

HATBORO / JENKINTOWN
BOROUGHES
ABINGTON / CHELTENHAM
/ UPPER MORELAND
TOWNSHIPS

ROUTES **611** & **263**
Corridor Study
Montgomery County

Phase 1 Report


Delaware Valley
Regional Planning
Commission
June 2008

Created in 1965, the Delaware Valley Regional Planning Commission (DVRPC) is an interstate, intercounty and intercity agency that provides continuing, comprehensive and coordinated planning to shape a vision for the future growth of the Delaware Valley region. The region includes Bucks, Chester, Delaware, and Montgomery counties, as well as the City of Philadelphia, in Pennsylvania; and Burlington, Camden, Gloucester and Mercer counties in New Jersey. DVRPC provides technical assistance and services; conducts high priority studies that respond to the requests and demands of member state and local governments; fosters cooperation among various constituents to forge a consensus on diverse regional issues; determines and meets the needs of the private sector; and practices public outreach efforts to promote two-way communication and public awareness of regional issues and the Commission.



Our logo is adapted from the official DVRPC seal, and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole, while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

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

DVRPC fully complies with Title VI of the Civil Rights Act of 1964 and related statutes and regulations in all programs and activities. DVRPC's website may be translated into Spanish, Russian, and Traditional Chinese online by visiting www.dvrpc.org. Publications and other public documents can be made available in alternative languages or formats, if requested. For more information, please call (215) 238-2871.

ROUTES 611/263 CORRIDOR STUDY

MONTGOMERY COUNTY

PHASE I REPORT

June 2008

Delaware Valley Regional Planning Commission
190 North Independence Mall West
8th Floor
Philadelphia PA 19106-1520
P: 215-592-1800
F: 215-592-9125
www.dvrpc.org

ACKNOWLEDGEMENTS

This report was guided with the support and involvement of the Study Advisory Committee members through a series of meetings and presentations. Thanks is hereby given to all participants for their input during the planning process.

STUDY ADVISORY COMMITTEE

Leo Bagley, Montgomery County Planning Commission

Ronald Bednar, PA Department of Community and Economic Development

John Boyle, Bicycle Coalition of Greater Philadelphia

Joe Bucovetsky, McCormick Taylor/Abington Township

David Burke, PA Department of Environmental Protection

Laura Burnham, Abington Arts Center

Charles Clark, Jenkintown Borough

Mike Crilly, Upper Moreland Township

Charles Denny, Philadelphia Streets Department

John Dezio, SEPTA

David Dodies, Upper Moreland Township

Christina Ferrell, Greater Valley Forge TMA

Bradley Flamm, Temple University

Dave Fogel, SEPTA

Michael Golden, Jenkintown Borough

Karen Hanson, Ph.D., BioLaunch611+ KIZ

Annette Jacobs, Partnership TMA

Anthony Johnson, The Partnership TMA

Wendy Klinghoffer, Eastern Montgomery County Chamber of Commerce

Stephanie Kruel, PhillyCarShare

Matt Lahaza, Abington Township

Charles Marsh, Penn State Abington

Herbert Matthews, Abington Memorial Hospital

Ed Momorella, EMC Regional Emergency Management Group

Jane Murray, U.S. Representative Schwartz

M. Richard Nalbandian, Temple University

Steve Nelson, Montgomery County Commissioners Office

Bruce Nicholson, Montgomery County Redevelopment Authority

Brian O'Leary, Montgomery County Planning Commission

Ashwin Patel, PennDOT District 6

Wes Ratko, Montgomery County Planning Commission

Bill Rickett, Bucks County TMA

Lisa Romaniello, Upper Moreland Township

Teri Ryan, Arcadia University

Mickey Simon, Cheltenham Township

Donald Steele, Pennsylvania Turnpike Commission

John Stillmun III, Jenkintown Borough

Bill Tompkins, Hatboro Borough

Marilyn Wood, 10,000 Friends of Pennsylvania

TABLE OF CONTENTS

Executive Summary	01
1.0 INTRODUCTION	13
1.1 Purpose and Need	13
1.2 Assets, Constraints and Opportunities	14
1.3 Summary of Existing Comprehensive Plans	15
2.0 CORRIDOR DEMOGRAPHICS	19
2.1 Population	19
2.2 Employment	19
3.0 CORRIDOR LAND USE AND ZONING	23
3.1 Land Use	23
3.2 Zoning	23
3.3 Density	28
3.4 Environmental Justice	28
4.0 SMART GROWTH ANALYSIS	31
4.1 Town Centers	31
4.2 Transit-Oriented Development	32
4.3 Sense of Place	33
4.4 Pedestrian Environment	35
4.5 Wayfinding	36
4.6 Parking	37
4.7 Growth Nodes	38
5.0 ENVIRONMENTAL ASSESSMENT	41
5.1 Stormwater	41
5.2 Green Infrastructure	52
6.0 TRANSPORTATION ASSESSMENT	59
6.1 Traffic Engineering Analysis	59
6.1.1 Traffic Volume Analysis	59
6.1.2 Trip Origin and Destination Analysis	60
6.1.3 Travel Time Survey	64
6.1.4 Crash Analysis	67
6.1.5 Intersection Analysis	69
6.1.6 Arterial Median Analysis	74
6.2 Transit Service Analysis	81
6.2.1 Corridor Bus Service	81
6.2.2 Bus Boarding and Transfer Locations	83
6.2.3 Corridor Rail Service	85
6.2.4 Bus/Rail Coordination	97
6.2.5 Non-SEPTA Transit Services	98
6.3 Bicycle Mobility and Safety	100

Contents (continued)

6.4	Pedestrian Mobility and Safety	104
7.0	PLAN RECOMMENDATIONS	109
8.0	NEXT STEPS	113
APPENDIX A:	DETAILED CRASH SUMMARY	A-1
APPENDIX B:	BUS SHELTER LOCATIONS	B-1
APPENDIX C:	WEEKEND BUS BOARDINGS	C-1
APPENDIX D:	Draft Resolution	D-1

LIST OF TABLES

Table 1:	Population and Population Forecasts	19
Table 2:	Employment and Employment Change	20
Table 3:	Employment Centers	20
Table 4:	Major Employers, 2003 and 2005	21
Table 5:	Land Use, 2005	24
Table 6:	Degrees of Disadvantage by Type	30
Table 7:	PA 611 Travel Time Survey	66
Table 8:	PA 263 Travel Time Survey	68
Table 9:	Levels of Service at Signalized Intersections	70
Table 10:	AM Peak Hour's 10 Worst Performing Intersections	73
Table 11:	PM Peak Hour's 10 Worst Performing Intersections	73
Table 12:	Potential Left-Turn Lane Extensions	76
Table 13:	Potential Locations for At-Intersection Pedestrian Refuges	77
Table 14:	Corridor Bus Service-Areas Served	86
Table 15:	Corridor Bus Service-Hours of Operation	86
Table 16:	Bus Pullout Locations	86
Table 17:	Regional Rail Station Boardings	89
Table 18:	Summary of Regional Rail Stations	90
Table 19:	Train/Bus Coordination	98
Table 20:	Summary of Recommendations	110

LIST OF MAPS

MAP 1:	Study Area	2
MAP 2:	Priority Area Recommendations	8
MAP 3:	2005 Land Use	25
MAP 4:	Zoning (Generalized)	27
MAP 5:	Environmental Justice	29
MAP 6:	Parking	39
MAP 7:	Natural Features	43
MAP 8:	Floodplains	45
MAP 9:	Impervious Surface	47
MAP 10:	Steep Slopes	55
MAP 11:	Proposed Greenways and Trails	57
MAP 12:	AADT	61
MAP 13:	2000 Origin-Destination Districts	63
MAP 14:	Crashes (2003-2005)	71
MAP 15:	Median Inventory - Cheltenham Township	78
MAP 16:	Median Inventory - Abington Township and Jenkintown Borough	79
MAP 17:	Median Inventory - Upper Moreland Township	80
MAP 18:	Study Area Transit Network	87
MAP 19:	Hatboro Station Area Improvements (A)	94
MAP 20:	Hatboro Station Area Improvements (B)	95
MAP 21:	Potential Locations for Willow Grove Transit Center	96
MAP 22:	Study Area Bicycle Network	103
MAP 23:	Sidewalk Inventory	108

EXECUTIVE SUMMARY

GENERAL BACKGROUND

The interconnected 9- and 12-mile corridors along Route 611/Route 263 (Old York Road and Easton Road) are situated in eastern Montgomery County between the boundaries of the City of Philadelphia and Bucks County. The study corridors include parts of five municipalities: Abington, Cheltenham and Upper Moreland townships and Hatboro and Jenkintown boroughs (See Map 1).

A key approach towards issues and problems along a transportation corridor is to foster inter-municipal cooperation and coordination to identify projects and programs to achieve needed solutions. In recognizing the value of this approach, the “Multi-Municipal Workshop” forum was formed consisting of the five corridor municipalities. These municipalities, along with Montgomery County, and the Delaware Valley Regional Planning Commission (DVRPC), funded this study.

This study provides an opportunity to address transportation, land use and environmental challenges in a coordinated effort. This synergy can enhance the creation of economic development opportunities within the corridor.

In an effort to understand the issues important to those who live and work in the corridor, a Study Advisory Committee (SAC) was formed. It includes state, local and regional agencies and organizations, business owners and educational institutions, as well as municipal representatives. The SAC has held three meetings to date. DVRPC and the SAC also sponsored a public open house. In addition, individual meetings have been held with each of the five study municipalities to gather information on their plans and vision for the corridor. The study team also met with several transportation and environmental organizations operating in the corridor to gain their perspective on corridor issues and needs.

This is Phase 1 of a two-phase process. This phase examines the existing conditions of the corridor, which will be followed by detailed improvement recommendations in Phase 2.












This study is organized into three main categories - environmental, land use and transportation. The study team documented and analyzed existing conditions of transportation facilities in the corridor. The analysis included traffic volumes, crash history, major intersections, and arterial roadways. In addition, a travel time survey and trip origin and destination analysis were conducted. A general overview of each bus and rail route was completed as well as an evaluation of the condition and adequacy of transit facilities and infrastructure. The connectivity of corridor bus routes and regional rail stations, including schedule coordination, was also assessed. Improvements to intermodal connections were recommended. Non-SEPTA transit services within the corridor were inventoried. Priority bicycle routes were identified by using two broad goals. The first goal was to create connections between residential neighborhoods and downtown areas. The second goal was to create alternative routes that parallel major roads such as Route 611 and Route 263. Priority road segments were also assessed for their fitness as bicycle facilities.

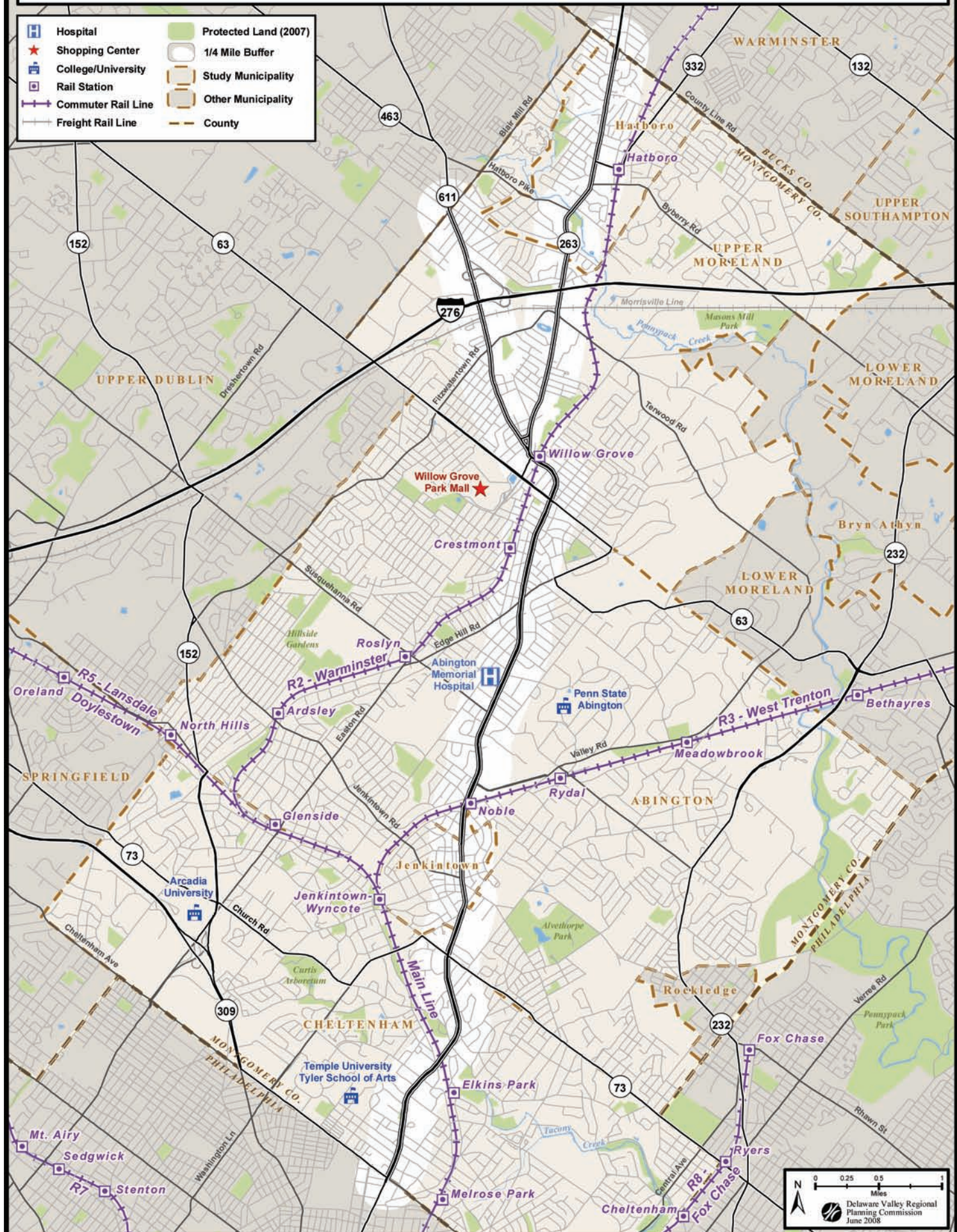
Land use plans, municipal zoning codes and demographic trends have also been documented. A toolkit of strategies was identified to promote smart growth in the corridor. The goal of these strategies is to revitalize older town centers, concentrate new development around growth nodes, enhance access to transit, and promote development of mixed-use corridors.

In these new growth centers, municipalities should ensure development that is dense and pedestrian-friendly, similar to the corridor’s older, historic areas, but with new construction. Zoning for these areas could require narrower frontages, permitting taller buildings, with front entrances sited along the street frontage, parking hidden or structured, and with streetscaping to enhance the area. Development form can be regulated to have similar scale and dimensions with historic building types, to retain a character in new areas that is sympathetic with the historic town centers, elsewhere along the Route 611 corridor.

Route 611/263 Corridor

Map 1: Study Area

	Hospital		Protected Land (2007)
	Shopping Center		1/4 Mile Buffer
	College/University		Study Municipality
	Rail Station		Other Municipality
	Commuter Rail Line		County
	Freight Rail Line		



In addition to the identified new growth nodes, untapped markets may exist for commercial and residential growth around rail transit stations. This type of concentration of new development around transit hubs is known as transit-oriented development (TOD). Areas around the Noble, Elkins Park (by Church Road), and Willow Grove train stations may be ripe for this type of development.

An issue that is inherently tied in with that of building town centers is to portray a strong sense of place. It is important to build a sense of place, and maintain the building form and scale of each community's historic areas, if the desire exists to retain and strengthen the commercial competitiveness of these town centers.

In order to revitalize growth nodes, develop a sense of place, support transit-oriented development, and restore the competitiveness of historic town centers, it is critical to support the pedestrian environment with elements such as benches, street trees and planting, pedestrian scale lighting, continuous unobstructed sidewalks and curbs in good condition, and pedestrian-oriented development. It is also important to have well-marked crosswalks, frequently sited, and with pedestrian signal heads.

The natural resources of the Route 611/263 corridor communities and the ecosystem services these resources provide are critical to the area's sustainability, overall health, and quality of life. The preservation and restoration of these resources, future redevelopment and growth, and changes to the area's transportation infrastructure are all interlinked.

One important topic addressed during Phase 1 was stormwater, which is affected by land use, geology and soils, surface and ground water, riparian buffers, woodlands, floodplains, wetlands, and slope. A direct environmental impact of stormwater runoff is the degraded water quality of the corridor's waterways. A large part of a municipal stormwater program can be the implementation of a "Green Streets" program that incorporates stormwater controls into the built environment through streetscape improvements, traffic calming devices, and greening efforts. Improvements to landscaping and parking regulations can lead to designs that capture rainfall and reduce runoff.

The second topic addressed is "Green Infrastructure," which is also based on land use, geology and soils, surface and groundwater, and natural vegetation, but also includes infrastructure investments like multi-modal trails and sidewalks, and capital investments like greenways, wildlife corridors, and parks. An understanding of the study area's Green Infrastructure will promote better decision-making with regard to transportation issues within the Route 611/263 corridor. Investing in and protecting Green Infrastructure is vital to protecting the ecosystem services natural areas provide.

This document represents Phase 1 of a two-phase process. This Phase 1 report examines the existing conditions of the corridor, which will be followed by detailed improvement recommendations in Phase 2. The Phase 2 report is scheduled to be completed by June 2009.

CORRIDOR-WIDE RECOMMENDATIONS

Corridor-wide recommendations are those that can provide benefits to road users along the length of the corridor through improved mobility, safety and aesthetics.

Transit

- Install bus stop shelters at peak boarding locations.
- Update bus and train schedules to promote bus-to-train transfers and commuting.
- Improve crosswalks and sidewalks in the vicinity of bus stops that are deficient.
- Expand parking at rail stations.

- Find parking alternatives for at-capacity rail stations.
- Improve rail station amenities.
- Install wayfinding signs to indicate the location of rail stations.
- Improve peak rail capacity.
- Install high-level platforms at stations with peak loading.
- Study potential for southern-corridor circulator shuttle.

Highway

- Expand left turn lanes to improve traffic flow.
- Landscape medians as traffic calming and stormwater management tools.
- Install man/hand pedestrian signals with countdown timers and continental-striped crosswalks at all signalized intersections.

Parking

- The number of parking spaces required for residential and commercial structures may be accommodated through shared parking arrangements. By facilitating and incentivizing shared parking, while consolidating entrance and egress points, municipalities may simultaneously maximize the potential of available land for parking, while creating more desirable areas for pedestrians and removing impervious surfaces.
- For development within the town center growth nodes, parking should be located in the rear of properties, should be on-street only, or should be shared in off-site, surface facilities or structured facilities.
- The minimum parking space dimensions should be reduced within municipal land development ordinances to accommodate compact vehicles, bicycles, motorcycles, and car-sharing, and allow for the installation of vegetated swales and landscaped medians to mitigate stormwater runoff.
- Where appropriate, such as on residential cross-streets and under-used and oversized commercial property parking lots, require the use of porous paving materials when surfaces must be repaved.
- Amend the municipal subdivision and land development ordinance to require that large parking lots have tree canopies to reduce stormwater runoff and urban heat island effect.

Pedestrian

- Widen and upgrade sidewalk pavement and remove obstacles.
- Create continuous sidewalk network.
- Install pedestrian amenities such as benches, street trees and planting, pedestrian scale lighting, sidewalks and curbs in good condition. Streetscape improvements are an integral part of a comprehensive “Green Streets” program, which employs the use of tree trenches and contained planters to mitigate stormwater runoff.

Bicycle

- Install “Share the Road” signs along designated bike routes.
- Install bicycle lanes along designated bike routes.

- Add elements of a comprehensive “Green Streets” program, such as street trees, to key cross streets and parallel side streets to create linear parks and bicycle paths that lead to transportation hubs and growth nodes.

Gateway treatments

- Install gateway treatments along municipal boundaries.
- Create a civic/business program to sponsor landscaped gateway treatments and other landscaping projects.
- Recognize the contributions of area businesses and organizations that establish innovative landscaping projects through an annual Corridor Award.

Wayfinding signs

- Wayfinding signs should be placed for the benefit of all. If one needs to travel through one municipality to get to an attraction in another, then the municipalities need to work together for sign placement.

PRIORITY AREA RECOMMENDATIONS

These areas (1-14) were identified through individual meetings with the study area municipalities as well as the Study Advisory Committee. These are listed as they occur geographically from south to north, and not in order of importance. The locations are displayed on the Priority Area Recommendations Map on page 8.

1. Route 611 at Cheltenham Avenue (Cheltenham Township)

ISSUES:

- Peak period congestion which is compounded by unsafe vehicular conditions.
- Traffic at this location is regulated by two, closely-spaced traffic signals.
- Lack of gateway treatment.
- Bridge area not attractive or welcoming.
- Shopping center too auto-centric, despite significant pedestrian activity.
- Poor connectivity between pedestrian crossing points and transit stops.

Recommendations:

- Provide northbound left-turning vehicles with a protected movement.
- Relocate the southbound lane-drop to the segment upstream of the intersection.
- Install planted gateway elements, such as a contained planter or infiltration planter, to reduce stormwater runoff, and add visible signage.
- Reface the upper level of the bridge, replacing the chain-link with attractive material, such as brick.
- Improve pedestrian crossings to be ADA compatible.
- Encourage development of street edge parcel where there is currently parking on the corner of the shopping center.

- Widen sidewalks and add pedestrian amenities along the west side.
- Create better connectivity between pedestrian crossings and transit stops.
- Create shared parking and reduce curb cuts for commercial conversion buildings on western side of Old York Road.

2. Route 611 at Ashbourne Road (Cheltenham Township)

Issues:

- The westbound approach is along a 7% uphill grade, severely reducing sight distance for westbound vehicles.
- The signal plan is currently split-phased.
- This intersection operates at a LOS of C and B for the morning and afternoon peak hours, respectively.
- Development proposed along Ashbourne Road will increase traffic volumes.

Recommendation:

- Realign and re-grade Ashbourne Road.

3. Route 611 Near Church Road (Cheltenham Township)

Issues:

- Lack of pedestrian amenities.
- Density too low to develop a town center environment.
- Intersection with Church Road forbids pedestrian crossing at certain points.
- No sidewalks at some points; cluttered and unattractive visual impact.
- Uses are not transit-supportive.

RECOMMENDATIONS:

- Allow and encourage higher density and mixed-use development.
- Install “Town Center” overlay district with design controls, requiring street-wall development.
- Limit auto-centric uses such as repair shops and gas stations.
- Install continuous sidewalks and widen existing sidewalks.
- Investigate feasibility of constructing new sidewalk on northbound Route 611 from Church Road to Green Briar Road.
- Utilize a sign ordinance to regularize signage and reduce clutter.
- Install pedestrian amenities, placemaking elements, and Green Street elements, such as pedestrian-scale lighting, trees and infiltration planters, banners, colored pavement treatments, and benches.
- Permit pedestrian crossings at all legs of Church Road intersection.
- Increase visibility of pedestrian crossings, possibly by installing a vegetated bump-out that also

mitigates stormwater runoff.

- Visibly mark shared parking facilities off the corridor.

4. Area Around Intersection of Route 611 and Township Line Road (Cheltenham and Abington Townships)

Issues:

- Development is too auto-centric.
- Sea of parking hurts the viability of the roadway.
- Few pedestrian amenities, especially in shopping center areas.
- Lack of gateways to Jenkintown.

Recommendations:

- Redesign the intersection with Township Line Road to be friendlier to pedestrians.
- Install Gateway treatments for Abington and Jenkintown at appropriate locations.
- Rezone areas between Wyncote Road and Washington Lane to develop a walkable growth node, with mixed-use development on both sides of Old York Road.
- Encourage the installation of structured parking and mixed-use development on some of the large parking lots.
- Encourage new residential development to support enhanced retail growth in this area.

5. Route 611 at Washington Lane (Jenkintown Borough and Abington Township)

Issues:

- The intersection is large and skewed. Route 611 stop bars are approximately 350 feet from each other; Washington Lane stop bars are approximately 370 feet from each other.
- There are delays in the morning and afternoon peak hours.
- Signal plan is split-phased for Washington Lane approaches.
- Two significant developments are proposed close to this location.

Recommendations:

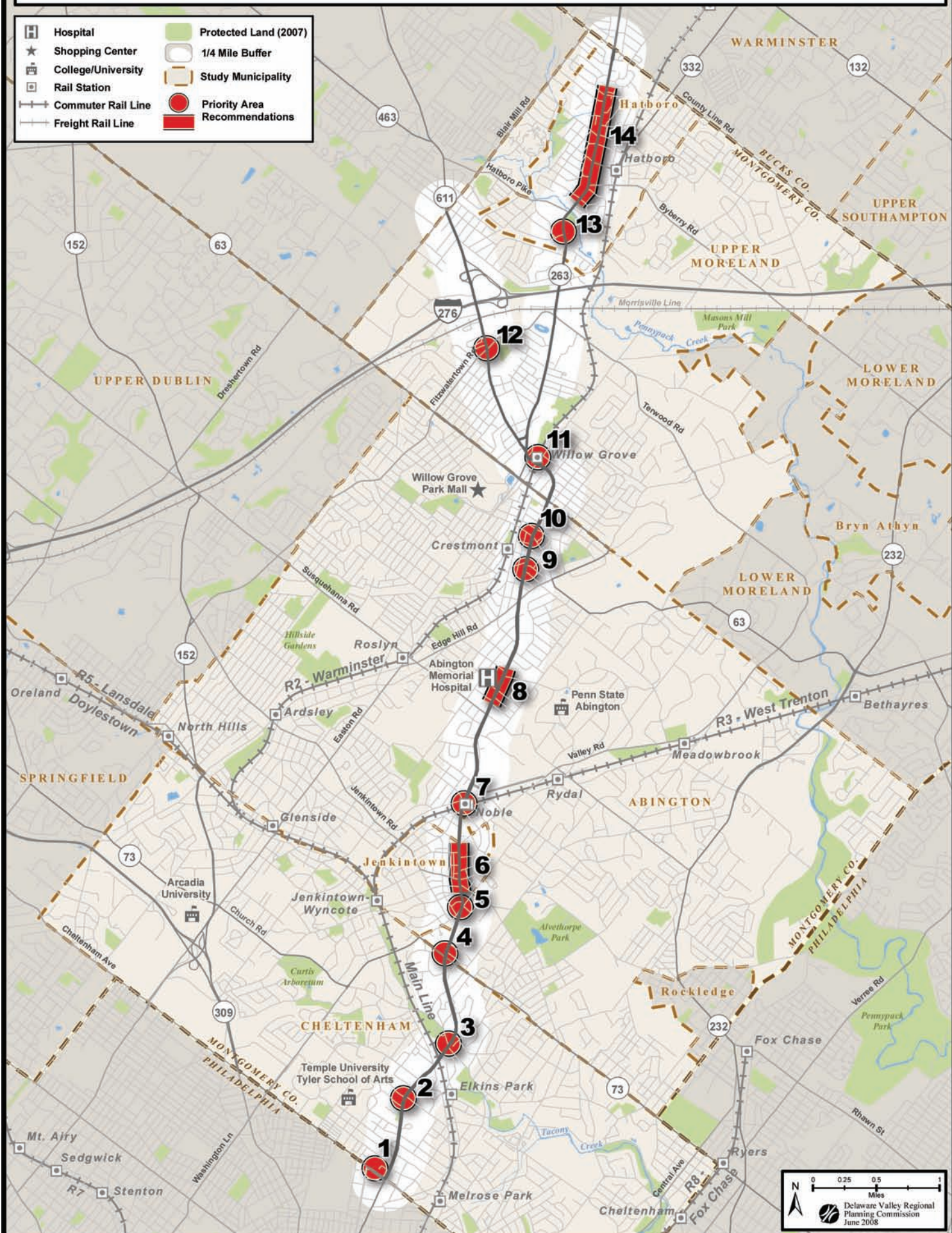
- Construct a gateway treatment at this location, such as a contained planter or infiltration planter to reduce stormwater runoff, and add visible signage.
- Convert Washington Lane west of Route 611 to one-way westbound to reduce delays at the intersection.¹

¹ Jenkintown Borough has expressed concern that this recommendation could re-route eastbound traffic into Jenkintown's neighborhood streets.

Route 611/263 Corridor

Map 2: Priority Area Recommendations

	Hospital		Protected Land (2007)
	Shopping Center		1/4 Mile Buffer
	College/University		Study Municipality
	Rail Station		Priority Area Recommendations
	Commuter Rail Line		
	Freight Rail Line		



6. Route 611 and Adjoining Streets in Downtown Jenkintown Borough

Issues:

- Old York Road frontage is not welcoming to pedestrians.
- Lack of connectivity with retail corridors off of Old York Road.

Recommendations:¹

- Install enhanced pedestrian amenities, such as bollards, contained planters, and infiltration planters, to separate the sidewalk from the roadway and mitigate stormwater runoff.
- Install a consistent treatment of banners, signage, and streetscaping connecting Old York Road frontage with interior roadways.
- Through streetscaping, new development, and signage work, encourage visibly moving the center of pedestrian activity, so that growth is radial from the existing Town Square, rather than linear, from Summit Avenue to Hillside Avenue.
- Jenkintown should develop a structured parking facility in its business district.
- Amend zoning to ensure all new development along Old York Road is built to the sidewalk edge or has minimal setback. No parking or internal curb cuts should be permitted along the Old York Road frontage.
- Extend Fox Chase Trail to Meetinghouse Road; other proposed bicycle facilities would allow bicyclists to continue to Jenkintown using Meetinghouse Road and Jenkintown Road.

7. Area Around Noble Train Station (Abington Township)

Issues:

- Existing development is too auto-centric to be transit supportive.
- Potential for significant infill development.
- Single-use parking.
- Poor pedestrian crossings at Harte Road.

Recommendations:

- Create Transit-Oriented Development overlay district, ensuring higher-density development, with transit-supportive uses.
- Rezone parcels on the west side of Old York Road, to ensure street-edge, mixed-use development, with transit-supportive form.
- Connect existing commercial parking and encourage shared parking arrangements with the transit station. Structured parking should be supported.
- Enhance pedestrian pathways and crossings, building easy accommodations between the Noble

¹ Jenkintown requests that DVRPC recommend their proposal to consolidate traffic lanes in its business district from four lanes to three lanes and install bicycle lanes along each curbside to separate the sidewalk from the roadway. This proposal is intended to enhance the pedestrian experience in Jenkintown while rationalizing the flow of traffic during peak periods, and providing bicycle access.

Station, retail, and parking facilities.

- Adapt zoning to facilitate higher-density, street edge development along the Fairway.
- Develop a bicycle corridor on Highland Avenue and Rockwell Avenue by adding lane striping or paving materials and street trees; other improvements would provide access to the Fairway and Noble Station.
- Create an official map to establish a new street network as this area is developed.

8. Abington Hospital Area (Abington Township)

Issues:

- Too many curb cut access points, leading to individual parking lots.
- Businesses in older structures seem to be struggling.
- Narrow sidewalks and poor pedestrian amenities.

Recommendations:

- Encourage the consolidation of curb cuts and the use of shared parking facilities.
- Rezone unbuilt parcels so that new development maintains street-wall frontage, and has ground level retail.
- Calm traffic, shorten crosswalks, enhance pedestrian crossings, and mitigate stormwater by installing vegetated bump-outs.
- Widen sidewalks where they are less than five-feet, and reduce the number of conflict points with pedestrians crossing over vehicle curb cuts.
- Invest in pedestrian amenities and “Green Streets” streetscaping.
- Adapt zoning to permit mixed use development, with higher densities and build to the sidewalk, along side streets and Highland Avenue.

9. Route 611 at Roy Avenue (Abington Township)

Issues:

- This is an unsignalized intersection that is offset by approximately 90 feet.
- There are few alternatives for crossing Route 611, as either a pedestrian or in a vehicle. The alternatives are Welsh Road to the north and Edge Hill Road to the south, both of which are approximately 1/4 mile away.

Recommendation:

- Further evaluate the realignment of Roy Avenue to create a four-leg intersection with Route 611.
- Improve pedestrian amenities and safety and mitigate stormwater runoff by installing elements of a comprehensive Green Streets program, such as street trees, infiltration planters, and vegetated bump-outs.

10. Redevelopment Area Around Old Welsh Road (Abington Township)

Issues:

- Vacant businesses.
- Suburban-style development with large front parking lots.
- Poor pedestrian amenities.
- Lack of sense of place.
- Potential for significant new development.

Recommendations:

- Zone vacant structures and redevelopment parcels with “Town Center” overlay, mandating mixed-use, street-wall, pedestrian-friendly development.
- Zone area to have parking behind the development, hidden, or structured,
- Invest in pedestrian amenities, placemaking elements, and Green Street elements, such as pedestrian-scale lighting, trees and infiltration planters, banners, colored pavers, and benches.
- Enhance pedestrian crossings and amenities, and mitigate stormwater runoff by installing elements of a Green Streets program.

11. Willow Grove Station (Upper Moreland and Abington townships)

Issues:

- Opportunity for new transit-oriented development.
- Businesses in older buildings seem to be struggling or are vacant.
- Blank walls facing the station area.

Recommendations:

- Create Transit-Oriented Development overlay district, ensuring higher-density development, with transit-supportive uses.
- Enhance pedestrian crossings and amenities.
- Construct sidewalk as necessary on Davisville Road between Willow Grove Station and the Mall; make Davisville Road a gateway.
- Develop a bicycle corridor on Fitzwatertown Road and Moreland Road; these roadways would be reconfigured and bicycle lanes would be added to create a connection between residential neighborhoods and Willow Grove Station.

12. Route 611 at Fitzwatertown Road (Upper Moreland Township)

Issues:

- Fitzwatertown Road is a major east-west connector between Route 63 and Route 263. Although volumes along PA 611 are dominant, heavy volumes are also experienced at the Fitzwatertown approaches, especially for eastbound left turning vehicles.
- Traffic exiting from the retail area (Staples, Dunkin Donuts) conflicts with traffic along Fitzwatertown Road.

Recommendations

- Close the exit from Dunkin Donuts to Fitzwatertown Road and direct traffic to the Route 611 exit or through the Staples Shopping center to Fitzwatertown Road.
- Make the exit from the Staples shopping center right-in/right-out only.

13. Route 263 from Warminster Road to Crooked Billet Road (Upper Moreland Township, Hatboro Borough)

Issues:

- Lack of sidewalks.
- Landscaping impeding pedestrian movement.

Recommendation:

- Construct new sidewalk on Route 263 to complete sidewalks on both sides of road between Warminster Road and downtown Hatboro.
- Implement a traffic calming strategy, specifically a lane reduction, north of Warminster Road.

14. Route 263 and Adjoining Streets in Downtown Hatboro Borough

Issues:

- Lack of gateways.
- Single use buildings along the corridor.
- Insufficient parking capacity.
- Speeding traffic traveling along Route 263 to north of Newington Drive.

Recommendations:

- Install gateway treatments near Horsham Road by the Pennypack Creek.
- Rezone parking lots to permit higher-density residential development behind the retail facades.
- Encourage shared parking arrangements.
- Create a Transit-Oriented Development overlay district around the Hatboro Train Station.
- Install wayfinding signs leading to the train station.
- Explore the feasibility of a lane drop northbound from Newington Drive to Crooked Billet Road to reduce speeding.

1.0 INTRODUCTION

1.1 PURPOSE AND NEED

The region's adopted long-range plan, *Destination 2030*, recommends goals and policies to achieve a more sustainable region, predicated on better linking land use and transportation plans and projects to achieve smart growth. A key approach to resolve issues and problems along a transportation corridor is to foster inter-municipal cooperation and coordination to identify projects and programs, including both individual and joint actions, to achieve needed solutions. In 2006, recognizing the value of this approach, the five study corridor municipalities established a "Multi-Municipal Workshop" forum that meets monthly to discuss common issues, problems and proposed solutions. Representatives from the forum, working with the Pennsylvania Environmental Council, the Montgomery County Commissioners' Office, and the Montgomery County Planning Commission, approached DVRPC to seek possible technical assistance to address corridor land use and transportation concerns. This study responds to the identified needs and is intended to provide a two-year work program culminating in an action strategy and proposed implementation projects.

Common to all the study corridor communities, given their location in eastern Montgomery County and the critical issues identified, is a concern about economic development and revitalization. In addition, as older communities oriented to and around SEPTA's Regional Rail lines and bus service, they share a common goal of maximizing public transit ridership. Increased ridership and transit-oriented development can help to discourage additional auto trips on Routes 611 and 263, while encouraging and reinforcing their existing, more compact development pattern.

This document represents Phase 1 of a two-phase process. The purpose of Phase 1 is to conduct an assessment of existing corridor conditions, identify strategic issues and identify and analyze the corridors' vision, goals and objectives. The Phase 1 report examines the existing conditions of the corridor, which will be followed by detailed improvement recommendations in Phase 2. The Phase 2 report will be completed by June 2009.

The goals of the study were determined by the corridor municipalities and Montgomery County working together with the DVRPC. Six primary goals have been identified for this study:

1. Improve circulation and mobility
2. Identify community development enhancements
3. Identify and promote cultural and historic resources
4. Improve economic development
5. Develop a corridor identity
6. Identify and evaluate natural resources

The following objectives were established that could assist in meeting the goals of the study:

- Improve vehicular safety and mobility
- Improve transit service to the corridor
- Improve bicycle mobility and safety

- Improve pedestrian safety and mobility
- Facilitate commercial and residential redevelopment
- Improve streetscape
- Introduce sustainable standards to the corridor

1.2 ASSETS, CONSTRAINTS AND OPPORTUNITIES

An analysis of the corridor included documenting its Assets - unique and positive characteristics; Constraints - factors or conditions that impede the advancement of the corridor; and Opportunities - possibilities to effectuate positive change.

Assets

- Commuter rail service provided by SEPTA R-1, R-2, R-3, and R-5 trains with direct access to Center City Philadelphia.
- Frequent bus service by SEPTA buses with the #55 serving the length of Route 611 with connections to major employment centers.
- Business districts with regionwide access.
- Historic and human scale main street frontages in the boroughs of Jenkintown and Hatboro.
- Sidewalks throughout the length of the corridor that provide pedestrian access.
- Institutions such as Abington Memorial Hospital and Penn State University - Abington through which partnerships could be brokered to achieve mutual goals.

Constraints

- A narrow cartway along Route 611 in Jenkintown that restricts pedestrian and vehicular circulation improvements.
- Discontinuous and deficient sidewalks throughout the corridor
- Small parcels with a high density of driveways and curb cuts
- Unattractive streetscape at some locations
- Uninviting pedestrian environment at some locations
- Spacing between traffic signals deter pedestrian movement across the corridor.
- Older stormwater infrastructure

Opportunities

- Potential to improve traffic circulation through intersection improvements
- Potential to consolidate and rationalize property access points that disrupt pedestrian activity along sidewalks
- Potential to improve sidewalk network and pedestrian crosswalks

- Potential to develop a corridor identity
- Potential to promote the history and culture of the corridor
- Potential to reinforce pedestrian scale development by orienting new buildings to street and sidewalks and placing off-street parking behind buildings
- Potential to implement Transit Oriented Development at rail stations
- Potential to reinforce central business districts along the corridor
- Potential to make use of large redevelopable sites to create new mixed use complexes
- Potential to combine streetscape and pedestrian improvements and traffic calming devices with improvements to stormwater management practices.
- Potential to link pedestrians and bicyclists to public transportation, incorporating on-road bikeways, greenways, and green streets.

