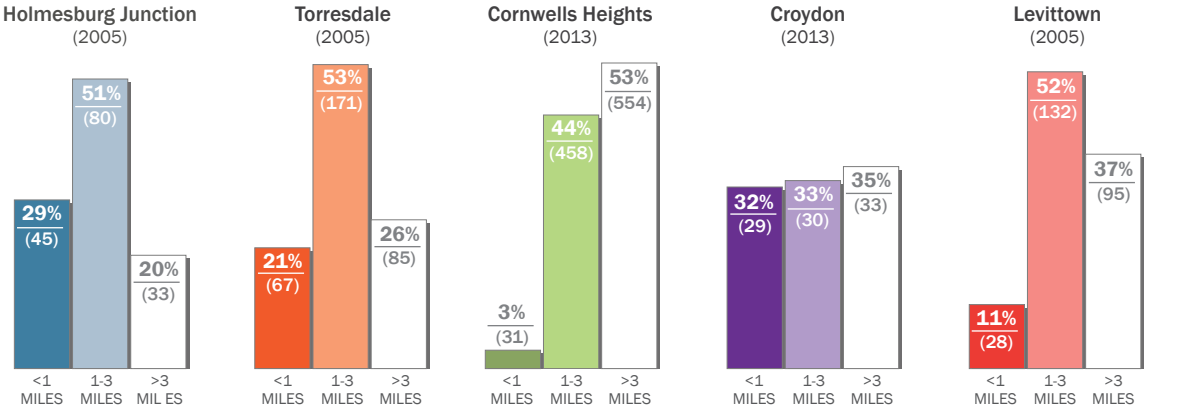


Figure 9: Commuting Distances for Park-and-Ride Passengers

These bar charts indicate the percentage of park-and-ride passengers traveling less than one mile, one to three miles, and three or more miles to each station. The number in parentheses indicates the raw number of passengers traveling that distance to that station.

In percentage terms, the number of park-and-ride patrons traveling less than three miles exceeds 60 percent at each station except for Cornwells Heights. In real terms, an average of 40 parking spaces at each station is occupied by commuters who traveled less than one mile.



Source: DVRPC

This information indicates where people are traveling from and the distance they travel to reach a station. Passengers driving less than three miles are particularly relevant when considering bicycle and pedestrian access improvements because they represent the largest group of existing passengers likely to consider walking or cycling to a station. Research indicates that cyclists will generally travel up to three miles to reach a transit station while pedestrians may walk up to a mile for high-quality transit service. More information on commuting distance is contained in Figure 9.

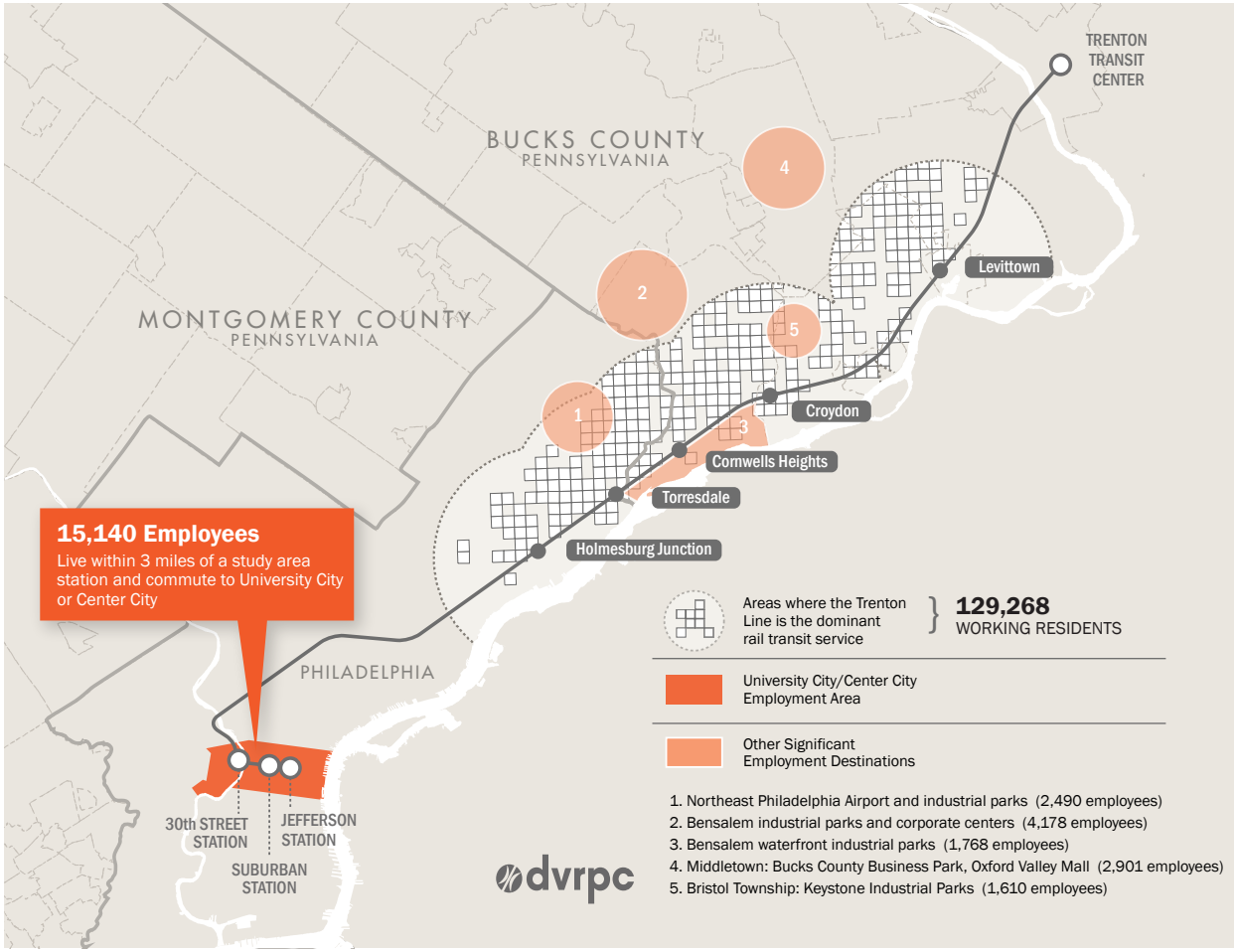
Work Destination Analysis

Examining commuter sheds can help us understand the travel patterns of existing transit riders, but they do not identify commuters who may consider using the Trenton Line in the future. Information on the potential pool of new transit users can be gathered by analyzing the origins and destinations of working residents along the study corridor. If a resident lives in close proximity to a Trenton Line station and works in a location served by the line, he or she may consider using the Trenton Line, particularly if their typical commute is disrupted by the reconstruction of I-95.

Figure 10 uses Longitudinal Employer-Household Dynamics data from the U.S. Census Bureau to determine the number of working residents who commute to University City and Center City, the primary employment centers served by the Trenton Line. For this analysis, only residents living within census tracts located within three miles of a study area station that are commonly associated with Trenton Line ridership (see Figure 7) were included. This area is shown as white grid cells in Figure 10.

In 2011, 129,268 working residents resided in areas with high Trenton Line ridership within three miles of a study area station. Just over 15,000 (11.7 percent) of these residents commuted to the census tracts which approximate Philadelphia's University City and Center City employment centers. That same year, the five study

Figure 10: Work Destination Analysis



Source: U.S. Census Bureau

area Trenton Line stations accounted for roughly 3,747 inbound boards on a typical weekday, a theoretical capture rate of 24.7 percent when considering the total number of study area residents commuting to University City and Center City. This capture rate will likely increase as construction activities continue and strategic improvements make Trenton Line stations more accessible.

Figure 10 also identifies five other significant employment destinations for working residents from the study area. These areas are generally not served by the Trenton Line and include industrial and corporate parks in Northeast Philadelphia, Bensalem, and Middletown.

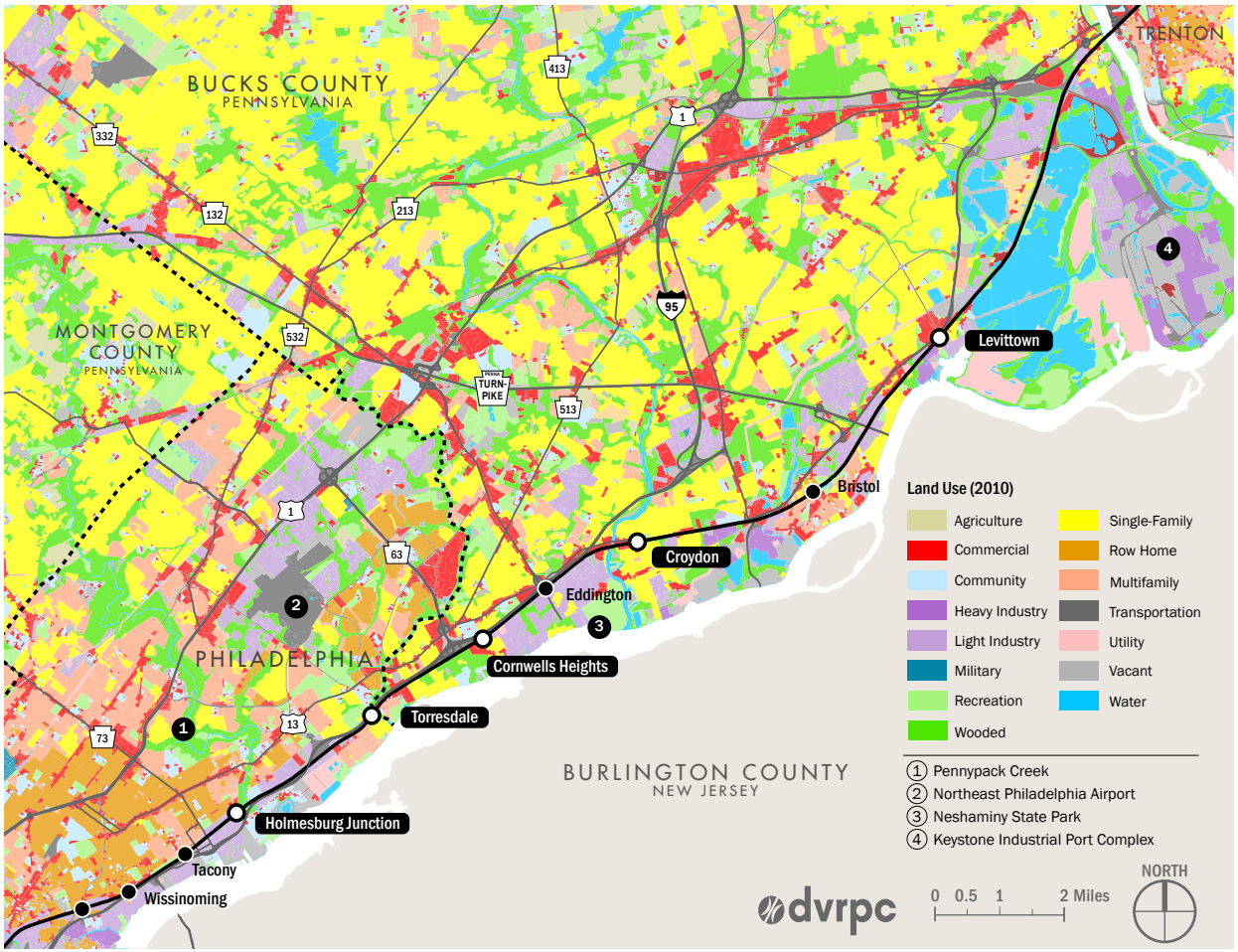
Land Use Patterns

Figure 11 illustrates the generalized land use patterns found in the areas surrounding the study area stations. This relatively large area contains a broad mix of land uses shaped by a network of regional highways and transit lines.

Commercial uses are concentrated along many of the study area's arterial roads, such as SR 13/Frankford Avenue, US 1/Roosevelt Boulevard, and SR 132/Street Road. Industrial uses are largely concentrated in the areas surrounding the Northeast Philadelphia Airport, the Keystone Industrial Port Complex, and along the Trenton Line, particularly along the waterfront.

Residential uses are fairly well distributed throughout the study area, with the densest concentrations of housing located in the Philadelphia neighborhoods of Bridesburg, Tacony, and Holmesburg. The study area is home to a number of local and county parks, as well as a small number of state recreation areas, such as Neshaminy State Park.

Figure 11: Study Corridor Land Use



"Two percent of Philadelphia workers rode bicycles to work between 2008 and 2012, more than double the 0.9 percent who biked in 2000.

American Community Survey, 2008-2012
United States Census Bureau

Fifty-nine percent of people identify "public transportation within walking distance of your home" as a *very important* or *somewhat important* factor in deciding where to live.

National Community Preference Survey, 2013
National Association of Realtors

CHAPTER 2

Pedestrian and Bicycle Access Tools

Creating environments around transit stations in which walking and bicycling are convenient and safe transportation options can pay huge dividends to transit providers and the municipalities that host stations. Improving nonmotorized access to transit can be a cost- effective way to reinforce existing ridership and attract new passengers. For example, both walking and biking reduce the need for parking spaces at park-and-ride lots, and bicycling extends the catchment area for transit service at a much lower cost than feeder buses.

In addition to these obvious benefits, accessible stations can promote active lifestyles, reinforce a transit agency's image as a green transportation provider, and help create multimodal communities. This study identifies a range of investments that can make significant improvements to pedestrian and bicyclist access at five stations along the Trenton Line. Like automobiles and trains, pedestrians and cyclists require infrastructure and facilities that enable safe movement within a station area, support them at the beginning and end of a trip, and minimize conflict with other vehicles and pedestrians.

However, in many locations, walking or bicycling to transit stations can be unsafe, inconvenient, or simply unpleasant. Pedestrians and bicycles can be easily deterred if physical or psychological barriers exist. Circuitous routes, deteriorated pavement or sidewalks, heavy traffic, and dark or isolated corridors are all examples of conditions that discourage walking and bicycling. Efforts to encourage public transit use and reinforce the behavior of passengers already traveling on foot or bike should focus on eliminating barriers, improving connectivity, and providing comfortable travel environments.

This chapter presents a variety of elements and strategies designed to help communities enhance pedestrian and bicycle access to transit. Due to differences between transit lines and local conditions, the appropriateness of each strategy for a given station may vary. Many of the generalized tools presented here will be referenced later in this document as specific improvements at particular stations are discussed. Unless otherwise specified, all costs cited here are based on estimates documented in *Costs for Pedestrian and Bicyclist Infrastructure Improvements* by the UNC Highway Safety Research Center. These costs are provided for estimation purposes only. The actual cost of implementing any of these improvements could vary significantly based on local conditions.

Pedestrian Elements

Sidewalks

Sidewalks are the most basic and important component of the pedestrian network. When a sidewalk network is continuous and well connected, it creates a safe and comfortable environment for pedestrians. Often used by motorists and cyclists at some point in their journey, sidewalks should be at least five feet wide, but may need to be wider in areas with high pedestrian volumes.

Obstructions, such as utility poles and signs, should be located outside of the path of travel to ensure adequate access for persons with disabilities. Sidewalks can be constructed with a variety of materials, including concrete, asphalt, and brick.

Average Cost: $32 per linear foot of concrete sidewalks (costs for other materials can vary substantially).

Street Furniture

Providing street furniture on sidewalks can act as a buffer between pedestrians and vehicular traffic. Street furniture can include benches, bus shelters, newspaper racks, and other pedestrian amenities that serve to create a more pleasant and attractive environment for pedestrians. These types of items should be placed outside of the pedestrian zone (see Figure 12) so as not to interfere with pedestrian mobility.

Average Cost: Varies depending on the design, style, and manufacturer.

Landscaping

Like street furniture, landscaping, such as regularly-spaced street trees, can be used to create a buffer between pedestrians and moving traffic. Landscaping can also make a streetscape more visually appealing and provide shade for walkers. The costs of sidewalk landscaping must consider watering and maintenance, which can be a challenge for implementation. Selecting appropriate plant species for particular environments can reduce maintenance costs and improve the effectiveness of any plantings.

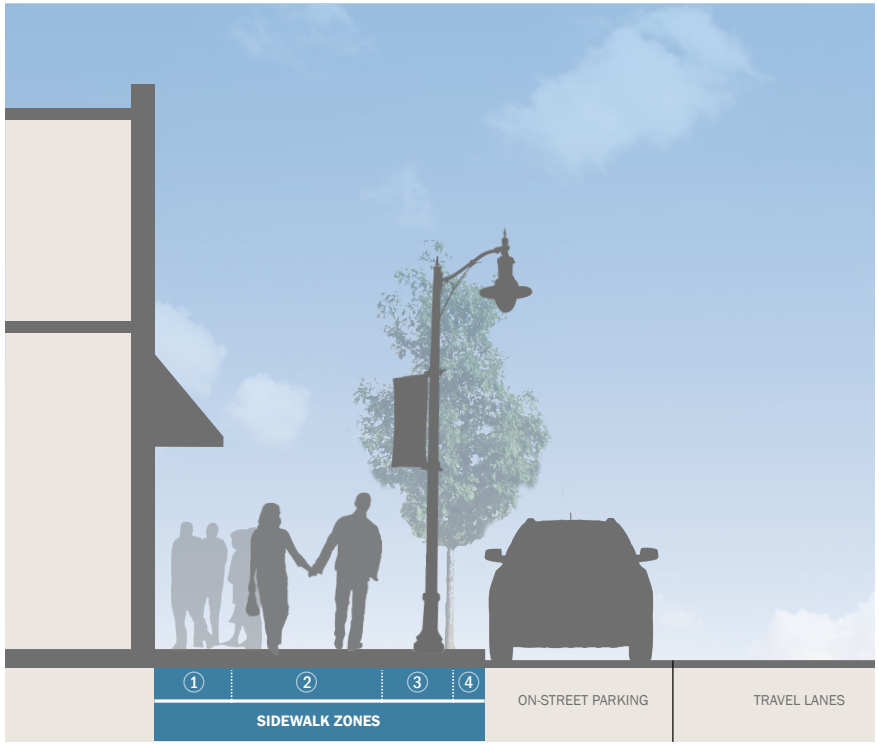
Average Cost: Varies depending on size of installation, vegetation type, and maintenance.

Street Lighting

Pedestrian-scale lighting can help pedestrians safely navigate sidewalks and feel more secure. Street lights are most effective when they are installed on both sides, illuminate both the sidewalk and street, and produce a consistent amount of light. Intersections and underpasses often require additional lighting to ensure pedestrians feel safe and are visible to motorists.

Average Cost: Approximately $5,000 for a streetlight, although costs can vary widely depending on the fixture type.

Figure 12: Sidewalk Zones



The most successful sidewalks are often found in shopping districts and include four distinct zones. Outside of commercial areas, it is imperative to maintain wide, clear pedestrain zones with a buffer between the sidewalk and moving traffic where possible.

1. **Frontage Zone**: Buffer zone between the sidewalk and structures or parking areas.

2. **Pedestrian Zone**: a clear space, typically 4—6 feet on the sidewalk for walking,

3. **Amenity Zone**: Used for street furniture, trees and plantings, bicycle racks, lighting, and kiosks.

4. **Curb Zone**: Buffer between the roadway and the sidewalk; creates a link between the sidewalk and crosswalk at intersections.

Source: DVRPC

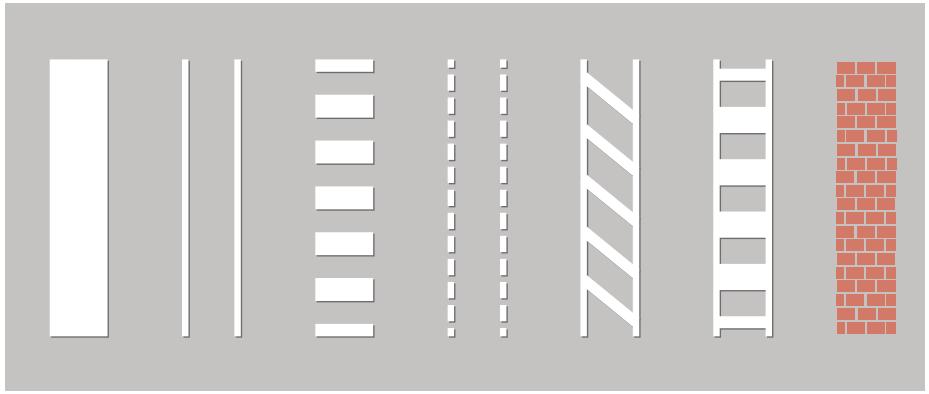
Crosswalks

Marked crosswalks help pedestrians identify preferred locations at which to cross a street. Crosswalks may be installed at intersections or midblock locations, and indicate to motorists where pedestrians have priority and where to yield.

Crosswalks should be highly visible to pedestrians and drivers, and can be installed in a number of patterns (see Figure 13).

Average Cost: Standard striped crosswalks can cost approximately $770, while higher-visibility patterns, such as continental or ladder markings, can cost approximately $2,500.

Figure 13: Crosswalk Types



Source: DVRPC

Source: www.pedbikeimages/LyubovZuyeva

Source: www.streets.mn

Crossing Amenities

Several design elements can be integrated into intersections to improve the safety and convenience of walking to transit stations.

Refuge islands create a protected space for pedestrians in the middle of a street and allow them to focus on crossing one direction of traffic at a time. Refuge islands are particularly useful at wide intersections and unsignalized midblock locations.

Average Cost: $13,520

Curb extensions extend the sidewalk or curb line out into the parking lane, which reduces the crossing distance of a street. These bumpouts can increase the visibility of pedestrians and serve as a traffic calming feature.

Average Cost: $13,000

Curb ramps provide access between the sidewalk and roadway for people using wheelchairs, walkers, and strollers as well as people with difficulty stepping up and down high curbs.

Average Cost: $810

Pedestrian countdown timers allow pedestrians to know the amount of time they have to cross the street before the traffic signal will change. These timers can be combined with pedestrian push buttons. Push buttons can be effective on arterial and congested streets because they can allot more time to pedestrians only when they are present , thereby reducing the delay for vehicles.

Average Cost: Countown timer modules cost approximately $740.

Bicycle Facilities

Source: Bikeable Communities

Bicycle Lanes

Bicycle lanes provide dedicated space for bicycle use on the roadway and are the preferred bicycle treatment when sufficient cartway width exists. Bicycle lanes are typically marked with striping or a full-colored lane. In some cases, bike lanes may be buffered from adjacent travel lanes to enhance rider comfort.

Bike lanes typically run with the flow of traffic but contra-flow lanes may be appropriate in certain situations. Bicycle lanes should be at least five feet wide and can be located adjacent to a curb or on-street parking. To ensure the safety of cyclists, bike lanes should be kept clear of debris.

Average Cost: $133,170 per mile although costs can vary greatly due to differences in project specifications and the scale and length of the treatment. It is often most cost efficient to create bicycle lanes during street reconstruction or resurfacing.

Shared Lane Markings (Sharrows)

Shared lane markings and "Share the Road" signage can create a safer bicycling environment on streets that cannot accommodate a bicycle lane. On these roads motor vehicles and bicycles are intended to use the same travel lane. Shared lane markings can be used to fill in gaps in the bicycle lane network and alert motorists to the presence of cyclists.

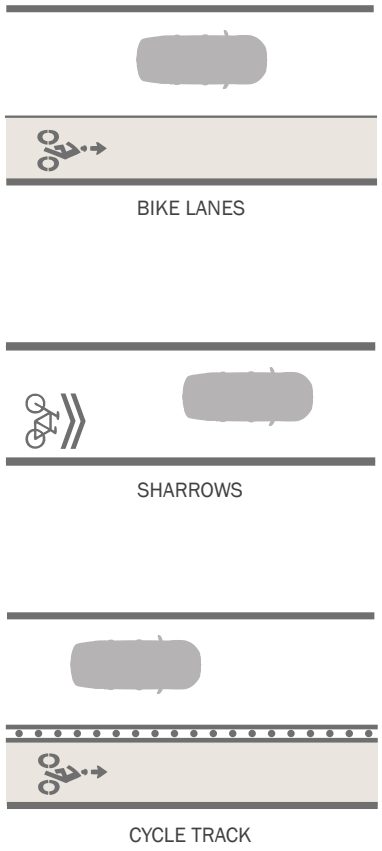
Average Cost: $180 per pavement marking

Cycle Track

A cycle track is an exclusive bike facility that physically separates the cyclists from vehicular traffic, parking, and sidewalks. There are many types of cycle tracks and the type of separation can vary from bollards to a landscaped median.

Average Cost: $240,000 per mile

Figure 14: Bicycle Infrastructure



Source: DVRPC

Source: wilder.org

Bicycle Parking and Storage

The lack of safe and dependable bicycle parking at transit stations can severely limit bicycle access to transit. Bicycle racks, lockers, and enclosed storage rooms can be used to meet the needs of commuters who often require all-day storage. Where possible, bicycle racks should incorporate weather protection and adequate lighting. Locating parking facilities near loading zones and in the view of station attendants can increase the security of bicycle storage.

