Route for Change

Transforming The Boulevard

Roosevelt Boulevard

Section 1 – Appendix 1

Previous Studies Review

March 2016

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Introduction

Theodore Roosevelt Memorial Boulevard (U.S. Route 1), more commonly known as "Roosevelt Boulevard" or simply "the Boulevard," was first proposed in 1902 as a way to connect the city center to the northeastern neighborhoods. Designed as a green and monumental roadway facility at the peak of the City Beautiful Movement, the first section of the Boulevard was completed in 1914, then later extended northeast to Bucks County and southwest to Interstate 76 (I-76).

As anticipated, the construction of Roosevelt Boulevard facilitated a mid-century development boom that brought homes, shopping centers, and industrial parks to northeast Philadelphia. With development, came increased travel demand, particularly for cars and trucks, as land uses in the corridor were designed for access by motorized vehicles.

In recent years, neighborhoods that are served by the Boulevard have changed with an increase in transit-dependent households and an increase of the number of people living in poverty. At the same time, the Boulevard has become an alternate route for the heavily traveled and often congested I-95 corridor, thereby decreasing safe access and connectivity for these neighborhoods and users of the Boulevard. Additionally, the current configuration of the Boulevard and the intersection density limits the efficiency of SEPTA's current bus routes which travel along the Boulevard from end to end in twice the time that cars take. As a result, traveling and living near the Boulevard is challenging and not as safe, reliable, and accessible as the community and motorists expect.

To address these challenges, Roosevelt Boulevard has been the subject of numerous plans and studies that evaluate its existing conditions, challenges, and offer specific recommendations. This technical memorandum provides an overview of ten plans or studies developed in conjunction with, or directly related to, the Route for Change Program (the Program), highlighting important background information to assist in its development. Many of the studies focus on the Roosevelt Boulevard Corridor and the challenges of traveling along it, or they have themes and objectives that overlap with and can inform the Program. The analysis of these previous efforts also ensures that critical information is considered and summarized in one comprehensive document.

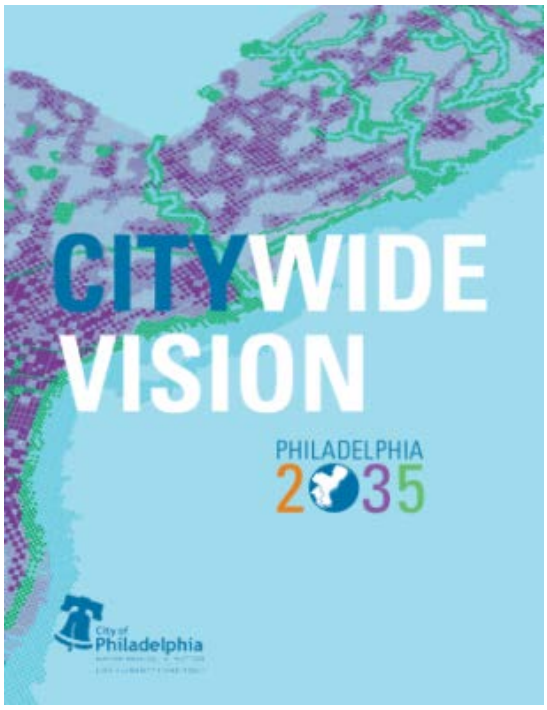
To best evaluate the past studies, this technical memorandum is separated into two sections. The first section contains six plans, four that are part of the *Philadelphia 2035* comprehensive planning process: the *Citywide Vision* and three *District Plans* for the *Lower Northeast, Central Northeast, and North Delaware* Districts, and the City of Philadelphia's *Pedestrian and Bicycle Plan*, and the *Philadelphia Trail Master Plan*.

The second section contains plans that focus on the planning, design, and operations of public transit and motorized and non-motorized travel along Roosevelt Boulevard. The purpose of these studies is to improve transit performance, address problems associated with vehicular traffic volumes, and increase pedestrian and bicyclist safety. These four plans are: the 2003 *Roosevelt Boulevard Corridor Transportation Investment Study*, the 2007 *US 1 Roosevelt Boulevard Corridor Study*, the 2014 *Neshaminy Mall Transit Center Evaluation And Concept Plan,* and the 2016 *Alternatives Development for Roosevelt Boulevard Transit Enhancements*.

In summary, the objective of this technical memorandum is to understand past work efforts; consider unfulfilled past recommendations in the Route for Change Program; and use the information to respond and address public comments and questions on the Route for Change Program.

1. Philadelphia 2035 Citywide Vision (2011, Philadelphia City Planning Commission)

Study Purpose and Highlights



The purpose of the *Philadelphia 2035 Citywide Vision* is to provide a unified, comprehensive vision and plan for improving the quality of life in the City of Philadelphia. Its authors defined three key strengths of the city:

- a strong metropolitan center,
- diverse and authentic neighborhoods, and
- the intended renewal and transformation of its industrial legacy areas.

The *Citywide Vision* has been implemented in two phases. First, the 2035 report documents the comprehensive vision of citywide initiatives and strategies. This report was finalized in June 2011.

The second phase was initiated in 2011 and calls for the completion of 18 *District Plans* that outline specific land use and capital investment recommendations. As of March 2016, ten *District Plans* have been completed (including the *Central* and *Lower Northeast Districts*), two are under way (including the *North Delaware District*), three are scheduled for initiation in the spring of 2016 (including the *Upper Far Northeast, Lower Far Northeast*, and *Upper North Districts*), and three have not been initiated.

The *Citywide Vision* identifies three broad themes with nine plan elements:

A. **Thrive**: 1) Neighborhoods, 2) Economic Development, and 3) Land Management
B. **Connect**: 4) Transportation and 5) Utilities
C. **Renew**: 6) Open Space, 7) Environmental Resources, 8) Historic Preservation, and 9) the Public Realm.

The three themes, used by the *Citywide Vision,* are useful in organizing goals and objectives for making recommendations to improve the quality of life in the City of Philadelphia. Furthermore, the *Citywide Vision* describes the nine plan elements as:

THRIVE

- Neighborhoods: Promote strong and well-balanced neighborhood centers and improve the quality and diversity of new and existing housing.

- Economic Development: Support the growth of economic centers, target industrial lands for continued growth and development, grow Philadelphia's strong institutional job sectors, and develop tourism and the arts as strong economic sectors.
- Land Management: Manage and reduce vacancy, protect sensitive lands from overdevelopment, and manage all non-community-based facilities efficiently.

CONNECT

- Transportation: Improve transportation safety, efficiency, and convenience.
- Utilities: Adapt utility services to changing technology and consumption patterns.

RENEW

- Open Space: Increase equitable access to our open-space resources.
- Environmental Resources: Fulfill city obligations to meet ambitious federal environmental standards.
- Historic Preservation: Preserve and reuse historic resources.
- Public Realm: Achieve excellence in the design and quality of the built environment.

Plan Recommendations

The *Philadelphia 2035 Citywide Vision* recommendations are generally broad policy directives that guide more specific land use and capital investment recommendations in the *District Plans*. Table 1 (page 3) identifies 73 citywide recommendations, their broad themes, plan elements, and topics that comprise the *Philadelphia 2035*'s *Citywide Vision*. While they are meant to be broad and applicable to all Philadelphia neighborhoods, some recommendations mention specific geographic locations. For example, the *Citywide Vision* identified ten specific transportation recommendations. One of these ten recommendations was to advance rapid transit along Roosevelt Boulevard. This recommendation is being evaluated by the Southeastern Pennsylvania Transit Authority (SEPTA). Note how Roosevelt Boulevard transit is highlighted (Figure 1, page 10). Any additional recommendation references to the Roosevelt Boulevard corridor are identified in the notes column of Table 1 (page 3). Table 1 also relates each of the recommendations to one of the five Route for Change themes.

Table 1: Recommendations from the *Philadelphia 2035 Citywide Vision* (Source: Philadelphia City Planning Commission)

Theme	Element	Citywide Objective Identifier	Topic	Recommendation	Route for Change Themes					Notes
					Safety	Reliability	Accessibility	Opportunity	Livability	
Thrive	Neighborhoods	1.1.1	Neighborhood Centers	Strengthen neighborhood centers by clustering community-serving public facilities.	✓	✓	✓	✓	✓	Co-location of community services, walkability emphasized.
		1.1.2		Strengthen neighborhood centers by developing viable commercial corridors.			✓	✓	✓	Strengthen commercial centers and corridors, walkability, access to goods, services, and jobs.
		1.1.3		Strengthen neighborhood centers by promoting transit-oriented development (TOD) around stations.	✓		✓	✓	✓	Promote TODs with retail, commercial, and residential, transit and walking access.
		1.1.4		Provide convenient access to healthy food for all residents.			✓		✓	Better access to fresh foods, community gardens, co-location with other services.
		1.2.1	Housing	Stabilize and upgrade existing housing stock.					✓	This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		1.2.2		Ensure a wide mix of housing is available to residents of all income levels.				✓	✓	Emphasizes access to affordable housing in all parts of the city.
		1.2.3		Promote new affordable housing developments to strengthen existing neighborhood assets.				✓	✓	Emphasizes access to affordable housing in all parts of the city.
	Economic Development	2.1.1	Metropolitan and Regional Centers	Support and promote Center City/University City as the primary economic center of the region.		✓	✓	✓		Although does not cite Northeast Philadelphia, provides reliable access to jobs.
		2.1.2		Strengthen Metropolitan Subcenters.		✓	✓	✓		Although does not cite Northeast Philadelphia, provides reliable access to jobs.
		2.1.3		Encourage the growth and development of both existing and emerging Regional Centers.			✓	✓	✓	Identifies Far Northeast as a Regional Center.
		2.2.1	Industrial Land	Ensure an adequate supply and distribution of industrially zoned land.			✓	✓		Identifies Hunting Park West industrial area and emphasizes effective planning to support development of industrial lands.

Theme	Element	Citywide Objective Identifier	Topic	Recommendation	Route for Change Themes					Notes
					Safety	Reliability	Accessibility	Opportunity	Livability	
		2.2.2		Reposition former industrial sites for new users.			✓	✓		Emphasizes effective planning to support development of industrial lands.
		2.3.1	Institutions	Encourage institutional development and expansion through policy and careful consideration of land resources.				✓	✓	Citywide goal calling for campus plans for medical and higher education institutions (many hospitals in Northeast Philadelphia).
		2.3.2		Create cooperative relationships between institutions and neighbors.					✓	Calls for public schools and medical institutions to coordinate with neighbors.
		2.4.1	Cultural Economy	Maintain Philadelphia's strong role in the national and international tourism market.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		2.4.2		Provide ample resources to cultural institutions to enrich the City's quality of life.					✓	This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
	Land Management	3.1.1	Vacant Land Structures	Centralize land management in a single City agency to track and dispose of surplus land and structures and return publicly owned vacant parcels to taxable status.						Calls for policy to manage surplus and vacant lands citywide.
		3.1.2		Prevent abandonment of land and structures.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		3.1.3		Reuse vacant land and structures in innovative ways.				✓	✓	This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		3.2.1	Land Suitability	Use topography to direct land development.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		3.3.1	Municipal Support Facilities	Reduce expenditures for municipal support facilities.						Calls for co-location of municipal services and coordination with other local land uses.
Connect	Transportation	4.1.1	Transit	Invest in existing infrastructure to improve service and attract riders.	✓	✓	✓			Strong support for transit service improvements, modernization, and integration with other planning efforts.

Theme	Element	Citywide Objective Identifier	Topic	Recommendation	Route for Change Themes					Notes
					Safety	Reliability	Accessibility	Opportunity	Livability	
		4.1.2		Extend and introduce new technological advances to the transit network to serve new markets.		✓	✓			First goal: "Build a new transit extension along Roosevelt Boulevard corridor through Northeast Philadelphia."
		4.1.3		Coordinate land use decisions with existing and planned transit assets to increase transportation choices, decrease reliance on automobiles, increase access to jobs, goods, and services, and maximize the economic, environmental, and public health benefits of transit.	✓	✓	✓	✓	✓	TOD, safety, equity, and livable communities all key elements of this recommendation.
		4.2.1	Complete Streets	Implement a complete streets policy to ensure that the right-of-way will provide safe access for all users.	✓	✓				Safe and reliable transportation for all roadway users emphasized.
		4.2.2		Expand on- and off-street networks serving pedestrians and bicyclists.	✓	✓			✓	Safety, reliability of mobility for non-motorized transport users, and enhanced streetscapes.
		4.2.3		Improve safety for pedestrians and bicyclists and reduce pedestrian and bicycle crashes.	✓					Detailed recommendations for improving pedestrian and bike safety.
		4.3.1	Streets and Highways	Upgrade and modernize existing streets, bridges, and traffic control infrastructure to ensure a high level of reliability and safety.	✓	✓				Safety and reliability for motorists and pedestrians.
		4.3.2		Control automobile congestion through traffic management and planning.		✓			✓	Emphasis on parking, its minimization, and incentives to take transit or bike and walk.
		4.3.3		Improve highway access for goods movement.		✓	✓	✓		Ensure goods movement.
		4.3.4		Improve pedestrian connections across major rights-of-way.	✓		✓		✓	Relevant to pedestrian and bicyclist crossings on Roosevelt Boulevard.
		4.4.1	Airports, Seaports, and Freight Rail	Strengthen the airports' global and local connections.				✓		Emphasis on Philadelphia International Airport, but cites role of Northeast Philadelphia Airport as key reliever and corporate airport.

Theme	Element	Citywide Objective Identifier	Topic	Recommendation	Route for Change Themes					Notes
					Safety	Reliability	Accessibility	Opportunity	Livability	
		4.4.2		Elevate the competitive position of Philadelphia ports on the Eastern Seaboard.						Emphasis on ports, away from Roosevelt Boulevard corridor.
		4.4.3		Modernize freight rail assets to ensure efficient goods movement to and through Philadelphia.			✓	✓		Indirect relevance regarding safe and efficient goods movement.
	Utilities	5.1.1	Consumption, Capacity, and Condition	Reduce electricity, natural gas, and water consumption to reduce financial and environmental costs.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		5.1.2		Achieve reductions in waste through reuse, recycling, and composting of solid-waste materials.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		5.1.3		Ensure adequate utility capacity to serve customers.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		5.1.4		Modernize and bring the condition of existing utility infrastructure to a state of good repair.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		5.2.1	Broadband Infrastructure	Prepare a long-term plan for maintenance and use of City-owned broadband infrastructure and wireless assets.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		5.2.2		Expand affordable access to broadband and promote digital literacy programs among low-income populations of the city.				✓	✓	This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		5.2.3		Encourage technical innovation and recruitment of high-tech businesses.				✓		This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
Renew	Open Space	6.1.1	Watershed Parks and Trails	Create a citywide trails master plan to coordinate the planning and construction of trail systems within Philadelphia.	✓		✓		✓	Trail Master Plan adopted, including elements of the Fairmount Park watershed trail system in NE Philadelphia.
		6.1.2		Connect citywide parks to the existing protected natural areas of the regional greenspace network.			✓		✓	Tacony and Pennypack Creeks feature prominently.
		6.1.3		Create a trail corridor network that connects parks, neighborhoods, and trails citywide.			✓		✓	Trail corridor network would include Northeast Philadelphia creeks, parks, and open spaces.

Theme	Element	Citywide Objective Identifier	Topic	Recommendation	Route for Change Themes					Notes
					Safety	Reliability	Accessibility	Opportunity	Livability	
		6.2.1	Waterfronts	Improve and increase waterfront recreation opportunities.					✓	Focus on Delaware and Schuylkill Rivers.
		6.2.2		Expand use of rivers for passenger transportation.			✓			Focus on Delaware and Schuylkill Rivers.
		6.3.1	Neighborhood Parks and Recreation	Ensure that all Philadelphians live within a 10-minute walk of a neighborhood park or a recreation center.			✓	✓	✓	Large areas of Northeast Philadelphia neighborhoods more than 0.5 miles from parks / rec centers. Lower and Central Northeast Districts identified as "high population areas particularly underserved by open space."
		6.3.2		Connect neighborhood parks and trails to neighborhood centers and major public facilities.			✓		✓	
		6.3.3		Ensure proper maintenance and vibrancy of park and recreation facilities.			✓		✓	Encourages colocation of rec centers and other public facilities.
	Environmental Resources	7.1.1	Air Quality	Reduce overall and per capita contributions to air pollution.					✓	Emphasis on TOD and bike, pedestrian, and transit.
		7.1.2		Reduce overall and per capita greenhouse gas (GHG) emissions by 45 percent by 2035.						Indirectly related to design and transportation opportunities for reducing GHG emissions.
		7.1.3		Reduce air temperature during the warm season in the city.					✓	Emphasizes tree plantings and cool, vegetated surfaces.
		7.2.1	Water Quality	Improve the quality of city and regional water sources.						Citywide goal without Northeast Philadelphia projects cited.
		7.2.2		Restore and create urban stream banks and tidal wetlands along watersheds.					✓	Tacony-Frankford and Pennypack Creeks identified for priority projects.
		7.2.3		Support stormwater regulations set by the Philadelphia Water Department to capture stormwater on site and reduce flooding damage.				✓	✓	Emphasizes city's green stormwater infrastructure program.
		7.3.1	Tree Cover	Increase the overall tree canopy across the city to 30 percent.					✓	This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		7.3.2		Enhance the city's forests to create a total of 7,200 acres.					✓	This is a citywide goal. No Northeast Philadelphia projects are specifically cited.

Theme	Element	Citywide Objective Identifier	Topic	Recommendation	Route for Change Themes					Notes
					Safety	Reliability	Accessibility	Opportunity	Livability	
		7.3.3		Support tree planting and stewardship within the city.					✓	This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
	Historic Preservation	8.1.1	Cultural, Historical, and Architectural Resources	Preserve culturally, historically, and architecturally significant buildings, sites, structures, and districts.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		8.1.2		Rehabilitate abandoned industrial infrastructure for new uses and reuse industrial buildings to create new neighborhood anchors.				✓		Citywide goal. Frankford Arsenal in Bridesburg neighborhood cited.
		8.1.3		Preserve and reuse all “at risk” historic anchor buildings, commercial corridor buildings, and districts’ elements.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		8.1.4		Protect archaeological sites.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		8.1.5		Ensure maintenance and management of cemeteries and religious properties.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		8.1.6		Preserve historically significant viewsheds and landscapes.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		8.1.7		Preserve cultural and ethnic traditions, places and resources.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		8.2.1	Heritage Tourism	Create new and enhance existing tourism programs based on various cultural experiences unique to Philadelphia.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		8.2.2		Demonstrate sustainable practices in visitor activities and facilities.						This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
	Public Realm	9.1.1	Development Patterns	Preserve the walkable scale of the city.	✓		✓		✓	Emphasis on city's street grid and walkability, both challenges on Roosevelt Blvd.
				Ensure that new development reinforces the urban scale.					✓	This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		9.2.1	Urban Design	Apply sound design principles to guide development across the city.					✓	This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		9.2.2		Create welcoming, well-designed public spaces, gateways, and corridors.			✓		✓	This is a citywide goal. No Northeast Philadelphia projects are specifically cited.

Theme	Element	Citywide Objective Identifier	Topic	Recommendation	Route for Change Themes					Notes
					Safety	Reliability	Accessibility	Opportunity	Livability	
		9.2.3		Link public art with major capital initiatives.					✓	This is a citywide goal. No Northeast Philadelphia projects are specifically cited.
		9.2.4		Ensure maintenance and protection of public works of art.					✓	This is a citywide goal. No Northeast Philadelphia projects are specifically cited.

Figure 1: Key Transportation Recommendations from the *Philadelphia 2035 Citywide Vision* (Source: Philadelphia City Planning Commission)

Public Involvement Process

The City's first comprehensive plan in over fifty years was developed with a **significant effort to engage the public in meaningful and ongoing ways**. Two series of **interactive public meetings** were organized in spring and fall 2010 to elicit "big ideas" to define the vision and themes for the next twenty five years and then to prioritize projects and initiatives that advanced to City recommendations. After the release of the *Citywide Vision* in 2011, an additional **open house session** with four round table meetings was held to present the plan and its recommendations. This was followed by stakeholder and civic organization meetings around the city.

As identified in Table 1 (page 3), every theme of the Route for Change Program is supported with multiple recommendations in the *Citywide Vision*. The Route for Change Program should anticipate the public will have full knowledge of the Plan recommendations.

Relevance to Route for Change Program

Key recommendations of the *Citywide Vision* that are of particular importance to the Route for Change Program:

- Transit proposals along the Boulevard are highlighted frequently in *Philadelphia 2035*. It is mentioned as an important improvement opportunity by both the PCPC and the general public. Existing regional centers that support a variety of commercial, professional, institutional, and light industrial activities in Northeast Philadelphia would benefit from improved access to transit mentioned in the plan, supporting the **Opportunity** and **Accessibility** themes that are emphasized in the Route for Change Program.
- The three themes used by the *Citywide Vision* have direct and indirect connections to the five themes that define the Route for Change Program: Safety, Accessibility, Reliability, Opportunity and Livability:

  THRIVE

  - Neighborhoods: **Accessibility** and **Livability** are improved with well-balanced neighborhood centers; **Opportunity** is improved when affordable, high quality housing available for all citizens.
  - Economic Development: **Opportunity** is a key focus of this element of the *Citywide Vision.*
  - Land Management: Recommendations in this element of the *Citywide Vision* are indirectly related to Route for Change Program themes of **Opportunity** and **Livability**.

  CONNECT

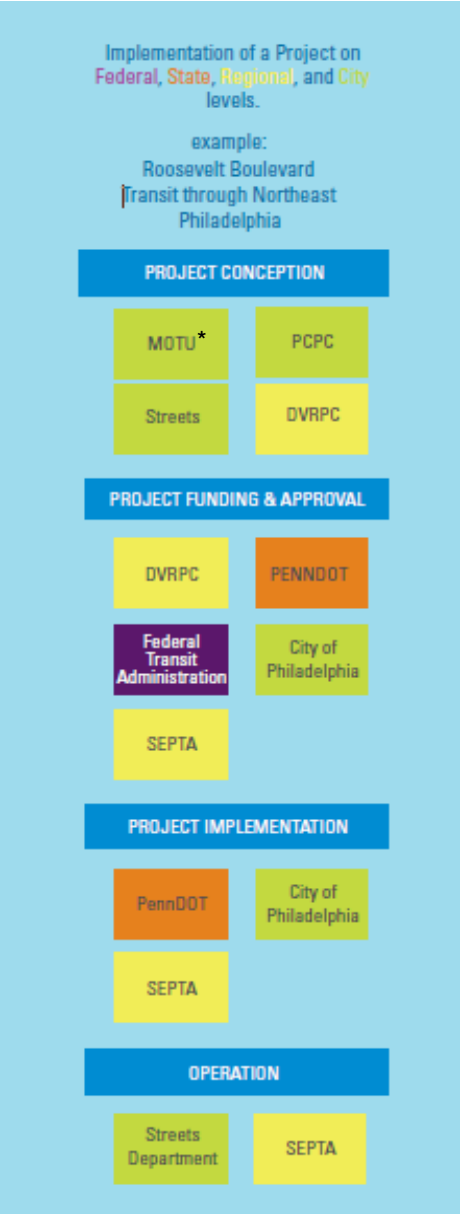
  - Transportation: **Safety**, **Reliability**, and **Accessibility** are supported by the recommendations in this element of the *Citywide Vision*.

- Utilities: Recommendations in this element of the *Citywide Vision* indirectly support the Route for Change Program themes of **Opportunity** and **Accessibility**.

RENEW

- Open Space: Recommendations in this element relate to the **Accessibility** and **Livability** themes of the Route for Change Program.
- Environmental Resources: Recommendations in this element relate primarily to the **Livability** theme of the Route for Change Program.
- Historic Preservation: While most recommendations for this element of the *Citywide Vision* do not directly relate to the themes of the Route for Change Program, several link historic preservation to economic development, the focus of the **Opportunity** theme.
- Public Realm: Most of the recommendations on this topic in the *Citywide Vision* are focused on **Livability** and making public spaces, including roads and sidewalks, more accessible and appealing.

Figure 2: Sample Implementation of a Project for Roosevelt Boulevard Transit (Source: PCPC)



* MOTU is now known as the Office of Transportation and Infrastructure Systems (OTIS).

- The *Citywide Vision* uses the Boulevard as an example of a project involving numerous stakeholders at multiple levels of government. This is illustrated in Figure 2 in a simplified description of the roles of stakeholders involved in the implementation of such large-scale project.
- The *Philadelphia 2035 Citywide Vision*'s User's Guide states that the City should use the Plan to "guide land-use decisions, determine the projects that offer the maximum return on public investment, and pursue funding for key infrastructure projects. The planning process has vetted these subjects by working closely with City agencies, and successful implementation of the recommendations in *Philadelphia 2035* will depend on joint cooperation between City departments and many public, private, and nonprofit partners."
- The *Citywide Vision* plan recognizes that a heavy rail project on Roosevelt Boulevard (as recommended in the 2003 *Roosevelt Boulevard Corridor Transportation Investment Study*) is more costly than can be supported at present and states that alternative, more cost-effective

transit alternatives for the Boulevard are currently being studied (although the plan does not state which studies are underway).

- Specific Northeast Philadelphia parks, businesses, and facilities are cited in the *Citywide Vision*, including:
    - Advocates for "an unbroken system of naturally vegetated open space across county boundaries" for eight creeks and rivers, including **Tacony-Frankford** and **Pennypack** Creeks. (Goals 6.1.2 and 7.2.2)
    - Supports enhancement of the **Northeast Philadelphia Airport** so that it can serve as a reliever for the Philadelphia International Airport and as a corporate airport serving the Delaware Valley. (Goal 4.4.1)
    - "Reinforce the **Far Northeast Regional Center** by capturing new industrial, corporate, aviation, and retail demand generated by improvements to I-95, the Pennsylvania Turnpike, and Roosevelt Boulevard." (Goal 2.1.3)
    - Recommends transforming the **Hunting Park West Industrial Area** into a commercial center and industrial mixed-use hub with clean industries and light manufacturing. (Goal 2.2.1)
    - A new transit extension along **Roosevelt Boulevard**, without specification of a particular transit technology. (Goal 4.1.2)
    - Poor access to parks and green space is cited for large parts of **Central and Lower Northeast Planning Districts** in a call for using opportunity sites (schoolyards and recreation centers), institutional and private open spaces, and new public open spaces to address the deficit. (Goal 6.3.1)
    - Calls for the rehabilitation of the **Frankford Arsenal** in the Bridesburg neighborhood to be used as a neighborhood center. (Goal 8.1.2)

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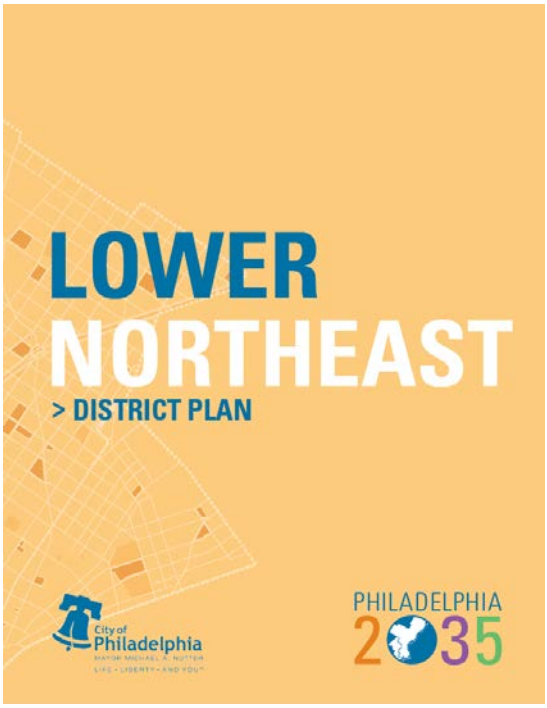
2. Lower Northeast District Plan (2012, Philadelphia City Planning Commission)

Study Purpose and Highlights



The purpose of the *Lower Northeast District Plan* is to apply the general objectives mentioned in the *Philadelphia 2035 Citywide Vision* to district-specific, local recommendations. The *Lower Northeast District Plan* area is bisected by Roosevelt Boulevard and covers approximately 5.9 square miles and includes the neighborhoods of Frankford, Northwood, Summerdale, Lawncrest and Oxford Circle (Figure 3, page 16).

The *District Plan* is meant to accomplish eight goals:

- Advance the **goals and recommendations** of the ***Philadelphia 2035 Citywide Vision***;
- Guide the City's **zoning remapping process** with proposals for revisions;
- Identify **geographic focus areas** for intensive planning and investment;
- Make recommendations for **capital investments in City facilities**, such as libraries and playgrounds;
- **Enhance the public realm** through improvements to public spaces;
- **Improve community health** with better access to healthy foods and physical activity opportunities;
- **Coordinate neighborhood plans**, by consulting past plans and setting priorities for future plans; and
- **Involve the public** with meaningful citizen engagement processes.

The *Lower Northeast District Plan* allows readers to envision what the District could look like if recommendations are implemented.

Plan Recommendations

The *District Plan* recommendations are organized into three principal themes (Thrive, Connect, Renew), and described by nine planning elements (Neighborhoods, Economic Development, Land Management, Transportation, Utilities, Open Space, Environmental Resources, Historic Preservation, and the Public Realm). These are arranged into topics which are further supported by specific goals achievable through objectives and strategies.

Figure 3: Lower Northeast District Plan Study Area (Source: PCPC)

The *Lower Northeast District Plan* includes 45 recommendations designed to turn the goals of the citywide effort into implementable actions (Table 2, page 23). Generally, the *District Plans* are focused on a shorter time frame than the 25-year *Philadelphia 2035 Citywide Vision* with some of the recommendations being early action items that lay the foundation for longer-term proposals. Many of the recommendations directly relate to Roosevelt Boulevard (e.g. infrastructure of the cartway, medians, traffic and pedestrian signals, and sidewalks) and to the homes, businesses, and City facilities in close proximity. Other recommendations relate to topics that are important to the Lower Northeast, but are not directly related to the Route for Change Program, such as historic preservation, support for tourism, and improvements to utilities, such as broadband and wireless.

One notable difference between the Citywide Vision and the *Lower Northeast District Plan* is the idenfication of **geographically targeted, priority planning areas.** These focus area sites are identified because they have underutilized land, inappropriate zoning classifications, or both. They are considered opportunity areas by the PCPC staff and community members and are strategically located so that their improvement will benefit the entire district.

For this *District Plan*, Frankford Transportation Center (FTC), Frankford Gateway and Castor Avenue Commercial Corridor have been selected as focus areas (Figure 4). There are specific recommendations identified for these areas.

Figure 4: Lower Northeast District Plan Focus Areas (clockwise: Castor Avenue, Frankford Transportation Center, and Frankford Gateway) (Source: PCPC)

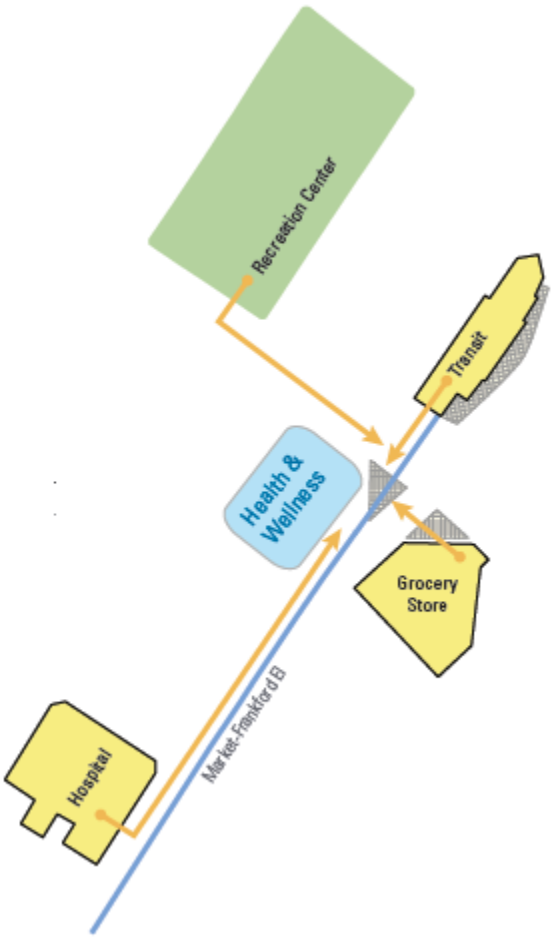
Frankford Transportation Center

The goal of the FTC focus area is to **create a neighborhood center**, which is identified in the *Philadelphia 2035 Citywide Vision* as element 1.1, Neighborhood Centers. Frankford Transportation Center is located approximately 0.6 miles from the Boulevard, and serves as the major transportation hub in the area. To create a neighborhood center at FTC, the *District Plan* recommends (Figure 5, page 18):

- Enlarge the FTC plaza and enhance crosswalks on Frankford Avenue to reduce the number of pedestrians crossing at uncontrolled intersections and mid-block locations, shorten pedestrian crossing distances, create ADA-accessible curb ramps, and **improve pedestrian visibility**.
- Develop a new wellness center through a public-private-partnership: **construct a neighborhood center** on a vacant lot, engage Frankford Avenue residents with its design, and provide social services that meet the needs of residents in the District.

- **Strengthen the commercial node on Frankford Avenue**: improve signage, clean and restore façades, and increase ground-floor transparency; change the existing assorted land uses to CMX-3 Community/Commercial Mixed-Use zoning to spur growth and development.

Figure 5: Vision of Frankford Transportation Center as a Neighborhood Center (Source: PCPC)



Frankford Gateway

The goal of the Frankford Gateway focus area is to **strengthen its unique historic, creative and natural resources** through better connectivity and thoughtful urban design. The goal falls under the *Citywide Vision* element 3.1.3: Reuse vacant land and structures in innovative ways. Frankford Gateway is located at the southern end of the Lower Northeast District and is approximately 1.5 miles from Roosevelt Boulevard. The *District Plan* recommends actions to:

- Complete the Frankford Creek Greenway in order to treat stormwater runoff and **connect the region's growing trail system**: the greenway would connect to the Tacony Creek Trail which extends under Roosevelt Boulevard and connects to a trail in Montgomery County.
- Revive the industrial heritage of Frankford Gateway to **develop live/work housing** options to encourage artisanal history: industrial buildings adjacent to Frankford Creek could be transformed into flexible, mixed-use spaces.
- **Perform streetscape improvements** on Church Street: provide pedestrian-scaled lighting, complete sidewalks and curbs, plant street trees, add way-finding signage, and incorporate public art to create a **safer, more accessible area with increased livability** (Figure 6, page 19).

Figure 6: Vision of Church Street with Streetscape Enhancements (Source: PCPC)

Castor Avenue Commercial Corridor

The goal of this focus area is to **create a multicultural destination** due to its rapid population growth and convenient access to public transportation. This goal falls under the *Citywide Vision* Objectives 1.1.2: Strengthen neighborhood centers by developing viable commercial centers, and 1.1.3: Strengthen neighborhood centers by providing transit-oriented development around stations.

Castor Avenue is identified in the *Lower Northeast District Plan* as a **pedestrian-oriented commercial corridor** due to its wide street that offers easy access to the Route 59 trackless trolley. The Castor Avenue Commercial Corridor is located approximately half a mile north of the Boulevard, and recommendations in the plan include:

- Promote a **pedestrian-oriented environment**: change current zoning from CA-1 (auto-oriented uses) and CMX-2 (neighborhood-serving retail and service uses) to CMX-2.5 (neighborhood commercial corridors) to develop mixed-use buildings and increase density along the Route 59 trackless trolley.
- **Improve connections to recreation**: plant street trees on Castor, Cranford, and Magee Avenues and on Levick Street, add tree trenches and stormwater swales to nearby Cranford Avenue, and connect Tarken Recreation Center into the neighborhood fabric.

Public Involvement Process

The *Lower Northeast District Plan* was written with input from the public obtained **in three community meetings** in April, June, and August 2012 and through community outreach about transit improvement possibilities via **text messaging**. Each public meeting had a separate theme, the second and third building on previous meetings.

- The first meeting was to **define the context**: the planning process and its link to the larger *Citywide Vision* and existing demographic, economic, and physical conditions of the District. Interactive mapping and discussion helped identify planning focus / opportunity areas and expectations for change in the coming ten years. Consensus was not a goal of the exercises and differences of opinion were noted.
- The second meeting emphasized **scenario building** and focused on early recommendations on three key topics: commercial growth, mobility on the Boulevard, and recreational facilities. Notably, there was support for both transit expansion and roadway improvements on Roosevelt Boulevard, with a slightly higher number of participants favoring transit.
- The third meeting was devoted to review of **draft recommendations**. Again, consensus was not the purpose and all participant comments and preferences were noted.

As with the *Citywide Vision*, every theme of the Route for Change program is supported in the *Lower Northeast District Plan* with multiple recommendations in the final version.

Relevance to Route for Change Program

The *Lower Northeast District Plan* identifies 45 recommendations that reflect the goals and strategies described in the *Citywide Vision*. These are listed below in Table 2 (page 23). Consideration was given to how these recommendations relate to the Route for Change Program themes of Safety, Reliability, Accessibility, Opportunity, and Livability. If the goal had an overlap with the Route for Change Program a checkmark was placed in the appropriate theme column in Table 2 (page 23).

Eight priority recommendations identified in the *District Plan* include:

- Develop a health and wellness center through a public-private partnership adjacent to the Frankford Transportation Center.
- Rezone commercial properties along the Castor Avenue Commercial Corridor between Robbins Street and Unruh Avenue to increase density and encourage mixed-uses.
- Complete an analysis to understand the evolving travel patterns in Northeast Philadelphia and the immediate suburbs in Bucks and Montgomery Counties.
- Realign the intersection of Oxford and Frankford Avenues in order to simplify pedestrian and auto circulation and create a welcoming entrance plaza at Margaret-Orthodox Station.
- Create a greenway along both sides of the Frankford Creek from Castor Avenue to Torresdale Avenue.
- Renovate Hedge Street Playground in Frankford.
- Prioritize the preservation and rehabilitation of certain buildings and sites through local historic designation, adaptive reuse, and increased awareness.

- Initiate public realm improvements in the Frankford Gateway Focus Area.

Of the 45 recommendations in the *Lower Northeast District Plan*, the following seven recommendations were selected as being the most relevant to the Route for Change Program (highlighted in Table 2, page 23):

- Develop a health and wellness center through a public-private partnership adjacent to the Frankford Transportation Center.
    - Reason: Optimal location near the Frankford Transportation Center would strengthen area as a neighborhood center by clustering community-serving public facilities, would strengthen neighborhood centers by promoting **transit-oriented development** around stations.
- Complete an analysis to understand the evolving travel patterns in Northeast Philadelphia and the immediate suburbs in Bucks and Montgomery Counties.
    - Reason: Frankford Transportation Center is Northeast Philadelphia's main transit hub with 16,000 daily passengers. 30 percent of district households do not own a vehicle and 25 percent of households commute to work on transit. Investing in and understanding existing infrastructure would **improve transit service and reliability** and attract riders.
- Complete a Corridor Study to determine the best options for transforming Roosevelt Boulevard into a multimodal corridor with expanded transit service, automobile circulation improvements, and pedestrian and bicycle upgrades.
    - Reason: The current Program is underway to satisfy this recommendation for transforming the Boulevard by reducing the risk of crashes, improving transit service and reliability and **attracting riders through enhanced public transportation**, allowing visitor and residents to move between schools, jobs, businesses, attractions, and neighborhoods, and **providing access to jobs** in the corridor and region.
- Complete a feasibility study for an extension of the Market-Frankford El along Bustleton Avenue to a new terminus at the intersection of Roosevelt Boulevard, Bustleton Avenue, and Levick Street.
    - Reason: Investing in existing infrastructure would improve transit service and reliability and **attract riders from the District and the region**.
- Implement Pedestrian and Bicycle Plan recommendations to improve sidewalks and bicycle routes, prioritizing commercial corridors and streets that directly connect to El stations.
    - Reason: Bicycle and pedestrian commuters would have **increased accessibility to and safety along the Boulevard**, certifies that the right-of-way provides safe access for all users, reduces pedestrian and bicycle crashes.
- Improve pedestrian and bicycle facilities on Roosevelt Boulevard by constructing a shared-use side path on one or both sides of the Boulevard.
    - Reason: Bicycle and pedestrian commuters would have increased accessibility to and safety along the Boulevard, would improve safety and reduce pedestrian and bicycle crashes, would **improve pedestrian connections across major rights-of-way**.

- Realign the intersection of Oxford and Frankford Avenues in order to simplify pedestrian and auto circulation and create a welcoming entrance plaza at Margaret-Orthodox Station.
    - Reason: Upgraded infrastructure would **ensure a higher level of reliability and safety,** traffic pattern changes may impact other arterial roads.