1.3 SUMMARY OF EXISTING COMPREHENSIVE PLANS

The local governments and the various agencies have commissioned or undertaken studies over the years in the Route 611/263 corridor. These studies have included recommendations on land use, transportation, and environmental conditions. From a local municipal plan through the county and finally at the regional planning level, many of these recommendations contain similar themes. The following section contains highlights from each level of government's comprehensive plan. While this corridor study does not attempt to re-hash older recommendations, it is important to document each government's vision for the corridor. Many of the themes mentioned in the comprehensive plans are echoed in section seven: Plan Recommendations.

DVRPC Long Range Plan

As the metropolitan planning agency for the region, federal regulations require that DVRPC prepare, adopt and maintain a long-range transportation and land use plan (LRP) with a minimum 20-year time horizon. *Destination 2030* sets forth DVRPC's land use and transportation policies, including transportation projects, for the region. It outlines a collective future vision for the region's 353 municipalities. DVRPC classified each of the municipalities as one of four general community types: Core Cities, Developed Communities, Growing Suburbs, and Rural Areas.

Each municipality in the Route 611/263 study area has been classified as a Developed Community in the DVRPC LRP. They include the region's older townships and boroughs, inner-ring municipalities adjacent to the Core Cities, streetcar suburbs, and developed townships in outlying areas. Preventive maintenance, streetscape and signage programs, and economic development activities such as Main Street initiatives can all help to reinforce the locational and physical advantages of these places while also stemming disinvestment. Policies in these communities should be focused on stabilization and revitalization.

Montgomery County Comprehensive Plan

In 2005, the Montgomery County Planning Commission adopted their most recent county comprehensive plan, *Shaping Our Future: A Comprehensive Plan for Montgomery County*. This extensive plan contains many elements that are intended to guide transportation, land use, and open space decisions at both the county and municipal levels.

Included in the transportation plan are separate sections discussing pedestrian and bicycle mobility, public transit, and highways with separate recommendations for each section. Pedestrian recommendations include guidance for sidewalk design and placement in relationship to the adjacent roadway conditions. Corridors that

are important to building a bicycle network are identified, including Old York Road. Recommendations for how bicycle facilities are incorporated on new roadways are included.

Bus recommendations include expansion of service through growing sections of Montgomery County and increasing service frequency on existing routes. Reverse commuting should also be expanded through adding additional connector busses. SEPTA Regional Rail recommendations include eliminating lesser used stops from peak hour trains, increasing service through using faster trains, and exploring the use of electronic fare cards. The plan supports proposed Cross County Metro service that would parallel the Pennsylvania Turnpike in Montgomery County. Completing sidewalk connections to transit stations and bus stops and providing shelters at key bus stops are also recommended.

Additionally, each highway corridor contains specific improvements aimed at managing traffic and identifying key projects. The Route 611/263 corridor contains over twenty improvements including the following that are applicable to this study: replace Old York Road bridge over SEPTA R3 tracks, rehabilitate the Edge Hill Road bridge, expand parking at Willow Grove (R2) rail station, and install a double track along the R2 Regional Rail line from Roslyn to Warminster stations.

The land use plan describes the development and growth vision for Montgomery County. All of the land in the general Route 611/263 area is categorized as Existing Suburban Development, with various strategies aimed at redevelopment. Also included in or around the corridor are two areas identified as major development centers: Jenkintown and Willow Grove. Examples of strategies in these areas include streetscape improvements, traffic calming, appropriate building design, wayfinding, historic preservation, and improving marketing programs.

Municipal Comprehensive Plans

The local comprehensive plan inventories existing conditions and describes a vision for each community (on which the municipality's zoning ordinance is based). There are comprehensive plans at the municipal level for all of the municipalities, and many other neighborhood, corridor, or other more specific plans for areas within the corridor. These plans, when taken as a whole, have recommendations for economic development, placemaking, housing, open space, and transportation needs.

What follows is a quick summary of each of the study area municipal comprehensive plans. For this inventory, the Willow Grove Revitalization plan has been used, as it is more recent than Upper Moreland's comprehensive plan.

Hatboro Borough Comprehensive Plan and Revitalization Strategy (2004)

- By Urban Research & Development Corporation.
- Developed in concert with a task force of local stakeholders.
- Four elements: Future Land Use and Housing; Business Revitalization; Recreation, Public Infrastructure, and Public Safety; and Transportation.
- Majority of the recommendations address land use, economic development, and parking. The recommendations also focus on expanding open space opportunities, improving parking circulation, public safety, and on environmental issues.

Jenkintown Revitalization Master Plan (2002)

- By Kise Straw & Kolodner in association with Glatting Jackson and Urban Partners. Created with input from the Jenkintown Revitalization Task Force.
- Revitalization goals grouped under: Economic Development Goals, Public Safety Goals, Community

Facilities Goals, Transportation Goals, and Housing Goals.

- The Plan largely focuses on reviving the Uptown commercial core based around Old York Road (PA 611), with 10-year timeline for implementation.
- Top Ten Revitalization Goals include improving the pedestrian environment, increasing parking supply, expanding the office and retail tax base, protecting architectural resources, minimizing speeding, and expanding open space opportunities.

Cheltenham Township Comprehensive Plan (2005)

- By the Cheltenham Planning Commission and the Montgomery County Planning Commission.
- Recommendations broken down into nine chapters: Natural and Scenic Resources, Housing, Historic Preservation, Transportation, Community Facilities, Open Space, Economic Development, Land Use; and Implementation.
- Each chapter concludes with a set of goals and objectives with policies to address them. The recommendations are fairly specific and targeted at an identified need.
- Economic development chapter makes frequent reference to the Commercial District Enhancement Plan, adopted October 2000; and the Community Revitalization Plan, adopted March 2002.

Abington Township Comprehensive Plan Update (2007)

- Created by Abington Township. Recognizes that many sections of the 1992 Comprehensive Plan are still relevant.
- Defers to the recommendations of the Township's Open Space, Recreation, and Environmental Resource Protection Plan of 1995 on pertinent issues. Also acknowledges and references over a dozen other plans created for the Township.
- Lays out several major goals and objectives, including maintaining a diversity of housing, protecting open space, providing recreational facilities, building local identity, providing local services, updating wastewater treatment facilities, meeting changing transportation needs, addressing economic development, and focusing on land use planning.
- Chapters include recommendations to address natural resources, community facilities and utilities, transportation and thoroughfares, relationship to neighboring municipalities, land use, and zoning

Willow Grove Revitalization & Redevelopment Plan

- By Kise Straw & Kolodner in association with Glatting Jackson and Urban Partners. Created with input from the Willow Grove Redevelopment Area Plan Oversight Committee.
- Contains Economic Development, Transportation, Housing, and Public Safety Analyses.
- Lays out several major goals and objectives, including encouraging mixed use development and discouraging isolated big box development, making centers pedestrian- and transit-friendly, preserving adjacent neighborhoods, and connecting Memorial Park to the town center.

2.0 CORRIDOR DEMOGRAPHICS

2.1 POPULATION

The population in the five municipalities is generally stable. In 1980, 133,000 residents lived in the municipalities, with Cheltenham and Abington comprising 71 percent of the total population. By 2000, the total population had decline by three thousand people, or two percent. Only Cheltenham Township increased in population (1,300 residents). DVRPC conducts population forecasts in conjunction with the Long-Range Plan. Corridor population is forecasted to increase by one percent to 130,950 residents by 2035 as illustrated in Table 1. On the other hand, Montgomery County, currently at 749,000 residents, is expected to increase to 890,100 residents, an increase of nineteen percent.

Table 1: Population and Population Forecasts

Municipality	1980	2000	2015	2025	2035	Population Change 2000 to 2035	Population Change 2000 to 2035
Abington	58,836	56,105	55,954	56,093	56,216	111	0%
Cheltenham	35,509	36,880	36,761	36,949	37,114	234	1%
Hatboro	7,579	7,390	7,448	7,552	7,643	253	3%
Jenkintown	4,942	4,475	4,442	4,452	4,461	-14	0%
Upper Moreland	26,138	24,990	25,136	25,338	25,515	525	2%
Study Area Total	133,004	129,840	129,741	130,384	130,949	1,109	1%
Montgomery County	643,377	748,978	822,952	860,816	894,136	145,158	19%

Source: DVRPC, 2007

Actual population along Route 611/263 can be refined by using Census Tract information. There are 21 census tracts that are within a quarter mile of the corridor, ranging in population from 2,300 to 6,000 persons. The total population of these 21 census tracts is 83,000 persons, or sixty-two percent of the population in the five municipalities. Additionally, there are 33,300 households within the 21 census tracts. The average household size, therefore, has 2.5 residents.

2.2 EMPLOYMENT

Similar to population, employment in the five municipalities is forecasted to remain consistent. In 2000, 65,400 residents were employed in the five municipalities, with Abington containing 25,600 jobs, or forty percent of the total employment. Cheltenham and Upper Moreland also contained 13,000 and 15,000 jobs respectively. DVRPC forecasts total employment by 2035 in the five municipalities to rise slightly to a total of 67,150 jobs, an increase of three percent. The majority of the employment change is forecasted to occur in Upper Moreland Township. Table 2 illustrates study area employment and employment change from 2000 to 2035. Similar to population change, employment change is much lower in the five municipalities than in Montgomery County, as a whole

Employment and population can be analyzed together to derive a jobs/housing ratio. This number, while only a factoid in itself, can illustrate work-related transportation decisions, and lead to a further understanding of

traffic concerns. Abington, Hatboro, and Upper Moreland all have a jobs/housing ratio between .45 and .65, indicating that there are roughly one job for every two people. Cheltenham has a ratio of .35 while Jenkintown has a ratio of 1.6. For Jenkintown, with close to twice as many jobs as residents, this indicates that many workers must be living outside of the municipality. This also might indicate that few workers have an opportunity to walk to work and must either take mass transit or drive.

Table 2: Employment and Employment Change

Municipality	2000 Census	2015	2035	Employment Change 2000 to 2035	Employment Change 2000 to 2035
Abington	25,586	25,742	25,774	188	1%
Cheltenham	12,984	13,247	13,254	270	2%
Hatboro	4,757	4,757	4,807	50	1%
Jenkintown	7,112	7,129	7,228	116	2%
Upper Moreland	14,952	15,351	16,080	1,128	8%
Study Area Total	65,391	66,226	67,143	1,752	3%
Montgomery County	492,677	535,621	585,430	92,753	19%

Source: DVRPC, 2007

Employment Centers and Major Employers

Identifying the types of business and their regional significance helps establish the magnitude of employment related trips within the study area. In the five counties that comprise Southeastern Pennsylvania, DVRPC has defined 88 employment centers that have an employment density of at least .5 employees per acre and at least 500 employees in 2000. Route 611/263 contains four employment centers, all of which have the greatest employment in the Service sector. Only the Jenkintown - Willow Grove center lies completely within the study area. Table 3 illustrates the four employment centers located within the Route 611/263 corridor, total employment and service employment. The next highest employment category and employment figure have also been included. These employment centers are significant both for the region and for Montgomery County. North Broad Street is the 8th largest employment center among Southeastern Pennsylvania, Willow Grove / Horsham is the 9th, and Jenkintown - Willow Grove is the 12th. King of Prussia is the only larger center in Montgomery

Table 3: Employment Centers

Center Name	Total Employment	Service	Next Highest Sector and Sector Employment
Warwick - Ivyland - Hatboro	23,679	6,068	Manufacturing - 5,591
Jenkintown - Willow Grove	38,815	15,657	Retail - 9,102
Willow Grove / Horsham	40,045	10,564	FIRE - 8,189
North Broad Street	41,931	25,994	Government - 5,155

Source: DVRPC, 2005

County. North Broad Street and Jenkintown - Willow Grove also rank 4th and 7th in total service employment while Willow Grove/Horsham ranks 3rd in total FIRE (Finance, Insurance, Real Estate) employment.

The Greater Philadelphia Chamber of Commerce produces a report of employers in the region, the Major Employers Directory, listing employers within eleven Philadelphia regional counties. Included in this list is the number of workers each company employs. The 2005 report lists only the top 30 employers per county, but the 2003 report contains much more data. Abington Memorial Hospital, a 570 bed medical facility located on Route 611 in Abington, is the largest employer in the study area. Other major employers within or around Route 611/263 as of 2003 (with 2005 updates) are listed in Table 4.

Table 4: Major Employers, 2003 and 2005

Name	Location	2003 Number of Employees in County	2005 Number of Employees in County	Head Quarters Office	Business Type
Abington Memorial Hospital	Abington	4,251	4,800	Regional	Hospital, General Medical and Surgical
ABB Automation Company (Instrumentation Division)	Warminster	490	N/A		Field Instrumentation Products
Averstar, Inc	Warminster	60	N/A		Software Engineering
Envirosource, Inc.	Horsham	100	N/A		Waste Management
GMAC Mortgage Corporation	Horsham	517	N/A	National	Mortgage Companies
Kulicke & Soffa Industries, Inc.	Willow Grove	600	N/A	International	Semiconductor assembly equipment
Penn Mutual Life Insurance	Horsham	500	N/A		Insurance Company
Philadelphia Geriatric Center	Jenkintown	700	N/A	Regional	Nursing Homes, Assisted Living
PNC Bank Corp	Abington	801	N/A		Banking/Finance Institution/Brokerage
Prucare of Philadelphia	Horsham	1,600	N/A		Health Maintenance
Quest Diagnostics Inc	Horsham	800	3,050		Medical Laboratories
SPS Technologies, Inc.	Jenkintown	1,200	N/A	International	Precision Mechanical Fasteners
Toll Brothers	Horsham	400	1,500	National	General Contractors - Single Family Homes
U.S. Security Guards	Willow Grove	300	N/A	Regional	Security
United Parcel Service	Horsham	3,500	N/A		Package Distribution Center
W. Atlee Burpee Co.	Warminster	250	N/A	National	Gardening Related Products

Source: Greater Philadelphia Chamber of Commerce, 2003 & 2005

3.0 CORRIDOR LAND USE AND ZONING

3.1 LAND USE

One way to study the built environment is to conduct a land use inventory and analysis. This tool analyzes the use of the land for synergies and conflicts. A discussion of existing land use in a corridor study is important for understanding the context of the transportation network and the relationship of roads and transit to growth centers and jobs.

DVRPC uses aerial photographs, flown every five years, to assist with a regional land use inventory, with 2005 being the latest data available. To insure the accuracy of the inventory, site visits were conducted to verify the land use type. Additionally, for any 'mixed use' site, a building with more than one use such as commercial and residential, the first floor or most prominent use of the building determined the type.

For this analysis, all land within a quarter mile of Route 611/263 has been analyzed. In general, the corridor can be characterized as a commercial corridor surrounded by neighborhoods composed of single-family-detached residential housing units. Most of the commercial activity is on Route 611/263 with very little along any of the side streets, except for West Avenue in Jenkintown and western Cheltenham Avenue in Cheltenham, as illustrated in Map 2. Cheltenham is the exception to the rule, where Route 611 is not lined by commercial structures but has a mix of residential, community service, and commercial. Single-family detached residential units comprise the majority of the land (Table 5), at 53 percent for the corridor overall and is above 50 percent in all of the municipalities except Upper Moreland (46 percent). Some row-homes and multi-family housing does exist but only comprises four percent of the total land area. It should be noted that nine percent of Hatboro's land area is either row homes and multi family housing – the largest in the corridor. As these are built out communities, there is very little wooded land (seven percent). Parking, as a separate use, comprises twelve percent of the total land (427 acres). Fortunately, there are several parking decks along the corridor, or this number would be higher.

3.2 ZONING

If land use tells what currently is on the land, the municipal zoning code dictates what can be built in terms of form and in most cases use. In Pennsylvania, each municipality has local zoning control, permitting the locality to create and enforce their own zoning ordinance. Within the five municipalities, there are 59 separate zones that can be found within a quarter mile from Route 611/263, not including any overlays. Each municipality contains between 10 and 17 zones. While each zone is unique, to get a clearer picture of zoning in the corridor, the zones have been consolidated into ten general categories based on use and form:

Similar to land use, the zoning within the corridor can be generalized as commercial zoning along Route 611/263 surrounded by residential uses. Many of the zones permit lower uses in the zone, so a commercial zone might also permit residential uses. Comparing land use to zoning illustrates that many community service uses are in residential zones. Also, with a few exceptions, the heights in the corridor are consistent at three stories, or between 35 and 50 feet. Map 3 illustrates general zones within the corridor.

Generalized Zoning: Routes 611/263 Corridor

Very Low Density Residential: under 1 unit/acre
Low Density Residential: 1 to 2 units/acre
Medium Density Residential: 2 to 8 units/acre
High Density Residential: over 8 units/acre
Commercial

Office
Institutional
Industrial
Recreation/Conservation
Life Care Facility

Source: DVRPC, 2008

Table 5: Land Use, 2005

	Hatboro	Upper Moreland	Abington	Jenkintown	Cheltenham	Total
Residential: Single-Family Detached	308.4	542	581.8	131.4	336.7	1900.3
Residential: Row Home	20.5	11.7	6.4	4.4	20.1	63
Residential: Multi-Family	25.3	22.7	9.7	1	14	72.8
Commercial	35.7	101.1	69.8	26.6	19.6	252.7
Community Services	25.9	18.8	36.3	8.3	55.9	145.3
Manufacturing: Light Industrial	0	55.2	2.3	0	0	57.6
Recreation	1.3	41.3	51.1	0.4	23.1	117.1
Utility	0	6.3	0	0	1.1	7.3
Transportation	2	67.1	32.4	4.4	24.1	130
Parking	53.6	149.4	150.9	24	49.6	427.5
Wooded	33.8	101.8	41.2	2	57.2	236
Vacant	19.8	49.9	28.6	2.2	18.1	118.6
Water	7.6	2.4	1.8	0	2.7	14.6
Total	534	1169.6	1012.4	204.7	622	3542.8

Source: DVRPC, 2007

	Hatboro	Upper Moreland	Abington	Jenkintown	Cheltenham	Total
Residential: Single-Family Detached	57.80%	46.30%	57.50%	64.20%	54.10%	53.60%
Residential: Row Home	3.80%	1.00%	0.60%	2.10%	3.20%	1.80%
Residential: Multi-Family	4.70%	1.90%	1.00%	0.50%	2.30%	2.10%
Commercial	6.70%	8.60%	6.90%	13.00%	3.10%	7.10%
Community Services	4.90%	1.60%	3.60%	4.00%	9.00%	4.10%
Manufacturing: Light Industrial	0.00%	4.70%	0.20%	0.00%	0.00%	1.60%
Recreation	0.30%	3.50%	5.00%	0.20%	3.70%	3.30%
Utility	0.00%	0.50%	0.00%	0.00%	0.20%	0.20%
Transportation	0.40%	5.70%	3.20%	2.10%	3.90%	3.70%
Parking	10.00%	12.80%	14.90%	11.70%	8.00%	12.10%
Wooded	6.30%	8.70%	4.10%	1.00%	9.20%	6.70%
Vacant	3.70%	4.30%	2.80%	1.10%	2.90%	3.30%
Water	1.40%	0.20%	0.20%	0.00%	0.40%	0.40%

Source: DVRPC, 2007

Route 611/263 Corridor

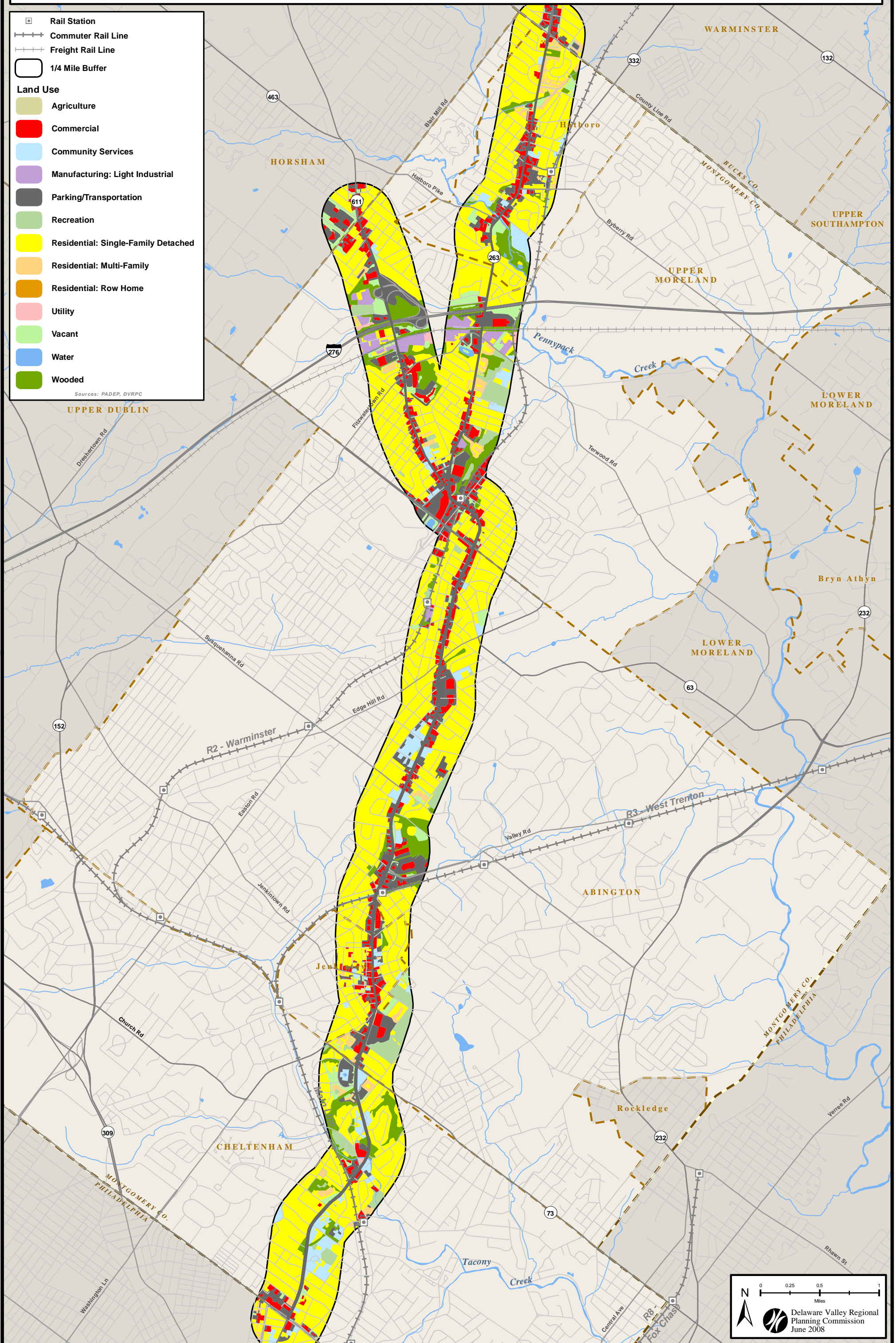
Map 3: 2005 Land Use

- Rail Station
- Commuter Rail Line
- Freight Rail Line
- 1/4 Mile Buffer

Land Use

- Agriculture
- Commercial
- Community Services
- Manufacturing: Light Industrial
- Parking/Transportation
- Recreation
- Residential: Single-Family Detached
- Residential: Multi-Family
- Residential: Row Home
- Utility
- Vacant
- Water
- Wooded

Sources: PADEP, DVRPC



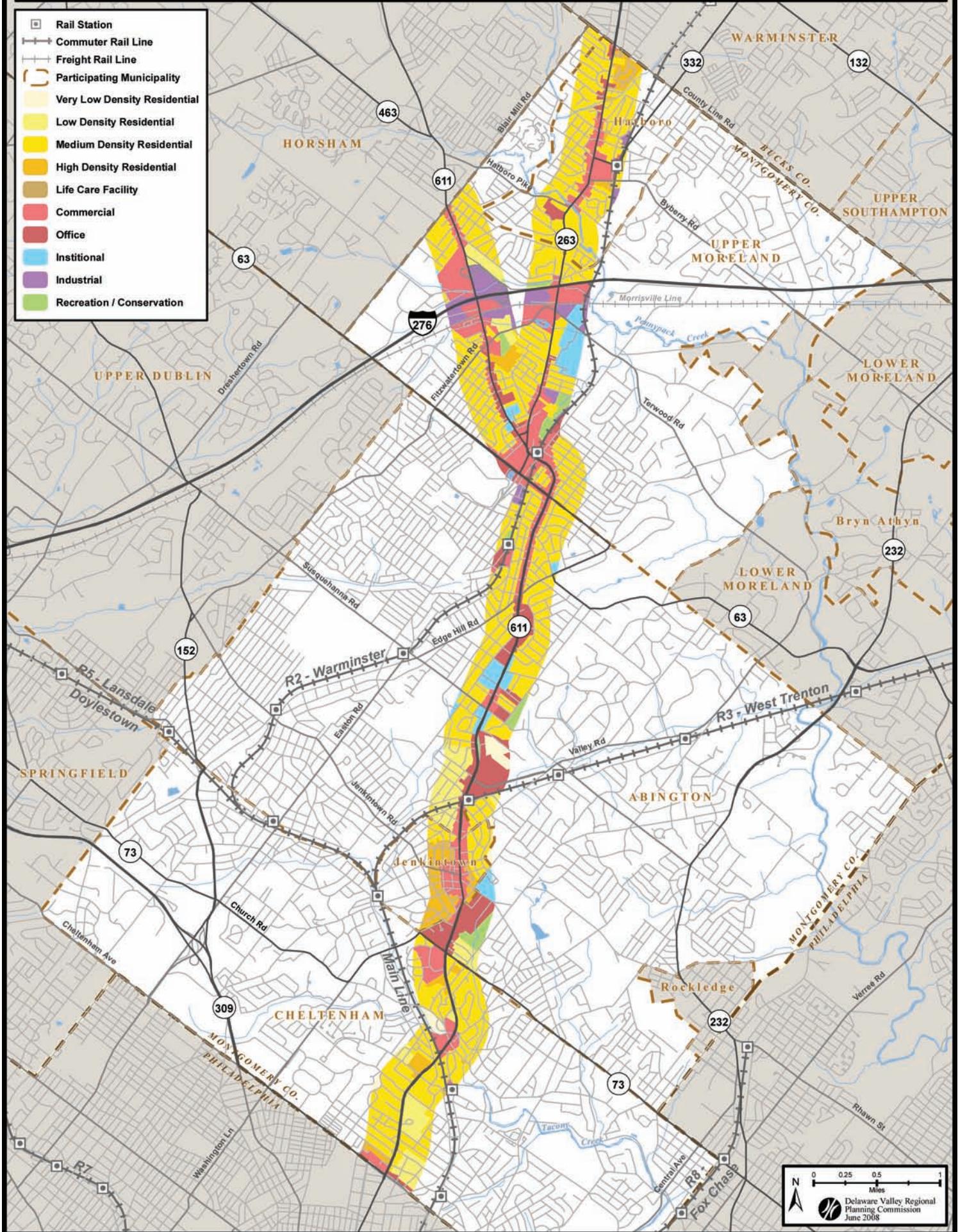
0 0.25 0.5 1
Miles

Delaware Valley Regional
Planning Commission
June 2008

Route 611/263 Corridor

Map 4: Zoning (Generalized)

-  Rail Station
-  Commuter Rail Line
-  Freight Rail Line
-  Participating Municipality
-  Very Low Density Residential
-  Low Density Residential
-  Medium Density Residential
-  High Density Residential
-  Life Care Facility
-  Commercial
-  Office
-  Institutional
-  Industrial
-  Recreation / Conservation



3.3 DENSITY

Route 611/263 is an established community. Zoning and ensuing land use patterns have resulted in a community with higher residential densities than outer suburbs but not as dense as Philadelphia neighborhoods. Higher residential density is a benefit to a community in facilitating reduced automobile trips as uses can be closer together, enabling alternative transportation options like biking, walking, and transit, and reducing infrastructure costs. Additionally, a denser community with options to walk or bike from housing to shopping, employment, or entertainment trips offers many health benefits.

Of the 21 census tracts that fall within the quarter mile study area, only one tract is considered low density, having less than two persons per acre, while only three tracts have less than four persons per acre. Six census tracts are high density and contain over eight persons per acre. The census tract that comprises Jenkintown has the highest density at 12.3 units per acre, while just outside of the study area, the LaMott neighborhood in Cheltenham at 19.3 persons per acre has the highest density within the five study area municipalities.

3.4 ENVIRONMENTAL JUSTICE

As part of Title VI of the Civil Rights Act of 1964 and the 1994 President’s Executive Order on Environmental Justice (EJ), DVRPC adopted guidelines to help mitigate potential direct and disparate impacts of transportation projects and programs on defined historically disadvantaged groups. DVRPC employs an environmental justice methodology that quantifies levels of disadvantage within the nine-county region. Using 2000 census tract information, categories of eight potential disadvantaged groups are analyzed, including female head of household with child, non-Hispanic minority, Hispanic, carless households, impoverished, elderly over 85 years of age, physically disabled, and limited English proficiency. Each category is analyzed for the total concentration in the region, generating a baseline number. If a census tract contains a concentration higher than the baseline threshold, it is considered disadvantaged. Census tracts can therefore contain zero to eight degrees of disadvantage (DOD).


This analysis generally indicates that extra care should be taken when looking into any physical improvements that would have an extra burden on the elderly or disabled population, possibly taking infrastructure improvements above and beyond any Americans with Disabilities Act (ADA) requirements. There are individuals living in the communities with limited English capabilities, and it is possible that many of these residents speak an Asian language: of the eleven census tracts within the five municipalities (not just within the corridor) that have an Asian concentration of greater than four percent, eight of these census tracts also have the LEP degree of disadvantage. While just outside the study area, the LaMott neighborhood census tract has a Non-Hispanic minority concentration of 90 percent. These groups should all be given special consideration for public input.

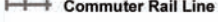
While indicators point to a relatively low level of disadvantage along the Route 611/263 corridor, it is important to recognize this is only a broad brush tool. For example, while only one census tract is considered sensitive for car-less households, meaning only one census tract has a concentration of over sixteen percent. There are over 2,500 households without cars along the corridor.


Of the 21 census tracts that fall within a quarter mile of Route 611/263, the overall DOD level is low. Three census tracts, two in Abington and one in Cheltenham have three degrees of disadvantage. In looking at overall disadvantage, fourteen census tracts have high concentrations of persons over 85, while eight census tracts have high concentrations persons with physical disabilities, as illustrated in table 6. Other high concentrations include Limited English Proficiency (5 census tracts), Non-Hispanic Minority (3 census tracts) and Carless Households (1 census tract).


Route 611/263 Corridor

Map 5: Environmental Justice


 Rail Station


 Commuter Rail Line


 Freight Rail Line

 Participating Municipality

Degrees of Disadvantage by Census Tract

 0

 1 or 2

 3 or 4

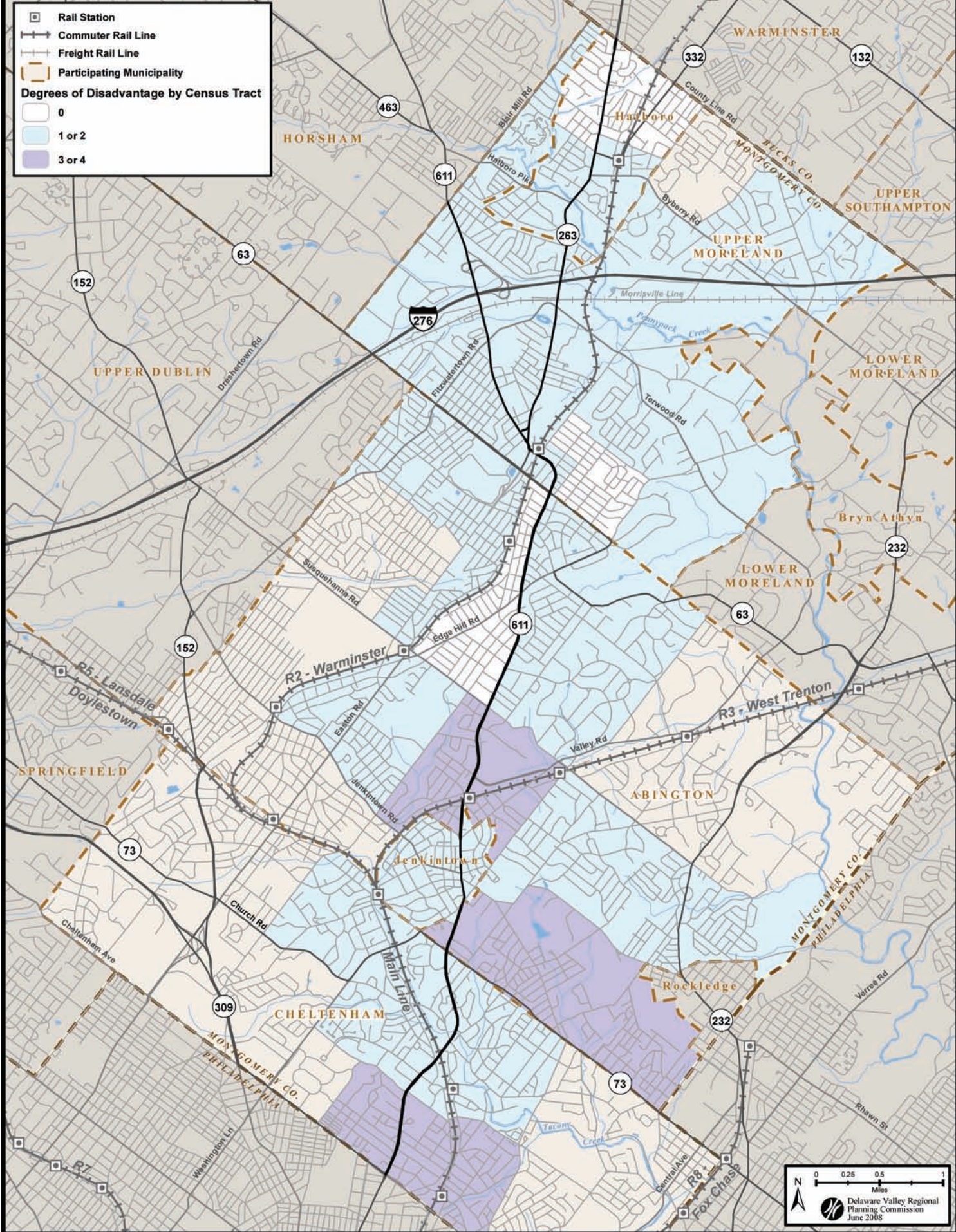


Table 6: Degrees of Disadvantage by Type

DOD Population Group	Number of Tracts
Non Hispanic Minority	3
Carless Household	1
Poverty	0
Female Head of Household with Child	0
Physically Disabled	8
Hispanic	0
Elderly: Over 85	14
Limited English Proficiency	5

Source: DVRPC, 2003

4.0 SMART GROWTH ANALYSIS

Objectives:

- Facilitate Commercial and Residential Development
- Improve Streetscape

Smart growth is a development pattern that focuses on reducing sprawl and concentrating development in a way that is pedestrian-friendly, enhances local economic development, encourages fewer automobile trips, and preserves older town centers. The Route 611/263 corridor has several vibrant historic areas, while elsewhere it also exhibits sprawling new development. Through a toolkit of strategies to promote smart growth, the municipalities along Route 611/263 could revitalize their older areas, concentrate new development around new growth centers, enhance access to shared parking and transit, and promote the economic development of its commercial and mixed-use corridors.

4.1 TOWN CENTERS

The corridor contains some older town centers: Hatboro, Abington (near the hospital), Jenkintown, Elkins Park. These places still have older buildings, with traditional configurations to the street - close-set buildings, minimal setbacks, front doors facing the sidewalk. These places define the historic character of the study corridor. Additionally, these types of older town centers within the Delaware Valley region have been shown to attract residents, visitors, and economic development around their unique character and amenities. Older suburbs like Haddonfield in New Jersey and Ambler in Pennsylvania have succeeded in reviving their older main streets, by investing in traditional patterns.

Along the Route 611/263 study corridor, however, the development pattern over the past 50 years has not been centered around these older main streets. Rather, growth has been permitted in a sprawling pattern, with new structures containing front parking lots and other elements that emphasize automobile travel over the pedestrian-friendly environment of traditional, town-center development. These suburban development patterns have been permitted by the zoning of the municipalities along the corridor, and availability of large tracts of land. This sprawling of the commercial structures along the corridor may increase the ability for individual municipalities to attract large-scale retailers; however, it detracts from the competitiveness of the older town centers, and reduces their ability to attract residents, businesses, and visitors by maintaining their unique, historic character.

Each municipality must decide how it wants to grow. However, all of the municipalities along the study corridor have made it clear that they place a strong priority on the revitalization of their older areas and the retention of their historic character, while supporting local economic development. In order to achieve these goals, the municipalities along the corridor will have to focus on strategies for encouraging smart-growth development, concentrated around historic growth nodes, or town centers.

Suggested locations for these town-centers are:

- Jenkintown
- Elkins Park (around Church Road)
- Abington around the hospital
- Hatboro

New Growth Centers

Smart-growth strategies can also be utilized to enhance development around non-historic areas. There is a demand for new commercial and residential development along the corridor, and the historic areas may not be able to accommodate all of this growth. However, rather than permitting sprawling, stand-alone developments, through zoning and other tools, the municipalities along the corridor should ensure that new development is concentrated together to build new growth centers that are also walkable and attractive.

In these new growth centers, municipalities should ensure development that is dense and pedestrian-friendly, similar to the historic areas, but with new construction. Zoning for these areas could require narrower frontages, permitting taller buildings, with front entrances sited along the street frontage, parking hidden or structured, and with streetscaping to enhance the area. Development forms can be regulated to have similar scale and dimensions with historic building types, to keep a character in new areas that is sympathetic with the historic town centers elsewhere along the corridor.

New growth centers are:

- Abington, just north of Township Line Road
- Area in Abington around Old Welsh Road
- Roy/Rubicam Area
- London Center Area

4.2 TRANSIT-ORIENTED DEVELOPMENT

There is only limited capacity to build new commercial development around existing growth nodes. In addition to the identified new growth nodes, untapped markets may exist for commercial and residential growth around rail transit stations. This type of concentration of new development around transit hubs is known as transit-oriented development (TOD). Significant data exist showing that there is demand for residential and commercial opportunities near rail transit, so that residents may easily be near their stations for commuting, and so that visitors can utilize transit to reach walkable commercial centers. Areas around the Noble, Elkins Park (by Church Road), and Willow Grove train stations may be ripe for this type of development.