Multi-Use Facilities

Multi-Use trail

Multi-use trails are off-road facilities which often accommodate multiple types of users. Multi-use paths can be paved or unpaved and are typically ten feet in width. Although multi-use paths are frequently used for recreation purposes, they can also serve transportation needs, including providing links to transit stations.

Average Cost: $481,141 per mile for paved trails and $121,390 per mile for unpaved trails. Costs can vary significantly based on materials used, right-of-way acquistion, and other factors.

Sidepath

A sidepath is a multi-use trail that parallels a roadway. Typically at least ten feet in width, sidepaths may be appropriate along high-speed, high-volume roads. The physical separation of sidepaths may encourage riders who are not comfortable riding on streets. However, paths immediately adjacent to roadways may cross numerous intersecting roads and driveways that create conflicts for path users. These types of facilities must be carefully designed to accommodate a mix of users while minimizing hazards.

Average Cost: $481,141 per mile although costs can vary significantly based on materials used, right-of-way acquistion, and other factors.

Other Considerations

In addition to physical infrastructure designed to enhance pedestrian and bicycle mobility, various policies and programs can also play a role in creating environments around transit stations that are safe and comfortable for pedestrians and cyclists. Transit agencies typically have limited control over conditions on streets and roadways adjacent to transit stops and stations. Accordingly, transit agencies must establish partnerships with local communities and stakeholders to develop the policies and programs that complement physical infrastructure and foster multimodal station areas.

The following recommendations identify transit agency and municipal policies designed to complement pedestrian and bicycle infrastructure:

- Develop system-wide access guidelines that provide clear design guidance for the integration of pedestrian and bicycle facilities into stations.
- Develop guidelines for the design and placement of station bicycle parking facilities that establish standards for coverage, security, and convenience.
- Update station information displays to include maps displayed at a walking scale that include pedestrian and bicycle facilities and emphasize safe walking routes.
- Establish a wayfinding signage system that identifies the most appropriate bicycle and pedestrian routes to transit stations.
- Require multimodal circulation and access studies as part of the development review process for projects near transit.
- Coordinate with local police forces to identify and address station safety and security issues, and to implement crime prevention measures.
- Identify opportunities to educate the public on bicycle and pedestrian issues and programs.
- Carefully consider the location of bus stops near train stations so as to maximize pedestrian visibility and convenience.
- Coordinate with local authorities to develop protocols for maintaining clear and passable pedestrian and bicycle routes to the station, including who is responsible for snow removal and routine maintenance.

More information on policies that support nonmotorized access to transit stations can be found on the Pedestrian and Bicycle Information Center website: www.pedbikeinfo.org.


SEPTA
Holmesburg Junction
Trains to Center City Philadelphia

STATION PROFILE

Location: Philadelphia, PA (Holmesburg/ Upper Holmesburg neighborhoods)

Fare Zone: 2

Time to 30th St. Station: 22—28 minutes

Time to Trenton: 28—31 minutes

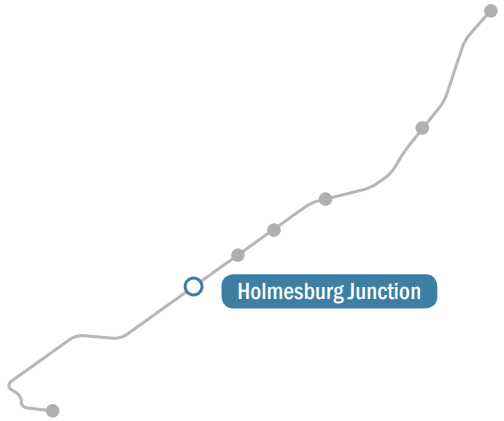
Weekday Inbound Boards (2013): 466

SEPTA Parking: 37 spaces (free)

Bicycle Parking: 2 racks (4 bikes)

ADA Access: No

Connecting Service: Bus Route 84



CHAPTER 3

Holmesburg Junction

The Holmesburg Junction station is located in a diverse area of Northeast Philadelphia and serves the Holmesburg and Upper Holmesburg neighborhoods.

The area surrounding the station includes dense residential neighborhoods, industrial uses, and institutional facilities. Additionally, the station area contains portions of the Frankford Avenue commercial corridor and Pennypack on the Delaware park. This diverse setting allows the Holmesburg Junction Station to serve local residents, as well as employees of nearby businesses and institutions.

In general terms, the Trenton Line rail corridor divides the station area in two, with each side exhibiting a dramatically different character. South of the tracks, the area is largely defined by a combination of light industrial and warehousing facilities along Rhawn Street and State Road. North of the tracks, Rhawn Street is home to two schools, a used-car dealership, and a mix of commercial properties and single-family homes. Residential uses are concentrated in the row home neighborhoods northwest of the station.

Most commuters arrive at the station via Rhawn Street. From Rhawn Street, passengers access both the north and southbound platforms through a stairway up the embankment. Alternatively, commuters can arrive at the southbound platform by traveling through the parking lot which is accessible from Tulip Street. Passengers can only cross to the northbound platform by using the stairs located on Rhawn Street.

Demand outstrips capacity at the station's small lot, resulting in spillover parking along nearby Rhawn, Tulip, and Decatur streets. However, additional dedicated station parking may become available through the development of a privately owned parking lot on a currently-vacant parcel directly across from the station on Rhawn Street.

Of the five study stations, Holmesburg Junction has the highest percentage of parking commuters traveling from less than one mile away. Furthermore, the station is well-positioned to serve riders arriving on foot or by bicycle due to the station area's high population density and interconnected street network.

The recommendations presented later in this chapter focus on improving nonmotorized access along Rhawn Street and capitalizing on the station's proximity to the Pennypack Trail and Pennypack on the Delaware Park.

Figure 15: Holmesburg Junction Station Area Context

The Holmesburg Junction station area contains a mix of industrial, civic, commercial, and residential land uses. South of the station, the area is largely defined by a combination of light industrial and warehousing facilities along Rhawn Street and State Road. North of the station, Rhawn Street is home to two schools, a used auto dealership, and a mix of commercial properties and single-family homes. Residential uses are concentrated in the row home neighborhoods northwest of the station. Holmesburg Junction is also located a short distance from Pennypack on the Delaware Park and a number of Philadelphia Prison System facilities, such as the Fromhold Correctional Facility and the Philadelphia Industrial Correction Center.

Parks/Recreation
1. Pennypack Trail
2. Pennypack on the Delaware Park

Redevelopment Sites
1. Northern Shipping Site
2. Liddonfield Homes Site
3. Torresdale Avenue Site

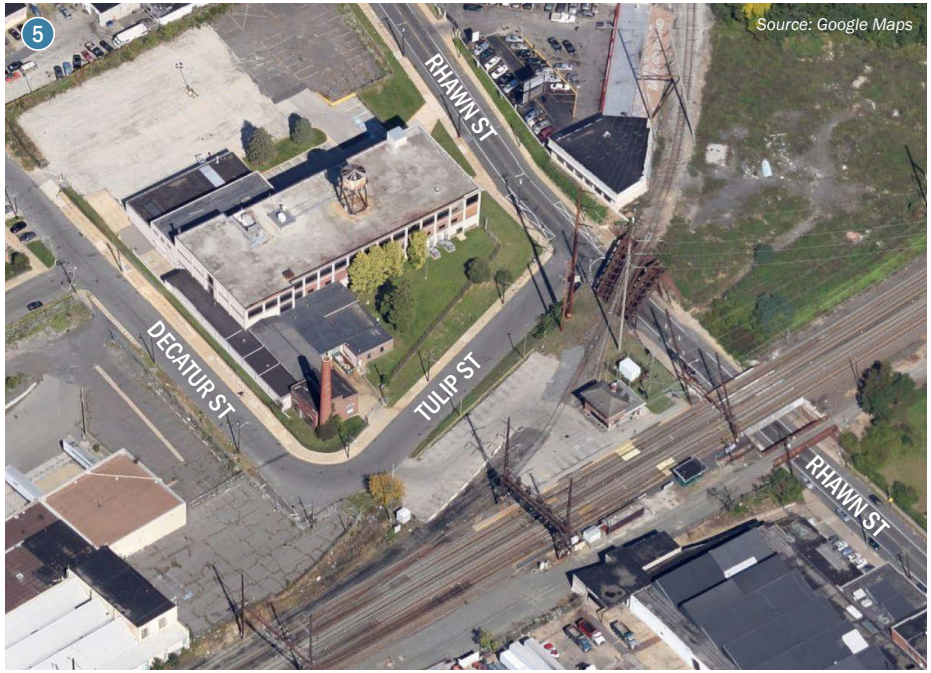
Civic
1. New Foundations Charter Elementary School
2. New Foundations Charter High School
3. Holmesburg Prison
4. Philadelphia Prison System Facilities
5. Philadelphia Police Academy
6. St. Hubert Catholic High School for Girls

0 0.25 0.5 Miles

NORTH

Station Area Images

1. A parking lot is proposed for a vacant parcel on Rhawn Street, across from the station.
2. Passengers wait outside the Holmesburg Junction Station building.
3. Station parking typically overflows onto Tulip Street.
4. Crossing State Road, near Rhawn Street, can be a challenge for pedestrians and cyclists.
5. Aerial view of the station area.
6. North of the station, many portions of Rhawn Street are residential.
7. Industrial uses are located along Rhawn Street south of the station.
8. The dilapidated condition of the Rhawn Street overpass can make it an uncomfortable place for pedestrians.
9. The Pennypack Trail is accessible from Torresdale Avenue.



Transit Network

The station area is served by four SEPTA bus routes: 28, 66, 70, and 84 (see Figure 16). Route 84, in particular, has the potential to promote bus-to-rail transfers because it travels directly in front of the station. During the morning hours (6:30 to 10:00 am), three-fourths of Route 84 buses traveling in either direction stop at the station within 15 minutes of a southbound Trenton Line departure. During the evening rush (3:30 to 6:30 PM), half of northbound Route 84 buses arrive within 15 minutes of a train, while the same is true for only 16 percent of southbound Route 84 buses.

The Torresdale Bus Loop is located near the intersection of Cottman and Torresdale avenues, approximately a 20-minute walk from the Holmesburg Junction Station.

Pedestrian and Bicycle Access

Despite its location and the existing bicycle lanes on Torresdale Avenue, nonmotorized access to Holmesburg Junction can be challenging, particularly for cyclists. Several aspects of the station's pedestrian and bicycle environment are illustrated in Figure 17.

Rhawn Street provides the primary access to the station from the north, and is the only access street from the south. However, the high volume and speed of traffic along Rhawn Street make it an unsafe environment for cyclists.

With the exception of the south side of Tulip Street, the sidewalk network within the station area is nearly complete and interconnected. Many crosswalks, however, are in need of repainting, and adding new crosswalks at strategic locations could improve pedestrian safety.

The Pennypack Creek Trail is an important recreation facility; however, it appears to be little used by nonmotorized commuters. Creating safer trail crossings of local streets can enhance the trail's connection to the station. A series of potential strategies to improve nonmotorized access are identified on pages 28—29.

Figure 16: Holmesburg Junction Transit Network

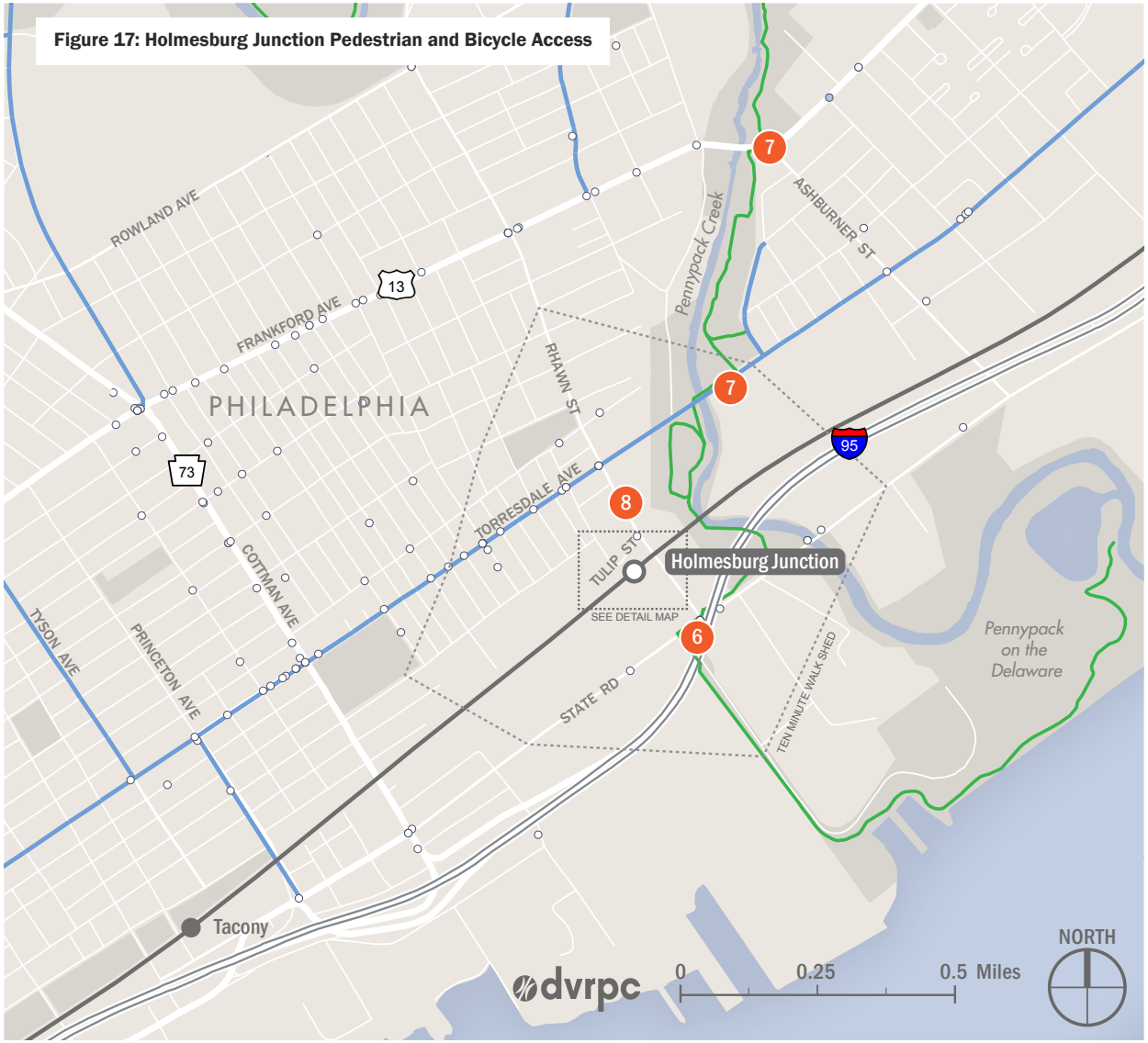
SEPTA Bus Routes

- Route 28: Torresdale-Cottman to Fern Rock Transportation Center
- Route 66: Frankford-Knights to Frankford Transportation Center
- Route 70: Frankford-Gregg and Torresdale-Cottman to Fern Rock Transportation Center
- Route 84: Bustleton-County Line and Philadelphia Mills Mall to Frankford Transportation Center

0 0.25 0.5 Miles

NORTH

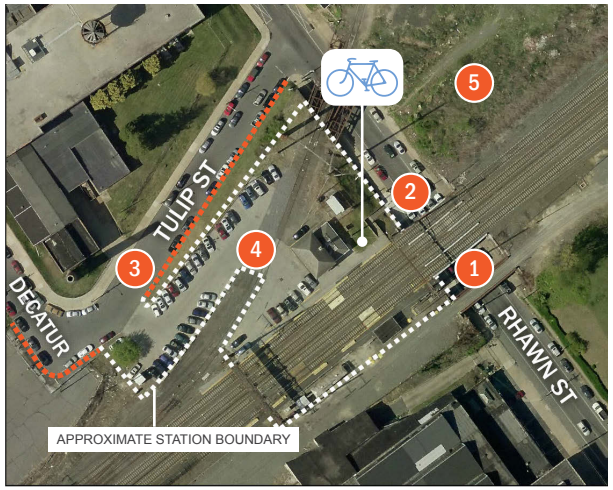
Figure 17: Holmesburg Junction Pedestrian and Bicycle Access



Bike Lane
Multi-Use Trail
Critical Missing Sidewalk

Bicycle Parking
Station Area Issues and Observations

Crash Locations (2009–2013)
Pedestrian Crash
Bicycle Crash



ISSUES AND OBSERVATIONS

1	Dark and deteriorating overpasses detract from pedestrian safety and comfort.
2	Stairways connect each platform to Rhawn Street, limiting ADA access.
3	Station lacks designated pick-up/drop-off locations.
4	Limited off-street parking results in commuters parking on nearby streets, such as Tulip, Rhawn, and Decatur streets.
5	Vacant parcel being cleared for use as a privately owned parking lot.
6	The intersection of State and Rhawn is difficult for trail users to navigate, creating a gap in the Pennypack Creek Trail leading to Pennypack on the Delaware.
7	Pennypack Trail users face unsafe crossings at Frankford and Torresdale avenues.
8	Rhawn Street, the most direct route to the station, can be intimidating for cyclists because of high vehicular speeds and its narrow width.

Station Area Opportunities

Table 1: Holmesburg Junction Potential Improvements

	LOCATION	DESCRIPTION	PRIORITY	COST *	ACTOR(S)	MORE INFO
Bicycle	1. Rhawn Street	Add shared lane markings (sharrows) on Rhawn Street between Rowland Avenue and Torresdale Avenue.	LOW	$	PSD, PennDOT	
	2. Rhawn Street	Add bicycle lane to Rhawn Street between Torresdale Avenue and State Road.	MED	$	PSD, PennDOT	p. 30
	3. Frankford Avenue	Add shared lane markings (sharrows) on Frankford Avenue between Rhawn Street and Knights Road.	LOW	$	PSD, PennDOT	
	4. Inbound Parking Lot	Remove existing U rack and add sheltered bike parking near station house or the entrance to the parking lot.	MED	$	SEPTA	
Pedestrian	5. Vandike Street	Add crosswalk to Vandike Street at Rhawn Street.	MED	$	PSD, PennDOT	
	6. Tulip Street	Add sidewalks on south side of Tulip Street between Rhawn Street and the station.	HIGH	$	PSD, SEPTA	
	7.Tulip Street	Restripe crosswalk at Rhawn Street and add new crosswalk near station entrance.	HIGH	$	PSD, SEPTA	
	8. Rhawn Street	Improve lighting and condition of Rhawn Street overpasses.	HIGH	$$	AMTRAK, SEPTA	
Multi-Use Trails	9. Pennypack Trail at Frankford Avenue	Improve trail crossing by restriping crosswalk, installing signage, and widening shoulder to install a two-way cycle track on the northbound side of Frankford Avenue.	LOW	$$	PSD, PennDOT, PERT	p. 32
	10. Pennypack Trail at Torresdale Avenue	Improve trail crossing by adding midblock crosswalk, signage, user-actuated signals, and bicycle infrastructure.	MED	$$/$$$	PSD, PennDOT, PERT	p. 33
	11. Private property between CSX and SEPTA rail tracks	Create mutli-use trail spur through or adjacent to new parking area to link Pennypack Trail to the station. Trail could potentially connect to station via the existing freight rail bridge.	LOW	$$$	PPO, PERT, SEPTA	
	12. State Road and Rhawn Street	Add sidepath near the intersection of State Road and Rhawn Street to better link the Pennypack Creek Trail to Pennypack on the Delaware Park and the station.	MED	$$$	PSD, PennDOT	p. 34

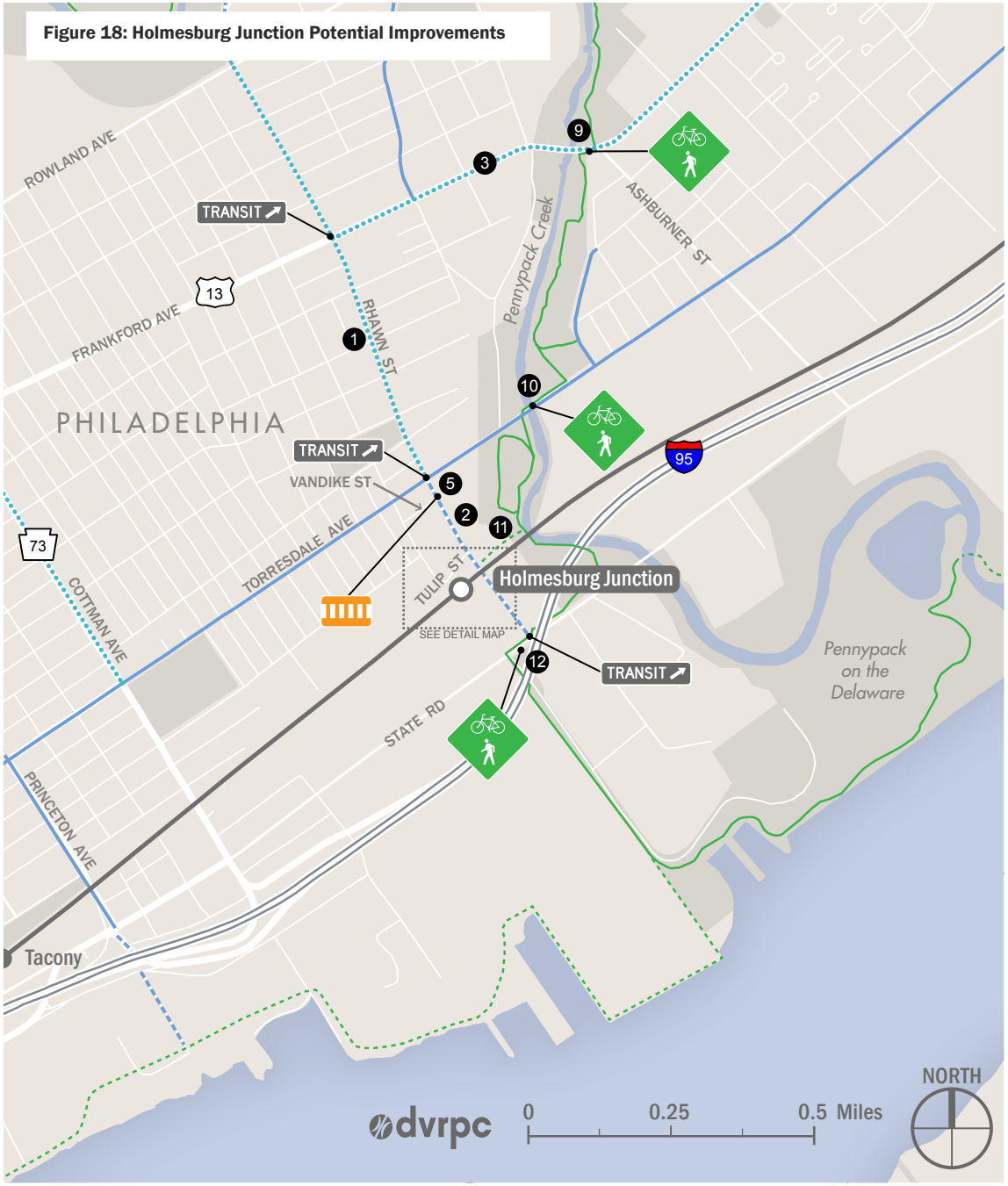
Approximate Cost Ranges
$: Less than $50,000
$$: $50,000 to $250,000
$$$: More than $250,000

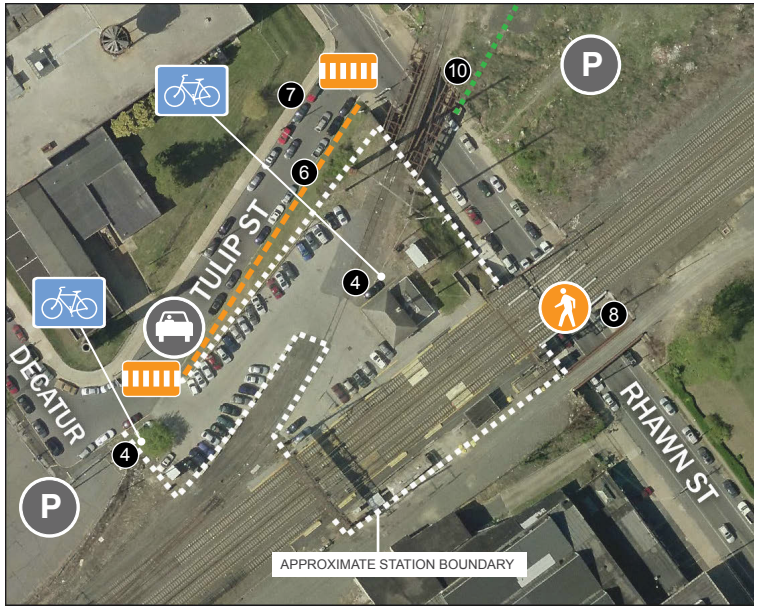
Actors
PERT: Pennypack Ecological Restoration Trust
PPO: Private Property Owners
PSD: Philadelphia Streets Department

** All cost ranges generated using average cost estimates documented in* Costs for Pedestrian and Bicyclist Infrastructure Improvements *by the UNC Highway Safety Research Center. Actual costs of implementation may vary significantly based on local conditions.*

Source: DVRPC

Figure 18: Holmesburg Junction Potential Improvements





Existing Bicycle and Multi-Use Facilities

- Bike Lane
- Multi-Use Trail

Recommended Pedestrian and Bicycle Improvements

- New Bike Lane
- New Marked Shared Lane
- New Multi-Use Trail
- New Sidewalk
- Station Area Opportunity *(See Table 1)*
- Pedestrian Intersection Improvement
- Pedestrian Spot Improvement
- Multi-Use Trail Crossing Improvement
- New/Enhanced Bicycle Parking

Other Opportunities

- Wayfinding Signage
- Potential New Parking Area
- Pick-Up/Drop-Off Location

FOCUS AREA

Rhawn Street Bicycle Lanes

Description

Rhawn Street provides the main access to the Holmesburg Junction Station. This street connects the existing bicycle lanes on Torresdale Avenue with the station and the entrance to the Pennypack on the Delaware Park on State Road. Currently, high traffic speeds and the lack of bicycle infrastructure make this an unsafe and unwelcoming environment for bicyclists. This stretch of Rhawn Street was identified as in need of traffic calming in the *North Delaware Riverfront Rail Stations Urban Design Study*. Rhawn Street was also identified by the *Philadelphia Pedestrian and Bicycle Plan* for further study as a potential bicycle facility.