Table 2: Lower Northeast District Plan Recommendations

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
1.1.1, 1.1.2	Thrive: Neighborhoods	1	Enhance the concentration of community-serving facilities at the Lawncrest Neighborhood Center.	29					✓
1.1.1, 1.1.3	Thrive: Neighborhoods	2	Develop a health and wellness center through a public-private partnership adjacent to the Frankford Transportation Center.	29				✓	✓
1.1.1	Thrive: Neighborhoods	3	Support the efforts of Friends Hospital to open a Federally Qualified Health Center on its campus at Adams Avenue and the Boulevard.	29				✓	✓
1.1.2, 1.1.3, 4.1.3	Thrive: Neighborhoods	4	On the Frankford Avenue commercial corridor, consolidate commercial development around the Church, Margaret-Orthodox, and Frankford Transportation Center Stations.	30				✓	✓
1.1.2, 1.1.3	Thrive: Neighborhoods	5	Rezone commercial properties along the Castor Avenue Commercial Corridor between Robbins Street and Unruh Avenue from CA-1 (Commercial Auto-Oriented), CMX-1 (Commercial Mixed-Use), and CMX-2 to CMX-2.5 to increase density and encourage mixed uses.	30	✓			✓	✓
1.1.2	Thrive: Neighborhoods	6	Work with businesses to create management organizations for the Castor Avenue and Rising Sun Commercial Corridors.	30					✓
1.2.1	Thrive: Neighborhoods	7	Preserve single-family building stock.	32					✓
1.2.2, 1.2.3	Thrive: Neighborhoods	8	Develop multifamily housing above stores along the Castor Avenue commercial corridor.	32					✓
1.2.2, 1.2.3	Thrive: Neighborhoods	9	Develop live/work housing in East Frankford and along the Frankford Creek in formerly industrial buildings and along the Frankford Avenue commercial corridor.	32				✓	✓
1.2.1, 1.2.2	Thrive: Neighborhoods	10	Market home improvement resources to help homeowners maintain their homes and attract partners for the City's Home Buy Now Program.	32					✓
1.2.1, 1.2.2, 1.2.3	Thrive: Neighborhoods	11	Conduct a detailed study of the housing stock in Frankford.	32					✓
2.2.2	Thrive: Economic Development	12	Work with the PIDC (Philadelphia Industrial Development Corporation) to find a viable industrial user for the vacant site at 5000 Summerdale Avenue, across from the Houseman Recreation Center.	35					✓
2.2.2	Thrive: Economic Development	13	Rezone industrial properties in East Frankford to reduce uses that are incompatible with residential areas, encourage small-scale industry, and allow for the growth of industrial-residential and industrial-commercial mixed uses.	35					✓
2.3.2, 7.2.3	Thrive: Economic Development	14	Support the NSA's (Naval Support Activity) master planning efforts in order to better integrate the complex with the surrounding neighborhoods and encourage innovative solutions to stormwater management.	35					✓
2.3.2	Thrive: Economic Development	15	Relocate the NSA's tractor trailer entrance from its current location on Tabor Avenue to the intersection of Godfrey and Whitaker Avenues to remove truck traffic from residential areas.	35	✓				✓

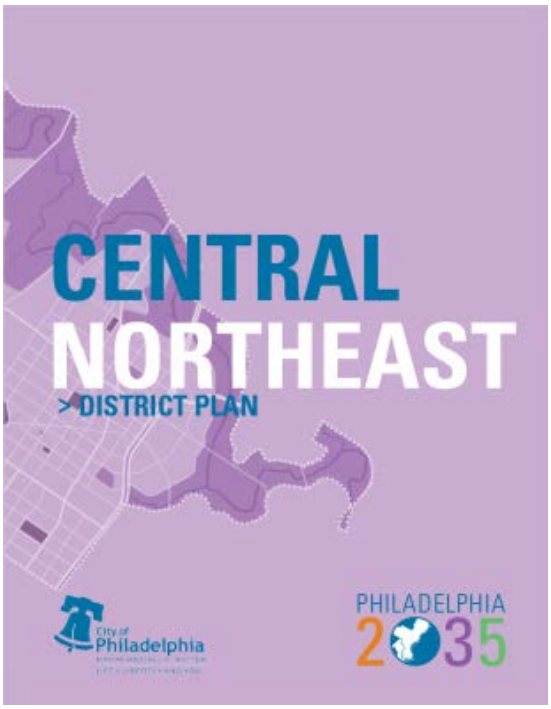
Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
3.1.3, 3.2.1	Thrive: Land Management	16	Decrease the amount of vacant land in Frankford with focused public resources and policies.	36					✓
3.1.2	Thrive: Land Management	17	Prevent further abandonment and vacancy in Frankford by focusing public safety improvements, such as improved lighting and more frequent street and sidewalk cleaning, on the following areas: long the Frankford Avenue commercial corridor, and along streets that directly connect to El stations.	36	✓				✓
4.1.1	Connect: Transportation	18	Complete an analysis to understand the evolving travel patterns in Northeast Philadelphia and the immediate suburbs in Bucks and Montgomery Counties.	38	✓	✓	✓	✓	✓
4.1.1	Connect: Transportation	19	Complete a Corridor Study to determine the best options for transforming Roosevelt Boulevard into a multimodal corridor with expanded transit service, automobile circulation improvements, and pedestrian and bicycle upgrades.	38	✓	✓	✓	✓	✓
4.1.1	Connect: Transportation	20	Complete a feasibility study for an extension of the Market-Frankford El along Bustleton Avenue to a new terminus at the intersection of Roosevelt Boulevard, Bustleton Avenue, and Levick Street.	38		✓	✓		✓
4.1.1	Connect: Transportation	21	Employ Transit First strategies to improve the Route 66 trackless trolley. Expand this program to other routes in order to increase transit ridership and mobility.	38		✓	✓		✓
4.2.1, 4.2.2, 4.2.3	Connect: Transportation	22	Implement Pedestrian and Bicycle Plan recommendations to improve sidewalks and bicycle routes, prioritizing commercial corridors and streets that directly Connect to El stations.	40	✓	✓	✓	✓	✓
4.2.1, 4.2.2, 4.2.3, 4.3.4	Connect: Transportation	23	Improve pedestrian and bicycle facilities on Roosevelt Boulevard by constructing a shared-use side path on one or both sides of the Boulevard.	40	✓	✓	✓	✓	✓
4.2.2	Connect: Transportation	24	Improve pedestrian accommodations along Adams Avenue from Rising Sun Avenue to Crescentville Road.	40	✓		✓	✓	✓
4.2.3 , 4.3.1	Connect: Transportation	25	Realign the intersection of Oxford and Frankford Avenues in order to simplify pedestrian and auto circulation and create a welcoming entrance plaza at Margaret-Orthodox Station.	40	✓	✓	✓	✓	✓
4.2.1, 4.2.2, 4.2.3	Connect: Transportation	26	Remove from the City Plan the following unimproved streets: Adams Avenue from Torresdale Avenue to Paul Street and Imogene Street from Orchard Street to Paul Street.	40					
4.2.1, 4.2.2, 4.2.3	Connect: Transportation	27	Add diagonal parking on Devereaux Avenue from Hasbrook Avenue to Newtown Avenue in order to increase commuter parking for the Lawndale Regional Rail Station.	40					
6.1.2, 6.1.3, 7.2.2	Renew: Open Space	28	Complete the extension of the Tacony Creek trail from Roosevelt Boulevard to I and Ramona Streets at Juniata Park. Include stream bank restoration and stormwater management infrastructure where feasible.	42			✓		✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
6.1.2, 6.1.3, 6.2.1, 6.3.2, 7.2.2	Renew: Open Space	29	Create a greenway along both sides of the Frankford Creek from Castor Avenue to Torresdale Avenue, complete with a recreational trail, riparian buffer, and stormwater management infrastructure where space permits. Connect the greenway to historic Womrath Park in order to link the recreational trail network to Frankford Avenue's shopping and transportation.	42			✓		✓
6.1.2, 7.2.2	Renew: Open Space	30	Conduct a feasibility study for Connecting the Frankford Creek greenway and trail from Torresdale Avenue to the Delaware River waterfront to link with the developing North Delaware Greenway. Consider on-street Connections where necessary.	42			✓		✓
6.1.2, 6.3.2	Renew: Open Space	31	Conduct a feasibility study for the Tacony/Pennypack Connector trail along the PECO right-of-way to Connect Tacony Creek Park with Pennypack Park.	42			✓		✓
6.3.3, 3.1.3	Renew: Open Space	32	Expand recreation amenities at McIlvain Recreation Center by including indoor recreation and fitness facilities as part of the proposed health and wellness center adjacent to the Frankford Transportation Center.	43					✓
6.3.1, 6.3.3	Renew: Open Space	33	Renovate Hedge Street Playground in Frankford.	43					✓
6.3.1, 7.1.3, 7.2.3	Renew: Environmental Resources	34	Increase green space through the use of green stormwater management infrastructure at select neighborhood schools and Hedge Street Playground.	44					✓
6.3.2, 7.2.3	Renew: Environmental Resources	35	Convert Cranford Street in Oxford Circle from a local street to a "green alley" Connecting Tarken Recreation Center to the Castor Avenue Commercial Corridor. Include green stormwater infrastructure to capture stormwater runoff where appropriate.	44	✓				✓
7.2.3	Renew: Environmental Resources	36	Maximize the use of innovative, green stormwater management infrastructure to manage stormwater runoff from properties within the Lawncrest Industrial District.	44					✓
7.3.1	Renew: Environmental Resources	37	Increase the tree canopy in the Lower Northeast, prioritizing select streets, publicly owned properties and cemeteries.	44					✓
8.1.1	Renew: Historic Preservation	38	Develop historic preservation plans that include zoning recommendations, conservation tools, and recommended historic designations for the Frankford Industrial Village, Rural Oxford Township, and Lower Northeast Suburban Development Thematic Historic Districts.	46					✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
8.1.1, 8.1.2, 8.1.3	Renew: Historic Preservation	39	Prioritize the preservation and rehabilitation of select buildings and sites through local historic designation, adaptive reuse, and increased awareness.	46					✓
8.1.1	Renew: Historic Preservation	40	Protect the character of the Northwood neighborhood.	46					✓
8.2.1	Renew: Historic Preservation	41	Develop a historic walking tour of Frankford to highlight its history as a major industrial center.	46					✓
9.2.2	Renew: Public Realm	42	Create attractive and functional pedestrian plazas at the following areas of high pedestrian activity: in front of Frankford Transportation Center and at the intersection of Oxford and Frankford Avenues.	49	✓		✓		✓
9.2.1, 9.2.2	Renew: Public Realm	43	Improve the appearance, safety, and usability of Frankford Avenue.	49	✓	✓	✓		✓
9.2.2, 9.2.3	Renew: Public Realm	44	Initiate public realm improvements in the Frankford Gateway Focus Area.	49	✓		✓		✓
9.2.1	Renew: Public Realm	45	Develop a form-based zoning overlay for the Frankford Avenue Corridor so that redevelopment and infill development fronting the Market-Frankford El is required to have additional ground- and upper-floor setbacks.	49					✓

3. Central Northeast District Plan (2014, Philadelphia City Planning Commission)

Study Purpose and Highlights



The purpose of the *Central Northeast District Plan* is to apply the general objectives mentioned in the *Philadelphia 2035 Citywide Vision* to district-specific, local recommendations. The plan covers approximately 6.5 square miles that includes the neighborhoods of Fox Chase, Bells Corner, Burholme, Rhawnhurst, Lexington, Lawndale, Castor Gardens, Upper Northwood and most of Pennypack Creek Park (Figure 7, page 28).

Most of the 1,600 acres of Pennypack Park is located in this District, and Roosevelt Boulevard traverses from the southeast to northeast section of the Central Northeast District. This District is home to several important commercial corridors, including 1.6 million square feet of commercial space located at Cottman Avenue and Roosevelt Boulevard.

The District is culturally diverse and boasts a high foreign-born population percentage that is nearly double the percentage of the City of Philadelphia as whole.

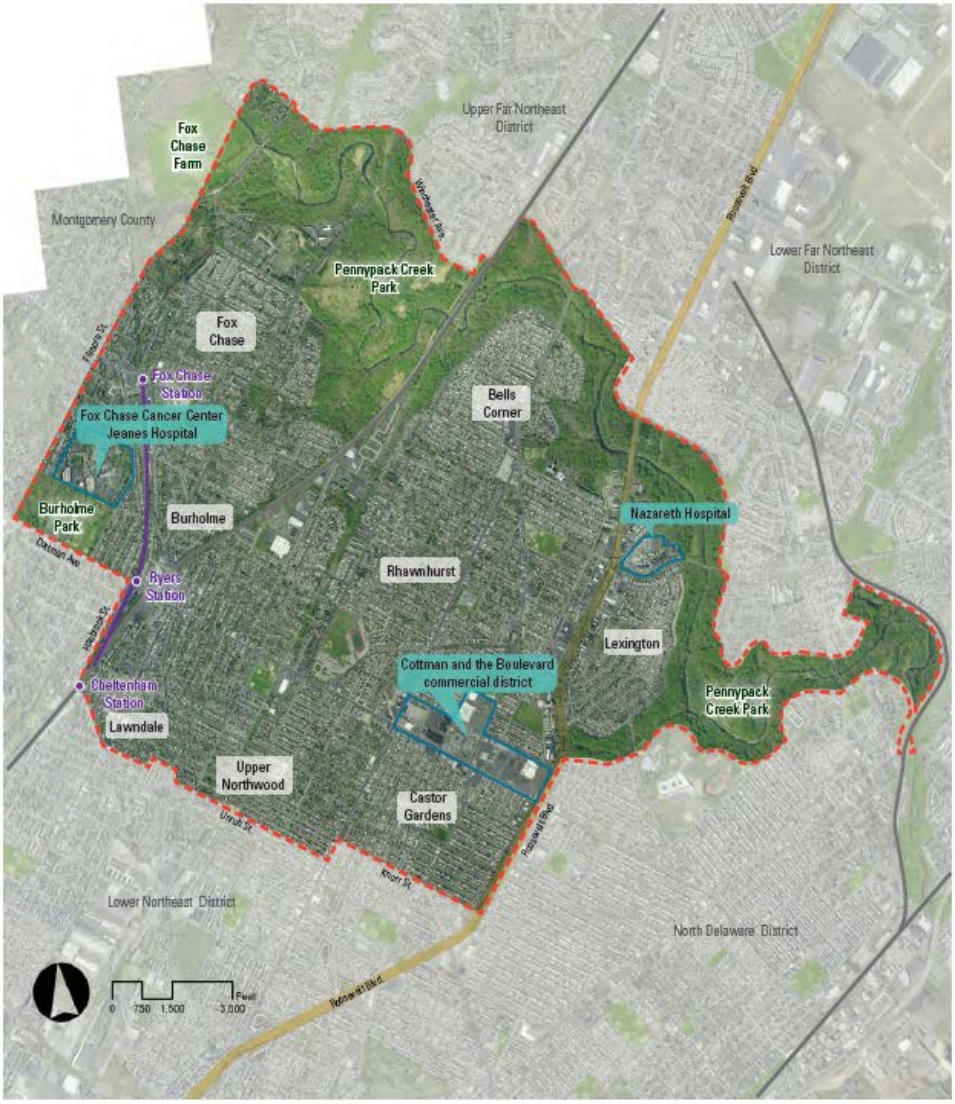
This *District Plan*, like each of the 17 others in the City, is meant to accomplish eight goals:

- **Advance the goals and recommendations of the *Philadelphia 2035 Citywide Vision***;
- Guide the City's **zoning remapping process** with proposals for revisions;
- Identify **geographic focus areas** for intensive planning and investment;
- Make recommendations for **capital investments in City facilities**, such as libraries and playgrounds;
- **Enhance the public realm** through improvements to public spaces;
- **Improve community health** with better access to healthy foods and physical activity opportunities;
- **Coordinate neighborhood plans**, by consulting past plans and setting priorities for future plans; and
- **Involve the public** with meaningful citizen engagement processes.

Proposed Recommendations

The *Central Northeast District Plan* provides detailed illustrations and explanatory text that allow readers to envision what the District could look like if recommendations are implemented.

Figure 7: Central Northeast District Plan Study Area (Source: PCPC)



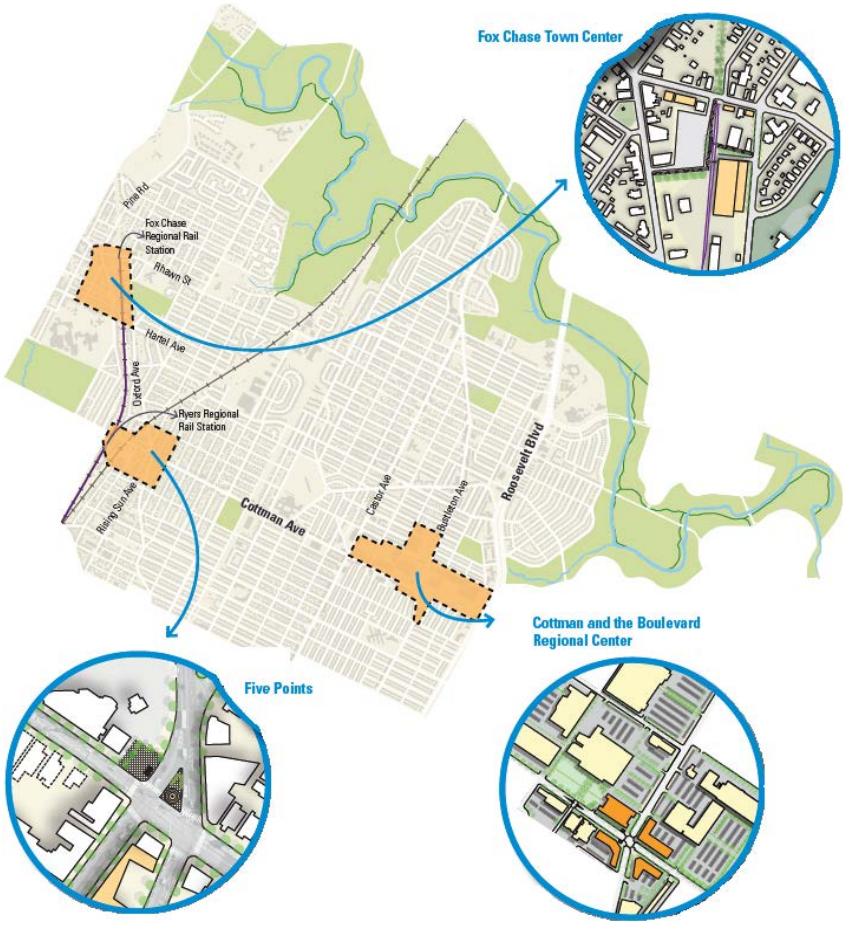
As with all *District Plans*, the recommendations are organized into three forward-thinking themes (Thrive, Connect, Renew), described by nine planning elements (Neighborhoods, Economic Development, Land Management, Transportation, Utilities, Open Space, Environmental Resources, Historic Preservation, and the Public Realm). These are arranged into topics which are further supported by a specific goal achievable through objectives and strategies.

These *District Plan* recommendations are described in more detail in the following section of this summary. Generally, the *District Plans* are focused on a shorter time frame than the 25-year *Philadelphia 2035 Citywide Vision* with some of the recommendations being early action items that lay the foundation for longer-term proposals. Many of the *District Plan's* recommendations relate directly to Roosevelt Boulevard – the infrastructure of the cartway, medians, traffic and pedestrian signals, and sidewalks – and to the homes, businesses, and City facilities in close proximity to it. Other recommendations relate to topics that are important to the Central Northeast, but are indirectly related to the Route for Change Program, such as historic preservation, support for tourism, and improvements to utilities, such as broadband and wireless.

As with the *Lower Northeast District Plan*, the *Central Northeast District Plan* identifies three **geographically targeted, priority planning areas** that are the focus of the plan's written recommendations (Figure 8, page 29).

Focus area sites are identified in each *District Plan* because they have underutilized land, inappropriate zoning classifications, or both. They have been identified as opportunity areas by the PCPC staff and community members and are strategically located so that their improvement will benefit the entire district. For this *District Plan*, Cottman and the Boulevard Regional Center, Fox Chase Town Center, and Five Points have been selected as focus areas.

Figure 8: Central Northeast District Focus Areas (Source: PCPC)



Cottman and the Boulevard Regional Center

The goal of the Cottman and the Boulevard Regional Center focus area is to **transform a shopping area into a vibrant town center**, supporting the *Philadelphia 2035 Citywide Vision* element 2.1: Metropolitan and Regional Centers.

The regional center is bounded on one edge by Cottman Avenue, which carries the **highest volumes of vehicular traffic and transit service in the Central Northeast**, making it a highly visible route for shoppers and commuters. The southern end of the Regional Center (occupied by Roosevelt Mall) abuts Roosevelt Boulevard. The large number of major roadways and bus and trolley routes in the area provide excellent access for regional and local customers.

Key recommendations for Cottman and the Boulevard Regional Center include:

- **Increase pedestrian safety** and establish a business/community-based association: coordinate streetscape improvements (paving, crosswalks, sidewalks, lighting, signs

security features, landscaping); activate the area during non-peak hours by holding special events; and acknowledge pedestrian "desire lines" by using **strategic landscaping to connect sidewalks to store entrances** (Figure 9).

Figure 9: Rendering of Pedestrian Crossing Improvements at Cottman Avenue and Oakland Street (Source: PCPC)

- Increase transit amenities and improve storefronts: **explore opportunity sites that support transit accessibility** and mixed-uses; rezone for a commercial mixed-use district; and **advocate for an attractive and convenient Cottman Avenue station** as part of plans for faster and more frequent transit service along Roosevelt Boulevard.
- Create a mixed-use regional center**: improve access to community serving uses** in the Northeast Regional Library and Health Center #10; and promote façade, signage, and landscape improvements on private property.

Fox Chase Town Center

The goal of the Fox Chase Town Center focus area is to **integrate transit, retail and recreation** to improve walkability and promote transit-oriented development. The goal falls under the *Citywide Vision* element 1.1.3: Strengthen neighborhood centers by promoting transit-oriented development around stations.

The Fox Chase Station is adjacent to bus stops, commercial and community activities which enhance walkability and convenience, but the area still needs improved streetscapes and pedestrian connections to better connect the Fox Chase Station with the village center and public-serving facilities. Fox Chase Town Center is located approximately 2.5 miles northwest of Roosevelt Boulevard.

Recommendations for Fox Chase Town Center include:

- Strengthen Fox Chase and its neighbor Rockledge in Montgomery County as a neighborhood center: **encourage redevelopment of underutilized properties** for mixed-use commercial and for parking to support town center establishments, residents and transit riders; rezone to commercial mixed-use CMX 2.5 to emphasize retention and development of mixed-use

building that front directly on the sidewalk; and support the efforts of local community and business associations to **beautify the commercial corridor**.

- **Improve streetscapes and pedestrian connections**: upgrade transit-related signs and building façades by reducing curb cuts and better managing stormwater and accessory signs along Rhawn Street; and clear pedestrian routes to and through the Fox Chase train station to increase safety and enhance walkability.

Five Points

Five Points focus area, comprised of the core blocks of Cottman, Rising Sun, and Oxford Avenues, is a distinctive historic area with positive features such as the local landmark Honor Square War Memorial, anchor stores, and multiple transit nodes. It is located approximately 2 miles from Roosevelt Boulevard.

The goal of identifying the Five Points focus area is to **bring a unified streetscape to a complex intersection**, element 1.1.2 of the *Citywide Vision* 1.1.2: Strengthen neighborhood centers by developing viable commercial corridors.

Five Points contains several newer, modern anchor stores. Recent improvements to Ryers Station and the CSX bridge create an attractive and functional area.

Recommendations for the Five Points focus area include:

- **Improve the public realm**: emphasize development that is compatible with the traditional neighborhood commercial corridor and holds the street line without setbacks; establish and maintain a locally-based organization that can manage initiatives to revitalize the commercial corridor; and **utilize pedestrian-friendly signals and marking**s.
- **Support residential living above stores on transit-served commercial corridors**: promote storefront improvements that are compatible with residential uses on upper floors.
- Implement transit amenities and improvements: **add bus shelters and evaluate stop locations** at Oxford and Rising Sun Avenues; and **give buses priority through signalized intersections** along Cottman Avenue.
- Redesign Honor Square War Memorial: restore the landmark Honor Square War Memorial; reduce visual clutter; evaluate traffic flow to make area more pedestrian friendly; and **add landscaping and seating areas to reinforce the sense of place.**

Public Involvement Process

The *Central Northeast District Plan* was written with input from the public obtained in **three community meetings** in July, September, and December 2013. Each public meeting had a separate theme, the second and third building on previous meetings.

The first meeting emphasized **"building on our strengths"**: the planning process and its link to the larger *Citywide Vision* and existing demographic, economic, and physical conditions of the District. Interactive mapping and discussion helped identify planning focus / opportunity areas and expectations for change in the coming ten years. Consensus was not a goal of the exercises and differences of opinion were noted.

The second meeting emphasized **geographic focus areas in the District**. Attendees learned about existing conditions at the Fox Chase Town Center and the Five Points War Memorial Intersection, then participated in an interactive exercise to prioritize pedestrian, vehicular and transit concerns for these areas. Similar efforts were made to consider improvements to the Cottman and Boulevard Shopping Center Area.

The third meeting was devoted to review of **draft recommendations**. Again, consensus was not the purpose and all participant comments and preferences were noted.

As with the *Citywide Vision*, every theme of the Route for Change program is supported in the *Central Northeast District Plan* with multiple recommendations in the final version.

Relevance to Route for Change Program

The *Central Northeast District Plan* identifies 36 recommendations that reflect the goals and strategies described in the *Citywide Vision*. Recommendations that directly align with the Route for Change Program themes of Safety, Reliability, Accessibility, Opportunity, and Livability are identified with a checkmark underneath the theme.

Eight priority recommendations identified in the *District Plan* include:

- Strengthen Fox Chase/Rockledge as a neighborhood center.
- Support the viable commercial nodes on both Castor and Bustleton Avenues that serve Castor Gardens and Rhawnhurst.
- Preserve single-family housing stock through zoning and marketing of home improvement resources including incentives for home rehabilitation. Promote retrofits to improve energy efficiency.
- Strengthen Cottman and the Boulevard as a competitive regional center.
- Implement the recommendations of DVRPC's *Alternatives Development for Roosevelt Boulevard Transit Enhancements* study in order to incrementally transform Roosevelt Boulevard into a multi-modal corridor with expanded transit service, automobile circulation improvements, and pedestrian and bicycle upgrades.
- Add bus shelters and evaluate stop locations at high volume bus stops such as: Rhawn Street and Roosevelt Boulevard, Cottman Avenue and Roosevelt Boulevard, Oxford and Rising Sun Avenues.

- Expand Transit First initiatives along Castor Avenue for Route 59 and Cottman Avenue for Routes 67, 70, 77, and 88.
- Update the 2001 *Pennypack Park Trail Master Plan*.
- Enhance the architectural integrity of commercial corridors that reflect the unique concentration, identity, and place-making value of mid-century modern architecture.
- Redesign Honor Square at Five Points.

Of the 36 recommendations in the *Central Northeast District Plan*, the following 11 recommendations were selected as being the most relevant to the Route for Change Program (highlighted in Table 3, page 35):

- Strengthen Cottman and the Boulevard as a competitive regional center.
    - Reason: Encourages growth and development in district, may generate public-private partnerships to develop pedestrian facilities, will increase pedestrian safety and **create a more visually attractive destination for drivers and pedestrians**.
- Implement the recommendations of DVRPC's Alternatives Development for Roosevelt Boulevard Transit Enhancements study in order to incrementally transform Roosevelt Boulevard into a multimodal corridor with expanded transit service, automobile circulation improvements and pedestrian and bicycle upgrades.
    - Reason: Draft study completed by DVRPC in January 2016; study will be used to inform EBS (enhanced bus service) phase for Route for Change Program.
- Add bus shelters and evaluate stop locations at high volume bus stops such as: Rhawn Street and Roosevelt Boulevard, Cottman Avenue and Roosevelt Boulevard, and Oxford and Rising Sun Avenues.
    - Reason: **Accommodates the needs of all transit passengers safely and comfortably**, allows efficient and cost-effective transit operations, connects residents and visitors to the community, improves service and attracts riders.
- Implement high-priority bicycle network improvements as identified in PCPC's *Pedestrian and Bicycle Plan* (2013), including Glendale Avenue from Castor Avenue to Roosevelt Boulevard.
    - Reason: Completes key gaps in the bicycle network and improves overall surface quality, expands on- and off- street networks serve bicyclists, improves safety for pedestrians and bicyclists and **reduces pedestrian and bicycle crashes**.
- Construct a sidepath on the east side of the Boulevard as proposed in PCPC's *Pedestrian and Bicycle Plan* and the *Philadelphia Trails Master Plan*.
    - Reason: **Completes key gaps in the bicycle network and improves overall surface quality**, expands on- and off- street networks serve bicyclists, improves safety for pedestrians and bicyclists and reduces pedestrian and bicycle crashes.
- Install additional traffic signals on Cottman Avenue at the intersection with Leonard Street and develop a study designed to improve pedestrian, transit, and vehicular movement at the Cottman and the Boulevard shopping center entrance opposite Health Center #10.
    - Reason: Improves pedestrian connections across major rights-of-way, reduces travel times, **increases access to opportunities**, and increases overall pedestrian safety.
- Replace and upgrade sidewalks and street trees along the Cottman, Bustleton, Castor, Oxford and Rising Sun Avenue commercial corridors.

    - Reason: Completes key gaps in the sidewalk network and improves overall surface quality, **expands on- and off- street networks to serve pedestrians**, increases overall pedestrian safety, increases access to opportunities.
- Conduct a feasibility study for the Tacony/Pennypack Connector trail along the PECO right-of-way to connect Tacony Creek Park with Pennypack Park.
    - Reason: Creates a corridor network that **connects parks, neighborhoods, major public facilities and trails citywide**.
- Improve the public realm through well-marked curb cuts, sidewalks, driveways, and refuge islands in order to improve walkability. (Cottman Avenue sidewalks from Roosevelt Boulevard to Castor Avenue, Cottman Avenue and Oakland Street intersection, Bustleton Avenue and Castor Avenue intersection)
    - Reason: Preserves the walkable scale of the city, completes key gaps in the sidewalk network, improves safety for pedestrians and reduces pedestrian crashes, **encourages growth and development of Regional Centers**, strengthens neighborhood centers.
- Evaluate traffic flow on Roosevelt Boulevard, the Focus Areas and along other commercial corridors to make area streets and sidewalks more pedestrian friendly.
    - Reason: Preserves the walkable scale of the city, completes key gaps in the sidewalk network, **improves safety for pedestrians and reduces pedestrian crashes**, encourages growth and development of Regional Centers, strengthens neighborhood centers.
- Provide gateways at a number of locations in the Central Northeast District, including Roosevelt Boulevard and Cottman Avenue.
    - Reason: **Creates welcoming, well-designed public spaces and corridors**, attracts residents, visitors and businesses to area.

Table 3: Central Northeast District Plan Recommendations

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
1.1.2	Thrive: Neighborhoods	1	Strengthen Fox Chase/Rockledge Focus Area as a neighborhood center.	48					✓
1.1.2	Thrive: Neighborhoods	2	Improve the public realm at Five Points.	48				✓	✓
1.1.2	Thrive: Neighborhoods	3	Create a welcoming and fully active commercial node at the intersection of Bustleton and Castor Avenues in Bell's Corner.	48				✓	✓
1.1.2	Thrive: Neighborhoods	4	Support the viable commercial nodes on both Castor and Bustleton Avenues that serve Castor Gardens and Rhawnhurst.	48				✓	✓
1.2.1	Thrive: Neighborhoods	5	Preserve single family housing stock through zoning and marketing of home improvement resources including incentives for home rehabilitation (see text box below). Promote retrofits to improve energy efficiency.	49	✓			✓	✓
1.2.2	Thrive: Neighborhoods	6	Support residential living above stores on transit-served commercial corridors and promote storefront improvements that are compatible with residential uses on upper floors.	49					✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
1.2.2	Thrive: Neighborhoods	7	Support a wider mix of new housing types to serve changing markets. This should include modern apartments or condominiums that offer a mix of uses and units. Potential markets include seniors, aging-in-place programs and accessory housing, as well as modern condominiums and apartments that offer younger households low maintenance living.	49					✓
2.1.3	Thrive: Economic Development	8	Strengthen Cottman and the Boulevard as a competitive regional center.	50					✓
2.3.1	Thrive: Economic Development	9	Rezone Jeanes Hospital and Nazareth Hospital to a Special Purpose Institutional district (SP-INS).	51				✓	✓
6.3.1, 6.3.3, 8.1.7	Thrive: Economic Development	10	Encourage Central Northeast schools to increase availability for recreation and community meetings.	51					✓
2.4.2	Thrive: Economic Development	11	Create and bolster existing cultural facilities along commercial corridors and neighborhood centers. Incentivize sponsorship of programs by existing businesses.	51				✓	✓
2.4.2	Thrive: Economic Development	12	Support Pennypack Creek Park Amphitheater and Ryerss Museum with enhanced programming and sponsorship.	51					✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
4.1.1	Connect: Transportation	13	Implement the recommendations of DVRPC's *Alternatives Development for Roosevelt Boulevard Transit Enhancements* study in order to incrementally transform Roosevelt Boulevard into a multimodal corridor with expanded transit service, automobile circulation improvements, and pedestrian and bicycle upgrades.	52	✓	✓	✓	✓	✓
4.1.1	Connect: Transportation	14	Increase parking at Regional Rail Stations.	52			✓		
4.1.1	Connect: Transportation	15	Add bus shelters and evaluate stop locations at high volume bus stops such as: Rhawn Street and Roosevelt Boulevard, Cottman Avenue and Roosevelt Boulevard, and Oxford and Rising Sun Avenues.	52	✓	✓	✓		
4.1.1	Connect: Transportation	16	Expand Transit First programs along Castor Avenue for route 59 and Cottman Avenue for routes 67, 70, 77 and 88.	52	✓	✓	✓		
4.2.2	Connect: Transportation	17	Implement high-priority bicycle network improvements as identified in PCPC's *Pedestrian and Bicycle Plan* (2013).	55	✓	✓	✓	✓	
4.2.2	Connect: Transportation	18	Explore an additional bicycle and pedestrian linkage across the CSX right-of-way near Napfle Avenue.	55	✓		✓		

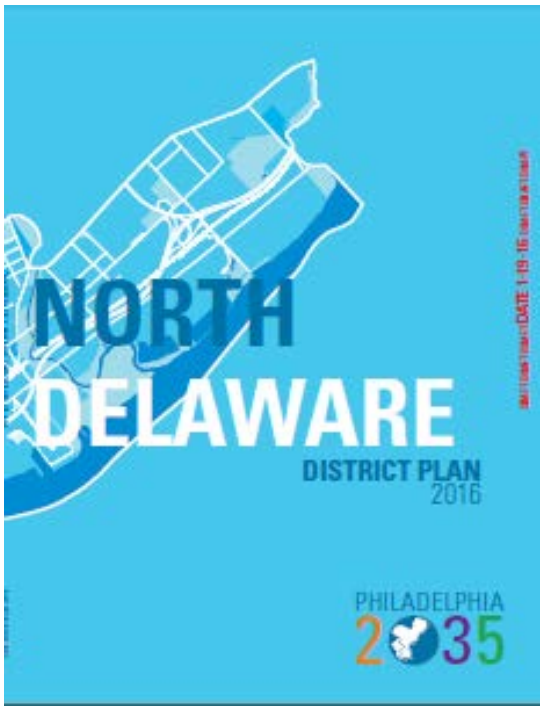
Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
4.2.2	Connect: Transportation	19	Construct the sidepath on the east side of the Roosevelt Boulevard as proposed in PCPC's *Pedestrian and Bicycle Plan* and the *Trails Master Plan* (2013).	55	✓		✓	✓	
4.3.4	Connect: Transportation	20	Install additional traffic signals on Cottman Avenue at the intersection with Leonard Street and develop a study designed to improve pedestrian, transit, and vehicular movement at the Cottman and the Boulevard shopping center entrance opposite Health Center #10.	55	✓		✓	✓	
4.2.2	Connect: Transportation	21	Complete sidewalks and bike lane segments on Oxford Avenue from Shelmire Street to Hartel Street and on Verree Road through Pennypack Park.	55	✓		✓		
4.2.2	Connect: Transportation	22	Replace and upgrade sidewalks and street trees along the Cottman, Bustleton, Castor, Oxford and Rising Sun Avenue commercial corridors.	55					✓
6.3.3	Renew: Open Space	23	Ensure that Pennypack Park is maintained in a state of good repair.	56					✓
6.1.2, 6.2.1, 4.2.2	Renew: Open Space	24	Complete the Fox Chase Lorimer Park Trail as prioritized by the Trail Master Plan.	56			✓		✓
6.1.1, 6.3.3, 7.2.1, 7.2.2	Renew: Open Space	25	Update the 2001 Pennypack Park Trail Master Plan.	56			✓		✓
6.1.2, 6.3.2	Renew: Open Space	26	Conduct a feasibility study for the Tacony/ Pennypack Connector trail along the PECO right-of-way to Connect Tacony Creek Park with Pennypack Park.	56			✓		✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
6.3.	Renew: Open Space	27	Provide needed improvements to public recreation facilities at Fox Chase Recreation Center, Pelbano Playground, Jardel Recreation Center, and Burholme Park.	57					✓
7.1.3, 7.2.3, 9.1.1	Renew: Environmental Resources	28	Install stormwater management infrastructure to control stormwater runoff from large commercial, institutional, and industrial sites. Encourage owners of large sites that face increased PWD stormwater fees to consider parcel reinvestment strategies that improve stormwater management and reduce stormwater fees.	58					✓
7.1.3, 7.2.3, 9.1.1	Renew: Environmental Resources	29	Increase the tree canopy in the Central Northeast, prioritizing select locations.	58					✓
8.1.1, 8.1.2, 8.1.3	Renew: Historical Preservation	30	Nominate a number of historic resources of extraordinary value to the Philadelphia Register of Historic Places.	59					✓
8.1.1, 8.1.2, 8.1.3	Renew: Historical Preservation	31	Enhance the architectural integrity of commercial corridors that reflect the unique concentration, identity, and place-making value of mid-century modern architecture.	59					✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
9.1.1	Renew: Public Realm	32	Improve the public realm through well-marked curb cuts, sidewalks, driveways, and refuge islands in order to improve walkability at Cottman Avenue sidewalks from Roosevelt Boulevard to Castor Avenue, Cottman Avenue and Oakland Street Intersection, and Bustleton Avenue and Castor Avenue intersection.	61	✓		✓	✓	✓
9.2.1, 9.2.2, 9.2.3, 9.2.4	Renew: Public Realm	33	Redesign Honor Square at Five Points.	61	✓		✓	✓	✓
9.1.1	Renew: Public Realm	34	Improve the streetscape at the locations where commercial corridors transition to well-maintained residential blocks.	61	✓	✓	✓		✓
7.1.3, 7.2.3, 9.1.1	Renew: Public Realm	35	Evaluate traffic flow on Roosevelt Boulevard, the Focus Areas and along other commercial corridors to make area streets and sidewalks more pedestrian friendly.	61	✓		✓		✓
7.1.3, 7.2.3, 9.1.1	Renew: Public Realm	36	Provide gateways at the following locations: Verree and Susquehanna Roads; Five Points; intersection of Bustleton and Castor Avenues; Roosevelt Boulevard and Cottman Avenue. Propose new gateways at the following locations: Castor and Cottman; Solly Avenue at proposed PECO right-of-way recreation trail; Tyson Avenue at proposed PECO recreation trail; entrance to proposed trail near Rhawn and Rockwell Streets.	61				✓	✓

4. North Delaware District Plan (DRAFT, 2016, Philadelphia City Planning Commission)

Study Purpose and Highlights



The purpose of the *North Delaware District Plan* is to apply the general objectives outlined in the *Philadelphia 2035 Citywide Vision* to geographically-specific, local recommendations for the North Delaware District. The plan covers approximately 9.8 square miles, including the neighborhoods of East Torresdale, Holmesburg, Mayfair, Tacony, Upper Holmesburg and Wissanoming (Figure 10, page 42).

Roosevelt Boulevard travels along the northern boundary of the Mayfair neighborhood in the western section of the North Delaware district of the City of Philadelphia.

This *District Plan*, like the other 17 in the City, is meant to accomplish eight goals:

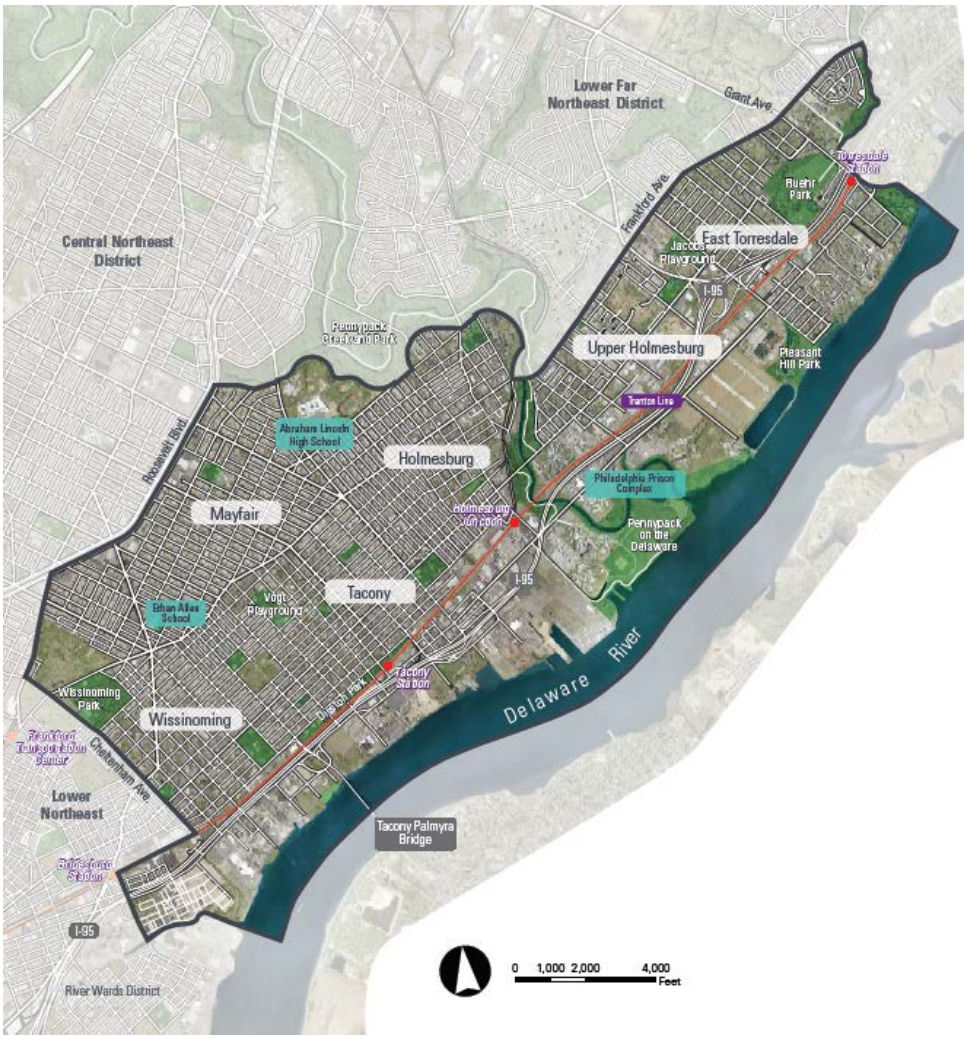
- Advance the **goals and recommendations of the *Philadelphia 2035 Citywide Vision***;
- Guide the City's **zoning remapping process** with proposals for revisions;
- Identify **geographic focus areas** for intensive planning and investment;
- Make recommendations for **capital investments in City facilities**, such as libraries and playgrounds;
- **Enhance the public realm** through improvements to public spaces;
- **Improve community health** with better access to healthy foods and physical activity opportunities;
- **Coordinate neighborhood plans**, by consulting past plans and setting priorities for future plans; and
- **Involve the public** with meaningful citizen engagement processes.

The *North Delaware District Plan* provides detailed illustrations and compelling text that allows readers to envision what the District could look like if recommendations are implemented.

Proposed Recommendations

As with all *District Plans*, recommendations are organized into three principal themes (Thrive, Connect, Renew), described by nine planning elements (Neighborhoods, Economic Development, Land Management, Transportation, Utilities, Open Space, Environmental Resources, Historic Preservation, and the Public Realm). These are arranged into topics which are further supported by specific goals achievable through objectives and strategies.

Figure 10: North Delaware District Study Area (Source: PCPC)



These *District Plan* recommendations are described in more detail in the following section of this summary. Generally, the *District Plans* are focused on a shorter time frame than the 25-year *Philadelphia 2035 Citywide Vision* with some of the recommendations being early action items that lay the foundation for longer-term proposals. Many of the *District Plan's* recommendations relate directly to Roosevelt Boulevard – the infrastructure of the cartway, medians, traffic and pedestrian signals, and sidewalks – and to the homes, businesses, and City facilities in close proximity to it. Other recommendations relate to topics that are important to the Central Northeast, but are indirectly related to the Route for Change Program, such as historic preservation, support for tourism, and improvements to utilities, such as broadband and wireless.

As with the *Lower Northeast* and the *Central Northeast District Plans*, the *North Delaware District Plan* identifies three **geographically-targeted, priority planning areas** that are the focus of specific recommendations in the plan.

Focus area sites are identified the *District Plan* because they have underutilized land, inappropriate zoning classifications, or both. They have been identified as opportunity areas by the PCPC staff and community members and are strategically located so that their improvement will benefit the entire district.

For this *District Plan*, the Industrial Waterfront and the area of Liddonfield and Upper Holmesburg have been designated Focus Areas. In addition the Mayfair Business Improvement District has been identified as important to District development.

Industrial Waterfront

The goals identified for the Industrial Waterfront is to **combine open space and recreational amenities with future development that supports employment-generating land uses**. Currently, the industrial waterfront contains acres of vacant and underutilized property. But its proximity to I-95 and regional rail lines supports access by truck transportation and transit, while keeping the industrial area separate from residential locations. The area is located approximately one mile south of the Boulevard.

Current recommendations for the Industrial Waterfront focus area include:

- Encourage employment on the waterfront: remediate industrial land where contamination exists; and **encourage a mix of light industrial, office, and commercial land uses** between Disston Street and Cottman Avenue.
- **Enhance ridership and service at Tacony Regional Rail Station**: improve bicycle and pedestrian access to enhance access; provide station amenities to promote transit use and safety and comfort; explore potential relocations or expansions that will enable ADA accessibility; and provide additional parking and sheltered bicycle parking with access to the waterfront and surrounding neighborhoods.
- Reactivate industrial land along the waterfront: **preserve existing historic structures**; create spaces for new office and light industry; and initiate more detailed follow-up studies on reuse feasibility, phasing, and finance with a mixed-use employment center at Disston Mills.
- Encourage new public streets along the Delaware River waterfront: create new street alignment parallel to the Delaware River between Milnor Street and Levick Street; reestablish Magee Avenue and Disston Street to connect residents and visitors to the waterfront; and **coordinate future gateway improvements with potential stormwater infrastructure** on Magee, Unruh, and Longshore Avenues.