The key to successful TOD is to structure it through zoning and design guidelines to ensure that it achieves several goals. These include 1) close proximity to transit (1/4 mile radius around the transit stop); 2) density great enough to support transit use and retail uses (minimum 6-8 residential units per acre); 3) orientation of buildings to the transit entrance and sidewalks, rather than to parking lots; 4) mix of uses, with retail uses to support the residential component, and residential uses to provide a critical mass to support rail transit and commercial growth; 5) walkability so that residents can walk to the coffee shop on the corner, for example, rather than having to drive.

In 2004 the Commonwealth of Pennsylvania adopted the Transit Revitalization Investment District (TRID) Act (PA Act #238 – 2004), enabling municipalities to utilize a value-capture structure to support improvements around transit stations. The TRID Act could provide a financing structure for the municipalities within the Routes 611/263 corridor to work in partnership with SEPTA to encourage TOD and improvements around the existing transit stations.

Suggested locations for TOD are:

- Noble train station
- Willow Grove train station

Smart-Growth Zoning

One of the most important strategies for encouraging smart-growth development in town centers, new growth nodes, and TOD areas is through zoning. The municipalities along the corridor should work on coordinating and potentially combining zoning districts to establish consistency. Municipalities should develop a shared “town-center” zoning district that requires compact, street-wall development (with minimal setbacks), rear-sited parking, shared access points (curb cuts), and architecture that is sympathetic with the historic fabric. This latter element can be achieved through form-based zoning (see Form-based zoning section below). This town center district should also permit higher densities and should encourage mixed-use, to ensure the critical mass of businesses and residents necessary to sustain a vibrant, pedestrian-friendly area, and to ensure eyes and activity on the street.

The growth pattern has resulted in a corridor with commercial development flanking either side of Route 611/263 in four out of the five municipalities (Cheltenham being the exception). This type of sprawling development results in natural conflicts with the nature of the roadway; the whole corridor is used both for commerce and for moving vehicles from one end to the other. The municipalities should encourage additional commercial development along the side streets and major intersections to further create nodes (rather than linear sprawl). Equally important is ensuring compact mixed-use development around these growth centers, and limiting commercial development at other points along the corridor.

Many businesses, especially national chain retailers, prefer stand-alone sites, where they can erect cookie-cutter buildings. However, they will build different types of structures in competitive markets, where their suburban model is not permitted. For this reason, the municipalities should dramatically limit commercial development outside of growth centers, ensuring that most new development along the corridor is built in a way that retains the character of historic areas, or contributes to the character of new, dense growth centers. By encouraging businesses to locate within growth nodes, shoppers will be more likely to park once and patronize several businesses, rather than making single trips to stand-alone retail locations.

Incentives

In addition to regulating growth through zoning, the revitalization of town centers can be enhanced through developer and business incentive programs. For example, municipalities could identify key infill development sites in their growth nodes, and provide financial benefits for developing them. These could include competitive loans, grants toward some aspect of redevelopment activities, a tax abatement, fast-track permitting, or waiving of application fees.

These types of programs serve as a carrot to make development in older areas more desirable. In the long-term the goal is to rebuild these historic growth nodes so that they are naturally more desirable places to locate businesses. However, in the short-term it may take these sorts of economic incentives to build the level of vibrancy and critical mass of business activity necessary in the commercial core to make shoppers, business owners, and the development market become responsive.

Incentives also exist to help finance streetscaping and façade improvements. For example, the City of Philadelphia awards matching grants of up to \$10,000 to business owners for façade improvements. Cheltenham Township also has matching grants for facade improvements for the Elkins Park Commercial Districts.

4.3 SENSE OF PLACE

An issue that is inherently tied in with that of building town centers is maintaining the look and feel of a vibrant, attractive area that reflects the values and local, historic character. Currently even the areas of the corridor that maintain their historic structures do not adequately portray a strong sense of place. The area along US 611 through Elkins Park (by Church Road) is fronted by suburban style-development across the street that bears no



The simulated images shown here to the right of the actual photographs demonstrate how, conceptually, placemaking, pedestrian amenities, and smart-growth development around nodes can create a more attractive and vibrant corridor.

Source: DVRPC



relation to the street-wall, historic structures on the other side. The sidewalks are narrow as well as chipped and broken. There is substantial visual clutter. This is not a welcoming environment for pedestrians that may attract local or regional visitors and shoppers to the retail destinations.

Likewise, the area in Abington near the hospital contains some identity signage, but it is outdated and looks worn. The sidewalks in some locations are too narrow for pedestrians to proceed safely. When new parcels have been recently developed, such as the Wachovia bank, they have not reflected the historic scale and dimensions, with the bank structure set back and fronted with a parking lot. These two examples show how it is important to build a sense of place, and maintain the building forms and scale of the historic area, if the desire exists to retain and strengthen the commercial competitiveness of these town centers.

Form-Based Zoning

One of the tools both for encouraging smart-growth development and building sense of place is form-based zoning. Traditional zoning regulates use, whereas form-based zoning permits mixed-use, while focusing more heavily on the form of the buildings (the architecture, massing, setbacks, heights, proportions). Form-based zoning often contains illustrations to show, rather than simply describe, the type of design guidelines that the code regulates. Form-based zoning can be incorporated into an entire zoning code or utilized as an element of a single zoning district or overlay. This strategy has been used widely across the U.S. to enhance and protect the character of historic town center areas. Form-based zoning may be applied at any of the identified growth nodes (see Growth Nodes on Page 38).

Streetscape Improvements

The most important element of smart growth development is the form of the buildings and the pedestrian environment. However, another important element is the attractiveness and character of the streetscape. Municipalities should invest in streetscape elements, not necessarily corridor-wide, but focused on transforming these town-center growth nodes into places that reflect an eye-catching, attractive character, that sets them apart from the rest of the corridor. Important streetscape investments include wide sidewalks, buffer zones with plantings and street trees, banners and awnings, consistent colors and textures of streetscape materials and treatments, pedestrian-scale lighting, and attractive retail facades.

Streetscape improvements can be coordinated with a Green Streets program to combine beautification efforts with low-impact stormwater management techniques. Additionally, unified streetscape improvements can become a mandatory part of new development and redevelopment by adopting landscaping ordinances. (The Green Streets concept and landscaping ordinances are further detailed in Section 5.0, Environmental Assessment).

Historic Preservation

A third important element towards creating and maintaining a sense of place is historic preservation of the existing buildings that serve to define and anchor the historic character of a town center area. Historic buildings, streets, and structures are the basic elements that set older town centers apart and give them the ability to attract residents and visitors for their unique sense of place. Permitting historic structures to be demolished or altered so as to damage their integrity hurts the competitiveness of a municipality's effort to revitalize an older area.

Historic preservation can be achieved through historic districts and building inventories - created by ordinance as enabled by the Commonwealth's Constitution and the Pennsylvania Municipalities Planning Code. In addition, municipalities can also strengthen and encourage preservation by producing local guidebooks explaining the local architecture and building forms. There are several strong examples of this in Philadelphia, (e.g., Ardmore), and in New Jersey (e.g., the Wildwoods). These types of guides explain what is distinctive about local architecture, how to preserve it, and how to design sympathetic modern elements to complement it.

4.4 PEDESTRIAN ENVIRONMENT

In order to revitalize growth nodes, develop a sense of place, support transit-oriented development, and restore the competitiveness of historic town centers, it is critical to support the pedestrian environment. Elements that comprise a strong pedestrian environment include wide sidewalks, buffer zones between sidewalk and cartway, amenities such as benches, street trees and planting, pedestrian scale lighting, sidewalks and curbs in good condition, clearance of the sidewalk from bushes and tree branches, continuous stretches of sidewalk without curb cuts, and pedestrian-oriented development. It is also important to have well-marked crosswalks, frequently sited, and with pedestrian signal heads.

Throughout the Route 611/263 corridor there are sections that do not have strong pedestrian environments. At Susquehanna Road in Abington, for example, the sidewalk is very narrow. At certain points in Cheltenham it is non-existent. There are some long stretches without any crosswalks, encouraging pedestrians to jaywalk. At certain points pedestrians must walk very close to the cartway, creating potentially dangerous conditions with traffic. Overall, except for some key areas, such as in Hatboro, the pedestrian environment leaves much to be desired.

Municipalities should invest in pedestrian infrastructure. Sometimes investments like realigning the roadway to provide for wider sidewalks, or installing mid-block crosswalks, or calming traffic to produce strong pedestrian context requires expensive solutions. However, designing a strong pedestrian environment is a worthwhile investment, as it is a core element for reviving older town centers, and creating lively, traditional retail environments. All of the smart-growth design and banners in the world will not succeed if pedestrians do not feel safe and comfortable.

Additionally, places that have higher concentrations of individuals with mobility limitations, such as seniors and physically disabled individuals, or destinations which are frequented by these individuals should take extra care in pedestrian site design. Timing for pedestrian signal crossings can be slightly longer, and median resting points and street furniture encouraged.

4.5 WAYFINDING

From town centers to major attractions, the signs that point travelers to these locations are a key form of advertising for that location. They can inform a traveler that an attraction is close by and which direction they need to go to get there. Hospitals, schools, historic sites, transit stations, libraries, senior centers, police stations, municipal buildings are several types of places that may need wayfinding signs within a community. Other places, like the Abington Arts Center, Wall Park in Cheltenham, PennState Abington, and the Willow Grove Mall are also places that warrant wayfinding signs, as they are attractions that receive many visitors.

Street signs are also a form of wayfinding. A traveler may become lost if the lettering is too small or the sign is too far away from the roadway. Finally, it is helpful for a traveler to know when they are entering into a new community, either at the municipal or place name level.

Municipalities should invest in gateway treatments along their municipal boundaries. Here, a large sign with the municipal name and other important information that the municipality wants to portray, inform the traveler that they have entered a new location. Some municipalities like Hatboro, when traveling northbound on Route 263, have effective gateway treatments. Other places have signs that are too small to catch the traveler's eye, especially at higher roadway speeds. When a new place is entered within the municipality, such as Elkins Park (by Church Road) in Cheltenham or 'Downtown Jenkintown' banners may be more appropriate. Many municipalities have differently colored street signs, but these do not substitute for gateway signage.

Municipalities need to be conscious of where wayfinding signs are placed and should come together for the benefit of all. If one needs to travel through one municipality to get to an attraction in another, then the municipalities need to work together for sign placement.

The Manual of Uniform Traffic Devices (MUTCD) provides guidance for lettering size and distance from the roadway for many types of wayfinding signs, and municipalities should be encouraged to use it as a guide for all signs in their community. To help with placemaking, municipalities should create a sign district overlay ordinance. This overlay, ideally in the growth nodes, awards owners with larger lettering or larger sign face area in return for conforming to pre-set colors, fonts, or materials.

To address other wayfinding issues, one option is to create a multi-municipal sign district and develop a sign plan. The key attractions within all municipalities would be identified followed by identifying where signs would be placed along the roadway. Colors and lettering schemes would be developed, also adding to sense of place for the community. A sign plan would also include information on maintenance.

4.6 PARKING

One cannot discuss economic development, revitalization, smart growth, and transportation without discussing parking. Several types of parking exist within the corridor, and consequently several issues regarding parking exist. Very few places other than downtown Hatboro have on-street parking. In Hatboro, on-street parking is parallel and metered, and has an added benefit of traffic calming this area by visually reducing the width of the cartway, and adding to adjacent pedestrian activity. Unfortunately, on-street parking is not adequate to accommodate the needs of the corridor, and other types of parking are needed. However, better wayfinding signage can direct motorists to available off-street parking.

Surface parking lots exist in several forms. Municipalities may own lots and allow for limited-term parking, free of charge. Small businesses have their own parking in the front, side, or rear of their property for their customers only. Big-box retailers and malls have large surface lots. These facilities may take up a lot of land, and can result in stormwater management issues. Large lots that are set back far from the roadway may have the negative impact of discouraging pedestrian activity.

Structured parking is another option that can be found in several places in the corridor, such as at the Abington Hospital. Structured parking maximizes land usage through vertical growth, but is much costlier to construct.

Another issue is the demand versus lot capacity. In other shopping locations, like the Willow Grove Mall, vast portions of the lots stay empty for much of the year and only become full a few days, around the holidays. On the other hand, most of the SEPTA regional rail surface lots are constantly full. There is a need to expand these facilities or identify spillover lots.

Within one quarter mile of the Route 611/263 corridor, 12% of the land uses are devoted to parking. It is critical for local economic development to maximize uses along the street frontage. With so much of the corridor utilized for parking, clearly the businesses and municipalities in the study area are missing important opportunities for higher and better uses that will attract visitors and patrons.

To mitigate parking issues, each municipality should explore the following strategies:

- The number of parking spaces required for residential and commercial structures may be reduced. Additional demand may be accommodated through shared parking arrangements. By facilitating and incentivizing sharing parking, while consolidating entrance and egress access points, municipalities may simultaneously maximize the potential of available land for parking, while creating more desirable areas for pedestrians.
- For development within the town center growth nodes, parking should be located in the rear of properties, should be on-street only, or should be shared in off-site, surface facilities or structured facilities. Parking in other locations should be located on the side or rear of parcels to create a more attractive and pedestrian-friendly environment throughout the corridor.
- Another potential strategy is to reduce the minimum parking space dimensions. This strategy could

reduce the average spot size for an entire facility, or create allowances for spaces to accommodate compact vehicles, bicycles and motorcycles, and/or or car sharing. This strategy, of course, must continue to accommodate accessible parking spaces as per the Americans with Disabilities Act.

On-street parking can be added to the targeted growth nodes to increase the parking supply, calm traffic, and create convenient parking spaces near key business locations. As aforementioned, on-street parking has the shared advantage of calming traffic.

Stormwater issues should be taken into careful consideration through requirements and regulations governing the design and construction of parking facilities. Pervious paving materials should be required, as should buffers and planting areas, with trees. See Section 5.0, Environmental Assessment for more detailed information about stormwater management strategies and porous paving materials.

4.7 GROWTH NODES

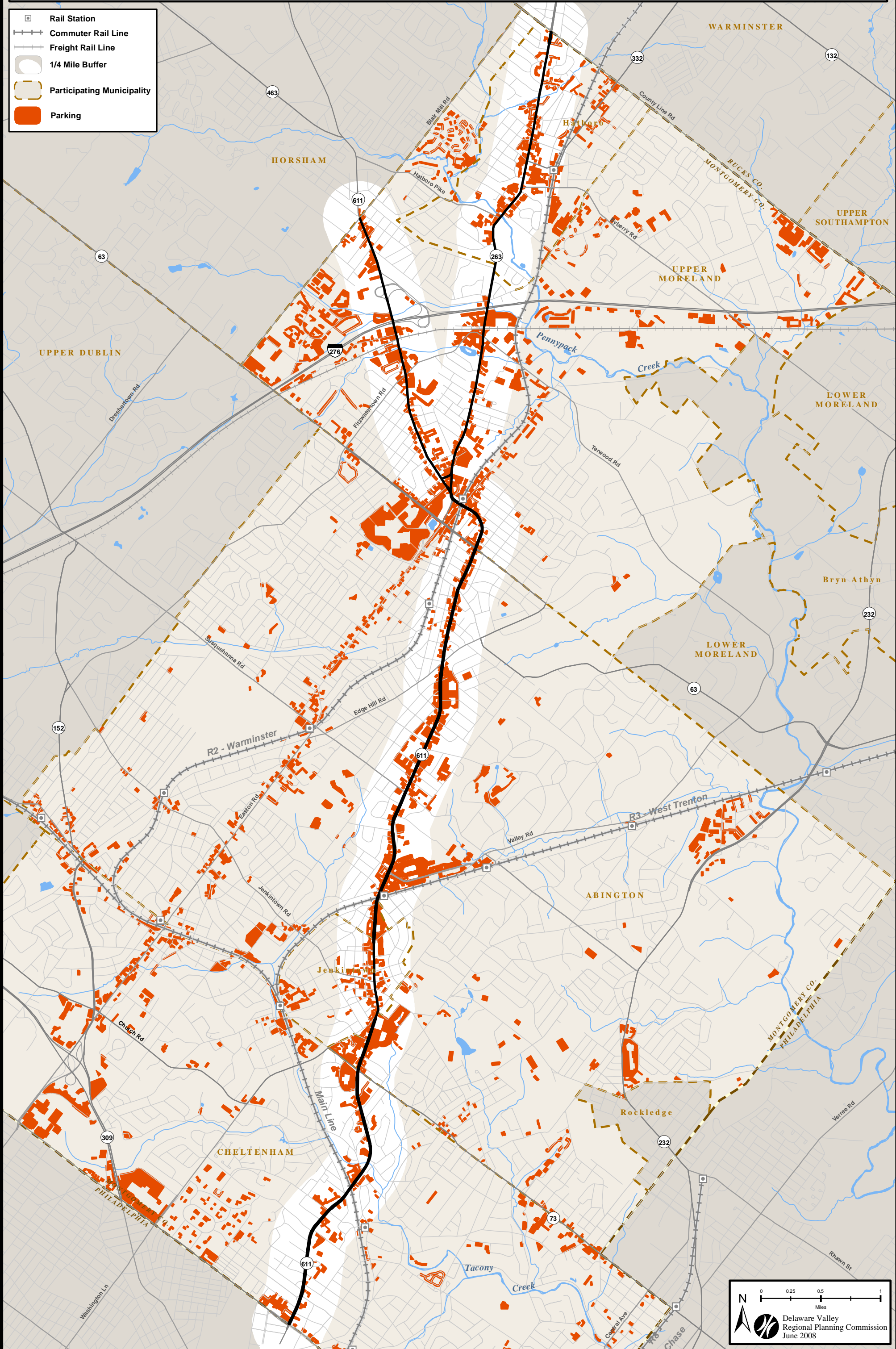
The following areas have been identified as growth nodes. These areas are the places on the corridor where new commercial and mixed-use development should be encouraged. Elsewhere on the corridor commercial development should be limited. These growth nodes may be historic town centers, new development areas, and TOD areas. The growth suggested nodes are:

1. Elkins Park by Church Road (historic town center)
2. Abington Business Center: North of Township Line Road (new growth area)
3. Downtown Jenkintown (historic town center)
4. Noble Station area (TOD area)
5. Abington Hospital area (historic town center)
6. London Center Area (new growth area)
7. Roy/Rubicam Area (new growth area)
8. Redevelopment area around Old Welsh Road (new growth area)
9. Willow Grove Station (TOD area)
10. Downtown Hatboro (historic town center)

Route 611/263 Corridor

Map 6: Parking

- Rail Station
- Commuter Rail Line
- Freight Rail Line
- 1/4 Mile Buffer
- Participating Municipality
- Parking



5.0 ENVIRONMENTAL ASSESSMENT

Objective: Introduce sustainable standards to the corridor

The natural resources of the 611/263 corridor communities and the ecosystem services these resources provide are critical to the area's sustainability, overall health, and quality of life. The preservation and restoration of these resources, future redevelopment and growth, and improvement of the area's transportation infrastructure are all interlinked. This section focuses on several topics that address the corridor's environmental features, all of which are interrelated (and often overlapping) and which impact, and are impacted by, changes in land use and transportation.

One daunting topic addressed is stormwater, which is affected by land use, geology and soils, surface and ground water, riparian buffers, woodlands, floodplains, wetlands, and slope. The second topic addressed is "Green Infrastructure," which is also based on land use, geology and soils, surface and groundwater, and natural vegetation, but also includes infrastructure investments like multi-modal trails and pedestrian sidewalks, and capital investments like greenways, wildlife corridors, and parks. An understanding of the study area's Green Infrastructure will promote better decision-making with regard to transportation issues within the Route 611/263 corridor.

5.1 STORMWATER

Stormwater management entails designing, constructing, and maintaining land surfaces that direct and control the runoff during rain events, or from melting ice and snow. With conventional stormwater management practices, the total amount (or volume) of runoff, and the rate at which it reaches the stream, both increase substantially as land development occurs.

Stormwater management entails the control of water that runs off land during rain events or from melting ice and snow. The volume (the amount and rate) of runoff substantially increases as land development occurs. High volume of stormwater discharge detrimentally affects a surface waterway - eroding the stream banks, washing out natural vegetation along the stream banks, increasing sediment in the water that destroys aquatic life habitat, carrying pollutants, and increasing the frequency and intensity of flooding, and therefore increasing damage to private property and public infrastructure such as roads and bridges.



About 12% of the PA 611/263 study area's land area is dedicated to parking, an impervious land cover. Impervious surfaces significantly increase stormwater runoff, which carries pollutants into surface waterways.

Source: DVRPC

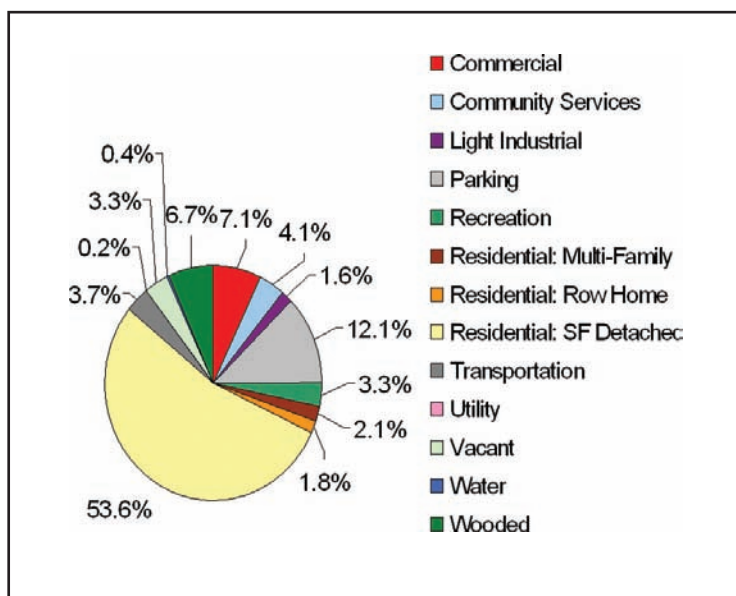
At first glance, the Route 611/263 study corridor appears to have few natural resources or environmental assets. However, several important waterways cross the corridor. And there is a significant amount of wooded areas and protected open space for a nearly built-out corridor. Pennypack Creek and its tributaries traverse the northern portion of the corridor (parts of Hatboro, Upper Moreland, Abington, and Jenkintown). Sandy Run, which flows into Wissahickon Creek, starts to the west of the R-2 SEPTA line in Abington. Tookany Creek and its tributaries cross Route 611 in Jenkintown and Cheltenham. Currently, the Philadelphia Water Department is working with the Tookany/Tacony-Frankford Watershed Partnership (TTFWP) and other stakeholders to create

the Act 167 Stormwater Management Plan for TTF watershed communities within Montgomery County and the City of Philadelphia.

Unfortunately, the study area has a preponderance of impervious surfaces. Over 12% of the study area's land surface is dedicated to parking, which serves commercial areas, public facilities, transit facilities, institutional facilities, and multi-family residential buildings. Over 53% of the study area is dedicated to residential single-family homes. Individual home lots tend to have less impervious surfaces than an industrial park or shopping center, but landscaped lawns tend to have higher rates of runoff than forested or "dry-scaped" areas. The image below shows the breakdown of land uses in the study area.

Much of the study corridor crosses headwater areas of important streams, including Sandy Run (Wissahickon basin), Terwood Run and Meadow Brook (Pennypack basin), and Tookany Creek. The headwater areas, being located at the top of their respective watersheds, play a very important role in the collection and conveyance of stormwater runoff, as well as in the generation of non-point-source pollution. What happens in headwater areas affects everything downstream. In highly impervious regions like eastern Montgomery County, one of the most valuable environmental improvements that can be made is to address stormwater management in headwater areas. This can be, and should be, done using numerous small-scale practices of various kinds, distributing them widely to provide service in as many places as possible. It is important to note that such stormwater management projects can be integrated with streetscape and pedestrian improvements, such as are recommended in other sections of this document.

The Pennypack Ecological Restoration Trust and its Pennypack Preserve, located in Upper Moreland, Lower Moreland, and Bryn Athyn, are excellent examples of Green Infrastructure. The Preserve mitigates flooding and improves water quality through riparian restoration projects, maintains viable populations of flora and fauna, and provides eight miles of trails for nearby residents and visitors. In fact, some of the only non-impaired waterways found in the Pennypack Watershed are tributaries of the Pennypack Creek that flow to or through the Preserve.



The breakdown of land-use types along the study corridor
 Source: DVRPC, 2008

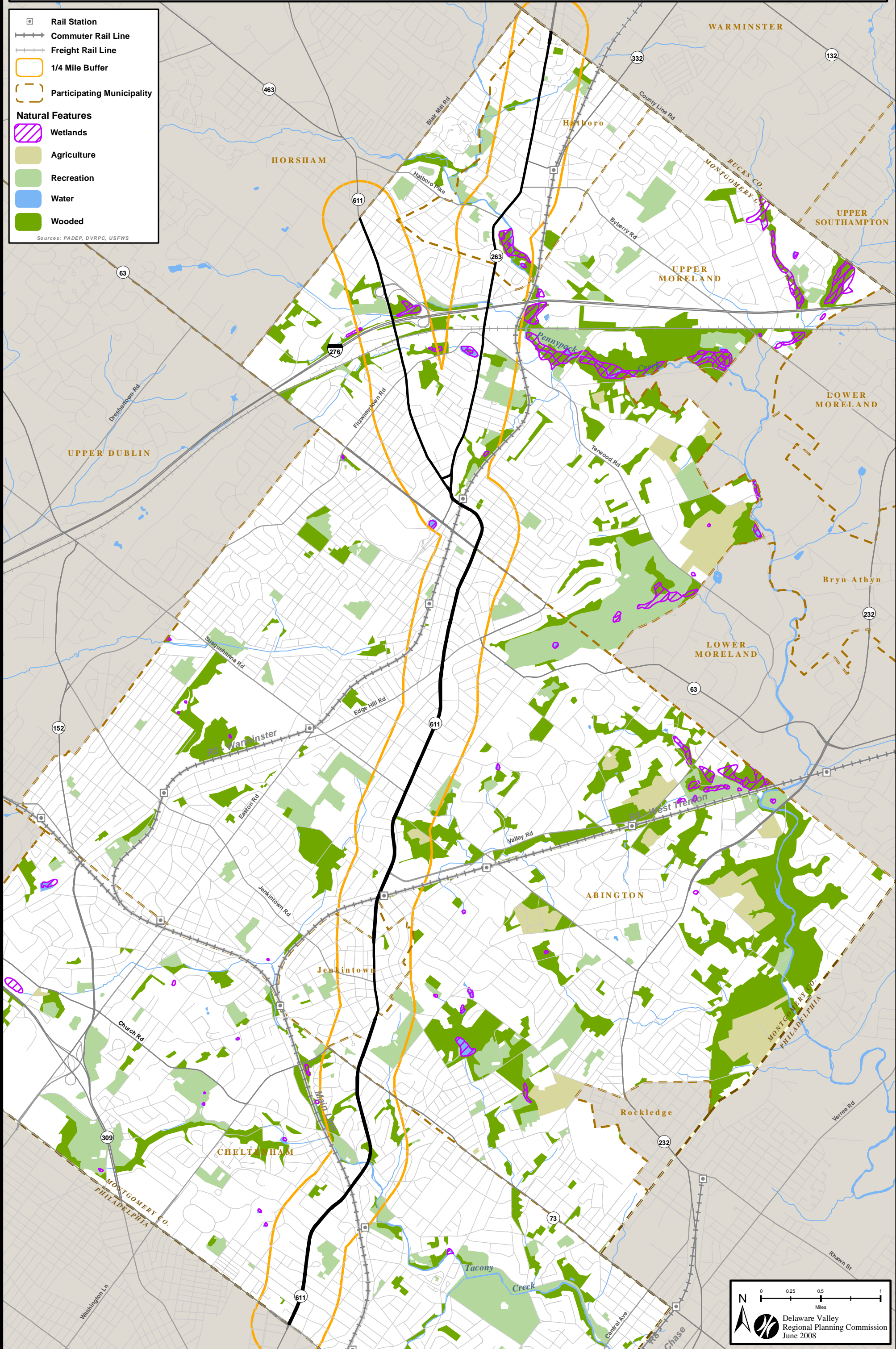
A direct environmental impact of stormwater runoff is the degraded water quality of the corridor's waterways. Every stream crossing PA 611 or 263 is impaired, meaning it does not support aquatic life, is not suitable for drinking water, cannot be used for recreation, or another specific use. This is partly caused by the lack of riparian buffers and wetlands and compromised floodplains along the stream banks. There are very few wetlands within the study corridor as well as the corridor communities, primarily because the roads were built and much development occurred before destruction of wetlands was regulated or prohibited. Wetlands provide habitat for animals, but also serve as natural water filters, act as a natural flood control, and sequester carbon from the atmosphere.

Additionally, in many places, development has occurred in the floodplains or the floodplain is restricted or non-existent because the stream is completely or partially culverted or underground and used as a stormwater pipe. Because of an increase in impervious surfaces throughout the corridor municipalities and along the PA

Legend:

- Rail Station
- Commuter Rail Line
- Freight Rail Line
- 1/4 Mile Buffer
- Participating Municipality
- Natural Features
 - Wetlands
 - Agriculture
 - Recreation
 - Water
 - Wooded

Sources: PADEP, DVRPC, USFWS



Route 611/263 Corridor

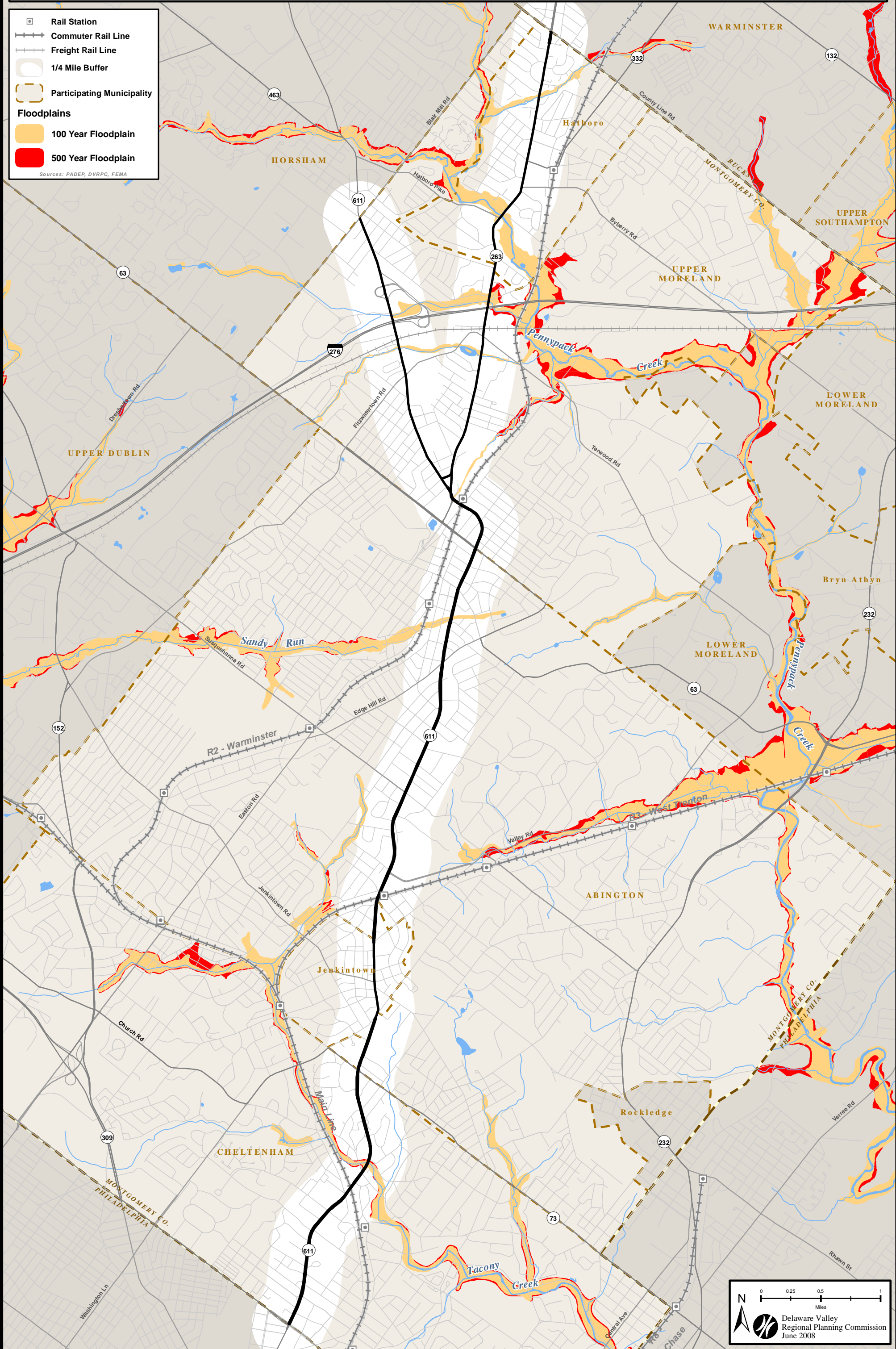
Map 8: Floodplains

- Rail Station
- Commuter Rail Line
- Freight Rail Line
- 1/4 Mile Buffer
- Participating Municipality

Floodplains

- 100 Year Floodplain
- 500 Year Floodplain

Sources: PADEP, DVRPC, FEMA



0 0.25 0.5 1
Miles

Delaware Valley
Regional Planning Commission
June 2008

Route 611/263 Corridor

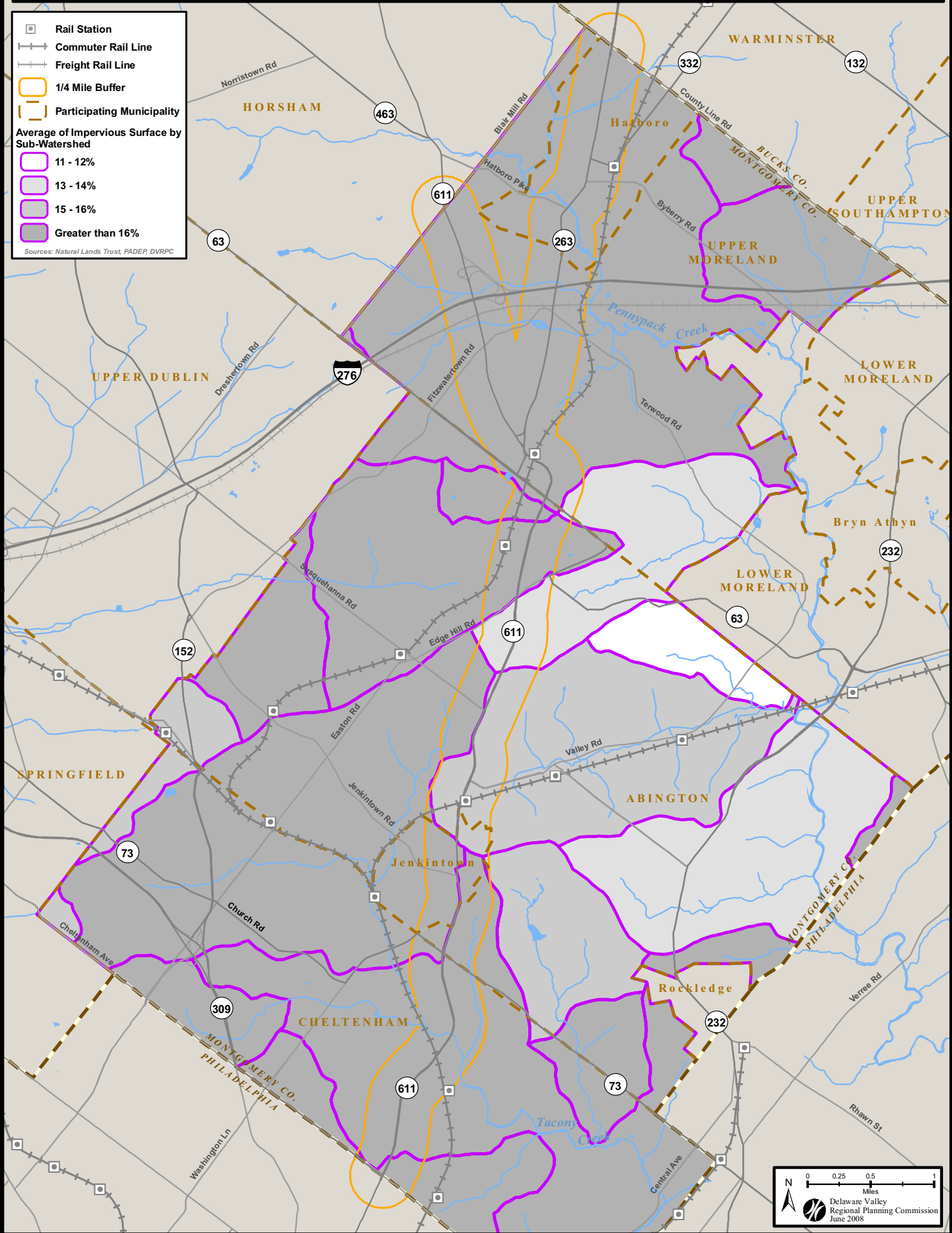
Map 9: Impervious Surface

- Rail Station
- Commuter Rail Line
- Freight Rail Line
- 1/4 Mile Buffer
- Participating Municipality

Average of Impervious Surface by Sub-Watershed

- 11 - 12%
- 13 - 14%
- 15 - 16%
- Greater than 16%

Sources: Natural Lands Trust, PADEP, DVRPC



0 0.25 0.5 1
Miles
Delaware Valley
Regional Planning Commission
June 2008

611/263 corridor, the areas defined as 100- or 500-year floodplains are flooding more frequently.

The current land use pattern, with its prevalence of impervious surfaces, significantly increases the amount of runoff, and concentrates that runoff quickly, resulting in brief but damaging flood events. The effects of this are exacerbated by the loss of natural resources, including the natural vegetation that ought to be established along stream corridors. Because municipalities regulate land use and are large landowners, the Route 611/263 corridor communities can adopt several strategies to mitigate stormwater runoff. Those strategies call for the corridor communities to increase activities within the existing municipal stormwater programs, implement Watershed Management Best Management Practices, increase activities within the existing municipal stormwater programs, implement a “Green Streets” program, adopt stringent landscaping regulations, and adopt parking regulations.

Municipal Stormwater Programs

Within the last two decades, the US Environmental Protection Agency (USEPA) has mandated a reduction in water pollution consistent with the requirements of the Clean Water Act of 1970. Federal and State water pollution reduction programs are combining to put significant new obligations onto local government.

Pennsylvania’s Stormwater Management Act of 1978 (Act 167) requires counties to evaluate stormwater management on a watershed basis and create stormwater management plans that must be implemented at the municipal level with the adoption of a Municipal Stormwater Ordinance. In addition, the Federally-mandated Municipal Separate Storm Sewer System Program (MS4) requires local government to institute a variety of best management practices including regular street cleaning, inlet cleaning, maintenance of storm sewers, and other measures aimed at reducing the amount of pollution coming from these systems. The MS4 requirements and the Act 167 Plans should reinforce each other, since both are supposed to address issues of stormwater volume and discharge rate, as well as issues of water quality.

The municipalities should evaluate their land development and stormwater management ordinances to ensure that new development and redevelopment employ best management practices that seek to infiltrate stormwater first, and detain stormwater if and only if infiltration is not possible.