Dedicated bike lanes along this two-way road would necessarily remove on-street parking from either one or both sides of the street. Currently, the amount of on-street parking is already somewhat limited between Torresdale Avenue and State Road due to the presence of multiple driveways and no-parking zones (see Figure 19). In addition, the existing schools and businesses on State Road have off-street parking available to serve their needs. The current demand for on-street parking along Rhawn Street primarily seems to serve park-and-ride passengers of the Trenton Line. Accordingly, the installation of bicycle lanes on Rhawn Street may need to be coordinated with the development of a new off-street parking facility for passengers.

Potential Strategies

- Restripe Rhawn Street between Torresdale Avenue and State Road for bike lanes (see Figure 20).
- Option 1 removes parking from both sides of the street to include buffered bike lanes.
- Option 2 removes parking from one side of the street to include bike lanes without buffers.

Figure 19: Rhawn Street Parking

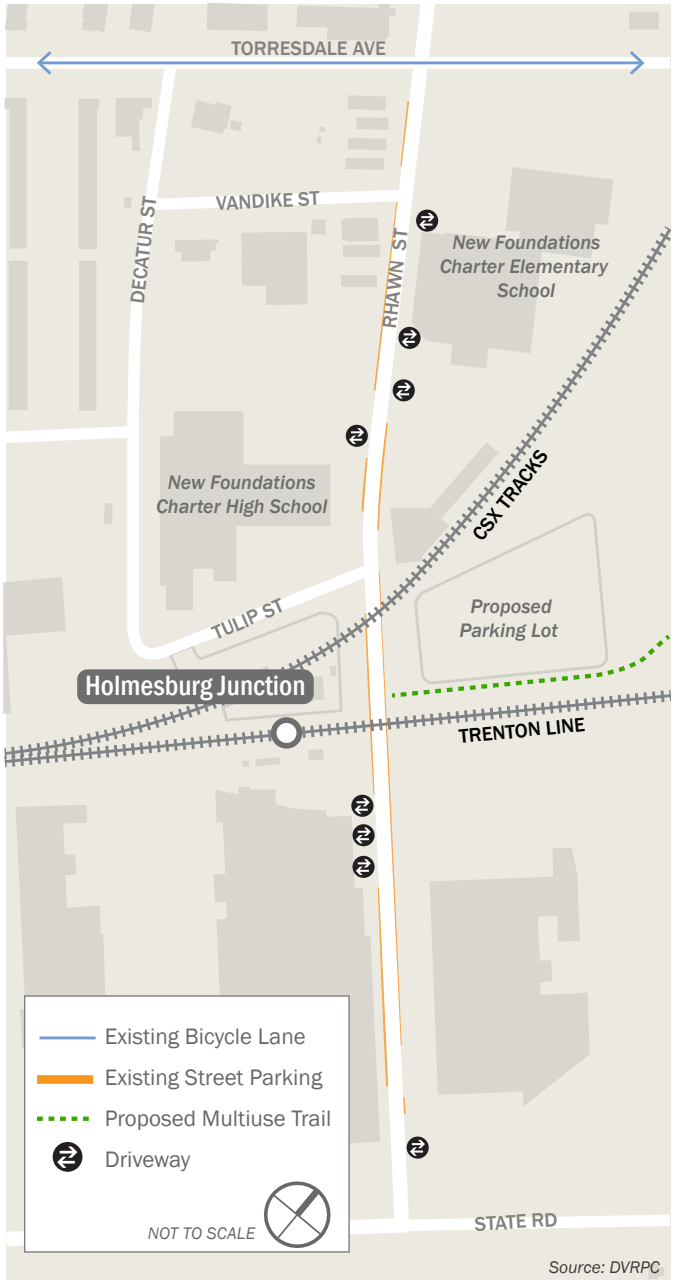
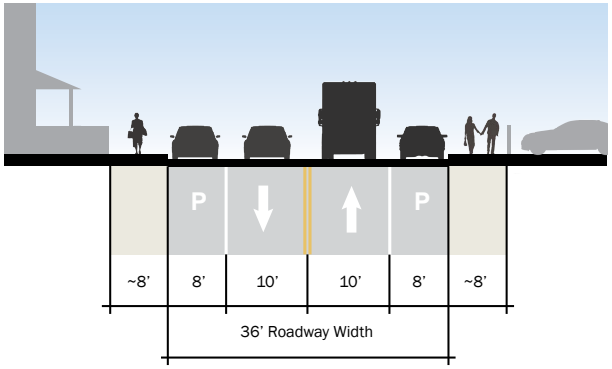
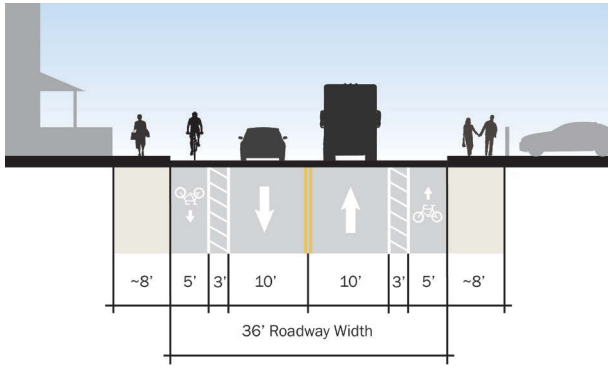


Figure 20: Rhawn Street Bicycle Facilities Alternatives

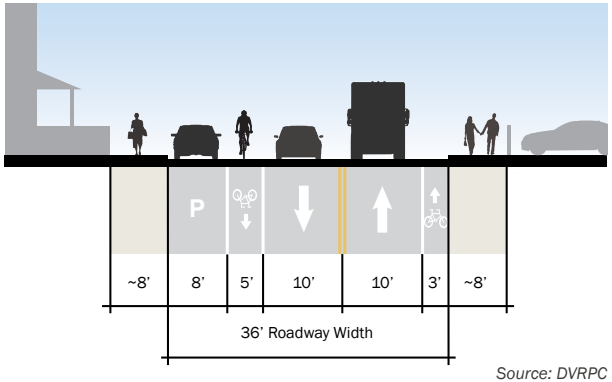
Existing Conditions



Option 1: Bike Lanes with No Parking



Option 2: Bike Lanes with One Lane of Parking



Source: DVRPC

Considerations

Option 1 provides the greatest degree of safety and comfort for all road users by buffering separated bike lanes from vehicular traffic. However, Option 1 requires the potentially controversial removal of all on-street parking (approximately 92 spaces) from this section of Rhawn Street. Doing so would not be recommended until the development of additional off-street parking at the station would be complete.

Option 2 provides dedicated bike lanes but preserves on-street parking on the west side of Rhawn Street (approximately 47 spaces). This configuration requires the removal of less on-street parking but at a potentially increased safety risk for all road users. However, the proposed alignment of Option 2 does meet the minimum standards for bike lanes according to the National Association of City Transportation Officials (NACTO).

Alternatively, one lane of parking may be converted into a two-way cycle track (not pictured). The remaining lane of parking could be aligned as a buffer between traffic and cyclists.

Although Decatur Street can be used as an alternate bicycle route to access the station from Torresdale Avenue, Rhawn Street would still be required to access State Road and the entrance to the Pennypack on the Delaware Park.

FOCUS AREA

Pennypack Trail: Frankford Avenue

Description

The Pennypack Trail extends for over 20 miles from the mouth of the Pennypack on the Delaware River through Philadelphia and into Montgomery County. Along the way, there are a number of gaps as the trail encounters road crossings and other obstacles. One such gap is at the trail's intersection with Frankford Avenue, less than one mile from the Holmesburg Junction station.

At Frankford Avenue, the Pennypack Trail is bisected and separated by approximately 150 feet. For bicyclists traveling north along the trail, this gap can be accommodated by using the shoulder of Frankford Avenue and crossing at the signalized intersection of Ashburner Street. However, the only legal way for bicyclists traveling south is to dismount and walk their bicycle along the sidewalk on the southern side of the street after crossing at Ashburner. Such a disruption can discourage trail users and create confusion.

Potential Strategies

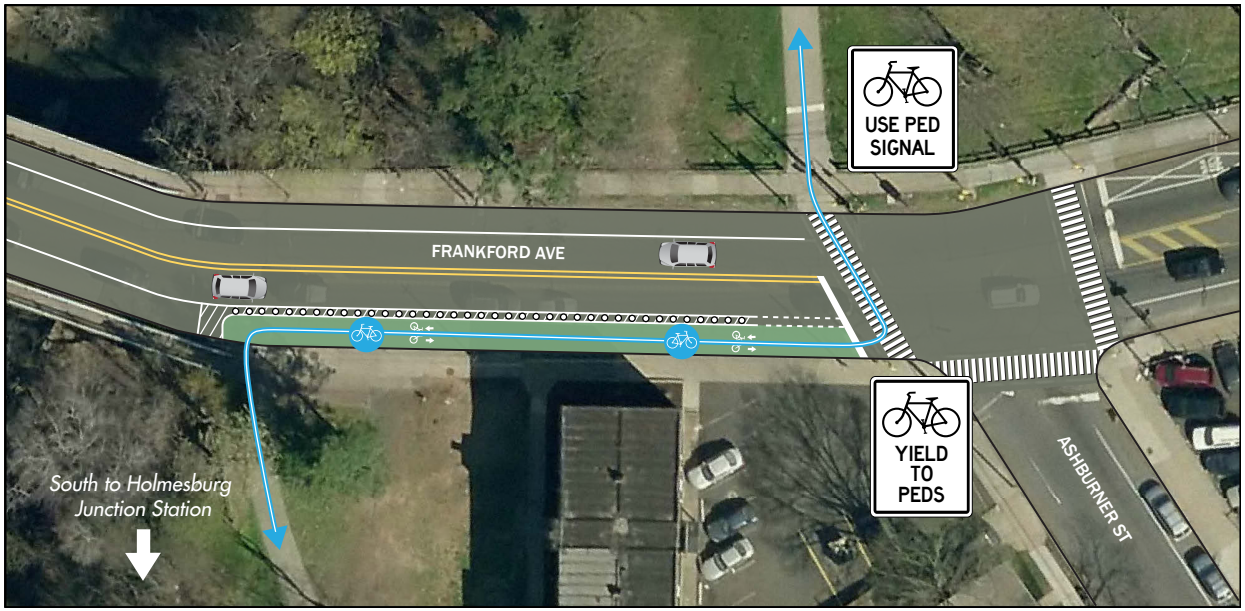
- Improve crossing of Ashburner Street by adding high-visibility crosswalk and countdown timer.
- Create a separated two-way cycle track on a portion of northbound Frankford Avenue by removing the striped center median and increasing the width of the northbound shoulder.
- Improve the curbing, paving and gateway signage at the southern entrance to the trail.

Considerations

A two-way bike lane is not a common feature in Philadelphia, and may face hurdles in implementation. This stretch of Frankford Avenue is recommended for a marked shared lane in the Philadelphia City Planning Commission's P*hiladelphia Pedestrian and Bicycle Plan*, which, if implemented, might create confusion alongside this two-way bike lane segment. Converting the shoulder into a bike lane would eliminate approximately seven on-street parking spaces; however, demand for on-street parking in this location appears to be very low.

This potential intervention could create a safe, legal, and continuous way to connect a gap on the Pennypack Trail, while also increasing awareness of the trail itself. Creating a high-visibility trail crossing with road markings and new signage will draw attention to the Pennypack Trail and encourage increased usage.

Figure 21: Frankford Avenue Trail Crossing



NOT TO SCALE

Source: DVRPC

FOCUS AREA

Pennypack Trail: Torresdale Avenue

Description

Another gap in the Pennypack Trail is found at the crossing of Torresdale Avenue, approximately one-third of a mile from the Holmesburg Junction station. At this location, there is a 500-foot gap between the two sections of the trail, which switches from the east to the west side of the Pennypack Creek as you travel south. Currently, there is no way for trail users (bike or pedestrian) to safely and legally make this connection to continue along the trail due to the absence of a crossing.

Potential Strategies

- Create a new midblock crosswalk at the southeastern entrance to the trail (see Figure 22).
- Option 1 creates a new two-way multi-use sidepath along the southbound side of Torresdale Avenue.
- Option 2 utilizes the existing bike lanes on Torresdale Avenue and creates a new signalized intersection and crosswalk at Enfield Avenue.

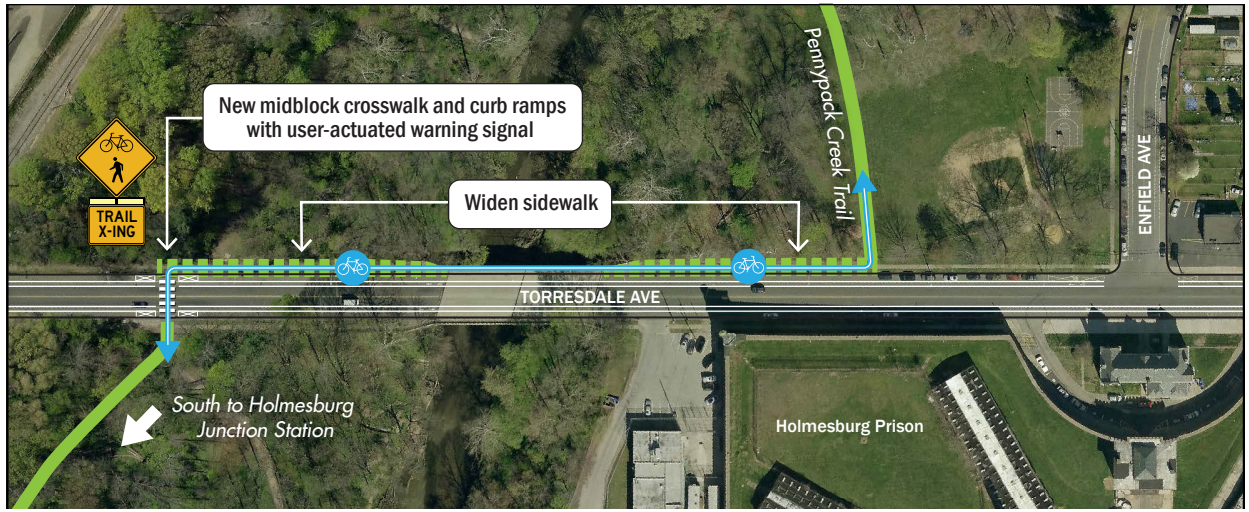
Considerations

Option 1 provides the most direct, intuitive crossing of Torresdale Avenue, although the width of a sidepath on the southbound side would be constrained by the existing width of the bridge. This option also creates a facility that partially duplicates the existing Torresdale Avenue bicycle lanes.

Option 2 utilizes existing roadway infrastructure and requires the addition of a traffic signal at Enfield Avenue. However, regardless of the trail crossing, a new signalized intersection at Enfield Avenue would serve the historic Holmesburg Prison facility, which is currently used as an office and training facility. The nearest signalized intersection is approximately 1,500 feet away at Ashburner Street.

Figure 22: Torresdale Avenue Trail Crossing

Option 1: Torresdale Avenue Sidepath



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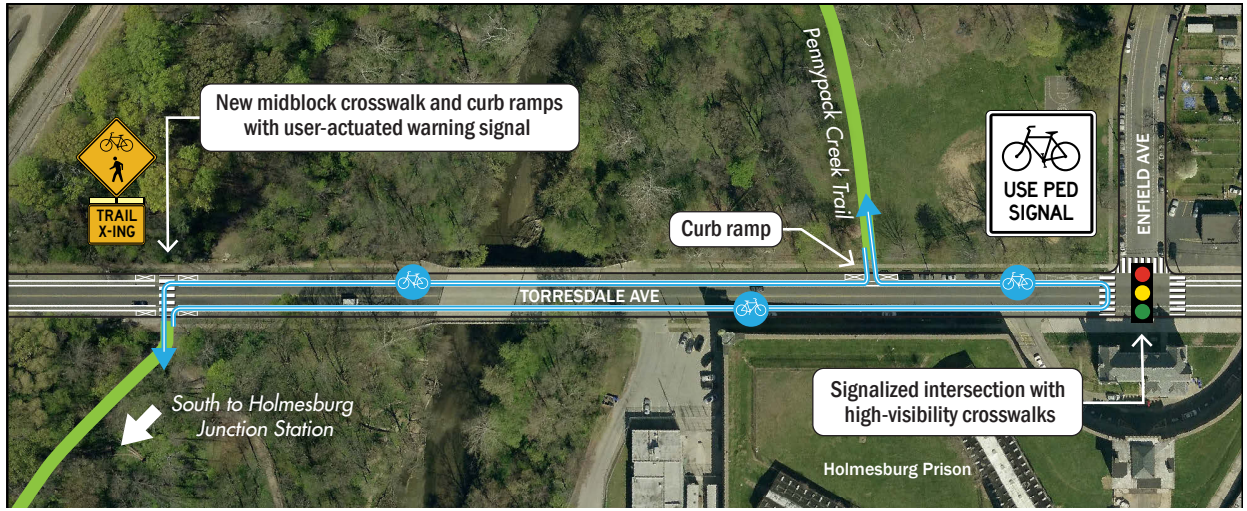
Option 2: Torresdale Avenue Bicycle Paths



NOT TO SCALE

Source: DVRPC

FOCUS AREA

Pennypack Trail: Rhawn Street and State Road

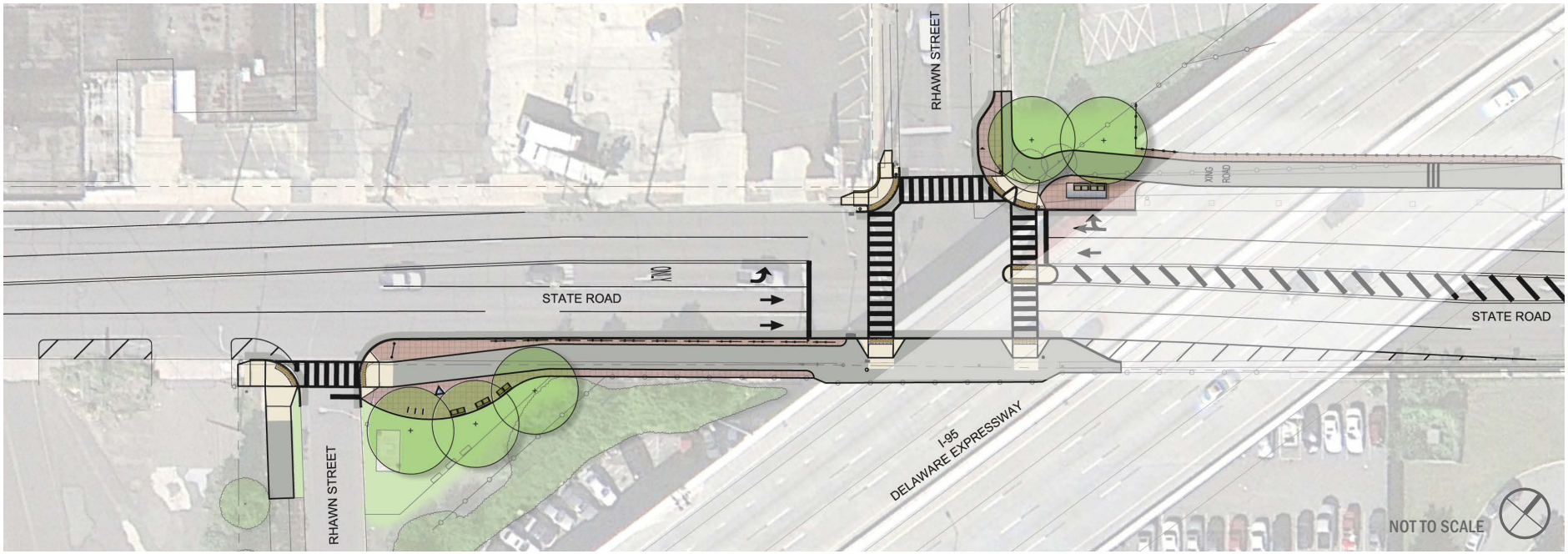
Several recent planning studies have highlighted the need for pedestrian and bicycle improvements at the intersection of State Road and Rhawn Street, a critical gap in the Pennypack Trail. In addition to being an important at-grade trail crossing, this heavily traveled intersection is one block from the Holmesburg Junction Station and adjacent to the entrance to Pennypack on the Delaware Park.

In order to continue from the Pennypack Trail on the west side of State Road to the entrance of the park on the east side of the street, trail users must cross five lanes of traffic. This crossing is complicated by I-95, which crosses the intersection diagonally on a viaduct creating shadows that create potential visibility issues for motorists. There are no pedestrian signals at this intersection.

A conceptual State and Rhawn Sidepath was identified as a high-priority project by the Philadelphia Trail Master Plan, and the Philadelphia City Planning Commission is currently working with a consultant team to develop preliminary design documents for this project (see Figure 23). To improve crossing conditions, the project would add pedestrian countdown signals, a high-visibility crosswalk on the south side of the intersection, and wayfinding signage. The east shoulder of State Road between Rhawn Street and the park entrance to the south will be expanded for shared use by cyclists and pedestrians.

This project, along with other potential improvements to Pennypack Trail crossings discussed earlier, can enhance nonmotorized circulation within the Holmesburg Junction station area and help turn the Pennypack Trail into a valuable commuter link to the station itself.

Figure 23: Conceptual State and Rhawn Sidepath



Source: Toole Design Group, Philadelphia City Planning Commission


PHILADELPHIA

STATION PROFILE

Location: Philadelphia, PA (Torresdale neighborhood)

Fare Zone: 3

Time to 30th St. Station: 23—32 minutes

Time to Trenton: 25—28 minutes

Weekday Inbound Boards (2013): 1,022

Non-SEPTA Parking: 331 spaces (daily, $1)

Bicycle Parking: 2 racks (4 bikes)

ADA Access: No

Connecting Service: Bus Routes 19, 84

CHAPTER 4

Torresdale

The Torresdale Station is located in the Torresdale neighborhood of Northeast Philadelphia, adjacent to the Bucks County border.

The station area is a mix of urban and suburban environments and primarily consists of residential, recreational, and institutional land uses. In addition to the Torresdale neighborhood, the station serves the adjacent Morrell Park neighborhood in Philadelphia and the Andalusia neighborhood of Bensalem. Residential areas north and west of the Trenton Line are comprised of single-family attached and detached homes, while multifamily developments are prevalent south and east of the station along State Road.

Holy Family University is located approximately one-third of a mile northwest of the station. The university campus, along with an elementary and high school, represents a large concentration of institutional uses on the land east of Grant Avenue and south of Frankford Avenue.

Fluehr Park, a 62-acre park that includes a trail and sports fields, sits just north of the station and can be accessed via Tulip Street and Convent Lane. The historic Glen Foerd mansion, part of the Philadelphia Parks and Recreation system, is located to the southeast of the station at the mouth of Poquessing Creek on the Delaware River. Sections of land adjacent to the Poquessing Creek are also publically owned parkland, although the trail network is incomplete.

Dedicated parking for the station totals 331 spaces spread over three lots, which are fully occupied on a typical weekday. On-street parking is available along James Street and limited sections of Grant Avenue. All passengers must use Grant Avenue at some point to reach the station. Riders must use stairs to access the northbound platform, while the southbound track can be accessed via a set of stairs from Grant Avenue or a sloping sidewalk that runs along the station driveway.

Approximately 74 percent of parking passengers are traveling less than three miles to reach the Torresdale Station. Better bicycle and pedestrian infrastructure may encourage some of these passengers to walk or bike to the station instead. The recommendations presented later in this chapter focus on improvements to Grant Avenue and portions of State Road south of the station.

Figure 24: Torresdale Station Area Context

The Torresdale Station is located adjacent to I-95 in an area primarily composed of residential, institutional, and open space uses. The Holy Family University campus is located east of Grant Avenue and south of Frankford Avenue. North of I-95, the study area also includes several residential blocks and Fluehr Park, a 62-acre park that includes a variety of trails and sports fields. A mix of older single-family homes and newer gated multifamily developments is located south of the station along State Road.