Liddonfield and Upper Holmesburg

The goal of the Liddonfield and Upper Holmesburg Focus Area is to **create a walkable pedestrian network that unifies and serves the needs of area residents while connecting them to commercial centers**. This focus area is distinguished by large parcels that are transitioning into new uses and may be redeveloped in the future, making the area well suited for automobiles but poorly laid out for pedestrians. The area's sidewalks, pathways, and crossings are inconsistent between row-home blocks and neighborhood amenities, and there is an important opportunity to use new development and rehabilitation to create a walkable, unified pedestrian network.

Redevelopment in neighborhoods of the district has been long-anticipated. In 2012, PCPC and Upper Holmesburg Civic Association released the **Upper Holmesburg Goals and Strategies Report** containing planned improvements, proposed streetscape improvements, and redevelopment proposals, some of which inform the focus area recommendations in the *District Plan*. In addition, as of April 2015, the **Philadelphia Housing Authority is soliciting proposals to develop the**

Liddonfield Homes public housing site with affordable senior housing and residential and/or commercial use.

Recommendations from the *District Plan* for Liddonfield and Upper Holmesburg include:

- Connect pedestrians to shopping: **create sidewalks and/or separated walkways for pedestrians that link to street networks**; add drive aisles; encourage development to align entrances with existing streets; and increase landscaping (tree screens, low plantings, and landscaping islands) to **make it easier and safer for non-automobile travelers to access stores**.
- **Connect pedestrians to surrounding neighborhoods**: redevelop the industrial area between Torresdale Avenue and I-95 into a mixed-use development; **and improve bus stops in the area** by adding shelters, landscaped buffers, street trees, improved sidewalks and other recommendations.

The Upper Holmesburg Goals and Strategies Report can be found at http://phila2035.org/upper-holmesburg-goals-strategies-report/.

Mayfair Business Improvement District

Although not a focus area, the *District Plan* has several recommendations for the **Mayfair Business Improvement District (BID) on Frankford Avenue to restore it as a commercial corridor**. The *District Plan* suggests the business district is already successful due to low vacancy and mix of commercial development on Frankford Avenue, but with strategic changes could improve the image and identity of the corridor.

In April 2015, **City Council and the Mayor authorized the Mayfair BID** and as of March 2016, the BID is working on internal administration and organization. District recommendations include:

- Change parcels to CMX 2.5 zoning: **encourage buildings to front property lines with rear parking**; increase mixed-use density; and encourage storefront transparency to face Frankford Avenue.
- Street and intersection improvements: enhance Frankford, Cottman, and Ryan Avenues with pedestrian improvements (Figure 11, page 45).

Figure 11: Transformation of Shopping Center Vignette (Source: PCPC)

Additional information on the Mayfair BID can be found at http://mayfairbid.org.

Public Involvement Process

The *North Delaware District Plan* was written with input from the public obtained in **three community meetings** in August, October, and December 2015. Each public meeting had a separate theme, the second and third building on previous meetings.

The first meeting was designed to conduct a "**District Analysis / SWOB** (Strengths / Weaknesses / Opportunities / Barriers)" exercise. Existing demographic, economic, and physical conditions of the District were presented and most important assets and concerns participants had for the District were discussed. Interactive mapping and discussion helped identify planning focus / opportunity areas and expectations for change in the coming ten years. Consensus was not a goal of the exercises and differences of opinion were noted.

The second meeting emphasized **preferences for future land uses and public improvements in the District**. Attendees were asked to consider future land uses, the infrastructure needed to promote development and connect the District to the waterfront, and appropriate places for public open space.

The third meeting was devoted to review of **draft recommendations**. Again, consensus was not the purpose and all participant comments and preferences were noted.

As with the *Citywide Vision*, every theme of the Route for Change program is supported in the *North Delaware District Plan* with multiple recommendations in the final version.

Relevance to Route for Change Program

The *North Delaware District Plan* identifies 42 recommendations that reflect the goals and strategies described in the *Citywide Vision* (Table 4, page 49). Recommendations that directly align with the Route for Change Program themes of safety, reliability, accessibility, opportunity, and livability are identified with a checkmark underneath the theme.

Nine priority recommendations identified in the *District Plan* include:

- Develop and maintain strong community partnerships between community serving facilities and the surrounding neighborhoods, other community serving facilities and friends groups.
- Implement strategies that will strengthen commercial corridors as destinations.
- Reactivate industrial land along the waterfront.
- Improve safety for pedestrians and bicycles throughout the district and across major streets and rail lines.
- Upgrade the conditions along State Road to make it safer for both pedestrians and bicyclists.
- Upgrade the underpass on Grant Avenue at the Torresdale Regional Rail Station to provide safer pedestrian access to the train station, better stormwater management and improved vehicle safety.
- Pursue the nomination of a local or national historic district in Holmesburg and the Disston Community.
- Preserve and extend the City's street grid, especially through large parcels, to create parcels that can accommodate new development and to connect residents and visitors to the waterfront.
- Preserve, enhance and create significant viewsheds and landscapes within the district.

Of these 42 recommendations in the *North Delaware District Plan*, the following eight recommendations were selected as being the most relevant to the Route for Change Program (highlighted in Table 4, page 49):

- Implement strategies that would strengthen commercial corridors as destinations:
    - Use strategies such as the business improvement district in Mayfair, the Storefront Improvement Program, streetscape improvements, signage and landscaping;
    - Develop design standards for parking lots along commercial corridors; and
    - Identify opportunities to improve convenience and safety for all users to shop within the district, particularly at the Mayfair Shopping Center and at large grocery stores.
        - Reason: Creates welcoming, well-designed public spaces and corridors, **attracts residents, visitors and businesses to area**, would strengthen neighborhood centers by clustering community-serving public facilities, would provide more employment opportunities, and would **improve overall livability**.
- Strengthen Cottman and the Boulevard as a competitive regional center:
    - Promote façade, signage, and landscape improvements on private property;

    - In cooperation with local partners, program city and state funding for coordinated public streetscape improvements, including paving, crosswalks, sidewalks, lighting, signs, security features, and landscaping; and
    - Ensure that patrons can safely access and travel to the regional center.
        - Reason: Encourages growth and development in district, may generate public-private partnerships to develop pedestrian facilities, would increase pedestrian safety and **create a more visually attractive destination for drivers and pedestrians**.
- Implement high-priority bicycle and pedestrian infrastructure upgrades as identified in the Delaware Valley Regional Planning Commission's Trenton Line Access Study to enhance service and attract riders at Holmesburg Junction and Torresdale Regional Rail Station:
    - Bicyclist connections: installing shared lane markings (sharrows) on Rhawn Street between Rowland and Torresdale Avenues and on Frankford Avenue between Rhawn Street and Knights Road;
    - Pedestrian connections: installing missing crosswalks and sidewalks within proximity of the stations;
    - Improve access to the station for pedestrians and bicyclists by connecting to the Pennypack and Delaware River Waterfront Trail Systems;
    - Provide improved station amenities, such as lighting, to promote transit user safety and comfort;
    - Designate placement for kiss-and-ride locations to facilitate passenger drop off and pick up; and
    - Provide high quality bicycle parking infrastructure, including covered bike racks, to increase transit ridership and security.
        - Reason: Fills in key gaps in the bicycle network and improves overall surface quality, expands on- and off- street networks serve bicyclists, improves safety for pedestrians and bicyclists and **reduces pedestrian and bicycle crashes**.
- Advance the recommendations already proposed for enhanced bus service along Roosevelt Boulevard as well as those from the upcoming Roosevelt Boulevard Multimodal Corridor Program.
    - Reason: Current Program considering recommendations from DVRPC's *Alternatives Development for Roosevelt Boulevard Transit Enhancements* that would **improve transit service and attract new riders**.
- Improve safety for pedestrians and bicycles throughout the district and across major streets and rail lines:
    - Enhance pedestrian safety along the corridor from the Torresdale Regional Rail Station to Glen Foerd; and
    - Identify strategies to increase safety at the following intersections and at-grade rail crossings: Cottman Avenue at the intersections of Roosevelt Boulevard, Frankford & Torresdale Avenues, Frankford & Tyson Avenues, State Road & Rhawn Street, Frankford & Harbison Avenues, Torresdale Avenue & Knorr Street.
        - Reason: Fills in key gaps in the sidewalk network and improves overall surface quality, expands on- and off- street networks serve bicyclists, **improves safety for pedestrians and bicyclists**, reduces pedestrian and bicycle crashes,

creates welcoming, well-designed public spaces and corridors, attracts residents, visitors and businesses to area. Improves pedestrian connections across major rights-of-way, reduces travel times and **increases access to opportunities**.

- Identify Complete Streets projects on wide, crash prone streets such as Frankford, Cottman, Torresdale, and Harbison Avenues.
    - Reason: **Balances use of roadways to ensure safety and efficiency for travel by all modes**, ensures high level of reliability and safety due to upgraded existing streets and traffic control infrastructure, reduces vehicular crashes, reduces pedestrian and bicycle crashes.
- Coordinate with PennDOT the reconstruction of I-95 to ensure safety, connectivity, and improved highway access for goods movement, including associated roadway construction on State Road, Cottman Avenue, Princeton Avenues, Bridge Street and Tacony Street:
    - Ensure that highway improvements preserve the existing network and incorporate proposed bicycle and pedestrian connections to the future river trail as interchanges are rebuilt;
    - Preserve motorists' views of important community landmarks and destinations when designing and installing sound walls; and
    - Develop a truck routing plan, in conjunction with the PennDOT I-95 Reconstruction Project, to ensure public safety, connectivity and improved highway access for goods movement.
        - Reason: **Provides a safe and efficient road network, upgrades and modernizes existing streets, bridges, and traffic control infrastructure to ensure high level of reliability and safety**, controls automobile congestion, improves highway access for good movement.
- Develop well-designed gateways to neighborhoods, commercial corridors and the waterfront that may include signage, public art, street furniture, and programmed events.
    - Reason: **Creates welcoming, well-designed public spaces and corridors**, attracts residents, visitors and businesses to area.

Table 4: North Delaware District Plan Recommendations

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
1.1.1	Thrive: Neighborhood Centers	1	Cluster municipal and community serving facilities to improve their efficiency and safety of operations. • Evaluate the Former Philadelphia Police Academy Campus (8501 State Road) for potential new users .	32	✓		✓		
1.1.1	Thrive: Neighborhood Centers	2	Ensure that all community-serving facilities are maintained in a state of good repair. • Make all libraries and recreation centers ADA accessible (Holmesburg Library, Disston Recreation Center). • Expand and enhance the facilities for the Police 2nd/15th District Headquarters.	32				✓	✓
1.1.1	Thrive: Neighborhood Centers	3	Develop and maintain strong community partnerships between community serving facilities and the surrounding neighborhoods, other community serving facilities and friends groups. • Establish community partnerships at Lower Mayfair Playground, Disston Recreation Center and Glen Foerd. • Expand the relationships at Ramp Playground, Lincoln Pool and Lansing Knights Youth Organization.	32					✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
1.2.2, 1.2.3	Thrive: Housing	4	Stabilize and upgrade housing while ensuring that there is a mix of housing choices available to residents of all income levels. • Identify areas for single-family dwellings and for multi-family housing and ensure that they are appropriately zoned. • Investigate opportunities for seniors to age in place. • Redevelop the Liddonfield site to include senior & affordable housing.	32					✓
1.2.1, 1.2.3	Thrive: Housing	5	Preserve single-family housing stock (both rental and owner-occupied) through marketing of home improvement resources including incentives for home rehabilitation. • Promote retrofits to improve energy efficiency. • Ensure that a full range of housing is available to populations of all abilities and income levels. • Facilitate infill housing in existing residential neighborhoods.	32					✓
1.1.2	Thrive: Commercial Corridors	6	Concentrate commercial zoning along active commercial corridors to reinforce previous and planned public and private investment. • Zone for residential and commercial infill where appropriate along Torresdale Avenue. • Direct auto oriented uses towards the edges of commercial corridors to reinforce the pedestrian oriented character of the corridors.	34					✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
1.1.2	Thrive: Commercial Corridors	7	Implement strategies that will strengthen commercial corridors as destinations. • Use strategies such as the business improvement district in Mayfair, the Storefront Improvement Program, streetscape improvements, signage and landscaping. • Develop design standards for parking lots along commercial corridors. • Identify opportunities to improve convenience and safety for all users to shop within the district, particularly at the Mayfair Shopping Center and at large grocery stores.	34	✓	✓	✓	✓	✓
1.1.2	Thrive: Commercial Corridors	8	Enhance and upgrade the existing commercial corridors along Frankford and Torresdale Avenues to improve walkability, pedestrian and bicycle safety and improve the overall commercial experience. • Frankford Avenue: enhance anchor buildings and uses, consider the creation of a gateway at Ryan Avenue that could include pedestrian islands or parklets, explore the opportunity of temporary closures of Ryan Avenue between Frankford Avenue and Leon Street for special events. • Torresdale Avenue: continue to upgrade the corridor to enhance the pedestrian experience.	34	✓		✓		
2.1.3	Thrive: Metropolitan and Regional Centers	9	Strengthen Cottman and the Boulevard as a competitive regional center. • Promote façade, signage, and landscape improvements on private property. • In cooperation with local partners, program city and state funding for coordinated public streetscape improvements, including paving, crosswalks, sidewalks, lighting, signs, security. features, and landscaping • Ensure that patrons can safely access and travel to the regional center.	34	✓	✓	✓	✓	✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
2.2.1, 2.2.2	Thrive: Economic Development	10	Reactivate industrial land along the waterfront. Maintain industrial zoning in the following areas: • Bridge Street to Levick Street between I-95 and the Delaware River. • Edmund Street to the waterfront between Cottman Avenue and Pennypack Path. • Between Linden Avenue, State Road, Ashburner Street and the alignment of Hegerman Street.	38				✓	
2.2.1, 2.2.2	Thrive: Economic Development	11	Manage and improve the industrial and commercial mix between Solly Avenue, the AMTRAK Northeast Corridor, Linden Avenue and Torresdale Avenue.	38				✓	
2.2.1, 2.2.2	Thrive: Economic Development	12	Identify industrially-used properties that should be rezoned to position them for future mixed use developments: • Remediate industrial land where environmental contamination exists. • Encourage medium and light industrial land uses between Levick Street and Unruh Avenue. • Encourage a mixture of light industrial, office and commercial land uses between Unruh Avenue and Disston Street. • Encourage a mixture of light industrial, office and commercial retail spaces between Disston Street and Cottman Avenue.	38				✓	
3.3.1	Thrive: Land Management	13	Modernize the campus of the Philadelphia Prison System to meet citywide. Including those outlined in the Philadelphia Prison System Master Plan: • Expand the Philadelphia Prison System agriculture programs. • Relocate modular support facilities out of the floodplain. • Improve the circulation on site to improve efficiency. • Consolidate all training for Philadelphia Prison System staff either on site or closer to the Philadelphia Prison System Campus.	38					

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
3.3.1	Thrive: Land Management	14	Consider options to replace the House of Corrections.	39					
3.3.1	Thrive: Land Management	15	Study opportunities to consolidate the Philadelphia Prison System activity at the Holmesburg Prison Site (8215 Torresdale Avenue) in order to consider new users for the site.	39					
4.4.1, 4.1.3	Connect: Transportation	16	Implement high-priority bicycle and pedestrian infrastructure upgrades as identified in the Delaware Valley Regional Planning Commission's Trenton Line Access Study to enhance service and attract riders at Holmesburg Junction and Torresdale Regional Rail Station. • Bicyclist connections: installing shared lane markings (sharrows) on Rhawn Street between. • Rowland and Torresdale Avenues and on Frankford Avenue between Rhawn Street and Knights Road. • Pedestrian connections: installing missing crosswalks and sidewalks within proximity of the stations. • Improve access to the station for pedestrians and bicyclists by connecting to the Pennypack and Delaware River Waterfront Trail Systems. • Provide improved station amenities, such as lighting, to promote transit user safety and comfort. • Designate placement for kiss-and-ride locations to facilitate passenger drop off and pick up. • Provide high quality bicycle parking infrastructure, including covered bike racks, to increase transit ridership and security.	44	✓		✓	✓	✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
4.1.1, 4.1.3	Connect: Transportation	17	Pursue and study short and long term improvements to the Tacony Regional Rail Station to enhance ridership and service. • Short term: Improve bicycle and pedestrian access to enhance access and provide in station amenities, such as lighting, to promote pedestrian and transit user safety and comfort to increase ridership. • Long term: Explore potential relocations or expansions that will enable the construction of an ADA accessible Tacony Regional Rail Station with amenities such as additional parking and sheltered bicycle parking that provides access to the waterfront and surrounding neighborhoods.	44	✓	✓	✓		
4.1.1	Connect: Transportation	18	Explore structured parking at the Torresdale Station to meet parking demand.	44			✓		
4.1.1	Connect: Transportation	19	Expand Transit First programs along Cottman and Torresdale Avenues for bus routes 28, 56, 70, 77, 84 and 88, such as signal prioritization and stop consolidations.	44		✓	✓		
4.1.2	Connect: Transportation	20	Advance the recommendations already proposed for enhanced bus service along Roosevelt Boulevard as well as those from the upcoming Roosevelt Boulevard Multimodal Corridor Program.	44	✓	✓	✓	✓	✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
4.2.2	Connect: Transportation	21	Expand the bicycle and pedestrian network throughout the district and connect residents and visitors to the waterfront. • Implement the priority bicycle network as identified in the 2015 Progress Report from the Philadelphia Pedestrian and Bicycle Plan. • Fill the sidewalk "gaps" and upgrade sidewalks in poor condition as identified in the 2015 Progress Report from the Philadelphia Pedestrian and Bicycle Plan. • Enhance Magee Avenue to make it a 'connector street' between the Tacony neighborhood and the waterfront.	47	✓		✓		
4.2.1, 4.2.2, 4.2.3	Connect: Transportation	22	Improve safety for pedestrians and bicycles throughout the district and across major streets and rail lines: • Enhance pedestrian safety along the corridor from the Torresdale Regional Rail Station to Glen Foerd. • Identify strategies to increase safety at the following intersections and at-grade rail crossings: Cottman Avenue at the intersections of Roosevelt Boulevard, Frankford & Torresdale Avenues, Frankford & Tyson Avenues, State Road & Rhawn Street, Frankford & Harbison Avenues, Torresdale Avenue & Knorr Street. • Ensure the use of appropriate materials when repairing driveways between residential rows.	47	✓		✓	✓	
4.2.1	Connect: Transportation	23	Identify Complete Streets projects on wide, crash prone streets such as Frankford, Cottman, Torresdale, and Harbison Avenues.	47	✓		✓		✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
4.3.1, 4.3.3, 4.3.4	Connect: Transportation	24	Coordinate with PennDOT in its reconstruction of I-95 to ensure safety, connectivity, and improved highway access for goods movement, including associated roadway construction on State Road, Cottman Avenue, Princeton Avenues, Bridge Street and Tacony Street. • Ensure that highway improvements preserve the existing network and incorporate proposed bicycle and pedestrian connections to the future river trail as interchanges are rebuilt. • Preserve motorists' views of important community landmarks and destinations when designing and installing sound walls. • Develop a truck routing plan, in conjunction with the PennDOT I-95 Reconstruction Project, to ensure public safety, connectivity and improved highway access for goods movement.	47	✓		✓		
4.3.1	Connect: Transportation	25	Upgrade the conditions along State Road to make it safer for both pedestrians and bicyclists. • Improve the intersection at State Road and the entrance to the Philadelphia Prison System Campus to ensure safety for bus riders, cars and visitors to the Philadelphia Prison System facility. • Implement the City's adopted dimensional standards for sidewalks.	47	✓	✓	✓		
4.3.1	Connect: Transportation	26	Upgrade the underpass on Grant Avenue at Torresdale Regional Rail Station to provide safer pedestrian access to the train station, better stormwater management and improved vehicle safety.	47	✓	✓	✓		

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
6.1.1, 6.1.3	Renew: Open Space	27	Complete the North Delaware Trail, a section of the East Coast Greenway, and connect it to adjacent neighborhoods and existing trails by constructing these segments: • Kensington & Tacony 1 (K&T 1) from the Frankford Boat Launch to Magee Avenue. • Kensington & Tacony 2 (K&T 2) from Magee Avenue to Princeton Avenue. • Tacony Holmesburg Trail from Princeton Avenue to Rhawn Street. • State & Rhawn Pennypack Connector Sidepath. • Two way protected bike lane on Frankford Avenue between Ashburner Street and the Pennypack Trail.	54			✓		✓
6.1.1	Renew: Open Space	28	Connect the trail network within the North Delaware District as recommended in the Trail Master Plan. • High Priority: Kensington & Tacony Trail and State Road & Rhawn Street Sidepath. • Medium Priority: State Road Sidepath, North Delaware Gap from Princeton. Avenue to Rhawn Street, Lower Poquessing Creek Trail A, Roosevelt Boulevard Sidepath.	54			✓		✓
6.2.1	Renew: Open Space	29	Connect existing residential neighborhoods to the waterfront. • Encourage the development of new publicly accessible open space between Levick Street and Princeton Avenue along the length of the planned North Delaware Greenway.	54			✓	✓	✓
6.2.1	Renew: Open Space	30	Expand opportunities for recreation along the Delaware River. • Provide for direct river access at Glen Foerd.	54					✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
7.2.2	Renew: Environmental Resources	31	Restore stream banks and tidal wetlands along the Delaware River and tributaries to manage stormwater and provide flood management. • Stabilize the riverbank with native grasses similar to the plantings at Lardner's Point Park.	55					✓
7.2.3	Renew: Environmental Resources	32	Implement projects to capture and manage stormwater. • Increase the number of trees at City facilities including the American Legion Playground.	55					✓
6.3.1	Renew: Environmental Resources	33	Partner with landowners to increase public access to open space: • Provide safe and continuous sidewalks around Magnolia and Cedar Hill Cemeteries. • Work with the Philadelphia Housing Authority to encourage public open space to be provided at the Liddonfield site. • Where feasible, increase the amount and access to open space at Philadelphia School District facilities.	55	✓		✓		✓
8.1.1	Renew: Historic Preservation and Public Realm	34	Pursue the nomination of a local or national historic district in: • Holmesburg (Frankford & Welsh). • Disston Community (Tacony), including the factory buildings.	56					

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
8.1.1	Renew: Historic Preservation and Public Realm	35	Pursue designation of the following types of North Delaware assets: • City Facilities-such as the Lardner's Point Water Pumping Station (5300 Robbins Street)and the Tacony Branch of the Free Library. • Iconic Neighborhood Structures- such as St. Vincent's Orphan Asylum/Catholic School (7101 Milnor Street), the Devon Theater(6325-43 Frankford Avenue), Mayfair Theater (7300 Frankford Avenue, Stein Your Florist Co. (7059 Frankford Avenue)and Harbot's Hotel (6900 State Road). • Residential Structures- such as Stonyhurst (3501 Solly Avenue) and the Mill houses (4300 Holmesburg Avenue).	56					
8.1.2	Renew: Historic Preservation and Public Realm	36	Reuse historic industrial facilities for new tenants and as neighboring anchors such as the Frankford Arsenal and Disston Sew Works.	56					
8.1.3	Renew: Historic Preservation and Public Realm	37	Preserve flood prone historic buildings on the Delaware riverfront through flood mitigation measures that prevent or reduce damages to these resources, to minimize negative visual impacts to their integrity, and to comply with the 2016 Philadelphia pilot project of the Pennsylvania Historical and Museum Commission's Disaster Planning for Historic Properties Initiative.	56					
8.1.3	Renew: Historic Preservation and Public Realm	38	Promote attractions in the district, such as Lardner's Point Pork, Glen Foerd, and Pleasant Hill Park, through better directional and identification signage.	56					✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
9.1.1, 9.1.2	Renew: Historic Preservation and Public Realm	39	Preserve and extend the City's street grid, especially through large lots to create parcels that can accommodate new development and to connect residents and visitors to the waterfront. • Extend Magee Avenue, Knorr Street and Disston Street and Tyson Avenue between State Road and the alignment of the future North Delaware Greenway Trail. • Extend Milnor Street between Levick Street and Princeton Avenue. • Extend the street grid through the Liddonfield site. • Encourage the development of new public streets along the Delaware waterfront. • Create a new street alignment parallel to the river, midway between New State Road and the waterfront, between Milnor Street and Levick Street. • Create a new street alignment parallel to the river, that serves as a frontage road between developed parcels and the planned North Delaware Greenway Trail. • Reestablish Magee Avenue between New State Road and the waterfront • Reestablish Disston Street between New State Road and the waterfront. • Extend Longshore Avenue between New State Road and the proposed new street midway between New State Road and the waterfront.	56	✓		✓		✓
9.2.1	Renew: Historic Preservation and Public Realm	40	Develop design standards for both the Torresdale and Frankford Avenue commercial corridors to reinforce building to the front property line, consistent signage and pedestrian amenities.	57					
9.2.2	Renew: Historic Preservation and Public Realm	41	Develop well-designed gateways to neighborhoods, commercial corridors and the waterfront that may include signage, public art, street furniture, and programmed events.	57					✓

Citywide Objective	Category	Recommendation		District Plan Page	Route for Change Themes				
					Safety	Reliability	Accessibility	Opportunity	Livability
9.2.2	Renew: Historic Preservation and Public Realm	42	Preserve, enhance and create significant viewsheds and landscapes within the district. • Preserve, develop and improve public access along the Delaware Waterfront at sites such as the Arsenal Boat Launch, Pleasant Hill Park and Glen Foerd. • Continue to develop the North Delaware Greenway to create a continuous trail along and preserve views to the Delaware River from Lardner's Point Park to Pennypack Street.	57					✓

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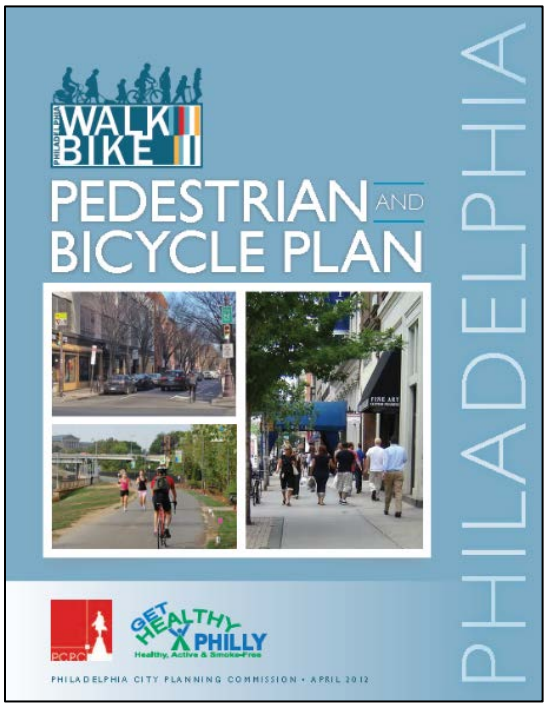
5. Philadelphia Pedestrian and Bicycle Plan (2012, Philadelphia City Planning Commission)

Study Purpose and Highlights

This plan is Philadelphia's first Pedestrian Plan, and it serves as an update to the City's bicycle network plan, completed in 2000. The City convened a Steering Committee to actively participate in all aspects of the planning process. The Committee helped to develop the following goals for the plan:



- Improve **Safety** for all pedestrians and bicyclists.
- **Encourage** walking and bicycling to promote healthy, active living and to enjoy the associated economic and environmental benefits.
- Increase the **Connectivity** of the bikeway and walking networks.
- Promote and enhance the role of sidewalks and streets as the **Public Realm**.
- Garner **Recognition** for Philadelphia as a leader in pedestrian and bicycle achievement.

Vision, Goals and Measures

The *Pedestrian and Bicycle Plan* established the following vision for the City of Philadelphia*:*

> "[W]alking and biking are an integral part of daily life, and vital components of a first class multi-modal transportation system. Philadelphia residents, workers and visitors consider traveling on foot or by bike to be a safe, effective, and accessible choice; one of the benefits of being in the City. Our transportation system supports other City goals for sustainability, active living, economic and community development."

The Plan's goals have measures associated with them to assess progress over time. Some of these measures have established target outcomes and are summarized in Table 5 (page 64):

Table 5: Measures and Target Outcomes

Measure	Target Outcome
Number of bicycle and pedestrian crashes	• Reduce fatalities 50% by 2020 • Reduce injuries 50% by 2020
Increase in the commuting mode share	• For bicycling, from 1.6% to 6.5% by 2020 • For walking, from 8.6% to 12% by 2020
Regular pedestrian and bicyclist counts	• Triple bicyclist volume at key locations • Increase pedestrian volumes at key locations by 50%
DVRPC Household Travel Survey	• Increase total of Walk, Bicycle, and Transit by 10%

Existing Conditions

In 2011, Philadelphia was awarded a silver level Walk Friendly Community designation by the Pedestrian and Bicycle Information Center. For the past several years, WalkScore ranked Philadelphia as the 5th most walkable large city in America. Since release of the Plan, WalkScore has ranked Philadelphia as the 4th most walkable large city in America.

The Plan includes a pedestrian demand analysis that assesses the relative amounts of pedestrian activity in different parts of the city. The analysis incorporated population and employment densities, and pedestrian generators, including colleges and universities, tourist attractions, schools, transit facilities, retail corridors, community services, and parks. Figure 12 (page 66) compares the pedestrian demand map with a map showing pedestrian collisions. The intersections of Cottman Avenue, Welsh Road, and C Street with Roosevelt Boulevard are revealed as having relatively high levels of pedestrian collisions.

For biking, Philadelphia has 230 miles of marked bike lanes and was ranked a Bronze Bicycle-Friendly Community by the League of American Bicyclists. A goal of a Platinum award was set for 2013; the city is currently ranked a Silver Bicycle-Friendly Community. A bicycle demand analysis was conducted as part of the plan, using inputs similar to those in the pedestrian demand analysis. Again, Cottman Avenue and Welsh Road intersections with Roosevelt Boulevard were identified as having relatively higher levels of bicycle collisions.

Street Types and Sidewalk Design Standards

The Plan presents a new street classification system to facilitate pedestrian planning and serve as the basis for citywide sidewalk design standards.

Eleven street types are included in the new classification: Civic Ceremonial, High-Volume Pedestrian, City Neighborhood Street, Walkable Commercial Corridor, Urban Arterial, Auto-Oriented Commercial/Industrial, Scenic Drive, Park Road, Low Density Residential, Local, and Shared Narrow Street.

Roosevelt Boulevard is classified as an Urban Arterial, a designation that is appropriate for the inner, express lanes, but suggests higher speeds and volumes for the outer local lanes than is consistent with pedestrian and bicyclist comfort and safety.

Pedestrian and Bicycle Policies

This Plan introduces a comprehensive review and revision of policies and programs that affect pedestrians and bicyclists in Philadelphia. They address the limitations and gaps in existing policies, guidelines, regulations, and operating procedures. Policy changes to improve conditions for walking and bicycling fall into four areas:

- Pedestrian Network Design
- Bicycle Network Design
- Health and Safety
- Management and Monitoring

Each of these areas is described in more detail in the following sections.

Pedestrian Network

The Plan recommends primarily physical changes to the pedestrian network. The recommendations are organized in a toolbox designed to address the following issues:

- Insufficient Sidewalk Capacity
- Excess Auto-orientation
- Inadequate or Missing Crossing Facilities
- Insufficient Time to Cross
- Wide or Diagonal Intersections
- Complex Intersections

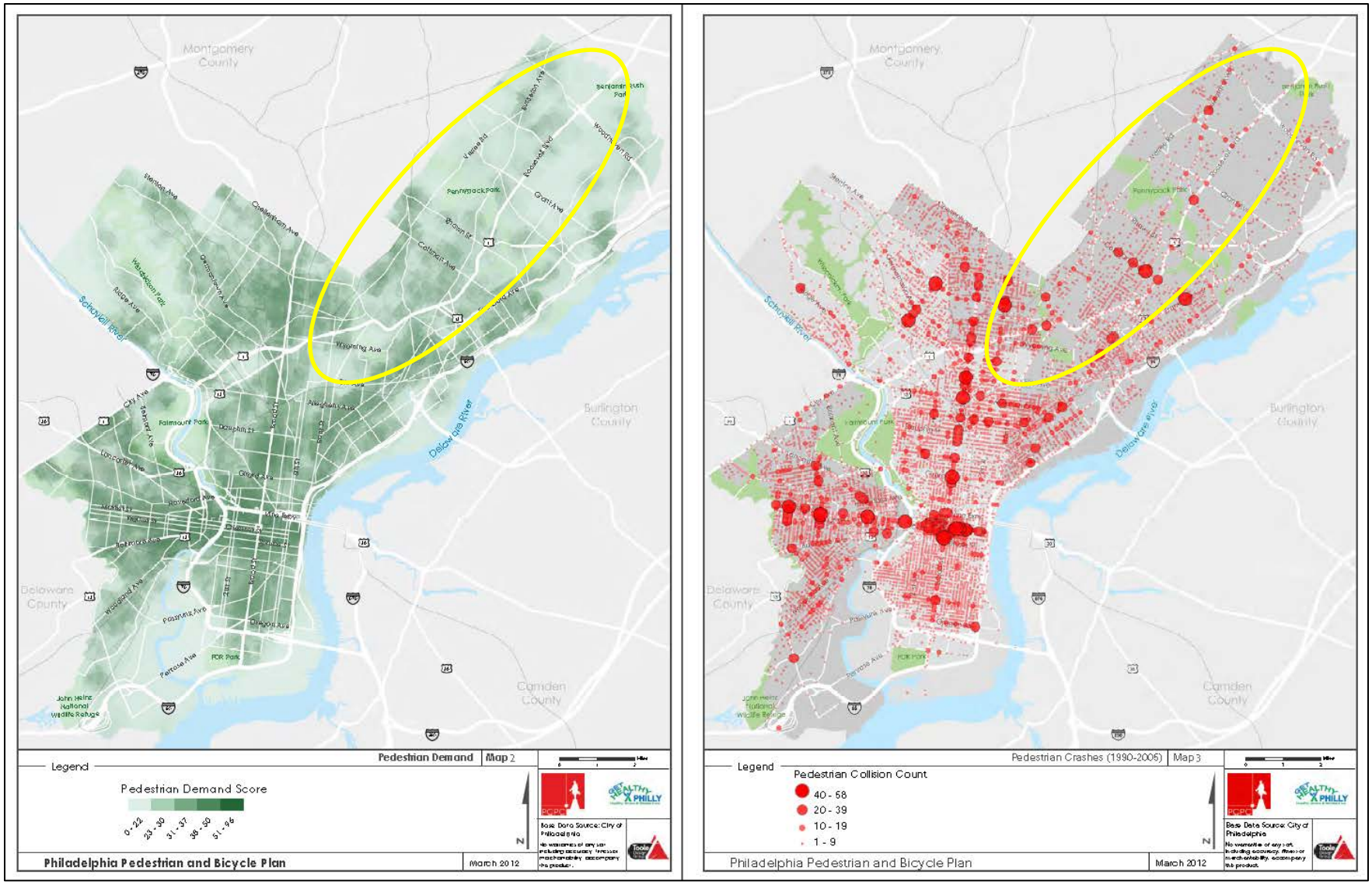
Bicycle Network

This Plan identifies an interconnected citywide network of bikeways that will serve all neighborhoods. The bicycle network establishes new connections and fills gaps between existing on and off-road bicycle facilities using a range of facility types. The Plan focuses on safety, comfort, and encouragement by identifying key issues that should be considered as bicycle facilities are implemented and roads are reconstructed.

Plan Implementation

The Plan outlines the strategy and approach for implementing the pedestrian and bicycle recommendations of the Plan. For ranking infrastructure projects, the Plan used data from the existing conditions inventory and demand analysis to identify projects in the areas with the greatest needs.

Figure 12: Pedestrian Demand and Collision Maps with Roosevelt Boulevard Corridor Highlighted



Study Recommendations

The *Pedestrian and Bicycle Plan* identified key intersections along Roosevelt Boulevard as pedestrian network focus areas (Table 6, page 70). Other recommendations from the *Pedestrian and Bicycle Plan* were excluded from this technical memorandum due to their geographical insignificance to this Program.

With regard to the Bicycle network recommendations, the Plan recommended a sidepath along the length of Roosevelt Boulevard to provide a bicycle facility and provide connectivity to the adjacent neighborhoods and intersecting bicycle facilities. Sidepaths are defined as a "widened sidewalk on the side of the street," requiring approval by the Streets Department. They are generally operated as shared-use facilities, but in some locations, bicycle and pedestrian traffic are separated.

Public Involvement Process

The development of Philadelphia's *Pedestrian and Bicycle Plan* involved **extensive public involvement**, including six **community workshops** and **open houses** in a first phase, lasting from April 2009 to April 2010 and eight in a second phase from October 2010 to October 2011. Attendees of the workshops and open houses considered existing conditions and obstacles, preliminary identification of needs, and draft pedestrian, bicycle, and street type recommendations. In addition, a **project website** helped disseminate information (dates of events, draft maps, presentations, and other materials) and collect comments and insights through an **on-line survey**.

The study authors emphasize that public input – along with information obtained from City staff, recent studies, and members of the project Steering Committee – was important to writing the plan's goals and objectives, to developing lists of concerns related to safety, motorist behavior, parking, and specific locations in the city, and to the identification of criteria and methodologies for prioritizing pedestrian and bicycle recommendations.

All of the **Route for Change program themes** are addressed by general and specific recommendations in the Plan. Safety, Accessibility, and Livability are directly addressed with policy and infrastructure recommendations that would give users of non-motorized transportation modes safer, more direct, and more comfortable options for traveling by bicycle and on foot in the City. Reliability would be enhanced, as would Opportunities to access jobs, schools, shops, and other destinations, but those themes are addressed only indirectly the Plan.

Relevance to Route for Change Program

Key features of this study that have direct and indirect connections to the five themes that define the Route for Change Program: Safety, Accessibility, Reliability, Opportunity and Livability:

- **Safety:** the study recommends pedestrian and bicycle safety enhancements at multiple intersections.

  While the study identifies four locations for spot pedestrian improvements, some of the recommendations could be applied to other locations throughout the Roosevelt Boulevard corridor, including installing LPIs (leading pedestrian intervals) for all crosswalks with turning

vehicles, improving existing curb ramps throughout the corridor to make them ADA accessible, and implementing design measures to narrow crossing distance across the intersections and demarcate sidewalk from driveways and parking lots.

- **Reliability:** appropriate designation and consistent roadway design and right-sizing would allow for improved experience for all modal users.

  The plan designated Roosevelt Boulevard as an Urban Arterial characterized as having high vehicle significance and medium pedestrian significance. The plan recommends the following minimum sidewalk widths for Urban Arterials:
  - 12' for total width,
  - 6' minimum or half sidewalk width, whichever is greater for the walk zone, and
  - 4' for the furniture zone.

  As part of the Route for Change Program, the pedestrian significance ranking should be reconsidered given that transit improvements along the corridor are expected to increase pedestrian demand. Best practices for multiway boulevards (boulevards in which express and local lanes are physically separated by medians, as they are on Roosevelt Boulevard) suggest the designation for the Boulevard should be changed to reflect its dual uses as either a "Multiway Boulevard" or a hybrid Urban Arterial / Local roadway.

- **Accessibility:** increasing the length of the bicycle and walking networks and their interconnectivity would result in enhanced mobility for pedestrians and bicyclists.

  Roosevelt Boulevard was identified as a Bicycle Priority Project. The Bicycle Priority Project Recommendation for Roosevelt Boulevard is identified as a sidepath, implying a shared space for bicyclists and pedestrians of a width greater than 6. This recommendation was further reiterated in the *Philadelphia Trail Master Plan*. Given that pedestrian and transit enhancements are expected to alter the pedestrian demand and use along the corridor, consideration for separating bicycles and pedestrians should be considered as part of the Route for Change Program.

  Although the plan recommended a sidepath along one side of the Boulevard, the Bicycle Coalition of Greater Philadelphia in 2015 identified Roosevelt Boulevard as a facility that should have protected bicycle lanes installed, suggesting a revision to the *Pedestrian and Bicycle Plan* to change the 2012 sidepath recommendation.

- **Opportunity:** increased safety, accessibility, and reliability of the bicycle and pedestrian networks will enhance the role of sidewalks as the public realm and enable bicycling to be a viable transportation mode along the corridor.

- **Livability**: improved bike/pedestrian facilities will encourage walking and bicycling to promote healthy and active living.

As part of the corridor re-envisioning process, and in consideration for the plan's goals of encouraging walking, enhancing the role of sidewalks as the public realm, and demonstrating Philadelphia's leadership in pedestrian achievement, the sidewalk widths, quality of the sidewalk buffers and amenities, and safety of pedestrian crossings at all intersections should be considered during the Route for Change Program to prioritize pedestrians along the corridor.

Table 6 (page 70) provides the Plan's recommendations along the Boulevard in relation to the Route for Change themes of the Program.

Table 6: Pedestrian and Bicycle Plan Recommendations along Roosevelt Boulevard and Route for Change Relationship Summary

Location	Recommendation	Route for Change Themes				
		Safety	Reliability	Accessibility	Opportunity	Livability
Rhawn St & Roosevelt Blvd	Provide benches or shelters at bus stops.	✓		✓		✓
	Provide buffers between sidewalk and road where possible, particularly trees.	✓		✓		✓
	Improve existing surface quality of the curbs and sidewalks.		✓	✓	✓	✓
	Consider LPIs (leading pedestrian intervals) for all crosswalks with turning vehicles.	✓				✓
	Consider visual or physical measures to demarcate sidewalk from driveways and parking lots.	✓				✓
Cottman Ave & Roosevelt Blvd	Consider constructing a median at the intersection of Cottman Avenue and Roosevelt Boulevard.	✓	✓			
	When bridge is rebuilt, widen sidewalks over Roosevelt Blvd.			✓	✓	
	For the rest of Cottman Avenue, add street trees where space allows.					✓
	Consider LPIs or adjust signal timing to provide more time for pedestrians to cross.	✓				✓
	Provide benches or shelters at bus stops.	✓		✓		✓

Location	Recommendation	Route for Change Themes				
		Safety	Reliability	Accessibility	Opportunity	Livability
	Consider visual or physical measures to demarcate sidewalk from driveways and parking lots.	✓				✓
C St & Roosevelt Blvd	Improve existing curb ramps throughout the corridor to make them ADA accessible.	✓		✓		
	Consider options to reduce crossing distance on C St, such as curb extensions or center medians.	✓				✓
Wyoming Ave & Roosevelt Blvd	Consider measures to narrow crossing distance across Wyoming Avenue.	✓				✓
	Improve sidewalk on southeast side of Roosevelt Boulevard between Wyoming Avenue and 6th Street to serve as a shared use sidepath.		✓			✓
	Construct sidewalks along Wyoming Avenue and Roosevelt Boulevard.	✓		✓	✓	✓
	Improve existing curb ramps throughout the corridor to make them ADA accessible.	✓		✓		
Roosevelt Blvd	Construct a sidepath along the length of Roosevelt Blvd.	✓		✓	✓	✓

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6. Philadelphia Trail Master Plan (2013, Philadelphia City Planning Commission)

Study Purpose and Highlights

The preparation of the *Philadelphia Trail Master Plan* was a recommendation of the *Philadelphia 2035 Citywide Vision*, Philadelphia's Comprehensive Plan. The Citywide Trail Master Plan process began in the spring of 2011 as a joint effort between the Philadelphia City Planning Commission and Philadelphia Parks & Recreation, in collaboration with the Mayor's Office of Transportation & Utilities.

The *Trail Master Plan* defines priorities for future trail developments in Philadelphia and sets four goals for the city's trail network:

- **Connectivity**: To build on the existing trail network to reach underserved areas and fill gaps in the trail network as well as bicycle and pedestrian networks.
- **Safety**: To provide an off-road alternative to pedestrian and bicycle facilities.
- **Encouragement**: To provide more opportunities for Philadelphians to engage in physical activity both for recreation and transportation.
- **Open Space**: To provide better access to the open space network and develop new open spaces.