Additionally, Cheltenham Township’s ordinance calls for any disturbance of soil greater than 250 square feet triggers stormwater control. While this is a very low threshold (a homeowner constructing a shed may have to submit a site stormwater management plan, referred to as a Lines and Grades Plan, to the township engineering department) its gives the township an opportunity to review all major and minor site construction and fully implement its stormwater ordinance.

Furthermore, Cheltenham Township has undertaken very proactive and comprehensive measures to reach out to residents regarding what homeowners can do to reduce runoff from their properties. The other municipalities should follow Cheltenham’s example and encourage residents to reduce fertilizers and pesticides on lawns, re-vegetate lawns with native and drought-resistant plants, use rain barrels, create bio-swales and rain gardens.

Temple University’s Center for Sustainable Communities recently completed the Pennypack Creek Watershed Study. The study calls for municipalities to identify publicly-owned sites for stormwater control demonstration projects. Municipal buildings, public libraries, and schools are high priority sites for such demonstration projects. Demonstration projects on DPW facilities and lots, while not as high profile, can have the biggest impact for improving water quality.

Finally, the municipalities can participate in, or lead, streambank restoration projects, including projects to re-vegetate riparian areas with trees and shrubs. This kind of project, which is commonly referred to as the restoration or enhancement of the “riparian buffer,” can improve water quality by stabilizing the streambank, shading the stream from the summer sun, and slowing and filtering overland runoff. This kind of work can

complement the effort to improve stormwater runoff management, and can contribute greatly to the goal of improving the quality of local streams.

“Green Streets”

A large part of a municipal stormwater program can be the implementation of a “Green Streets” program that incorporates stormwater controls into the built environment through streetscape improvements, traffic calming devices, and greening efforts. The Green Streets program was first developed by Portland, Oregon, and its Bureau of Environmental Services and has since been adopted and adapted by the Seattle Public Utilities and the Philadelphia Water Department.

Portland defines a Green Street as “a street that uses vegetated facilities to manage stormwater runoff at its source.” Portland’s Green Streets program integrates urban design, multi-modal transportation, water quality, and parks and open space within realistic public budgets with the added benefit of recreating existing neighborhoods as inviting and livable communities.

A corridorwide community, or all five communities, can adopt the Green Streets approach and install vegetated stormwater facilities along cross streets of PA 611 or certain segments of PA 611. The benefits to creating a Green Street are multiple and include:

- Improving water quality and replenishing groundwater through infiltration;
- Creating attractive streetscapes that enhance a neighborhood’s livability; and
- Enhancing pedestrian and bicycle connectivity by creating a green connector between open spaces, trails, and destinations along the corridor.

The Green Streets uses two strategies to manage stormwater in existing built environments. The first strategy uses landscape elements to manage stormwater through the integration of trees and root systems, contained planters, vegetated swales, vegetated infiltration basins, and/or infiltration planters into stormwater control facilities. The second strategy is to use paving materials, such as pervious pavers, pervious pavement, or turf blocks to infiltrate stormwater into the ground. The advantage of the Green Streets approach is that almost any size roadway can accommodate a landscape or paving element to capture and treat stormwater at its source.

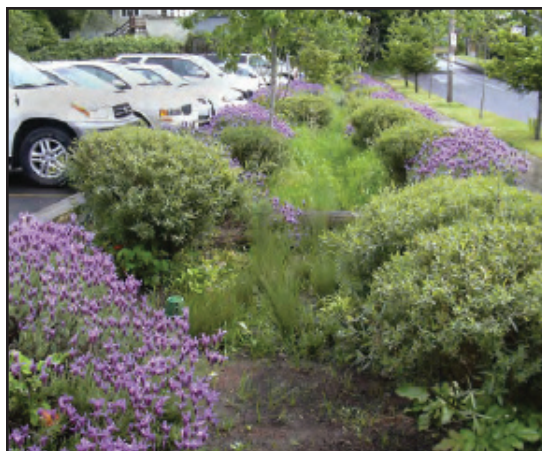
Public entities, like municipal or county government, can undertake the Green Streets program in public right-of-ways, with PennDOT approval. Municipalities



*Left: Trees are suitable for residential neighborhoods, large parking lots, and some roadway medians.
Source: DVRPC*

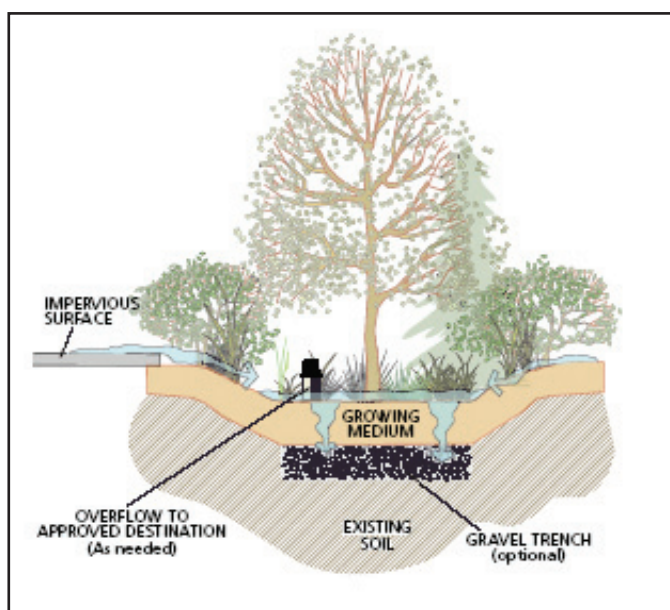


*Right: Contained planters accept precipitation only, not stormwater runoff. Contained planters are placed on top of flat impervious surfaces, such as sidewalks and plazas. Rainwater is temporarily stored in the planter’s soil and filters down slowly to the impervious surfaces. These are suitable for commercial corridors and public buildings.
Source: Portland Bureau of Environmental Services*



Vegetated swales are gently sloping depressions of land planted with dense and “thirsty” plants. Swales are located in strategic positions to capture runoff from rooftops, streets, and parking lots and allowing it to filter into the ground. If located in an area with poor draining soils, a swale can convey runoff to a soakage trench. Many landscaped islands in large parking lots can be excavated and retrofitted into a swale system. This type of facility is suitable for large parking lots, like those found at the Willow Grove Mall and Target, residential streets, or commercial corridors in need of traffic calming and/or cross walks. Source: Portland Bureau of Environmental Services

Vegetated infiltration basins are landscape basins that temporarily store stormwater runoff until it can infiltrate into the ground. Basins can be planted with trees, shrubs, and grasses. Basins should not be located in areas with high water tables, nor designed as ponds (which would negate stormwater infiltration). Basins are suitable for large parking lot areas or large building complexes, like the Abington Memorial Hospital. Source: Portland Bureau of Environmental Services



Infiltration planters, which include tree trenches, are structures with open bottoms that allow stormwater to slowly infiltrate into the ground. They contain a layer of gravel, soil, and vegetation. These planters are ideal for space-limited sites with soils that drain well. Infiltration planters have numerous environmental benefits and are also very attractive and easily integrated into a sidewalk or building site; they can be placed closely to building walls. This type of stormwater control facility is suitable for nearly any site, including shopping centers, residential neighborhoods, commercial corridors, and public buildings. Source: Portland Bureau of Environmental Services

can adopt landscaping and parking regulations (in addition to municipal stormwater ordinances) that mandate new development and redevelopment on private property to incorporate appropriate Green Streets elements.

Landscaping Regulation

All five municipalities can strengthen landscaping regulations within their land development ordinances to encourage the use of low-impact, non-structural systems for stormwater management and native, drought-resistant plants for decorative plantings. Montgomery County Planning Commission crafted a model landscaping ordinance that mandates the preservation of existing natural vegetation, requires parking lots over a certain size (possibly ten parking spots) to have landscaped islands, addition of street trees for development of 5 or more residential units, along major walkways between non-residential buildings, property line buffers, and other instances when landscaping should be employed. Vegetated islands can be designed or redesigned as raised beds to capture rainfall (see Green Streets subsection). The model ordinance also lists native plants that are suitable for such types of plantings, such as trees that do not have shallow root systems that buckle a sidewalk.

Durango, Colorado adopted landscaping regulations in 1983 and has had a surprising amount of success. First, the city complied with the new regulations on all of its public properties. Then, the city created an annual landscaping award to recognize public and private entities' investment in landscaping for beautification or stormwater purposes. By doing this, the city was able to encourage property owners who did not have to comply with the ordinance because the property was developed prior to the adoption, to redesign parking lots and building entries to effectively manage stormwater and attract customers.

Lastly, the municipalities should partner with local business organizations, such as the Suburban Chamber of Commerce or the Eastern Montgomery County Chamber of Commerce, to install planters and landscape medians throughout the corridor that display plaques that read "Sponsored by..." These planters could act as gateways to business districts and town centers and serve as moderate stormwater controls.

Rethink parking

All land types - residential, commercial, industrial, and institutional - need a certain amount of parking. However, parking standards tend to call for more parking than is needed. Generally, parking standards were developed several decades ago and call for parking to meet peak demand for single-use development in relatively low-density settings with little or no transit service. Parking replaces natural vegetation, creates more stormwater runoff that overflows streams, influences people to drive more rather than use public transportation or walk, and decentralizes complementary uses in a sprawling pattern (see Smart Growth section).

There are several strategies a municipality can employ to rethink parking that reduces oversupply in certain areas while relieving overuse and crowding at other facilities. These include:

- Zoning codes should be revised to set minimum and maximum standards. Locations near transit stations and/or stops should have lower parking requirements to encourage multi-modal trips.
- Additionally, commercial developments should have a minimum number of parking spaces for the first 2,000 square feet (generally 8 spaces), and have a lower requirement for additional square footage beyond that (e.g. one space per 1,000 additional square feet).
- In some areas, minimum standards can be eliminated; parking needs can be determined by a developer or owner who knows customers or users parking preferences and needs. This approach may work best in neighborhoods with a range of travel options.
- A maximum standard can be established based on the square footage of a specific land use.
- Parking spaces within a municipality, neighborhood, or watershed can be made an "entitlement." If unused, parking spaces can be transferred or sold to another location or facility if unused at the

current location.

- Parking requirements should be tied to Town Center and Smart Growth zoning. Such zoning should have lower parking requirements to encourage walkable development and support existing downtown areas. Additionally, less parking is needed at senior facilities, low-income housing sites, and transit-accessible neighborhoods. (See Smart Growth section)
- More cars can be accommodated on less land if shared parking options are explored between individual businesses and institutions.
- Centralized parking in business districts, such as structured parking (e.g. garages) can be funded through various mechanisms, including developer impact fees or monthly parking fees from business owners.

In addition to reducing the oversupply of parking spaces, the size of parking spaces and facilities needs to be reduced to decrease the amount of impervious surfaces in a community or watershed. Rainwater running over parking lots and roads carries oil and other pollutants through a drainage system to waterways; thus, stormwater runoff is the chief cause of impaired water quality in all urbanized or suburbanized areas.

There are many ways that parking facilities can be designed and managed so as to reduce their contribution to stormwater pollution. Such strategies include:

- Create different size parking spaces to accommodate compact cars;
- Use one-way angled parking to decrease total lot size;
- Create spillover parking areas to be used at peak times; spillover parking areas can be paved with alternative pavers such as grid pavers, grass, or porous paving to increase water infiltration; and
- Increase natural landscaping (see Landscape Regulations for more information about specific prescriptions within this section).

All five municipalities should mandate the use of pervious paving in the construction of new parking lots or when parking lots are repaved. Given the over-abundance of parking in the study area, parking lots are a great and real opportunity to reduce stormwater runoff and create a greener community. Pervious pavers (pre-cast, concrete, brick, stone, or cobbles) can be installed on residential cross-streets and demarcate where street-side parking is permitted. Pervious pavement, which resembles conventional asphalt but has more air spaces to allow water to pass through into a reservoir of crushed aggregate, can replace parking lot surfaces as they are newly constructed or replaced.

5.2 GREEN INFRASTRUCTURE

Green Infrastructure can be defined as an interconnected network of natural areas and open spaces that conserve natural ecosystems, sustain clean air and water, and provide a wide array of benefits to people and wildlife. Green Infrastructure can be public parks, rows of street trees, or non-structural stormwater management areas. Protecting, maintaining, and investing in Green Infrastructure is key to creating a sustainable, healthy community with a high-quality of life. Strategic investments in Green Infrastructure can mitigate flooding, maintain viable populations of native plants and animals, and provide a wide variety of outdoor recreational opportunities.

Investing in and protecting Green Infrastructure is key to protecting the ecosystem services natural areas provide. In terms of land use or land cover, the study area’s Green Infrastructure consists of woodlands, public

open space, streams, and underused or vacant land. Much of this land cover occupies sensitive environmental areas such as floodplains, riparian corridors, and steep slopes. The sensitive environmental features are very valuable and should be of primary concern when planning future growth and redevelopment.

Public Parks and Natural Areas along the Corridor

All five municipalities should undertake an inventory of underused parking lots and commercial properties immediately adjacent to the waterways that cross PA 611 and 263. If development applications are submitted to the municipalities, the planning boards can request parking lots be repaved or relocated and riparian corridors restored with tree plantings.

The Montgomery County Planning Commission suggests that Upper Moreland Township, Cheltenham Township, and Abington Township adopt riparian corridor ordinances. A riparian corridor ordinance prohibits development within a certain distance of streams and waterbodies. Montgomery County recommends a setback of 75 feet, but a smaller setback might be appropriate for developed municipalities like the Corridor communities.

The study area falls in the Piedmont topographic region of Pennsylvania. The Piedmont is characterized by ridges, hills, and deep narrow valleys. As a result, PA 611 and 263 traverse some very steep slopes. In some areas in Cheltenham and Abington townships, the road climbs a slope greater than 45%. Sites with slopes greater than 10% require special engineering work and leveling. Steep slopes are generally found along stream corridors. Throughout the eastern United States and in the PA 611 corridor, roads and rail lines were laid either alongside steep slopes, in natural floodplains and stream valleys, or on top of steep slopes along ridge lines. The R3 West Trenton SEPTA line and Valley Road, which runs adjacent to the R3 lines, are examples of this practice. Map 9 depicts the steep slopes in the corridor communities.

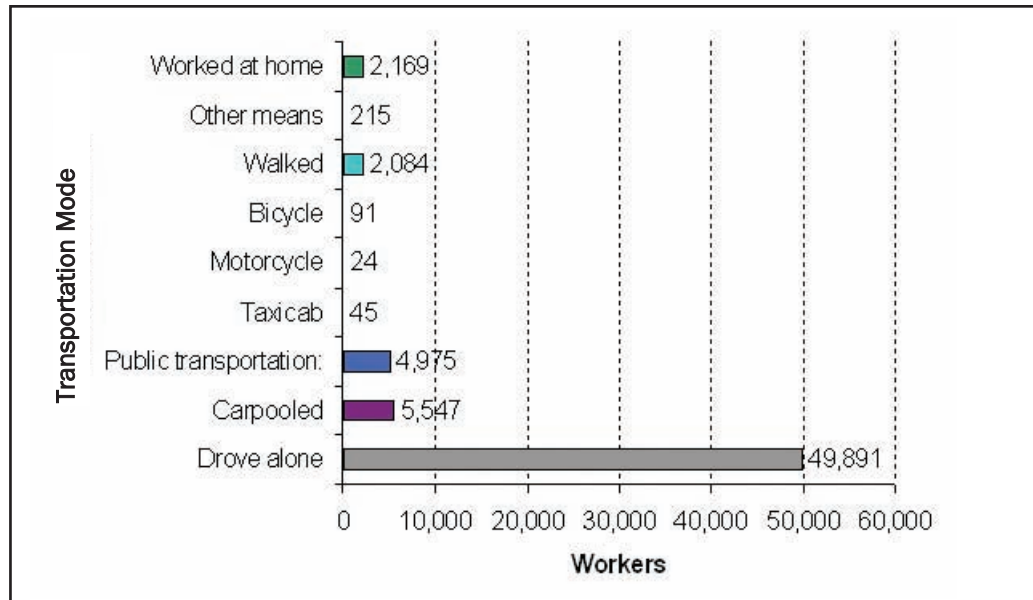
Neither Upper Moreland Township nor Hatboro Borough has a steep slope ordinance and Abington Township has a weak steep slope ordinance. Such an ordinance regulates development on areas with steep slopes. The definition of steep varies from municipality to municipality, with a 10% gradient typically the minimum definition of steep.

Though the corridor communities have several large parks and natural areas, there are very few areas of protected open space or public parks along the corridor. One area on the corridor is Miller Meadow, also known as Hatboro Meadow, which is adjacent to Pennypack Creek, and is currently used to host some community events. This open space area hosts several community events throughout the year, but otherwise is underutilized and appears to be an empty lot. Hatboro Borough should explore opportunities to plant resilient native grasses with the Pennypack Ecological Restoration Trust. Native grasses can be mown at different times of the year to accommodate community events, and can grow to high lengths during other times of the year to provide important wildlife habitat and buffer areas around Pennypack Creek.

Greenways & Trails

The corridor municipalities are relatively dense suburban communities and nearly built-out. While residential uses are not the dominant land use immediately along the PA 611/263 corridor, many dense residential neighborhoods envelope the corridor. Over 57% of the study area is dedicated to residential land uses. The five corridor municipalities have nearly 130,000 residents, 17 train stations within or near its borders, and 179 bus stops along the PA 611/263 corridor. However, only 7.6% of the population uses public transportation to commute to work according to the 2000 US Census. Slightly more people (8.5%) reported they carpooled to work. The image below depicts the multi-modal split of the five municipality populations' journey to work.

In addition to improving the pedestrian environment along PA 611 and 263 (see Smart Growth and Transportation sections) the corridor communities can make Green Infrastructure investments and buy property or access easements to create a greenway and trail system. Municipalities within the Pennypack Watershed, Abington, Upper Moreland, and Hatboro, should work with the Pennypack Greenway Partnership to fully implement the Pennypack Greenway. The Pennypack Greenway is part conservation lands and part recreation trail. The proposed greenway extends from the headwaters of the Pennypack Creek in Horsham Township to its




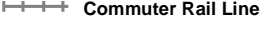
*The multi-modal split for journey to work in corridor communities.
Source: 2000 US Census*


confluence with Delaware River. The Pennypack’s stream banks are completely within Philadelphia’s Fairmount Park, but are only partially protected in Montgomery County. The creek’s upper reaches in Horsham Township, Upper Moreland Township, and Hatboro Borough are threatened by existing and new development encroaching on the stream corridor.


The Montgomery County Planning Commission is actively building trails throughout the county with help from communities. Upper Moreland Township should work with Montgomery County to implement the Pennypack Trail, which links trails at the Pennypack Ecological Restoration Trust with the Power Line Trail in Horsham Township. The proposed trail would run along a tributary of the Pennypack Creek, in between Mansfield Road and Fitzwater Road/Terrwood Road, through large industrial and office properties. There are also plans to connect the trail to the Elkins Park Commercial Districts.


Additionally, the Green Streets initiative uses tree-lined streets to visually connect bikers and pedestrians from high volume roads, like PA 611, to town centers and nodes of activity. Green Streets can be viewed as a different type of public park. The City of Philadelphia’s comprehensive open space plan, GreenPlan Philadelphia, proposes residential streets to be lined with thousands of new street trees to create green corridors. The City cannot afford to buy land for new parks, but needs to provide green refuges to certain neighborhoods. Both the City of Philadelphia and the Philadelphia Water Department see Green Streets as way to create linear open space and manage stormwater at relatively low costs. Green Streets could be created along cross streets connecting Abington Hospital to the Penn State University Abington campus and points of interest in between.

 Rail Station


 Commuter Rail Line


 Freight Rail Line


 1/4 Mile Buffer


 Participating Municipality

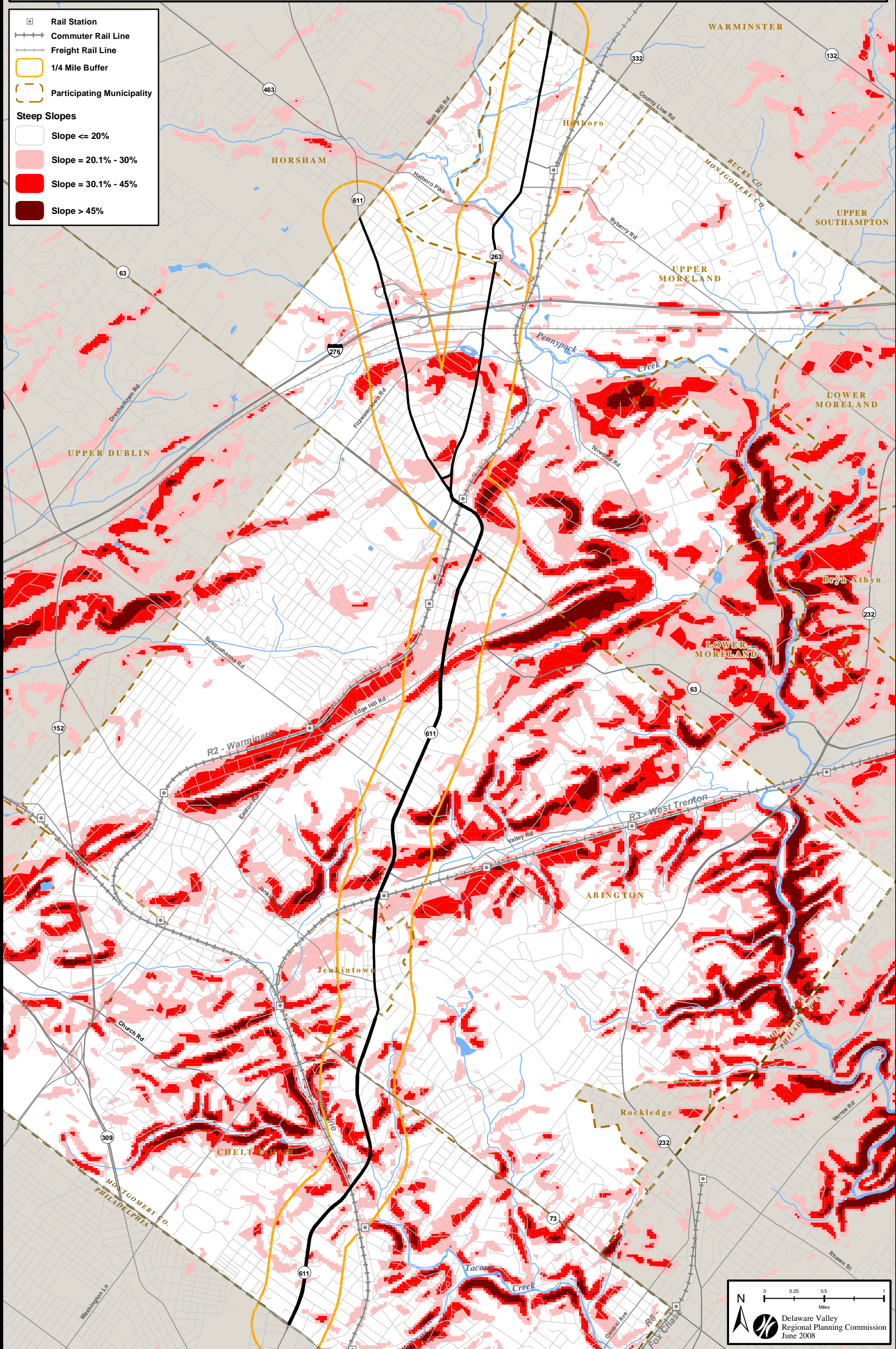
Steep Slopes

 Slope <= 20%


 Slope = 20.1% - 30%

 Slope = 30.1% - 45%

 Slope > 45%



0 0.25 0.5 1
Miles

 Delaware Valley
Regional Planning Commission
June 2008

Route 611/263 Corridor

Map 11: Proposed Greenways & Trails

- Commuter Rail Line
- Freight Rail Line
- Protected Land (2007)
- 1/4 Mile Buffer
- Participating Municipality

Proposed Trails & Greenways

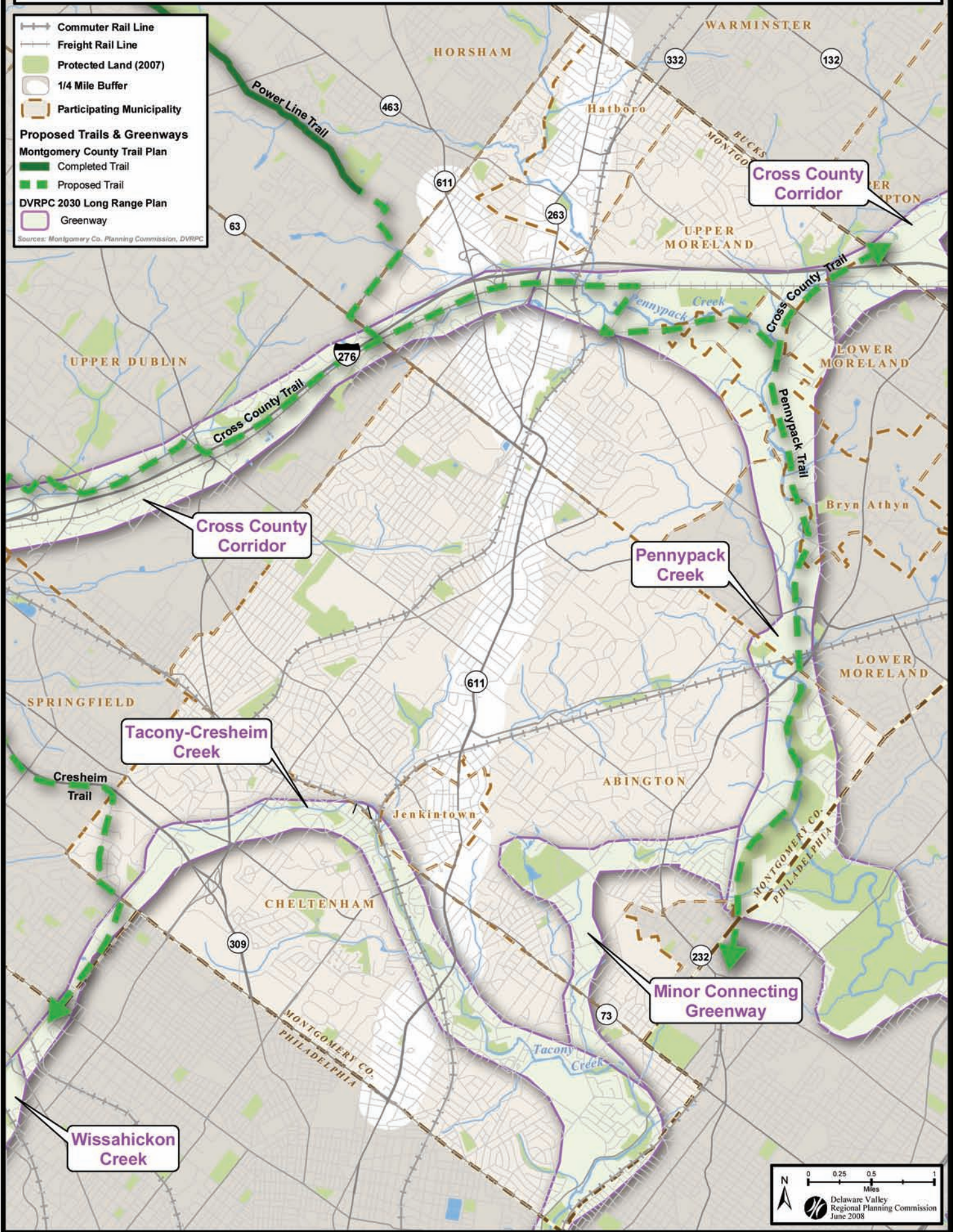
Montgomery County Trail Plan

- Completed Trail
- Proposed Trail

DVRPC 2030 Long Range Plan

- Greenway

Sources: Montgomery Co. Planning Commission, DVRPC



6.0 TRANSPORTATION ASSESSMENT

6.1 TRAFFIC ENGINEERING ANALYSIS

Objective: Improve vehicular safety and mobility

6.1.1 Traffic Volume Analysis

Traffic volume, a major determinant of traffic conditions, varies widely in the Route 611/263 study corridor. For example, Route 611 carries twice as much traffic volume at the Pennsylvania Turnpike interchange in Upper Moreland than in Cheltenham. This section describes the distribution of traffic volume on Route 611, Route 263, and parallel and perpendicular facilities in the study area.

ROUTE 611

Traffic volume on Route 611 can be divided into three areas corresponding to 1) Cheltenham, 2) Abington / Jenkintown Borough, and 3) Upper Moreland.

As illustrated in Map 12, Cheltenham traffic volume ranges from 20,000 to 23,500 average annual daily traffic (AADT). In Abington, traffic volume is much higher. Major and minor arterial roads such as Moreland Road and Susquehanna Road carry a large amount of east-west traffic. Route 611 is the only major north-south arterial that connects them.

Approaching Abington from the south, traffic volume increases by 6,600 AADT at Township Line Road. North of Washington Lane and Jenkintown Road, it increases by another 3,900 AADT to 30,500 AADT. Traffic volume in Abington peaks just south of Edge Hill Road at 33,600 AADT.

Within Upper Moreland, the Pennsylvania Turnpike generates an enormous amount of traffic between Blair Mill Road and Fitzwatertown Road. South of the Turnpike, Route 611 carries 36,000 AADT. Fitzwatertown Road, a collector road that feeds into Route 611, appears to supply a significant amount of Turnpike traffic. For example, south of Fitzwatertown Road, traffic volume on Route 611 drops to 23,500 AADT. North of the Turnpike, traffic volume is 48,200 AADT, indicating that the larger share of demand for travel at the Willow Grove interchange originates in Horsham and points north.

ROUTE 263

Route 263 extends north from Willow Grove through Upper Moreland and Hatboro Borough. Traffic volume on Route 263 can be divided into two sections separated by Fitzwatertown Road/Terwood Road, which acts as a collector road for Route 263. South of Fitzwatertown Road/Terwood Road, traffic volume is 16,100 AADT. North of it, it is 27,700 AADT.

Route 263 appears to distribute traffic to other roads. North of Mill Road/Warminster Road, traffic volume drops by 3,800 AADT to 23,900 AADT. North of Byberry Road, it drops another 6,300 AADT. Some traffic may be using Byberry Road or other local streets to reach Jacksonville Road. In downtown Hatboro Borough, Route 263 carries 17,300 AADT. Outside the downtown, where the road becomes two lanes by direction, it carries 19,100 AADT.

PARALLEL AND PERPENDICULAR FACILITIES

There are parallel facilities west of Route 611 but none are longer than two miles. Easton Road is a parallel route north of Susquehanna Road before it converges with Route 611 in Willow Grove. That section of Easton Road carries 16,500 AADT. Highland Avenue and Rockwell Avenue offer an alternative travel route for local trips

between Jenkintown Road and Maplewood Avenue (near Moreland Road). Traffic volume on Highland Avenue south of Canterbury Road is 8,100 AADT. No data is available for Rockwell Avenue.

The three most important perpendicular facilities are Cheltenham Avenue, Moreland Road and Susquehanna Road. Traffic volume on Cheltenham Avenue is 40,800. Despite having much less traffic volume than Cheltenham Avenue, Moreland Road and Susquehanna Road appear to supply more traffic to Route 611. Much of that traffic originates west of the study corridor: Moreland Road carries 22,100 AADT west of Route 611 and 7,900 AADT east of it. Susquehanna Road carries 16,200 AADT west of Route 611 and 9,700 AADT east of it.

Other significant parallel facilities include Township Line (10,900 AADT) and Washington Lane in Abington, as well as Horsham Road (10,900 AADT) and Byberry Road (11,700 AADT) in Hatboro Borough.

6.1.2 Trip Origin and Destination Analysis

Route 611 in Montgomery County is classified as a Principal Arterial highway. It is a major north-south connector between Philadelphia and Doylestown with few direct alternatives to the east or west. It also serves as an access road to the Pennsylvania Turnpike at the Willow Grove Interchange. As an alternative to an elaborate and expensive origin and destination (O/D) survey of motorists, the DVRPC travel demand model, which uses population and employment data and is validated with traffic counts, was used to assist in the identification of local versus regional trip patterns. This model, while most effective in estimating regional traffic patterns at a macro-level, can also be effective in identifying trends at the local level.

METHODOLOGY

The methodology used was to disaggregate existing county planning areas in the study area by Traffic Analysis Zones (TAZs) to create three distinct districts (Map 13):

District 1 - Upper Moreland and Hatboro: This district is generally bounded by Moreland Road, Blair Mill Road, County Line Road, and the R2 Warminster rail line.

District 2 - Abington (part): This district is primarily bounded by Moreland Road, Fitzwatertown Road, Washington Lane, and Susquehanna Road. Abington Township is partially represented in Districts 2 and 3.

District 3 - Abington (part), Jenkintown, and Cheltenham: This district is roughly bounded by Susquehanna Road, Cheltenham Avenue, New 2nd Street, and Cedar Road along the east, and Washington Lane, and the R2 Warminster rail line to the west.

The rest of the region was consolidated in seven (7) other districts (Doylestown Area, King of Prussia, Warminster/Warrington, Olney, Philadelphia, the rest of Pennsylvania, and the rest of New Jersey). The number of trips occurring in each district is generated using 2005 census data, including population, households, vehicle ownership, employed residents, and employment by sector.

Within each of the study area districts, a link on Route 611 was chosen to track vehicle trips. During the model runs, each vehicle trip using one of these selected links was tabulated and the O/D of the trip was recorded. The results were calibrated using current traffic counts. These links are:

- Route 611 north of Ashbourne Rd
- Route 611 north of Susquehanna Rd
- Route 611 north of PA Turnpike Interchange

For trips by transit, the modeled origin and destination of each trip beginning or ending in the study area or selected surrounding areas was analyzed. These results are an indication of the magnitude of transit ridership within the study area.

Route 611/263 Corridor

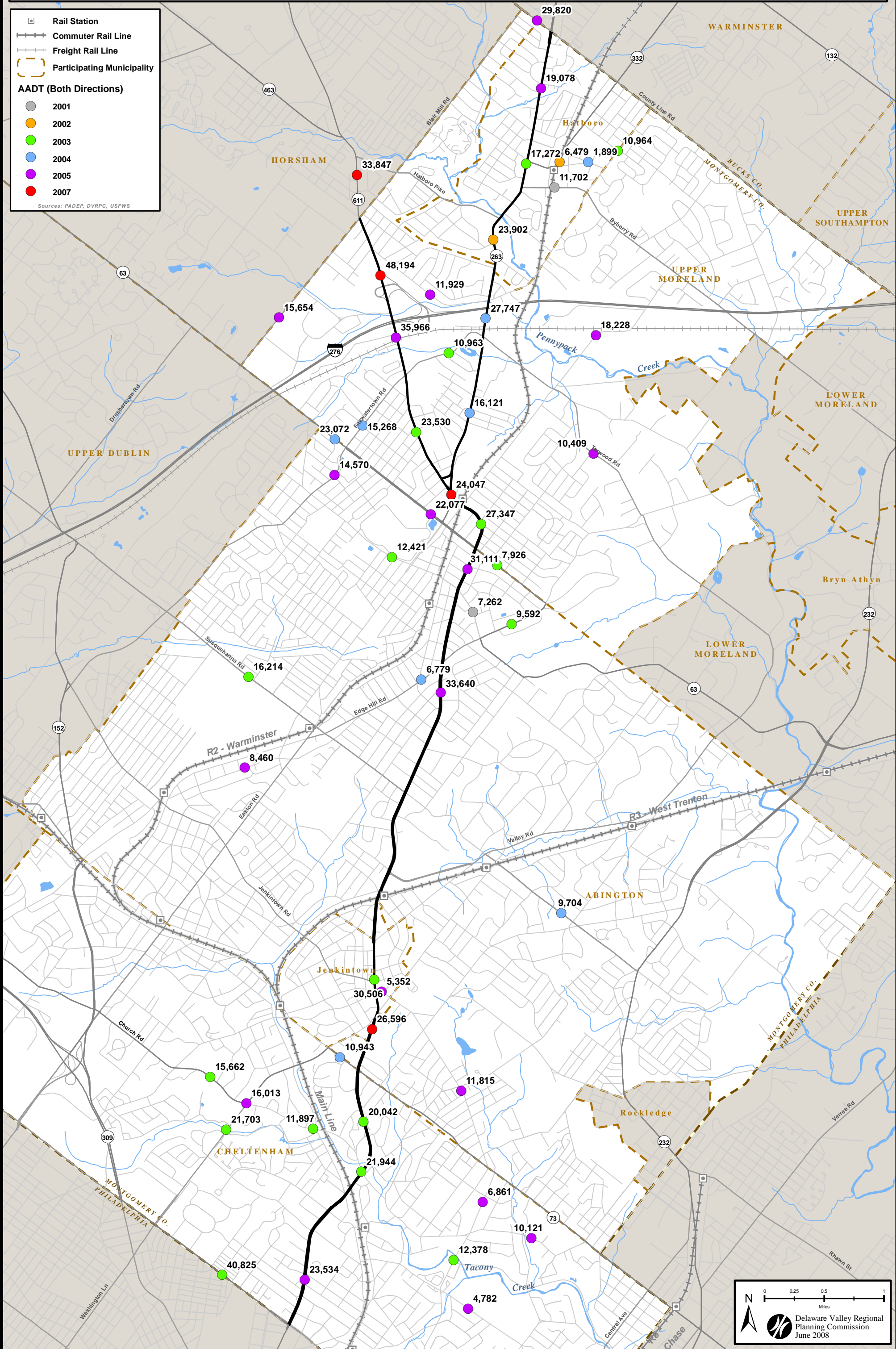
Map 12: AADT

Rail Station
 Commuter Rail Line
 Freight Rail Line
 Participating Municipality

AADT (Both Directions)

- 2001
- 2002
- 2003
- 2004
- 2005
- 2007

Sources: PADEP, DVRPC, USFWS

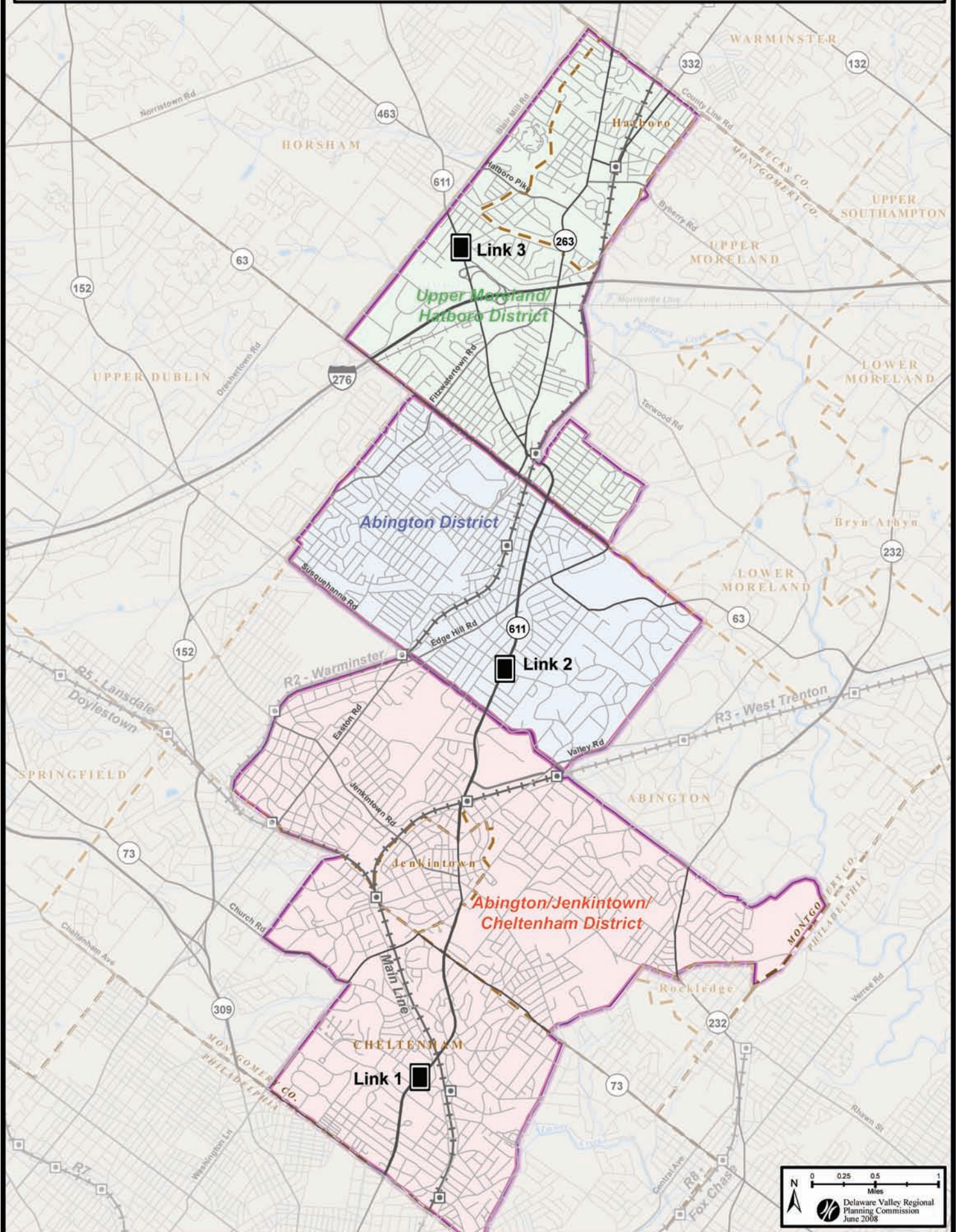


0
 0.25
 0.5
 1
 Miles

Delaware Valley Regional
 Planning Commission
 June 2008

Route 611/263 Corridor

Map 13: 2000 Origin/Destination Districts



FINDINGS

- Approximately 75% of peak direction vehicles using the section of the corridor just north of Ashbourne Road originate in or are destined for Philadelphia.
- Approximately 42% of trips using the Ashbourne Road link originate in or are destined to the Abington/Jenkintown/Cheltenham District.
- Approximately 40% of vehicles using the section of the corridor just north of Susquehanna Road originate in or are destined for Philadelphia. Approximately 43% of trips were to the rest of Pennsylvania. Only 37% of trips at this location originates or are destined to the Abington/Jenkintown/Cheltenham District.
- The majority of northbound trips (44%) north of the Pennsylvania Turnpike interchange originate from the rest of Pennsylvania outside the study area and the majority (78%) is also destined for the rest of Pennsylvania.
- The highest percentage of trips using any of the selected links to or from either Doylestown or the Warminster/Warrington area was 9% of trips near the Turnpike Interchange for trips originating in Warminster/Warrington.
- A maximum of 15% of transit trips using any of the selected links, originated in the Olney area of Philadelphia.
- Few daily transit trips are made between Olney and Warminster, and between Warrington and Doylestown.
- The majority of transit trips from Olney were destined for part of Abington, and Jenkintown and Cheltenham townships.