Parks/Recreation
1. Union League Golf Club at Torresdale
2. Fluehr Park
3. Poquessing Creek Trail

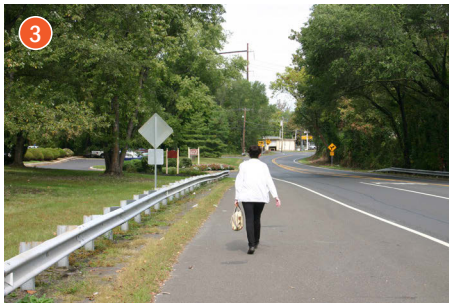
Civic
1. St. Katherine Grade School
2. Holy Family University
3. Nazareth Academy High School
4. Nazareth Academy Grade School
5. Glen Foerd at Torresdale
6. Aria Health Torresdale Campus

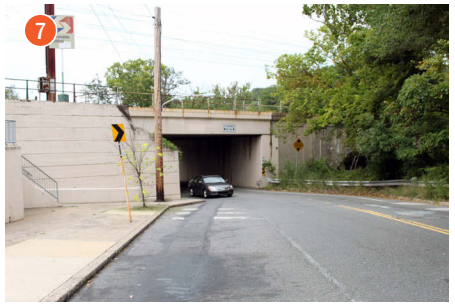
0 0.25 0.5 Miles

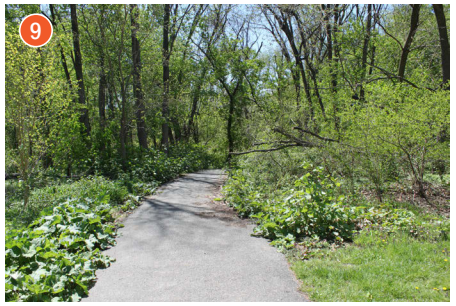
NORTH

Station Area Images

1. Grant Street passes under both I-95 and the Trenton Line rail corridor.
2. From Grant Avenue, passengers can reach the southbound platform via stairs or a sloping sidewalk.
3. No sidewalks existing on State Road east of Grant Avenue.
4. Grant Avenue is a two-lane road with wide shoulders.
5. No sidewalks exist on Grant Avenue south of the station.
6. Aerial view of the station area.
7. Routes 19 and 84 buses stop along Grant Avenue just south of the station.
8. The Grant Avenue sidewalk narrows as it passes below the Trenton Line overpass.
9. The Poquessing Creek Trail connects to a portion of Tulip Street on the Holy Family University campus.







Transit Network

Four SEPTA bus routes travel within one mile of the Torresdale Station: 19, 66, 70, and 84. Routes 19 and 84 stop directly at the station while Route 66 travels along Frankford Avenue, roughly one half-mile north of the station.

The Route 19 and Trenton Line schedules have a high degree of interconnectivity that helps to facilitate bus-to rail-transfers. Most or all of the morning and evening rush hour buses arrive within 15 minutes of a train serving Center City. The Route 84 bus schedule is less convenient for passengers wishing to transfer; most connections require waiting 20 minutes or more.

Pedestrian and Bicycle Access

Pedestrian and bicycle access to the Torresdale Station is limited because Grant Avenue, the station's primary access street, has an incomplete sidewalk network and lacks any facilities for bicycles. Nonmotorized access issues are summarized in Figure 26.

Pedestrian comfort along Grant Avenue is further constrained by the presence of three overpasses: one for the Trenton Line and one for each direction of I-95. Although these overpasses are in relatively good physical shape, inadequate lighting, vehicle speeds, and narrow sidewalks create an uncomfortable environment for walking, particularly under the Trenton Line where the road curves and sight distance is limited.

Further south, the lack of sidewalks along portions of State Road limits pedestrian access from many of the larger multifamily residential developments located along State Road.

One potentially underutilized asset is the Poquessing Creek Trail. This trail runs from Hegerman Street in the Morrell Park neighborhood through a wooded area to a section of Tulip Street on the Holy Family University. This trail represents an off-street connection for pedestrians and cyclists wishing to access the station from residential areas along Frankford Avenue/Bristol Pike.

Figure 25: Torresdale Transit Network

Figure 26: Torresdale Pedestrian and Bicycle Access

ISSUES AND OBSERVATIONS

1	Grant Avenue turns as it travels underneath the Trenton Line. Limited sight distances, excessive vehicle speeds, and a narrow sidewalk create uncomfortable conditions for pedestrians.
2	Bus stops for Routes 19 and 84 are located on Grant Avenue near James Street. There are no crosswalks linking the station to the northbound bus stops.
3	Pedestrian access is limited by the lack of sidewalks along Grant Avenue south of the station and a difficult crossing at the intersection of Grant Avenue and State Road.
4	A section of the Poquessing Creek Trail links nearby neighborhoods to the station via Tulip Street, a private road on the Holy Family University campus.
5	Daytime parking is restricted along most of Grant Avenue north of the station. Parking is permitted along a portion of the west side of Grant Avenue opposite the Nazareth Academy Grade School.
6	The lack of sidewalks and crosswalks at State Road and Old Bridge Road discourages pedestrian access to the station from the Salem Harbour development.

Bike Lane
State Bicycle Route
Multi-Use Trail
Critical Missing Sidewalk
Bicycle Parking
Station Area Issues and Observations
Crash Locations (2009–2013)
Pedestrian Crash

Station Area Opportunities

Table 2: Torresdale Potential Improvements

	LOCATION	DESCRIPTION	PRIORITY	COST *	ACTOR(S)	MORE INFO
Bicycle	1. Grant Avenue	Add north- and southbound bicycle lanes to Grant Avenue between Frankford Avenue and James Street.	HIGH	$$	PSD, PennDOT	
	2. Grant Avenue	Add northbound bicycle lane to Grant Avenue between James Street and State Road (cyclists traveling south can use James Street and Fitler Street to reach State Road).	HIGH	$	PSD, PennDOT	p. 45
	3. Linden Avenue	Add bicycle lanes to Linden Avenue between the I-95 overpass and State Road as identified in the *Philadelphia Pedestrian and Bicycle Plan.*	LOW	$	PSD, PennDOT	
	4. Various	Add shared lane markings (sharrows) to Frankford Avenue, Linden Avenue, Torresdale Avenue, and Hegerman Street as identified in Figure 27.	LOW	$	PSD, PennDOT	
	5. Parking Lots	Cover existing U racks near inbound platform. Add sheltered rack to oubound side in striped no-parking zone.	MED	$	SEPTA	
Pedestrian	6. Grant Avenue	Widen existing sidewalk and add new sidewalk to the west side of Grant Avenue adjacent to Fluehr Park.	MED	$	PSD	
	7. Grant Avenue	Install sidewalks on Grant Avenue between James Street and State Road.	HIGH	$	PSD	p. 44
	8. Grant Avenue	Install high-visibility crosswalks in two locations on Grant Avenue: north of the station, near Eden Hall Lane; and south of the station at James Street.	HIGH	$	PSD	
	9. Grant Avenue and State Road	Restripe crosswalks at the intersection of Grant Avenue and State Road.	HIGH	$	PSD	p. 44
	10. State Road	Install sidewalks on north side of State Road between Fitler Street and Grant Avenue and on the south side of State Road between River's Edge Nursing Center and Grant Avenue.	HIGH	$$	PSD	p. 44
	11. State Road	Install sidewalks on State Road between Grant Avenue and the Gate House apartments/Old Bridge Road. Install crosswalk on Old Bridge Road at State Road.	MED	$$	BEN	
	12. Grant Avenue	Improve pedestrian experience under the Trenton Line bridge by adding lighting and installing a pedestrian barrier along the Grant Avenue sidewalk.	MED	$$	AMTRAK, SEPTA	
Shared-Use	13. Lower Poquessing Creek	Formalize nonmotorized access to the Tulip Street right-of-way between Stevenson Street and Grant Avenue by adding signage and removing chains.	MED	$	HFU, PERT, PSD	
	14. Bensalem Riverfront Trail	Continue study and design of future phases of the Bensalem Greenway along State Road linking the Cornwells Heights Station to the Philadelphia border.	MED	$$$	ECG, PEC, BEN	

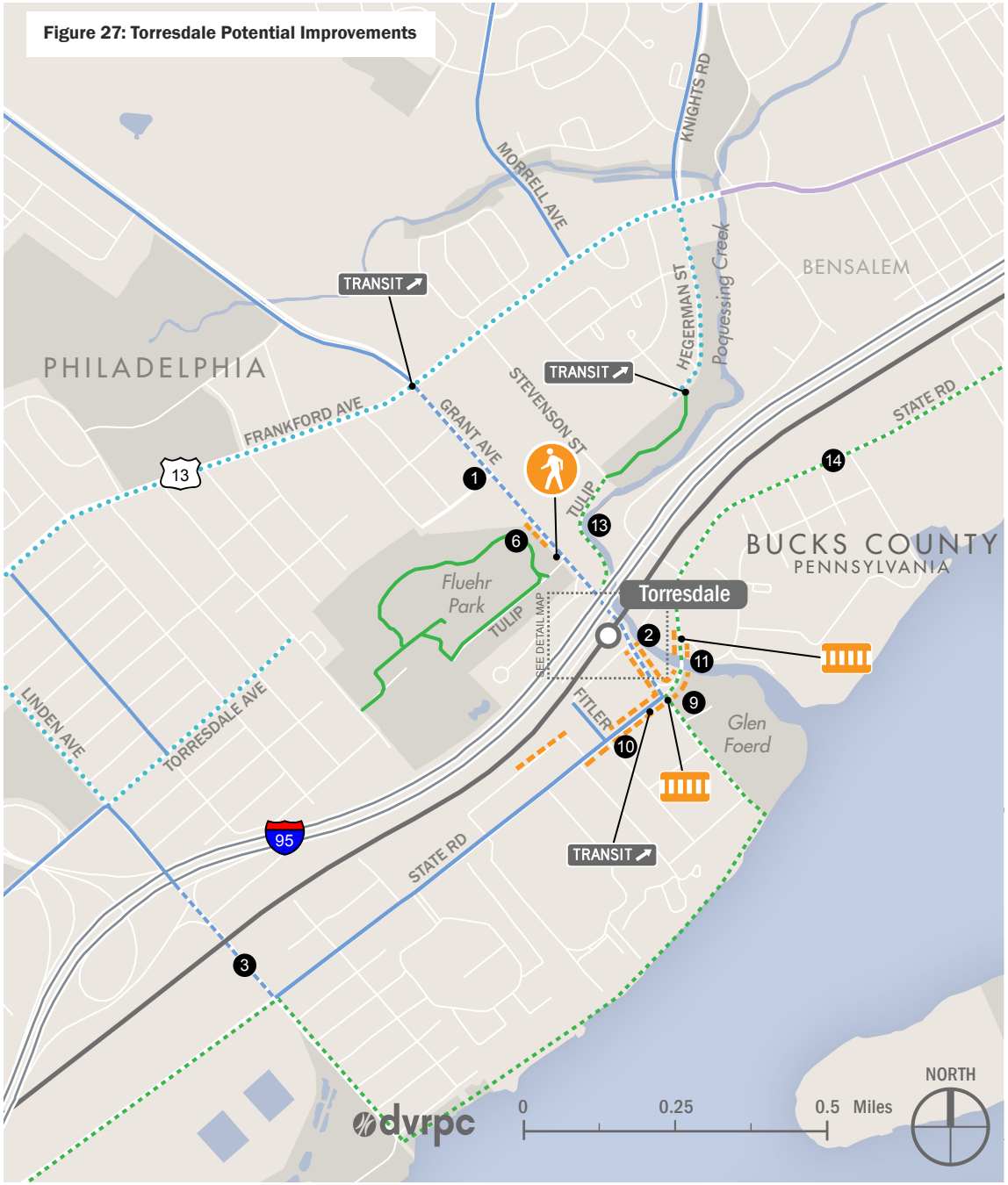
Approximate Cost Ranges
$: Less than $50,000
$$: $50,000 to $250,000
$$$: More than $250,000

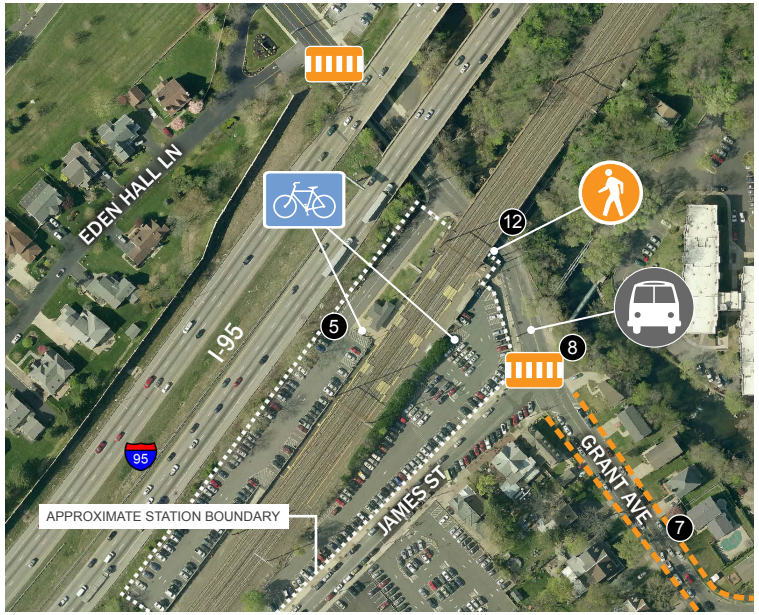
Actors
BEN: Bensalem Township
ECG: East Coast Greenway
HFU: Holy Family University
PEC: Pennsylvania Environmental Council
PERT: Pennypack Ecological Restoration Trust
PSD: Philadelphia Streets Department

** All cost ranges generated using average cost estimates documented in* Costs for Pedestrian and Bicyclist Infrastructure Improvements *by the UNC Highway Safety Research Center. Actual costs of implementation may vary significantly based on local conditions.*

Source: DVRPC

Figure 27: Torresdale Potential Improvements





Existing Bicycle and Multi-Use Facilties

- Bike Lane
- Multi-Use Trail
- State Bicycle Route

Recommended Pedestrian and Bicycle Improvements

- New Bike Lane
- New Marked Shared Lane
- New Multi-Use Trail
- New Sidewalk
- Station Area Opportunity *(See Table 2)*
- Pedestrian Intersection Improvement
- Pedestrian Spot Improvement
- New/Enhanced Bicycle Parking

Other Opportunities

- Wayfinding Signage
- Bus Stop Realignment

FOCUS AREA

South Side Pedestrian Access

Description

Pedestrian access from the residential areas south and southeast of the station is significantly limited by the lack of sidewalks and crosswalks on Grant Avenue and State Road. In particular, two multifamily apartment complexes (Gate House and Salem Harbour) are located less than a half-mile from the station yet have no safe, continuous pedestrian route to the station.

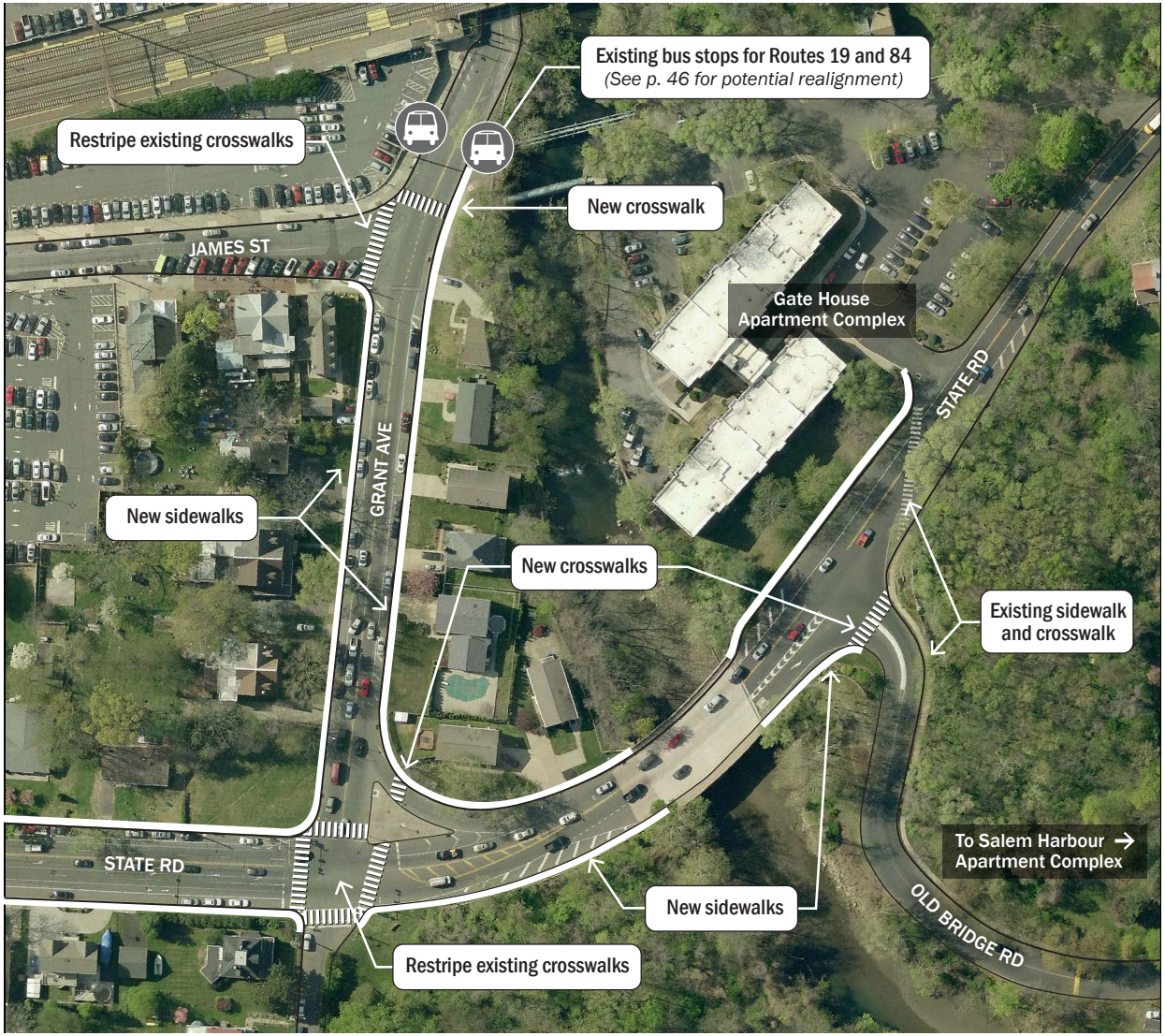
Potential Strategies

- Add sidewalks to Grant Avenue and State Road as illustrated in Figure 28. Sidewalks already exist on the State Street bridge over the Poquessing Creek.
- Improve pedestrian safety by restriping the crosswalks at the intersection of State Road and Grant Avenue and across James Street at Grant Avenue.
- Add new crosswalks to Old Bridge Road at State Road, the State Road slip lane to Grant Avenue, and to Grant Avenue at James Street. The Grant Avenue crosswalk can also be used by passengers coming to or from the northbound Grant Avenue bus stop.

Considerations

Installing sidewalks on Grant Avenue will require close coordination with the existing homeowners. This portion of State Road is envisioned as an eventual segment of the Bensalem Greenway. Two alignments for this trail have been proposed. The first option maintains an off-road alignment by routing the trail behind the Gate House apartments and reaching Grant Avenue via a new bridge that crosses the Poquessing Creek. The second option uses on-street bicycle lanes that would connect to the existing bicycle lanes on State Road west of Grant Avenue.

Figure 28: Grant Avenue and State Road Pedestrian Improvements



Source: DVRPC

FOCUS AREA

Grant Avenue Bicycle Facilities

Description

All cyclists wishing to access the Torresdale Station must travel on Grant Avenue at some point in their journey. They can already use existing bicycle lanes on Grant Avenue (north of Frankford) and State Road (west of Grant Avenue). However, no dedicated facilities exist on Grant Avenue between Frankford Avenue and State Road. This segment of Grant Avenue is composed of one travel lane in each direction with wide shoulders that may be used for parking at certain times of the day (primarily after 4 PM). Only a small section of Grant Avenue (identified in Figure 29), across from the Nazareth Academy Grade School, allows unrestricted parking.

Grant Avenue was identified for future bicycle lanes in the *Philadelphia Pedestrian and Bicycle Plan* due to its proximity to the station, width, and the relatively low number of parked cars that would be displaced. Grant Avenue bicycle lanes would significantly enhance the bicycle network in the station area by connecting existing and proposed bike facilities, including the proposed marked shared lanes on Frankford Avenue.

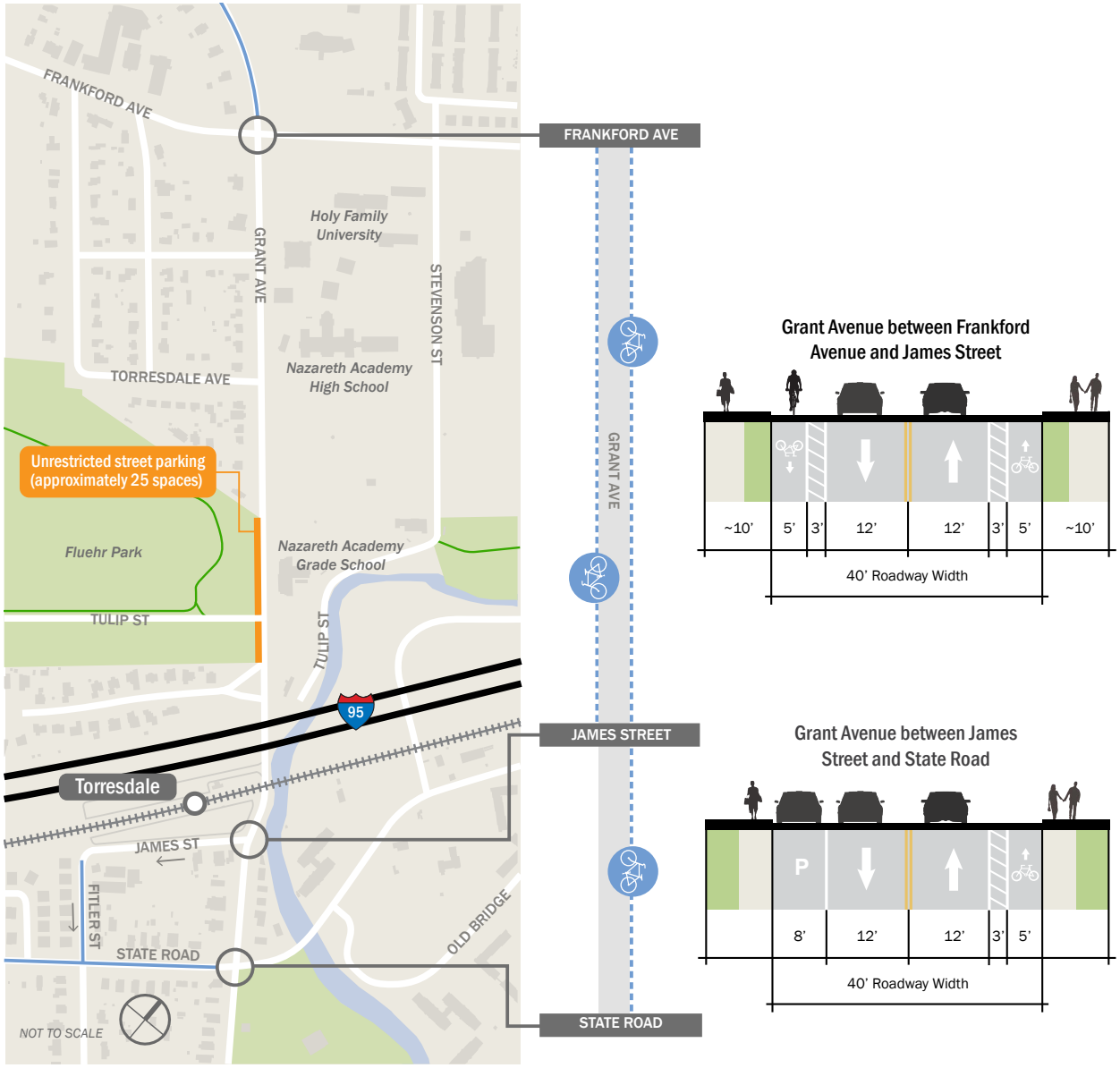
Potential Strategies

- Add north- and southbound bicycle lanes to Grant Avenue between Frankford Avenue and James Street.
- Add a northbound bicycle lane to Grant Avenue between State Road and James Street.

Considerations

Bike lanes on Grant Avenue will eliminate approximately 25 unrestricted, on-street parking spaces. The daytime use of these parking spaces appears to be related to the Nazareth Academy Grade and High schools.

Figure 29: Grant Avenue Bicycle Facilities



Source: DVRPC

Although north- and southbound bicycle lanes are recommended for Grant Avenue north of James Street, a single northbound lane may be most appropriate for Grant Avenue between James Street and State Road (see Figure 29).