The *Trail Master Plan* was adopted in 2013. Annual updates have been made each year with the most recent update in 2015.

The *Trail Master Plan* begins with a brief overview of the types of trail facilities in Philadelphia and an inventory of existing trails. Philadelphia's trail and greenway network spans more than 200 miles, including portions of the regional Schuylkill River Trail, Pennypack Trail, and Forbidden Drive in Wissahickon Valley Park.

Several entities operate and maintain existing Philadelphia trails, including Philadelphia Parks & Recreation (PPR), US Fish & Wildlife Service, Schuylkill River Development Corporation (SRDC), the Delaware River City Corporation (DRCC), and the Delaware River Waterfront Corporation (DRWC). The inventory of existing trails concludes with a section on best practices in trail design standards.

The majority of the *Trail Master Plan* is comprised of a series of cut-sheets with specific recommendations for proposed trails. Each cut-sheet provides a description of the trail, a map of the proposed trail project, and evaluates the project by five factors:

- Project Status
- Demand
- Connectivity

- Feasibility
- Cost

Figure 13 (page 78) provides a sample of a *Trail Master Plan* cut-sheet. The final chapter of the *Trail Master Plan* provides recommendations for implementation, including an outline of the role of the Philadelphia Trail Committee as the city's trail network expands.

Study Recommendations

Four of the projects and descriptions from the *Trail Master Plan* in the Roosevelt Boulevard vicinity are found in Table 7 (page 76). Other recommendations from the *Trail Master Plan* were excluded from this technical memorandum due to their geographical insignificance to this Program.

Public Involvement Process

The *Philadelphia Trail Master Plan* was developed as a **direct result of a recommendation in the *Philadelphia 2035 Citywide Vision*:** Goal 6.1 Watershed Parks and Trails: "Complete, expand, and connect watershed parks and trails in the city and the region."

The work was completed by Philadelphia City Planning Commission in collaboration with a Steering Committee of key City agency representatives and an Advisory Committee of advocacy, regional, state, and trail development organizations. **No public involvement and outreach activities** were part of this effort. The public's interest in and support for the plan's goals and recommendations was expressed only through the extensive public outreach initiatives associated with the *Philadelphia 2035* long-range planning process.

Route for Change themes of Safety, Accessibility, and Livability were directly addressed in the Trail Master Plan. The Plan's goals to improve connectivity of trails for recreational and transportation purposes, to enhance safety, encourage physical activity, and provide better access to open space for all Philadelphians. Reliability and Opportunity would be improved as elements of the Plan are implemented, but they are only addressed by the Plan in an indirect manner.

Relevance to the Route for Change Program

Some key takeaways of this study that have direct and indirect connections to the five themes that define the Route for Change Program: Safety, Accessibility, Reliability, Opportunity and Livability:

- **Safety:** the study recommends an off-road alternative to pedestrian and bicycle facilities.

  Typically, off-road trails offer more protection from crashes for non-motorized users since the potential for vehicular and bike/pedestrian conflicts are minimized.

- **Reliability:** the off-road trails do not necessarily need to be long or extensive to be successful and popular, but should be connected and build on the existing trail network to reach underserved areas and fill gaps in the off-road trail network as well as on-road bicycle and pedestrian networks.

  Connections to other trails in the vicinity of Roosevelt Boulevard should be examined in more detail as the Route for Change Program advances. There are many opportunities to

coordinate efforts and strengthen Route for Change initiatives by working with the City of Philadelphia, Bucks County, and the State of Pennsylvania on their trail and pathway plans, designs, and investments.

- **Accessibility:** building on and increasing the bikeway and walking off-road network and their interconnectivity would result in enhanced mobility for pedestrians and bicyclists.

  The study made recommendations for three different trail facilities (fourth one, the Benjamin Rush State Park Sidepath, is already under construction) that should be considered by the Program.

  The proposed Roosevelt Boulevard Sidepath follows along the entire project corridor (see Figure 13, page 78).This project was recommended in previous studies, including Philadelphia's Pedestrian and Bicycle Plan. The real point of the recommendation is to provide bicycle and pedestrian connectivity to link neighborhoods and major destinations along this major transportation corridor. Since the publication of the original version of the Master Plan in 2013, the Bicycle Coalition of Greater Philadelphia has identified Roosevelt Boulevard as a facility where protected bicycle lanes are appropriate. The design of improvements along the Roosevelt Boulevard should also address the Tacony Pennypack Connector Trail.

- **Opportunity:** safe, accessible, and reliable bicycle and pedestrian trails will enhance connectivity to neighborhoods and major destinations.

  Support for improving pedestrian and bicyclist safety and access through the development of sidewalks, trails, and bicycle facilities of various kinds is longstanding. Providing access to quality, reliable, and interconnected off-road trail network will provide more opportunities for Philadelphians to engage in physical activity both for recreation and transportation. And, providing better access to the open space network can lead to development of new open spaces.

- **Livability**: new and improved bike/pedestrian trails will encourage walking and bicycling to promote healthy and active living. Neighborhoods that include off-road trails tend to be more attractive to residents and businesses.

  The existence of an expanded and better connected network of trails serving both recreational and transportation purposes in the Roosevelt Boulevard Corridor highlights the importance of strong bicycle / transit coordination. Bicycle racks on SEPTA buses, secure bicycle parking, safe crossings of the Boulevard and corridor arterials for bicyclists and pedestrians will all be important elements of short-, medium-, and long-term changes to transit service and the physical design and operations of Roosevelt Boulevard.

Table 7 (page 76) provides the Plan's recommendations along the Boulevard in relation to the Route for Change themes of the Program.

Table 7: Route for Change Relationship Summary

Trail Name/Owner	Description	Status (2013)	Recommendation	Route for Change Themes				
				Safety	Reliability	Accessibility	Opportunity	Livability
Roosevelt Boulevard Sidepath	The Roosevelt Boulevard Sidepath is a sidepath concept to connect the neighborhoods, commercial areas, and park and recreation assets along the Boulevard. The project was identified in several previous planning studies.	Conceptual	11.9 mile sidepath along Roosevelt Blvd	✓		✓		✓
Tacony Pennypack Connector	The Tacony Pennypack Connector is a conceptual trail alignment along the PECO right-of-way between the Pennypack and Tacony Creek Parks. There are several significant challenges along the alignment, including waterways, Roosevelt Boulevard, a shopping center, and the Naval Support Activity employment center.	Conceptual	5.7 mile Tacony Pennypack trail connector	✓		✓		✓
Tacony Creek Trail B	The Tacony Creek Trail B will extend the trail under	Final Design	0.7 mile Tacony	✓		✓		✓

Trail Name/Owner	Description	Status (2013)	Recommendation	Route for Change Themes				
				Safety	Reliability	Accessibility	Opportunity	Livability
	Roosevelt Boulevard to enable trail users to continue on the portion of the existing Tacony Creek Trail that extends more than two miles to Montgomery County.		Creek Trail B					
Benjamin Rush State Park Sidepath	The sidepath will run from the intersection of Southampton Road along Roosevelt Boulevard within the park between the new alignment of the park entrance roadway and the Boulevard. The sidepath will serve as an entrance to the park and also as a pedestrian amenity along the Boulevard, as there are no sidewalks in this section.	Under Construction	0.6 mile Benjamin Rush State Park	✓		✓		✓

Figure 13: Sample cut-sheet from the Trail Master Plan (Source: PCPC 2013)

Sidepath/Roadway Adjacent

Priority 13: Roosevelt Boulevard Sidepath

Map Key 14

> Project Status and Description

The Roosevelt Boulevard Sidepath is a sidepath concept to connect the neighborhoods, commercial areas, and park and recreation assets along the Boulevard. There are many areas of the Boulevard without sidewalks and the grid in north and northeast Philadelphia is skewed in several directions. A sidepath along the length of the Boulevard is a major opportunity because there is significant public right-of-way along the roadway and the sidepath would serve as a major bicycle and pedestrian connector between neighborhoods. The project is detailed at length in the *Philadelphia Pedestrian & Bicycle Plan*. The project scored in the mid-range in project status because it is mentioned in several previous planning studies.

> Demand

The project scored high in demand because it is quite long and touches many neighborhoods. It is in close proximity to several schools, park and recreation facilities, and high-use transit stations. It fills a gap in the Walkable Access to Public Open Space map.

> Connectivity

The project scored high in connectivity because it would complete a gap in the trail network, complete gaps in and supports the pedestrian and trail networks, and serve as a feeder to several major trails, including the Pennypack and Tacony trails.

> Feasibility

The project scored low in feasibility because of the large scope and length of the proposed improvements. It would, however, be primarily on public roadway right-of-way.

> Cost

The project ranked low in the cost category because of the high estimated construction cost.

> Priority

The project is in the medium priority category.

> Entity

The project is primarily on City of Philadelphia roadway right-of-way but there is no identified steward for the project at this time.

Entity	City of Philadelphia
Status	Conceptual
Type	Sidepath
Length	Approximately 11.9 mi
Rank	Medium Priority

There are several areas along the Boulevard with no sidewalks, including areas adjacent to commercial and recreational uses, such as near Red Lion Road, below. This area is also in close proximity to a high school.

7. Roosevelt Boulevard Corridor Transportation Investment Study (2003, Philadelphia City Planning Commission)

Study Purpose and Highlights

The Roosevelt Boulevard Corridor Transportation Investment Study examined transportation investment alternatives along Roosevelt Boulevard. The study was completed in 2003 and conducted on behalf of PCPC, the Philadelphia Mayor's Office of Transportation, and SEPTA.

Four goals were emphasized in the study:

- Improve transportation options and travel times in the corridor
- Support community stabilization and development
- Provide a cost-effective and efficient transportation investment strategy
- Minimize any adverse environmental impacts

The study area covered the northeastern section of Philadelphia, focusing specifically on the 12-mile stretch of Roosevelt Boulevard from Broad Street to the northeastern city limits.

After considering fifteen alternatives and studying six of those in depth, the **Preferred Alternative** of this study was a 12-mile subway/elevated spur of the existing Broad Street Line subway from Erie Station at Erie Avenue and Broad Street to a terminus station on Southampton Road and Roosevelt Boulevard. Twelve new stations would be constructed, including a transfer station at Bustleton Avenue and Roosevelt Boulevard to the Market-Frankford Line (extended in a tunnel one mile north of its existing terminus at the Frankford Transportation Center).

Five-car trains would operate at six minute headways in peak hours and 12 minute headways in off-peak hours. Significant improvements to local bus service would be provided in order to get subway riders to one of the twelve new stations. Average daily rail boardings were estimated at 124,500, with 83,300 representing new transit trips. The capital cost estimate was $3.4 billion in 2000 dollars. Annual estimated operating and maintenance costs were $56 million in 2000 dollars.

The study highlighted two opportunities for **transit-oriented development** along Roosevelt Boulevard. First was the area known as the "Logan Triangle," approximately 40 acres of vacant land in the Logan neighborhood near 9th Street where, beginning in the 1960s, hundreds of buildings have been demolished after unstable soils damaged houses and businesses. The second TOD opportunity identified was at the intersection of Cottman Avenue and Roosevelt Boulevard, where the use of parts of the Roosevelt Mall parking lot for a new retail/office mixed use "town center" was envisaged.

Study Recommendations

Fifteen alternatives based on three transportation technologies (bus, light rail, and heavy rail), roadway design, and traffic operation scenarios (no build, grade separations, sunken expressway, and transportation systems management) were considered. Ten independent members of a screening committee assessed each early alternative using twenty four evaluation criteria, selecting six for subsequent detailed analysis:

- No Project
- Transportation System Management (TSM) and Express Bus
- **Broad Street Line with Transfer to the Market-Frankford Line (selected as Preferred Alternative)**
- Broad Street Subway and Roosevelt Expressway Extensions
- Light Metro
- Broad Street Line via New York Short Line

Each of these are described in Table 8 (page 81). Illustrations of elements of the Preferred Alternative are shown in Figure 14 and Figure 15 (page 81).

Figure 14: Study Alternative C, Roadway Section (Source: PCPC)

Figure 15: Study Alternative C, Elevated Rail Section (Source: PCPC)

Table 8: Selected Early Alternatives

Alternative	Mobility, Cost, & Operating Benefits	Environmental Impacts
(1) No Project a. Considered so that other alternatives could be compared to a no-cost, no new transit riders, no community or environmental impacts scenario.	Not assessed	Not assessed
(2) Transportation System Management (TSM) / Express Bus a. Traffic and signal timing improvements, combined with an express bus system of limited-stop buses operating in mixed traffic at frequent headways of 3 to 7.5 minutes. b. Alternative **not chosen** because, despite low capital costs, travel time savings forecasted to be just 15% from the Northeast to Center City, transfers would be required to the Broad Street or Market-Frankford lines, ridership would be about 23,000 daily boardings, and farebox recovery forecasted to be just 18%.	<u>Mobility Benefits</u> ▪ BRT Daily Boardings: 23,000 ▪ Daily New Transit Trips: 12,400 ▪ Travel Time Savings: 822 hrs daily <u>Cost</u> ▪ Capital: $47M (in 2003 $s) ▪ Annual O&M: $27M (in 2003 $s) <u>Cost Effectiveness / Operating Efficiency</u> ▪ Cost per New Trip: $8.48 ▪ Farebox Recovery Ratio: 18% ▪ Operating Efficiency: -1.5 cents per passenger-mile	<u>Major Environmental Impacts</u> + Traffic Flow Improvements

Alternative	Mobility, Cost, & Operating Benefits	Environmental Impacts
(3) Broad Street Line with Transfer to the Market-Frankford Line a. A tunneled, cut and cover, and elevated direct extension of the BSL from the Erie Street station to Southampton Road, with a transfer at Bustleton Road to the Market-Frankford Line (extended one mile in a tunnel from its present terminus). Twelve new stations served by five-car trains operating on 6-minute headways (12 minutes in off-peak hours). b. Alternative **selected as preferred**. Includes improved bus access to new stations and TOD projects at two locations: the Logan Triangle in the Logan neighborhood and at the intersection of Cottman Avenue and Roosevelt Boulevard.	Mobility Benefits ▪ Rail Daily Boardings: 124,500 ▪ Daily New Transit Trips: 83,300 ▪ Travel Time Savings: 12,900 hrs daily Cost ▪ Capital: $3.4B (in 2003 $s) ▪ Annual O&M: $56M (in 2003 $s) Cost Effectiveness / Operating Efficiency ▪ Cost per New Trip: $13.24 ▪ Farebox Recovery Ratio: 51% ▪ Operating Efficiency: -8.8 cents per passenger-mile	Major Environmental Impacts ++ Improved Travel Times ++ Reduced Energy Consumption ++ Improved Air Quality + Potential for TOD + Traffic Flow Improvements - Visual Impacts of Elevated Guideway -- Disruption during Construction
(4) Broad Street Subway and Roosevelt Expressway Extensions a. Extension of the BSL in depressed expressway with four motor vehicle travel lanes (two each direction) from Erie Street station to Southampton Road. Same stations and operating headways as Alt C, with improved bus service to provide access. Slip ramps and turn-back structures provided for movement b/w express and local lanes. b. Alternative **not selected**. Despite travel time savings and pedestrian safety benefits, negative features of the alternative include: lack of convenient transfers to the Market-Frankford Line, visual and community impacts of a depressed expressway, high cost, and smaller traffic flow and distances traveled benefits.	Mobility Benefits ▪ Rail Daily Boardings: 125,600 ▪ Daily New Transit Trips: 81,000 ▪ Travel Time Savings: 10,000 hrs daily Cost ▪ Capital: $2.5B (in 2003 $s) ▪ Annual O&M: $61M (in 2003 $s) Cost Effectiveness / Operating Efficiency ▪ Cost per New Trip: $10.26 ▪ Farebox Recovery Ratio: 45% ▪ Operating Efficiency: -8.8 cents per passenger-mile	Major Environmental Impacts ++ Traffic Flow and Safety Improvements + Improved Air Quality + Potential for TOD -- Visual and Community Impacts of Depressed Expressway -- Disruption During Construction

Alternative	Mobility, Cost, & Operating Benefits	Environmental Impacts
(5) Light Metro a. Extension of the BSL as a light rail system along the Boulevard to Southampton Road. The same stations described above would be part of this alternative, as would improve bus service for access to light rail stations. Trains e three cars long and would operate at three minute headways in peak hours. b. Alternative **not selected or assessed**. Deemed "fatally flawed" due to traffic and safety issues at cross-overs where train-vehicle conflicts would occur and in the BSL subway, where operational constraints would be significant.	Not assessed	Not assessed
(6) Broad Street Line Via New York Short Line a. Extension of BSL using the New York Short Line, a freight railroad about a mile to NW of Roosevelt Blvd, to Byberry Road. This alternative would require the discontinuation of the Fox Chase Regional Rail Line, though most of its stations would be served by the new Broad Street Line extension. 6-minute peak hour headways and improved bus feeder service would be part of this alternative. b. Alternative **not selected** as preferred. Though significant air quality, energy consumption and travel time savings modeled, there would be significant impacts on Tacony Creek and Pennypack Parks, an impact only acceptable under federal regulations when no "feasible and prudent" alternative exists, not deemed the case in this study.	<u>Mobility Benefits</u> ▪ BRT (bus rapid transit) Daily Boardings: 95,300 ▪ Daily New Transit Trips: 64,400 ▪ Travel Time Savings: 10,300 hrs daily <u>Cost</u> ▪ Capital: $1.7B (in 2003 $s) ▪ Annual O&M: $56M (in 2003 $s) <u>Cost Effectiveness / Operating Efficiency</u> ▪ Cost per New Trip: $10.04 ▪ Farebox Recovery Ratio: 39% ▪ Operating Efficiency: -7.3 cents per passenger-mile	<u>Major Environmental Impacts</u> ++ Improved Air Quality ++ Reduced Energy Consumption + Traffic Flow Improvements + Small Potential for TOD -- Disruption During Construction -- Parkland Impacts

Public Involvement Process

This study relied on an **intensive public involvement** process from its start in February 1999 to the end of the comment period in November 2001. Two review committees – an Advisory Committee and a Technical Committee – with community business leaders, civic leaders, elected officials (or their designates), and selected agency representatives provided input. Three general **public meetings** and eight **community presentations** were held. Twenty five key person **interviews**, 600 in-person intercept interviews, and 120 telephone interviews were conducted. **Newsletter**, a **telephone hotline**, and an **e-mail account** provided communication with the public. And media coverage, a web site, and an outreach database including an interactive issue log were also used to communicate with the public and register comments and suggestions. (See pages 9-12 of the report for details.)

Almost 1,000 comments were registered throughout the project and documented in 39 separate categories of topics. Key results of these comments were:

- Almost a third of comments were directed at preferences for alternatives considered, though "**no single alternative emerged as either the overwhelming favorite or clear loser** among public comments." The heavy rail extension garnered the most support, followed by TSM, No Project, and the expressway proposal. Each alternative appeared to have received public comments of both support and opposition, with no clear, shared opinion for any of them.
- A little over a fifth of comments addressed **traffic control, traffic conditions, and safety**. Synchronization of traffic signals, the difficulty of left turns, and the Grant Avenue / Roosevelt Boulevard intersection were frequently cited as important issues to address. Congestion, speeding, and almost every major intersection were cited as "problems" on the Boulevard by one or more participants.
- About an eighth of participants mentioned the importance of **costs and funding**, political support and public involvement. Some argued cost effectiveness was critical while others said that high costs should not be a deterrent to choosing an alternative.
- One in twelve comments addressed **job accessibility** and **transit mobility**. Deficiencies of existing transit service and the difficulty of reverse commuting to jobs in the Northeast and in Bucks County were cited. Several participants liked the idea of express bus service and others made comments supportive or skeptical of high ridership estimates for the heavy rail alternative.
- Smaller numbers of participants identified economic development, aesthetics, coordinated transportation and land use planning, enforcement of traffic regulations and other issues as being important to address with the study.

All of the **key themes of the Route for Change Program** were identified as important to some of the public participants in the *Roosevelt Boulevard Corridor Transportation Investment Study*. No single preferred alternative was evident and differing, sometimes opposite opinions were expressed on the potential impacts on the corridor communities of heavy rail, expressway, and express bus service alternatives.

Relevance to the Route for Change Program

Key features of this study that have direct and indirect connections to the five themes that define the Route for Change Program: Safety, Accessibility, Reliability, Opportunity and Livability:

- **Safety:** was assessed as a sub-goal of the community stabilization and development goal, but was not a high priority of this study.

  Generally, heavy rail, followed by any type of grade-separated transit service, is safer than local buses operating in regular mixed traffic lanes, but the Route for Change Program would likely focus on safety from the point of transit riders safely getting to and from transit stop/station, as well as bike/pedestrian safety.

- **Reliability:** each of the study alternatives would result in increased transit service reliability, as long as they are well integrated with the existing transit network's operations.

The preferred alternative, the heavy rail Broad Street Line with Transfer to the Market-Frankford Line extension would offer more reliable transit service than the few existing bus routes serving the corridor, but that reliability comes with a high cost. The high cost of the preferred alternative – $3.4 billion– has subsequently been identified as the reason the study's recommendations were never implemented. A package of financial support from the City of Philadelphia, the Commonwealth of Pennsylvania, the federal government, and private sources was never successfully compiled and the proposal was ultimately deemed infeasible.

- **Accessibility:** expansion of the transit network, if designed to match trips with origins and destinations can be a powerful tool to increase mobility, provide better access to opportunities, and empower people.

  "Access" can be provided using a variety of transit solutions and technologies; one of the lessons for the Route for Change Program learned from the *Roosevelt Boulevard Corridor Transportation Investment Study* is that feasible, implementable solutions that offer immediate accessibility make more sense in the current financing environment than expensive solutions that would enhance access for more transit riders but not be implemented.

  Consider that the ridership projections were very high for the heavy rail alternatives – about 125,000 for the two Roosevelt Boulevard subway extensions and 95,000 for the rail extension along the New York Short Line tracks. Estimates of ridership on bus alternatives – in this study and in the recent *Alternatives Development for Roosevelt Boulevard Transit Enhancements* by DVRPC (Draft, 2016) – are significantly lower, not exceeding 27,000 daily transit trips in either case.

  The Express Bus alternative was rejected in this study for not having sufficiently high ridership estimates, farebox recovery, or operating efficiencies. This alternative, however, is similar to that proposed in DVRPC's 2015 *Alternatives Development for Roosevelt Boulevard Transit Enhancements*, though operating costs and farebox recovery were not estimated in this more recent study.

- **Opportunity:** the study emphasizes two locations for potential **TOD investments** – the Logan Triangle and at the intersection of Cottman Avenue and Roosevelt Boulevard – that may be important elements of the Route for Change Program.

- **Livability**: each of the studied transit solutions, and especially the heavy rail alternative in particular, would make the areas it passes through more attractive as places to live, work, and redevelop or invest in.

  The **depressed expressway concept** in Alternative D was rejected in large part because of expectations that negative "community and visual impacts" would be significant. The Vine Street Expressway is routinely criticized by planners and designers for the barrier that the below-grade facility creates between Center City and Logan Circle to the south and Spring Garden, Callowhill, and Northern Liberties to the north.

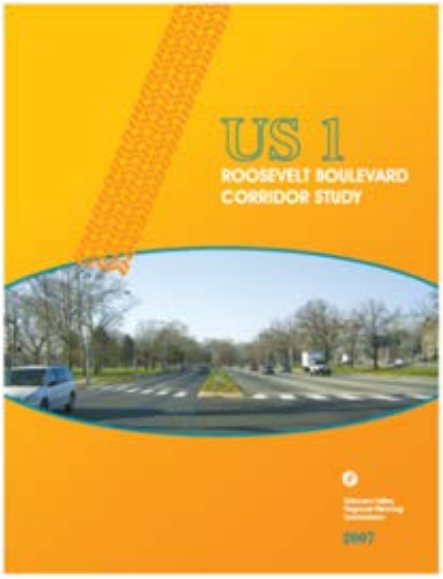
Table 9 provides a summary of the Report's recommendations in relation to the Route for Change themes of the Program.

Table 9: Route for Change Relationship Summary

Alternatives	Route for Change Themes				
	Safety	Reliability	Accessibility	Opportunity	Livability
No Project					
Broad Street Line with Transfer to the Market-Frankford Line (Preferred Alternative)		✓	✓	✓	✓
Transportation System Management (TSM) and Express Bus		✓	✓	✓	✓
Broad Street Subway and Roosevelt Expressway Extensions		✓	✓	✓	
Light Metro			✓	✓	✓
Broad Street Line via New York Short Line			✓	✓	

8. US 1 Roosevelt Boulevard Corridor Study (2007, Delaware Valley Regional Planning Commission)

Study Purpose and Highlights



The *US 1 - Roosevelt Boulevard Corridor Study* by Delaware Valley Regional Planning Commission (DVRPC) identified transportation constraints and opportunities on the Boulevard and recommended **pedestrian safety** and **mobility improvements**. An intersection and midblock crosswalk analysis was performed as well as crossover redesign and lane reduction studies. The study area consists of an 8-mile stretch of Roosevelt Boulevard from Ninth Street to Grant Avenue.

Recommended improvements for crosswalks and crossovers were summarized in an implementation matrix developed to be used as a dynamic long-range tool for selecting safety projects. The study suggested the improvement matrix could be a punchlist for agencies to implement safety improvements. A reconfiguration of the Boulevard from 12 to ten lanes and consolidating inner and outer lanes into one roadway was studied. A direct benefit was found to be a reduction in crossover conflict points.

Study Recommendations

The study identified specific transportation enhancements within the corridor, including:

- **Spot bus stop improvements** such as benches and shelters
- **Intersection and mid-block crossings enhancements** to increase pedestrian safety:
  - pedestrian countdown signals with illuminated pedestrian push buttons
  - restriping all crosswalks
  - installing crosswalk safety educational signs
  - retiming pedestrian crossing time allowance
- Identification of roadway **lane crossovers** to eliminate, modify, or leave unchanged
- **Lane reduction and consolidation** from 12 to ten lanes on the Boulevard.

The study proposed improvements at 13 signalized intersections, 11 mid-block pedestrian crossing locations and 37 crossovers along the 8-mile section of Roosevelt Boulevard. Table 10 (page 88) identifies individual study recommendations and provides a current status of the individual recommendations for the signalized intersections and midblock crosswalks. Table 11 (page 90) identifies the study crossover recommendation and includes a detailed status report on the crossover recommendation. Field review conducted in March 2016 showed that many of the original 2007 study recommendations have been implemented, especially short-term pedestrian safety improvements such as pedestrian countdown signals and restriped crosswalks.

Table 10: Status of Crosswalk Recommendations (based on recommendations made in the US 1 – Roosevelt Boulevard Corridor Study DVRPC 2007)

	Short Term	Install pedestrian countdown signals	Install pedestrian push buttons	Install traffic control signal	Restripe crosswalks	Install crosswalk safety signs	Retime crossing time allowance	Conduct safety outreach at schools	Install crosswalk advisory sign	Install speed display signs	Install regulatory or other sign	Restripe stop bar	Clear vegetation	Move bus stop	Ensure adequate lighting	Ensure signal coordination	Realign crosswalk	Long Term	Create median safety refuge	Install bus stop shelter	Consolidate crosswalk	Eliminate crosswalk	Upgrade sidewalks or walkways	Install a curb	Improve drainage	Consolidate bus stops	Move overhead directional sign	Follow complementary recommendations	Study pedestrian overpass feasibility
Intersections																													
9th St.		✓	✗		✓	†	●													✗									
5th St.		✓	✗		✓	†	●								✗														
North Front St.		✓	✗		✓	†	●	●			✗					✓							✗						
Rising Sun Ave.		✓	✗		✓	†	●	●																					
C St.		✓	✗		✓	†	●	●				✓																	
F St.		✓	✗		✓	†	●				✗													✗				✗	
Bridge St.		✓	✗		✓	†	●		✗	✓															✗				
Harbison Ave.		✓	✗		✓	†	●				✗		✓	✗									†						
Tyson Ave.		✓	✗		✓	†	●																						
Cottman Ave.		✓	✗		✓	†	●													✗				✗					
Rhawn St.		✓	✗		✓	†	●		✗										✓				✓						
Welsh Rd.		✓	✗		✓	†	●												✓	✗									
Grant Ave.		✓	✗		✓	†	●												✗	†			✓						
Mid-Block Crosswalks																													
Bingham & Rorer Sts.		✓	✓		✓	†	●			✗																			●
Smylie Rd.											✗											✓				✓				

	Short Term	Install pedestrian countdown signals	Install pedestrian push buttons	Install traffic control signal	Restripe crosswalks	Install crosswalk safety signs	Retime crossing time allowance	Conduct safety outreach at schools	Install crosswalk advisory sign	Install speed display signs	Install regulatory or other sign	Restripe stop bar	Clear vegetation	Move bus stop	Ensure adequate lighting	Ensure signal coordination	Realign crosswalk	Long Term	Create median safety refuge	Install bus stop shelter	Consolidate crosswalk	Eliminate crosswalk	Upgrade sidewalks or walkways	Install a curb	Improve drainage	Consolidate bus stops	Move overhead directional sign	Follow complementary recommendations	Study pedestrian overpass feasibility
Garland St. & Whitaker Ave.		✓	†		✓	†	●		✓																				
Sanger St.		✓	✓			†																							
Benner St.											✗											✓				✓			
Unruh Ave.		✓	✓		✓	✓	●													✗									●
Longshore Ave.											✗											✗				✗			
Princeton Ave. & Friendship St.		✓	✓		✓	✓	●		✗												✓					✓			
Friendship St. & St. Vincent St.																					✓							✓	
Shelmire Ave. & Faunce St.				✓	✓	✓			✗								✓												
Loney St.																						✓				✓			

Note: Status is based on 3/15/16 field conditions

Legend

✓ Recommendation completed

✗ Recommendation not completed

† Recommendation partially completed

● Status not confirmed

Table 11: Status of Crossover Recommendations (based on recommendations made in the US 1 – Roosevelt Boulevard Corridor Study DVRPC 2007)

	Type	Lengthen deceleration lane	Lengthen acceleration lane	Eliminate crossover	Move crossover	Install signs for crossover	No change recommended
Northbound							
NB 1 - 2nd St.	Local to Express	✗	✗			✓	
NB 2 - Front St.	Express to Local						✓
NB 3 - Rorer St.	Local to Express			✗			
NB 4 - F St.	Express to Local	✗	✗		✗	✓	
NB 5 - Kenwyn St.	Local to Express						✓
NB 6 - Bridge St.	Express to Local			✗			
NB 7 - Benner St.	Express to Local	✗					
NB 8 - Levick St.	Local to Express	✗	✗				
NB 9 - Harbison Ave.	Express to Local			✗			
NB 10 - St. Vincent St.	Express to Local						✓
NB 11 - Revere St.	Local to Express						✓
NB 12 - Loney St.	Express to Local						✓
NB 13 - Winchester Ave.	Express to Local			✗			
NB 14 - Woodward St.	Local to Express						✓
NB 15 - Welsh Rd.	Express to Local						✓
NB 16 - Grant Ave.	Local to Express						✓
Southbound							
SB 1- Michener St.	Local to Express						✓
SB 2 - Goodnaw St.	Express to Local		✗			✓	
SB 3 - Winchester Ave.	Express to Local			✗			
SB 4 - Rahle St.	Local to Express	✗					
SB 5 - Loney St.	Express to Local	✗	✗			✓	
SB 6 - Shelmire Ave.	Local to Express						✓
SB 7 - Sandyford Rd.	Express to Local			✗			
SB 8 - Princeton Ave.	Local to Express						✓
SB 9 - Longshore Ave.	Express to Local			✓			
SB 10 - Hellerman St.	Local to Express			✗			
SB 11 - Benner St.	Express to Local						✓
SB 12 - Bridge St.	Local to Express					✓	
SB 13 - Pratt St.	Express to Local		✗			✓	
SB 13b - Langdon St.	Express to Local			✗			

	Type	Lengthen deceleration lane	Lengthen acceleration lane	Eliminate crossover	Move crossover	Install signs for crossover	No change recommended
SB 14 - Garland St.	Local to Express			✗			
SB 15 - Bingham St.	Express to Local						✓
SB 16 - C St.	Local to Express		✗				
SB 17 - Rising Sun Ave.	Express to Local			✗			
SB 18 - Front St.	Local to Express			✗			
SB 19 - Rockland St.	Express to Local	✗	✗				
SB 20 - 8th St.	Express to Local						✓

Note: Status is based on 3/15/16 field conditions

Legend
✓ Recommendation completed
✗ Recommendation not completed

Public Involvement Process

This study was conducted by DVRPC to address transportation and safety issues within 8 miles of the Roosevelt Boulevard corridor (from 9th Street to Grant Avenue) identified during DVRPC's 2030 long-range planning process. While the 2030 long-range plan involved extensive public involvement, this particular study was **a technical exercise** that involved field assessment of 13 intersection crosswalks, 11 mid-block crosswalks, and all 37 crossovers and did not include public meetings, engagement, or outreach activities.

The study reflects the first transportation priority adopted in the 2030 long-range plan: **Safety**. The DVRPC 2030 long-range planning process included public forums, input from the Regional Citizens Committee, and a regional household survey to identify concerns, hopes, and priorities. The results reflect the regional public's interest in operational safety and mobility, but **no public comments *specific to this study* were solicited or documented**.

Relevance to Route for Change Program

The recommendations will be useful to the Route for Change Program in identifying pedestrian/ vehicular points of conflict along the Boulevard. As a list of interim improvement recommendations are being developed in the form of "Hot Spots," the status summary of the proposed *Roosevelt Boulevard Corridor Study* improvements will be a key source for determining potential short and long term solutions.

Key features of this study of particular importance to the Route for Change Program:

- **Safety:** focus on pedestrian safety enhancements at multiple crosswalk locations and an assessment of the existing crossovers used for vehicular access between the inner and outer lanes along the Boulevard.
- **Reliability:** standardized geometric recommendations for multiple crossover locations. Consistency in crossover design would result in improved driver expectation throughout the corridor.
- **Accessibility:** improvements related to sidewalk upgrades, crosswalk relocations and improved connections with bus service were offered.
- **Opportunity:** increased safety and accessibility is important to local residents using Roosevelt Boulevard as a pedestrian link from the surrounding neighborhoods area shopping and employment centers.
- **Livability:** improved public realm for the area residents due to improvements such as bus shelters and signalized crosswalks.

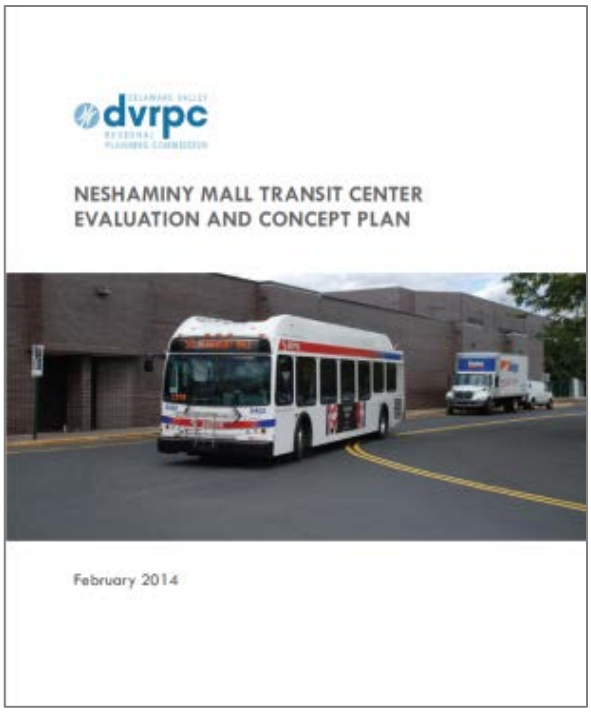
Table 12 provides a summary of the Report's recommendations in relation to the Route for Change themes of the Program.

Table 12: Route for Change Relationship Summary

Recommendation	Pages	Route for Change Themes				
		Safety	Reliability	Accessibility	Opportunity	Livability
Improvements to 13 existing intersection crosswalk locations	19 to 45	✓		✓	✓	✓
Improvements to 11 midblock crosswalk locations.	46 to 67	✓		✓	✓	✓
Improvements to inner and outer lane crossovers	68 to 81	✓	✓			

9. Neshaminy Mall Transit Center Evaluation And Concept Plan (2014, Delaware Valley Regional Planning Commission)

Study Purpose and Highlights



The purpose of the Neshaminy Mall Transit Center Evaluation and Concept Plan is to recommend improvements for SEPTA bus transit facilities at the Neshaminy Mall in Bensalem, Bucks County, Pennsylvania. Neshaminy Mall is a major stop along four SEPTA bus routes (14, 58, 128, and 130) serving lower Bucks County and Northeast Philadelphia.

The study's authors identified:

- Appropriate locations on the mall property for an enhanced bus center,
- Transportation infrastructure needs at those locations, and
- Passenger amenities to make transit service more attractive to potential riders.

The study focused on two options for an enhanced transit center at the mall, calculated estimated costs of $1.1 to $1.7 million, and made a recommendation to continue working with project partners to advance the concept.

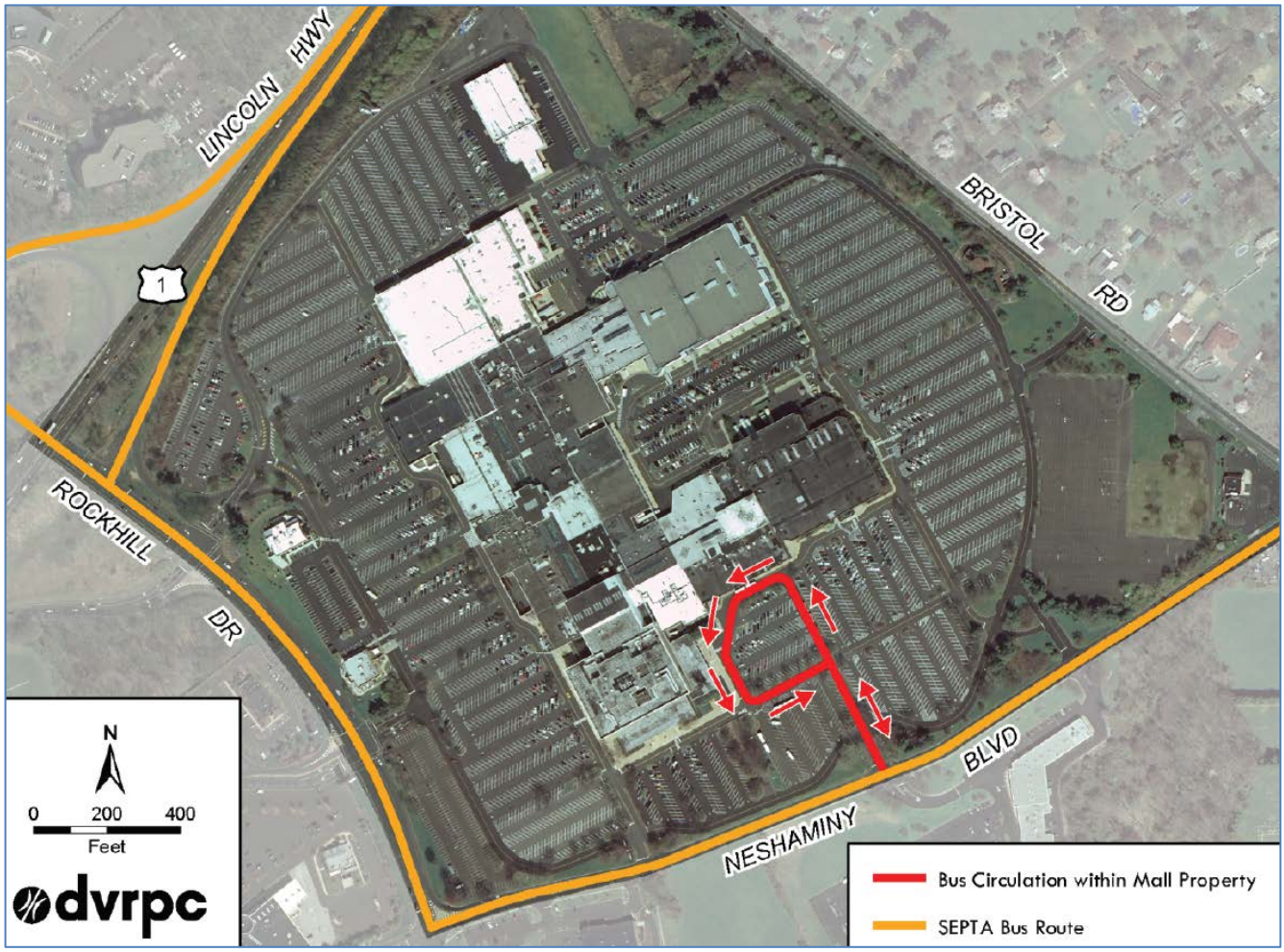
Although at least 20 buses stop at the mall per hour during the peak hours, the existing bus stop configuration and conditions are considered inadequate (Figure 16 and Figure 17, page 94).

Figure 16: Neshaminy Mall Existing Bus Stop Conditions (Source: DVRPC)

To address the deficiencies and identify a set of improvements, the authors of the report:

- Proposed two alternatives for improving bus transit at the mall:
  - **Enhance the current bus stop location,** and
  - **Relocate the transit center to the southwest side of the mall,**
- Provided details as to design, operations, and estimated costs of each one, and
- Made a commitment to pursue a financing package while continuing to work with SEPTA, local government, and the mall's owners on additional opportunities such as the Route for Change Program.

Figure 17: Neshaminy Mall Existing Bus Circulation (Source: DVRPC)



The study authors, however,

- Did not select a preferred alternative: the purpose was to explore options to enhance transit facilities, without committing to a solution.
- Did not address bus access and egress from the mall to US 1 in sufficient detail.

Study Recommendations

The study authors developed two alternative proposals that were responsive to the existing conditions at the Neshaminy Mall. Each of the two proposals included:

- Designated bus bays to increase bus capacity
- Improved boarding/alighting areas for riders
- Passing lane for buses
- Layover parking areas for buses.

The two primary alternatives developed to improve transit facilities at the mall were:

(1) Enhance the current bus stop location near Boscov's with added transit rider amenities and increased bus capacity (Figure 18, page 96).
(2) Relocate the transit center to the southwest side of the mall, off Rockhill Drive (Figure 19, page 97).

Key characteristics of the two alternatives are identified in Table 13 below.