CONCLUDING OBSERVATIONS

- Northbound origin and southbound destination data shows that much of the Philadelphia based traffic begins (southbound) or ends (northbound) their journey within the corridor.
- The significance of the traffic classified as “the rest of Pennsylvania” (up to 79%) clearly demonstrates that Route 611 through the corridor is a Principal Arterial which serves much more than local traffic.
- Doylestown area based traffic is not significant south of the PA Turnpike.
- Corridor based traffic is more pronounced in the southern corridor area.
- Transit trips and vehicle trips from Olney were primarily destined for Abington, Jenkintown, and Cheltenham.

6.1.3 Travel Time Survey

A travel time survey was performed to assess mobility in the study corridor. The travel time survey was conducted along the length of Route 611, from the Philadelphia / Montgomery County boundary to the intersection of Route 463, Horsham Road in Horsham Township. In addition, Route 263, Old York Road from Route 611 to County Line Road in Upper Moreland Township and Hatboro Borough was included in the analysis.

The survey was conducted prior to Thanksgiving and the holiday shopping season (October- November 2007). A comparative analysis was also done of historical data collected along Route 611 in the 1996-1997 Travel Time Survey of the Delaware Valley Region.

Normally, three time periods (AM Peak, Midday and PM Peak) would be utilized to understand travel time

characteristics in the corridor. However, due to the preponderance of retail complexes adjacent to Route 611 in Montgomery County and the tendency of this land use to create a mini peak during the lunch hour (Midday period), it was deemed necessary to add a fourth period between the AM Peak and Midday period. This period simulated “Free Flow” conditions and was used as a baseline against which the other data was compared.

METHODOLOGY

Test vehicles equipped with Global Positioning Systems (GPS) technology drove the corridor, moving with the flow of traffic. The technician operating the GPS unit recorded the position of the vehicle and the time at each cross street. The technician also recorded stopped delay, defined as the vehicle coming to a complete stop in traffic.

Three runs were conducted in each direction in each time period. These were scheduled with varying starting times so that samples from different times within each time period would be collected. Mondays and Fridays were excluded as survey days, as were days following or preceding a holiday.

RESULTS

Tables 7 and 8 show data from the travel time survey by time period, for northbound and southbound travel, respectively. Travel time and stopped delay data have been aggregated between major cross streets. Average speed has also been calculated.

The results of the Free Flow and PM Peak periods are summarized below. The PM Peak was selected to heighten the contrast with the Free Flow period. The worst delays occurred during the PM Peak.

FREE FLOW

Free flow travel time to traverse the study corridor on Route 611 was almost 22 minutes, both northbound and southbound. That corresponds to an average speed of 24 mph. Speeds were somewhat slower in south Abington. The travel time on Route 263 between Route 611 and County Line Road was approximately seven and a half minutes northbound and eight and a quarter minutes southbound. Average speed was approximately 26 mph and 23 mph, respectively.

PM PEAK

Travel time on Route 611 increases in the PM Peak but much of the increase is in south Abington and, to a lesser extent, Cheltenham. The increase in travel time is more pronounced in the southbound direction, amounting to an extra four minutes. The difference is also reflected in stopped delay. For example, compared to the Free Flow period, stopped delay in south Abington doubles northbound but nearly triples southbound. Free Flow stopped delay is 2 minutes 12 seconds northbound and 2 minutes 30 seconds southbound. PM Peak stopped delay is 4 minutes 40 seconds northbound and 7 minutes 15 seconds southbound.

PM travel time also increases on Route 263. It takes an extra three minutes to travel between Route 611 and County Line Road northbound, and an extra two and a half minutes southbound. The worst delays are in the northbound direction in Hatboro Borough. Average speeds there, compared to the Free Flow period, drop significantly, from 24 mph in the Free Flow period to 16 mph in the PM Peak.

TRAVEL TO CENTER CITY PHILADELPHIA

The southern extent of the study was extended to City Hall, Philadelphia via Broad Street to provide a basis for comparing auto travel times with regional rail access to center city (via Suburban Station). Free Flow travel time between Philadelphia and Willow Grove was slightly more than three quarters of an hour (45 m 46 s). The length of the trip increased significantly in the PM Peak. It took almost another ten minutes (55 m 15 s). In contrast, SEPTA R2 Warminster regional rail made the trip in 40 minutes during the off peak and the PM Peak.

Table 7: PA 611 Travel Time Survey

Municipality	Intersection	Dist. (mi.)	NB Free Flow				NB PM Peak				SB Free Flow				SB PM Peak			
			Travel Time (sec)	Avg Speed (mph)	Total Delay (sec)	Travel Time (sec)	Avg Speed (mph)	Total Delay (sec)	Travel Time (sec)	Avg Speed (mph)	Total Delay (sec)	Travel Time (sec)	Avg Speed (mph)	Total Delay (sec)	Travel Time (sec)	Avg Speed (mph)	Total Delay (sec)	
Cheltenham Township	Cheltenham Ave. to Ashbourne Rd.	0.6	90.5	25.5	31.5	107.2	21.5	46.0	103.5	22.3	44.0	105.7	21.8	46.0				
	Ashbourne Rd. to Stahr Rd.	0.5	77.0	21.0	33.5	92.3	17.6	50.0	74.0	21.9	33.5	52.0	31.2	13.0				
	Stahr Rd. to Forest Ave	0.2	27.0	24.0	11.0	26.6	24.4	9.6	36.0	18.0	19.0	33.0	19.6	15.6				
	Forest Ave. to PA 73 Township Line Rd.	0.8	67.0	41.4	13.5	112.3	24.7	50.9	69.0	40.2	14.5	82.3	33.7	22.7				
	Total Cheltenham	2.0	261.5	28.1	89.5	338.4	21.7	156.5	282.5	25.996	111	273	26.9	97.3				
Abington Township	PA 73 Township Line Rd. to Washington Lane	0.4	69.0	20.9	31.0	99.7	14.4	61.7	97.0	14.8	58.0	108.0	13.3	69.3				
Jenkintown Borough	Washington Lane to Rydal Rd.	0.5	108.5	16.9	64.5	108.3	17.0	64.3	73.0	25.2	28.5	266.7	6.9	223.7				
	Total Jenkintown	0.5	108.5	16.9	64.5	108.3	17.0	64.3	73.0	21.2	28.5	266.7	6.9	223.7				
Abington Township	Rydal Rd. to Old York Rd.	0.6	84.5	26.0	23.0	155.7	14.1	95.7	103.5	27.9	42.5	142.0	15.5	82.6				
	Old York Rd. to PA 63 Moreland Rd.	2.2	320.5	24.4	119.5	365.3	21.4	165.3	279.5	0.0	82.0	421.6	18.5	223.1				
	Total Abington	3.2	474.0	24.2	173.5	620.7	18.4	322.7	480.0	23.9	182.5	671.6	17.0	375.0				
Upper Moreland Township	PA 63 Moreland Rd. to Cherry St.	0.3	32.5	31.0	7.5	67.3	15.0	42.0	44.5	22.7	19.0	62.0	16.3	37.3				
	Cherry St. to Summit Ave.	0.8	128.0	23.1	85.0	108.1	27.3	66.1	157.5	18.7	115.5	153.3	19.3	109.9				
	Summit Ave. to Wyandote Rd.	0.9	151.5	21.6	67.0	203.0	16.1	119.3	128.0	25.6	43.5	136.3	24.0	52.9				
	Wyandote Rd. to Maryland Rd.	0.2	17.0	31.8	2.5	20.3	26.6	6.3	37.5	14.4	23.5	29.7	18.2	15.3				
	Maryland Rd. to Mill Rd.	0.5	82.0	20.6	41.5	59.3	28.5	18.7	55.5	30.5	14.5	84.7	20.0	42.4				
	Mill Rd. to Blair Mill Rd.	0.3	36.0	23.3	15.0	41.7	20.8	19.7	34.5	24.3	13.0	69.3	12.0	48.3				
	Total Upper Moreland	2.9	447.0	23.2	218.5	499.7	20.7	272.1	457.5	22.7	229	535.3	19.4	306.1				
	Total Corridor:	8.6	1,291.0	24.0	546.0	1,567.1	19.8	815.6	1,293.0	24.0	551.0	1,746.6	17.7	1,002.1				

Source: DVRPC, 2007

HISTORICAL SURVEY

A temporal comparison is provided by data collected along Route 611 summarized in the DVRPC publication, 1997 Highway and Transit Travel Time Survey for the Delaware Valley Region (Publication # 02030). Unsurprisingly, the commute between Philadelphia and the study corridor has worsened in the last decade. When the original study was performed, the average PM peak trip between Philadelphia and Willow Grove took just under 42 minutes. Today the same trip takes almost another quarter hour to complete (55 m 15 s).

6.1.4 Crash Analysis

INTRODUCTION

Crash data for the years 2003 to 2005 was evaluated for 16 locations in the Route 611/263 study corridor (Map 14). The data used in this analysis was derived from Police Crash Investigation Reports, provided by the Pennsylvania Department of Transportation (PennDOT) District 6 office. For this study, reportable crash reports were utilized. Reportable crashes are incidents that result in a fatality, an injury, and or property damage that requires a vehicle to be towed from the scene. The main goals of this analysis are to identify problematic locations, highlight crash trends, and determine causal factors. The crash summary (Appendix A) is the analytical synopsis of various crash conditions obtained from the police reports. These tools assist municipal officials and traffic safety specialists in identifying crash trends which may be addressed through any combination of engineering improvements, increased enforcement and/or educational campaigns.

Most locations were selected based on the high number of crashes. Some were selected because the intersection was under study for other reasons. The locations are listed in order of total crashes, with the highest crash total first. No fatalities were reported over the period of analysis.

ROUTE 611 AT SUSQUEHANNA ROAD (ABINGTON TOWNSHIP)

With a total of 70 crashes from 2003 to 2005, this location has the highest amount of crashes among all locations. The number of serious crashes is high when compared to the rest of the corridor. Over three years, there were three head-on collisions and three pedestrians were struck. A number of crashes (8) involve hit fixed objects. The rate of injuries is also high (70 percent) when compared to other corridor locations. Nothing in the breakdown of crash types suggests an explanation for these trends.

ROUTE 611 AT CHELTENHAM AVENUE (CHELTENHAM TOWNSHIP)

A large majority of crashes at this location are angle crashes. The rate of angle crashes (81 percent) exceeds that at all other locations. The injury rate is also high (66 percent) when compared to other corridor locations. In addition, there were four head-on crashes. The Cheltenham Board of Commissioners has endorsed Option 6 (relocate lane drop) from the improvement study by F. Tavani and Associates.

ROUTE 611 AT MORELAND ROAD (ABINGTON TOWNSHIP, UPPER MORELAND TOWNSHIP)

There were 60 crashes in three years at this location. The proportion of angle crashes is high (58%) when compared to other corridor locations. The rate of injuries is also high (58 percent). Three head-on collisions have been reported and a pedestrian was struck in 2004.

ROUTE 611 AT OLD WELSH ROAD (ABINGTON TOWNSHIP)

The location accumulated a total of 41 crashes over three years. More than half of the crashes were angle crashes (56 percent). The proportion of hit fixed object crashes was also high (12 percent). A pedestrian was struck in 2004.

Table 8: PA 263 Travel Time Survey

Municipality	Intersection	Distance (mi.)	Northbound						Southbound					
			Free Flow			PM Peak			Free Flow			PM Peak		
			Travel Time (sec)	Avg. Speed (mph)	Total Delay (sec)	Travel Time (sec)	Avg. Speed (mph)	Total Delay (sec)	Travel Time (sec)	Avg. Speed (mph)	Total Delay (sec)	Travel Time (sec)	Avg. Speed (mph)	Total Delay (sec)
Upper Moreland Township	PA 611 Easton Road to Newington Dr.	1.5	195.8	28.2	63.8	233.0	23.7	91.7	262.7	21.0	119.5	348.7	15.8	200.7
Hatboro Borough	Newington Dr. to Fulmore Ave.	0.5	60.7	27.7	18.7	108.4	15.5	68.4	39.7	42.4	10.7	46.7	36.0	16.7
	PA 611 Easton Rd. to Fulmore Ave. Total:	2.0	256.5	28.1	82.5	341.4	21.1	160.1	302.4	23.8	130.2	395.4	18.2	217.4
	Fulmore Ave. to Summit Ave.	0.7	135.3	17.4	74.7	206.7	11.4	146.0	136.4	18.6	71.6	193.6	13.1	130.6
	Summit Ave. to County Line Rd.	0.6	49.0	42.0	1.0	75.4	27.3	23.0	56.4	38.7	2.3	59.0	37.0	4.4
	Total Corridor:	3.2	440.8	26.3	158.2	623.5	18.6	329.1	495.2	23.4	204.1	648.0	17.9	352.4

Source: DVRPC, 2007

ROUTE 263 AT FITZWATERTOWN ROAD (UPPER MORELAND TOWNSHIP)

Angle crashes predominate at this location. Out of 38 crashes 25 were angle crashes. Compared to the other locations, that represents a high rate (66 percent). The proportion of injury (66 percent) and the proportion of night crashes (37 percents) are also high. A pedestrian was struck in 2004.

ROUTE 611 AT FITZWATERTOWN ROAD (UPPER MORELAND TOWNSHIP)

This location had 28 crashes from 2003 to 2005. The proportion of angle crashes is the second highest (71 percent) in the corridor. The proportion of crashes at night is also high (43 percent).

ROUTE 611 AT TOWNSHIP LINE ROAD (ABINGTON TOWNSHIP, CHELTENHAM TOWNSHIP)

More than half of the 26 crashes at this location were rear-end crashes. Compared to the other locations, that represents the second highest number of rear-end crashes (54 percent). There was one head-on collision. Two pedestrians were struck, one each in 2003 and 2004.

ROUTE 611 AT WOODLAND ROAD (ABINGTON TOWNSHIP)

There were 23 crashes at this location but three of these crashes were head-on collisions. The proportion of head-on collisions is the highest of any location (13 percent). The proportion of injuries is also very high (83 percent). The breakdown of the crash types does not suggest an obvious explanation for the severity of crashes at this location.

ROUTE 611 AT BLAIR MILL ROAD (UPPER MORELAND TOWNSHIP)

Ten of twenty crashes at this location were rear-end crashes. Compared to the other locations, the proportion of rear-end crashes is the second highest (50 percent) and is probably explained by delays at the intersection. Angle crashes account for almost all other crashes 45 percent).

ROUTE 263 AT MORELAND AVENUE (ABINGTON TOWNSHIP, UPPER MORELAND TOWNSHIP)

This location totaled 13 crashes from 2003 to 2005. Despite the comparatively low overall number of crashes, there was one head-on collision and two pedestrians were struck.

ROUTE 611 AT ROY AVENUE (ABINGTON TOWNSHIP)

Crashes declined from five in 2003 to one in 2005. More than half of all crashes are angle crashes (60 percent). This location has the lowest proportion of injuries (40 percent).

ROUTE 611 AT CHURCH ROAD (CHELTENHAM TOWNSHIP)

There were 10 crashes over three years at this location, but five occurred at night and five occurred under wet conditions. Both these occurrences are unusually high for the corridor. In any case, the severity of crashes at this location is conspicuous. The proportion of injury is extremely high (80 percent). There was also a head-on collision.

ROUTE 611 AT ASHBOURNE ROAD (CHELTENHAM TOWNSHIP)

This location had only six crashes from 2003 to 2005 but all the crashes resulted in injury. More of these crashes occurred at night (50 percent) or dusk (17 percent) than is usual. Darkness may exacerbate line of sight problems at the intersection due to steep approaches on Ashbourne Road.

ROUTE 611 AT SUMMIT AVENUE (UPPER MORELAND TOWNSHIP)

There were five crashes at this location during the three-year period. All the crashes resulted in injury but no reason stands out. They all occurred in daylight. Three were rear-end crashes and two occurred under wet conditions.

ROUTE 611 AT WASHINGTON LANE (ABINGTON TOWNSHIP, JENKINTOWN BOROUGH)

With a total of four crashes, this site had the second lowest number of crashes from 2003 to 2005. Two of the crashes involved injury. A pedestrian was struck in 2005.

ROUTE 611 AT EASTON ROAD (UPPER MORELAND TOWNSHIP)

Despite heavy traffic volume at this location, there were only two crashes during the three-year period. Only one involved injury.

6.1.5 Intersection Analysis

There are 43 traffic signals on Route 611 in the study area and 12 on Route 263. Traffic volume, the traffic signal's timing plan, and other external variables, all contribute to delay at intersections. If excessive delay is experienced at numerous intersections, then vehicular mobility along the corridor becomes compromised. Thus, in order to maintain and facilitate vehicular mobility, intersection improvements must be considered and evaluated. However, such improvements must balance the interests of all transportation modes and that of adjacent land-uses.

EXISTING CORRIDOR-WIDE CONDITIONS

The 55 signalized intersections along the study corridor serve side-streets of varying local and regional significance. Depending on the time of day, each intersection carries a different proportion and overall volume of vehicles. As a result, the performance of an intersection is determined by the hierarchy of its side-street in the street network and the time of day. This performance can be expressed by qualitative measure, Level of Service.

LEVEL OF SERVICE ANALYSIS

In order to understand the existing conditions of the corridor, DVRPC conducted an analysis of the existing traffic operations, and roadway conditions including safety, geometry, and level of service (LOS) at selected highway locations. The LOS is the standard performance measure for evaluating roadways and is defined by the Highway

Table 9: Levels of Service at Signalized Intersections

Level of Service	Description	Control Delay Per Vehicle (Seconds)
A	Very low Delay, high quality flow	≤ 10.0
B	Low delay, good traffic flow	10.1 to 20.0
C	Average delay, stable traffic flow	20.1 to 35
D	Longer delay, approach capacity flow	35.1 to 55
E	Limit of acceptable delay, capacity flow	55.1 to 80
F	Unacceptable delay, forced flow	> 80

Source: Highway Capacity Manual, 2000

Capacity Manual (HCM) as a “qualitative measure describing conditions within a traffic stream, and their perception by motorists and/or passengers”. LOS is divided into six categories (Table 9), ranging from LOS A (free flow traffic) to LOS F (traffic flows break down, over capacity conditions).

The performance measures used to determine LOS vary depending on the type of intersection. If signalized, LOS is based on the average control delay for all motorists in each available movement within the intersection. This is correlated with the volume/capacity ratio, derived from the intersection’s physical characteristics.

Based upon recent PennDOT timing and volume data, Tables 10 and 11 outline the 10 worst performing intersections along Route 611 for the morning and afternoon peak hours.

For the morning peak hour, the 10 worst performing intersections average 40 seconds of delay. Although the intersection of Route 611 and Blair Mill Road is the worst performing with an overall LOS of F, three of the remaining nine intersections operate at a LOS of D, with the final six at an acceptable LOS of C.

For the afternoon peak hour, the 10 intersections average 44 seconds of delay. Though there is no intersection with a failing LOS, eight of the 10 operate at a LOS of D.

It is worth noting that eight intersections (Blair Mill Road, Church Road, Davisville Road, Fitzwatertown Road, Greenwood Ave, Susquehanna Road, Washington Lane, and Township Line Road) share a position on both lists. These intersections may warrant further analysis, since their associated delay is not isolated to one peak hour. Consequently, potential improvements for such intersections may be applicable for multiple peak periods.

GENERAL RECOMMENDATIONS

In order to alleviate vehicular delay and poor LOS at an intersection, a variety of improvements are often considered. Such improvements may be divided into three categories: signal timing, geometric, and operational.


Most signal timing improvements may be considered “short-term” alternatives, since they require relatively minimal expense, infrastructure, or right-of-way to implement. Such improvements include simple modifications to split length or proportion, as well as to the overall cycle length. Other modifications include various methods to accommodate left-turns with or without signal protection. Lastly, signal coordination between a series of closely-spaced traffic signals allows for less interrupted traffic progression along a roadway.

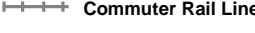
Geometric improvements include any modification that adds physical capacity to the intersection. Examples include lengthening an existing turning lane, incorporating a channelized right-turn slip lane, or widening a road with an additional travel lane. Because such improvements often require the acquisition of additional right-of-way, they are often considered “medium-term” or “long-term”.

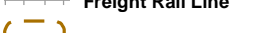
An operational improvement entails a measure that streamlines the flow of vehicles through an intersection, without adjustments to its signal timing or geometry. These improvements include enhanced access management such as the relocation of adjacent driveways or the introduction of a physical median barrier. Another method includes enhanced signage that is informative yet condensed; intended information may be advisory or directional.

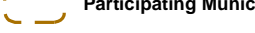
Route 611/263 Corridor

Map 14: Crashes (2003 - 2005)





 Rail Station

 Commuter Rail Line

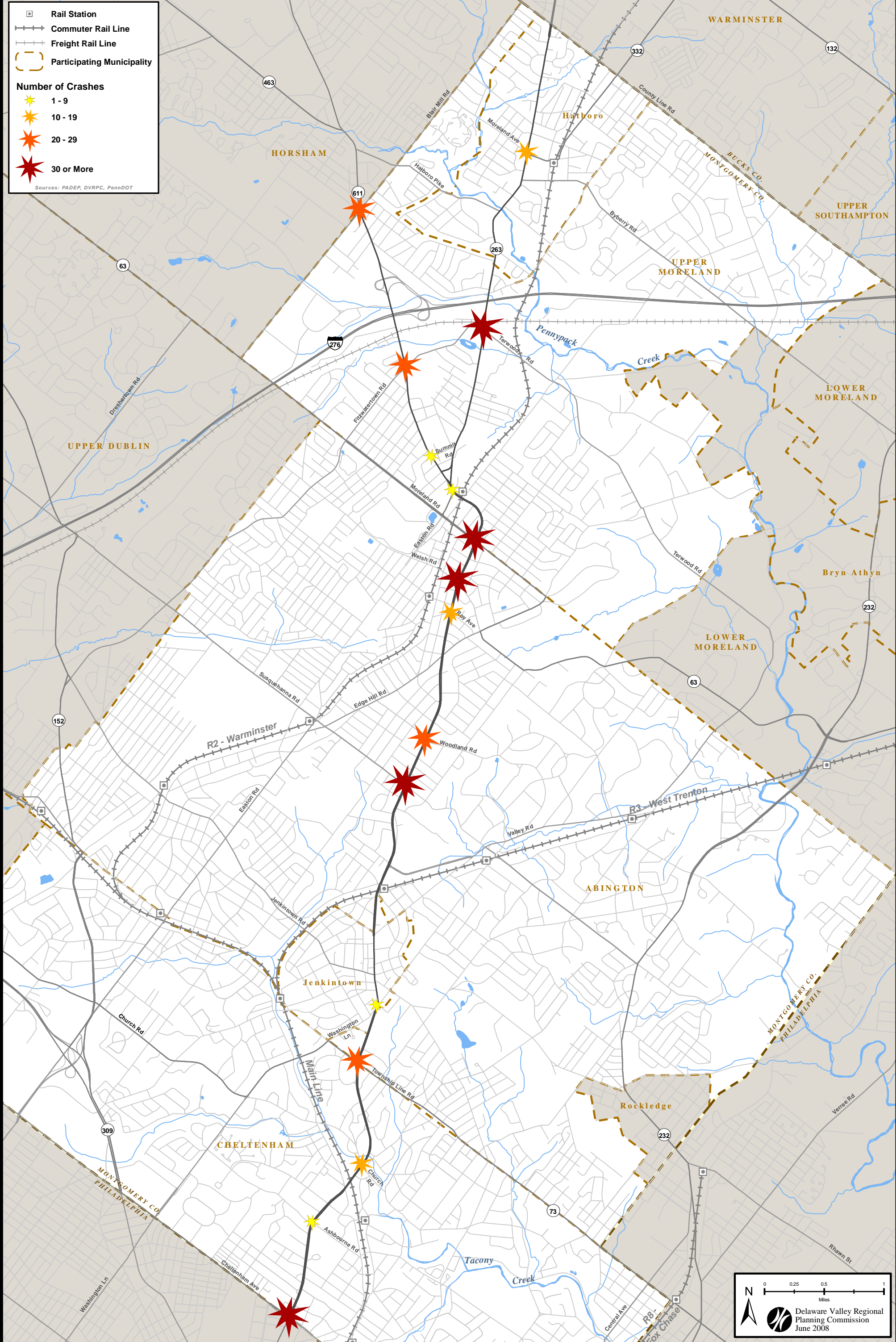
 Freight Rail Line


 Participating Municipality

Number of Crashes

-  1 - 9
-  10 - 19
-  20 - 29
-  30 or More

Sources: PADEP, DVRPC, PennDOT



 0 0.25 0.5 1 Miles


 Delaware Valley Regional Planning Commission
June 2008

Table 10: AM Peak Hour's 10 Worst Performing Intersections

Morning Peak Hour				
	Route 611 Intersection:	Municipality	Overall Delay: (Seconds)	Overall LOS:
1	Blair Mill Road	Upper Moreland	81	F
2	Church Road	Cheltenham	52	D
3	Washington Lane	Jenkintown	44	D
4	Greenwood Avenue	Jenkintown	36	D
5	Fitzwatertown Road	Upper Moreland	33	C
6	Susquehanna Road	Abington	33	C
7	Moreland Road	Upper Moreland, Abington	32	C
8	Township Line Road	Abington, Cheltenham	30	C
9	Davisville Road	Upper Moreland	29	C
10	Maryland Road	Upper Moreland	28	C

Source: DVRPC, 2008

Table 11: PM Peak Hour's 10 Worst Performing Intersections

Afternoon Peak Hour				
	Route 611 Intersection:	Municipality	Overall Delay: (Seconds)	Overall LOS:
1	Center Avenue	Upper Moreland	67	E
2	Fitzwatertown Road	Upper Moreland	54	D
3	Blair Mill Road	Upper Moreland	50	D
4	Washington Lane	Jenkintown	44	D
5	Baeder Road	Abington	39	D
6	Church Road	Cheltenham	38	D
7	Davisville Road	Upper Moreland	38	D
8	Susquehanna Road	Abington	37	D
9	Greenwood Avenue	Jenkintown	36	D
10	Township Line Road	Abington, Cheltenham	32	C

Source: DVRPC, 2008

6.1.6 Arterial Median Analysis

One of the more defining physical characteristics of the Route 611 cartway is its raised median. In contrast to a standard, at-grade painted median, the raised medians along the study corridor are comprised of traversable curbs and a raised platform that divide the north and southbound lanes of traffic. It currently serves many functions, such as an access management tool, as provision for left-turn storage bays, and as a pedestrian refuge.

RAISED MEDIAN INVENTORY

Utilizing DVRPC’s 2005 aerial imagery in conjunction with GIS software, and further supplemented by field visits, an inventory of the study corridor’s raised median was created (See Maps 15, 16, and 17). The inventory considers various characteristics that physically define a segment of the raised median as well as its relationship to the adjacent street network and land use. Specifically, the width, length, and purpose of a section of raised median were documented. Width was divided into three categories: “narrow” (zero to four feet in width), “medium” (five to nine feet), and “wide” (ten feet and greater). Purpose was defined as: at-intersection left-turn lane, left-turn lane taper, or segment (usually between intersections).

However, among all sections of the raised median, 62% is defined as a “narrow” section, while only 26% is defined as “wide”. Furthermore, the longest such “wide” section is only 910 feet long. Due to this relative lack of contiguous “wide” segments, there leaves little opportunity to reclaim the median’s right-of-way as additional capacity, for either cars or bicycles, for any significant portion of the study corridor.

An analysis of the inventory reveals that along the majority, or 63% of the Route 611 portion of the study corridor there is a raised median. There are no significant sections along Route 263 with a raised median. The remaining 37% of Route 611 is comprised mainly of sections where either the raised median is interrupted for cross-street access or missing along consolidated sections of the corridor. Such sections include its entire length in Jenkintown, a stretch of Upper Moreland between Park Avenue and Russell Road, and the Elkins Park commercial area near Church Road.

RAISED MEDIAN AS ACCESS MANAGEMENT TOOL

The raised median does represent opportunities beyond those of additional roadway capacity. For instance, it currently serves as an access management tool by preventing vehicles from executing left-turns to access or exit a mid-block driveway. For the majority of the study corridor, the only opportunities for an exclusive left-turn lane are at an intersection, of which most are signalized. Otherwise, to access a mid-block parcel on the opposite side of Route 611, a U-Turn must be completed at the nearest intersection.

With regards to safety, the raised median has multiple impacts. By restricting mid-block left-turns, it eliminates numerous conflict points. Though the raised median is flanked by traversable curbs, it does provide a barrier for vehicles traveling in opposite directions from colliding head-on. Nonetheless, this mobility improvement and its subsequent safety benefits are partially moderated by the higher vehicular travel speeds it sometimes encourages. This may be partially mitigated by landscaping the raised median, which would provide greater visual friction, thus inducing a potential reduction in speed.

RAISED MEDIAN FOR LEFT-TURN STORAGE BAYS

Along many portions of Route 611, a left-turn lane and storage bay is provided within the raised median. Along such sections, the raised median is often “narrow” (less than four feet in width) thus providing the necessary width to separate slowing or queuing left-turning vehicles from the through lanes.

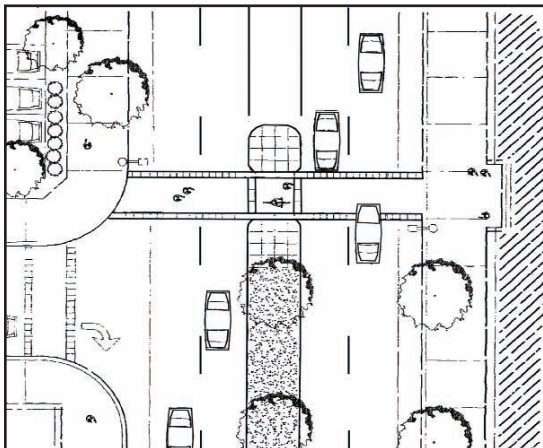
Utilizing PennDOT turning movement counts, the cycle length of the signal, and the median inventory, it is possible to understand which left-turn bays are most prone to a spillover of queuing vehicles into the through lane. Such locations are listed in Table 12. The ability to lengthen such storage bays is based upon the

availability of upstream median width. Unfortunately, in many instances a northbound left-turn lane shares its taper with a southbound left-turn lane, thus complicating any effort to lengthen either. All initiatives to lengthen left-turn storage bays should be made in conjunction with median landscaping efforts in order to avoid potential conflicts.

RAISED MEDIAN AS PEDESTRIAN REFUGE

Due to the number of lanes, the large volume of vehicles, the prevailing speeds at which they travel, and at some locations the lack of signal control, crossing Route 611 can prove very intimidating, if not very difficult for many pedestrians. However, their efforts may be facilitated by the presence of a pedestrian refuge at the median. The images on this page provide an example of a pedestrian refuge along a comparable roadway. Unfortunately, many of the Route 611 intersections only carry a “narrow” raised median at the intersection. Since standards for a pedestrian refuge require a minimum of 6 feet in width, the raised median is unable to serve as a pedestrian refuge at most intersection locations. Nonetheless, the opportunity to create a pedestrian refuge still remains at a number of intersections; they are listed in Table 13.

Additionally, where deemed necessary by pedestrian activity in combination with excessive distance between signalized intersections, appropriate vehicular speed, and the presence of a “wide” raised median, a mid-block pedestrian crossing may be considered. Due to the presence of the “wide” raised median, the mid-block crossing may be facilitated by a pedestrian refuge. The image on this page provides an example along a comparable roadway.



Left: Example of an At-Intersection Pedestrian Refuge; **Right:** Example of a mid-block pedestrian refuge.
Source: Pedestrian and Bicycle Information Center (PBIC), 2008

Table 12: Potential Left-Turn Lane Extensions

Municipality	Intersection	Direction	Existing Length (ft)	Largest Left-Turn Volume per Peak Hour (Vehicles)	Available Upstream Median (ft)	Additional Length Desired (ft)
Abington Twp	Highland Ave	NB	110	Mid-Day: 85	350	50
	Keith Rd	NB	110	Morning: 118	40	50
	Susquehanna Rd	NB	190	Afternoon: 232	125 (landscaped)	125
	Susquehanna Rd	SB	130	Afternoon: 196	175	140
	Old Welsh Rd	NB	265	Afternoon: 233	0	50
	Township Line Rd	SB	100	Afternoon: 180	0	150
	Woodland Rd	SB	350	Morning: 287	40	50
Cheltenham Twp	Ashbourne Rd	SB	75	Morning: 64	105	20
	Township Line Rd	NB	100	Afternoon: 76	420	20
	Valley Rd	SB	35	Afternoon: 91	0	100
Upper Moreland Twp	Blair Mill Rd	NB	215	Morning: 289	15	200
	Fitzwatertown Rd	SB	500	Afternoon: 475	0	150
	Maryland Rd	NB	190	Morning: 429	300	400
	Moreland Rd	SB	70	Afternoon: 83	0	50

Source: DVRPC, 2008

Table 13: Potential Locations for At-Intersection Pedestrian Refuges

Municipality	Intersecting Street	Side of Intersection	Width of Adjacent Raised Median	Intersection Control	Number of Lanes to Cross	Presence of Median Landscaping
Abington Twp	The Fairway	South	Medium	Signalized	5	Landscaped
	The Fairway	North	Medium	Signalized	6	
	Hidden Ln	South	Medium	Unsignalized	6	
	Hidden Ln	North	Medium	Unsignalized	6	
	Woodcrest Rd	North	Wide	Unsignalized	4	
	Canterbury Rd	North	Wide	Unsignalized	5	
	Adams Ave	North	Wide	Unsignalized	4	
	Guernsey Ave	North	Wide	Unsignalized	4	
	Eckard Ave	South	Wide	Unsignalized	4	
	Hamilton Ave	North	Wide	Unsignalized	4	
	Butler Ave	South	Wide	Unsignalized	4	
	Chester Ave	South	Wide	Unsignalized	4	
	Roy Ave	South	Wide	Unsignalized	4	
	Rubicam Ave	North	Wide	Unsignalized	4	
	Berrell Ave	North	Wide	Unsignalized	4	
Cheltenham Twp	Valley Rd	South	Wide	Signalized	4	
	Willow Ave	North	Wide	Unsignalized	4	
	Academy Ln	North	Wide	Unsignalized	4	
	Stetson Rd	North	Wide	Unsignalized	4	
	Webb Rd	North	Wide	Unsignalized	4	
	Breyer Dr	North	Wide	Unsignalized	4	
Upper Moreland Twp	Evans Ave	South	Medium	Unsignalized	4	
	Easton Rd	North	Medium	Signalized	4	
	Regency Towers Driveway	South	Medium	Unsignalized	4	
	Maryland Rd	South	Medium	Signalized	5	
	Maryland Rd	North	Wide	Signalized	6	
	Home Depot Dr.	North	Wide	Signalized	6	
	Willow Ave	North	Wide	Unsignalized	6	

Source: DVRPC, 2008

Route 611/263 Corridor

Map 15: Median Inventory - Cheltenham Township

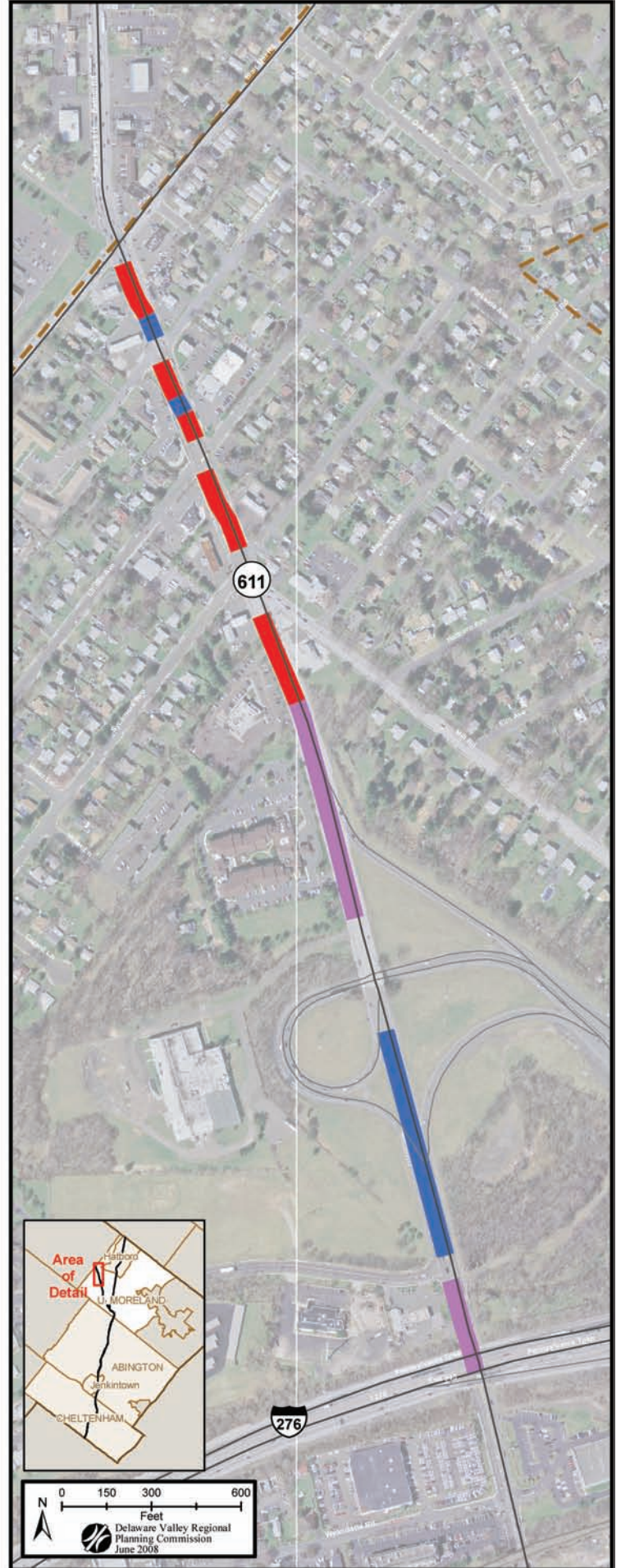
Median Width

- █ Narrow (0 - 4 feet)
- █ Medium (5 - 9 feet)
- █ Wide (10 or more feet)



Route 611/263 Corridor

Map 17: Median Inventory - Upper Moreland Township



6.2 TRANSIT SERVICE ANALYSIS

Objective: Improve transit service to and along the corridor

Overview

Historically, Old York Road was ordered in 1683 and laid out from southern Cheltenham to as far as Jenkintown by 1692. In the 1890's, a trolley service was introduced along Old York Road which fuelled suburban expansion from Philadelphia.