A northbound bicycle lane would connect cyclists to the station from State Road while preserving some on-street parking for nearby residences. Pavement and signage can encourage cyclists traveling south from the station to travel west on James Street, a bicycle-friendly one-way street, before using the existing bicycle lanes on Fitler Street.

FOCUS AREA

Grant Avenue and James Street Intersection

The intersection of James Street and Grant Avenue is a conflict point for motorists and pedestrians, some of whom may be getting on or off Route 84 or 19 buses. The combination of high traffic speeds and poor visibility make crossing the street challenging and potentially unsafe.

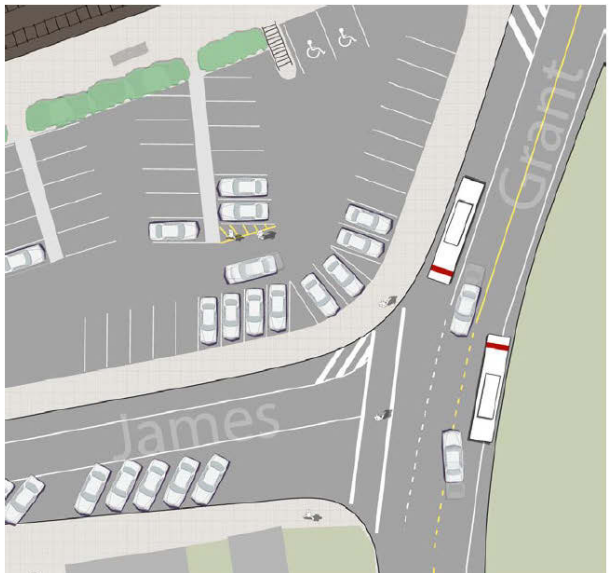
The 2008 *North Delaware Riverfront Rail Stations Urban Design Study* by Interface Studio, LLC, identified several improvements for the intersection of James Street and Grant Avenue. Illustrated in Figure 30, these improvements are designed to create a better balance between traffic demands and pedestrian movements.

Potential improvements include:

- installing a two-way stop sign control on Grant Avenue and James Street to decrease the speed of turning movements and change the character of the intersection;
- adding a crosswalk to Grant Avenue at this location;

Figure 30: Grant Avenue and James Street Intersection Improvements

Existing Conditions



Potential Improvements

Source: Interface Studio, LLC North Delaware Riverfront Rail Station Urban Design Study

- adding bulb-outs to the southwest and southeast corners of James Street to slow turning movements and shorten pedestrian crossings; and
- formalizing bus parking areas for Routes 19 and 84 with consideration for sight distance and safe waiting areas.

Any reconfiguration of the intersection that involves bus pullouts will need to consider the impact of potential transit delays to Routes 84 and 19. In addition, any modifications to bus stop locations should conform to SEPTA bus stop design guidelines.


Cornwells
Heights
Station
CLEARANCE
13ft 2in
ROADWAY
SUBJECT TO
FLOODING
6
5
4
3
2
1

STATION PROFILE

Location: Bensalem, PA

Fare Zone: 3

Time to 30th St. Station: 28—34 minutes

Time to Trenton: 22—26 minutes

Weekday Inbound Boards (2013): 1,608

SEPTA Parking: 329 spaces (daily, $1)

Non-SEPTA Parking: 1,600 spaces

Bicycle Parking: 2 racks (4 bikes)

ADA Access: Yes

Connecting Service: Bus Routes 78, 133

CHAPTER 5

Cornwells Heights

The Cornwells Heights station is a major park-and-ride facility for the Trenton Line located off the Woodhaven Road exit of I-95 in Bensalem. In addition to serving the SEPTA Trenton Line, the Cornwells Heights station also serves Amtrak's Keystone and Northeast Corridor routes.

The Cornwells Heights community of Bensalem straddles both sides of the Trenton Line. The station itself is situated in a suburban environment that includes single-family detached homes, apartment complexes, and industrial parks. Two major shopping centers, the Woodhaven Mall Shopping Center and the Franklin Mills Mall, are located northwest of the station, but have little connection to the transit line. The historic Pen Ryn Manor, now functioning as a catering facility, is located approximately three-quarters of a mile south of the station along the Delaware Riverfront.

At 1,929 spaces, the Cornwells Heights parking lot is the largest in the SEPTA system. The station's parking area is so large that a shuttle is available to transport passengers between the parking areas and the platforms. Cornwells Heights is the only study corridor station with excess parking capacity. A 2013 license plate survey showed the station's parking lots at 64 percent occupied. More recent observations suggest that parking demand is increasing at the station as construction activity along I-95 increases.

The station's excellent highway access and large parking capacity suggest that it may absorb a large number of new riders over the next several years. SEPTA has conducted a preliminary investigation into adding a parking garage at this station. One scenario suggests that a four-story garage located on the existing parking lot could accommodate 1,390 cars, resulting in a total increase of 988 spaces.

Despite the park-and-ride character of Cornwells Heights, pedestrian and bicycle access can play an important role in the station's future. Currently three percent of parking passengers are traveling less than one mile to the station, but this number may significantly increase as new development occurs in the station area.

While many drivers travel to the station via I-95, local access is provided exclusively by Station Avenue. However, sidewalks along Station Avenue are often inadequate or missing, and no bicycle facility exists on the street. Furthermore, large portions of State Road and Bristol Pike leading to Station Avenue lack sidewalks.

Figure 31: Cornwells Heights Station Area Context

Cornwells Heights is a large park-and-ride facility with direct access from I-95 and Woodhaven Road. As such, the station does not have much of a relationship with the surrounding area. South of the tracks, the station area is comprised of warehouse and industrial uses west of Station Avenue and a mix of multifamily and single-family residences to the east of Station Avenue. An established neighborhood of single-family homes and the Saint Katharine Drexel Mission Center and Shrine are located north of I-95.

Commercial
1. Woodhaven Mall Shopping Center
2. Philadelphia Mills Mall
3. Woodhaven Industrial Park
4. Liberty Bell Industrial Park

Civic
1. Saint Katherine Drexel Shrine
2. Holy Ghost Prep School
3. Pen Ryn Estate

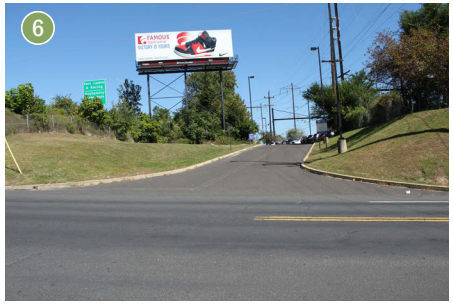
Development Sites
1. Waterfront Community

0 0.25 0.5 Miles

NORTH

Station Area Images

1. Stairways to each platform are connected via an elevated sidewalk on the west side of Station Avenue.
2. The Cornwells Station apartment complex is located a short distance from the station but no sidewalks or crosswalks connect the development to the station.
3. Station Avenue is a two-lane road with no on-street parking.
4. Walking south on Station Avenue toward State Road can be challenging due to large curb cuts and the lack of sidewalks.
5. Aerial view of the station area.
6. Drivers enter the primary parking lot from Station Avenue.
7. Waterfront is a large residential development being constructed on State Road southeast of the station.
8. The inbound platform is located approximately 700 feet from the Station Avenue entrance.
9. The poor condition of the Trenton Line overpass negatively impacts the pedestrian environment of the station.



Transit Network

Four SEPTA buses travel within one mile of the Cornwells Heights Station; however, only one route, the 133, has a direct connection with the station (see Figure 32). Route 78 offers three express trips between 5:00 and 6:00 AM and two reverse trips after midnight each weekday. Routes 129 and 130 both utilize Woodhaven Road and Bristol Pike within the station area.

Route 133 runs along Bristol Pike, Station Avenue, and State Road, potentially facilitating bus-to-rail transfers. The route offers four northbound runs between 6:30 AM and 10:00 AM, and four southbound runs in the afternoon. In the morning, half of the buses serve the station within 15 minutes of an inbound train. During the afternoon, only one of the four buses stops at the station within 15 minutes of an outbound train.

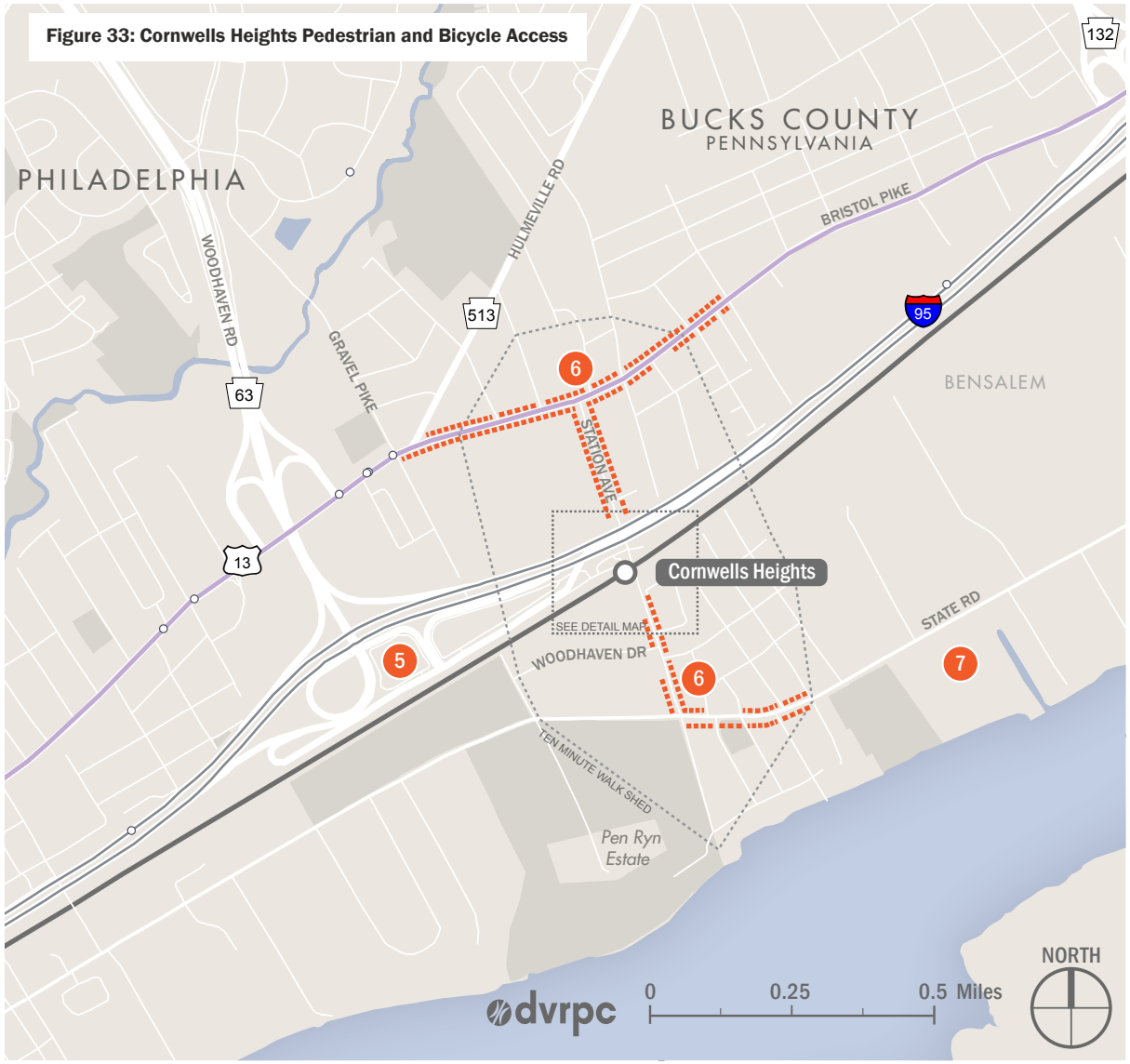
Pedestrian and Bicycle Access

The area surrounding the Cornwells Heights station is auto-oriented, and most streets lack sidewalks. There are no bike lanes in the area, although Bristol Pike is a designated state bike route. State Road is identified for future use as part of the multi-use Bensalem Greenway, although currently it does not contain any bicycle infrastructure. Nonmotorized access issues are summarized in Figure 33.

The pedestrian environment of the station is further degraded by the poor condition and inadequate lighting of the Trenton Line and I-95 overpasses. A large population of potential transit users is located in the Cornwells Station apartment complex on the east side of Station Avenue, southeast of the station. However, station access for even these proximate residents is compromised by the lack of sidewalk on the east side of State Road and the lack of a safe crossing location.

Figure 32: Cornwells Heights Transit Network

Figure 33: Cornwells Heights Pedestrian and Bicycle Access



State Bicycle Route

Critical Missing Sidewalk

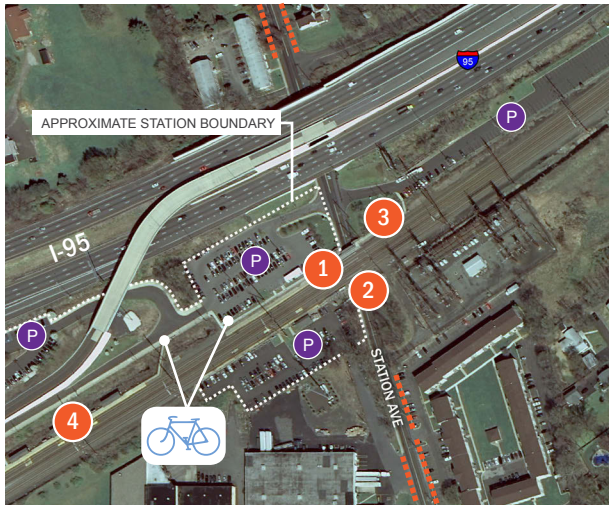
Bicycle Parking

Station Area Issues and Observations

Commuter Parking Lot

Crash Locations (2009-2013)

Pedestrian Crash



ISSUES AND OBSERVATIONS

1	Stairways connect each platform to Station Avenue, limiting ADA access.
2	An elevated sidewalk is located on the west side of Station Avenue, allowing pedestrians to travel between the inbound and outbound platforms. However, walking under the Trenton Line bridge is unpleasant due to inadequate lighting and the poor condition of the walls and overpass.
3	An elevated walkway on the Trenton Line bridge connects this parking area to the station.
4	The inbound platforms are located approximately 700 feet from the Station Avenue stairway entrance.
5	Due to the size of the primary parking lots, SEPTA operates an internal shuttle system to link parkers to the station.
6	Pedestrian access throughout the station area is hampered by the lack of sidewalks on Bristol Pike, Station Avenue, and State Road.
7	The first phase of the Waterside development is being sold. Without improvements to State Road and Station Avenue, pedestrian access to the station will be extremely limited.

Station Area Opportunities

Table 3: Cornwells Heights Potential Improvements

	LOCATION	DESCRIPTION	PRIORITY	COST *	ACTOR(S)	MORE INFO
Bicycle	1. Station Avenue	Add shared lane markings (sharrows) to Station Avenue between Bristol Pike and the station.	MED	$	BEN, BUCKS, PennDOT	
	2. Station Avenue	Add bicycle lanes to Station Avenue between the station and State Road.	HIGH	$$	BEN, BUCKS, PennDOT	p. 56
	3. Parking Lots	Cover existing U racks on inbound side. Add sheltered racks to the outbound side in the striped area near the parking kiosk.	MED	$	SEPTA	
Pedestrian	4. Station Avenue	Complete sidewalk network along Station Avenue between Bristol Pike and State Road.	HIGH	$$	BEN, BUCKS	p. 56
	5. South Side Parking Lot	Create sidewalk ramp leading from the Station Avenue sidewalk to the outbound platform.	MED	$	BEN, BUCKS, SEPTA	p. 56
	6. Station Avenue Underpass	Conduct structural assessment of bridge, clean and repair wall surfaces, and improve lighting.	HIGH	variable	AMTRAK, SEPTA	
	7. Station Avenue	Install high-visibility crosswalk across Station Avenue near the entrance to the Cornwells Station Apartments.	HIGH	$	BEN, BUCKS, PennDOT	
Multi-Use	8. State Road	Continue design and implementation of the Bensalem Greenway along State Road (due to expected development, priority should be given to the portion of the trail between Camer Drive and Station Avenue).	MED	$$$	EGC, PEC, BEN	p. 57

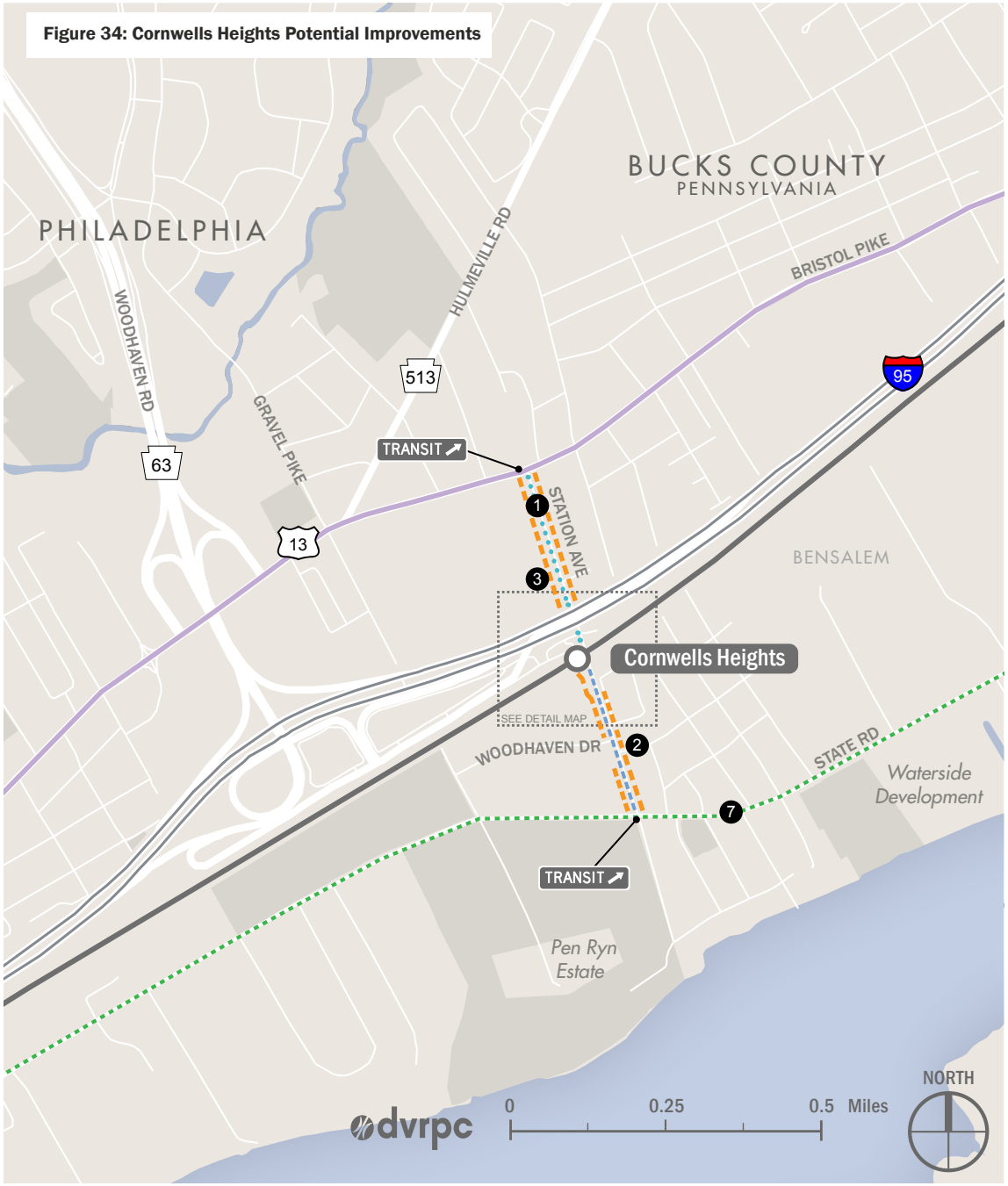
Approximate Cost Ranges
$: Less than $50,000
$$: $50,000 to $250,000
$$$: More than $250,000

Actors
BEN: Bensalem Township
BUCKS: Bucks County
ECG: East Coast Greenway
PEC: Pennsylvania Environmental Council

** All cost ranges generated using average cost estimates documented in* Costs for Pedestrian and Bicyclist Infrastructure Improvements *by the UNC Highway Safety Research Center. Actual costs of implementation may vary significantly based on local conditions.*

Source: DVRPC

Figure 34: Cornwells Heights Potential Improvements



Existing Bicycle and Multi-Use Facilties

State Bicycle Route

Recommended Pedestrian and Bicycle Improvements

- New Bike Lane
- New Marked Shared Lane
- New Multi-Use Trail
- New Sidewalk
- # Station Area Opportunity *(See Table 3)*
- Pedestrian Intersection Improvement
- Pedestrian Spot Improvement
- New/Enhanced Bicycle Parking

Other Opportunities

TRANSIT Wayfinding Signage

FOCUS AREA

Station Avenue

Description

All nonmotorized users wishing to access the Cornwells Heights Station must travel on Station Avenue. However, discontinuous sidewalks and the absence of bicycle facilities make biking or walking on Station Avenue difficult and potentially unsafe. Although safety and connectivity improvements are recommended for Station Avenue between Bristol Pike and State Road, township officials have indicated that priority should be given to improvements along the southern portion of the roadway (see Figure 35). These improvements, in coordination with the proposed Bensalem Greenway, have been prioritized because of the role they can play in providing access to the station from current and future redevelopment projects.

Bensalem Township is presently completing master planning tasks that will lay the groundwork for the redevelopment of a large portion of the township east of I-95, from just north of Street Road to just south of Station Avenue. This 675-acre area includes both the Cornwells Heights and Eddington Regional Rail stations and currently consists largely of underutilized low-density industrial uses. The township envisions this area as a mix of transit-supportive uses that capitalize on the existing transit infrastructure, highway access, waterfront location, and planned trail network. Construction has begun on Waterside, a large mixed-use development located on State Road, less than a mile from the Cornwells Heights Station. This 41-acre development may include as many as 600 residential units, as well as restaurant, retail, and office space.

Potential Strategies

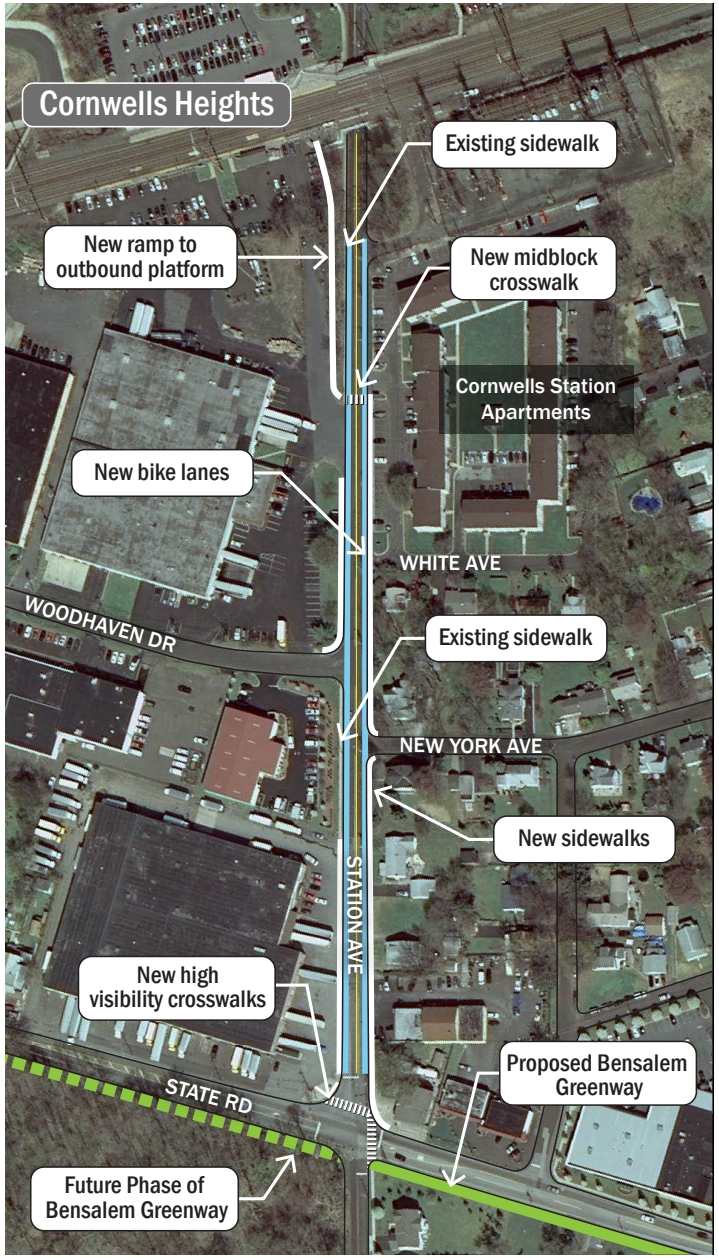
- Add sidewalks to both sides of Station Avenue as illustrated in Figure 35.
- Add high-visibility crosswalks to the intersection of Station Avenue and State Road, as well as a new midblock crosswalk near the entrance to the Cornwells Station Apartments.
- Install bicycle lanes on Station Avenue from just south of the Trenton Line overpass to State Road.
- Install an ADA-compliant sidewalk and ramp linking Station Avenue to the outbound platform. This path can travel along the eastern edge south side parking lot.