Table 13: Two Primary Options to Improve Transit Facilities

	(1) Enhance current bus stop	(2) Relocate transit center
Location	• Same south entrance to the existing mall bus stop location	• New transit center on southwest side of the mall at the mall's shared-ride park-and-ride lot (accessed via Rockhill Dr.) • Optional: second stop adjacent to the park-and-ride lot
Pedestrian enhancements	• Rider amenities: shelters, landscaping, and streetscape furnishings • Wider sidewalks • Pedestrian access: accessible path between the transit center and the mall entrance	
Bus capacity and operations	• Increased bus capacity (5 bays) • Transit operations centralized near mall entrance • Boarding area protected from vehicular traffic	• Increased bus capacity (7 bays) • Transit operations siting provides greater access for future rapid bus transit along US 1 • Shortened operating route (distance) for routes 14 and 58
Parking impact	• Loss of 66 parking spaces	• Loss of 132 parking spaces
Estimated cost	• $1.15M	• $1.68M ($1.24M without the second stop)

Figure 18: Neshaminy Mall Transit Center: Option 1 (Source: DVRPC)

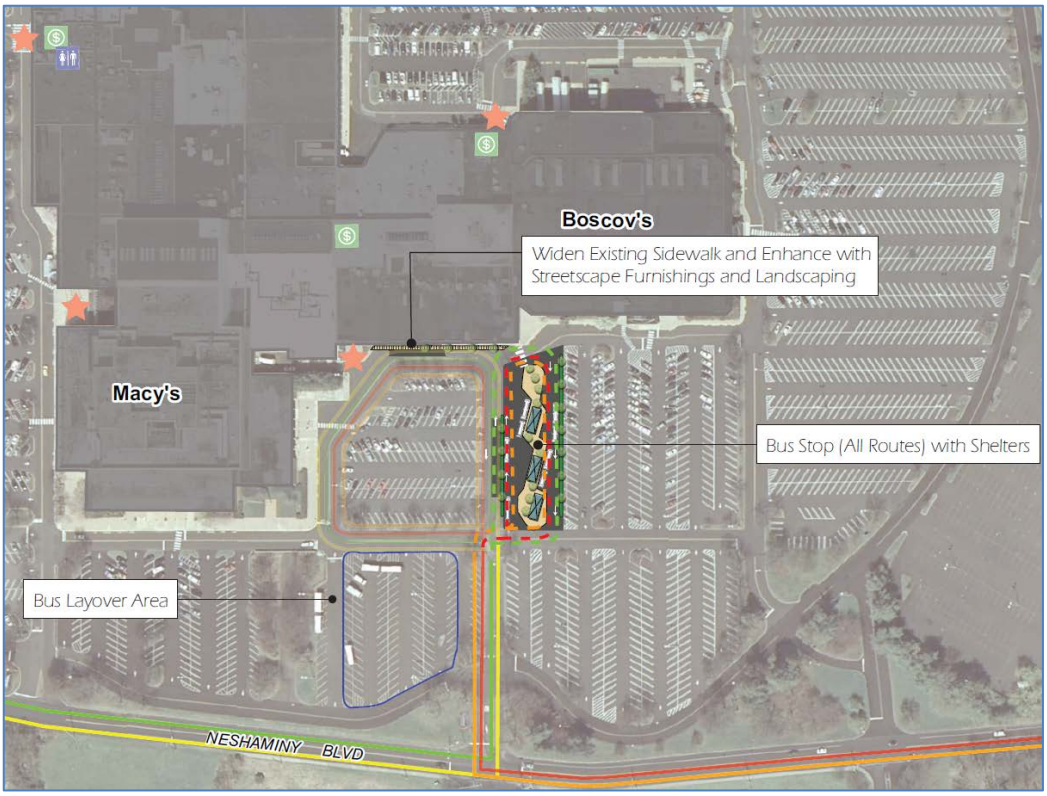
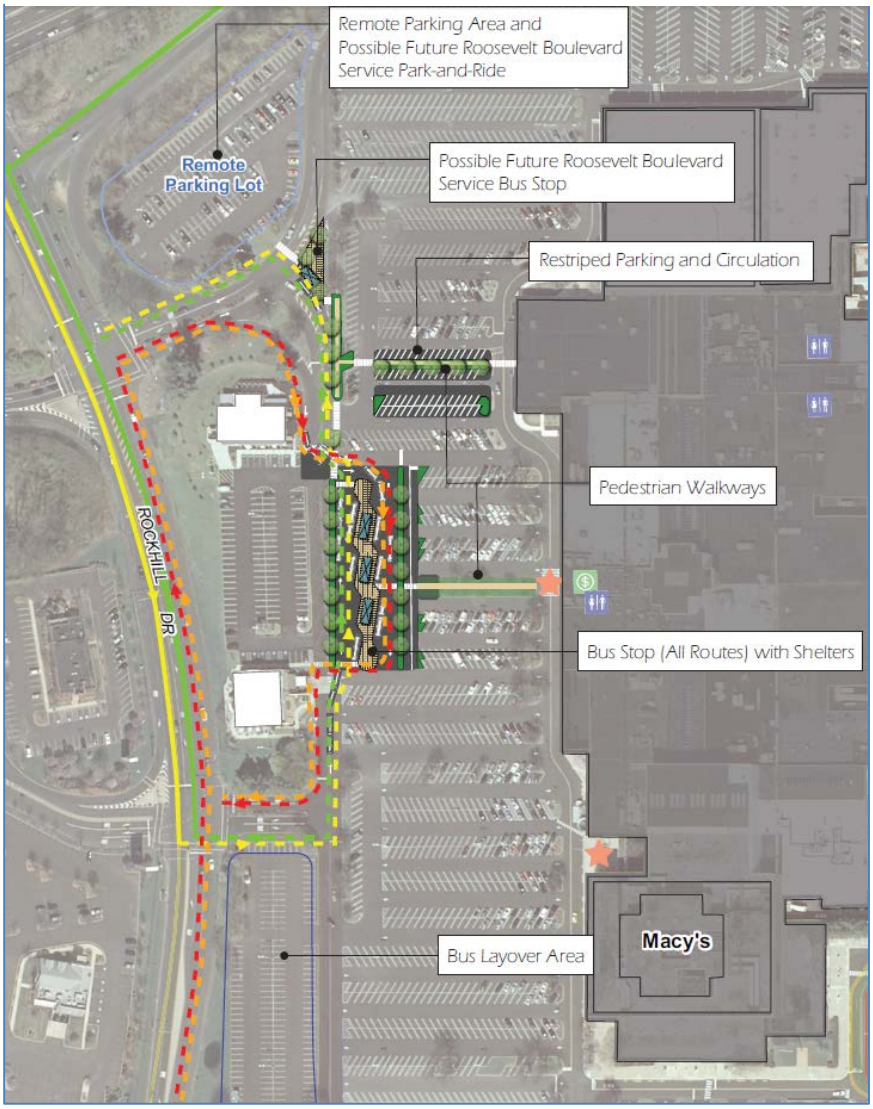


Figure 19: Neshaminy Mall Transit Center: Option 2 (Source: DVRPC)



Public Involvement Process

This study was a **technical effort** led by the need to explore options for enhancing transit facilities at the Neshaminy Mall in Bensalem Township, Bucks County. A **technical committee** composed of staff members representing Bucks County, SEPTA, Bensalem Township, TMA Bucks, and the Neshaminy Mall helped set study goals, identify alternatives for detailed study, and review analytical methods and results. But **no explicit methods for engaging the general public**, mall employees and customers, or SEPTA bus riders were used.

The authors of the study indicated that DVRPC would continue to work with the township and county, SEPTA, TMA Bucks and the owners of the Neshaminy Mall to "explore potential funding strategies and additional opportunities to coordinate with other planning efforts," (page 23 of the Plan) such as the Route for Change Program. Because any future transit service enhancements, whether one of the two alternatives considered for this study or another as-yet-unspecified option, will be constructed on private property, the opportunities for public involvement will need to be agreed upon with Neshaminy Mall and General Growth Properties.

Relevance to Route for Change Program

Key features of this study that have direct and indirect connections to the five themes that define the Route for Change Program: Safety, Accessibility, Reliability, Opportunity and Livability:

- **Safety:** both options support the Route for Change Program's intentions of providing safe pedestrian transit access.
- **Reliability:** Neshaminy Mall is the northernmost boundary of the Roosevelt Boulevard Multimodal Corridor Program study area. Providing reliable service to and from the mall might become more important if the EBS/BRT Roosevelt Boulevard solutions might elevate it to end-of-line / transfer station status and the existing and new choice riders expect service to/from Neshaminy Mall to be more dependable.
- **Accessibility:** while both options support the Route for Change Program's intentions of providing safe pedestrian transit access and more reliable transit service, Option 2, relocating the transit center to the southwest side of the mall provides better overall access for future EBS/BRT along US 1. But providing EBS/BRT service to the mall might require improving bus access between the mall and Roosevelt Boulevard, not considered in the study.
- **Opportunity:** the study emphasizes that the existing transit stop has high numbers of buses and riders (23,700 weekday riders via 564 vehicle trips) and is a major employment destination with many retail jobs. If one of the two options is implemented, there might be an opportunity to capture new choice riders, and it is something that the Route for Change Program might consider.
- **Livability**: both options might slightly increase the mall's image and aesthetics, but overall impact on this Route for Change theme should be minimal.

Table 14 (page 99) provides a summary of the Report's recommendations in relation to the Route for Change themes of the Program.

Table 14: Route for Change Relationship Summary

Alternatives	Route for Change Themes				
	Safety	Reliability	Accessibility	Opportunity	Livability
Option 1: Enhance the current bus stop location near Boscov's with added transit rider amenities and increased bus capacity	✓	✓	✓		
Option 2: Relocate the transit center to the southwest side of the mall, off Rockhill Drive	✓	✓	✓		

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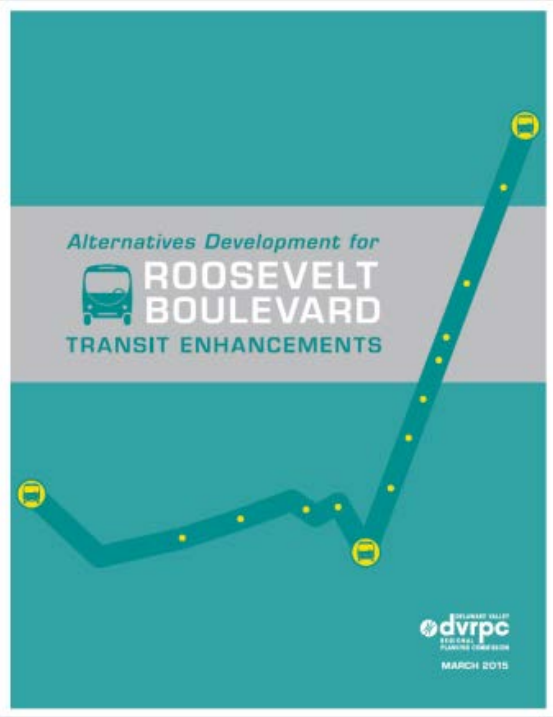
10. Alternatives Development for Roosevelt Boulevard Transit Enhancements (DRAFT, 2016, Delaware Valley Regional Planning Commission)

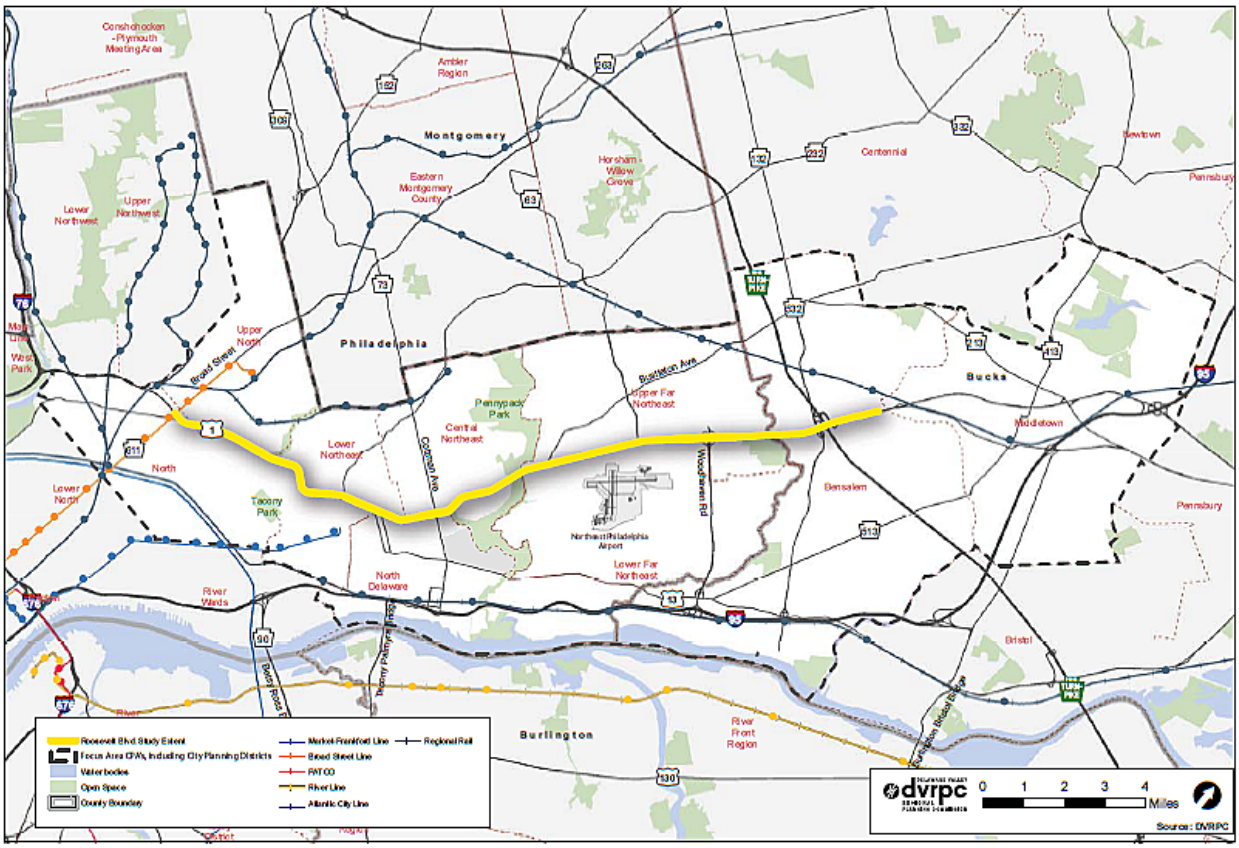
Study Purpose and Highlights



In recent years, there has been renewed interest in improved transit service on Roosevelt Boulevard in Philadelphia, expressed in a variety of studies such as DVRPC's 2008 *Long-Range Vision for Transit* and *Connections 2040* long-range plan and the Philadelphia City Planning Commission's *Philadelphia 2035 Citywide Vision*.

The purpose of the *Alternatives Development for Roosevelt Boulevard Transit Enhancements* study is to develop and **screen immediate and feasible alternatives for at-grade transit enhancements in the corridor**, running from Broad Street to Neshaminy Mall, approximately 14 miles (Figure 20, page 102). The study's objective was to identify transit service improvement strategies that could be implemented at lower cost and in a shorter timeframe than rail investments recommended in reports such as the 2003 *Roosevelt Boulevard Corridor Transportation Investment Study*.

Figure 20: Alternatives Development for Roosevelt Boulevard Transit Enhancements Study Area (Source: DVRPC)



The *Alternatives Development for Roosevelt Boulevard Transit Enhancements* study reconsidered transit needs along the complex Roosevelt Boulevard facility. The study developed improvement strategies that could be achieved at grade within the existing cross section of the roadway and would meet the needs of two transit markets:

- **Inbound commuters** to Center City Philadelphia
- **Intra-corridor and reverse commuters** to employment centers in NE Philadelphia and Bucks County.

The draft report describes the process and findings for the study, summarizing the analysis that was conducted, the area's existing conditions, a short-list of alternatives, as well as the research and recommendations for the preferred bus service design options.

The study's collaborative, workshop-oriented approach resulted in development of two **BRT** service concepts that could be implemented in a phased approach:

- Short term **enhanced bus service (EBS):**
  EBS would operate in a dedicated business access and transit (BAT) lane in the outermost of the local lanes on the Boulevard using existing SEPTA articulated buses in a limited-stop service pattern with transit enhancements:
  - High-capacity and quality shelters with real-time trip information
  - Roadway design enhancements to improve service effectiveness and visibility (BAT lanes or high-visibility bus zone treatments)
  - Transit Signal Priority (TSP) systems

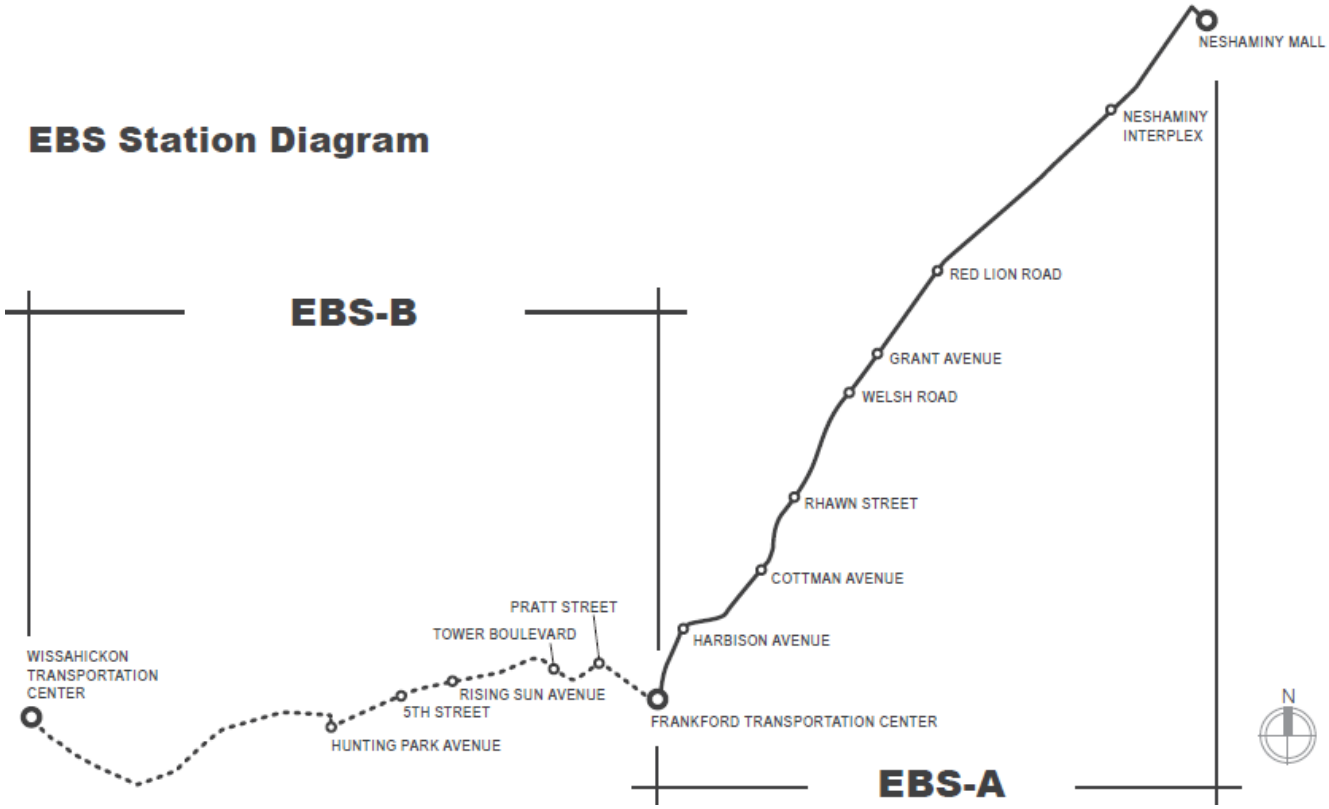
- A fare collection system enabling multi-door boarding and alighting

The EBS concept included a two-phased approach for two different segments of the boulevard - **EBS-A** and **EBS-B** (Table 15 and Figure 21, page 104):

Table 15: Two-phased Approach for EBS Concepts

		EBS-A	EBS-B
SEPTA bus route base / supplemented		Route 14	Route R
Stop locations		Neshaminy Mall Neshaminy Interplex Red Lion Rd Grant Ave Welsh Rd Rhawn St Cottman Ave Harbison Ave/Bustleton Ave Frankford Transportation Center (FTC)	FTC Pratt St Tower Center Rising Sun Ave 5th St Hunting Park Ave Wissahickon Transportation Center (WTC)
Peak bus travel time		Neshaminy Mall to FTC: 33 minutes	FTC to WTC: 26 minutes
Ridership		9,000 forecast daily riders 4,500 new project riders	8,500 forecast daily riders 1,500 new project riders
Capital cost: stations and roadway redesign, terminal improvements, off-board fare collection, and streetscape improvements	<$4 million	<$2 million	
	Combined TSP ~$4 million		

Figure 21: EBS Station Diagram (Source: DVRPC)



- **Long-term, at-grade, separated busway (BRT):**

  Building on the EBS concept's station set, but making use of medians for bus operations and larger-footprint, more rail-like stations, the study proposed three long term solutions for an at-grade, physically-separated BRT busway placed in:

  - Center median (preferred alternative)
  - Southbound side median
  - Concurrent flow bus lanes running adjacent to the outer medians

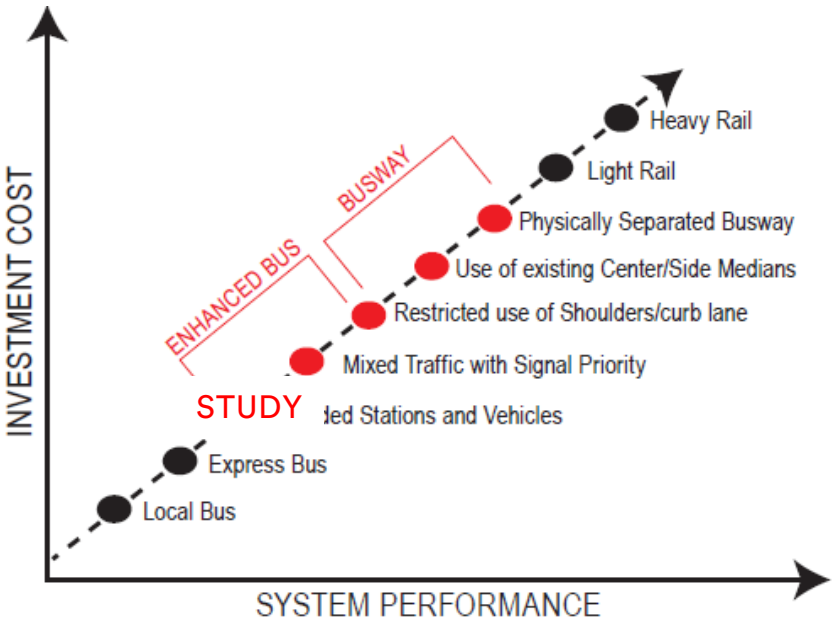
  The study provided details on the BRT concept:

  - Exclusive busway on Roosevelt Boulevard portions
  - Same Roosevelt Boulevard stations as combined EBS (A and B)
  - Travel times 15 to 20% faster than EBS within busway extent
  - 26,000 daily riders forecast in 2040
  - Capital cost estimated at $500 million

  The study recommended that low investment costs and the ability to introduce service quickly, together with the forecasted ridership growth, support near-term project implementation of EBS-A, followed by EBS-B. Long term, the study recommended further evaluation of the center median BRT concept, including consideration of partial or full off-grade operation.

Study Recommendations

Figure 22: Public Transit Investment Costs Compared to Performance (Source: DVRPC)



The *Alternatives Development for Roosevelt Boulevard Transit Enhancements* study initially considered a wide range of investment costs and expected performance for transit improvements (Figure 22). While the project began in a mode-neutral way, through a series of workshops it focused on the two-phased EBS and busway BRT options.

EBS-A's alignment was chosen as the first route to implement because:

- Existing ridership patterns suggest a smooth transition for SEPTA Route 14 riders to EBS-A due to the travel time savings and shared high ridership stop locations
- The route is linear direct, and understood by current and potential riders
- Both termini, FTC and the Neshaminy Mall, are already major destination points and key trip generators

EBS-B builds on another successful existing SEPTA bus service (Route R), and offers similar advantages to EBS-A: legibility to current and potential riders due to familiar route pattern and termini. Additional transfers available at Wissahickon Transportation Center will allow more riders traveling from other origins and destinations to benefit from enhanced service.

For each proposed EBS station, the following principles were applied to station siting and station design (Figure 23 and Figure 24, pages 106 and 107):

- Stations should be on the far side of intersections where possible
- Local service will stop at EBS stations, and may require relocating existing local stops to the far side and consolidating stops
- Bus zones within the bus lane should be approximately 180' long (min.) to accommodate one EBS articulated vehicle (62') and two local buses (40')
- Consistent vehicle, station, and signage treatments (including wayfinding) should be created and reinforced through branding, building a project identity

Figure 23: Roosevelt Boulevard EBS: Typical Station Layout (Source: DVRPC)

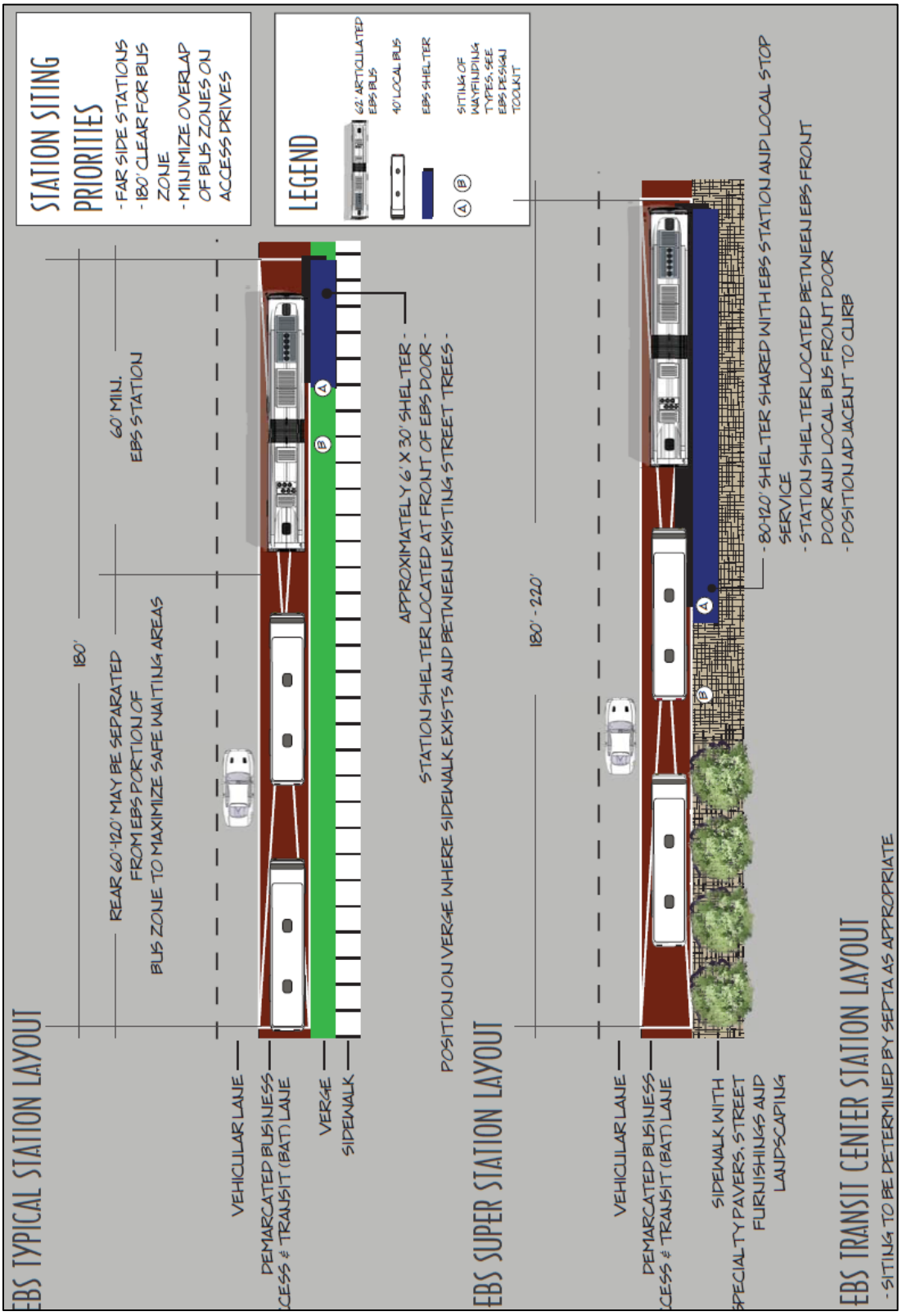
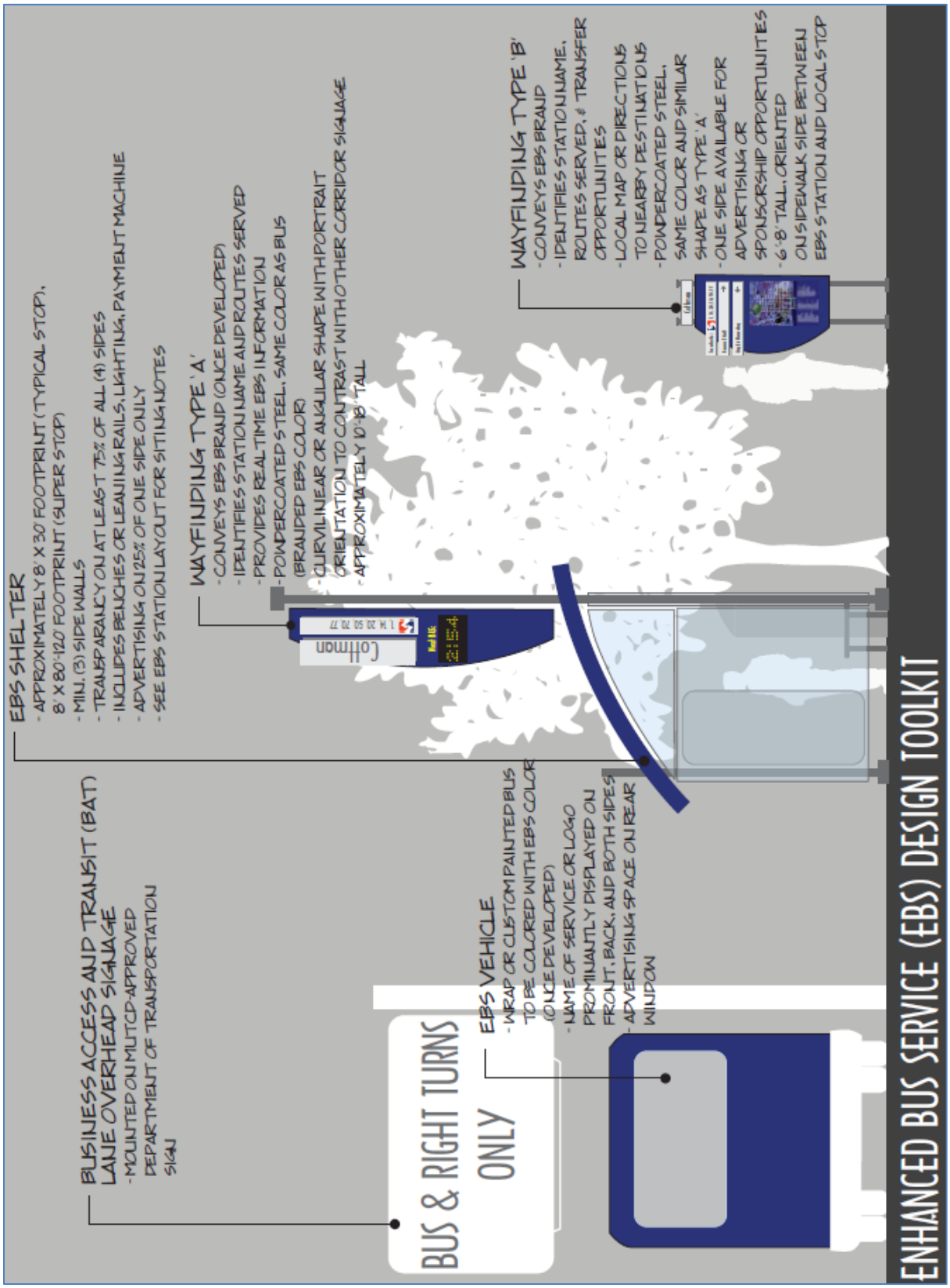


Figure 24: Roosevelt Boulevard EBS: Typical Station Design (Source: DVRPC)



Building on the EBS concepts, the study considered three long term solutions for an at-grade, physically-separated busway:

- **Option 1: Busway in the center median:**

  This option would operate in the center median of Roosevelt Boulevard with a proposed single bus station at each intersection. The median would physically separate the busway from vehicular use along the corridor, as shown in Figure 25 and Figure 26 (pages 109 and 110). Where a center median does not exist or is too narrow for a two-way busway, either additional right-of-way would be required, or some roadway redesign would be needed to site the busway and the station.

- **Option 2: Busway in the southbound side median:**

  This option would create a dual-direction, separated busway running adjacent to the southbound median of Roosevelt Boulevard, as shown in Figure 27 and Figure 28 (pages 111 and 112). This design eliminates one southbound inner lane of the outer drive (local traffic lanes) to make room for the southbound bus lane and one southbound outer lane of the inner drive (express traffic lanes) to create the northbound bus lane. The station infrastructure could be shared between northbound and southbound buses. Where a side median does not exist, or is too narrow for a station, additional right-of-way would be required to accommodate the busway and all existing lanes.

- **Option 3: Concurrent flow bus lanes running adjacent to the outer medians:**

  This option creates a busway in the southbound and northbound directions using the outer medians for station infrastructure, as shown in Figure 29 and Figure 30 (pages 113 and 114). This concept eliminates the inner lane of the outer drive (local traffic lanes) in each direction to make room for the busway. One potential variation could instead operate in the outer lane of the inner drive (express traffic lanes), and use the side median for station infrastructure. Where a side median does not exist, or is too narrow for a station, additional right-of-way would be required to accommodate the busway and all existing lanes.

The study recommended further evaluating Option 1 (the preferred alternative), including consideration of partial or full off-grade operation.

The recommended EBS and BRT concepts from the *Alternatives Development for Roosevelt Boulevard Transit Enhancements* study are described in Table 16 (page 115). An illustrative map showing the proposed phasing of the recommended alternatives elements is found in Figure 31 (page 117).

Figure 25: Option 1 - Center Median Busway BRT Concept Diagram (Source: DVRPC)

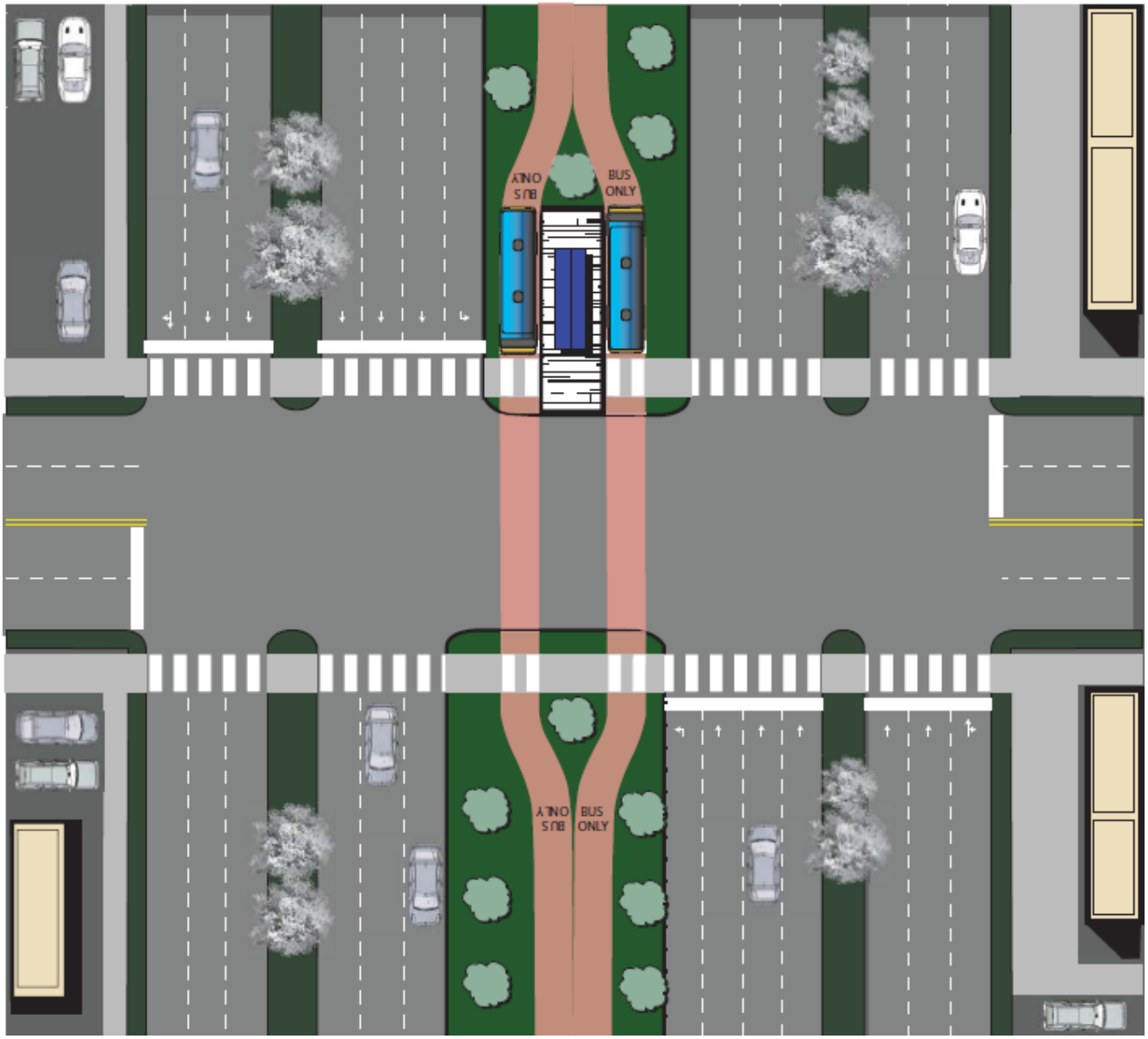
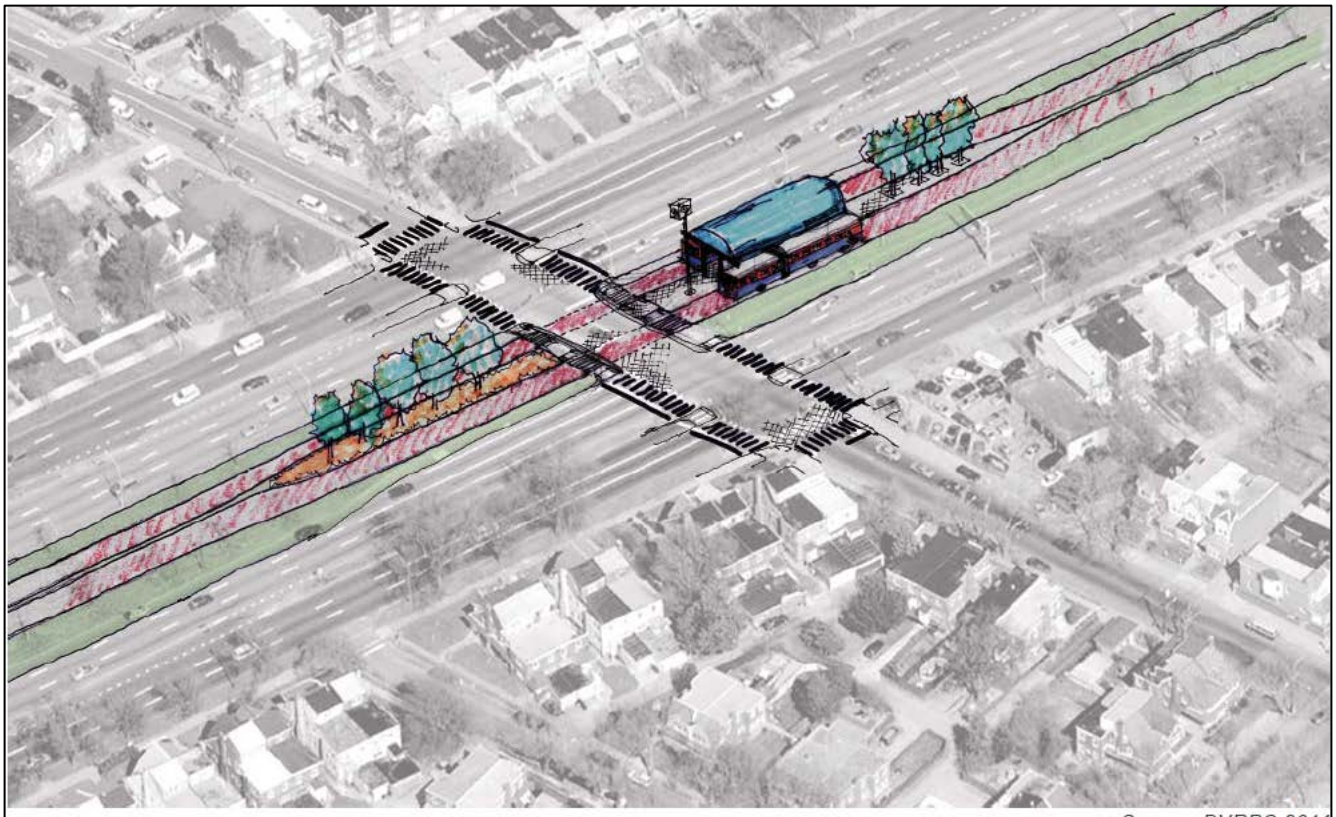


Figure 26: Option 1 – Center Median Busway BRT Concept Illustration (Source: DVRPC)



Source: DVRPC 2014

PROS:

- Less impact to end-to-end vehicular capacity than other options
- One centralized station
- Construction of new right-of-way communicates a message of permanence
- Clearly legible as rail-like service
- Access between inner and outer drive is maintained

CONS:

- Reduces green space along the corridor
- High construction costs
- Adds more impervious surface
- Bridges would need to be rehabilitated to accommodate space in the median for the busway
- May require additional right-of-way
- Adds additional conflict points at intersections between modes
- Requires a bus fleet with doors on the left

Figure 27: Option 2 - Southbound Side Median BRT Concept Diagram (Source: DVRPC)