The development patterns of the Route 611/263 corridor permit an efficient mass transportation system. Numerous regional rail lines cross the corridor offering the opportunity to travel easily throughout the region. Bus routes conveniently connect corridor communities with one another as well with areas outside of the corridor. For the majority of individuals residing within the corridor the ability to travel via mass transit is a reality.

However, an aging mass transit system matched with an aging corridor presents additional challenges that must be met in order to provide an ongoing safe, convenient, reliable, attractive, and affordable system. The benefits of mass transit are plentiful, and include; reduced congestion, improved air quality, increased mobility, and an alternative to the single-occupant vehicle. To maximize these benefits, the corridor municipalities, SEPTA, and the TMAs must continually work together to bring about improvement.

This section will provide an inventory of existing mass transit services and identify potential improvements.

In conducting this task, the following aspects of the existing system were considered:

- A general overview of each bus and rail route which includes headways and end terminus points;
- The connectivity of the corridor's bus routes with the corridor's regional rail stations, including schedule coordination;
- The connectivity of the corridor's transit resources with major employment centers;
- The connectivity of the corridor's transit service to social service providers, such as; libraries, hospitals, schools, courts, social service facilities, and municipal offices;
- The condition of the corridor's transit facilities; and
- An inventory of Non-SEPTA transit services.

6.2.1 Corridor Bus Service

The 611/263 corridor is served by numerous bus routes. Map 18 shows the corridors mass transit routes. Routes 22 and 55 serve as corridor trunk lines, serving the corridor in a north - south manner. There are several major points of interest in the corridor that attract significant amounts of bus patrons, including the Willow Grove Park Mall and surrounding businesses, Abington Memorial Hospital, the Target shopping center, and Penn State University - Abington, among others. These points are all served directly by SEPTA bus routes with the exception of the Penn State campus which is a short walk from Route 55. All regional rail stations are within walking distance to a bus route, with Crestmont Station being the least accessible due to its location three blocks west of Old York Road.

BUS ROUTE DESCRIPTIONS

Following are brief descriptions of each bus route that serves the corridor supplemented with Tables 14 and 15 which provides route summaries:

Route 22

Route 22 is a north - south bus route that travels between Warminster and Olney Transportation Center (OTC) in Philadelphia. The route travels on Easton Road, entering the study area at the intersection of PA routes 611 and 263 in Upper Moreland Township, and then continuing along PA Route 263 through Hatboro Borough. Scheduled travel time between Hatboro and OTC is approximately 40 minutes. Traveling to Center City Philadelphia via Route 22, bus to subway, is approximately 25 minutes greater than traveling on Regional Rail alone. The Willow Grove Park Mall is located along this route. Regional Rail connections are available at Hatboro, Willow Grove, and Glenside stations.

Route 28

This route traverses a small portion of the study corridor in eastern Cheltenham Township and does not serve PA Route 611 or Route 263. The route serves two Regional Rail stations in the study area, Melrose Park and Elkins Park, thereby acting as potential feeders to the system.

Route 55

Route 55 runs between Cross Keys Place Shopping Center in Doylestown and OTC in North Philadelphia, including all of PA Route 611 that falls within the study area. On weekdays the route is modified to serve the UPS facility on Electronic Drive in Horsham Township and the Willow Grove Industrial Commons on Turnpike Drive in Upper Moreland Township. The route also stops at a transit hub at Willow Grove Park Mall where connections to routes 22, 98, and 310 are available. Transfer to Regional Rail is possible from Route 55 at Willow Grove Station and Noble Station; additionally transfer to the Broad Street Line is available at OTC. The route operates approximately 23 hours per day which allows it to be considered an Owl service, on weekdays, and has headways ranging from 10 minutes during peak hours, to an hour during late night hours. Travel time between Willow Grove Park Mall and OTC is approximately one hour.

Route 77

This route travels east - west between Chestnut Hill and northeast Philadelphia. The route passes through the study area on Glenside Avenue, Greenwood Avenue, and a short length of Old York Road in Jenkintown. It is the only SEPTA route that has a stop near the Jenkintown-Wyncote Regional Rail station. Additionally, it stops near the Glenside Regional Rail station. It is also the only corridor route that does not meet SEPTA's service standards due to low ridership. The route will undergo a review by SEPTA which will consider options such as a marketing campaign, re-routing, or other measures. Termination of the route is currently not being considered.

Route 98

This route is an east - west traveling route that has its eastern terminus in the corridor at Willow Grove Park Mall. It does not operate on either PA Route 611 or PA Route 263. It enters and exits the study area on Moreland Road in Upper Moreland Township. Within the corridor, this bus route does not have a direct connection to Regional Rail.

Route 310

This is a small circular route referred to as "Horsham Breeze." The route is funded via fare box revenues, Montgomery County subsidies, and private sector subsidies. It serves the area directly around the Willow Grove Park Mall, including many of the areas large employers. The route takes approximately a half hour to complete one loop. It does not operate on Sundays. According to SEPTA, the route is viable and carries approximately 700 passengers a day.

6.2.2 Bus Boarding and Transfer Locations

This section inventories and analyzes SEPTA's bus stop locations within the corridor with focus on sheltered bus stops and bus to bus transfer locations.

Within the corridor there is only one major bus to bus transfer location - Willow Grove Park Mall, which serves routes: 22, 55, 98, and 310. The only other location that could provide transfers between bus routes is the segment of Old York Road between Greenwood Avenue and Township Line Road where Route 77 crosses Route 55. A review of SEPTA schedules however, shows that these routes are not coordinated to facilitate transfers. Bus to Regional Rail stations are discussed in "Bus/Rail Coordination" below.

The Willow Grove Park Mall acts as a major transfer point between several bus routes. Based on the boarding statistics for Routes 22, 55, and 310, the transfer location at Willow Grove Park Mall would rank in the top 10 of the 153 Regional Rail stations (2005 SEPTA census). Only the Jenkintown-Wyncote regional rail station handles more daily boardings than Willow Grove Park Mall in the corridor. The location of the transfer point at Willow Grove Park Mall is in the middle of extensive automobile parking. Though not ideal for bus patrons coming from or going to the mall, the location provides access to the surrounding businesses. The physical amenities at the location include; two large shelters, benches, and trash receptacles. These amenities are minimally sufficient in terms of patron comfort, and considerably less than what should be expected for a heavily used transfer location. Several improvements can be explored to improve patron comfort.

SHORT TERM

- provide a covered walkway to the mall
- install heaters in the shelters
- install LED status boards
- provide a token machine

LONG TERM

Previous studies have suggested relocating the Willow Grove Station to the parcel on Davisville Road between Moreland Road and York Road. If this suggestion is realized in the future, the new station should be multi-modal

Reverse Commuting on Route 55

Route 55 is beneficial for reverse commuters coming from North Philadelphia and commuting to corridor employment centers, as well as those in Horsham Township. An analysis of northbound Route 55 ridership data found that Olney Transportation Center is the most heavily used boarding location. In all, 1,582 individuals board northbound Route 55 in North Philadelphia and alight at a bus stop in the study corridor between, and inclusive of Cheltenham Avenue and Willow Grove Park Mall. Five bus stops account for 55 percent of the alightings: Willow Grove Park Mall (470), Woodland Road (143), Davisville Road (110), Horace Avenue (86), and Wyncote Road (59). The Willow Grove Park Mall allows for transfers to other bus routes and access to employment and commercial opportunities in the mall area. Davisville Road allows for bus transfers, transfers to rail, and Willow Grove area employment and commercial opportunities. Horace Avenue and Woodland Avenue serve both Abington Memorial Hospital and the Penn Statue campus. The Wyncote Road bus stop allows for access to The Pavilion complex.

and include the bus transfer location. Bus routes could enter and exit the parcel from Moreland Road at signal-controlled intersections. Section 4.2, Transit-Oriented Development, provides additional background on this topic.

BUS STOP SHELTERS

Bus stop shelters provide a level of comfort to individuals waiting to board buses. Bus stop shelters come in numerous shapes and sizes, as well as with varying amenities. The basic shelter design in the corridor is generally a structure enclosed on three sides with clear walls, or two clear walls and one wall with advertising, a bench, wheelchair space, and a trash can. Some shelters are very minimal and include only the structure component itself. The only American's with Disabilities Act (ADA) requirement for bus stop shelters is that they provide a space of 30 inches by 48 inches which is completely covered for wheelchair accommodation. The shelter must also be situated so that there is a connecting access path to the associated bus stop. Municipalities that choose to install bus stop shelters have a great deal of freedom in terms of their design; however the placement of the shelter should not impede pedestrian through access on the sidewalk.

An inventory of all bus stop shelters found on Route 22 and Route 55 within the corridor was completed via field visits. This inventory is documented in Appendix B. The total number of shelters on PA Route 611 within the study corridor is 23. Along PA Route 263, there are six shelters.

No bus stop shelters were found in Jenkintown or Hatboro boroughs. A cross-analysis with SEPTA ridership information was conducted to determine if peak load points had shelters.

Appendix C shows the highest boarding locations for weekend ridership on the two bus routes. The boarding numbers represent the sum of both Saturday November 12th, 2006 and Sunday October 28th, 2006 entire-day boardings. The top five boarding locations are displayed for Route 22 and the top ten locations for Route 55.

Appendix C also shows weekday boardings for a typical weekday. The weekday survey data supplied by SEPTA was gathered from on-board surveys on Thursday, November 2, 2006.

The two tables show that:

- Some of the busiest boarding locations have bus stop shelters while others do not;
- Route 22 ridership is considerably less than that of Route 55; and
- A majority of the boardings occur in the southbound direction.

Using the SEPTA survey data and the shelter inventory, a priority list of 22 locations was created to identify locations that would benefit the most from new shelter installation. The locations were selected based on weekday boardings and average weekend day boardings. The focus however, was on weekday boardings due to those riders having a more significant impact on traffic. The list is contained in Appendix B.

Nearly every bus stop shelter found in the corridor is the type provided by Clear Channel Outdoor Advertising Inc. TMA's have, in the past coordinated with Clear Channel Outdoor Advertising Inc. to have new shelters installed. While this method is without cost to the municipality, the shelters provided will be of the same type that is currently found in the corridor and will contain advertising. Municipalities may choose to purchase shelters and be free of the roadside advertising associated with Clear Channel Outdoor Advertising Inc. shelters.

Recommendation:

- Municipalities - Work with the TMA's to have bus stop shelters constructed at locations mentioned in Appendix B.

BUS STOP PULLOUTS

Bus stop pullouts allow through traffic to flow uninterrupted while bus passengers board and alight. The American Association of State Highway and Transportation Officials (AASHTO) recommend pullouts to be a minimum of 150 feet. The 150 feet is divided into a 50 foot taper for deceleration, a 50 bay, and a 50 foot taper for acceleration. Additionally, the 50 foot taper is the minimum and a 100 foot taper is the ideal. Far-side bus pullouts do not need the deceleration taper due to being able to use the associated intersection for deceleration.

A survey using aerial imagery was used to locate current bus pullouts in the corridor, and to identify locations suitable for new bus pullouts. The vast majority of the corridor is developed, much to the edge of the sidewalk, therefore potential locations for new bus pullouts are rather limited. Table 16 lists current and potential bus pullout locations.

Several other locations stand out as locations where pullouts may be warranted due to high bus activity, but each has a characteristic hindering the construction of a pullout. Examples of this situation include the Target shopping center - would require loss of parking, and Abington Memorial Hospital - would require removal of mature trees. In most cases, locations ideal for a pullout have a site disadvantage, and locations with site advantages do not warrant a pullout.

Recommendation:

- Investigate the potential for installing bus pullouts at the locations mention in Table 16.

BUS SERVICE AREA

The primary purpose of mass transit service is to move people from one location to another. To be an effective service, mass transit must operate where people live and connect that location to where people work, shop, visit, or seek services. Using SEPTA's definition of a well-served location being within a quarter-mile radius of a bus stop, an analysis of several types of locations was conducted. The locations used in the analysis include; municipal courts, municipal buildings, libraries, schools, colleges, major employers, daycare centers, shopping centers, and hospitals. Map 18 provides a visual representation of these locations in relation to the corridor's bus service.

Recommendations:

- Willow Grove Park Mall - add bus information to media offering directions to the mall.
- TMA - install bus schedule displays at peak load points shown in Appendix C.
- All municipalities - Require future developments to install bus stop shelters, including benches and trash receptacles, as a fair share contribution, if the municipality deems it necessary.
- Abington Memorial Hospital, and other large employers - Investigate the feasibility of offering TransitChek benefits to employees. This will reduce parking demand and promote public transit.
- Shelter mural art - Investigate the potential for public school art programs to paint murals on the corridor's bus shelters. The murals would promote public transportation as being a part of the community.

6.2.3 Corridor Rail Service

SEPTA operates a large network of Regional Rail lines. Within the corridor there are four separate rail lines (R-1, R-2, R-3, and R-5) and ten stations. Several of the stations in the southern portion of the corridor are served by multiple rail lines.

Table 14: Corridor Bus Service: Areas Served

Route	Serves	Corridor Service
22	OTC* to Warminster	York Road
28	Fern Rock TC to Tacony	Roads in eastern Cheltenham Township
55	OTC to Doylestown	Route 611: Old York Road and Easton Road
77	Chestnut Hill to NE Philadelphia	Short length of Old York Road
98	Norristown TC to Willow Grove Park Mall	Moreland Road west of Old York Road
310	Horsham to Willow Grove	Moreland Road, Davisville Road

* OTC = Olney Transportation Center

Source: SEPTA, 2007

Table 15: Corridor Bus Service: Hours of Operation

Route	Service Hours		Headways*		Complete length travel time*	Weekend Service	
	Begin	End	Peak	Off peak		Saturdays	Sundays
22	4:38 AM	1:31 AM	0:10 - 0:20	0:20 - 1:00	1 hr, 5 min	Yes	Yes
28	5:55 AM	10:25 PM	0:20 - 0:25	0:30	49 min	Yes	Yes
55	4:30 AM	3:55 AM	0:10	0:20 - 0:40	1 hr, 7 min	Yes	Yes
77	6:10 AM	7:22 PM	1:00	1:00	1 hr	Yes	Yes
98	5:55 AM	11:35 PM	0:16 - 0:25	1:00	1 hr, 10 min	No	No
310	5:30 AM	11:30 PM	0:15	0:30	30 min	Yes	No

* Times vary slightly. Numbers given are approximations.


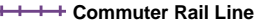

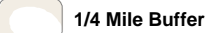

Source: SEPTA, 2007

Table 16: Bus Pullout Locations










Current Pullouts				
Primary Street	Secondary Street	Direction	NS/FS/MB	Municipality
Old York Road	Raymour Flannagan Driveway	NB	FS	Abington
Old York Road	Breyer Drive	NB	MB	Cheltenham
York Road	Home Depot (former)	NB	MB	Upper Moreland
Easton Road	Park Avenue	SB	NS	Upper Moreland
Potential Pullouts				
Primary Street	Secondary Street	Direction	NS/FS/MB	Municipality
Old York Road	Spring Avenue	SB	NS	Cheltenham
Old York Road	Wyncote Road (Pavillion)	NB	MB	Cheltenham
Old York Road	Rubicam Avenue	SB	MB	Abington

NB-Northbound, SB-Southbound, NS-Nearside, FS-Farside, MB-Midblock

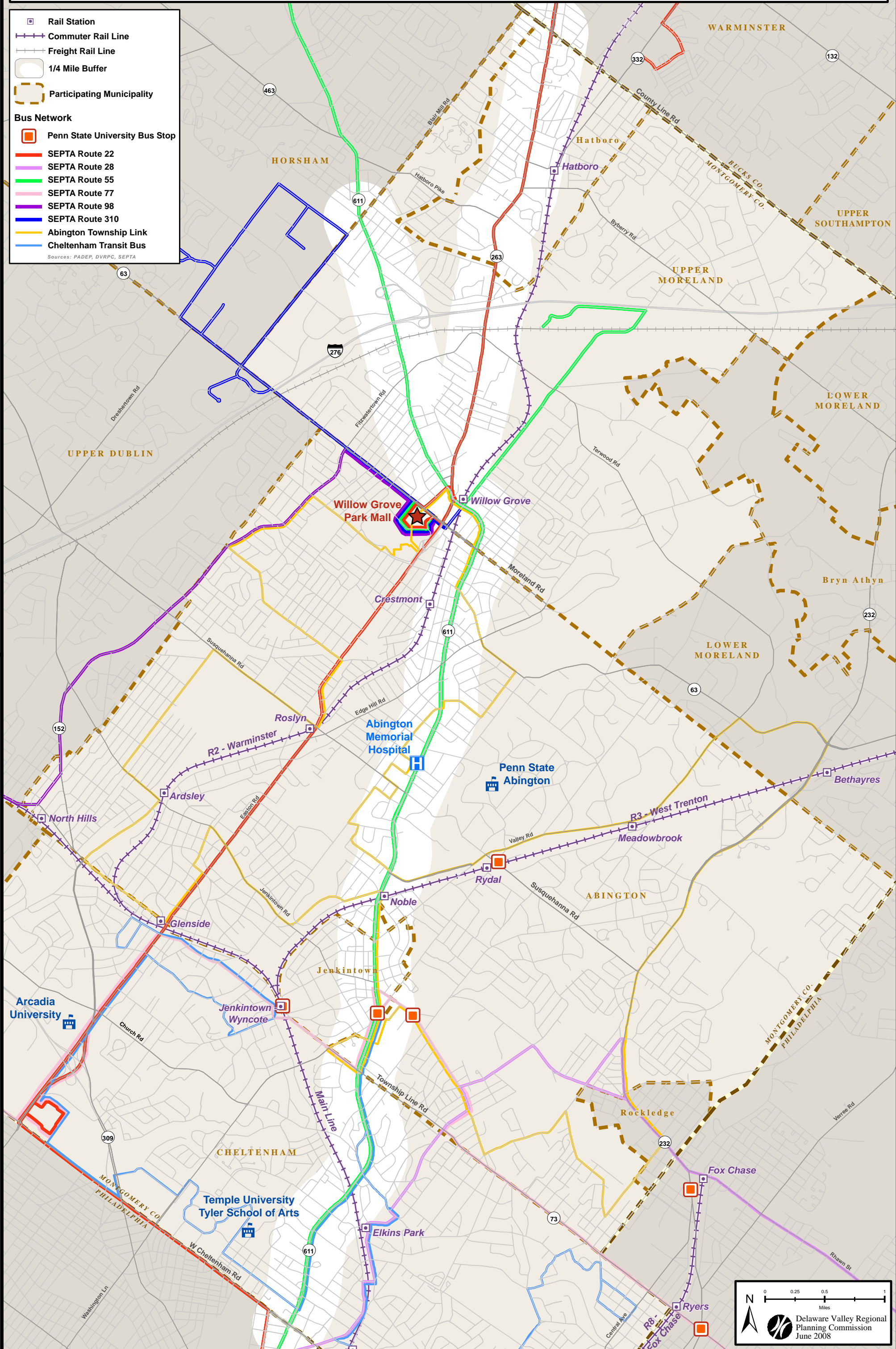
Source: DVRPC, 2008


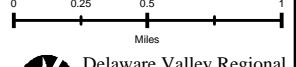

 Rail Station
 Commuter Rail Line
 Freight Rail Line
 1/4 Mile Buffer
 Participating Municipality

Bus Network

 Penn State University Bus Stop
 SEPTA Route 22
 SEPTA Route 28
 SEPTA Route 55
 SEPTA Route 77
 SEPTA Route 98
 SEPTA Route 310
 Abington Township Link
 Cheltenham Transit Bus

Sources: PADEP, DVRPC, SEPTA






 Delaware Valley Regional
 Planning Commission
 June 2008

The SEPTA rail network is focused on providing service to and from Center City Philadelphia. Travel times to Suburban Station in Philadelphia range from as low as 22 minutes from Melrose Park, to as high as 42 minutes from Hatboro. Peak hour headways range from a low of three minutes at Jenkintown to a high of 36 minutes for stations served solely by the R2. The 2005 SEPTA census counted a total of 4,670 boardings at the 10 corridor rail stations on a typical weekday. Over half of the boarding activity occurred at two stations - Jenkintown and Glenside. Crestmont and Rydal each had fewer than 100 daily boardings. The current usage of these routes is considered to be at capacity. The 10 stations have a total of 1,169 parking spaces with a current utilization rate of 90 percent. However, six of the stations have 100 percent parking utilization rates. Jenkintown Station's 430 parking spaces is the corridor high, and with only 24 spaces Crestmont Station has the fewest. Parking structures are currently being considered for Jenkintown and Glenside Stations. SEPTA's boarding data for the corridor's stations is shown in Table 17, and summary station information can be found in Table 18.



Willow Grove Park Mall Bus Transfer Location
Source : DVRPC 2007

RAIL STATIONS

Within the study area there are 10 Regional Rail stations. However, there are five stations within close proximity to Route 611 or Route 263. These are: Crestmont, Hatboro, Jenkintown, Noble, and Willow Grove. This section provides descriptions, analyses, and improvement recommendations for the corridor's Regional Rail stations.

Crestmont

Crestmont station is a very small station area located between Roslyn and Willow Grove stations on the single-track portion of the R2-Warminster line. 24 parking spaces are located at the station with 100 percent weekday usage. However, the station is located in a primarily residential portion of Abington Township allowing for both on-street parking, and pedestrian access to the station. No signs restricting on-street parking were noted during a field visit. SEPTA's 2005 census found 59 boardings per weekday at the station. The R2 line provides approximate 30 minute peak-hour, and 60 minute off-peak headways. In physical terms, the station is modest. Beyond the 24 parking spaces (located on the southern side of the track) is one large wooden shelter that is equivalent to an oversize bus stop shelter. It is enclosed on three sides and is in good condition.

Access to Crestmont station is a concern. The station is located in a suburban neighborhood and is somewhat

Table 17: Regional Rail Station Boardings

Station	Weekday	Saturday	Sunday
Crestmont	59	17	14
Elkins Park	445	162	126
Glenside	940	332	158
Hatboro	370	124	94
Jenkintown	1489	557	346
Melrose Park	347	104	75
Noble	170	58	34
Roslyn	387	62	68
Rydal	95	21	10
Willow Grove	368	176	82

Source: SEPTA, 2005

Table 18: Summary of Regional Rail Stations

Station	Route(s)	Fare Zone	Minutes to Suburban Station	Parking capacity	Parking usage	Platform	Bicycle racks	Bus connections
Crestmont	R2	3	0:36	24	100%	Low	No	None
Elkins Park	R1, R2, R3, R5	2	0:24	59	100%	Low	Yes	Rt 28
Glenside	R1, R2, R5	3	0:28	167	100%	Low	No	Rts 22, 77
Hatboro	R2	4	0:42	100	100%	Low	No	Rt 22
Jenkintown	R1, R2, R3, R5	3	0:26	430	100%	Low	Yes	Rt 77
Melrose Park	R1, R2, R3, R5	2	0:22	185	53%	High	Yes	Rt 28
Noble	R3	3	0:28	61	79%	Low	Yes	Rt 55
Roslyn	R2	3	0:38	87	71%	Low	No	Rt 22
Rydal	R3	3	0:30	43	65%	Low	No	None
Willow Grove	R2	3	0:38	100	100%	Low	No	Rts 22, 55, 310
Total				1256	89%			

Source: SEPTA, 2007

hidden on Rubicam Avenue. Trailblazer or wayfinding signs would aid in the navigation to the station for potential users. It also does not have bicycle storage amenities. Finally, despite the residential character of the surrounding area, there is not a connected sidewalk or bicycle network which could encourage individuals to walk and bicycle to and from the station.

Recommendations:

- Make the intersection of Rubicam Avenue and Rockwell Road a four-way stop intersection to increase safety for pedestrians.
- Install international style crosswalks at the intersection of Rubicam Avenue and Rockwell Road along with associated pedestrian crossing signage (W11-2).
- Install “Share the Road” signage (W11-1 and W16-1) on Rockwell Road to increase the safety for cyclists.
- Install bicycle storage amenities at the station.
- Install prominent wayfinding signage (I-7) which directs individuals to the station from both Easton Road and Old York Road.
- Create a long-term township sidewalk retrofit plan with priority given to areas in the vicinity of rail stations.

Elkins Park

Elkins Park Station is located east of Old York Road in central Cheltenham Township. It is surrounded by a variety of land uses, including varying degrees of residential densities and commercial uses. The station is served by SEPTA's R1, R2, R3, and R5 Regional Rail lines. It is the third most heavily used rail station with 445 boardings per typical weekday. Physically, the station is in good repair and has bicycle storage. A station area concern is the 100 percent daily usage of the 59 parking spaces, however there are no opportunities for additional parking in the vicinity. A large parking lot would not be a desirable land use in this part of Cheltenham Township, though this location may be viable for structured parking. There is a municipal lot at the corner of Montgomery and Harrison Avenues, which has 31 long-term metered spaces. The township is currently planning streetscape improvements in the vicinity of the train station.

Recommendations:

- Considering parking is at capacity and there are no opportunities for expanding the parking lot, investigate the possibility of introducing carpool only spaces.

Glenside

Glenside Station is located to the north of the study area. It is served by three Regional Rail lines; R1, R2, and R5. The 2005 SEPTA census found 940 daily weekday boardings. Travel time to Suburban Station from Glenside is approximately 28 minutes. Parking at the station is at 100% usage. A structured parking garage is currently programmed in SEPTA's Capital Budget for engineering and design. A field visit found two minimally expensive station discrepancies: absence of bicycle storage and flaking paint on the station.

Recommendations:

- Install bicycle storage amenities at the station.
- Re-paint the station and conduct periodic station inspections to prevent similar states of disrepair.
- Concrete stairs at overpass are in need of repair and lighting upgrades.

Hatboro

This station is served by SEPTA's R2 Regional Rail which operates between 30th Street in Philadelphia and Warminster in Bucks County. The travel time between Hatboro Station and Suburban Station is approximate 42 minutes. Hatboro Station is conveniently located near the borough's CBD as well as major residential developments. Despite this location, no wayfinding signs were seen in the Hatboro CBD, and the pedestrian environment in the station's vicinity is less than ideal.

There are 100 parking spaces at the station with a current utilization rate of 100 percent. 2005 SEPTA statistics show an average of 370 boardings per weekday

Recommendations:

- In an effort to provide additional parking, potential exists for the leasing of additional spaces from Station Park, an office complex located approximately 200 yards southeast of the station. The complex has nearly 420,000 square feet of office space covering almost 10 acres of land. They have an additional 12.5 acres of parking on the 38 acre site. Observations over time have found that the parking area is underutilized. Keystone Properties, the management company, is planning to convert much of the office space into warehousing which in turn should keep much of the parking underutilized. The portion of the complex's parking lot nearest the train station contains approximately 200 parking spaces out of their estimated total of 500 parking spaces. The feasibility of leasing additional parking capacity from Keystone Properties should be investigated.

- Install appropriate warning devices for at-grade rail crossings on East Moreland Avenue and Byberry Road. Warning devices should include railroad crossing sign and Manual of Uniform Traffic Control Devices (MUTCD) recommended pavement markings as shown in Maps 19 and 20.
- Narrow lane width on East Moreland Avenue between railroad crossing and North Penn Street to 11 feet per travel lane. The narrowed lanes will contribute to slower automobile speeds and provide a shorter crossing distance for pedestrians.
- Install international style crosswalks and pedestrian crossing signs (W11-2) at the intersections in the vicinity of the station.
- Install bicycle storage amenities at the station.
- Install wayfinding signs to train station on York Road.

Jenkintown

Jenkintown-Wyncote Station or simply Jenkintown Station is one of the most heavily used regional rail stations in the SEPTA system. The 2005 SEPTA census counted 1,489 daily weekday boardings at the station. The station's popularity is partially a result of it being served by four separate rail lines. Additionally, the station has 416 parking spaces, the largest station parking in the corridor. The area around the station is primarily single-family residential detached housing with some apartment structures and office buildings.

A parking structure is planned for Jenkintown station. This will increase parking capacity by 690 spaces. In addition, major station work for this station is being planned. This work will include the construction of high-level platforms. The period of construction at Jenkintown Station provides a unique opportunity to introduce lesser-utilized stations to individuals who normally use Jenkintown Station. A 2000 DVRPC parking demand study for Glenside and Jenkintown stations found a very large commutershed for Jenkintown Station, with many commuters bypassing several stations in favor of Jenkintown.

Access to Jenkintown Station via bus is not convenient. Only Route 77 serves the station with an hourly headway by direction. Route 55, which operates on Route 611, could potentially be routed to serve the station via Township Line Road. The round trip to and from the station would add approximately 1.3 miles to the route. While some transit users may welcome the spur, many likely would not. SEPTA ridership statistics show that over 2,000 people a day use Route 55 to commute from North Philadelphia to locations in Montgomery and Bucks Counties. The Route 55 bus currently serves Noble and Willow Grove Stations. Adding stop at Jenkintown Station would provide better bus-rail connection. However, there would be a time penalty to existing commuters using the Route 55 bus.

Recommendations:

- Re-stripe all crosswalks in the station's vicinity in the international style.
- Install wayfinding signs (I-7) on Old York Road and Easton Road, and in-between to direct individuals to the station.
- Advance current plans for parking structure construction and station revitalization.

Melrose Park

Melrose Park Station is located east of Old York Road and north of Cheltenham Avenue in southern Cheltenham Township, bordering the Philadelphia city line. The station is in excellent condition and is the only station in the study area with a high-level platform. The station is served by four rail lines, though many do not stop at the station. SEPTA reports that currently there are 185 parking spaces with a utilization rate of only 53%. The area surrounding the station is varying densities of residential housing. Despite the low parking usage, approximately 95 cars per day, SEPTA counted 347 weekday daily boardings.

Noble

Noble Station is located along Old York Road in Abington Township near the northern Jenkintown / Abington boundary. SEPTA's R3 line serves the station. The 2005 SEPTA census counted 170 boardings at the station on a typical weekday. There are currently 61 parking spaces at the station with a usage rate of 79%. A bicycle rack is also available. The station is located between low-density residential and commercial. The inbound side of the tracks houses the main waiting room. The outbound direction has only a small shelter. Abington Township had mentioned the bridge on Old York Road near the station as being in a state of disrepair. DVRPC confirmed the poor condition of the bridge during field visits. Currently, there are plans to repair this bridge.

Recommendation:

- Improve pedestrian access from Old York Road to the station.

Roslyn

Roslyn Station is located in western Abington Township along Easton Road at the Easton Road and Susquehanna Road intersection. The station facility is a large basic shelter. SEPTA's R2 line serves the station with a 38 minute commute to Suburban Station. There are 87 parking spaces utilized at a rate of 71%. There are no bicycle storage amenities.

Recommendation:

- Install bicycle storage amenities

Rydal

Rydal Station is located in eastern Abington Township near the eastern end of The Fairway. Pedestrian access is inadequate. There are several retail establishments along the Fairway adjacent to Rydal Station. There are 43 parking spaces at the station and 95 typical weekday boardings. The parking lot has a utilization rate of 65 percent meaning that only 28 vehicles park at the station per day. There are no bicycle storage amenities at the station.

Recommendation:

- Install bicycle storage amenities



Willow Grove

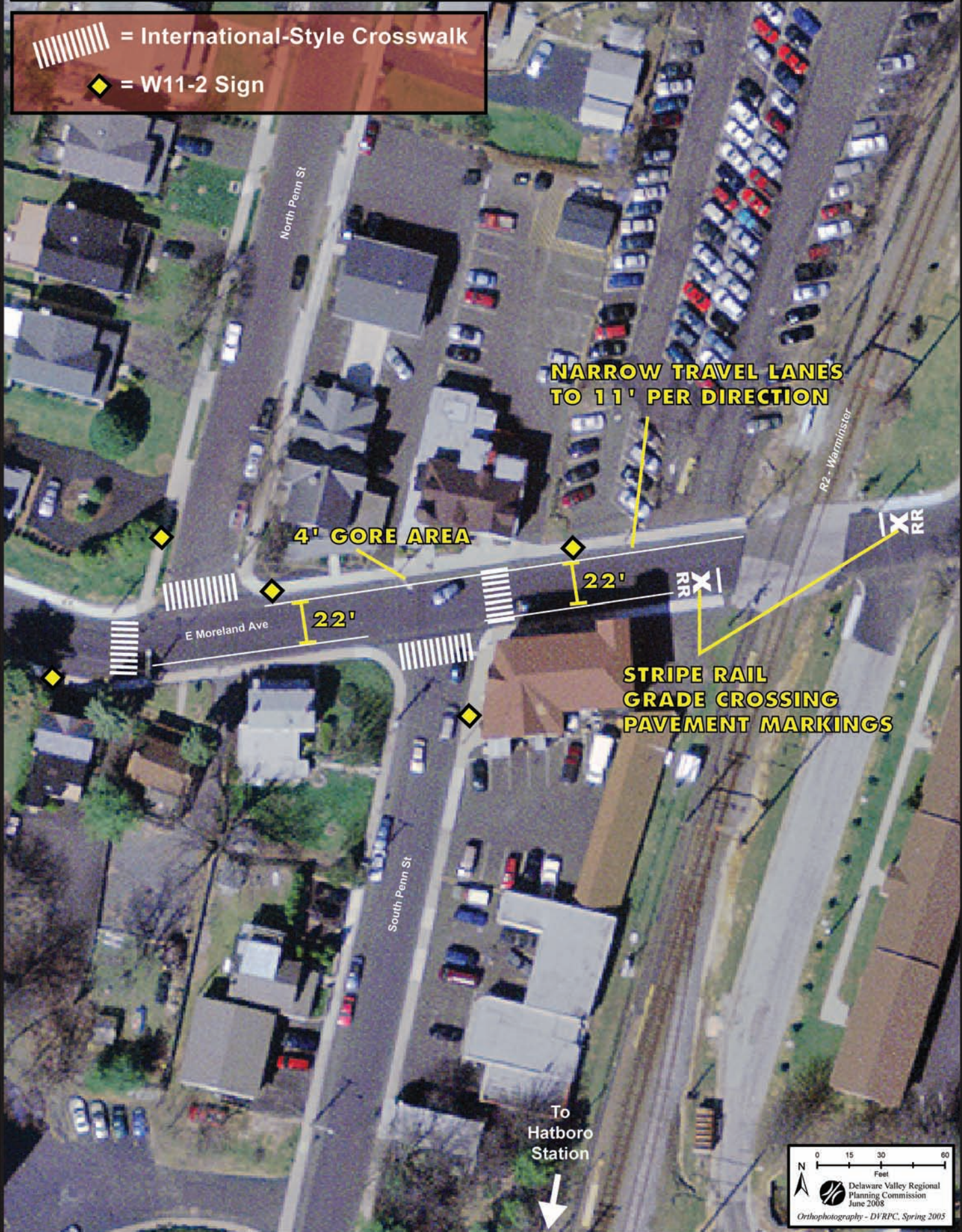
Willow Grove Station is adjacent to the York Road/Old York Road/Easton Road/Davisville Road intersection. There are two separate parking lots for the station, one accessed via Davisville Road and the other accessed via York Road. The two lots combine for a total of 100 parking spaces with a current utilization rate of 100 percent. The 2005 SEPTA census counted 368 boardings on a typical weekday. Commute time to Suburban Station is scheduled at 38 minutes. There is sidewalk connectivity on the station's east side though there is room for improvement. Auto access is influenced by the major intersection west of the station.