Considerations

Parking is not permitted on any part of Station Avenue between Bristol Pike and State Road, so any new bicycle facilities will not impact the local parking supply.

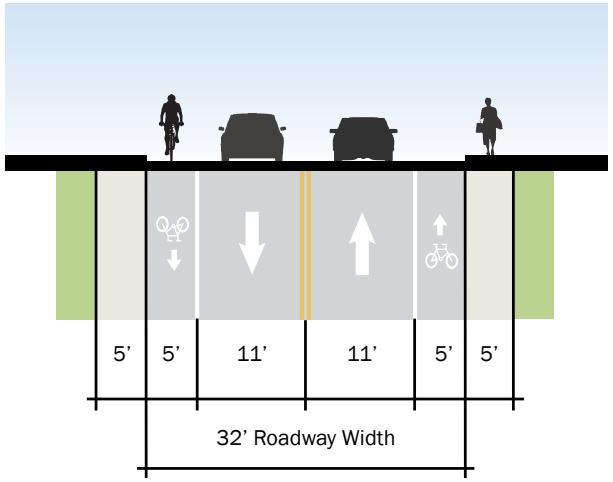
Constructing bicycle lanes and new sidewalks on this stretch of Station Avenue will require widening the roadway and adding new curbs. Based on recorded plans for the corridor, much of the required right-of-way appears to be already legally designated. In some locations, vegetation will need to be removed and retaining walls will need to be constructed due to the grade changes of adjacent properties.

Figure 35: Station Avenue South Improvements



Source: DVRPC

Figure 36: Station Avenue Proposed Cross-Section



Source: DVRPC

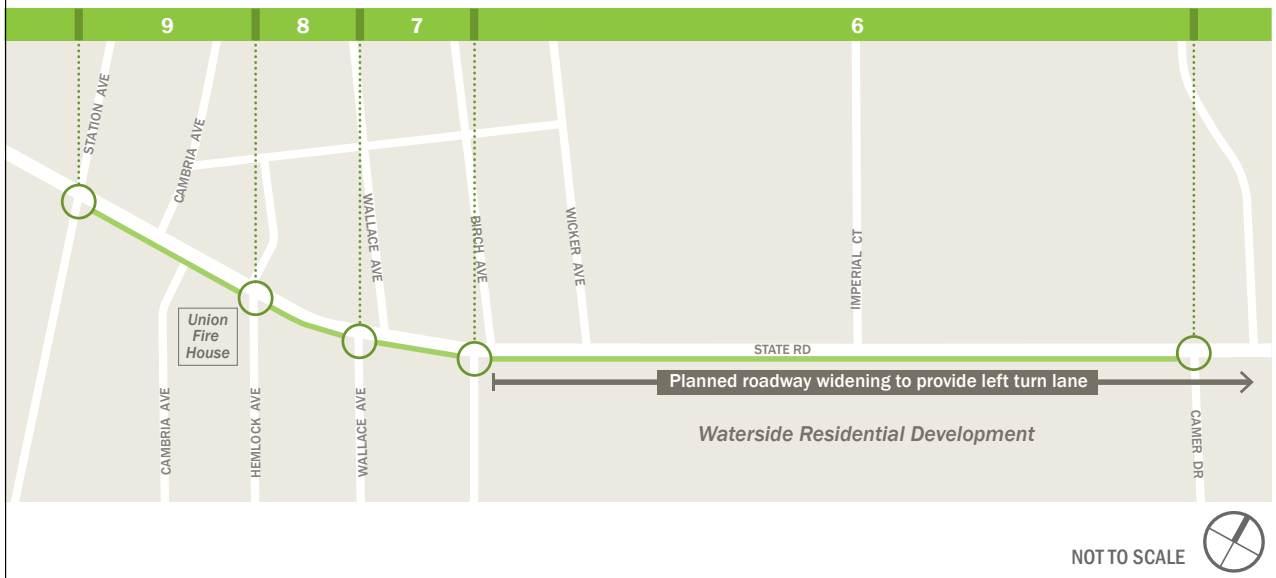
FOCUS AREA

State Road/Bensalem Greenway

The Bensalem Greenway is a proposed multi-use trail that will stretch from the township boundary with Philadelphia at Poquessing Creek to the entrance to Neshaminy State Park. Part of the larger East Coast Greenway, this trail is believed to require relatively low construction costs due to its alignment along State Road, a public right-of-way. The proposed trail has been divided into 17 individual segments, and the Bensalem Greenway Master Plan, completed in September 2012, describes potential alignments and considerations for each segment.

Bensalem Township has prioritized sections six through nine (see Figure 37) of the Bensalem Greenway because this section of the trail can serve as a critical nonmotorized link between ongoing residential development along the waterfront and the Cornwells Heights Station. In general, in this location, the greenway will be a bidirectional multi-use path along the southern side of State Road. Figure 37 includes a brief description of segments six through nine.

Figure 37: Bensalem Greenway Segments



Source: DVRPC using information fromt the Bensalem Greenway Master Plan, 2012

Segment 6: Camer Drive to Birch Avenue (Waterside)
This segment of the trail will cross the frontage of Waterside, a residential development being built on the south side of State Street. Prior to the development of the site, the trail can be located within the sewer easement. Once the site is developed, the expectation is for the developer to incorporate the trail into the landscaping of the front yard buffer.

Segment 7: Birch Avenue to Wallace Avenue
South of Waterside, the trail is proposed to continue within the 30-foot sewer easement.

Segment 8: Wallace Avenue to Hemlock Avenue
Within this segment, the trail passes in front of four single-family homes. Here, the trail is proposed to be located within the street right-of-way, which will require the roadway to shift slightly to the west.

Segment 9: Hemlock Avenue to Station Avenue
Between the Union Fire House and Station Avenue, an off-road alignment outside the current right-of-way is proposed for the trail. This will require securing an easement in front of the fire station property.


NOT
ENTER
Croydon

STATION PROFILE

Location: Bristol Township, PA

Fare Zone: 3

Time to 30th St. Station: 32—35 minutes

Time to Trenton: 17—21 minutes

Weekday Inbound Boards (2013): 343

SEPTA Parking: 197 spaces (daily, $1)

Bicycle Parking: 3 racks (6 bikes)

ADA Access: Yes

Connecting Service: Bus Route 128

CHAPTER 6

Croydon

Located on Bristol Pike, in the Cryodon commercial district of Bristol Township, the Croydon station has recently undergone a major renovation. Completed in the fall of 2011, the renovated station includes high-level platforms, fully accessible ramps, expanded parking, and a new underpass walkway.

The station primarily serves residents of the surrounding neighborhoods of Bristol and Bensalem, as well as employees of nearby commercial and industrial properties. In this area, Bristol Pike is lined with a variety of retail establishments, as well as an apartment complex.

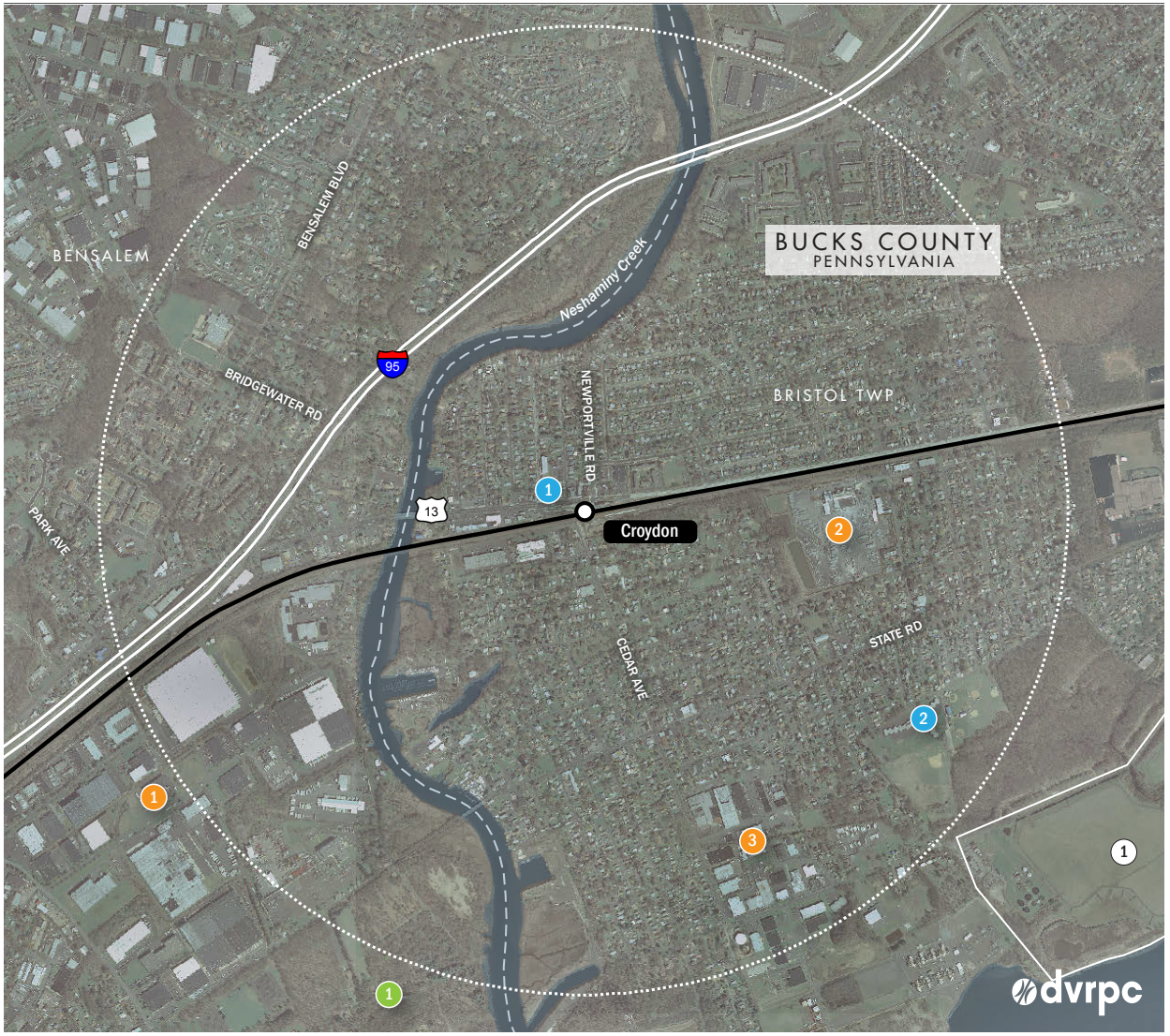
The neighborhoods on either side of Bristol Pike are largely made up of single-family detached homes. Some small-scale industrial uses are located to the southwest of the station, and a large concrete facility is located to the east of the station. Other industrial sites are located between State Road and the Delaware Riverfront, and a large industrial park is located across the Neshaminy Creek in Bensalem.

Neshaminy Creek runs north to south through the station area and is located just over one quarter of a mile from the station along Bristol Pike. Following the creek south leads to Neshaminy State Park, a 330-acre park on the Delaware Riverfront. A trail along the west side of the creek has been proposed, but nonmotorized connections between the station and the park are extremely limited due to the incomplete sidewalk network and the lack of bicycle facilities.

With less than 400 daily riders, the Croydon Station has the lowest ridership of any station profiled in this study. The station's 197-space parking lot is fully occupied on a typical weekday, and long-term parking is generally not available on adjacent streets. These parking constraints and the station's proximity to medium-density neighborhoods make the station a good candidate for improved bicycle and pedestrian infrastructure. Although the neighborhoods on each side of the station have an interconnected street network, the lack of sidewalks discourages pedestrian mobility, particularly south of the station.

Figure 38: Croydon Station Area Context

Recently renovated, the Croydon Station is located directly on Bristol Pike in Croydon's commercial center. In this area, Bristol Pike is lined with a variety of commercial and retail establishments, as well as an apartment complex. The neighborhoods on either side of Bristol Pike are largely composed of single-family detached homes.



Commercial
1. Expressway Industrial Park
2. Cayuga Concrete Pipe Company
3. Croydon Industrial Park

Parks/Recreation
1. Neshaminy State Park

Civic
1. St. Thomas Aquinas Church
2. Devine Elementary School

Redevelopment Sites
1. Rohm and Haas Site

0 0.25 0.5 Miles

NORTH

Source: DVRPC

Station Area Images

1. Recent renovations improved station access by adding sidewalks and ramps along Cedar Avenue.
2. South of the station, Cedar Avenue lacks consistent sidewalks.
3. The station faces a number of businesses along Bristol Pike in Croydon's commercial district.
4. The intersection of Cedar Avenue and State Road is challenging for pedestrians and cyclists due to large curb cuts.
5. Aerial view of the station area.
6. Cyclist riding on the shoulder of State Road.
7. Newportville Road connects the station to residential areas to the north.
8. The renovated station includes an expanded parking area on the south side.
9. The State Road bridge connects the station area to the Neshaminy State Park but is difficult for pedestrians and cyclists to navigate.

Transit Network

Facilities for SEPTA Route 128, which runs along State Road, Cedar Avenue, and Bristol Pike in the study area, are integrated into the renovated Croydon Station. This route connects the Neshaminy and Oxford Valley malls and helps to facilitate bus-to-rail transfers.

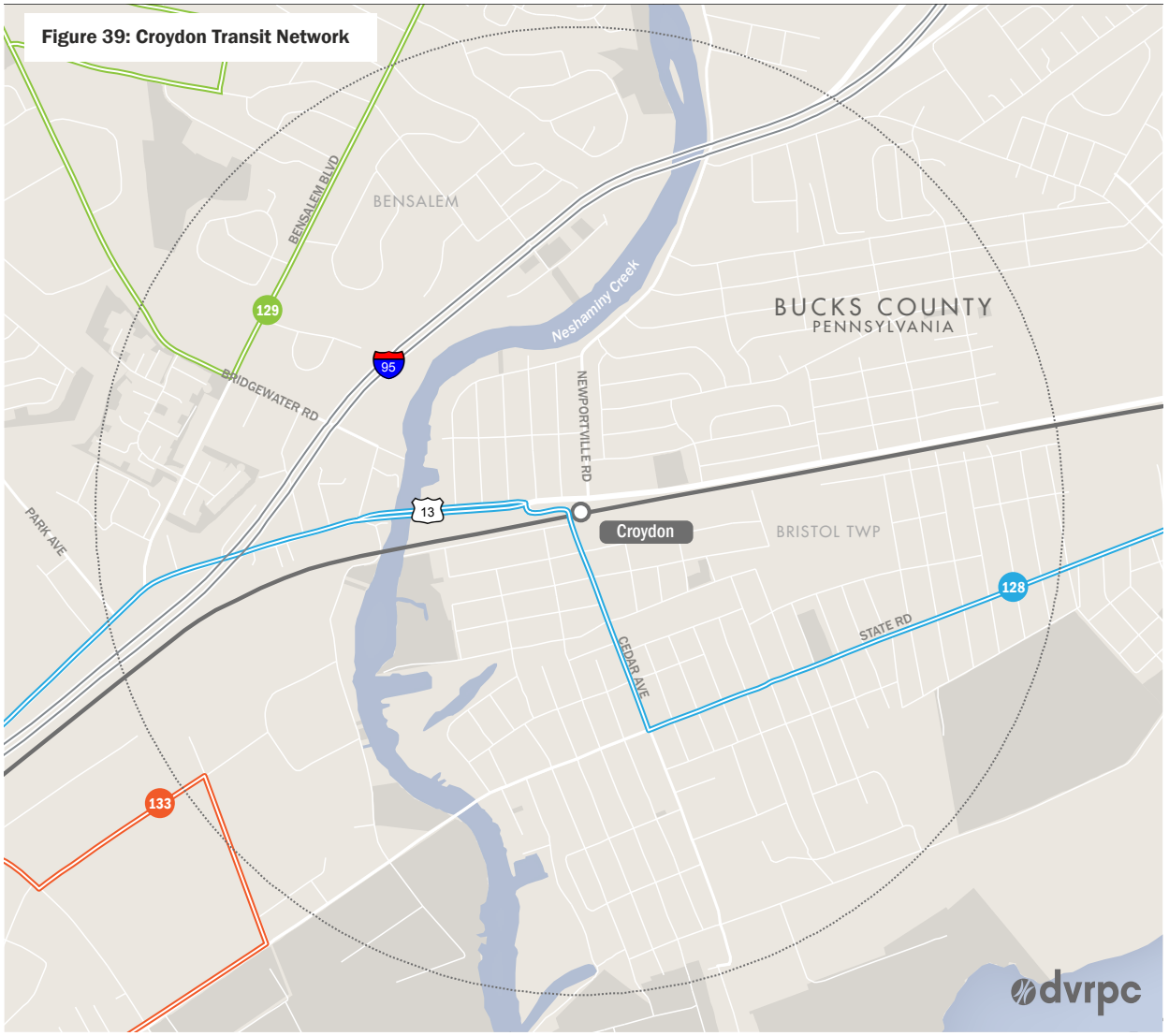
Intermobility between Route 128 and the Trenton Line is relatively efficient during the morning rush: two-thirds of southbound buses and three-quarters of northbound buses arrive within 15 minutes of an inbound Trenton Line train departure. However, train-to-bus connections are less convenient during the evening rush. Only one northbound bus is scheduled to arrive within 15 minutes of an outbound Trenton Train Line arrival. No southbound buses connect within 15 minutes of an outbound train.

Pedestrian and Bicycle Access

Although the recent renovation has improved mobility for the areas immediately adjacent to the station, bicycle and pedestrian access to the station from the surrounding neighborhood is limited by the lack of sidewalks and dedicated bike facilities.

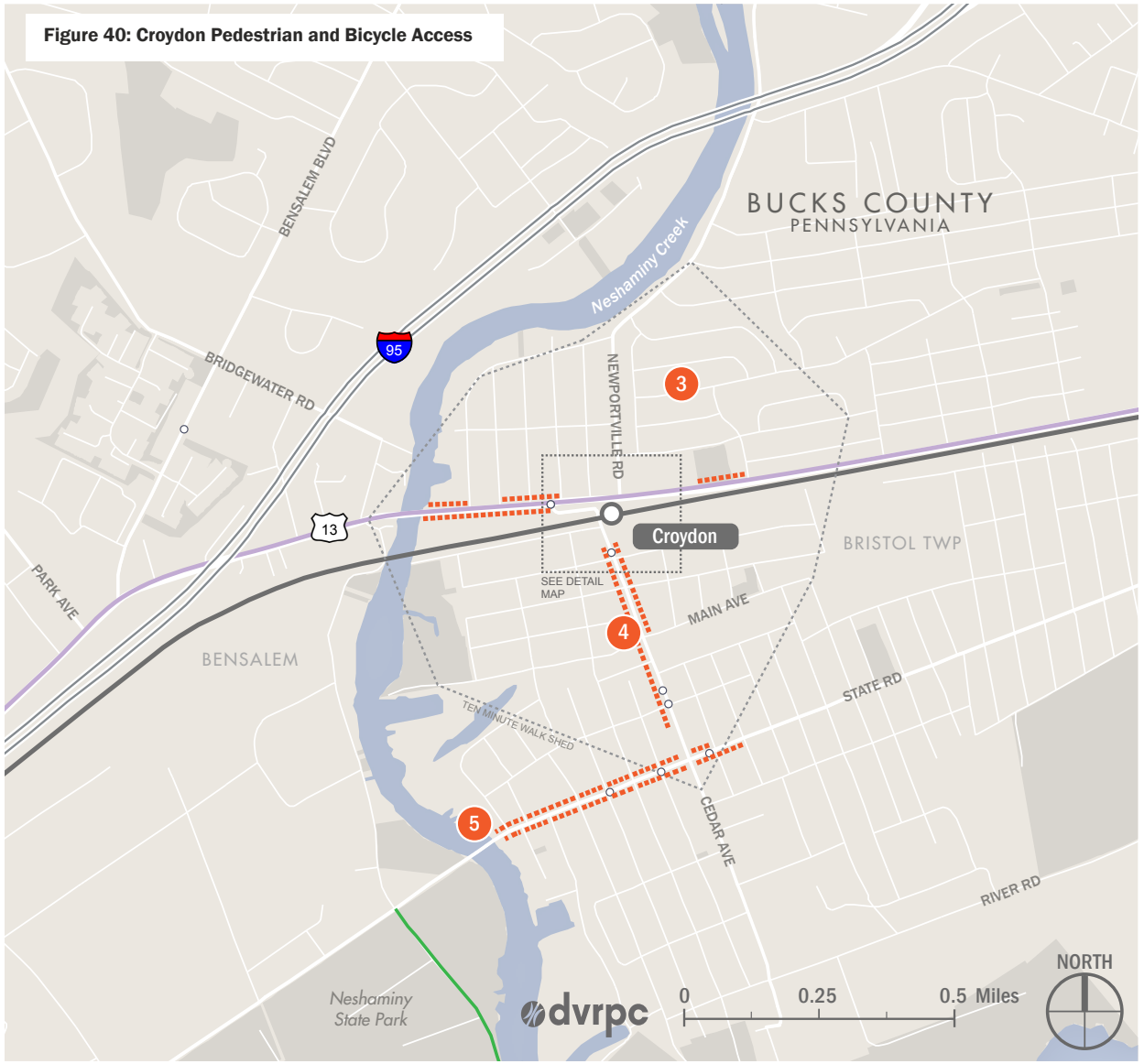
From the north, passengers access the station via Bristol Pike or Newportville Road. Passengers traveling from the south rely on Cedar Avenue. Despite their proximity to fairly dense residential neighborhoods, these routes have discontinuous sidewalks. Similar conditions are found along State Road, which links the station area to Neshaminy State Park. Bristol Pike is designated a State Bicycle Route, although it currently does not include any dedicated bike lanes.

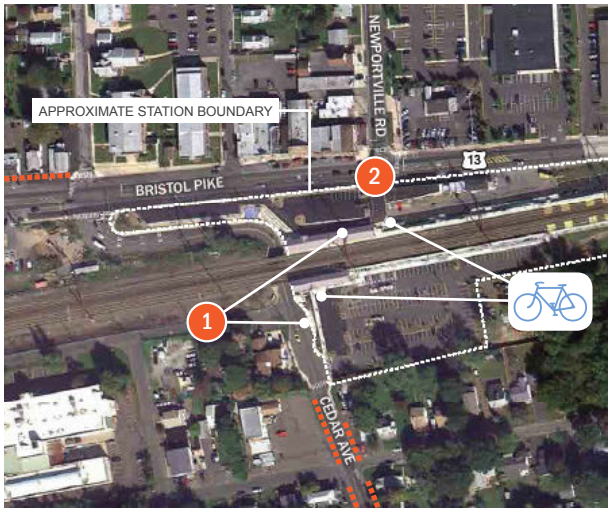
Figure 39: Croydon Transit Network



Source: DVRPC

Figure 40: Croydon Pedestrian and Bicycle Access





ISSUES AND OBSERVATIONS

1	Redesigned station includes integrated bus facilities for Route 128.
2	New sidewalks along Bristol Pike have enhanced the pedestrian environment of the station.
3	Residential areas north of the station are well connected by existing sidewalks and a network of bicycle-friendly streets.
4	The lack of continuous sidewalks along Cedar Avenue limits access to the station from points south.
5	The lack of sidewalks and bike facilities on State Road and the State Road bridge make it difficult for pedestrians and cyclists to travel between Neshaminy State Park and the station.