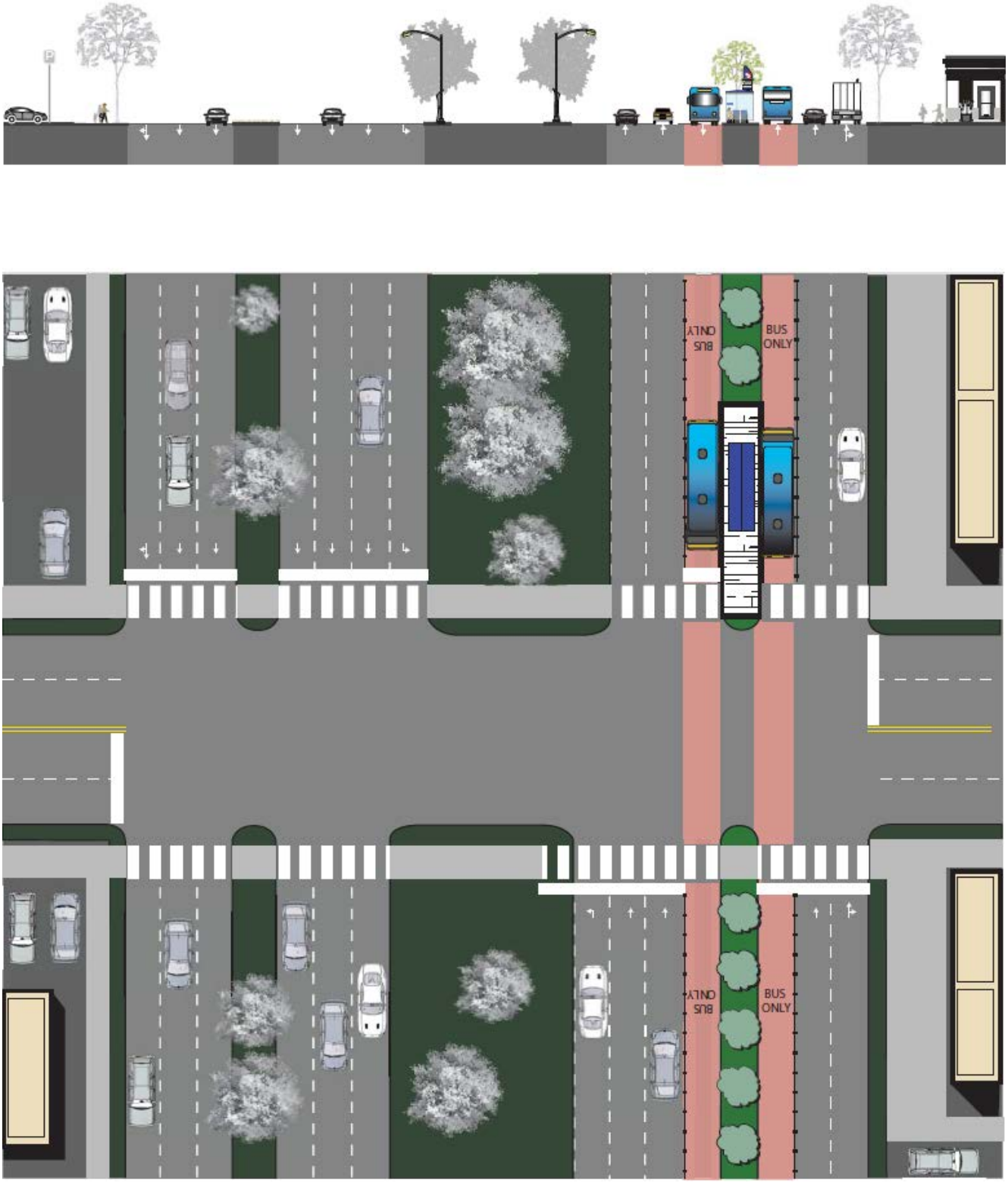
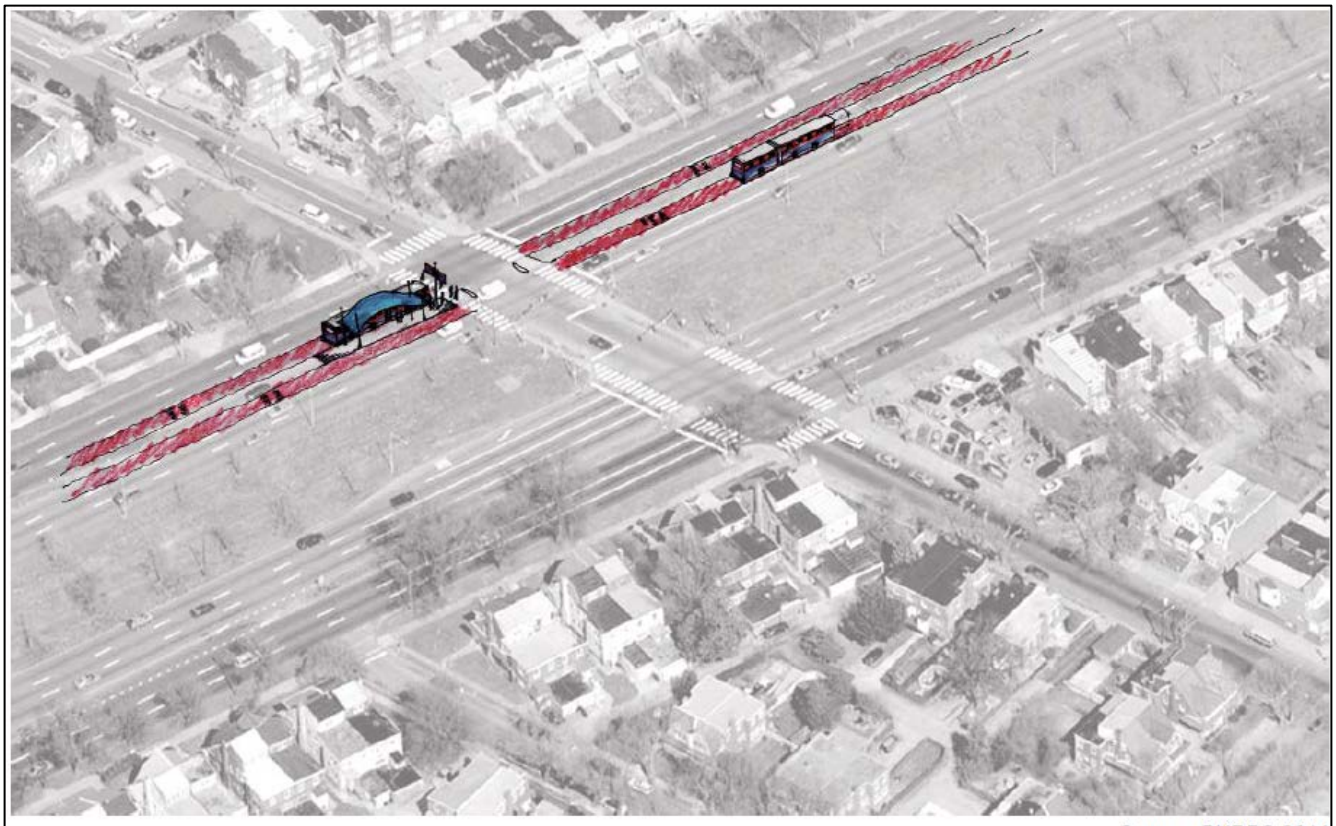


Figure 28: Option 2 - Southbound Side Median BRT Concept Illustration (Source: DVRPC)



Source: DVRPC 2014

PROS:

- One centralized station
- Clearly legible as rail-like service
- Makes use of the southbound side medians which are generally wider than the northbound side medians
- Uses existing impervious pavement footprint except at stations
- The majority of stations could be closer to transfer stops if SEPTA relocates cross street bus stops to the west side of intersections (transfers could be easier)

CONS:

- Requires prohibiting crossovers between inner and outer drive, or auto crossovers would need to make use of the busway
- High construction costs
- Operating on one side of the corridor may not be considered equitable by adjacent land owners
- One lane of the busway operates contraflow to vehicular traffic, potentially creating confusion even with a curb
- Requires a bus fleet with doors on the left
- Loss of two Southbound travel lanes

Figure 29: Option 3 - Concurrent Flow Bus Lane BRT Concept Diagram (Source: DVRPC)

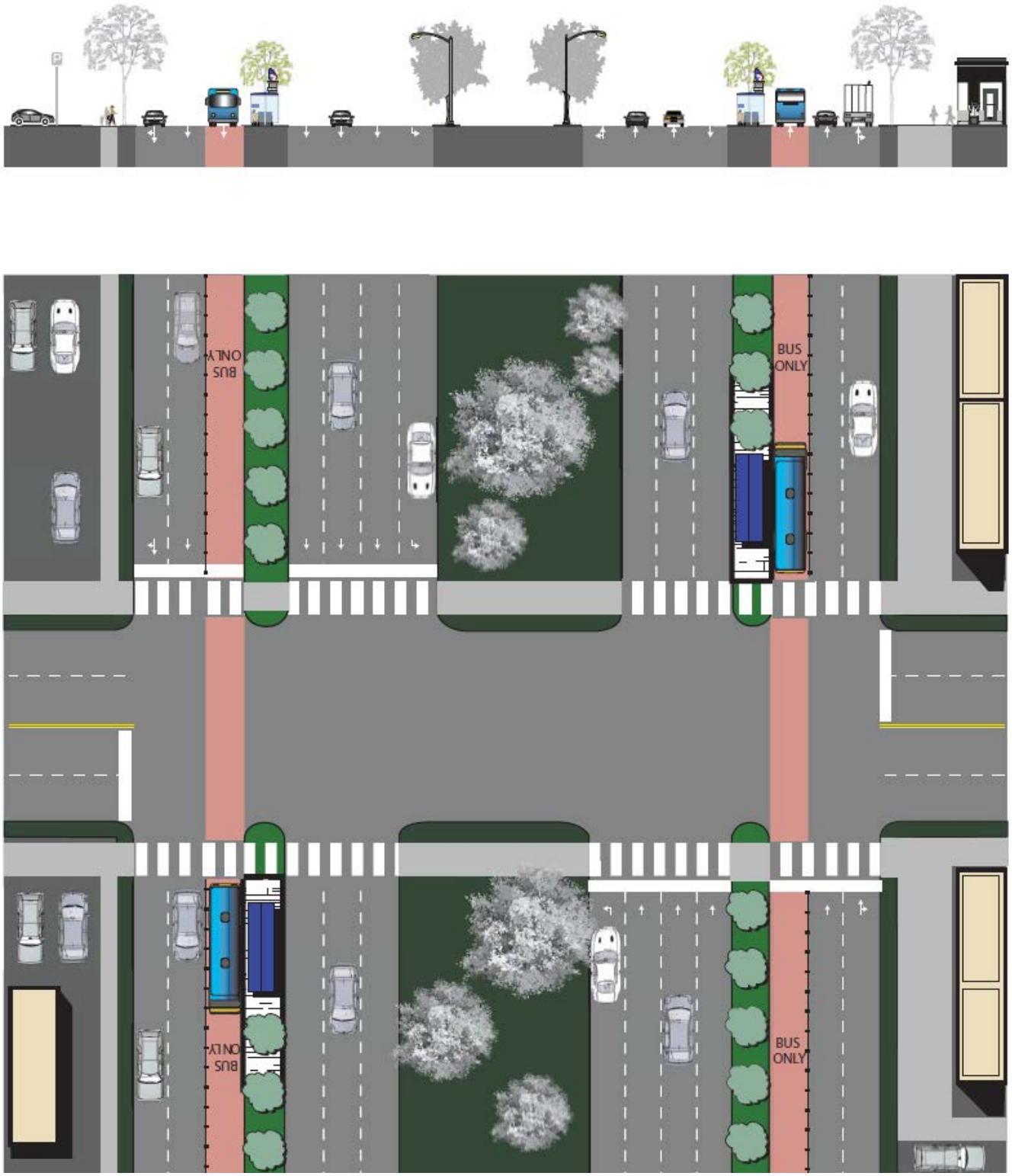
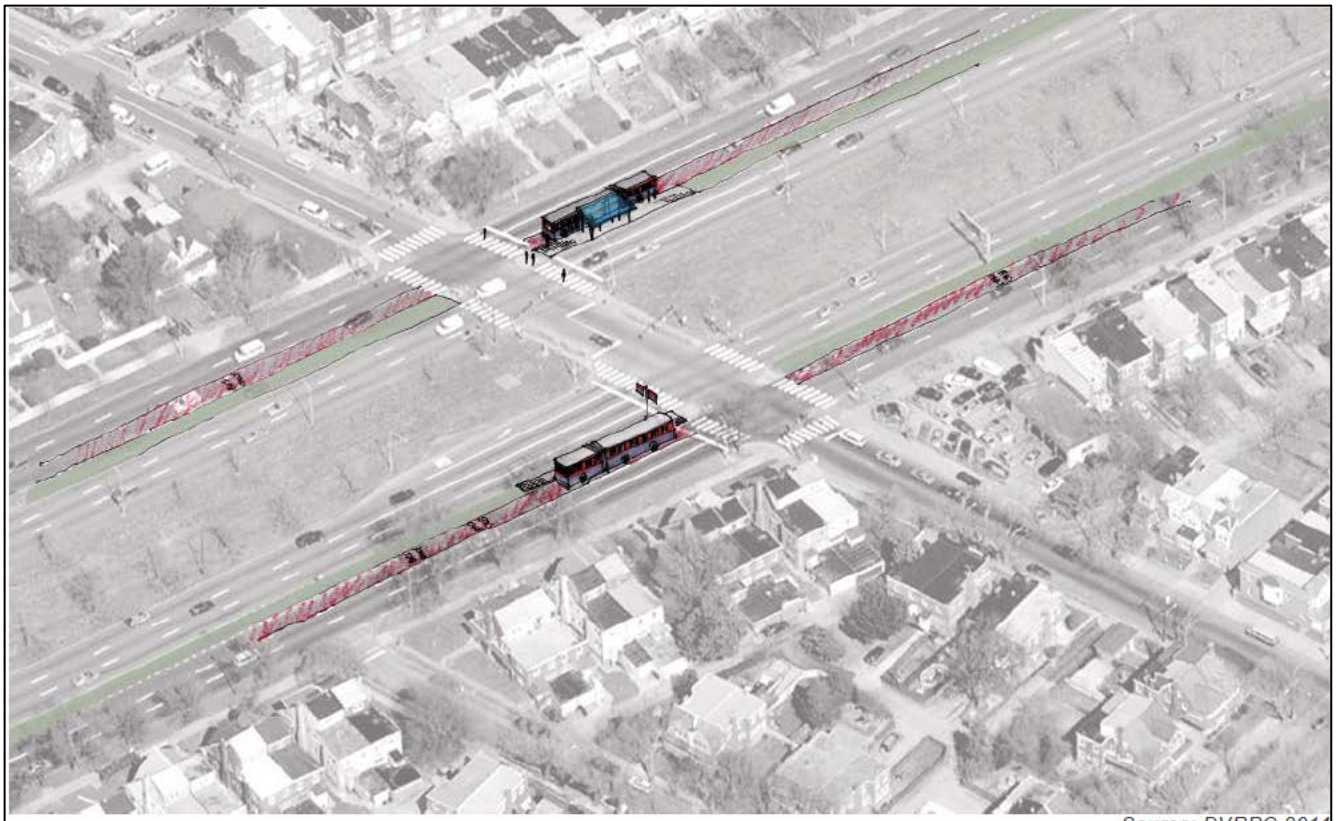


Figure 30: Option 3 - Concurrent Flow Bus Lane BRT Concept Illustration (Source: DVRPC)



Source: DVRPC 2014

PROS:

- Maintains center median green space
- Uses existing impervious pavement footprint except at stations
- Physically and visually connected to adjacent land uses
- Inner drive variation could use existing bus fleet with doors on the right

CONS:

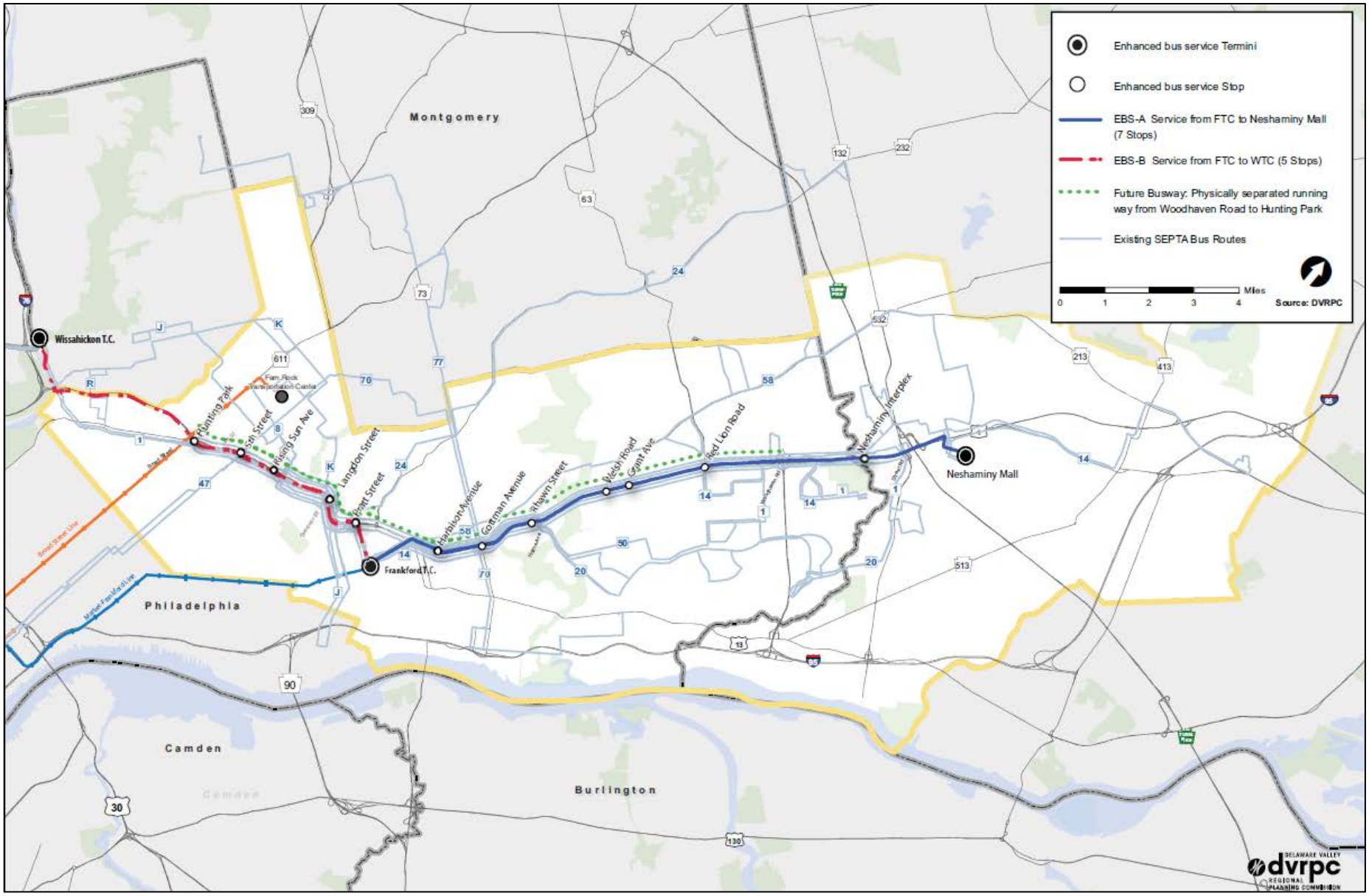
- Requires prohibiting crossovers between inner and outer drives, or auto crossovers make use of the busway
- May require reducing travel lane widths, or additional right-of-way to accommodate stations where there is no side median or it's too narrow for a station
- Reduces vehicular capacity by removing one travel lane in each direction
- A busway on the inner lane of the outer drive would require a bus fleet with doors on the left

Table 16: Recommendations in the *Alternatives Development for Roosevelt Boulevard Transit Enhancements* Study

Timeframe	Concept	Details	Mobility, Cost, & Operating Benefits
SHORT TERM (0 to 5 years)	**ENHANCED BUS SERVICE - EBS-A (Phase 1)** Branded, low-cost limited-stop EBS service between Frankford Transportation Center (FTC) and Neshaminy Mall operating in a dedicated business access and transit (BAT) lane at the outer lanes of the outer drive of the Boulevard using existing SEPTA articulated buses in a limited-stop service pattern with transit enhancements.	• Builds on SEPTA Route 14 bus service • 9 stop locations: Neshaminy Mall, Neshaminy Interplex, Red Lion Rd, Grant Avenue, Welsh Rd, Rhawn St, Cottman Ave, Harbison Ave/Bustleton Ave, FTC	Mobility Benefits • Daily Boardings: 9,000 • Daily New Transit Trips: 4,500 • Travel Time Savings: 14 minutes per trip (30%) Cost • Capital: $4M (*excluding TSP) • Operating: $4.2M (annually – saving $0.5M annually over existing Route 14) • *Combined TSP for EBS-A and EBS-B: $4M
	ENHANCED BUS SERVICE - EBS-B (Phase 2) Branded, low-cost limited-stop EBS service between Wissahickon Transportation Center (WTC) and FTC operating in a dedicated business access and transit (BAT) lane at the outer lanes of the outer drive of the Boulevard using existing SEPTA articulated buses in a limited-stop service pattern with transit enhancements.	• Builds on SEPTA Route R bus service • 7 stop locations: FTC, Pratt St, Tower Center, Rising Sun Ave, 5th St, Hunting Park Ave, WTC	Mobility Benefits • Daily Boardings: 8,500 • Daily New Transit Trips: 1,500 • Travel Time Savings: 13 minutes per trip (30%) Cost • Capital: $2M (*excluding TSP) • *Combined TSP for EBS-A and EBS-B: $4M

Timeframe	Concept	Details	Mobility, Cost, & Operating Benefits
LONG TERM (25 years)	**BUS RAPID TRANSIT – BRT** Combines EBS A and EBS-B and enhances it into at-grade, physically-separated busway on Roosevelt Boulevard portions only. The alternatives include: • **Busway in the center median (preferred alternative)** • Busway in the southbound side median • Concurrent flow bus lanes running adjacent to the outer medians	• 2040 horizon year • Builds on EBS A and EBS-B service • 15 stop locations - same stations as the combined EBS station set: Neshaminy Mall, Neshaminy Interplex, Red Lion Rd, Grant Ave, Welsh Rd, Rhawn St, Cottman Ave, Harbison Ave/Bustleton Ave, FTC, Pratt St, Tower Center, Rising Sun Ave, 5th St, Hunting Park Ave, WTC • Adds a dedicated, at-grade, median busway from Woodhaven Rd to Bustleton Ave; and from Pratt St to 9th St • Park-and-ride capacity at Neshaminy Mall, Red Lion Station, and WTC • Assumes that a center median busway can be constructed without vehicle capacity loss	<u>Mobility Benefits</u> • Daily Boardings: 26,000 • Travel Time Savings: 15-20% per trip compared to EBS <u>Cost</u> • Capital: $500M

Figure 31: Proposed Phasing of the Recommended Alternatives Elements (Source: DVRPC)



Public Involvement Process

This study is described as **a direct response to the public's "ongoing interest in improved public transit service on Roosevelt Boulevard**," which has been expressed over the past decade through "such feedback efforts as DVRPC's Dots & Dashes exercise to develop the 2008 Long-Range Vision for Transit, the Philadelphia City Planning Commission's 2035 Comprehensive Plan, and DVRPC Choices & Voices feedback for the Connections 2040 long-range plan." Meant to address a perceived public frustration with studies that lead to little change, this study was meant to lead to implementable, action-oriented recommendations.

The study relied on the **inputs of a steering committee** composed of representatives of SEPTA, the City of Philadelphia, Bucks County, PennDOT, Bucks County TMA, and Bensalem Township. These professionals participated in workshops and meetings to establish a vision and identify specific service proposals that resulted in six initial alternatives which were subsequently combined by project staff into short-term "enhanced bus service" and long-term busway concepts.

These concepts, and the details of their implementation proposed in the study (including station locations and design, timetables and frequency of service, and pedestrian and traffic signals and operations), **directly address all of the Route for Change program themes** of Safety, Accessibility, Reliability, Opportunity, and Livability.

No public meetings were held for the purposes of this technical analysis, nor were any other public involvement efforts made. The study ends with a set of recommendations for "next steps," including public outreach to develop the near-term "enhanced bus service" strategy.

Relevance to Route for Change Project

The recommendations in this study directly align with the Route for Change Program's aim to provide short and long term transit improvements as part of its multimodal corridor approach. **The *Alternatives Development for Roosevelt Boulevard Transit Enhancements* study is a direct predecessor to the *Roosevelt Boulevard Multimodal Corridor Program*'s transit element.**

The Route for Change Program should further analyze and build upon DVRPC's proposed short term EBS concepts and longer term BRT concepts. The study states that although the busway design is more conceptual, it "will become an input for a wider array of long-term options to be developed through the Roosevelt Boulevard Multimodal Study." It noted that installation of an at-grade or grade-separated busway could meet Route for Change Program goals, including **safety, mobility,** and **vitality along the corridor**, and should be further considered as part of the Program.

More specifically, some key takeaways of this study that have direct and indirect connections to the five themes that define the Route for Change Program: Safety, Accessibility, Reliability, Opportunity and Livability:

- **Safety:** the study notes that installation of an at-grade or grade-separated busway would increase safety along the Roosevelt Corridor. The proposed EBS/BRT service supports the Route for Change Program's intentions of providing safe access to transit for pedestrians.

- **Reliability:** all riders within the corridor's catchment area stand to benefit from the travel time savings and passenger amenities afforded by EBS; the estimates suggest that the EBS

treatments can save one-third of local bus running time, offering a transit option that is much more competitive with driving. A step up to BRT from EBS offers less incremental travel time benefits, but would establish Roosevelt Boulevard as one of the only corridors in the region with a bus rapid transit option.

- **Accessibility:** the studied concepts would greatly enhance access and connectivity to the major destination points and key trip generators in the area, including Frankford Transportation Center, Neshaminy Mall, and Wissahickon Transportation Center.

  Although a center median BRT busway concept was preferred, it carries a significant estimated cost even with at-grade operations. Grade separation would further elevate project costs, while maintaining roadway capacity where center median space is scarce could require major cross section redesign and changes to the right-of-way. Balancing the benefits associated with enhanced transit access and mobility versus project costs will be one of the issues the Route for Change Program might consider.

- **Opportunity:** there is a meaningful ridership market for each of the recommended transit service improvements, but socio-demographics and ridership forecasts suggest a greater likelihood of attracting new riders in the EBS-A service, as the southern portion of the corridor served by EBS-B already has a higher concentration of transit dependent riders. The Route for Change Program might explore options to maximize the corridor's potential to attract new choice riders by strategically phasing in and marketing transit improvements to best respond to and capture the existing and emerging transit demand.

- **Livability**: the project would meet the needs of two transit markets: inbound commuters to Center City Philadelphia, and intra-corridor and reverse commuters to employment centers in NE Philadelphia and Bucks County. Due to its reach and geographic scope, it has the potential to improve the image for the entire corridor, for residents and visitors alike. Many people living and working in the Roosevelt Boulevard corridor will be familiar with the recommendations in this study, either because they participated in the public engagement process or learned of the effort through print, Internet, radio or television media.

Table 17 (page 120) provides a summary of the Report's recommendations in relation to the Route for Change themes of the Program.

Table 17: Route for Change Relationship Summary

Alternatives		Route for Change Themes				
		Safety	Reliability	Accessibility	Opportunity	Livability
Enhanced Bus Service	**EBS-A (Phase 1)**	✓	✓	✓	✓	✓
	EBS-B (Phase 2)	✓	✓	✓	✓	✓
BRT	**Busway in the center median (preferred alternative)**	✓	✓	✓	✓	✓
	Busway in the southbound side median	✓	✓	✓	✓	
	Concurrent flow bus lanes running adjacent to the outer medians	✓	✓	✓		

Conclusion

The Route for Change Program and the earlier studies reviewed in this technical memorandum share the same goal for the Roosevelt Boulevard corridor: **to develop and sustain a fully functioning multimodal corridor that is safe, accessible, and reliable for all users**. The reviewed documents are useful in implementation of the early stages of the Program by identifying focus areas, transit recommendations, and corridor and spot improvements to guide the Route for Change Program to success. More importantly, many previous recommendations and options considered in the studies can be directly applied to, or considered by, the current Program.

The Program's themes of **Safety, Accessibility, Reliability, Opportunity,** and **Livability** are explicit in the findings and recommendations found in the ten reviewed plans. The most important lessons learned from the past initiatives include:

- **There is a strong desire to transform one of the most traveled and visible but not very loved gateways to Philadelphia into a multiway facility that caters to the needs of all modal users: motorists, transit riders, bicyclists, and pedestrians - a realistic showcase for multimodal transportation.** The reimagining of Roosevelt Boulevard and the infrastructure improvements analyzed in these previous studies and plans can create value that will spread beyond the Roosevelt Boulevard corridor to the adjacent neighborhoods, surrounding counties, and beyond.

- **There is overwhelming support for significant public transit enhancements along Roosevelt Boulevard.** This has been consistently expressed in the 2003 *Roosevelt Boulevard Corridor Transportation Investment Study*, the *Philadelphia 2035 Citywide Vision* and *District Plans,* the 2007 *US 1 Roosevelt Boulevard Corridor Study,* the 2014 N*eshaminy Mall Transit Center Evaluation and Concept Plan*, and the 2015 *Alternatives Development for Roosevelt Boulevard Transit Enhancements* study.

- The three Philadelphia City *District Plans* reviewed for this report reflect the *Philadelphia 2035 Citywide Vision* report's goals and strategies. A strong and consistent theme evident in these plans is the intention to **improve safety, mobility, and transportation options along the Boulevard**, and increase its appeal for vital and desirable destinations.

  These plans offer specific recommendations relevant to the Program:
  - The *Lower Northeast District Plan*:
    - Invest in a Frankford Transportation Center Transit-Oriented Development;
    - Study an extension of the Market-Frankford El along Bustleton Avenue to Roosevelt Boulevard; and
    - Develop a shared-use side path on Roosevelt Boulevard to improve bike/pedestrian facilities.

  - The *Central Northeast District Plan*:
    - Enhance pedestrian facilities and improve the public realm along the Boulevard and major gateways (e.g., Roosevelt Boulevard and Cottman Avenue);
    - Implement the recommendations of DVRPC's *Alternatives Development for Roosevelt Boulevard Transit Enhancements*;
    - Add bus shelters at high volume stops along the Boulevard: Rhawn Street, Cottman Avenue, and Oxford and Rising Sun Avenues;
    - Construct a shared-use side path on the Boulevard to improve bike/pedestrian facilities; and
    - Improve pedestrian, transit, and vehicular movement at the Cottman and the Boulevard shopping center.
  - The *North Delaware District Plan*:
    - Strengthen the Boulevard's status as a commercial corridor destination through higher design standards, business incentives, and dedicated funding for streetscape improvements;
    - Advance already proposed recommendations for enhanced bus service along Roosevelt Boulevard; and
    - Improve safety for pedestrian and bicycle travel.

- The *Philadelphia Pedestrian and Bicycle Plan* identified four key intersections along Roosevelt Boulevard as **pedestrian network focus areas** and, along with the *Philadelphia Trail Master Plan* (and the reviewed *District Plans*), it recommended a side path along the Boulevard. Both studies advocated for **bicycle and pedestrian connectivity** to link neighborhoods and major destinations along this corridor and addressed the Tacony to Pennypack Connector Trail. In 2015, the Bicycle Coalition of Greater Philadelphia proposed that a fully **protected bicycle lane** be constructed along Roosevelt Boulevard, rather than a sidepath.

- In 2003, the *Roosevelt Boulevard Corridor Transportation Investment Study* examined transportation investment alternatives on Roosevelt Boulevard and **proposed a 12-mile heavy rail extension** of the existing Broad Street Line subway from Erie Station to Southampton Road and Roosevelt Boulevard. While subway was the preferred alternative, its capital cost – $3.4 billion in 2003 dollars – was so high that eventually the concept was deemed infeasible. The study also analyzed an Express Bus alternative similar to that proposed in DVRPC's 2016 *Alternatives Development for Roosevelt Boulevard Transit Enhancements*. The study identified two locations for potential TOD investments – the Logan Triangle and Cottman Avenue and Roosevelt Boulevard intersection – that will be considered in the Route for Change Program.

- In 2007, the *US 1 Roosevelt Boulevard Corridor Study* proposed specific **operational and safety recommendations** for multiple bus facilities, intersection crosswalks, mid-block crossings, crossovers, and vehicular traffic lanes on the Boulevard. While some of these recommendations have been implemented, the outstanding transportation needs list will help identify high priority, hot spot improvement locations along the corridor.

- The *Neshaminy Mall Transit Center Evaluation and Concept Plan* proposed two alternatives for improving **bus transit and pedestrian safety** at the mall, the northernmost boundary of the Roosevelt Boulevard Multimodal Corridor Program study area.

- Finally, the yet-to-be-finalized *Alternatives Development for Roosevelt Boulevard Transit Enhancements* study, a **direct predecessor to the Roosevelt Boulevard Multimodal Corridor Program's transit element**, developed and screened immediate and feasible alternatives for at-grade transit enhancements in the corridor to arrive at the preferred BRT service concepts. The study's Layout and Station Design Toolkits provide viable concept plans for the Boulevard BRT design elements and could be directly applied to the Program.

The Route for Change Program will benefit from the review and analysis of the previous plans and study recommendations conducted along or within the Roosevelt Boulevard study area. The past plans and studies provide the Route for Change Program with a foundation for which to start the current evaluations and discussions with stakeholders as many concepts, visions, and recommendations have already been studied and discussed. The Route for Change Program will continue to analyze, build upon, and apply relevant earlier recommendations, focusing on those that best fit the Route for Change Program objective of **transforming Roosevelt Boulevard into a multimodal corridor with significantly improved public transit service, vehicular circulation enhancements, and pedestrian and bicycle facilities upgrades.**

Route for Change

Transforming The Boulevard

Roosevelt Boulevard

Section 1 – Appendix 2

Demographics Summary

February 2020

Introduction

The City of Philadelphia, in cooperation with the Pennsylvania Department of Transportation (PennDOT), and the Southeastern Pennsylvania Transportation Authority (SEPTA) received a United States Department of Transportation (USDOT) TIGER VI planning grant to develop a program to transform Roosevelt Boulevard, called the Roosevelt Boulevard Route for Change Program. The Route for Change Program creates the framework for transformation. The 14-mile Program area spans all 12.3 miles of Roosevelt Boulevard in the City of Philadelphia, from N. Broad Street to the Philadelphia County line shared with Bucks County, and an additional 1.7 miles of U.S. 1 in Bucks County to the Neshaminy Mall. It is a critical transportation corridor in the region, and serves tens of thousands of residents, vistors, and commuters each day.

This memorandum summarizes demographic characteristics of the area around Roosevelt Boulevard/U.S. 1. The demographic characteristics of the surrounding community inform our understanding of transportation needs and help support the need for improvements for people who walk, bike, and ride transit in order tofacilitiate multimodal travel and connectivity along and across Roosevelt Boulevard.

Scope and Background

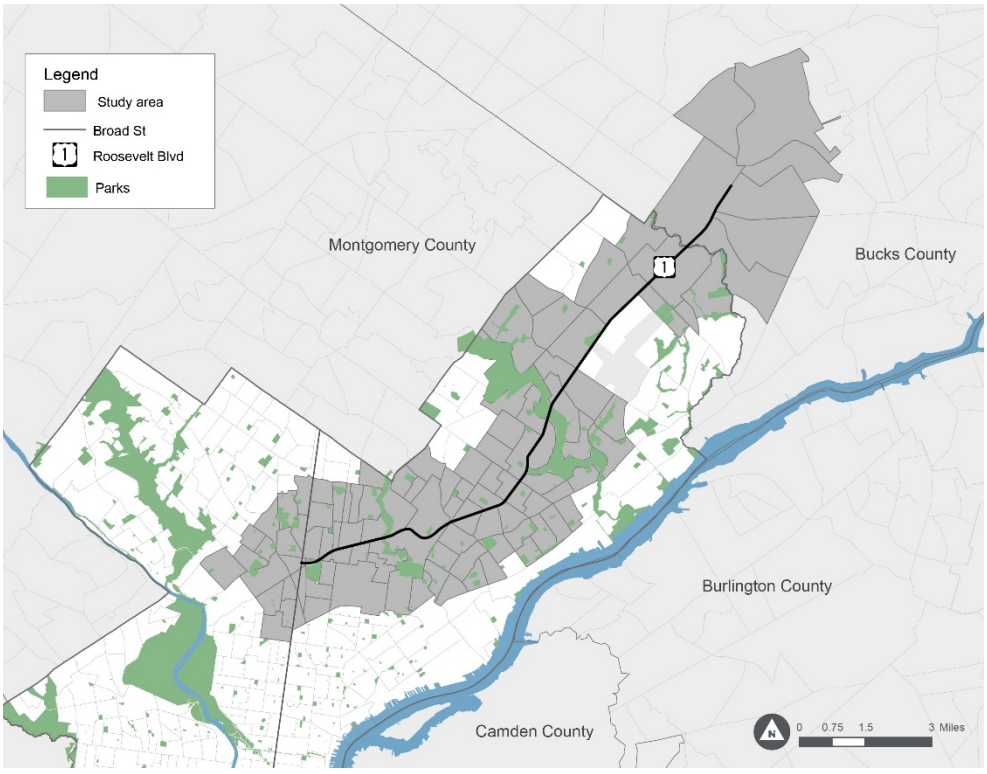
This memorandum focuses on a section of Roosevelt Boulevard that is 14 miles long (Figure 1).

Unless noted, data included in this report is from the 2006 - 2010 and 2013 - 2017 U.S. Census 5-year American Community Surveys (ACS). The census tracts included in the analysis are within one mile of Roosevelt Boulevard from Broad Street to Rockhill Drive. A full list of the relevant census tracts is provided in the Appendix.

The Program used an additional method of analyzing demographics to better understand Roosevelt Boulevard called Indicator of Potential Disadvantage (IPD). This is a regional analysis by the Deleware Valley Regional Planning Commission (DVRPC). The IPD analysis tool provides DVRPC and municipalities in the region a uniform approach to understanding key metrics that correlate to systemic disadvantage and inequities. The IPD analysis uses census data to map these populations in each of the census tracts in the region via GIS. Each population group is an "indicator" in the analysis and includes the following:

- Youth
- Older Adults
- Female
- Racial Minority
- Ethnic Minority
- Foreign-Born
- Limited English Proficiency
- Disabled
- Low-Income

Figure 1: Program Area



The IPD analysis methodology generates an “IPD score” for each indicator, which is determined by standard deviations relative to an indicator’s regional average calculated from the U.S. Census American Community Survey (ACS) 2013-2017 five-year estimates data of every census tracts in the region. Then the data for each of the indicators in the IPD analysis is split five categories: well below average (score of 0); below average (score of 1); average (score of 2); above average (score of 3); and well above average (score of 4).

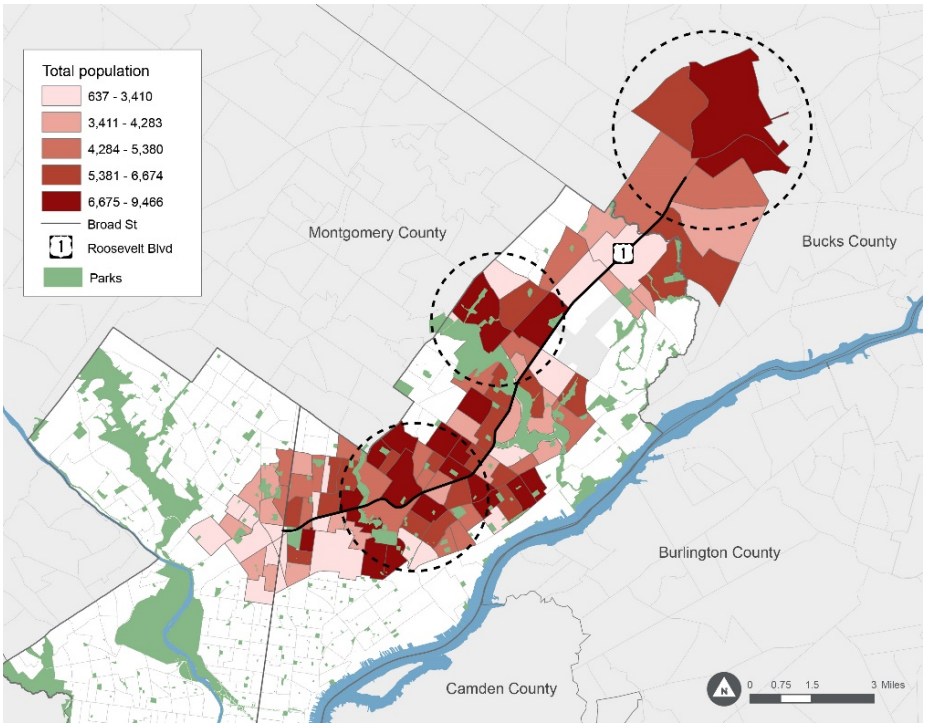
Population

According to the 2017 American Community Survey, the population of Philadelphia is approximately 1.6 million. Nearly 530,000 people live in a census tract that is within one mile of the Program area, with the vast majority living in Philadelphia. One in three Philadelphians live near Roosevelt Boulevard.

Population growth in the vicinity of Roosevelt Boulevard is slightly lower than the city’s overall growth rate. Between 2010 and 2017, Philadelphia’s population increased by 3.5 percent, while the population in census tracts within one mile of the Program area increased by two percent (approximately 12,000 people).

Within the Program area, there are three areas with high concentrations of people, circled in the map in Figure 2. One is around the Frankford area in Philadelphia, another is west of the Northeast Philadelphia Airport (PNE), and the third is near the northeastern portion of the corridor in Bucks County, which is just outside the Program area (Figure 2).

Figure 2: Total Population (2017)



Summary of Indicators of Potential Disadvantage (IPD) Analysis

Figure 3: IPD Scores by Census Tract Groupings

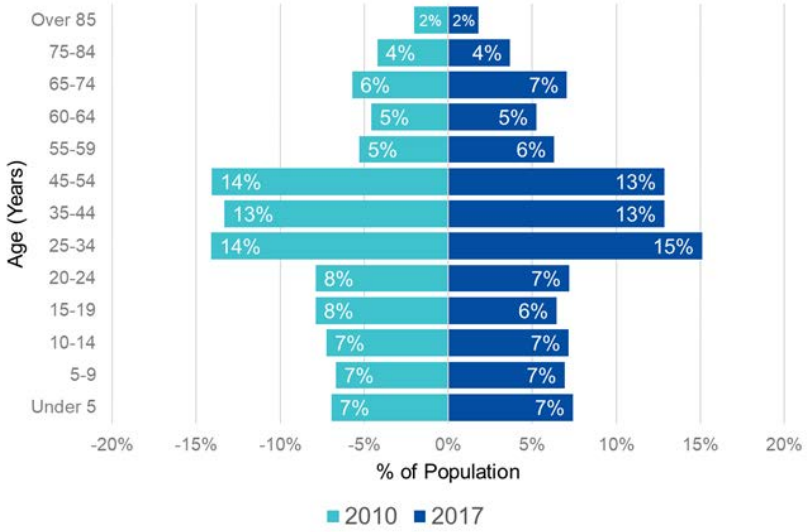
	Census tracks in the Program Area		Philadelphia		9-County Region[i]	
IPD Indicators	Number of Census Tracts Above and Well Above Avg	Percent of Census Tracts Above and Well Above Avg	Number of Census Tracts Above and Well Above Avg	Percent of Census Tracts Above and Well Above Avg	Number of Census Tracts Above and Well Above Avg	Percent of Census Tracts Above and Well Above Avg
Youth	52	48.15%	122	32.36%	365	26.68%
Older Adults	16	14.81%	69	18.30%	311	22.73%
Female	38	35.19%	146	38.73%	342	25.00%
Racial Minority	63	58.33%	224	59.42%	355	25.95%
Ethnic Minority	46	42.59%	78	20.69%	195	14.25%
Foreign Born	51	47.22%	111	29.44%	294	21.49%
Limited English Proficiency	57	52.78%	116	30.77%	235	17.18%
Disabled	59	54.63%	186	49.34%	357	26.10%
Low Income	75	69.44%	237	62.86%	368	26.90%
Total Number of Tracts	108		377		1,368	

Age

The age distribution along Roosevelt Boulevard is similar to citywide age distribution; nearly 40 percent of people in census tracts within one mile of the Program area are younger than 19 and older than 65. The remaining 60 percent are between 20 and 64 years of age according to the 2017 ACS (Figure 4). The median age was just under 35 years old.

The dependency ratio – a measure of the number of dependents aged zero to 14 and over the age of 65, compared with the total population aged 15 to 64 – is 38 percent in census tracts within one mile of the Program area.

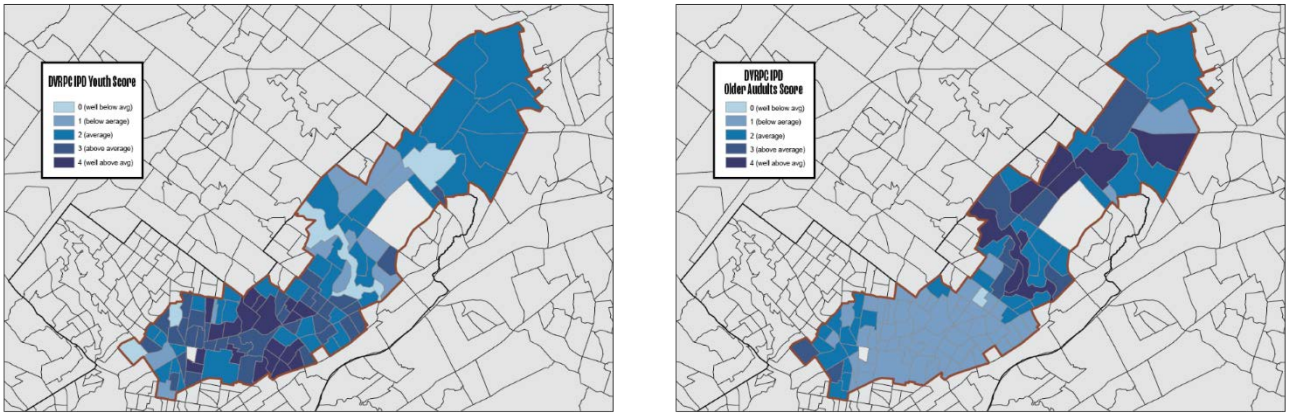
Figure 4: Age Distribution of Population around Roosevelt Boulevard



Between 2010 and 2017, there was a small increase in the number of residents in the Program area between 25 and 34. In addition, 24 percent of the population is over 50 and 21 percent is under 14. According to Smart Growth America's 2019 *Dangerous by Design* report, people over the age of age 50 are overrepresented in deaths involving people walking, especially people age 75 and older. In addition, Philadelphia's Vision Zero Plan identifies children and seniors as vulnerable users who are disproportionately at-risk for traffic crashes.