Recommendations:

There is currently potential for the relocation of the station across York Road, along Davisville Road between York and Moreland Roads. Upper Moreland Township commissioned a mobility improvement feasibility study to coincide with redevelopment efforts. The study considered the relocation of Willow Grove Station south of its current location. Numerous benefits would be associated with the station relocation; chiefly, the introduction of a significant revitalization catalyst into the Willow Grove commercial area. Following are other potential benefits:

- renewed interest in development in the Willow Grove area;

 = International-Style Crosswalk
 = W11-2 Sign





**NARROW TRAVEL LANES
TO 11' PER DIRECTION**


4' GORE AREA

**STRIPE RAIL
GRADE CROSSING
PAVEMENT MARKINGS**

To
Hatboro
Station

0 15 30 60
Feet
N
Delaware Valley Regional
Planning Commission
June 2008
Orthophotography - DVRPC, Spring 2005

 = International-Style Crosswalk
 = W11-2 Sign


To
Hatboro
Station



**STRIPE RAIL
GRADE CROSSING
PAVEMENT MARKINGS**



Location 1
Area: 2.63 Acres

Location 2
Area: 2.51 Acres

Building Area:
0.5 Acres

- potential for a high-level platform and ADA compliant station;
- removal of blight;
- opportunity to expand Memorial Park;
- shared parking with the Willow Grove Park Mall and surrounding businesses;
- on-site businesses to lease land and share station parking during evening hours;
- greater numbers of walkers and cyclists may more easily access the station;
- improved bus-rail transfer location with the new rail station; and
- allow for minimal disruption of station area traffic flow during rail dwell time.

This study considered two potential sites to relocate the station. The sites are shown on Map 21 and are labeled as Location 1 and Location 2.

Location 1 is a triangle shaped parcel demarcated by the rail line, Moreland Road, and Davisville Road. The parcel is currently occupied by numerous auto-related businesses and appears blighted. The township-sponsored engineering study felt that if this site were to be selected, the section of Davisville Road between Moreland Road and Route 611 would need to be closed. This parcel, with the inclusion of Davisville Road, is approximately 2.6 acres. Without the roadway, the parcel is approximately 2 acres. By contrast, the current station's southeastern section is less than one acre and contains the station house and 65 parking spaces. Closing Davisville Road to through traffic would reduce conflict points and make its intersection with Route 611 safer. Additionally, significant rail storage area exists on the track parallel to Davisville Road which would eliminate the current practice of blocking traffic on Route 611 by peak-hour trains at the station.

Location 2 is a similar sized and shaped parcel as Location 1. Location 2 however, does not have access to Moreland Road. Access to Location 2 would solely or primarily be from Route 611 which may cause traffic conflicts in an already congested area. Another issue is the presence of a large warehouse/storage facility (approximately 0.5 acre footprint) which could add to the cost of acquisition. Lastly, the parcel abuts residential properties, which could benefit from their proximity to the nearby station.

6.2.4 Bus/Rail Coordination

Bus and rail service should operate on headways in consistent increments in order to make arrivals and departures more predictable for users. Even on lightly traveled routes with long headways, it is better to have a schedule that is in one hour increments rather than an inconsistent schedule that can often be a deterrent to transit usage.

A timed bus transfer system is necessary in areas with suburban employment centers. In this corridor that role is being satisfied by the Willow Grove Park Mall where individuals are able to conveniently transfer from a trunk line to a circulator, such as Route 310. This timed transfer system is very important in retaining and attracting new riders, as well as connecting individuals to large employment centers. Focus should remain on ensuring bus route schedules are coordinated through this transfer location.

In the ideal situation, a person could walk to the nearest bus stop and catch a bus. The bus would proceed in a timely manner to the nearest Regional Rail station and the person would seamlessly transfer from the bus to the just arriving train. Likewise, the commute would be as simple for the return trip. Unfortunately the ideal situation is not reality. The majority of bus routes operated by SEPTA are long in length and bi-directional as opposed to circular. This network provides a difficult environment for coordinating bus schedules with train schedules. For instance, Route 55 is coordinated at Olney Transportation Center (OTC) and Willow Grove Park Mall with other bus routes, but attempting to coordinate the route with trains at Noble Station or Willow Grove Station would disrupt the higher priority coordination. Additionally, a change to a bus route schedule to

Table 19: Train/Bus Coordination

Station	Elkins Park			Glenside				Hatboro			Jenkintown			Melrose Park			Noble			Willow Grove						
(Train)/ Bus	(R2)	28 WB	28 EB	(R1,2 ,5)	77 NB	77 SB	22 NB	22 SB	(R2)	22 NB	22 SB	(R1, 2,3, 5)	77 NB	77 SB	(R1, 2,5)	28 WB	28 EB	(R3)	55 NB	55 SB	(R2)	55 NB	55 SB	22 NB	22 SB	
Peak Period AM (To City)	6:33	6:32		6:40	6:28		6:31	6:29	6:58			6:31			6:35		6:31	6:50	6:42	6:44	6:58	6:57	6:53	6:48	6:53	
	6:57	6:55		6:46					7:23		7:18	6:43	6:33		6:53			7:23	7:18	7:09	7:23	7:07	7:18	7:19	7:23	
	7:14		7:05	7:09		7:00	7:02		7:59			6:49			7:18			7:46	7:39	7:44	7:59	7:34	7:53	7:54	7:54	
	7:42	7:31	7:32	7:12				7:11	8:49		8:37	6:54			7:46	7:35		8:20	8:19	8:17	8:49	8:37	8:43	8:38	8:48	
	8:04	7:53	7:57	7:35			7:34	7:31				7:12		6:57	8:06	7:57	7:53	8:53	8:44	8:50						
	8:27	8:18	8:22	7:40								7:15			8:21		8:18									
				7:58	7:44	7:45	7:50	7:47				7:27			8:51	8:47	8:43									
				8:11			8:05	8:01				7:39														
				8:15				8:11				7:43		7:42												
				8:45	8:42		8:42	8:42				7:50														
				8:59			8:59	8:48				8:01	7:50													
												8:18														
												8:24														
												8:48														
											8:57	8:48	8:57													
Peak Period PM (From City)	4:55	5:07		4:34	4:40		4:43	4:38	4:50	5:00	5:01	4:31			4:41	4:47	4:47	4:50	4:56	4:55	4:46	4:55	4:58	4:46	4:48	
	5:15		5:17	4:48		4:58		4:51	5:17			4:45	4:46		4:53			5:20	5:26	5:26	5:13	5:14	5:15	5:27		
	5:23	5:32		5:01			5:07	5:08	5:47	5:58		4:48		4:55	5:11	5:11	5:13	5:45	5:56	5:51	5:41	5:43	5:48	5:46		
	5:40	6:02	5:42	5:18			5:18		6:29		6:38	4:58			6:12			6:14	6:26	6:31	6:24	6:29	6:33	6:24	6:25	
	6:05		6:12	5:29				5:32				5:15			6:25		6:36									
	6:09		6:12	5:51		6:01	6:05	5:59				5:18														
	6:27	6:37	6:40	6:12			6:22	6:17				5:26														
				6:19			6:22	6:29				5:43														
												5:48	5:53	5:58												
												6:08														
												6:12														
											6:16															

Source: DVRPC, 2007

Notes:

1. Buses arriving or departing greater than 15 minutes from train arrival or departure are excluded.
2. Based on SEPTA schedules as of 23 August 2007.

coordinate with a particular train will likely disrupt any incidental coordination at another train station, therefore alterations to existing routes for this purpose is not always reasonable or feasible. Table 19 provides the current coordination of the corridor's bus routes to the regional rail system. The table demonstrates where there is potential connectivity between the two modes.

By reviewing the table, it is evident that numerous instances of coordination exist. However, there is no evidence of promoting this in the corridor. Many train stations in close proximity to a bus route are absent from the routes printed schedule. Even if the coordination between the two modes is incidental, the connection should be identified, particularly for stations in which parking is at capacity. Following are several recommendations which can assist in publicizing the coordination to SEPTA riders.

RECOMMENDATIONS:

- Make prominent, information at Regional Rail stations identifying bus routes that serve those stations.
- Install highly visible wayfinding signs (I-7) pointing to nearby bus stops at regional rail stations, ensuring that the signs mention where the bus routes serve.

6.2.5 Non-SEPTA Transit Services

SHUTTLES

The corridor has two established fixed route shuttle systems as well as a van service.

Cheltenham and Abington Senior Shuttle (The Link)

Cheltenham and Abington townships sponsor a shuttle that serves both townships. The shuttle operates on Mondays, Wednesdays, and Fridays in Abington, and Tuesdays, Thursdays, and Saturdays in Cheltenham. The shuttle has a dedicated route in each township which passes many locations that a senior citizen may desire to

go, including several rail stations. While there are dedicated routes, the stops are not as firm. The shuttle will stop anywhere that is safe to do so. Seniors in both townships ride for free while others must pay \$4 per one-way trip, or \$10 for a ten-trip ticket. The shuttles are not convenient for the everyday commuter, but they serve an important role for occasional travelers.

The Greater Valley Forge TMA provides assistance in scheduling and marketing for the service in Cheltenham Township.

Penn State University - Abington Shuttle

The Penn State University - Abington operates two shuttles during the academic year. The shuttles connect the university with Jenkintown rail station, Rydal rail station, Olney Transportation Center, and the Market - Frankford line. They operate on weekdays between 7:30 AM and 6:00 PM when the university is in session. There is no charge for affiliates of the university, however they are also the only ones permitted to board.

Considering the proximity of the Penn State campus to Abington Memorial Hospital the potential for a shared shuttle exists. The current Penn State shuttle routes would need only minor route modifications in order to accommodate hospital employees. The primary disadvantage to the shared shuttle is the limited hours and seasonal nature of the Penn State campus.

Recommendation:

- The Greater Valley Forge TMA should facilitate discussion with Abington Hospital and Penn State on the merits of a shared service. The benefits of a shared shuttle would be reduced operating costs for Penn State and additional mobility options for hospital employees.

Abington Memorial Hospital Outpatient Van Service

The Abington Memorial Hospital has a van service used to transport outpatients to and from the hospital. The service operates as a quasi-taxi and must be scheduled in advance. The hospital states that there is a “nominal” charge associated with this service.

OTHER

Transportation Management Associations (TMAs)

TMAs are non-profit associations which aid municipalities and businesses with their transportation needs. The services offered by these organizations are wide ranging and include such things as operating shuttles, assisting with bus shelters, and providing a forum for transportation coordination. The study corridor is serviced by two TMAs. The Greater Valley Forge TMA is responsible for the southern portion, including; Cheltenham Township, Jenkintown Borough, and Abington Township. Upper Moreland Township and Hatboro Borough fall into The Partnership TMAs territory.

Car Share

Car sharing is an alternative means to reduce parking demand. The service is ideal for individuals who do not need a car on a daily basis. The service works by having cars stored at “pod” locations throughout the area. When an individual needs the use of a car, they simply make a reservation. For those who do not drive often, a savings may be realized over the cost of owning and insuring a personal car. It has been found that by providing car share in an urban area, 25 parking spaces can be eliminated. While the study corridor is not urban, certain areas are dense enough to support the service — most notably Jenkintown.

6.3 BICYCLE MOBILITY AND SAFETY

Objective: Improve Bicycle Mobility and Safety

The bicycle is a practical alternative for some short trips now made by automobile. Residential roads in the study corridor are generally suitable for bicycling. They have wide cartways, light traffic, and low speeds. It is the major roads, usually collectors or arterials, that are the main obstacle to bicycling. Many major roads are unsafe for bicycling. Some intersections of major roads are unsafe to cross.

In addressing bicycle mobility and safety, DVRPC built on previous work by Montgomery County.¹ The Bicycling Road Map: A Bike Mobility Plan for Montgomery County, Pennsylvania calls for “a comprehensive network of bikeable roads and other supportive facilities and programs to make bicycling a viable mode of transportation....” by 2020. It lays out a vision and provides tools for achieving it. But implementation of the vision depends on municipal action. This section includes a brief summary of the Bicycling Road Map. Bicycle improvement proposals developed by DVRPC for the study corridor are also presented.

The Bicycling Road Map

This summary discusses the Montgomery County bicycle network, the types of cyclists that planners must account for, and road improvements that support bicycle facilities.

Bicycle Network

Most Montgomery County roads were not designed with bicycles in mind and must be retrofitted to accommodate them. The Bicycling Road Map includes recommendations for a network of on-road bicycle routes. The routes were selected based on two criteria. The first criterion is that the route should offer a convenient and direct connection between major destinations. Major destinations include places of work, transit hubs, shopping centers, and recreation centers. The second criterion is travel demand as demonstrated by traffic volume. Roads that contribute most to an interconnected bicycle facility network are categorized as Primary Bicycle Routes. All other arterials and collectors are designated as Secondary Bicycle Routes. Overall, the county bicycle network reflects a concern with utilitarian, rather than recreational, cycling.

Types of Cyclists

Not all cyclists have the same riding abilities and needs. The FHWA describes cyclists according to three basic groups:

Group A (Advanced) Bicyclists - These are experienced riders who can operate under most traffic conditions.

Group B (Basic) Bicyclists - These are casual or new adult and teenage riders who are less confident of their ability to operate in traffic without special provisions for bicycles.

Group C (Child) Bicyclists - These are preteen riders whose roadway use is initially monitored by parents. As their riding skills develop, child bicyclists are accorded independent access to the system.

Most of the current users of collector and arterial roads are Group A cyclists. Group B and Group C cyclists may be effectively classed together. They generally require physical separation from motor vehicle traffic to feel safe. According to the Bicycle Road Map, the bicycle network should serve B/C group cyclists, who make up most of the public.

¹ DVRPC also benefited from conversations with John Wood of the Montgomery County Planning Commission and John Boyle of the Bicycle Coalition of Greater Philadelphia.

Road Improvements

FHWA guidelines prescribe four basic types of road improvements to accommodate bicyclists on public roads:

Shared Lane - No specific provisions for bicycles need to be made to the road. **Wide Curb Lanes** - An outer travel lane that is at least 14 feet wide to allow bicyclists and motorists to share the same lane without coming into conflict with each other.

Shoulders - Shoulders serve bicyclists well when they are at least 4 feet wide, paved, and maintained to the same standard as the adjoining travel lane.

Bike Lane - A bike lane is a portion of the roadway that has been designated by striping, signing, and pavement markings for the exclusive use of bicyclists.

The Bicycling Road Map and The Route 611/263 Study Corridor

DEVELOPMENT OF BICYCLE CONCEPTS

Approximately 80 road segments in the Route 611/263 study corridor are identified as potential bicycle routes in the Bicycling Road Map. The selection of priority bicycle routes was driven by two broad goals. The first goal was to create connections between residential neighborhoods and downtown areas. Not only are downtown areas popular but, in the case of Jenkintown and Hatboro, they have parking shortages that improved bicycling opportunities could help relieve. The second goal was to create alternative routes that parallel major roads such as Route 611 and Route 263. Although these roads are designated as Primary Bicycle Facilities in the Bicycling Road Map, it seems unlikely that either would be converted to bicycle facilities in the short term.

Priority road segments were also assessed for their fitness as bicycle facilities. The assessment was qualitative and included safety factors such as road geometry, traffic conditions, and line of sight. Where deficiencies existed, it was necessary to decide whether they could be corrected and how much work would be required. The availability of right of way for road improvements was frequently a major factor in this decision. In the end, the bicycle routes selected were those that made useful connections and appeared to have acceptable costs.

As a reality check, data was collected on the most promising road segments, including curb lane width, shoulder width, posted speed, and traffic volume.

The product was three bicycle concepts. Each bicycle concept comprises multiple connected road segments. Although the concepts are standalone projects, they approach each other at two locations, representing a future possibility to create a larger network. However, making those physical connections is not a trivial exercise. There are real difficulties. Once the separate projects are in place that may provide the impetus to complete the job.

Providing access to the Montgomery County trail system from the on-road bicycle network should also be a top priority. The most promising improvement would connect the proposed bicycle route on Fitswatertown Road to the Cross County Trail in Upper Moreland.

Study Corridor Bicycle Concepts

The study corridor bicycle concepts are presented below (and illustrated on Map 22). The format describes the proposal as well as the specific road improvements that would be necessary to realize it.

1. FOX CHASE TRAIL EXTENSION

Abington Township and Jenkintown Borough

Concept

The extension of the Fox Chase Trail, an off-road bicycle facility providing access to Avelthorpe Park, is proposed. The trail now runs between Cedar Road and Pond View Drive. Under the proposal, it would be extended to Meetinghouse Road. Other proposed bicycle facilities would allow bicyclists to continue to Jenkintown using Meetinghouse Road and Jenkintown Road.

The section of Meetinghouse Road to be improved borders Abington Friends School and the Abington Arts Center. Traffic calming, which is also proposed, would increase vehicular and bicycle safety on the roadway. These improvements would increase use of the trail and provide increased bicycle access to Jenkintown. In the short term, riders would be directed to use an alternate route through residential neighborhoods.

Strategy

Improvements will address bicycle mobility challenges:

- Extend Fox Chase Trail to Meetinghouse Road.
- On Meetinghouse Road, add bicycle lanes and implement traffic calming.
- Narrow travel lanes
- Reduce posted speed
- On Jenkintown Road, add bicycle lanes OR add bicycle/pedestrian trail.
- Under the short-term proposal, post wayfinding signage on residential streets and post “Share the Road” signs on Washington Lane.

2. HIGHLAND AVENUE / ROCKWELL AVENUE

Abington Township and Jenkintown Borough

Concept

Development of a bicycle corridor on Highland Avenue and Rockwell Avenue is proposed. The bicycle corridor would be a travel route parallel to Route 611 and would run between Jenkintown Road and Maplewood Avenue (near Moreland Road).

Highland Avenue and Rockwell Avenue are already used by experienced bicycle riders. Bicycle improvements would attract less experienced riders and maximize the potential of these roads as bicycle facilities. Less experienced riders would benefit specifically from bicycle lanes or signage that helped establish their place on the roadway. Traffic calming to reduce vehicle speeds would increase safety.

Other proposed improvements would provide access to activity centers along the route, including The Fairway and Jenkintown. Promoting alternate modes of travel to Jenkintown could help relieve the shortage of parking there.

Strategy

Improvements will address bicycle safety and mobility challenges:

- On Highland Avenue, add bicycle lanes OR add “Share the Road” signs, depending on location.
- On Rockwell Avenue, remove parking on one side of the roadway and add bicycle lanes.
- On Jenkintown Road from Highland Avenue to Walnut Street, add “Share the Road” signs.
- Implement traffic calming on The Fairway.

Route 611/263 Corridor

Map 22: Study Area Bicycle Network

Montgomery County Recommended Bike Routes

- Primary (Red line)
- Secondary (Purple line)

DVRPC Recommended Bike Routes

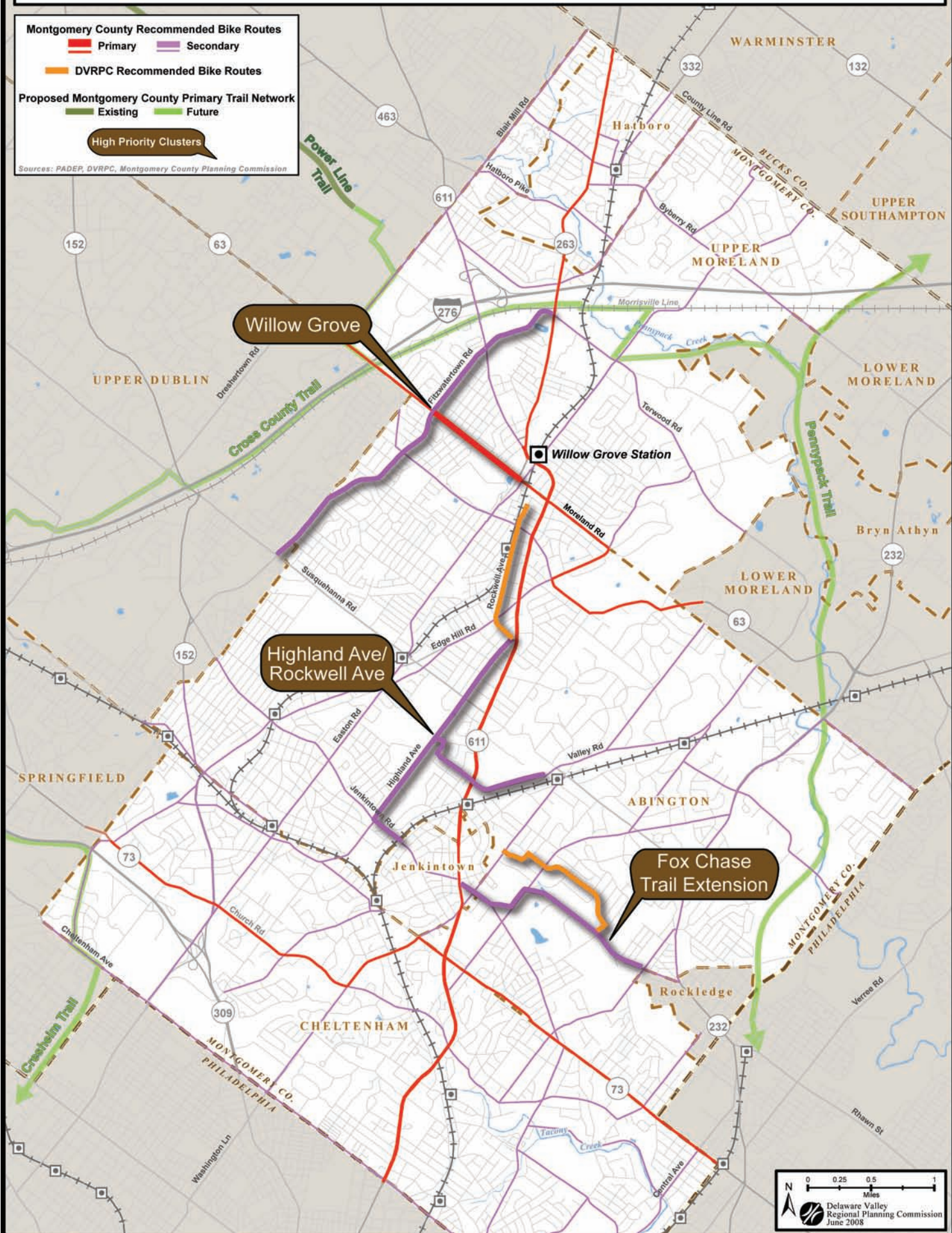
- (Orange dashed line)

Proposed Montgomery County Primary Trail Network

- Existing (Green line)
- Future (Light Green line)

High Priority Clusters

Sources: PADEP, DVRPC, Montgomery County Planning Commission



- Narrow travel lanes
- Reduce posted speed

3. WILLOW GROVE

Abington Township and Upper Moreland Township

Concept

Many local streets in the study corridor are suitable for bicycling. However, conditions on larger collector and arterials roads frequently present a barrier to bicycle trip making. To eliminate one such barrier, development of a bicycle corridor on Fitzwatertown Road and Moreland Road is proposed. Under the proposal, these roadways would be reconfigured and bicycle lanes would be added to create a connection between residential neighborhoods and the Willow Grove SEPTA station, as well as other Willow Grove activity centers. Davisville Road, which could provide access between Moreland Road and the Willow Grove SEPTA station, would also be improved.

Strategy

Improvements will address bicycle mobility and safety challenges, as well as access to transit. Roadways would be reconfigured to accommodate bicycle lanes, as follows:

- On Fitzwatertown Road, reduce width of center turn lane and travel lanes.
- On Moreland Road, consider 5-lane to 3-lane conversion (i.e., a “road diet”).
- Lower speed limit on both roadways.
- On Davisville Road, construct new sidewalks to achieve sidewalk continuity.

6.4 PEDESTRIAN MOBILITY AND SAFETY

Objective: Improve pedestrian safety and mobility

Walking is a viable alternative to driving for certain trips. Most pedestrian trips are usually of a half-mile or less. Pedestrian activity is most successful in an environment that is safe and attractive, with convenient facilities and amenities. A safe and efficient pedestrian network is important in conveying pedestrians to work, shop and for pleasure. By improving sidewalk connectivity, surface condition and attractiveness, more people will be inclined to use them instead of driving. In addition, crosswalk visibility and function should also be improved to permit safe crossing of the roadway.

The following pedestrian improvements should be considered for the Route 611/263 corridor:

Sidewalks

- Sidewalks should exist on both sides of the street, extend continuously, and be accessible to those in wheelchairs. If the sidewalk ends and continues on the other side of the street, a crosswalk should be provided for safe access.
- Along with sidewalks, buffers of four to six feet in width are necessary between the sidewalk and road shoulder.
- Widen existing sidewalks, buffers, and shoulders to provide adequate space for pedestrians to pass one another while ensuring a sense of distance from the dangers of vehicle traffic. This will also

constrain the roadway to slow traffic speeds.

- Plant trees along buffers and integrate street furniture (such as benches) into the more traveled retail areas in order to draw pedestrians and introduce a sense of community among the various distinct developments.
- Integrate raised medians and gateways that will lend to the community feel.
- Adequate street lighting not only creates a sense of security among shoppers, but also adds to the aesthetics of an area. Fixtures should be designed to illuminate both roadways and sidewalks, and should provide a consistent level of lighting. Mercury vapor, incandescent, or less expensive high-pressure sodium lighting is preferable at the pedestrian level.

Crosswalks

- Introduce pedestrian signals with features like electronic countdowns and scramble periods. Both the countdown, which shows the walker how much time he has left to cross, and the scramble period, which allows a separate phase in which vehicles are stopped and pedestrians can travel freely through the intersection, provide pedestrians with safer crossing alternatives on busier roads.
- Retract stop bars from busy intersections by 30 feet, thus ensuring clear crosswalks that are farther from the waiting vehicle traffic.
- Pedestrian-friendly crosswalks are necessary, especially in areas where people are most likely to cross illegally. An example would be a raised crosswalk, which makes a pedestrian more visible to a vehicle. Pavement markings and bright signs can be used to alert motorists to pedestrians in the roadway.
- Pedestrian refuges should be considered at heavily used crosswalks, particularly where there are four travel lanes on PA Route 611 and PA Route 263.

Study Corridor Pedestrian Improvements

Location-specific study corridor pedestrian improvements are presented below and identified on Map 23. The format describes the current issue as well as the strategy for dealing with it.

1. ROUTE 611 FROM CHURCH ROAD TO GREEN BRIAR ROAD (CHELTENHAM TOWNSHIP)

Issue

There is no sidewalk or shoulder on Route 611 between Church Road and Green Briar Road. The margin of the road is almost impassible. Activity centers in the area include the Elkins Park Free Library, the Township Building, the police department, Wall Park, and shopping centers. Route 611 is the most direct way for most pedestrians to reach these activity centers but existing conditions make walking difficult. Improvements could be made to the “spur” along York Road, to provide a more attractive route for pedestrians. However, there is no guarantee that pedestrians who currently traverse this stretch of Route 611 (with no sidewalk or shoulder) could be persuaded to utilize an alternative and less-direct route.

Strategy

It would be desirable for pedestrians to have an alternate mode of travel for short trips. Improvements at this location will address pedestrian mobility and safety challenges:

- Investigate feasibility of constructing new sidewalk on northbound Route 611.

2. ROUTE 611 FROM FOXCROFT ROAD TO MEETINGHOUSE ROAD (Cheltenham Township)

Issue

There is a break in sidewalk continuity on northbound Route 611 between Meetinghouse Road and Foxcroft Road. Steep slopes force pedestrians into the road. The discontinuity complicates pedestrian access to adjacent properties such as Beth Sholom and Keneseth Israel. Access to the crosswalk at Meetinghouse Road, where pedestrians could cross the road safely, is also affected.

Strategy

Improvements at this location will address pedestrian mobility and safety challenges:

- Construct new sidewalk on northbound Route 611.

3. CHELTEN HILLS DRIVE FROM CHURCH ROAD TO HEACOCK LANE (Cheltenham Township)

Issue

There is no sidewalk on Cheltenham Hills Drive between Church Road and Heacock Lane. There is no shoulder and the margin of the roadway is narrow, resulting in a lack of separation between vehicular and pedestrian traffic. Despite these conditions, commuters use Cheltenham Hills Drive to walk to the Jenkintown SEPTA station.

Strategy

Improvements at this location will address pedestrian mobility and safety challenges, as well as support access to transit:

- Construct new sidewalk on Cheltenham Hills Drive between Church Road and Heacock Lane.

4. DAVISVILLE ROAD FROM EASTON ROAD TO OLD YORK ROAD (Abington Township)

Issue

Davisville Road is a potential gateway between the Willow Grove SEPTA station and Willow Grove Mall. Transit commuters also use it to walk to the station. However, large sections of the roadway have no sidewalk or shoulder, resulting in a lack of separation between vehicular and pedestrian traffic.

Strategy

Improvements at this location will address pedestrian mobility and safety challenges:

- Construct sidewalk as necessary on Davisville Road.

The new infrastructure would allow Davisville Road to live up to its potential as a gateway. It would also benefit bicyclists.

5. ROUTE 611 AT PENNYPACK AND PA TURNPIKE BRIDGES (Upper Moreland Township)

Issue

This is a site of intense traffic due to the PA Turnpike exit ramps. It is also a retail strip and the site of the Willow Grove Industrial and Office Center, a major trip generator. Northbound Route 611 is impassable for pedestrians, who use southbound Route 611 instead. However, there is a break in sidewalk continuity on that side of the road. Overgrown foliage at some locations forces pedestrians into the road, where there is no shoulder. In addition, there is no sidewalk under the Turnpike, which would separate vehicular and pedestrian traffic.

Strategy

Improvements at this location will address pedestrian mobility and safety challenges:

- Remove foliage and construct a new sidewalk on southbound Route 611.
- Construct a new sidewalk under the PA Turnpike.

6. ROUTE 263 FROM WARMINSTER ROAD TO CROOKED BILLET ROAD (UPPER MORELAND TOWNSHIP, HATBORO BOROUGH)

Issue

This section of Route 263 is a residential area located between the Bennett Lane Shopping Center and downtown Hatboro. The sidewalk on Route 263 should provide residents with the alternative of walking for short trips to downtown Hatboro and the shopping center. Instead, there is missing sidewalk on both sides of the road and some locations are nearly impassible. For example, on the east side of Route 263 between Newington Drive and Mill Road, the steep slope and stone landscaping are difficult to negotiate. As a result, access to the crosswalk at Newington Drive is impeded.

Strategy

The sidewalk between Warminster Road and downtown Hatboro should, ideally, be complete on both sides of Route 263 and have a minimum five foot width throughout. Unfortunately, there are challenges to overcome on both sides of Route 263. They include the stone landscaping on the east side and the large number of residential properties on the west side that would be affected by construction of a sidewalk.

Despite these challenges, it is important to provide pedestrian access to downtown Hatboro for nearby residents.

Sidewalk construction could be pursued as part of a larger traffic calming strategy on Route 263, to be implemented by a lane reduction (4 lanes to 3 lanes) north of Newington Drive. The traffic calming strategy is primarily a response to speeding traffic and resulting crash cluster approaching the borough hall from the south. However, the lane reduction would allow the addition of pedestrian-friendly improvements such as new sidewalk, sidewalk widening and sidewalk setback from travel lanes. It would also allow for bicycle access improvements, but they would need to be coordinated with similar improvements north and south of the area.

Completing the sidewalk on only one side of Route 263 is a less satisfactory alternative due to the failure to serve those residents on the opposite side of the road. Therefore, if this alternative is selected, construction of a pedestrian crossing across Route 263 south of Crooked Billet Road should be also be considered.

- Construct new sidewalk on Route 263 to complete sidewalks on both sides of road between Warminster Road and downtown Hatboro.
- Implement a traffic calming strategy, specifically lane reduction, north of Warminster Road.

Route 611/263 Corridor

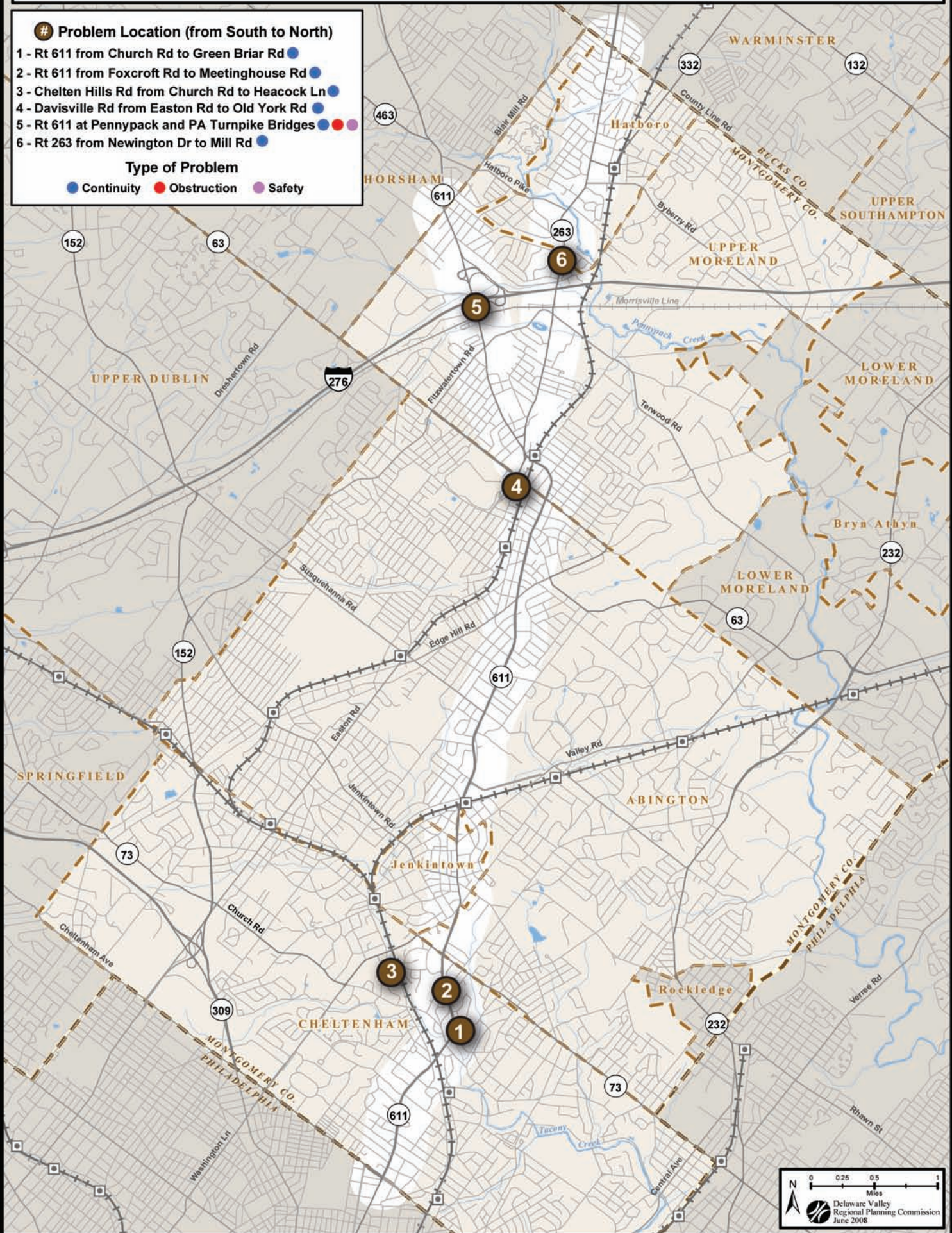
Map 23: Sidewalk Inventory

Problem Location (from South to North)

- 1 - Rt 611 from Church Rd to Green Briar Rd ●
- 2 - Rt 611 from Foxcroft Rd to Meetinghouse Rd ●
- 3 - Cheltenham Rd from Church Rd to Heacock Ln ●
- 4 - Davisville Rd from Easton Rd to Old York Rd ●
- 5 - Rt 611 at Pennypack and PA Turnpike Bridges ●
- 6 - Rt 263 from Newington Dr to Mill Rd ●

Type of Problem

- Continuity ● Obstruction ● Safety



7.0 PLAN RECOMMENDATIONS

This section of the report presents those issues and locations within the corridor that have been identified, using technical analysis, as critical to the development of the corridor, or that are projected to have significant impacts on the transportation infrastructure. These improvements could have important implications for the economic vitality of the local areas as well as mobility within the corridor as a whole. Table 19 below summarizes the Phase 1 recommendations.

Table 20: Study Recommendations Summary

Topic	Issue	Recommendations
Transportation Assessment	Bus Service	Improve passenger amenities at the Willow Grove Park Mall Bus Transfer Station
		Construct bus passenger shelters at recommended locations
		Consider bus pull-outs at recommended locations
		Increase public awareness and accessibility to bus services and opportunities
	Rail Service	Improve multi-modal access to SEPTA Rail Stations
		Install bicycle parking at SEPTA Rail Stations
		Improve accessibility to and investigate expanded parking at SEPTA Rail Stations
		Improve atmosphere and aesthetics at various SEPTA Rail Stations
		Investigate the concept of relocating the Willow Grove Rail Station
	Inter-modal Connectivity	Increase awareness of bus-rail connectivity; improve connections; use Green Streets as a way to connect pedestrians to transit stops
	Shuttle Service	Assess the feasibility of combining existing shuttle services.
	Intersection Analysis	Improve left-turn storage at congested intersections.
	Median Analysis	Extend recommended left-turn storage bays
		Install recommended pedestrian refuges for at-intersection and mid-block locations
		Improve median landscaping at selected locations; use concepts within a Green Streets program to turn landscaped medians into attractive stormwater management devices; encourage civic organizations and businesses to adopt medians and install planters
	Crash Analysis	Analyze selected crash locations in more detail
	Bicycling	Develop the extension of the Fox Chase Trail
Develop a bicycle corridor along segments of Highland Ave and Rockwell Ave		
Develop a bicycle corridor along segments of Fitzwatertown Rd and Moreland Rd		
Use concepts within a Green Streets program to create visual bicycle corridors along recommended road segments		
Pedestrian	Improve sidewalk connectivity, pavement condition, and attractiveness	
	Increase crosswalk visibility and function	

Table 20: Study Recommendations Summary (Continued)

Topic	Issue	Recommendations
Smart Growth Assessment	Development Patterns	Encourage smart growth development patterns focused around historical town centers, new-growth centers, and transit-oriented development
	Regulating Growth	Municipalities should coordinate or combine zoning districts and create shared "town center" zoning district
		Municipalities should utilize incentive programs to encourage redevelopment or infill development
	Sense of Place	Municipalities should consider adopting form-based zoning codes
		Encourage municipalities to preserve historical buildings, streets, and structures
		Municipalities should utilize incentive programs to finance streetscape and façade improvements
	Pedestrian Environment	Encourage municipalities to invest in pedestrian infrastructure
		Identify locations and designs for wayfinding signage and gateway treatments
	Parking	Reduce minimum parking requirements via shared parking arrangements
		Encourage rear-of-parcel, on-street, off-site, structured, and shared parking techniques for town center zones
Consider the potential to reduce minimum parking space dimensions and impervious surfaces		
Environmental Assessment	Mitigation of Stormwater Runoff	Update stormwater management ordinance: Infiltration, not detention, should be the default for new development
		Municipalities should advise homeowners to reduce runoff from their properties
		Municipalities should initiate stream bank restoration projects
		Adopt and implement a "Green Streets" program (a comprehensive approach to combining multi-modal transportation improvements with smart growth improvements to create more attractive and greener communities through low-impact stormwater management devices)
		Strengthen landscaping regulations within an individual municipality's subdivision and land development ordinance
		Reevaluate parking standards and regulations in order to minimize impervious surfaces
	Green Infrastructure	Undertake an inventory of underused parking lots and commercial properties immediately adjacent to waterways that cross Routes 611 and 263
		Protect natural areas along steep slopes, streams, and water bodies
		Create a greenway, trail system, and on-road bicycle corridors that incorporate Green Street concepts and provide more mobility options; this can complement the "Green Streets" program

Source: DVRPC, 2008

8.0 NEXT STEPS

This Phase 1 report will be followed by detailed improvement recommendations in a Phase 2 report. That report, developed with the guidance of the Study Advisory Committee, will detail a strategic implementation plan for the corridor based upon the land use scenarios, the transportation needs and the economic development strategy, in conformance with the policy goals and objectives of the local municipalities.