State Bicycle Route
Existing Multi-Use Trail
Critical Missing Sidewalk

Bicycle Parking
Station Area Issues and Observations

Crash Locations (2009–2013)
Pedestrian Crash

Source: DVRPC

Station Area Opportunities

Table 4: Croydon Potential Improvements

	LOCATION	DESCRIPTION	PRIORITY	COST *	ACTOR(S)	MORE INFO
Bicycle	1. Cedar Avenue	Add shared lane markings (sharrows) on Cedar Avenue between the station and River Road.	MED	$	BRISTOL, BUCKS, PennDOT	p. 66
	2. State Road	Add bicycle lanes to State Road between PA-413 and Neshaminy Creek.	MED	$$$	BRISTOL, BUCKS, PennDOT	
	3. Parking Lots	Relocate existing inbound-side U racks beneath canopy. Install sheltered bike rack in surface parking space 132 or 133 on the outbound side.	MED	$	SEPTA	
Pedestrian	4. Cedar Avenue	Install curbing and sidewalks on Cedar Avenue between the station and River Road as illustrated in Figure 41.	MED	$$$	BRISTOL, BUCKS, PennDOT	p. 66
Shared-Use Facilities	5. Bristol Delaware Riverfront Greenway	Continue long-term planning and design of an eventual multi-use greenway along River Road, Cedar Avenue, and State Road.	MED	$$$	ECG, PEC, BRISTOL	
	6. Neshaminy Creek Crossing	Continue long-term planning and design of new State Road bridge that incorporates pedestrian and bicycle infrastructure.	MED	$$$	ECG, PEC, BEN, BRISTOL, PennDOT	
	7. Lower Neshaminy Creek Greenway	Conduct feasibility analysis of a multi-use trail along the Lower Neshaminy Creek between Neshaminy State Park and the Neshaminy Falls Regional Rail Station on the West Trenton Line.	MED	$$$	ECG, PEC, BEN	

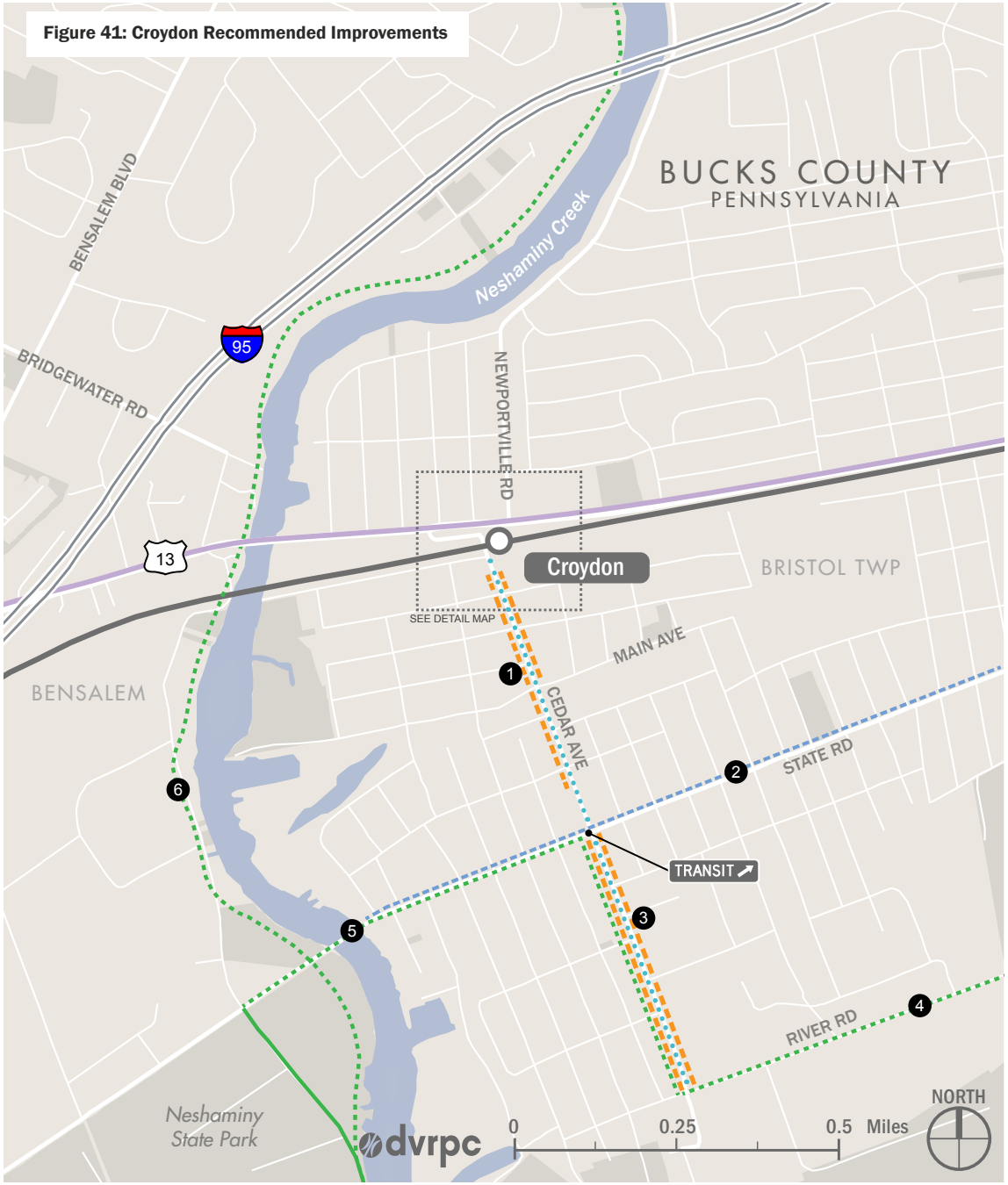
Approximate Cost Ranges
$: Less than $50,000
$$: $50,000 to $250,000
$$$: More than $250,000

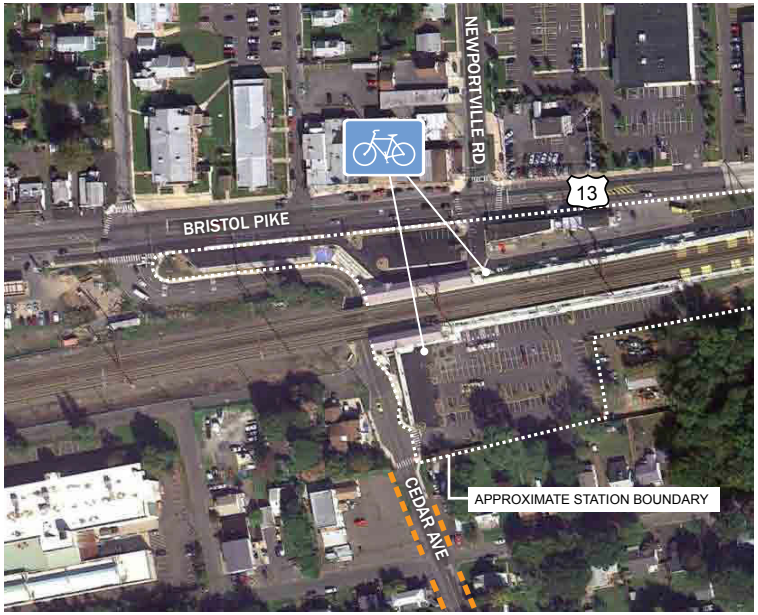
Actors
BEN: Bensalem Township
BUCKS: Bucks County
ECG: East Coast Greenway
PEC: Pennsylvania Environmental Council

** All cost ranges generated using average cost estimates documented in* Costs for Pedestrian and Bicyclist Infrastructure Improvements *by the UNC Highway Safety Research Center. Actual costs of implementation may vary significantly based on local conditions.*

Source: DVRPC

Figure 41: Croydon Recommended Improvements





Existing Bicycle and Multi-Use Facilties

State Bicycle Route

Recommended Pedestrian and Bicycle Improvements

New Bike Lane

New Marked Shared Lane

New Multi-Use Trail

Station Area Opportunity *(See Table 4)*

New Sidewalk

New/Enhanced Bicycle Parking

Other Opportunities

TRANSIT Wayfinding Signage

Source: DVRPC

FOCUS AREA

Cedar Avenue

Description

Cedar Avenue is the most important road for passengers traveling to the Croydon Station from the south. Despite improvements in the immediate vicinity of the station, Cedar Avenue is inhospitable to pedestrians due to the lack of sidewalks. Aside from some stretches of Cedar Avenue north of State Road, the roadway does not include sidewalks or curbs. Cedar Avenue does include wide shoulders that can be used by cyclists; however, these shoulders are used for parking in many locations along this predominantly residential area.

A combination of new sidewalks and shared lane markings (sharrows) can be used on Cedar Avenue between River Road and the station to improve nonmotorized access.

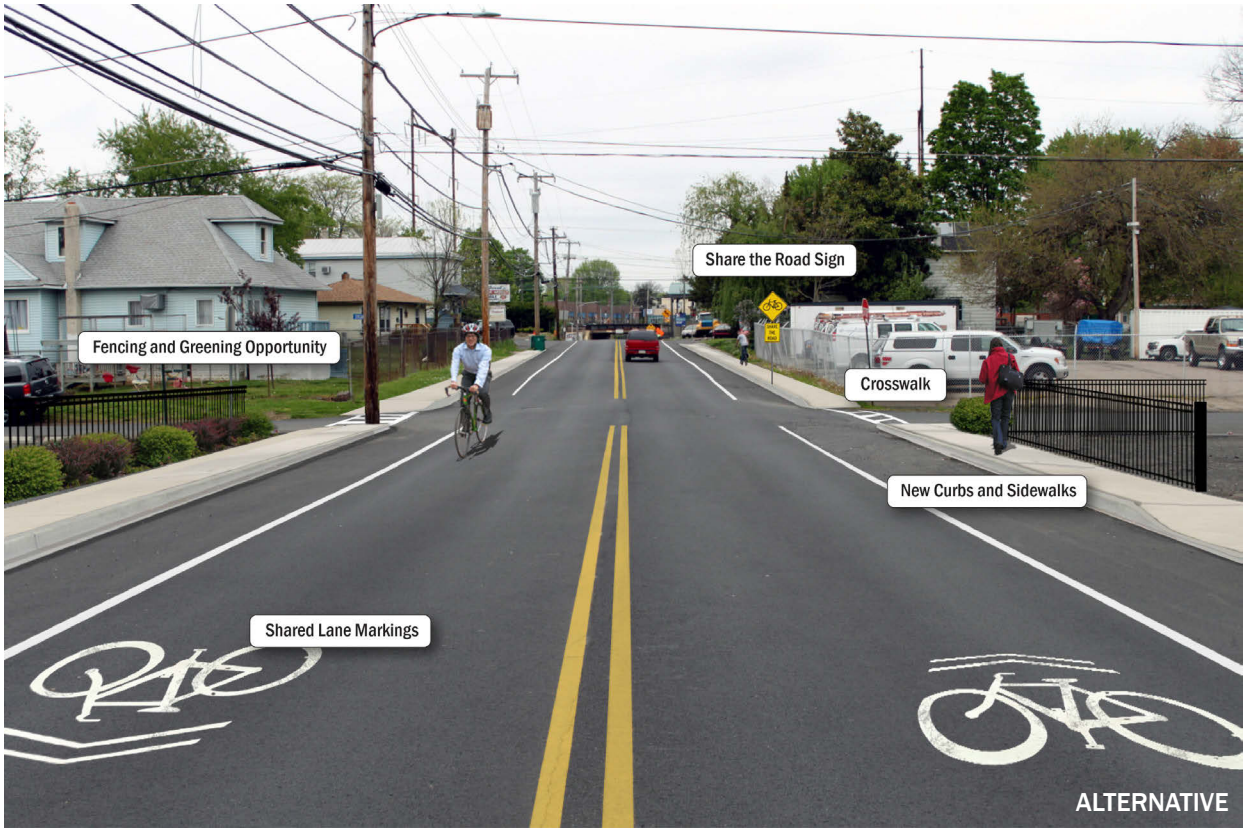
Potential Strategies

- Install curbing and sidewalks on Cedar Avenue between the station and River Road.
- Install sharrows on Cedar Avenue.

Considerations

Adding pedestrian improvements to the entirety of Cedar Road, a distance of approximately 0.9 miles, becomes expensive due to the need to create curbs and sidewalks along much of the roadway. Phasing these improvements over time can help manage these costs. The section of Cedar Avenue between the station and State Road is a logical starting point because it extends the pedestrian network from the station to the commercial properties located on State Road.

Figure 42: Cedar Avenue Improvements



Source: DVRPC


metro
PW

STATION PROFILE

Location: Tullytown, PA

Fare Zone: 4

Time to 30th St. Station: 40—45 minutes

Time to Trenton: 8-13 minutes

Weekday Inbound Boards (2013): 583

SEPTA Parking: 382 spaces (daily, free)

Bicycle Parking: 4 racks (8 bikes)

ADA Access: No

Connecting Service: Bus Routes 127, 128

CHAPTER 7

Levittown

Centered on the intersection of Bristol Pike/Route 13 and Levittown Parkway in the Borough of Tullytown, the Levittown Station area is a suburban environment that also includes portions of neighboring Bristol and Falls townships.

North and west of Route 13, the station area is largely composed of single-family homes, although commercial uses are found on Levittown Parkway. These commercial uses include the Levittown Town Center, a major retail destination that includes a Walmart Supercenter and Home Depot, located across Route 13 from the station. South and east of the Trenton Line, the station area includes a small residential neighborhood and a mix of industrial and warehouse facilities. The Delaware and Lehigh Canal Towpath Trail (D & L Trail) also bisects the station area, creating opportunities to link transit to this regional recreational resource.

The Levittown Station is well positioned to serve both nearby residents and employees of adjacent commercial and industrial sites. Levittown Parkway and Route 13 provide direct access to the inbound side parking lot and platform. PennDOT is currently improving Route 13 by reconstructing approximately 4.3 miles between PA 413 and Levittown Parkway. The project, entitled *Safer 13*, includes pavement restoration, storm drain replacement, and traffic signal upgrades but will not add pedestrian or bicycle facilities to the roadway.

The outbound platform and a small parking area can be accessed via Fallsington Avenue. Currently, passengers may travel between platforms by using an underground tunnel.

Both of the station's existing parking lots are filled to capacity on a typical weekday. The Levittown Station is scheduled to be rebuilt using funds from Pennsylvania's new transportation funding bill, Act 89. In addition to significantly improving passenger facilities at the station, plans call for providing an additional 80 surface parking spaces.

The recommendations presented later in this chapter identify opportunities to leverage investments in the station itself by enhancing pedestrian and bicycle access from the surrounding neighborhoods.

Figure 43: Levittown Station Area Context

The Levittown Station is located at the intersection of Bristol Pike and Levittown Parkway. A series of large commercial properties, including the Levittown Town Center shopping center, as well as several residential neighborhoods can be found north of the station. To the south, the station is bordered by a variety of industrial uses and a collection of single-family homes.

Commercial
1. Levittown Town Center
2. Riverside Industrial Complex
3. Meenan Oil Company
4. Arsenal Business Complex

Civic
1. John Fitch Elementary School
2. James Buchanan Elementary School
3. Walt Disney Elementary School
4. St. Michael Church & School

Parks/Recreation
1. D & L Trail

0 0.25 0.5 Miles

NORTH

Station Area Images

1. The 1950s-era Levittown Station will be rebuilt by SEPTA.
2. Cyclists and pedestrians coming from the north must cross Route 13 to reach the station.
3. The outbound platform and parking area are accessible via Fallsington Avenue.
4. Levittown Parkway is a four-lane road with a wide center median and inconsistent sidewalk network.
5. Aerial view of the station area.
6. Several bikes are parked at the station on a typical weekday.
7. The D & L Trail intersects Levittown Parkway north of Route 13.
8. Pedestrians and cyclists traveling south on the east side of Levittown Parkway must use a driveway and traffic diverter to reach the station.
9. The current alignment of the D & L Trail may encourage trail users to cross Levittown Parkway in a dangerous location.

Transit Network

SEPTA bus Routes 127 and 128 travel along Bristol Pike and the Levittown Parkway, making stops across from the station (See Figure 44). However, in general the existing schedules of these bus routes do not coincide well with Trenton Line trains serving Center City. The exception is Route 128: all three northbound buses during the morning rush arrive within 15 minutes of an inbound train departure. During the evening rush, three out of seven outbound trains arrive within 15 minutes of a southbound Route 128 bus.

Pedestrian and Bicycle Access

Although the station area is predominantly auto oriented, the sidewalk network is relatively intact for many streets within the surrounding neighborhoods. However, there are critical gaps in the sidewalk network along Levittown Parkway and Fallsington Avenue, the two most important access streets.

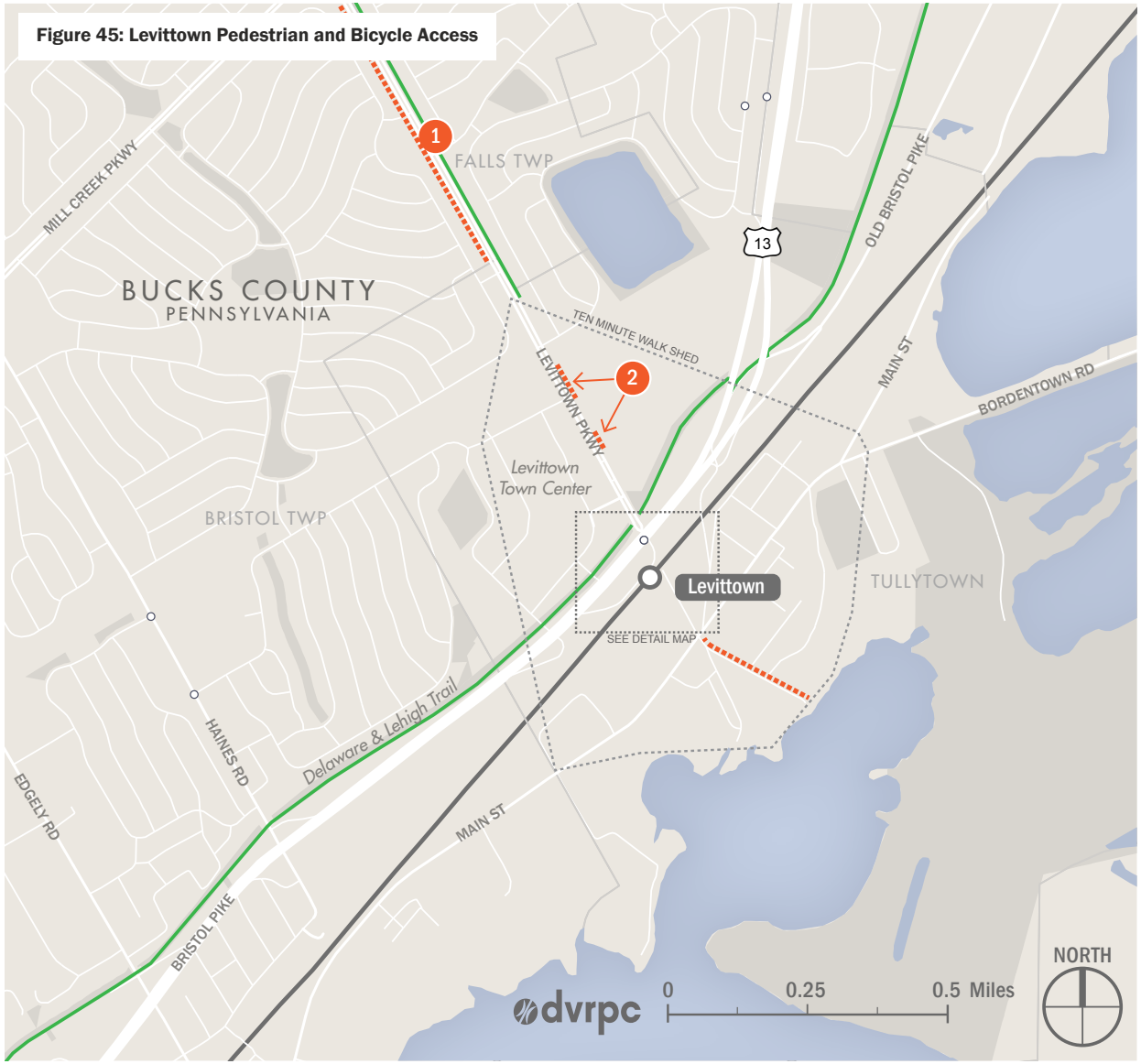
Levittown Parkway links the station to the planned communities of Levittown, as well as to a variety of commercial uses. Large driveways interrupt the sidewalk on the east side of Levittown Parkway, and a large section of sidewalk is missing further north along the west side of the road. On the south side of the station, sidewalks can be found on the west side of Fallsington Avenue but are missing from the eastern side.

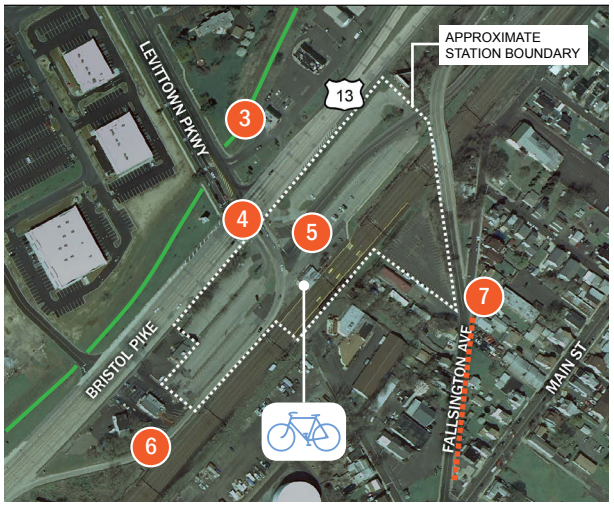
The D & L Trail, already a popular recreation facility, is a potential off-road commuting route for area residents. However, the potential of this route is currently limited because the connection from the trail to the station is not well delineated. Furthermore, the current alignment of the trail encourages users to cross Levittown Parkway at an uncontrolled location.

Further north, a segment of multi-use path exists along the east side of Levittown Parkway. Approximately 10 feet wide, this sidepath begins just south of Mill Creek Parkway and ends just north of Lakeside Drive, roughly one half-mile north of the station.

Figure 44: Levittown Transit Network

Figure 45: Levittown Pedestrian and Bicycle Access





ISSUES AND OBSERVATIONS	
1	A multi-use path already exists along a portion of the northbound side of Levittown Parkway
2	Excessive driveways create large gaps in the sidewalk in two locations on the northbound side of Levittown Parkway
3	Crossing Levittown Parkway can be confusing and dangerous for trail users
4	The intersection of Bristol Pike and Levittown Parkway can be intimidating for pedestrians
5	The Levittown Station is being redesigned by SEPTA. The new station will include roughly 80 new parking spaces.
6	Motorists often travel at high speed through the station parking lot on the Levittown Parkway jughandle.
7	The lack of sidewalks and safe crossings makes it difficult to access the station from the east.

Existing Multi-Use Trail
Critical Missing Sidewalk
Bicycle Parking
Station Area Issues and Observations
Crash Locations (2009—2013)
Pedestrian Crash

Station Area Opportunities

Table 5: Levittown Potential Improvements

	LOCATION	DESCRIPTION	PRIORITY	COST *	ACTOR(S)	MORE INFO
Pedestrian	1. Intersection of Bristol Pike and Levittown Parkway	Add high-visibility crosswalks, ADA curb ramps, and pedestrian countdown signals.	HIGH	$	PennDOT, BUCKS, TUL	p. 76
Pedestrian	2. Fallsington Avenue Station Entrance	Add raised crosswalk and walkway linking Fallsington Avenue to Levittown Station.	MED	$	PennDOT, SEPTA, TUL	p. 77
Pedestrian	3. Fallsington Avenue	Add sidewalks to the northbound side of Fallsington Avenue between Main Street and Trenton Avenue.	MED	$	PennDOT, BUCKS, TUL	p. 77
Multi-Use	4. Levittown Parkway	Add paved multi-use trail to Levittown Parkway between Bristol Pike and Mill Creek Parkway. A multi-use path already exists along northbound Levittown Parkway between Penn Lane and Spur Lane.	MED	$$$	PennDOT, BUCKS, FALLS, TUL	p. 78
Multi-Use	5. D & L Trail	Realign trail near the intersection of Levittown Parkway and Bristol Pike.	MED	$	BUCKS, D&L, TUL	p. 76

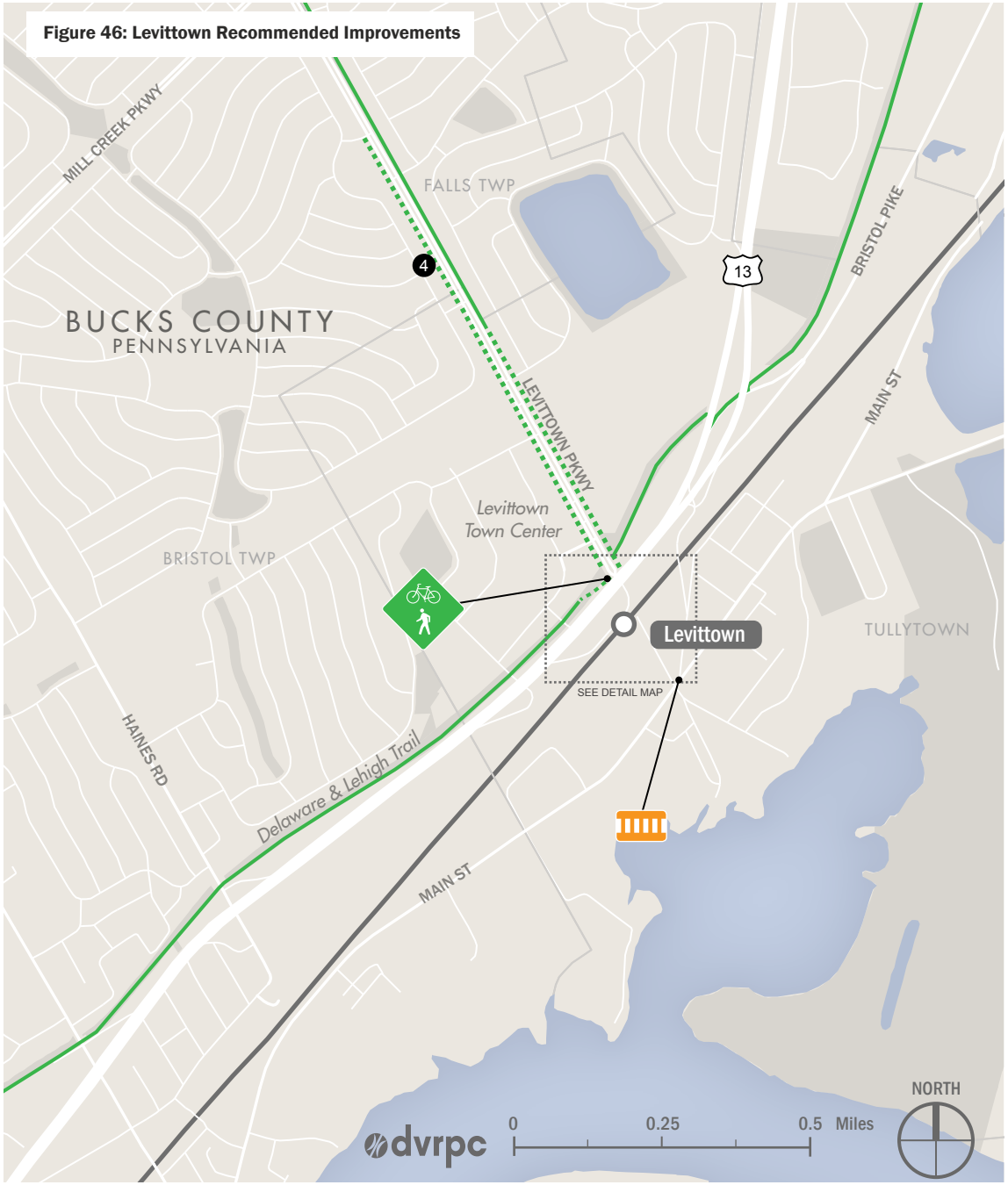
Approximate Cost Ranges
$: Less than $50,000
$$: $50,000 to $250,000
$$$: More than $250,000

Actors
BUCKS: Bucks County
D&L: Delaware & Lehigh National Heritage Corridor
FALLS: Falls Township
TUL: Tullytown Borough

** All cost ranges generated using average cost estimates documented in* Costs for Pedestrian and Bicyclist Infrastructure Improvements *by the UNC Highway Safety Research Center. Actual costs of implementation may vary significantly based on local conditions.*

Source: DVRPC

Figure 46: Levittown Recommended Improvements



Existing Bicycle and Multi-Use Facilties

- Multi-Use Trail

Recommended Pedestrian and Bicycle Improvements

- New Multi-Use Trail
- New Sidewalk
- Pedestrian Intersection Improvement
- # Station Area Opportunity *(See Table 5)*
- Multi-Use Trail Crossing Improvement
- STOP Controlled Intersection

FOCUS AREA

Levittown Parkway and Bristol Pike Intersection

Description

The Route 13 Improvement Project is reconstructing over four miles of US Route 13 between PA Route 413 (New Rodgers Road) and Levittown Parkway. Nonetheless, the intersection of Levittown Parkway and Bristol Pike remains a challenging intersection for pedestrians and cyclists wishing to access the Levittown Station due its width and the speed of traffic.