As seen in Figure 5, there is a stark difference between the lower portion of the Program area and the upper. The lower area scored high for youth population and many of the upper area scored high for older adults.

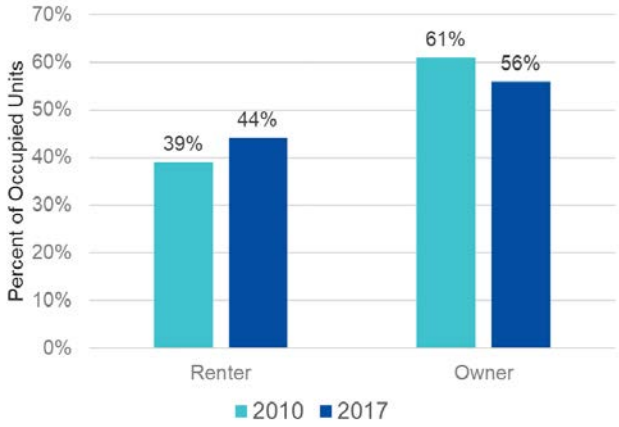
Figure 5: Maps of IPD Scores for "Youth" and "Older Adults"



Homeownership, Renters, and Housing Stock

Most of the housing within the Program area is occupied by homeowners, but the percentage decreased slightly between 2010 and 2017. During the same time period, there was an increase in renters. The homeownership rate decreased from 61 percent to 56 percent (Figure 6). In 2017, renters along Roosevelt Boulevard, on average, paid $946 in monthly rent. The median gross rent increased by more than $125 between 2010 and 2017.

Figure 6: Housing Owners and Renter Rate



Average housing size and housing stock have remained consistent since 2010. The average household size increased slightly from 2.75 people in 2010 to 2.77 people in 2017. Housing stock age and type has remained steady, and primarily consists of rowhouses, which are attached to adjacent houses on both sides, constructed before 1960 (Figures 7 and 8).

Figure 8: Age of Housing as Percent of Total Units

Year of Construction	2010	2017
2000 or later	1.6%	2.1%
1980-1999	7.0%	7.9%
1960-1979	21.6%	23.1%
1959 or earlier	69.7%	66.9%

Figure 7: Housing Type as Percent of Total Units

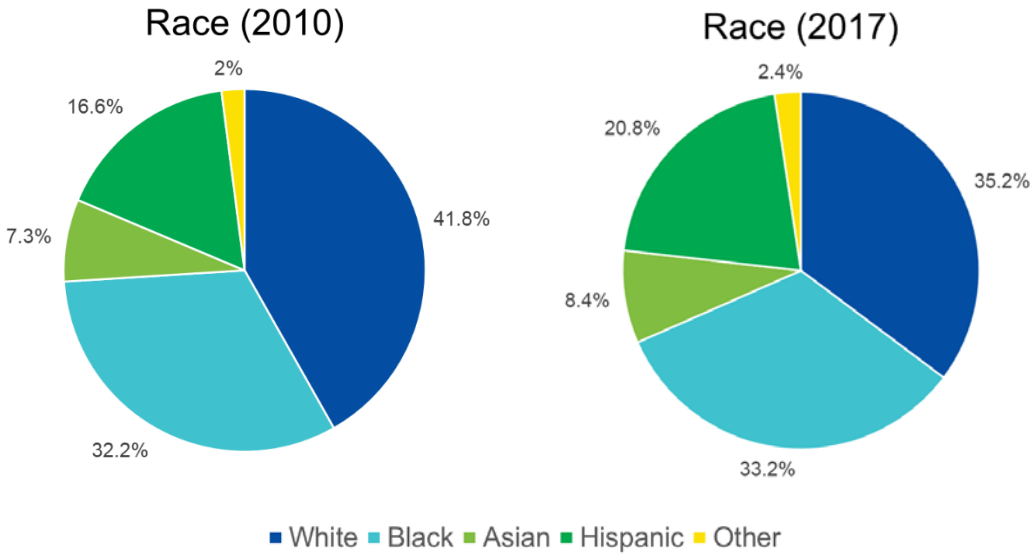
Housing Type	2010	2017
1-unit, detached	13.6%	13.1%
1-unit, attached (rowhouse)	59.3%	59.9%
2 units	10.0%	9.6%
3-4 units	5.0%	5.1%
5-9 units	3.0%	2.7%
10-19 units	2.6%	2.6%
20+ units	6.2%	6.5%
Mobile Home	0.5%	0.6%
Total units	204,643	207,364
Total occupied units	183,237	186,900

Race

According to the 2017 ACS, 35 percent of the population in the Program area around Roosevelt Boulevard identifies as White, 33 percent identifies as Black or African American, 21 percent identifies as Hispanic or Latino, and close to nine percent identifies as Asian (Figure 9). The racial composition of the area around Roosevelt Boulevard was generally consistent between 2010 and 2017; the primary race within the area remained White, although the percentage decreased from 42 to 35. During the same time period, the Black population increased slightly from 32 to 33 percent. The Hispanic population increased from 17 to 21 percent.

Race along Roosevelt Boulevard is separated spatially (Figures 10 and 11). A higher percentage of Hispanic, Black, Asian, and Other populations live near the lower half of Roosevelt Boulevard, closer to N. Broad Street; a higher percentage of the White population is present in the upper half of the .

Figure 9: Racial Composition of Program Area Population



**Other includes American Indian, Alaska Native, Two or More Races, or Other race*

Figure 10: Percent of White Residents (2017)

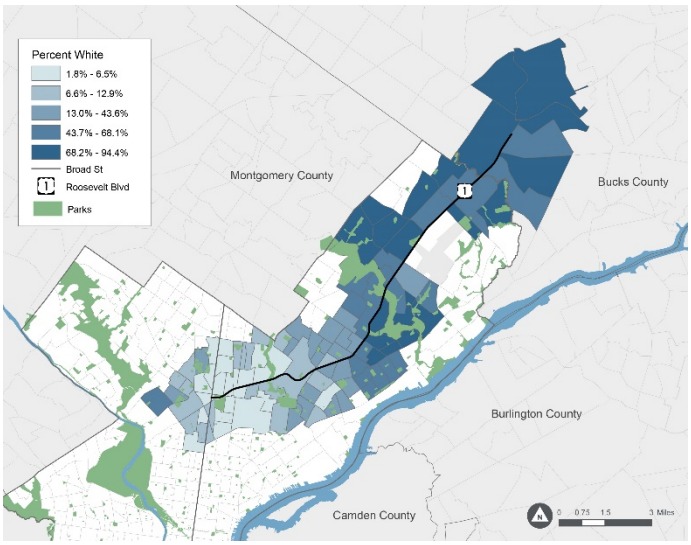
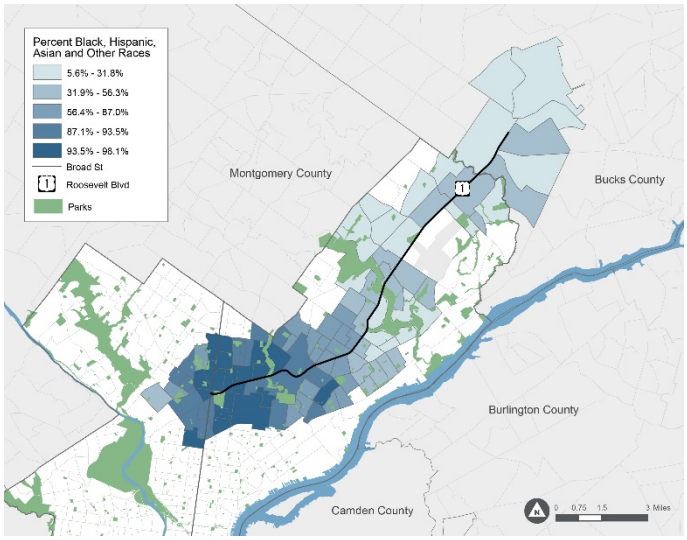


Figure 11: Percent Black, Hispanic, Asian, and Other Races



Language & Foregin Born Population

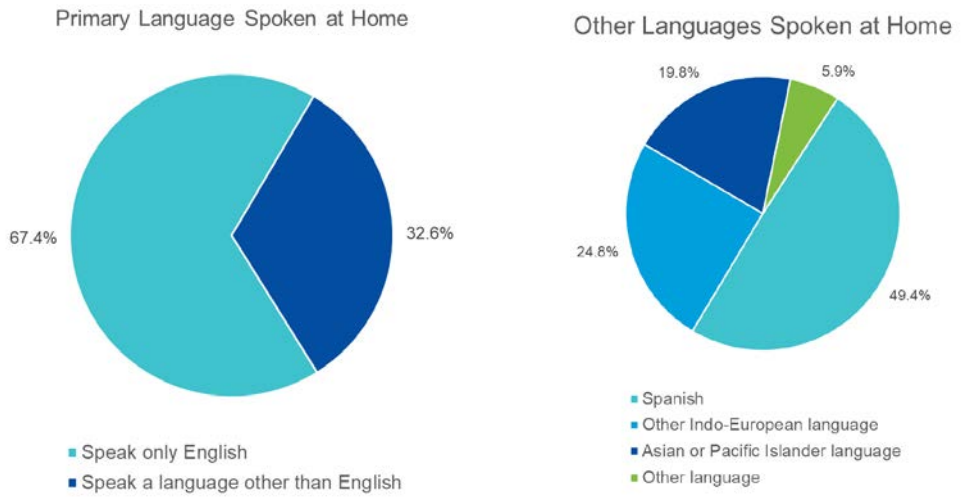
The foreign-born population increased slightly between 2010 and 2017, from 15 to 18 percent (Figure 12). The largest foreign-born populations are from Latin America and Asia.

The Program area is diverse in terms of race and language spoken within the home. In the 2017 ACS, almost one-third of the corridor's population cited a language other than English as their primary language at home. Of those who do not use English at home, 49 percent speak Spanish, 25 percent speak another Indo-European language, 20 percent speak Asian and Pacific Island languages, and 6 percent speak a language not specified in the survey (Figures 13 and 14).

Figure 12: Foreign Born Population in Program Area

	2010		2017	
Source Region	**Number**	**%**	**Number**	**%**
Foreign Born as % of Total Population	78,003	15.1%	95,561	18.1%
Europe	15,934	3.1%	15,758	3%
Asia	30,128	5.8%	35,144	6.7%
Africa	5,490	1.1%	7,421	1.4%
Oceania	105	0.02%	72	0.01%
Latin America	26,105	5.1%	37,025	7.0%
Northern America	241	0.05%	141	0.03%

Figures 13 and 14: Languages Spoken at Home in Program Area (2017)

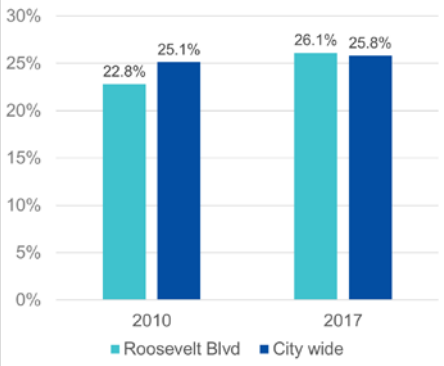


Income

The average median household income in 2017 in the Program area ($40,500) was similar to the city's average ($40,600). The average median household income in the Program area increased slightly from 2010 to 2017 ($40,000 to $40,500) whilePhiladelphia's average median household income increased from $36,500 to $40,600.

Changes in the poverty rate are also important to consider. Despite the average median income, the poverty rate in the Program area increased from 23 to 26 percent between 2010 and 2017 (Figure 15).

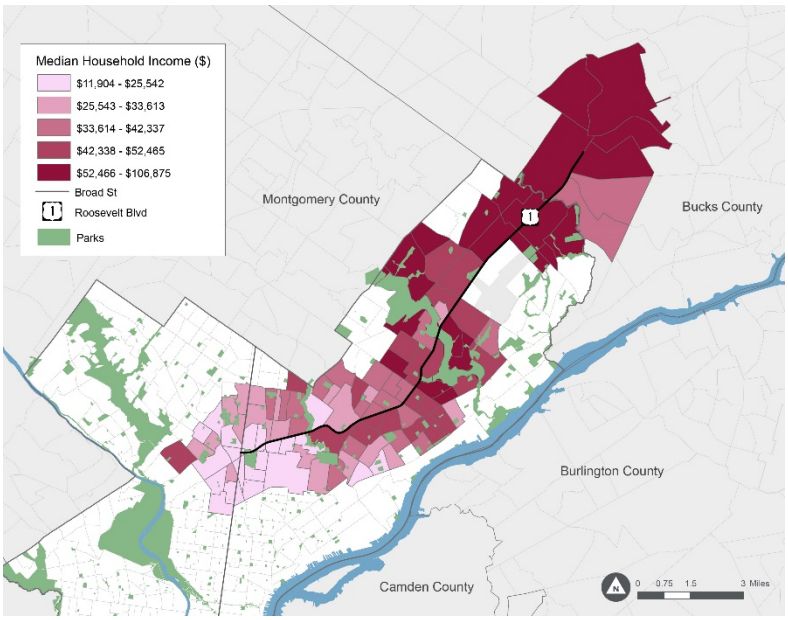
Figure 15: Percent in Poverty



Similar to racial composition, income disparities become more apparent when viewed spatially (Figure 16). The area around lower Roosevelt Boulevard has a lower average median income and the area around upper Roosevelt Boulevard has a higher median income.

The IPD measure for income also shows the lower portion of the Boulevard to have widespread concentrations of poverty. In sum, 70% of census tracts along Roosevelt Boulevard score above or well-above-average for low-income residents, compared to only 26 percent for the nine-county region.

Figure 16: Median Household Income (2017)



Unemployment

Overall, the unemployment in census tracts within one mile of the Program area has decreased since 2010, but it is still higher than the citywide rate (Figure 17).

The higher rate of unemployment aligns spatially with the areas of lower median household income (Figure 18). The higher rates also overlap with the parts of the Program area that have high percentages of Black, Hispanic, and Asian populations.

Figure 17: Unemployment Rate

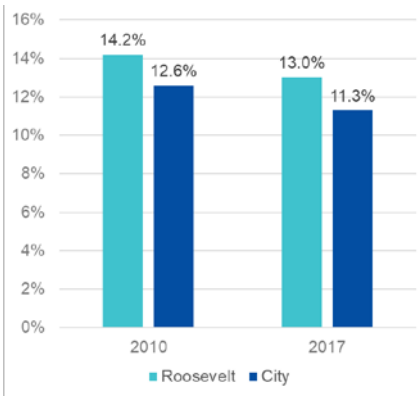
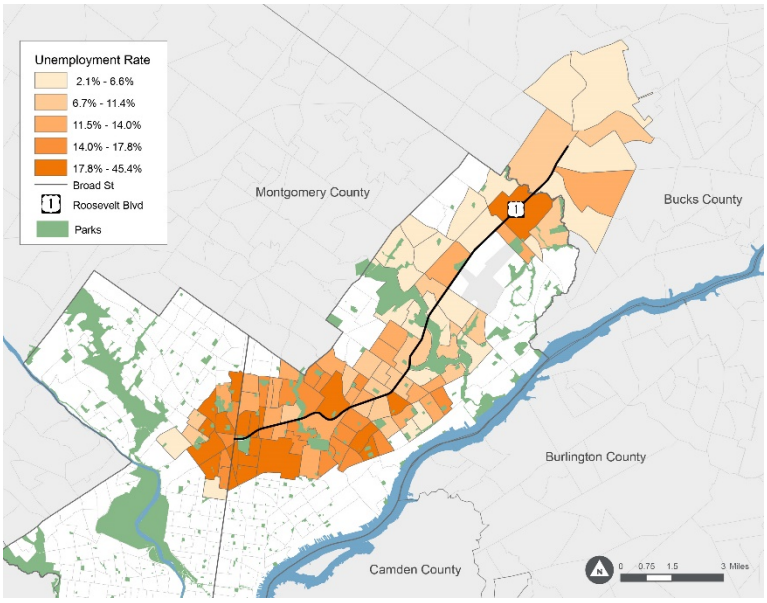


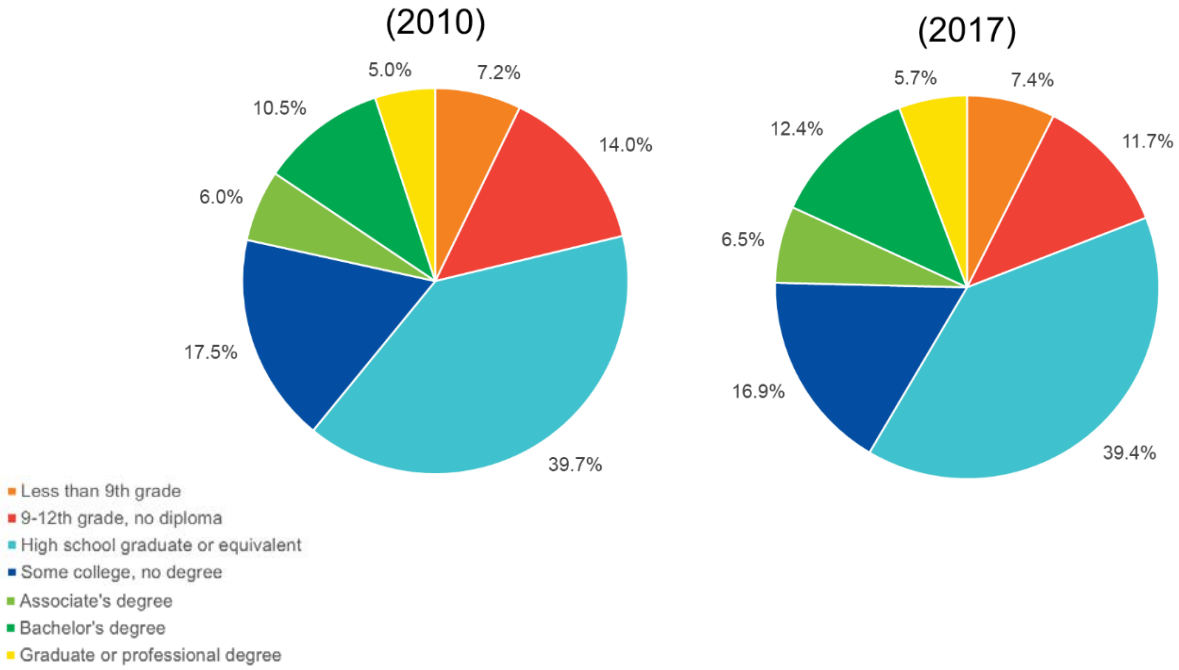
Figure 18: Unemployment (2017)



Educational Attainment

In 2017, residents within the Program area were more educated than in 2010. An average of 80 percent of the population over 25 has a high school degree or higher, compared to 78 percent recorded in the 2010 ACS. Within the same time period, people with bachelor's degrees increased by two percent (Figure 19).

Figure 19: Educational Attainment Over Time in Program Area



Commute Mode Share and Car Ownership

According to the 2017 ACS, 60 percent of people in Philadelphia reported driving to work. Of those, 51 percent drove alone and nine percent carpooled. A higher proportion of people in the Program area commuted to work by car (70 percent). Along Roosevelt Boulevard, the number of people who reported driving alone to work increased from 59 to 61 percent; however, the carpool rate stayed consistent (approximately 11 percent). Between 2010 and 2017, transit use decreased by more than two percent within the Program area, and the bike to work rate did not change (Figure 20).

Vehicle ownership rates remained consistent between 2010 and 2017. In the areas around Roosevelt Boulevard, the percentage of households without a car decreased, and the households with one car increased (Figures 21). This trend was similar citywide. Households without a car are clustered mostly in lower Roosevelt Boulevard, closest to N. Broad Street (Figure 22).

High rates of biking and walking commuters are distributed along the corridor. Most of the census tracts with the higher rates of walking and biking directly adjacent to Roosevelt Boulevard (Figure 23).

Figure 20: Commute Mode in Roosevelt Boulevard Area

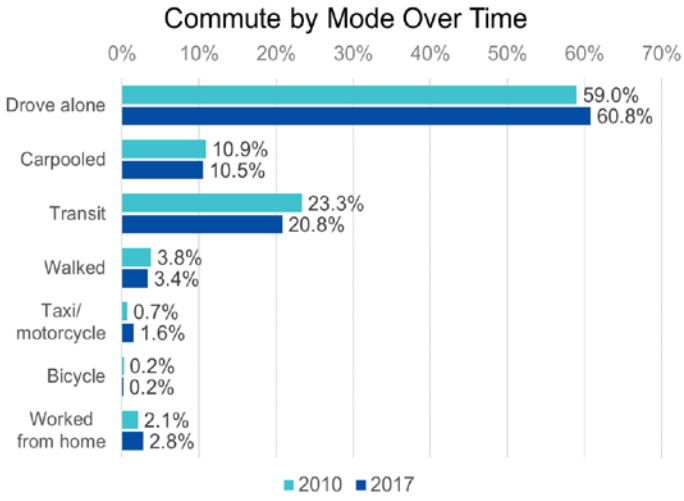


Figure 21: Average Car Ownership in Program Area

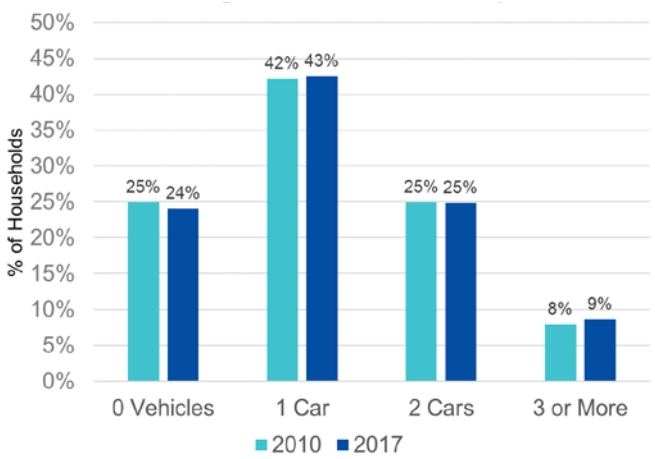


Figure 22: Car Ownership by Household

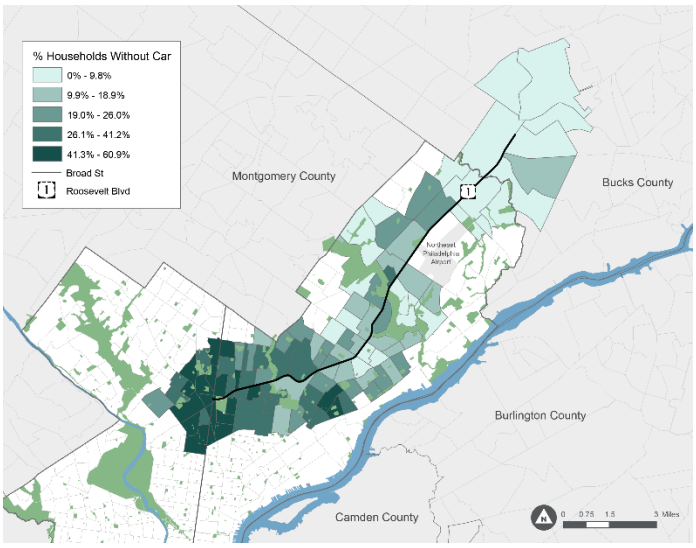
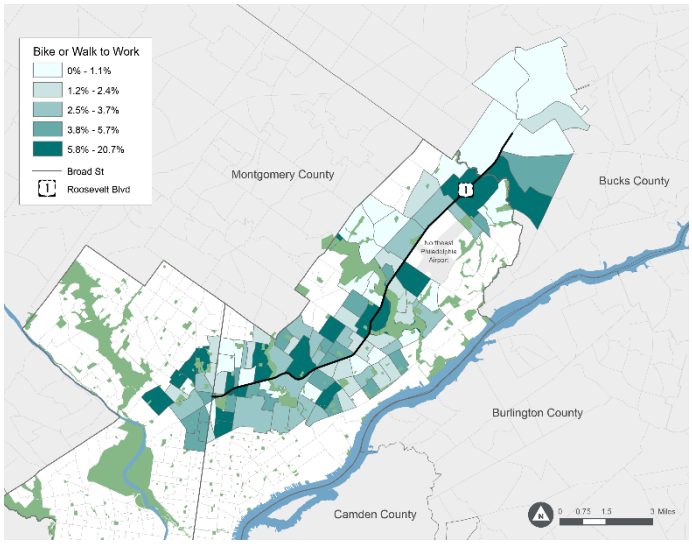


Figure 23: Percent of People Who Bike or Walk to Work



Conclusion

Northeast Philadelphia and the area around Roosevelt Boulevard are often viewed as traditional suburban portion of the City, essentially the suburbs within city limits. However, as this demographic overview shows, the neighborhoods around the Boulevard vary greatly in their characteristics.

Around lowerRoosevelt Boulevard, near N. Broad Street, the surrounding neighborhoods are majority Black and Hispanic and lower income. Households in this area have a lower rate of car ownership. In contrast, on the northern end of the Program area, the surrounding neighborhood is majority White, higher-income, and households have a higher rate of car ownership.

Compared to the region; however, all of the Boulevard is relatively diverse, with high proportions of racial and ethnic minorities, people with limited English profficiency, people who are foreign-born, youth, and seniors. The metrics show large concentrations of indidicators of potential disadvantage throughout the Program area, indicating the need for investment in equitable transportation solutions.

Along the entirety of the Roosevelt Boulevard Program area, a majority of the housing is aging and comprised of rowhouses and one unit detached units. There has been very little development in the past few decades.

Additional demographic information related to Philadelphia neighborhoods, including technical background memoranda, are available in the following City District Plans that include sections of Roosevelt Boulevard:

- Upper Far Northeast (combination of Upper Far Northeast District and Lower Far Northeast District) - https://www.phila2035.org/upper-far-northeast
- Central Northeast - https://www.phila2035.org/central-northeast
- North Delaware - https://www.phila2035.org/north-delaware
- Lower Northeast - https://www.phila2035.org/lower-northeast
- North - https://www.phila2035.org/north
- Upper North - https://www.phila2035.org/upper-north

Appendix

The demographic overview in this memorandum included census tracts within a one-mile buffer of Roosevelt Boulevard / U.S. 1 from N. Broad Street to Rockhill Drive in Bucks County.

Bucks County

Census Tract 1002.01	Census Tract 1002.08	Census Tract 1014.03
Census Tract 1002.06	Census Tract 1002.11	
Census Tract 1002.07	Census Tract 1009	

Philadelphia County

Census Tract 173	Census Tract 173	Census Tract 173
Census Tract 190	Census Tract 190	Census Tract 190
Census Tract 191	Census Tract 191	Census Tract 191
Census Tract 197	Census Tract 197	Census Tract 197
Census Tract 198	Census Tract 198	Census Tract 198
Census Tract 199	Census Tract 199	Census Tract 199
Census Tract 200	Census Tract 200	Census Tract 200
Census Tract 201.01	Census Tract 201.01	Census Tract 201.01
Census Tract 201.02	Census Tract 201.02	Census Tract 201.02

Census Tract 202	Census Tract 202	Census Tract 202
Census Tract 203	Census Tract 203	Census Tract 203
Census Tract 204	Census Tract 204	Census Tract 204
Census Tract 205	Census Tract 205	Census Tract 205
Census Tract 206	Census Tract 206	Census Tract 206
Census Tract 242	Census Tract 242	Census Tract 242
Census Tract 243	Census Tract 243	Census Tract 243
Census Tract 244	Census Tract 244	Census Tract 244
Census Tract 245	Census Tract 245	Census Tract 245
Census Tract 272	Census Tract 272	Census Tract 272
Census Tract 273	Census Tract 273	Census Tract 273
Census Tract 274.01	Census Tract 274.01	Census Tract 274.01
Census Tract 274.02	Census Tract 274.02	Census Tract 274.02
Census Tract 275	Census Tract 275	Census Tract 275
Census Tract 276	Census Tract 276	Census Tract 276
Census Tract 278	Census Tract 278	Census Tract 278
Census Tract 279.02	Census Tract 279.02	Census Tract 279.02
Census Tract 280	Census Tract 280	Census Tract 280
Census Tract 281	Census Tract 281	Census Tract 281
Census Tract 282	Census Tract 282	Census Tract 282
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Census Tract 286	Census Tract 286	Census Tract 286
Census Tract 287	Census Tract 287	Census Tract 287
Census Tract 288	Census Tract 288	Census Tract 288
Census Tract 289.01	Census Tract 289.01	Census Tract 289.01
Census Tract 289.02	Census Tract 289.02	Census Tract 289.02
Census Tract 290	Census Tract 290	Census Tract 290
Census Tract 291	Census Tract 291	Census Tract 291
Census Tract 292	Census Tract 292	Census Tract 292
Census Tract 293	Census Tract 293	Census Tract 293
Census Tract 294	Census Tract 294	Census Tract 294

[i] The nine-county DVRPC region covers two states: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey.

Route for Change

Transforming The Boulevard

Roosevelt Boulevard

Section 1 – Appendix 3

Roosevelt Boulevard Crash Analysis

June 2019

VISION ZERO ROOSEVELT BOULEVARD CRASH STUDY

CITY OF PHILADELPHIA - OTIS

DATE: JUNE 30, 2019

WSP
4 PENN CENTER, SUITE 510
1600 JFK BOULEVARD
PHILADELPHIA, PA 19103

TEL.: +1 215 209-1200
FAX: +1 215 561-9525
WSP.COM

TABLE OF CONTENTS

1 INTRODUCTION

The purpose of this report is to summarize the analysis completed during the Vision Zero Roosevelt Boulevard Crash Analysis. The study followed the principles of Vision Zero, focusing on fatality and injury crashes, to address the most serious issues with the Roosevelt Boulevard corridor. The study area spanned Roosevelt Boulevard inner and outer (local and express) lanes from North Broad Street to the Philadelphia/Bucks County line and included all reportable crashes from 2013-2017. The study identified corridor-wide crash patterns, intersection typologies, and further analyzed twelve intersections across the different typologies. The project team applied a methodology for the analysis of injury and fatality crashes consistent with the City's commitment to Vision Zero and focus on addressing acute safety challenges along segments of the City's High Injury Network.

The analysis of crash data on Roosevelt Boulevard indicates several key findings:

- **Speeding** is a common denominator in many crashes, occurs consistently throughout the corridor, and plays a key role in crash severity. All key findings relate to excessive speed on Roosevelt Boulevard.
- The **combination of roadway geometry, risky behavior, and vulnerable users** creates a high number of total crashes and a very high fatality and serious injury rate. DUIs, reckless driving, aggressive driving, driving while fatigued, and speeding at a very high rate are more likely to end in fatalities or serious injuries on Roosevelt Boulevard compared to elsewhere in the City.
- **Pedestrian crossings**, particularly those that occur outside of crosswalks or against a traffic signal, are more likely to result in death or serious injury along Roosevelt Boulevard compared to elsewhere in the City. Crossing Roosevelt Boulevard as a pedestrian can be a considerable challenge with long crossing distances, long wait times to cross, and long distances between crosswalks.
- **Red light running** also occurs throughout the corridor, though it is reduced at intersections with red-light cameras.
- People in **fixed object crashes**, particularly in the "S-Curve" from Adams/Whitaker to Summerdale/Adams, are more likely to be injured severely or killed.

Roosevelt Boulevard is a corridor designed for vehicles to travel at highway speeds, which may be encouraging drivers to speed up. Its many lanes and unique intersections may be confusing drivers, and its long distances between crosswalks and long wait times may be encouraging pedestrians to cross midblock or against the signal. The geometry of the "S-Curve," the sharp set of curves in the road between Adams/Whitaker and Summerdale/Adams, creates a hazard for drivers who lose control, especially while speeding, and hit fixed objects along the road.

It is the combination of and interplay between these unique roadway geometry challenges, risky behavior (such as speeding, driving while impaired, and aggressive driving), and vulnerable users (such as pedestrians, bicyclists, and people 70 years and older) that creates a series of consistent crashes, a high number of crashes, and more fatal and injurious crashes across Roosevelt Boulevard.

2 CORRIDOR-WIDE CRASH PATTERNS

To analyze crashes on Roosevelt Boulevard, the project team used PennDOT's 2013-2017 crash tables, which were cleaned, reshaped, and merged in R to create a city-wide database of crashes. The crash database was put into ArcGIS to identify whether crashes occurred on the High Injury Network (HIN) or on Roosevelt Boulevard. Summary crash statistics were created for the city, the High Injury Network, and Roosevelt Boulevard. Crash patterns for Roosevelt Boulevard were then compared against crash patterns city-wide and all HIN corridors. This helped the project team identify patterns that were unique to Roosevelt Boulevard or much more severe than seen elsewhere in the City.

All crash patterns were examined (see Table 1 below). Those patterns that showed the same or very similar rates across the city, HIN corridors, and Roosevelt Boulevard were not further analyzed. Only crash patterns that stood out as different or more severe, comparatively, are detailed below.

The project team also created a preliminary multivariate model of injury severity of all crashes from 2013-2017 on Roosevelt Boulevard. Initial results indicate that across Roosevelt Boulevard, people involved in red light-running, fixed object, or head-on crashes were more likely to be injured severely or killed. Pedestrians or bicyclists were also much more likely to be injured severely or killed. On the other hand, men involved in crashes were less likely to be injured severely or killed.

Additionally, the project team created multivariate models of injury severity for intersection typologies and sub-typologies. The multivariate modeling results from intersection typologies are highlighted below to support the relevant findings. See Section 4 for a detailed list of the preliminary modeling results.

2.1 WHEN

TIME OF DAY

Crashes on Roosevelt Boulevard peaked during the evening (28%) and night time (16%), even more so that at the city-wide level (31% and 14%, respectively). A disproportionately high number of fatal crashes occurred in the evening (40%) and at night time (34%) on Roosevelt Boulevard, compared to 38% in the evening and 26% at night, city-wide.

People involved in crashes that occurred in the evening or at night were more likely to be injured severely or killed in two of the intersection typologies or sub-typologies tested: direct no skew and elevated midblock pedestrian crossings.

2.2 WHO

The vast majority of users on Roosevelt Boulevard are in vehicles. There are far fewer vulnerable users on Roosevelt Boulevard (a third of the number of pedestrians involved in crashes than at the city level and very few bicyclists), however Roosevelt Boulevard is deadlier for them. The speed of traffic, very long crossing distances, and risky behavior (such as crossing outside a crosswalk or against the signal) create an injurious and deadly environment for bicyclists and pedestrians.

During the crash report review the project team noted that pedestrians are particularly vulnerable when vehicles are making right- or left-hand turns onto or off of Roosevelt Boulevard in separated lanes.

PEDESTRIAN FATALITIES

On Roosevelt Boulevard, the fatality rate for pedestrians is 18%, compared to 2% at the city level. That is, out of all the pedestrians involved in crashes on Roosevelt Boulevard, 18% of them die.

City-wide from 2013-2017, 182 pedestrians died in reportable crashes. 28 of those pedestrian fatalities occurred on Roosevelt Boulevard, about 15% of all city-wide pedestrian fatalities.

Pedestrians were more likely to be injured severely or killed across all the intersection typologies tested: direct no skew, direct skew, large T, midblock pedestrian crossings, separated median turns, expressway not at grade, and the Smylie segment.

BICYCLISTS

On Roosevelt Boulevard, bicyclists are four times less likely to be involved in a crash than at the city-wide level (0.5% compared to 2%). In the study period, no bicyclists were killed on Roosevelt Boulevard.

Bicyclists were more likely to be injured severely in several of the intersection typologies or sub-typologies tested: direct no skew multileg, direct skew, and separated median turns.

2.3 WHAT

The summary statistics below and review of the crash narratives indicates that risky behavior, including speeding, aggressive driving, red-light running, and driving while impaired are commonplace across Roosevelt Boulevard. The combination of these behaviors with the roadway geometry, which also influences driver behavior, results in a disproportionally high fatality rate on Roosevelt Boulevard.

AGGRESSIVE DRIVING & SPEEDING

59% of crashes on Roosevelt Boulevard were due to aggressive driving and/or speeding, compared to 49% at the city level. Aggressive driving often occurs in combination with speeding and higher speeds are widely understood to increase the likelihood of fatalities in a crash.

SPEEDING

Any crash is more deadly or injurious as the speed of one or more vehicles involved increases. Speeding alone causes a similar number of crashes (16% and 15%) and fatal crashes (27% and 26%) on Roosevelt Boulevard compared to city-wide. People involved in crashes flagged as speeding-related were more likely to be injured severely or killed in two different intersection sub-typologies: direct mid-block crossings and separated median turns (two curves).

During the crash report review, the project team noted that high speeds are also contributing to drivers losing control of their vehicles, which is happening throughout Roosevelt Boulevard.

HIT FIXED OBJECT

Fixed object crashes make up the same percent of all crashes on Roosevelt Boulevard and elsewhere in the City (12%). However, motor vehicle occupants in fixed object crashes are five times more likely to die in those crashes on Roosevelt Boulevard compared to the City (5% compared to 1%). Speed, roadway geometry, other behavioral choices, and an abundance of poles, posts, walls, and trees make a very lethal combination.

People involved in fixed object crashes were more likely to be injured severely or killed in three different intersection typologies: separated median turns, expressway not at grade, and the Smylie segment.

RUNNING RED LIGHTS

Red light running is a consistent problem across the corridor. 13% of all crashes and 9% of fatal crashes on Roosevelt Boulevard are due to red light running, as compared to the city (5% of all crashes and 7% of fatal crashes). Red-light cameras have been introduced at several intersections, where they successfully reduced red light running.

People involved in crashes where drivers ran red lights were more likely to be injured severely or killed in many of the intersection typologies or sub-typologies tested: direct no skew, direct skew multileg, large T, separated median turns not curved, and expressway below grade.

During the crash report review, the project team noted that some drivers are trying make it through yellow lights at high speeds approaching the intersection and end up running red lights, seeming to misjudge the distance to and length of intersections.

"NOT NORMAL"

There are a similar number of "not normal" crash participants on Roosevelt Boulevard compared to city-wide (5% and 6%). However, the fatality rate of "not normal" crash participants on Roosevelt Boulevard is 17%, compared to 11% city-wide.[1]

People in a "not normal" condition were more likely to be injured severely or killed in the Smylie segment intersection typology.

REAR-END CRASHES

Rear-end crashes make up a larger percentage of serious suspected injuries (21%) and minor injury crashes (34%) than City-wide (12% and 23%) and on HIN corridors (11% and 21%). Rear-ends on Roosevelt Boulevard tend to occur at stop bars, rather than in the intersection itself. The most common types of rear-ends include: drivers hitting the vehicle in front of them when it slows for a yellow light or distracted or not normal drivers hitting vehicles stopped at red lights.

ILLUMINATION

Both fatality and serious suspected injury crashes are occurring at disproportionately high rates on Roosevelt Boulevard during illuminated dark or twilight conditions (74% of fatalities and 52% of serious suspected injuries). Though still high, the HIN corridors are comparatively lower at 60% and 44% and City-wide rates lower still (58% and 44%). It is possible that factors other than illumination are involved; the fact that people are more likely to drink at night could play a more direct role than reduced visibility.

People involved in crashes in illuminated dark conditions were more likely to be injured severely or killed in the elevated mid-block pedestrian crossing intersection sub-typology.

FAILURE TO YIELD

At some intersections (a third of the intersections where this is possible), there is a general conflict between traffic on cross-streets turning left onto Roosevelt Boulevard failing to yield to through traffic on the cross-streets. While there is a protected left-turn phase, it is followed by a permitted green phase. Left-turning vehicles are conflicting at the end of the protected phase, during the permitted phase, and at the end of the permitted phase. This most often results in conflict between vehicles, but also has implications for pedestrians and bicyclists who are crossing legally and who are being hit by left-turning vehicles.

There are also several crashes caused by vehicles failing to stop for emergency vehicles or funerals.

This finding is supported by the project team's crash report review and crash diagramming. Failure to yield is not included as a discrete variable in PennDOT tables and thus could not be examined further with modeling.

ILLEGAL LEFT TURNS

At some intersections (half of the intersections where this is possible), there is a consistent minority of vehicles that attempt to turn left from the outer lanes of Roosevelt Boulevard, crossing the inner express lanes, often resulting in crashes. While some drivers admit to knowing this maneuver was illegal, many drivers said they were confused or were instructed by their GPS to make the turn.

This finding is supported by the project team's crash report review and crash diagramming. Illegal left turns are not included as a discrete variable in PennDOT tables and thus could not be examined further with modeling.

[1] "Not normal" behavior is defined by PennDOT as individuals who are under the influence of alcohol or drugs, having a medical emergency, or fatigued.

BUS-RELATED

During the crash report review the project team noted that there are a few cases across the corridor where crashes occur due drivers to trying to pass buses that are stopping to pick up or drop off passengers, sometimes hitting pedestrians who have just exited the bus.

Table 1 – Crash Pattern Summary Statistics Comparison (2013-2017)

	PATTERN	CITY-WIDE	ROOSEVELT BLVD.
WHEN	Time of Day: All Crashes	Crashes peak in evening and night time (31% occur from 7 PM-12 AM and 14% from 12 AM-6 AM)	Crashes peak in evening and night time (28% occur from 7 PM-12 AM and 16% from 12 AM-6 AM)
	Time of Day: Fatal Crashes	Peaking for fatal crashes is more pronounced (38% occur in the evening and 26% at night)	Peaking for fatal crashes is more pronounced (40% occur in the evening and 34% at night)
WHO	Pedestrians: Fatality Rate	2% (compared to 0.2% of motor vehicle occupants)	18% (compared to 0.4% of motor vehicle occupants)
	Bicyclists: All Crashes	2% of crashes involved a bicyclist	0.5% of crashes involved a bicyclist
WHAT	Adverse Weather: All Crashes	18% of all crashes occurred in adverse weather	14% of all crashes occurred in adverse weather
	Adverse Weather: Fatal Crashes	12% of fatal crashes occurred in adverse weather	9% of fatal crashes occurred in adverse weather
	Wet or Icy Road Conditions: All Crashes	2% of all crashes occurred on wet or icy roads	16% of all crashes occurred on wet or icy roads
	Wet or Icy Road Conditions: Fatal Crashes	14% of fatal crashes occurred on wet or icy roads	13% of fatal crashes occurred on wet or icy roads
	Fixed Objects: All Crashes	12% of all crashes are drivers hitting fixed objects	12% of all crashes are drivers hitting fixed objects
	Fixed Objects: Fatal Crashes	22% of fatal crashes are drivers hitting fixed objects	32% of fatal crashes are drivers hitting fixed objects
	Speeding: All Crashes	15% of all crashes are flagged as speeding-related	16% of all crashes are flagged as speeding-related
	Speeding: Fatal Crashes	27% of fatal crashes are flagged as speeding-related	26% of fatal crashes are flagged as speeding-related
	Aggressive Driving: All Crashes	49% of all crashes are flagged as aggressive driving-related	59% of all crashes are flagged as aggressive driving-related
	Aggressive Driving: Fatal Crashes	42% of fatal crashes are flagged as aggressive driving-related	38% of fatal crashes are flagged as aggressive driving-related
	Red Light Running: All Crashes	5% of all crashes are flagged as red light running-related	13% of all crashes are flagged as red light running-related
	Red Light Running: Fatal Crashes	7% of fatal crashes are flagged as red light running-related	9% of fatal crashes are flagged as red light running-related

	“Not Normal”: All Crashes	6% of all crashes are flagged as “not nomal”-related	5% of all crashes are flagged as “not nomal”-related
	“Not Normal”: Fatal Crashes	11% of fatal crashes are flagged as “not nomal”-related	17% of fatal crashes are flagged as “not nomal”-related
	Rear Ending: All Crashes	23% of all crashes are rear-ends	32% of all crashes are rear-ends
	Rear Ending: Fatal Crashes	5% of fatal crashes are rear-ends	4% of fatal crashes are rear-ends
	Side-Swipes: All Crashes	13% of all crashes are sideswipes	10% of all crashes are sideswipes
	Side-Swipes: Fatal Crashes	7% of fatal crashes are sideswipes	9% of fatal crashes are sideswipes
	Angle: All Crashes	34% of all crashes are angle crashes	40% of all crashes are angle crashes
	Angle: Fatal Crashes	21% of fatal crashes are angle crashes	17% of fatal crashes are angle crashes

3 INTERSECTION TYPOLOGIES & TWELVE FOCUS INTERSECTIONS

Roosevelt Boulevard has over 160 intersections (signalized and unsignalized). A corridor of this magnitude needs to be broken down into smaller portions to focus on the most important elements. The project team began by defining the problem using a Vision Zero lens. The problem on Roosevelt Boulevard that this study examines is fatal and serious injury crashes. This approach prioritizes where: a) deadly or serious crashes are occurring, b) pedestrians are dying or being seriously injured; and b) where deadly or serious crashes are occurring at a particularly high rate. This means that well-known intersections with the highest number of crashes are not necessarily prioritized. For this study, system failure is a high number of fatalities and serious injuries, not simply a high number of total crashes.