It is intended that the Phase 2 document will be used as a dynamic, long range tool for the systematic selection of projects to create a significantly improved transportation system within the study area. It will serve as a check list for the government agencies with a stake in the implementation of improvements. Municipal governments are key players in this process. Even though a highway may be maintained by the state or county, it is the welfare of the local residents which is affected the most. The study corridor municipalities should ensure that proposed improvements are advanced expeditiously by remaining involved in the study and implementation process.

The model resolution in Appendix D is being considered for adoption by Montgomery County and the five Routes 611 and 263 corridor municipalities, Abington, Cheltenham and Upper Moreland townships and Hatboro and Jenkintown boroughs. It endorses the findings of the Phase 1 report and recognizes the need to begin implementation of the Phase 1 recommendations through the continuing work to be defined in Phase 2 of the study.

APPENDIX A: DETAILED CRASH SUMMARY

APPENDIX A: DETAILED CRASH SUMMARY

Route 611 at Blair Mill Road	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	7	35%	4	20%	9	45%	20	100%
Crash Type								
Rear End (Same Direction)	4	57%	4	100%	2	22%	10	50%
Sideswipe (Same Direction)	0	0%	0	0%	0	0%	0	0%
Angle	3	43%	0	0%	6	67%	9	45%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	0	0%	0	0%	0	0%
Hit Pedestrian	0	0%	0	0%	0	0%	0	0%
Hit Fixed Object	0	0%	0	0%	1	11%	1	5%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	5	71%	1	25%	4	44%	10	50%
Dark	2	29%	3	75%	4	44%	9	45%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	0	0%	0	0%	1	11%	1	5%
Severity								
Not Injured	0	0%	2	50%	6	67%	8	40%
Injury	7	100%	2	50%	3	33%	12	60%
Unknown	0	0%	0	0%	0	0%	0	0%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	7	100%	2	50%	7	78%	16	80%
Wet	0	0%	2	50%	2	22%	4	20%
Snow/ Ice/ Sand/ Mud/ Dirt/ Oil/ Gravel	0	0%	0	0%	0	0%	0	0%

Route 611 at Fitzwatertown Road	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	10	36%	12	43%	6	21%	28	100%
Crash Type								
Rear End (Same Direction)	3	30%	3	25%	1	17%	7	25%
Sideswipe (Same Direction)	0	0%	0	0%	0	0%	0	0%
Angle	6	60%	9	75%	5	83%	20	71%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	0	0%	0	0%	0	0%
Hit Pedestrian	0	0%	0	0%	0	0%	0	0%
Hit Fixed Object	1	10%	0	0%	0	0%	1	4%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	6	60%	5	42%	5	83%	16	57%
Dark	4	40%	7	58%	1	17%	12	43%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	0	0%	0	0%	0	0%	0	0%
Severity								
Not Injured	4	40%	2	17%	2	33%	8	29%
Injury	5	50%	10	83%	4	67%	19	68%
Unknown	1	10%	0	0%	0	0%	1	4%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	10	100%	8	67%	5	83%	23	82%
Wet	0	0%	4	33%	1	17%	5	18%
Snow/ Ice/ Sand/ Mud/ Dirt/ Oil/ Gravel	0	0%	0	0%	0	0%	0	0%

Route 611 at Moreland Road	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	13	22%	23	38%	24	40%	60	100%
Crash Type								
Rear End (Same Direction)	4	31%	7	30%	5	21%	16	27%
Sideswipe (Same Direction)	0	0%	1	4%	1	4%	2	3%
Angle	8	62%	12	52%	15	63%	35	58%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	1	4%	2	8%	3	5%
Hit Pedestrian	0	0%	1	4%	0	0%	1	2%
Hit Fixed Object	1	8%	1	4%	1	4%	3	5%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	6	46%	18	78%	15	63%	39	65%
Dark	6	46%	5	22%	8	33%	19	32%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	1	8%	0	0%	1	4%	2	3%
Severity								
Not Injured	6	46%	8	35%	9	38%	23	38%
Injury	5	38%	15	65%	15	63%	35	58%
Unknown	2	15%	0	0%	0	0%	2	3%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	9	69%	18	78%	20	83%	47	78%
Wet	3	23%	4	17%	3	13%	10	17%
Snow/ Ice/ Sand/ Mud/ Dirt/ Oil/ Gravel	1	8%	1	4%	1	4%	3	5%

Source: DVRPC, 2008

PA 611 / 263 Corridor Study
Detailed Crash Summary
2003 - 2005

Route 611 at Susquehanna Road	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	25	36%	29	41%	16	23%	70	100%
Crash Type								
Rear End (Same Direction)	7	28%	7	24%	7	44%	21	30%
Sideswipe (Same Direction)	2	8%	1	3%	0	0%	3	4%
Angle	13	52%	13	45%	6	38%	32	46%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	3	10%	0	0%	3	4%
Hit Pedestrian	0	0%	1	3%	2	13%	3	4%
Hit Fixed Object	3	12%	4	14%	1	6%	8	11%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	18	72%	19	66%	10	63%	47	67%
Dark	7	28%	9	31%	5	31%	21	30%
Dawn	0	0%	1	3%	0	0%	1	1%
Dusk	0	0%	0	0%	1	6%	1	1%
Severity								
Not Injured	6	24%	8	28%	3	19%	17	24%
Injury	16	64%	20	69%	13	81%	49	70%
Unknown	3	12%	1	3%	0	0%	4	6%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	20	80%	22	76%	13	81%	55	79%
Wet	4	16%	7	24%	3	19%	14	20%
Snow/ Ice/ Sand/ Mud/ Dirt/ Oil/ Gravel	1	4%	0	0%	0	0%	1	1%

Route 611 at Township Line Road	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	8	31%	10	38%	8	31%	26	100%
Crash Type								
Rear End (Same Direction)	3	38%	5	50%	6	75%	14	54%
Sideswipe (Same Direction)	0	0%	1	10%	0	0%	1	4%
Angle	4	50%	2	20%	1	13%	7	27%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	0	0%	1	13%	1	4%
Hit Pedestrian	1	13%	1	10%	0	0%	2	8%
Hit Fixed Object	0	0%	1	10%	0	0%	1	4%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	6	75%	7	70%	7	88%	20	77%
Dark	2	25%	3	30%	1	13%	6	23%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	0	0%	0	0%	0	0%	0	0%
Severity								
Not Injured	2	25%	3	30%	3	38%	8	31%
Injury	5	63%	7	70%	5	63%	17	65%
Unknown	1	13%	0	0%	0	0%	1	4%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	8	100%	9	90%	5	63%	22	85%
Wet	0	0%	0	0%	2	25%	2	8%
Snow/ Ice/ Sand/ Mud/ Dirt/ Oil/ Gravel	0	0%	1	10%	1	13%	2	8%

Route 611 at Church Road	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	2	20%	4	40%	4	40%	10	100%
Crash Type								
Rear End (Same Direction)	0	0%	1	25%	1	25%	2	20%
Sideswipe (Same Direction)	0	0%	0	0%	0	0%	0	0%
Angle	2	100%	2	50%	2	50%	6	60%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	0	0%	1	25%	1	10%
Hit Pedestrian	0	0%	0	0%	0	0%	0	0%
Hit Fixed Object	0	0%	1	25%	0	0%	1	10%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	1	50%	3	75%	1	25%	5	50%
Dark	1	50%	1	25%	3	75%	5	50%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	0	0%	0	0%	0	0%	0	0%
Severity								
Not Injured	1	50%	1	25%	0	0%	2	20%
Injury	1	50%	3	75%	4	100%	8	80%
Unknown	0	0%	0	0%	0	0%	0	0%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	0	0%	3	75%	2	50%	5	50%
Wet	2	100%	1	25%	2	50%	5	50%
Snow/ Ice/ Sand/ Mud/ Dirt/ Oil/ Gravel	0	0%	0	0%	0	0%	0	0%

Source: DVRPC, 2008

ROUTES 611/263 CORRIDOR STUDY

PA 611 / 263 Corridor Study Detailed Crash Summary 2003 - 2005

Route 611 at Old Welsh Road	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	15	37%	14	34%	12	29%	41	100%
Crash Type								
Rear End (Same Direction)	6	40%	3	21%	1	8%	10	24%
Sideswipe (Same Direction)	1	7%	0	0%	0	0%	1	2%
Angle	6	40%	8	57%	9	75%	23	56%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	0	0%	0	0%	0	0%
Hit Pedestrian	0	0%	1	7%	0	0%	1	2%
Hit Fixed Object	2	13%	1	7%	2	17%	5	12%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	1	7%	0	0%	1	2%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	7	47%	11	79%	7	58%	25	61%
Dark	7	47%	3	21%	5	42%	15	37%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	1	7%	0	0%	0	0%	1	2%
Severity								
Not Injured	5	33%	4	29%	4	33%	13	32%
Injury	10	67%	10	71%	8	67%	28	68%
Unknown	0	0%	0	0%	0	0%	0	0%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	11	73%	11	79%	9	75%	31	76%
Wet	3	20%	2	14%	3	25%	8	20%
Snow/ Ice/ Hail/ Sand/ Mud/ Dirt/ Oil/ Gravel	1	7%	1	7%	0	0%	2	5%

Route 611 at Cheltenham Road	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	24	39%	18	29%	20	32%	62	100%
Crash Type								
Rear End (Same Direction)	1	4%	0	0%	0	0%	1	2%
Sideswipe (Same Direction)	0	0%	2	11%	2	10%	4	6%
Angle	22	92%	14	78%	14	70%	50	81%
Left Turn/ U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	1	6%	3	15%	4	6%
Hit Pedestrian	0	0%	0	0%	0	0%	0	0%
Hit Fixed Object	1	4%	0	0%	1	5%	2	3%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	1	6%	0	0%	1	2%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	16	67%	16	89%	14	70%	46	74%
Dark	8	33%	2	11%	6	30%	16	26%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	0	0%	0	0%	0	0%	0	0%
Severity								
Not Injured	6	25%	7	39%	8	40%	21	34%
Injury	18	75%	11	61%	12	60%	41	66%
Unknown	0	0%	0	0%	0	0%	0	0%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	22	92%	17	94%	18	90%	57	92%
Wet	2	8%	1	6%	2	10%	5	8%
Snow/ Ice/ Hail/ Sand/ Mud/ Dirt/ Oil/ Gravel	0	0%	0	0%	0	0%	0	0%

Route 611 at Summit Ave.	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	2	40%	2	40%	1	20%	5	100%
Crash Type								
Rear End (Same Direction)	1	50%	1	50%	1	100%	3	60%
Sideswipe (Same Direction)	0	0%	1	50%	0	0%	1	20%
Angle	1	50%	0	0%	0	0%	1	20%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	0	0%	0	0%	0	0%
Hit Pedestrian	0	0%	0	0%	0	0%	0	0%
Hit Fixed Object	0	0%	0	0%	0	0%	0	0%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	2	100%	2	100%	1	100%	5	100%
Dark	0	0%	0	0%	0	0%	0	0%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	0	0%	0	0%	0	0%	0	0%
Severity								
Not Injured	0	0%	0	0%	0	0%	0	0%
Injury	2	100%	2	100%	1	100%	5	100%
Unknown	0	0%	0	0%	0	0%	0	0%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	0	0%	2	100%	1	100%	3	60%
Wet	2	100%	0	0%	0	0%	2	40%
Snow/ Ice/ Hail/ Sand/ Mud/ Dirt/ Oil/ Gravel	0	0%	0	0%	0	0%	0	0%

Source: DVRPC, 2008

PA 611 / 263 Corridor Study
Detailed Crash Summary
2003 - 2005

Route 611 at Easton Road	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	1	50%	0	0%	1	50%	2	100%
Crash Type								
Rear End (Same Direction)	0	0%	0	0%	0	0%	0	0%
Sideswipe (Same Direction)	0	0%	0	0%	0	0%	0	0%
Angle	0	0%	0	0%	0	0%	0	0%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	0	0%	0	0%	0	0%
Hit Pedestrian	0	0%	0	0%	0	0%	0	0%
Hit Fixed Object	1	100%	0	0%	0	0%	1	50%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	1	100%	1	50%
Lighting Conditions								
Day	0	0%	0	0%	1	100%	1	50%
Dark	1	100%	0	0%	0	0%	1	50%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	0	0%	0	0%	0	0%	0	0%
Severity								
Not Injured	1	100%	0	0%	0	0%	1	50%
Injury	0	0%	0	0%	1	100%	1	50%
Unknown	0	0%	0	0%	0	0%	0	0%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	0	0%	0	0%	1	100%	1	50%
Wet	1	100%	0	0%	0	0%	1	50%
Snow/ Ice/ Hail/ Sand/ Mud/ Dirt/ Oil/ Gravel	0	0%	0	0%	0	0%	0	0%

Route 611 at Roy Ave.	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	5	50%	4	40%	1	10%	10	100%
Crash Type								
Rear End (Same Direction)	2	40%	1	25%	0	0%	3	30%
Sideswipe (Same Direction)	0	0%	0	0%	0	0%	0	0%
Angle	3	60%	3	75%	0	0%	6	60%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	0	0%	0	0%	0	0%
Hit Pedestrian	0	0%	0	0%	0	0%	0	0%
Hit Fixed Object	0	0%	0	0%	1	100%	1	10%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	5	100%	4	100%	0	0%	9	90%
Dark	0	0%	0	0%	1	100%	1	10%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	0	0%	0	0%	0	0%	0	0%
Severity								
Not Injured	4	80%	2	50%	0	0%	6	60%
Injury	1	20%	2	50%	1	100%	4	40%
Unknown	0	0%	0	0%	0	0%	0	0%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	4	80%	3	75%	1	100%	8	80%
Wet	1	20%	1	25%	0	0%	2	20%
Snow/ Ice/ Hail/ Sand/ Mud/ Dirt/ Oil/ Gravel	0	0%	0	0%	0	0%	0	0%

Route 611 at Woodland Road	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	8	35%	10	43%	5	22%	23	100%
Crash Type								
Rear End (Same Direction)	3	38%	3	30%	3	60%	9	39%
Sideswipe (Same Direction)	1	13%	0	0%	0	0%	1	4%
Angle	4	50%	3	30%	2	40%	9	39%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	3	30%	0	0%	3	13%
Hit Pedestrian	0	0%	1	10%	0	0%	1	4%
Hit Fixed Object	0	0%	0	0%	0	0%	0	0%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	8	100%	9	90%	3	60%	20	87%
Dark	0	0%	1	10%	2	40%	3	13%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	0	0%	0	0%	0	0%	0	0%
Severity								
Not Injured	0	0%	2	20%	1	20%	3	13%
Injury	7	88%	8	80%	4	80%	19	83%
Unknown	1	13%	0	0%	0	0%	1	4%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	6	75%	8	80%	3	60%	17	74%
Wet	2	25%	2	20%	2	40%	6	26%
Snow/ Ice/ Hail/ Sand/ Mud/ Dirt/ Oil/ Gravel	0	0%	0	0%	0	0%	0	0%

Source: DVRPC, 2008

ROUTES 611/263 CORRIDOR STUDY

PA 611 / 263 Corridor Study Detailed Crash Summary 2003 - 2005

Route 611 at Washington Lane	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	0	0%	2	50%	2	50%	4	100%
Crash Type								
Rear End (Same Direction)	0	0%	0	0%	0	0%	0	0%
Sideswipe (Same Direction)	0	0%	0	0%	0	0%	0	0%
Angle	0	0%	0	0%	1	50%	1	25%
Left Turn/U Turn	0	0%	2	100%	0	0%	2	50%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	0	0%	0	0%	0	0%
Hit Pedestrian	0	0%	0	0%	1	50%	1	25%
Hit Fixed Object	0	0%	0	0%	0	0%	0	0%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	0	0%	0	0%	2	100%	2	50%
Dark	0	0%	2	100%	0	0%	2	50%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	0	0%	0	0%	0	0%	0	0%
Severity								
Not Injured	0	0%	2	100%	0	0%	2	50%
Injury	0	0%	0	0%	2	100%	2	50%
Unknown	0	0%	0	0%	0	0%	0	0%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	0	0%	2	100%	2	100%	4	100%
Wet	0	0%	0	0%	0	0%	0	0%
Snow/ Ice/ Hall/ Sand/ Mud/ Dirt/ Oil/ Gravel	0	0%	0	0%	0	0%	0	0%

Route 611 at Ashbourne Road	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	2	33%	3	50%	1	17%	6	100%
Crash Type								
Rear End (Same Direction)	1	50%	0	0%	0	0%	1	17%
Sideswipe (Same Direction)	0	0%	1	33%	0	0%	1	17%
Angle	0	0%	2	67%	1	100%	3	50%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	0	0%	0	0%	0	0%
Hit Pedestrian	0	0%	0	0%	0	0%	0	0%
Hit Fixed Object	1	50%	0	0%	0	0%	1	17%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	0	0%	1	33%	1	100%	2	33%
Dark	1	50%	2	67%	0	0%	3	50%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	1	50%	0	0%	0	0%	1	17%
Severity								
Not Injured	0	0%	0	0%	0	0%	0	0%
Injury	2	100%	3	100%	1	100%	6	100%
Unknown	0	0%	0	0%	0	0%	0	0%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	2	100%	1	33%	1	100%	4	67%
Wet	0	0%	1	33%	0	0%	1	17%
Snow/ Ice/ Hall/ Sand/ Mud/ Dirt/ Oil/ Gravel	0	0%	1	33%	0	0%	1	17%

Source: DVRPC, 2008

PA 611 / 263 Corridor Study
Detailed Crash Summary
2003 - 2005

PA 263 at Fitzwatertown Road	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	9	24%	15	39%	14	37%	38	100%
Crash Type								
Rear End (Same Direction)	3	33%	3	20%	2	14%	8	21%
Sideswipe (Same Direction)	0	0%	0	0%	2	14%	2	5%
Angle	6	67%	11	73%	8	57%	25	66%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	1	7%	1	7%	2	5%
Hit Pedestrian	0	0%	0	0%	0	0%	0	0%
Hit Fixed Object	0	0%	0	0%	0	0%	0	0%
Backing	0	0%	0	0%	1	7%	1	3%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	7	78%	11	73%	12	86%	30	79%
Dark	2	22%	4	27%	2	14%	8	21%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	0	0%	0	0%	0	0%	0	0%
Severity								
Not Injured	3	33%	3	20%	5	36%	11	29%
Injury	4	44%	12	80%	9	64%	25	66%
Unknown	2	22%	0	0%	0	0%	2	5%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	6	67%	12	80%	13	93%	31	82%
Wet	1	11%	3	20%	1	7%	5	13%
Snow/ Ice/ Hail/ Sand/ Mud/ Dirt/ Oil/ Gravel	2	22%	0	0%	0	0%	2	5%

PA 263 at Moreland Avenue	2003		2004		2005		Total	
	Crash	Percent	Crash	Percent	Crash	Percent	Crash	Percent
Crash								
Reportable	5	38%	5	38%	3	23%	13	100%
Crash Type								
Rear End (Same Direction)	2	40%	2	40%	1	33%	5	38%
Sideswipe (Same Direction)	0	0%	0	0%	2	67%	2	15%
Angle	2	40%	0	0%	0	0%	2	15%
Left Turn/U Turn	0	0%	0	0%	0	0%	0	0%
Hit Parked Vehicle	0	0%	0	0%	0	0%	0	0%
Head On	0	0%	1	20%	0	0%	1	8%
Hit Pedestrian	1	20%	1	20%	0	0%	2	15%
Hit Fixed Object	0	0%	1	20%	0	0%	1	8%
Backing	0	0%	0	0%	0	0%	0	0%
Non-Collision	0	0%	0	0%	0	0%	0	0%
Other or Unknown	0	0%	0	0%	0	0%	0	0%
Lighting Conditions								
Day	5	100%	2	40%	2	67%	9	69%
Dark	0	0%	2	40%	1	33%	3	23%
Dawn	0	0%	0	0%	0	0%	0	0%
Dusk	0	0%	1	20%	0	0%	1	8%
Severity								
Not Injured	2	40%	1	20%	3	100%	6	46%
Injury	0	0%	3	60%	0	0%	3	23%
Unknown	3	60%	1	20%	0	0%	4	31%
Fatality	0	0%	0	0%	0	0%	0	0%
Weather Conditions								
Dry	4	80%	3	60%	1	33%	8	62%
Wet	1	20%	2	40%	2	67%	5	38%
Snow/ Ice/ Hail/ Sand/ Mud/ Dirt/ Oil/ Gravel	0	0%	0	0%	0	0%	0	0%

Source: DVRPC, 2008

APPENDIX B: BUS STOP SHELTER LOCATIONS

Bus Stop Shelter Locations

Abington Township						
Primary Street	Secondary Street	Bus Route	Direction	Amenities	Adjacent Land Use	NS/FS/MI
Old York Rd	Township Line Rd	55	SB	Bench	Residential	NS
Old York Rd	Cloverly Ave	55	SB	Bench	Office	NS
Old York Rd	Library	55	SB	Bench	Library	NS
Old York Rd	Horace Ave	55	SB	Bench, Trash	Hospital	NS
Old York Rd	Abington Hospital (near Woodland Rd)	55	SB	Bench, Trash	Hospital	MB
Old York Rd	Keith Rd	55	SB	Bench	Office	NS
Old York Rd	Highland Ave (Rockwell)	55	SB	Bench	Office	FS
Old York Rd	Highland Ave	55	NB	Bench	Shopping Center	NS
Old York Rd	Woodland Rd	55	NB	Bench, Trash	Hospital	NS
Old York Rd	Harte Rd/Fairway (north of)	55	NB	Bench, Trash	Shopping Center	MB
Willow Grove	Park Mall	22, 55	All	Bench, Trash	Shopping Center	N/A

Cheltenham Township						
Primary Street	Secondary Street	Bus Route	Direction	Amenities	Adjacent Land Use	NS/FS/MI
Old York Rd	Cheltenham Ave	55	SB		Shopping Center	NS
Old York Rd	Spring Ave	55	SB	Bench, Trash	Park	NS
Old York Rd	York Rd	55	SB	Bench	Shopping Center	MB
Old York Rd	Greenbriar Rd	55	SB	Bench, Trash	Residential	NS
Old York Rd	Breyer Dr	55	SB	Bench, Trash	School	NS

NS = Nearside, FS = Farside, MB = Midblock
 Source: DVRPC 2007

Bus Stop Shelter Locations

Upper Moreland Township						
Primary Street	Secondary Street	Bus Route	Direction	Amenities	Adjacent Land Use	NS/FS/MI
Old York Rd	Moreland Rd	55	SB		Office	NS
Old York Rd	Church St	55	SB		Residential	MB
Easton Rd	Park Ave	55	SB		Shopping Center	NS
Easton Rd	Sycamore St (south of)	55	SB	Bench, Trash	Restaurant	MB
Easton Rd	Fitzwatertown Rd (north of)	55	NB		Apartment/Hotel	MB
Easton Rd	Fitzwatertown Rd	55	NB		Shopping Center	NS
Easton Rd	Lincoln Ave	55	NB		Post office	NS
Easton Rd	Allison Rd (north of Summit Ave)	55	NB	Bench	School	MB
York Rd	Summit Ave	22	NB		Vacant shopping	MB
York Rd	Warren St	22	NB		Shopping Center	NS
York Rd	Lakevue Dr	22	NB		Residential	MB
York Rd	Fitzwatertown Rd / Terwood Rd	22	NB	Bench	Restaurant	NS
York Rd	Commercial Driveway (Sunset Ln)	22	NB		Vacant shopping	MB
York Rd	Commercial Driveway (Sunset Ln)	22	SB		Auto dealer	FS

NS = Nearside, FS = Farside, MB = Midblock
 Source: DVRPC 2007

Proposed New Shelter Priority List

Abington Township					
Old York Road &	Direction	Draw			
Baeder Road	SB	office buildings, rail transfer			
Edge Hill Road	SB	several churches			
Guernsey Ave	SB	municipal buildings			
Harte Road	SB	office building, shopping center			
Lenox Road	SB	PCOM, dense residential			
London Road	SB	large shopping centers			
Old Welsh Road	SB	small businesses, church			
Rodman Avenue	SB	rail transfer			
Rubicam Avenue	SB	small businesses			
Susquehanna Road	SB	small businesses, church			
Washington Lane	NB	Pavillion			
Wyncote Road	SB	Pavillion, PCOM			
Cheltenham Township					
Old York Road &	Direction	Draw			
Cheltenham Avenue	NB	Shopping center, church			
Jenkintown Borough					
Old York Road &	Direction	Draw			
Cherry Street	SB	Jenkintown CBD			
Greenwood Avenue	NB	Jenkintown CBD, bus transfer			
Greenwood Avenue	SB	Jenkintown CBD, bus transfer			
Hillside Avenue	SB	Jenkintown CBD, medical building			
West Avenue	SB	Jenkintown CBD			
Upper Moreland Township					
Old York Road &	Direction	Draw			
Davisville Road	SB	shopping center, rail transfer			
York Road &					
Fitzwatertown Road	SB	small businesses			
Hatboro Borough*					
York Road &	Direction	Draw			
Byberry Road	SB	Hatboro CBD, rail transfer			
Moreland Avenue	SB	Hatboro CBD, rail transfer			

*Two priority locations outside of the top 20 were given to Hatboro due to its retail commercial importance.

Hatboro does not have top 20 boarding locations.

Source: DVRPC, 2007

APPENDIX C: WEEKEND BUS BOARDINGS

Weekend Bus Boardings

Route 22 Southbound						
Rank	Stop	Boardings	Alightings	Shelter	Municipality	
1	Willow Grove Park Mall	542	46	Yes	Abington	
2	York Rd / Moreland Ave	37	7	No	Hatboro	
3	York Rd / Byberry Rd	26	2	No	Hatboro	
4	York Rd / Horsham Rd	18	2	No	Hatboro	
5	York Rd / County Line Rd	13	2	No	Hatboro	
5	York Rd / Fitzwatertown Rd	13	2	No	Upper Moreland	

Route 22 Northbound						
Rank	Stop	Boardings	Alightings	Shelter	Municipality	
1	Willow Grove Park Mall	70	512	Yes	Abington	
2	York Rd / Moreland Ave	8	29	No	Hatboro	
3	York Rd / Montgomery Ave	6	8	No	Hatboro	
4	Easton Rd / Moreland Rd	5	4	No	Abington	
4	Easton Rd / Old York Rd	5	1	No	Upper Moreland	

Route 55 Southbound						
Rank	Stop	Boardings	Alightings	Shelter	Municipality	
1	Willow Grove Park Mall	790	68	Yes	Abington	
2	Old York Rd / Davisville Rd	113	12	No	Upper Moreland	
3	Old York Rd / Harte Rd	108	27	No	Abington	
4	Old York Rd / London Rd	107	19	No	Abington	
5	Old York Rd / Cheltenham Ave	104	99	Yes	Cheltenham	
6	Old York Rd / Woodland Ave	87	7	No	Abington	
7	Old York Rd / Horace Ave	81	13	Yes	Abington	
8	Old York Rd / Township Line Rd	69	20	Yes	Jenkintown	
9	Old York Rd / Wyncote Rd	68	20	No	Jenkintown	
10	Easton Rd / Moreland Rd	57	29	No	Abington	

Source: SEPTA, 2006

Weekend Bus Boardings

Route 55 Northbound						
Rank	Stop	Boardings	Alightings	Shelter	Municipality	
1	Willow Grove Park Mall	123	989	Yes	Abington	
2	Old York Rd / Cheltenham Ave	83	126	No	Cheltenham	
3	Old York Rd / Rockwell Rd	32	78	Yes	Abington	
4	Old York Rd / West Ave	31	70	No	Jenkintown	
5	Old York Rd / Valley Rd	30	13	No	Cheltenham	
6	Old York Rd / Greenwood Ave	24	56	No	Jenkintown	
7	Old York Rd / Church Rd	21	33	No	Cheltenham	
8	Old York Rd / Washington Ln	20	50	No	Jenkintown	
8	Old York Rd / Rodman Ave	20	34	No	Abington	
10	Old York Rd / Fairway Rd	18	193	Yes	Abington	

Source: SEPTA, 2006

Weekday Bus Boardings

Route 55 Southbound						
Rank	Stop	Boardings	Alightings	Shelter	Municipality	
1	Willow Grove Park Mall	346	45	Yes	Abington	
2	Old York Rd / Horace Ave	95	12	Yes	Abington	
3	Old York Rd / Cherry St	69	2	No	Abington	
4	Old York Rd / Hospital	63	28	Yes	Abington	
5	Old York Rd / Baeder Rd	62	6	No	Abington	
6	Old York Rd / Rockwell Rd	47	4	Yes	Abington	
7	Old York Rd / Cheltenham Ave	44	56	Yes	Cheltenham	
8	Old York Rd / Township Line Rd	42	10	Yes	Abington	
9	Easton Rd / Blair Mill Rd	38	15	No	Upper Moreland	
9	Easton Rd / Moreland Ave	38	11	No	Abington	
9	Old York Rd / Lenox Rd	38	0	No	Abington	
9	Old York Rd / Bryers Woods	38	1	Yes	Cheltenham	

Route 55 Northbound						
Rank	Stop	Boardings	Alightings	Shelter	Municipality	
1	Willow Grove Park Mall	81	470	Yes	Abington	
2	Old York Rd / Cheltenham Ave	41	66	No	Cheltenham	
3	Old York Rd / Woodland Rd	33	143	Yes	Abington	
4	Old York Rd / Greenwood Ave	20	35	No	Jenkintown	
5	Old York Rd / Washington Ln	19	43	No	Jenkintown	
6	Old York Rd / Wyncote Rd	14	59	No	Jenkintown	
6	Old York Rd / Fairway Rd	14	79	Yes	Abington	
6	Old York Rd / Rockwell Rd	14	37	Yes	Abington	
9	Old York Rd / Davisville Rd	11	110	No	Abington	
9	Old York Rd / Church Rd	11	15	No	Cheltenham	

Source: SEPTA, 2006

Weekday Bus Boardings

Route 22 Southbound						
Rank	Stop	Boardings	Alightings	Shelter	Municipality	
1	Willow Grove Park Mall	554	42	Yes	Abington	
2	York Rd / Moreland Ave	29	8	No	Hatboro	
3	York Rd / Byberry Rd	21	1	No	Hatboro	
4	Easton Rd / Moreland Rd	11	14	No	Abington	
5	York Rd / County Line Rd	9	1	No	Hatboro	

Route 22 Northbound						
Rank	Stop	Boardings	Alightings	Shelter	Municipality	
1	Willow Grove Park Mall	59	502	Yes	Abington	
2	Easton Rd / Moreland Rd	12	0	No	Abington	
3	Easton Rd / York Rd	10	11	No	Upper Moreland	
4	York Rd / Fitzwatertown Rd	5	22	Yes	Upper Moreland	
4	York Rd / Byberry Rd	5	22	No	Hatboro	
4	York Rd / Moreland Ave	5	19	No	Hatboro	

Source: SEPTA, 2006

APPENDIX D: DRAFT RESOLUTION

The model resolution on the following page is being considered for adoption by Montgomery County and the five Routes 611 and 263 corridor municipalities, Abington, Cheltenham and Upper Moreland townships and Hatboro and Jenkintown boroughs. It endorses the findings of the Phase 1 report and recognizes the need to begin implementation of the Phase 1 recommendations through the continuing work to be defined in Phase 2 of the study.

DRAFT RESOLUTION

RESOLUTION ENDORSING PHASE 1 OF THE ROUTES 611 AND 263 CORRIDOR STUDY

WHEREAS, the "Multi-Municipal Workshop" forum consisting of the five Routes 611 and 263 corridor municipalities, Abington, Cheltenham and Upper Moreland townships and Hatboro and Jenkintown boroughs and Montgomery County provides an opportunity to address transportation, land use and environmental challenges in a coordinated effort, and

WHEREAS, the Delaware Valley Regional Planning Commission's adopted long-range plan, Destination 2030, recommends goals and policies to achieve a more sustainable region, predicated on better linking land use and transportation plans and projects to achieve smart growth, and

WHEREAS, the Route 611 Corridor has been identified as a regional priority which is consistent with Destination 2030 goals and policies, and

WHEREAS, in June 2008, the Delaware Valley Regional Planning Commission conducted a corridor study, referred to as Routes 611 and 263 Corridor Study, Phase 1 Report, which includes plan elements for Land Use, Environmental Assessment, Highways, Mass Transit, Bicycle and Pedestrian modes, and

WHEREAS, the study's goal is to integrate the planning and design of streets and highways in a manner that fosters development of sustainable and livable communities by incorporating financial constraints, community needs and aspirations, land use and environmental constraints during project development for effective use of resources and creation of lasting community assets, and

WHEREAS, Montgomery County and all five corridor municipalities have contributed towards the funding of this study;

NOW, THEREFORE, BE IT RESOLVED, that _____ Township/Borough/Montgomery County supports the findings of the Routes 611 and 263 Corridor Study, Phase 1 Report, and recognize the need to begin implementation of the Phase 1 recommendations through the continuing work program that will be defined for Phase 2 of the study.

Adopted by:

_____ Township/Borough/Montgomery County

ROUTES 611/263 CORRIDOR STUDY PHASE 1 REPORT

Publication Number: 08045B

Date Published: June 2008

Geographic Area Covered: The study area includes portions of the Montgomery County municipalities of Abington Township, Cheltenham Township, Upper Moreland Township, Hatboro Borough and Jenkintown Borough.

Key Words: travel time survey, intersection analysis, pedestrian facilities, bicycle mobility, smart growth, transit oriented development, stormwater, green infrastructure

Abstract: This study provides a unique opportunity to identify ways in which transportation and land use can be coordinated in concert with environmental needs. It is hoped that this synergy will enhance the creation of economic development opportunities within the corridor. The study was developed with the active involvement and cooperation of representatives from each of the study area communities, Montgomery County and the public. The study includes an assessment of existing corridor conditions, identification of strategic issues and identification and analysis of the corridors' vision, goals and objectives. The study is Phase I of a two-phase study process; the second phase will focus on implementing various Phase I recommendations, working with Montgomery County and the study corridor municipalities.

Delaware Valley Regional Planning Commission

190 N. Independence Mall West, 8th Floor

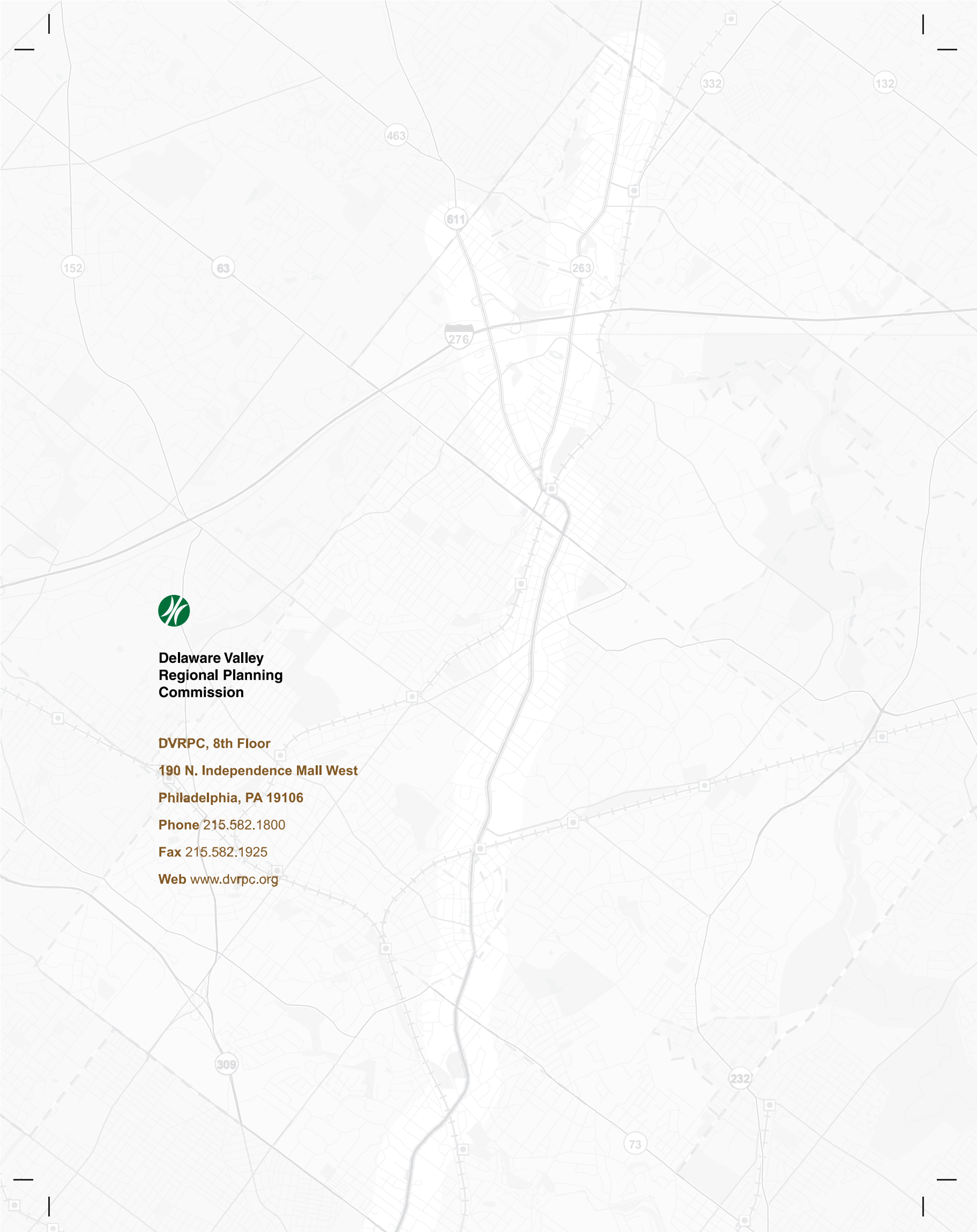
Philadelphia PA 19106

Phone: 215-592-1800

Fax: 215-592-9125

Internet: www.dvrpc.org

Staff Contact: **David Anderson, AICP, Project Manager**
215-238-2825
danderson@dvrpc.org



**Delaware Valley
Regional Planning
Commission**

DVRPC, 8th Floor
190 N. Independence Mall West
Philadelphia, PA 19106
Phone 215.582.1800
Fax 215.582.1925
Web www.dvrpc.org