Levittown Parkway also represents a critical gap in the D & L Trail. The D & L Trail intersects Levittown Parkway on a diagonal approximately 100 feet north of the Bristol Pike intersection. This alignment, along with a break in the median island designed to accommodate turning movements for vehicles traveling southbound on Levittown Parkway, encourages trail users to make a dangerous uncontrolled crossing to continue on the trail.

The improvements to the intersection illustrated in Figure 47 can enhance nonmotorized access to the station and help formalize the D & L Trail crossing.

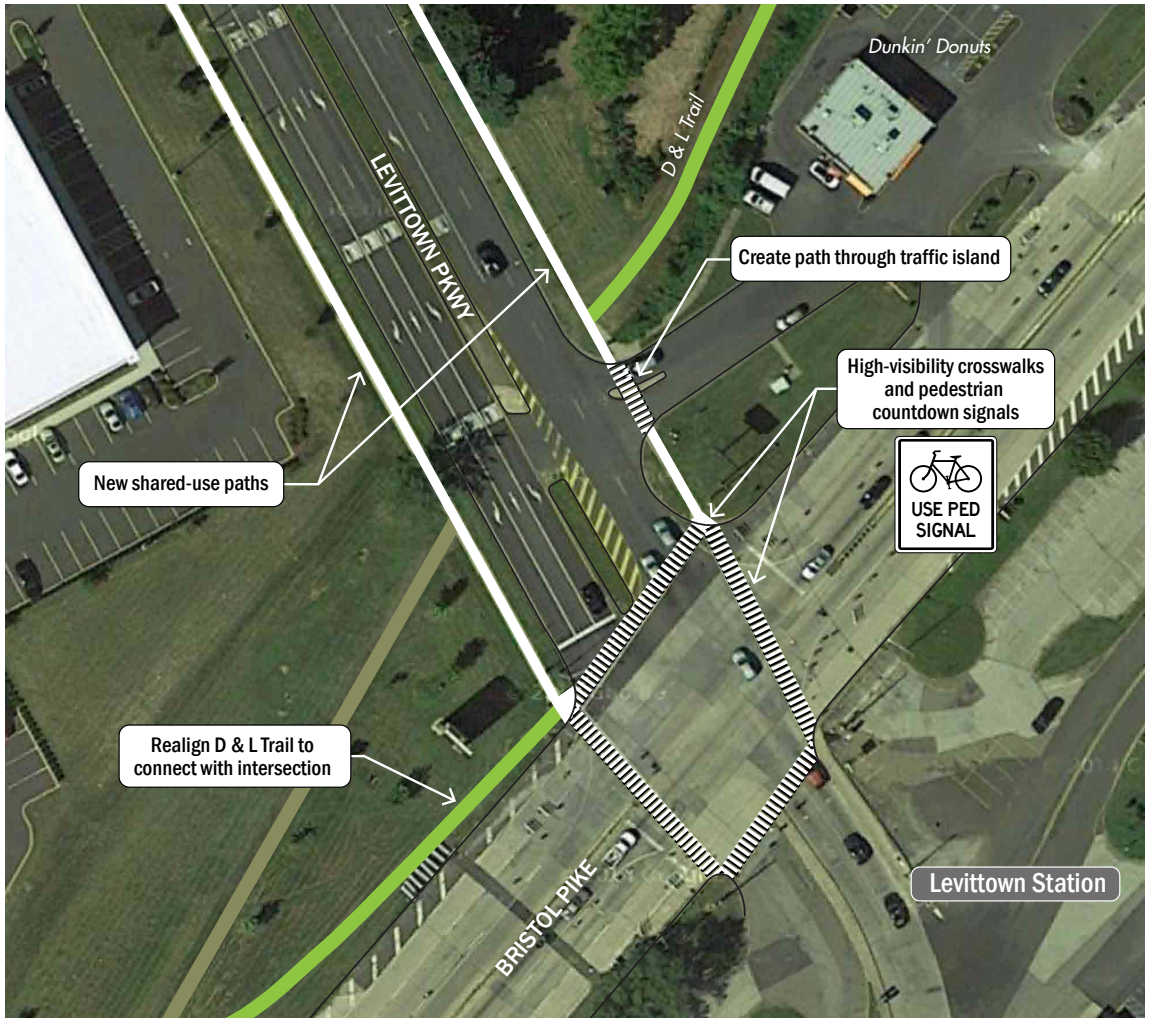
Potential Strategies

- Add high-visibility crosswalks and pedestrian countdown signals to the intersection of Levittown Parkway and Bristol Pike.
- Realign the D & L Trail west of Levittown Parkway to connect to the intersection of Bristol Pike.
- Install signage directing trail users to cross Levittown Parkway at the Bristol Pike intersection.
- Create a flat path to accommodate pedestrians and cyclists through the existing traffic diverter at the entrance to the Dunkin' Donuts parking lot.

Considerations

These improvements can work in tandem with the Levittown Parkway multi-use paths described on page 78 to promote nonmotorized access both along Levittown Parkway and across Bristol Pike.

Figure 47: Levittown Parkway and Bristol Pike Intersection Improvements



NOT TO SCALE

Source: DVRPC

FOCUS AREA

Fallsington Avenue

Description

Plans to rebuild the Levittown Station will vastly improve the passenger experience at this station. However, despite these improvements, pedestrians will continue to have a difficult time accessing the station from the east. A parking lot for the Levittown Station is located on Fallsington Avenue, near the intersection of Trenton Avenue. Discontinuous sidewalks, the lack of crosswalks near the station, and high vehicular speeds on Fallsington Avenue may discourage pedestrian activity in the area.

The east side station entrance is located adjacent to one of Tullytown's most walkable areas, Main Street near the intersection of Fallsington Avenue. This area includes sidewalks with decorative paving and a small memorial park. Making improvements to Fallsington Avenue near the train station would connect the train station to this existing pedestrian network and extend the look and feel of Main Street.

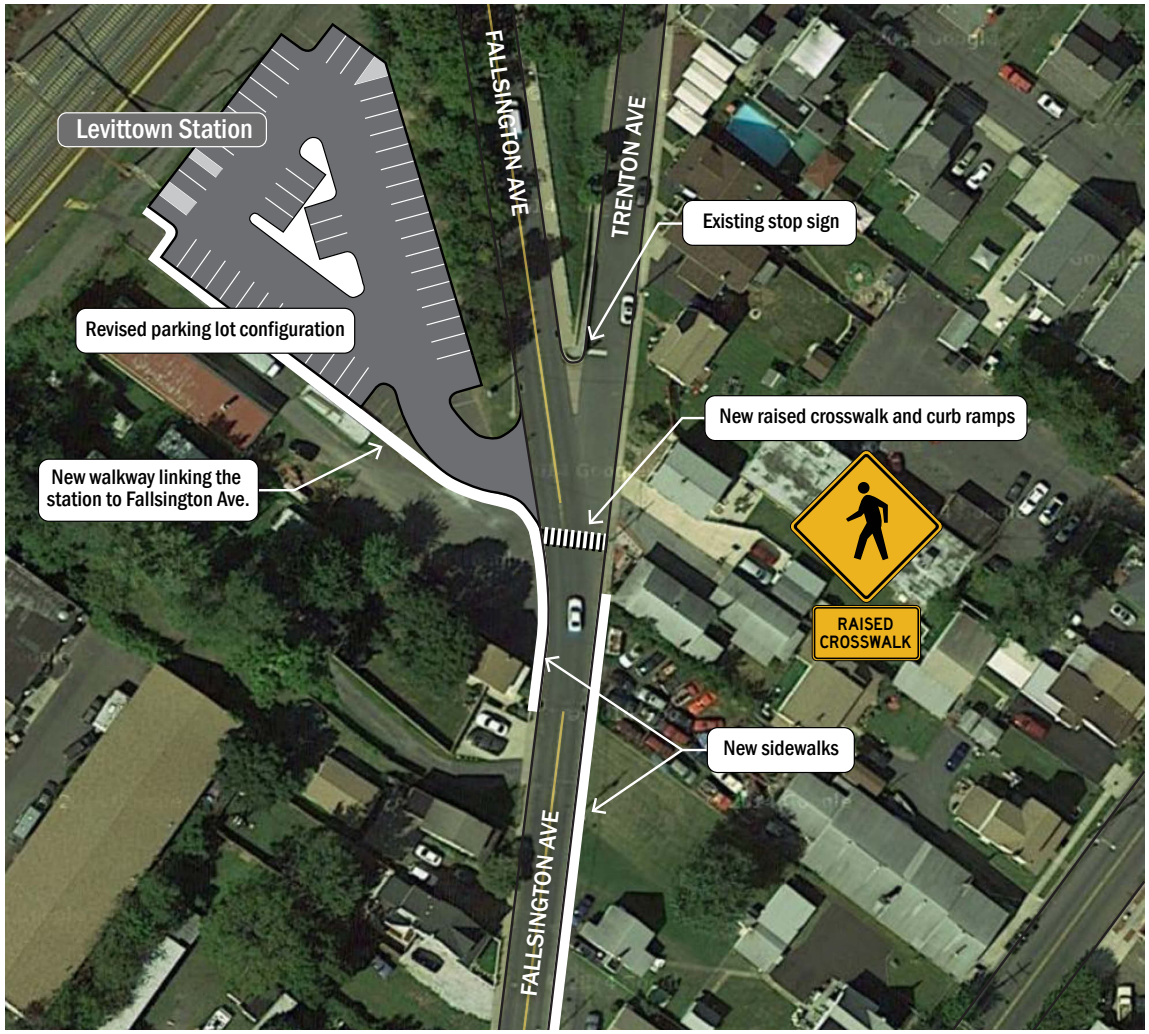
Potential Strategies

- Create new walkway linking the station to the existing sidewalk on the southbound side of Fallsington Avenue.
- Add new sidewalk to the northbound side of Fallsington Avenue between Main Street and Trenton Avenue.
- Add raised crosswalk across Fallsington Avenue near the station parking lot entrance.

Considerations

Despite the 25 MPH speed limit, motorists traveling south on Fallsington Avenue over the Northeast Corridor train tracks have few contextual clues that they are entering a residential area. A raised crosswalk near the station entrance would encourage motorists to yield to pedestrians because the raised crosswalk increases pedestrian visibility and forces motorists to slow down before going over the speed table. Raised crosswalks are most appropriate on neighborhood streets, and township officials would need to evaluate the traffic demands along this roadway before making any changes.

Figure 48: Fallsington Avenue Improvements



NOT TO SCALE

Source: DVRPC

FOCUS AREA

Levittown Parkway Multi-Use Trail

Description

Levittown Parkway is an urban minor arterial that extends from Bristol Pike, near the Levittown Station, along the boundary between Bristol and Falls townships and into Fairless Hills. The roadway provides a direct connection to the station from the relatively dense residential neighborhoods found on each side of Levittown Parkway. Because of its proximity to the station, the portion of the Parkway between Bristol Pike and Mill Creek Parkway (a distance of approximately 1.2 miles) should be prioritized for pedestrian and bicycle improvements.

This stretch of Levittown Parkway consists of two travel lanes in each direction with occasional dedicated left-turn lanes at intersections and a wide grass median that contains intermittent breaks to allow turns. The residential, commercial, and institutional uses found along Levittown Parkway are set back from the roadway by wide grass edges. Sidewalks, illustrated in Figure 49, are inconsistent on this stretch of Levittown Parkway. On the west side of Levittown Parkway, no sidewalks exist between Spur Lane and Mill Creek Parkway. Standard sidewalks, averaging approximately five feet wide, exist from Spur Lane to Bristol Pike on the west side of Levittown Parkway and from just north of Lakeside Drive to Bristol Pike on the east side of Levittown Parkway.

Finally, a wider asphalt path, approximately 10 feet wide, can be found on the east side of Levittown Parkway from just north of Lakeside Drive to Penn Lane. This sidepath is wide enough to accommodate both pedestrians and cyclists and represents a potential model for creating a multi-use trail along much of Levittown Parkway. Such a trail would enhance not only access to the station but also to commercial establishments in the Levittown Town Center.

Potential Strategies

- Add a multi-use trail to Levittown Parkway between Bristol Pike and Mill Creek Parkway to facilitate pedestrian and bicycle access to the Levittown Station.

Considerations

On the west side of Levittown Parkway, the trail could extend from Bristol Pike to Sexton Avenue; and on the east side of Levittown Parkway, the trail should extend from Bristol Pike to Penn Lane. These streets have been selected as potential endpoints for a trail because both Sexton Avenue and Penn Lane serve as collector roads for the adjacent residential neighborhoods.

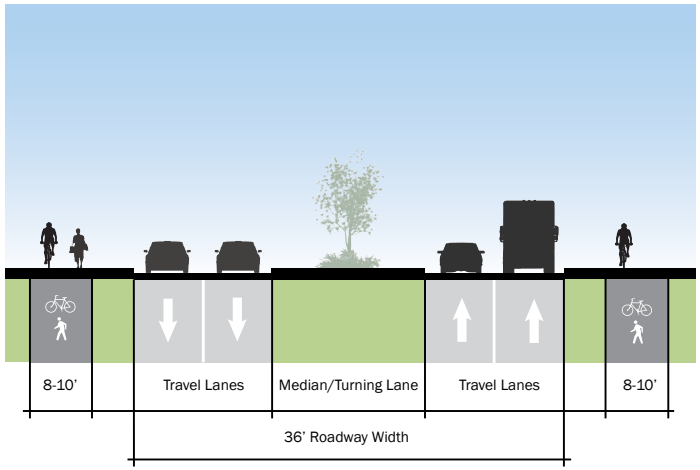
Ten feet is the recommended minimum width for a multi-use facility in order to minimize conflicts between different types of users. The space for such a facility appears to be available throughout the corridor; however, the trail may need to cross some extended curb cuts that exist on the east side of Levittown Parkway across from the Levittown Town Center. If more controlled access cannot be created in these locations, a multi-use trail will need to be clearly marked to maintain visibility.

Cyclists traveling on a trail adjacent to a roadway may not be as visible to motorists as cyclists riding on the street. As such, the potential for conflicts between cyclists and turning vehicles exists at intersections and driveways.

Figure 49: Levittown Parkway Existing Sidewalk Conditions

Source: DVRPC

Figure 50: Levittown Parkway Proposed Multi-Use Path Section



Source: DVRPC

CHAPTER 8

Implementation

There are multiple ways that municipalties and transit providers can create an environment around the region's train stations that supports walking and cycling. This study focuses on identifying potential physical improvements to pedestrian and bicycle infrastructure in and around select stations on the Trenton Line.

Oftentimes, these recommended infrastructure improvements are located on roads and trails leading to a particular station. Because SEPTA does not control the areas beyond its stations, the agency must continue to partner with local municipalities, PennDOT, and private landowners to improve these facilities. A central theme of this collaboration is the fact that each of these station area stakeholders benefits from infrastructure improvements that facilitate safer and more convenient nonmotorized access to transit.

Implementation can be a long process that involves identifying funding sources, engineering and design, right-of-way acquisitions, and construction. Many of the corridor municipalites have already undertaken efforts to promote pedestrian and bicycle mobility within their communities. This document can serve as a resource for continuing these efforts as staff resources and funding opportunities are available.

Prioritization

The access improvements recommended for each station area were prioritized based upon their potential impact on safety and ridership, as well as their cost and ease of implementation (see Station Area Opportunities tables in chapters three through seven). Accordingly, lower-cost improvements in dense residential neighborhoods are prioritized over higher-cost improvements in less heavily populated areas. In the coming years, corridor municipalities must reassess the recommendations presented here to determine which improvements are most important based on local conditions and developments.

RideScore is another tool that can be used to evaluate investments in bicycle infrastructure near commuter rail stations. Developed by DVRPC, RideScore is an online database that assesses the physical and demographic characteristics around transit stations that often correlate to demand for bicycle infrastructure. The database focuses on commuter rail stations, as well as trolley and subway terminals outside of Center City Philadelphia, and can be accessed at www.dvrpc.org/webmaps/ridescore.

To help determine where investments in bicycle infrastructure may be appropriate, DVRPC staff collected data on various station area characteristics, such as population and employment density, proximity to outdoor recreation destinations, and the volume

of transit vehicles, that relate to how supportive of bicycling the station area is, or could be. The sum of these factors is calculated to determine a total RideScore between zero and 10 for each station.

The RideScore database was designed to give transit agencies, municipalities, and advocacy groups an idea of the station area characteristics that contribute to the demand for bicycle facilities and amenities in a given location. Although the tool was designed with bicycle infrastructure in mind, many of the characteristics being measured can also be used to identify priority locations for pedestrian and transit connectivity.

Table 6 lists the cumulative and individual RideScores for 10 stations along the Trenton Line.

With the exception of Holmesburg Junction, no station profiled in this report scores above a 5.4. However, RideScore does not consider situational factors, such as the ongoing reconstruction of I-95, which is expected to generate additional transit passengers at these stations in the coming years. In reality, the relatively low RideScores of most of these study corridor stations reflect the challenging environments they are located in.

Potential Funding Sources

In addition to collaborative planning, implementing the recommended improvements will require funding. More information on two potential funding sources for Pennsylvania municipalities, the Pennsylvania Transportation Alternatives Program (TAP) and DVRPC's Transportation and Community Development Initiative (TCDI), is listed below. Most programs available to help pay for future pedestrian and bicycle improvements are competitive and require applications that clearly document project need, costs, and benefits.

Table 6: Trenton Line RideScores

	BRIDESBURG	TACONY	HOLMESBURG JUNCTION	TORRESDALE	CORNWELLS HEIGHTS	EDDINGTON	CROYDON	BRISTOL	LEVITTOWN	TRENTON
RideScore	8.9	6.9	8.0	5.4	2.6	4.3	3.7	5.4	3.9	7.9
RIDESCORE FACTORS										
Transit Volumes	5	4	4	5	3	3	3	4	3	5
Connectivity	5	4	3	1	1	2	3	3	1	5
Cultural	4	3	2	2	1	1	2	3	2	5
Circuit Proximity	3	4	4	1	1	1	1	4	5	3
Outdoor Destintations	5	4	5	5	4	3	3	4	4	3
Retail District	3	3	3	2	1	1	1	3	1	2
Near Bicycle Facility	5	1	5	5	1	1	1	1	1	5
Population	5	5	5	3	1	2	3	2	2	5
Employees	4	3	5	1	2	4	2	4	1	5
Non-Parking Boards	5	5	4	3	1	5	2	2	1	2

RIDESCORE FACTORS
- 1 (Low)
- 2
- 3
- 4
- 5 (High)

RideScore is a new online database created by DVRPC that can be used to evaluate investments in bicycle infrastructure near commuter rail stations. The tool rates each station area on 10 characteristics that often correlate to demand for bicycle infrastructure. The sum of these factors is calculated to determine a total RideScore between zero and 10 for each station. The table above lists cumulative and individual RideScores for 10 stations along the Trenton Line. More information on the tool, including descriptions of each individual category, can be found at www.dvrpc.org/webmaps/ridescore.

Source: DVRPC

The most complete list of potential funding sources for locally initiated planning and development projects can be found in DVRPC's *Municipal Resource Guide* (Publication 12003, 2012). DVRPC has also recently published *Funding Trails: A Guide to Funding Multi-Use Trails in Southeastern Pennsylvania* (Publication 14039).

Pennsylvania Transportation Alternatives Program (TAP)
The federal transportation bill passed in 2012 consolidated several programs into the Transportation Alternatives Program (TAP). These programs include Transportation Enhancements (TE), Safe Routes to School (SRTS), Scenic Byways (Byways), and Recreational Trails Program (RTP). The TAP program funds pedestrian and bicycle facilities, as well as bicycle and pedestrian education for students in kindergarten through eighth grade.

Deadline: Every two years
Grant Amount: $250,000 to $1 Million
Eligible Projects: Construction, Education
Eligible Entities: Municipalities, Counties, Other
Website: www.dvrpc.org/TAP

Transportation and Community Development Initiative (TCDI)
The Transportation and Community Development Initiative (TCDI) is a grant program of DVRPC that supports local development and redevelopment efforts in qualifying municipalities of the Delaware Valley. One of the objectives of the program is to create more vital and livable neighborhoods in the region's core cities and disadvantaged communities by enhancing the existing transportation network infrastructure.

Deadline: Every two years
Grant Amount: up to $150,000
Eligible Projects: Planning
Eligible Entities: Municipalities, Counties
Website: www.dvrpc.org/TCDI

PennDOT Multimodal Transportation Fund Program
The Multimodal Transportation Fund provides grants to municipalities, public transportation agencies, and others to improve transportation assets in order to enhance communities, pedestrian safety, and transit revitalization. The program focuses on the state's non-highway transportation assets: ports, freight rail, passenger rail, transit, bicycle and pedestrian infrastructure, and aviation. Each grant requires matching local funds in an amount not less than 30 percent of the non-federal share of the project costs.

Deadline: First grants were awarded in September 2014. Future rounds to be announced.
Grant Amount: $100,000 to $3 Million
Eligible Projects: Construction, Land Acquisition
Eligible Entities: Municipalities, Counties, City, Boroughs, School Districts, Councils of Government, Businesses, Non-Profits, Economic Development Organizations, Public Transportation Agencies, Transportation Associations, Ports or Rail/Freight Entities.
Website: http://www.dot.state.pa.us/internet/web.nsf/Multimodal?OpenFrameSet

TRENTON LINE ACCESS STUDY

Improving Pedestrian & Bicycle Access to Regional Rail Stations on the I-95 Corridor

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ABSTRACT

This study was conducted by DVRPC to identify potential strategies to enhance pedestrian and bicycle access to five stations along SEPTA's Trenton Regional Rail Line: Holmesburg Junction, Torresdale, Cornwells Heights, Croydon, and Levttitown. Enhancing nonmotorized access to these stations is particularly important at this time because over the next 10 years the reconstruction of I-95 is expected to generate a significant number of new peak period transit riders. This increase in peak demand will tax SEPTA's already strained service capacity along the Trenton Line corridor. Improving pedestrian and bicycle access to SEPTA's system is part of a comprehensive approach to congestion mitigation that can help reduce parking demand at stations by encouraging nearby residents to walk or bike to a station rather than drive.

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