The project team wanted to test the hypothesis that intersections with similar forms and pedestrian experiences have similar crash problems and behaviors. First, all intersections were first examined to see if they met the minimum criteria under a Vision Zero approach: either a fatality, serious suspected injury, and/or a pedestrian injury crash. Fifty-nine intersections met these criteria and were further evaluated.

Intersections were grouped into typologies based on consideration of the following characteristics:

- Land use
- Overall intersection size/width
- Angles/skew
- Number of intersection legs
- Driveways
- Size of cross-street
- At grade/below grade/above grade

To review each intersection, the project team held a mini-workshop. Participants referenced individual review sheets for each intersection. Each review sheet contained a map with all crashes at the intersection and nearby (broken out by mode), street-level views, and an aerial satellite view. The project team then reviewed and iteratively grouped the intersections based on the commonalities they exhibited:

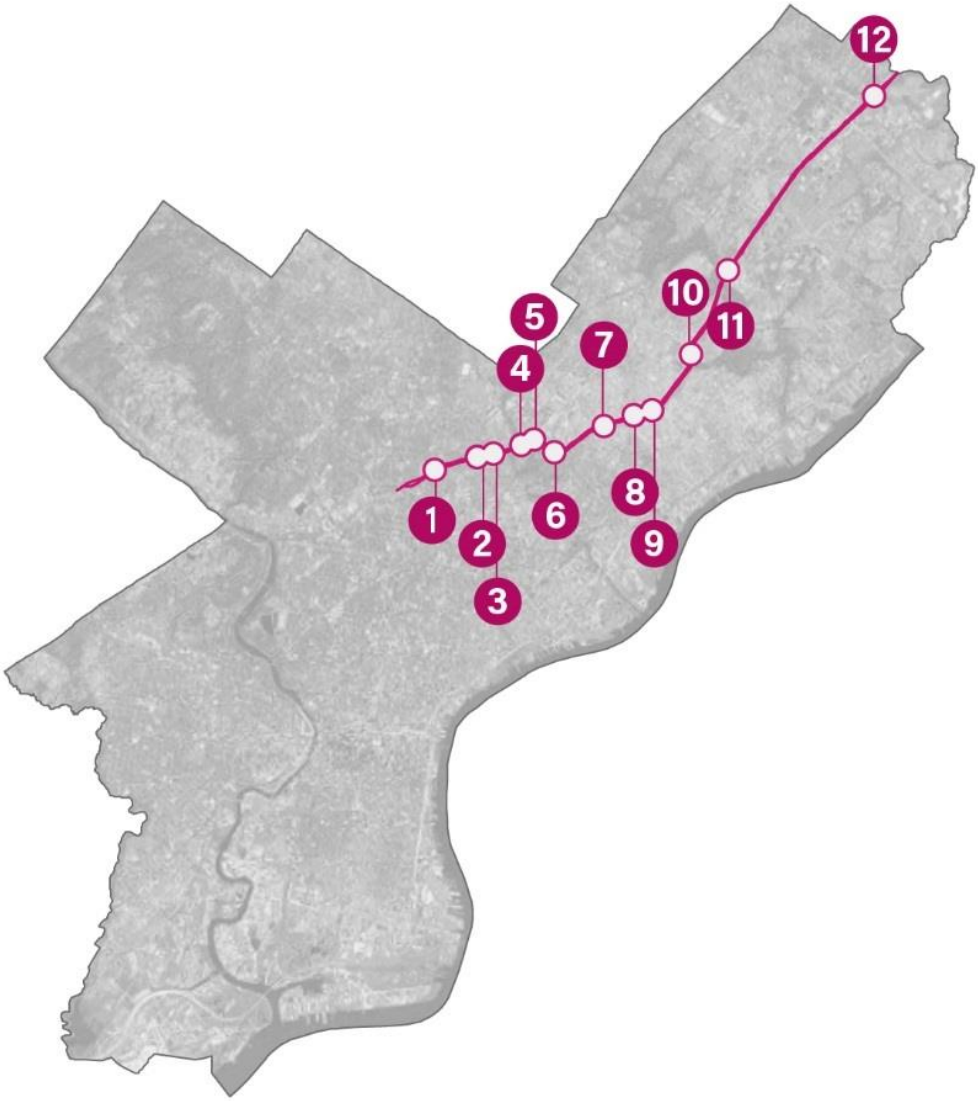
- Direct, No Skew Intersections (A)
- Direct, Skewed Intersections (B)
- Large T-Intersections (C)
- Pedestrian Crossings (D)
- Separated Median Turns (E)
- Small T-Intersections (F)
- Expressway, Not at Grade (G)
- Singularities

Twelve intersections were then chosen out of the fifty-six to diagram and examine in closer detail. An Intersection Crash Summary Statistics Table was developed to compare the number and rate of fatalities and serious suspected injuries (broken down by mode) across the fifty-six intersection areas (see Appendix for table). The project team worked to capture as many crash patterns, fatalities, serious suspected injuries, and pedestrian injuries as possible within the twelve intersection areas selected. These twelve intersections span the length of Roosevelt Boulevard:

1. Wyoming Avenue and 7th Street
2. Front Street and Rising Sun Avenue
3. C Street
4. Smylie Road
5. Adams Avenue and Whitaker Avenue

6. Summerdale Avenue and Adams Avenue
7. Large Street
8. Bustleton Avenue and Levick Street
9. Harbison Avenue
10. Faunce and Revere Streets
11. Woodward Street
12. Southampton Road

Figure 1 – Map of 12 Focus Intersections on Roosevelt Boulevard



4 INTERSECTION TYPOLOGY MODELING

The project team created a preliminary multivariate model of injury severity of all crashes between 2013-2017 on Roosevelt Boulevard. The multivariate models tested whether people in crashes were injured or killed at the same rate and if there was any significant difference between any of the variables.

For the entire corridor, people involved in red light-running, fixed object, or head-on crashes, were more likely to be injured severely or killed. Pedestrians or bicyclists were much more likely to be injured severely or killed. In the opposite direction, men involved in crashes were less likely to be injured severely or killed.

The project team also created multivariate injury severity models for the subset of crashes on Roosevelt Boulevard that occurred at the fifty-six intersection areas. These models were used to test the hypothesis that similar intersection typologies experience similar types of crashes and behavior. This subset had similar results to the full Roosevelt Boulevard crash dataset.

4.1 INTERSECTION TYPOLOGY MODELING RESULTS

INTERSECTION TYPOLOGY A (DIRECT NO SKEW)

The project team created multivariate models of injury severity of crashes at "direct no skew" intersections. This included models for the typology, and models for the three sub-typologies: intersections with a driveway terminus and restricted pedestrian access (Plaza, Hornig), four-way intersections (Grant, Woodward, Goodnaw, Red Lion, Southampton), and multileg intersections (3rd/4th, F, Harbison). Overall, the multivariate model for injury severity showed A Typology intersection crashes reflected many of the corridor-wide trends. People involved in crashes where drivers ran red lights were more likely to be injured severely or killed. Pedestrians were much more likely to be injured or severely killed. Crashes at A Typology intersections differed from the corridor in the following ways: crashes occurring during the evening or night were more likely to be injured severely or killed, as well as crashes occurring at the intersection (as compared to the mid-block).

- **A1 – Driveway Terminus, Restricted Pedestrian Access (Plaza, Hornig):** Pedestrians were much more likely to be injured severely or killed in A1 intersection crashes. Men were less likely to be injured severely or killed in A1 intersection crashes.
- **A2 – Four-way (Grant, Woodward, Goodnaw, Red Lion, Southampton):** Pedestrians were much more likely to be injured severely or killed in A2 intersection crashes. People involved in crashes where drivers ran red lights were more likely to be injured severely or killed in A2 intersection crashes. Men were less likely to be injured severely or killed in A2 intersection crashes.
- **A3 – Multileg (3rd/4th, F, Harbison)**: Pedestrians and bicyclists were much more likely to be injured severely or killed in A3 intersection crashes. People involved in crashes where drivers ran red lights or where crashes occurred at night were more likely to be injured severely or killed in A3 intersection crashes. Men were less likely to be injured severely or killed in A3 intersection crashes.

INTERSECTION TYPOLOGY B (DIRECT SKEW)

The project team created multivariate models of injury severity of crashes at "direct skew" intersections. This included models for the typology and models for the three sub-typologies: four-way intersections (C, Welsh, Pratt, Tyson), multileg intersections (Large, 9th, Mascher, Front/Rising Sun, Devereaux/Everett), and a hybrid of a direct skew four-way intersection and a separated median turn with one curve (Bustleton/Levick). Overall, the multivariate model for injury severity in B intersection crashes reflected some of the corridor-wide trends. Pedestrians and bicyclists were much more likely to be injured severely or killed. People involved in head-on crashes were more likely to be injured severely or killed.

- **B1 – Four-way (C, Welsh, Pratt, Tyson):** Pedestrians and bicyclists were much more likely to be injured severely or killed in B1 intersection crashes. People involved in sideswipes were less likely to be injured severely or killed.

- **B2 – Multileg (Large, 9th, Mascher, Front/Rising Sun, Devereaux/Everett):** Pedestrians and bicyclists were much more likely to be injured severely or killed in B2 intersection crashes. People involved in crashes where drivers ran red lights were more likely to be injured severely or killed. Men were less likely to be injured severely or killed.
- **B3 – Hybrid (Bustleton/Levick):** Pedestrians were much more likely to be injured severely or killed in B3 intersection crashes.

INTERSECTION TYPOLOGY C (LARGE T)

The project team created multivariate models of injury severity of crashes at "Large T" intersections (Comly/Nabisco, Wyoming/7th, Conwell). The multivariate model for injury severity in C intersection crashes reflected some of the corridor-wide trends. Pedestrians were much more likely to be injured severely or killed. People involved in crashes where drivers ran red lights were more likely to be injured or severely killed.

INTERSECTION TYPOLOGY D (MIDBLOCK PEDESTRIAN CROSSINGS)

The project team created multivariate models of injury severity of crashes at mid-block pedestrian crossings. The multivariate model for injury severity in D intersection crashes reflected some of the corridor-wide trends. Pedestrians were much more likely to be injured severely or killed. People involved in crashes flagged as aggressive driving-related were more likely to be injured or severely killed. People involved in crashes at the mid-block were more likely to be injured or severely killed. The project team created multivariate models for injury severity for the three sub-typologies: elevated pedestrian crossings, direct crossings, and indirect crossings.

- **D1 – Elevated Mid-block Pedestrian Crossings (Sanger/Castor, Hoffnagle/Strahle):** Pedestrians were much more likely to be injured severely or killed in D1 intersection crashes. People involved in crashes during the evening or nighttime were more likely to be injured severely or killed.
- **D2** – **Direct Mid-block Pedestrian Crossings (Unruh, Longshore, Bowler):** Pedestrians were much more likely to be injured severely or killed in D2 intersection crashes. People involved in crashes flagged as speeding-related were more likely to be injured severely or killed.
- **D3** – **Indirect Mid-block Pedestrian Crossings (Bingham/D, 2nd, Friendship, Faunce/Revere):** Pedestrians were much more likely to be injured severely or killed in D2 intersection crashes. People involved in crashes at the mid-block are more likely to be injured severely or killed.

INTERSECTION TYPOLOGY E (SEPARATED MEDIAN TURNS)

The project team created multivariate models of injury severity of crashes at "separated median turn" intersections. The multivariate model for injury severity in E intersection crashes reflected some of the corridor-wide trends. Pedestrians and bicyclists were much more likely to be injured severely or killed. People involved in crashes where a driver hit a fixed object were more likely to be severely injured or killed, particularly if speeding was involved. Men were less likely to be injured severely or killed. People involved in crashes that occurred in dark illumination conditions were more likely to be injured severely or killed. The project team created multivariate models for injury severity for the three sub-typologies: one curve (Tower Blvd), two curves (Adams/Whitaker, Garland/Mayfair, Summerdale/Adams), and not curved (Borbeck, Rhawn, and Langdon).

- **E1** – **One Curve (Tower):** People involved in crashes where a driver hit a fixed object were more likely to be injured severely or killed.
- **E2** – **Two Curves (Adams/Whitaker, Garland/Mayfair, Summerdale/Adams):** Pedestrians were much more likely to be injured severely or killed in E2 intersection crashes. People involved in crashes where a driver hit a fixed object were more likely to be injured severely or killed, particularly if speeding was involved.
- **E3** – **Not curved (Borbeck, Rhawn, Langdon):** Pedestrians were much more likely to be injured severely or killed. People involved in crashes where a driver hit a fixed object were more likely to be injured severely or killed. People involved in crashes where drivers ran red lights were more likely to be injured severely or killed. People involved in crashes where drivers were distracted were more likely to be injured severely or killed. Men were less likely to be injured severely or killed in E3 intersection crashes.

INTERSECTION TYPOLOGY F (SMALL T-INTERSECTIONS)

Due to the small sample size and sample selection (the project team deliberately picked intersections with KSIs or pedestrian injuries), the project team did not create multivariate injury severity models for F intersection crashes.

INTERSECTION TYPOLOGY G (EXPRESSWAY NOT AT GRADE)

The project team created multivariate models of injury severity of crashes at intersections where the expressway is not at grade. The multivariate model for injury severity in G intersection crashes reflected some of the corridor-wide trends. Pedestrians were much more likely to be injured severely or killed. People involved in head-on crashes or crashes where a driver hit a fixed object were more likely to be severely injured or killed. The project team created multivariate models for injury severity for the two sub-typologies: below grade (5th) and above grade (Cottman, Holme/Solly).

- **G1 – Crashes where intersections are below grade (5th):** People involved in crashes where drivers hit a fixed object were more likely to be injured severely or killed. People involved in crashes where drivers ran red lights were more likely to be injured severely or killed.
- **G12– Crashes where intersections are above grade (Cottman, Holme/Solly):** Pedestrians were much more likely to be injured severely or killed. People involved in head-on crashes or crashes where drivers hit a fixed object were more likely to be injured severely or killed.

SINGULARITIES (UNIQUE INTERSECTIONS)

Many of the singularities had too small of a sample size to model or did not yield models with significant results.

- **Smylie Mid-block**: People involved in crashes where a driver hit a fixed object were much more likely to be injured severely or killed. Pedestrians were more likely to be injured severely or killed. People involved in crashes where a driver or pedestrian was under the influence of drugs or alcohol were more likely to be injured severely or killed.

5 INTERSECTION CRASH PATTERNS

Crash patterns for the specific intersections below were generated through review of all crashes at those intersections. The crash narrative and diagram from the police crash report were read and patterns noted as they were reviewed. Additionally, the crash diagrams created by the project team were referenced for confirmation of the patterns and identification of any further patterns. See Appendix for intersection crash diagrams.

5.1 WYOMING AVENUE AND 7TH STREET

Intersection Typology: Large T

Crash Statistics: 31 crashes, two fatalities (both pedestrians)

- Southbound traffic on Roosevelt Boulevard is running red lights and speeding through yellow lights.
- Drivers are repeatedly hitting a SEPTA pole on the northwest corner of the intersection.
- Crashes at this intersection are becoming increasingly deadly.
- Most rear-ends occur at stop lights when traffic is stopped for a red light.
- Vehicles are attempting to "sneak" through red signals coming eastbound from Wyoming to reach the central stop bar/vehicle storage to turn northbound.

5.2 FRONT STREET AND RISING SUN AVENUE

Intersection Typology: Direct Skew, Multileg

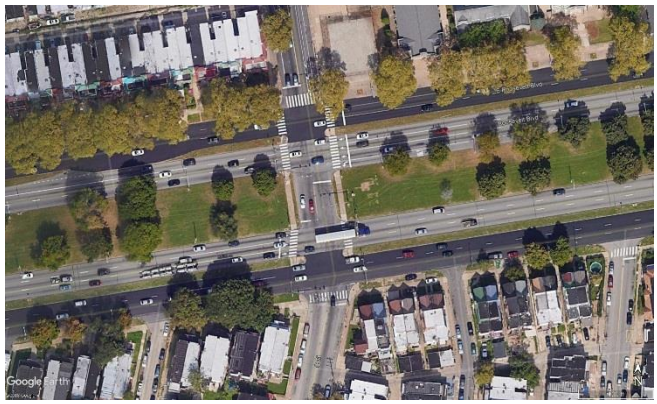
Crash Statistics: 81 crashes, two fatalities, four suspected serious injuries

- Southbound traffic on Roosevelt Boulevard running red lights consistently.
- Red light running is also a problem for through traffic on Front Street.
- Seems to be a fair amount of foot and bicycle traffic, often not following traffic laws.
- Many crashes involving left turn attempts from Roosevelt Boulevard's outer lanes being hit by inner/express lanes through traffic.
- Many crashes involving aggressive lane changing.

5.3 C STREET

Intersection Typology: Direct Skew, Four-way
Crash Statistics: 55 crashes, three fatalities (one pedestrian fatality)

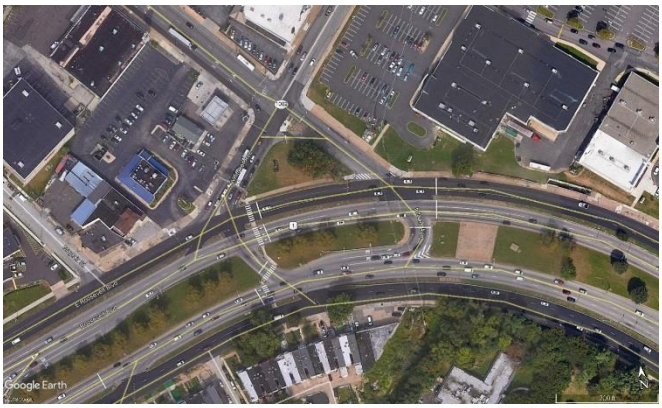
- Drivers on Roosevelt Boulevard are attempting to make left turns from the outer drive, particularly in the northbound lanes.
- Red-light running is not as pronounced at C as it is at other intersections. However, most red light running is occurring in the northbound lanes.
- Drivers on C Street turning left onto Roosevelt Boulevard are failing to yield to through traffic on C. This is particularly pronounced in the northbound lanes.



5.4 ADAMS AVENUE AND WHITAKER AVENUE

Intersection Typology: Separated Median Turns, 2 Curves
Crash Statistics: 69 crashes, five fatalities, one suspected serious injury

- Speeding seems to be pronounced in the S-Curve, and at this intersection. The curve and the speed together are causing a high number of crashes where drivers are speeding, losing control, and hitting fixed objects. These types of crashes tend to be fatal.
- There are a lot of DUI crashes at this intersection. They tend to follow the pattern of the above bullet.
- Most rear-ends occurring are drivers hitting Roosevelt Boulevard traffic that is fully stopped at red signals.
- Crashes are clustered at the southbound intersections with Adams and Whitaker. Fixed object crashes occur throughout this portion of the S curve, but large cluster is occurring northbound just after the left turn lanes onto Adams Avenue.



5.5 SUMMERDALE AVENUE AND ADAMS AVENUE

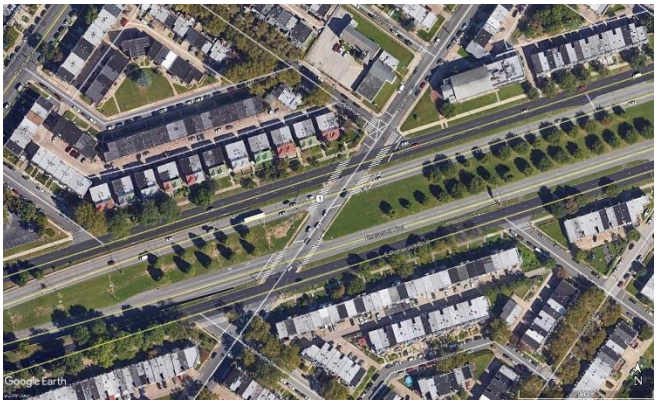
Intersection Typology: Separated Median Turns, 2 Curves
Crash Statistics: 74 crashes, three fatalities (one pedestrian fatality), five suspected serious injuries

- Speeding seems to be pronounced in the S-Curve, and at this intersection. The curve and the speed together are causing a high number of crashes where drivers are speeding, losing control, and hitting fixed objects. These types of crashes tend to be fatal.
- There are a lot of DUI crashes at this intersection.

5.6 LARGE STREET

Intersection Typology: Direct Skew, Multileg
Crash Statistics: 34 crashes, two fatalities (two pedestrian fatalities)

- Most rear-ends occurring are drivers hitting traffic that is fully stopped at red signals.
- Drivers in the outer and inner lanes of Roosevelt Boulevard are attempting to make illegal left turns across the express/inner lanes. Many drivers blamed their GPS, which instructed them to make a left at the intersection, where no left turns are allowed.
- Drivers on northbound Roosevelt Boulevard who are turning right onto Van Kirk Street are conflicting with Large Street through traffic and pedestrians.



5.7 BUSTLETON AVENUE AND LEVICK STREET

Intersection Typology: Direct Skew Multileg & Separated Median Turn Hybrid
Crash Statistics: 96 crashes, two fatalities (two pedestrian fatalities), one suspected serious injury

- Red-light running occurs frequently at Bustleton/Levick, despite the long-standing red light camera. Drivers are running red lights from both directions on Roosevelt Boulevard and from the cross-streets. Relatedly, many rear-ends occur when drivers slow for a yellow light (indicating that drivers expect other drivers to run the red light).
- There are also many rear-ends where drivers are hitting vehicles stopped at red signals.
- There are many cases of drivers on Roosevelt Boulevard in the outer lanes attempting to make illegal left turns across the express/inner lanes.

5.8 HARBISON AVENUE

Intersection Typology: Direct No Skew, Multileg
Crash Statistics: 90 crashes, three fatalities (three pedestrian fatalities)

- The three pedestrian fatalities seem to be extreme events – psychosis, DUI, and erratic behavior.
- Red-light running is a very pronounced issue here, particularly for southbound traffic on Roosevelt Boulevard.
- Failure of left-turning vehicles to yield to through traffic (turning onto Roosevelt Boulevard from Harbison) is most pronounced here.
- There seems to be an even higher level of reckless movements to get into the right lane (get out of the turn lane, into the turn lane, etc.) on Roosevelt Boulevard.
- The separated short merge on the south side of the intersection connecting westbound Harbison to northbound Roosevelt Boulevard is causing a few crashes, including bicycle/pedestrian crashes.
- The stop-controlled merge on the northwest side of the intersection (Magee Ave.) is also resulting in a few crashes.

5.9 FAUNCE AND REVERE STREETS

Intersection Typology: Indirect Midblock Pedestrian Crossing
Crash Statistics: 25 crashes, three fatalities (three pedestrian fatalities), two suspected serious injuries (one pedestrian suspected serious injury)

- There is an issue with the crossover where drivers merging into the inner lanes going northbound on Roosevelt Boulevard are not yielding to traffic, causing crashes.
- The proximity of Revere Street to the crossover also creates a condition where drivers are attempting to turn right onto Revere from the inner lanes using the cross over.
- The pedestrian fatalities and suspected serious injuries all occurred just outside of the crosswalk, which is a skewed, indirect crosswalk on the northbound side of Roosevelt Boulevard. This may indicate that the pedestrians were seeking the most direct route. Most of the pedestrians who were fatally struck appeared to be "not normal."

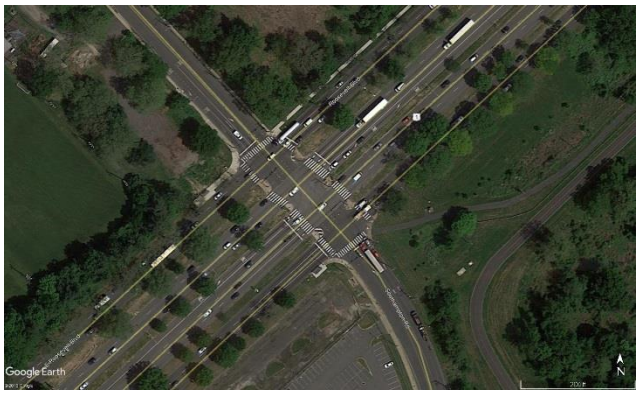
5.10 WOODWARD STREET

Intersection Typology: Direct No Skew, Four-way
Crash Statistics: 24 crashes, three fatalities, two suspected serious injuries

- Fatalities and suspected serious injuries are mostly extraordinary circumstances – going southbound in the northbound lanes, vehicle catching on fire after a rear-end, high speeds and hitting a pole, etc.
- Most crashes are minor types of crashes, such as rear-ends and crashes that occur when vehicles change lanes aggressively.

5.11 SOUTHAMPTON ROAD

Intersection Typology: Direct No Skew, Four-way
Crash Statistics: 73 crashes, two fatalities (one pedestrian fatality), two suspected serious injuries (one pedestrian suspected serious injury)



- The left turn phase and/or clearance phase from Roosevelt Boulevard onto Southampton is short, creating a conflict with through traffic on Roosevelt Boulevard hitting turning vehicles.
- Vehicles turning left from Southampton onto Roosevelt Boulevard are failing to yield to through traffic.
- The pedestrian killed at Southampton was not in the crosswalk.
- There seems to be a lot of truck traffic at this intersection.
- Two crashes involve vehicles hitting deer.
- Very large issue with rear-end crashes, particularly where drivers are distracted and at a high rate of speed rear-end vehicles stopped at a steady red.

6 APPENDIX

INTERSECTION CRASH PATTERNS TABLE

PATTERN	WYOMING/7TH	FRONT/ RISING SUN	C	SMYLIE	ADAMS/ WHITAKER	SUMMERDALE/ ADAMS	LARGE	BUSTLETON/ LEVICK	HARBISON	FAUNCE/REVERE	WOODWARD	SOUTHAMPTON
Speeding				✓	✓	✓						
Red-Light Running	✓	✓	✓					✓	✓			
Left Turns from Cross Streets Failing to Yield to Through Traffic	✓		✓						✓			✓
Illegal Left Turns from Roosevelt Blvd	✓	✓	✓				✓	✓				
Left Turns from Roosevelt Blvd Clearance Too Short												✓
"Not Normal"[1]		✓			✓	✓				✓		
Fixed Object	✓				✓							
Rear Ends: Stopped at Steady Reds	✓				✓	✓	✓	✓			✓	✓
Rear Ends: Slowing for Yellow						✓					✓	
Pedestrian & Bicycle Crashes		✓		✓				✓	✓	✓		
Aggressive Lane Changes		✓									✓	
Small Triangle Intersections/Small T Intersections							✓		✓			
Crossovers										✓		
Deer												✓

CORRIDOR PROPORTIONAL DOT MAP

APPENDIX

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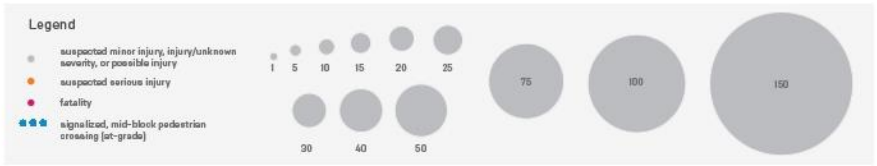
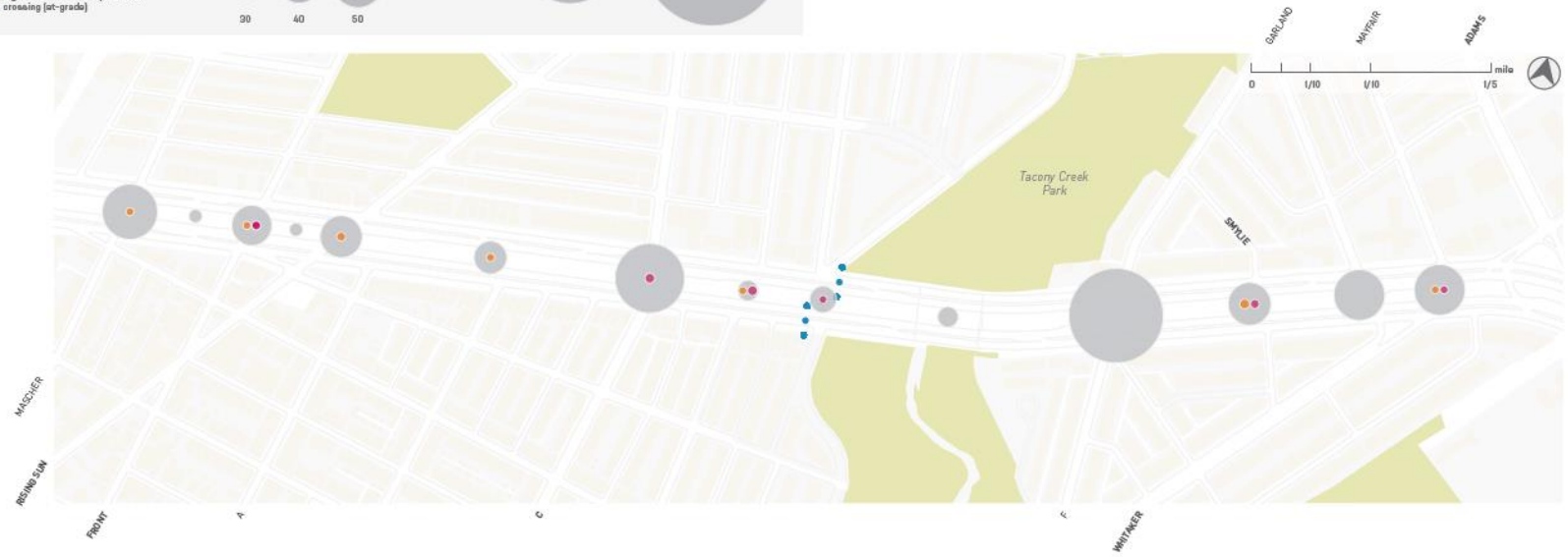
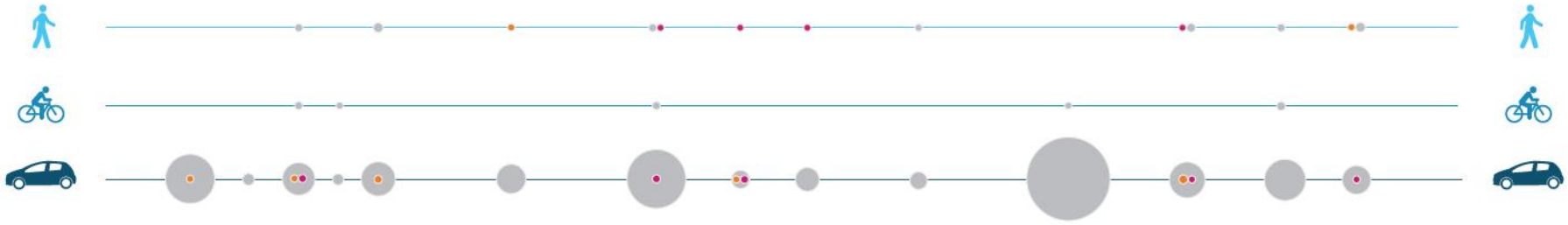
Crash Analysis







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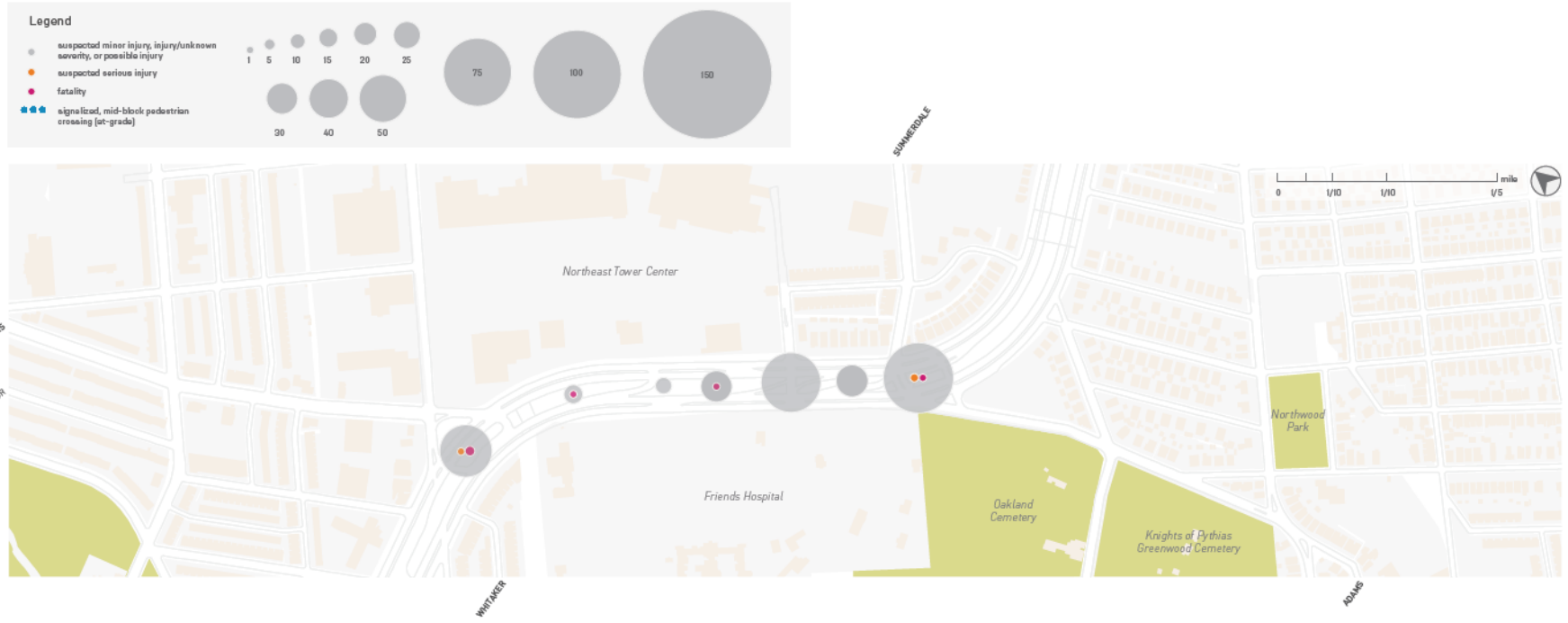

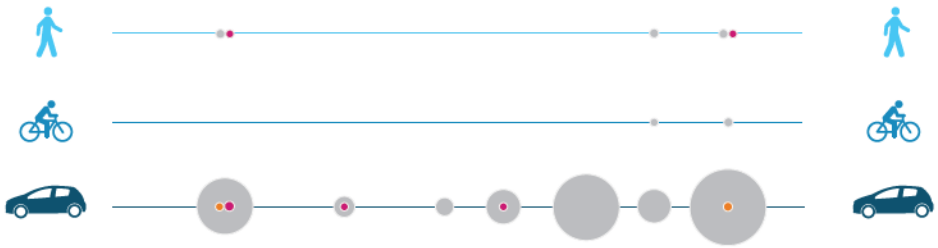

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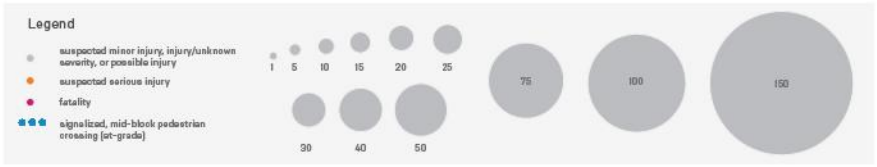

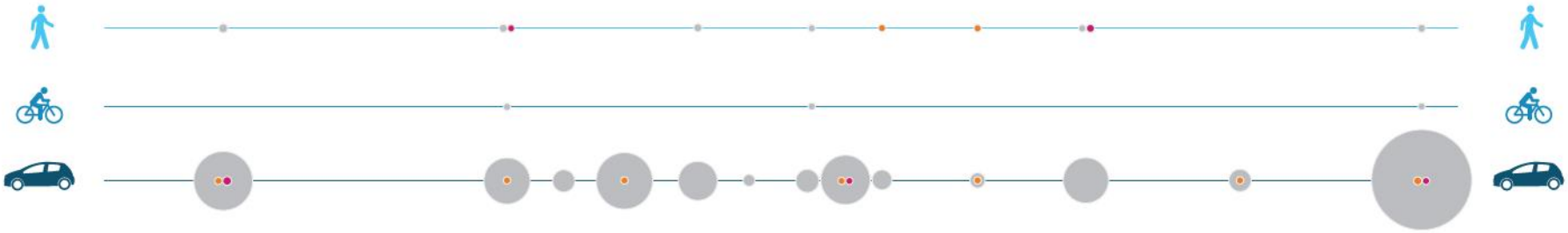

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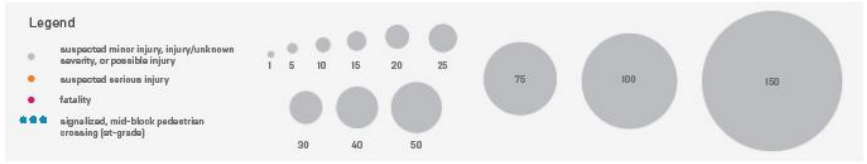
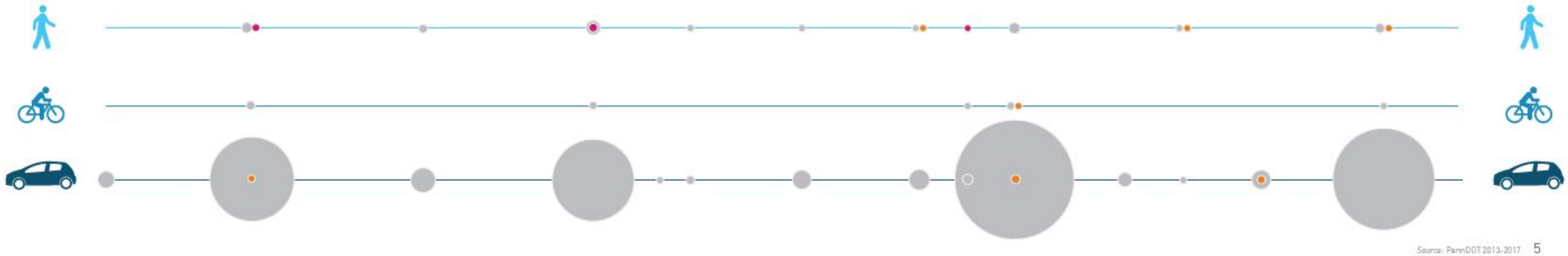
ROOSEVELT BLVD
Crash Analysis





Source: PennDOT 2013-2017

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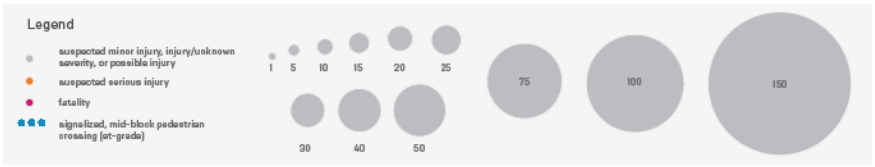

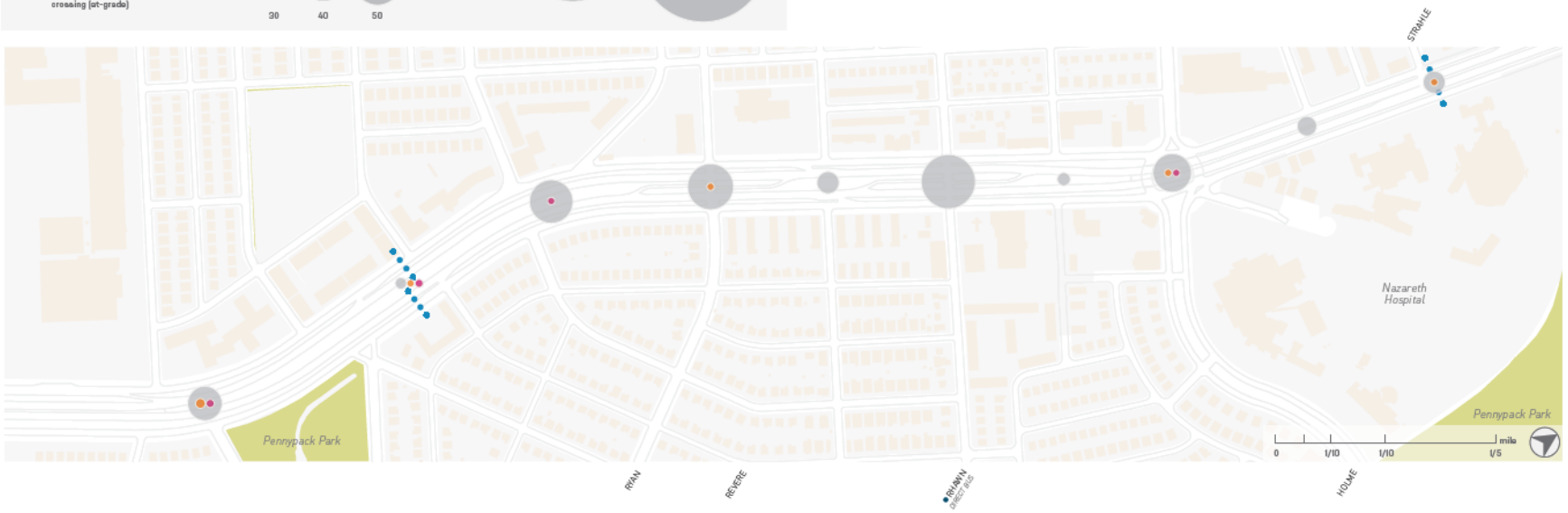

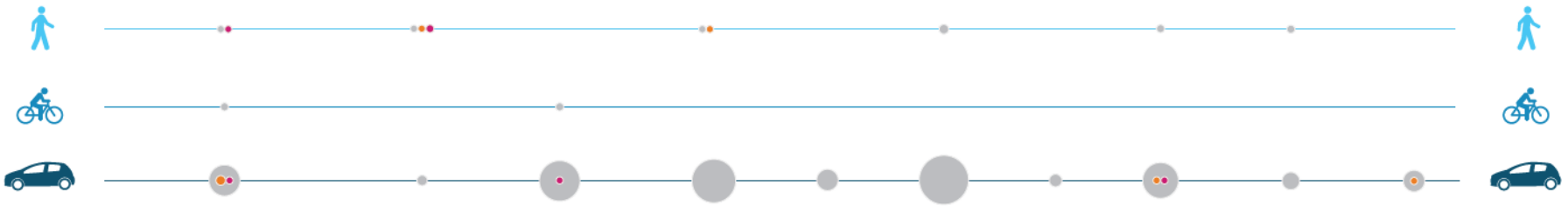

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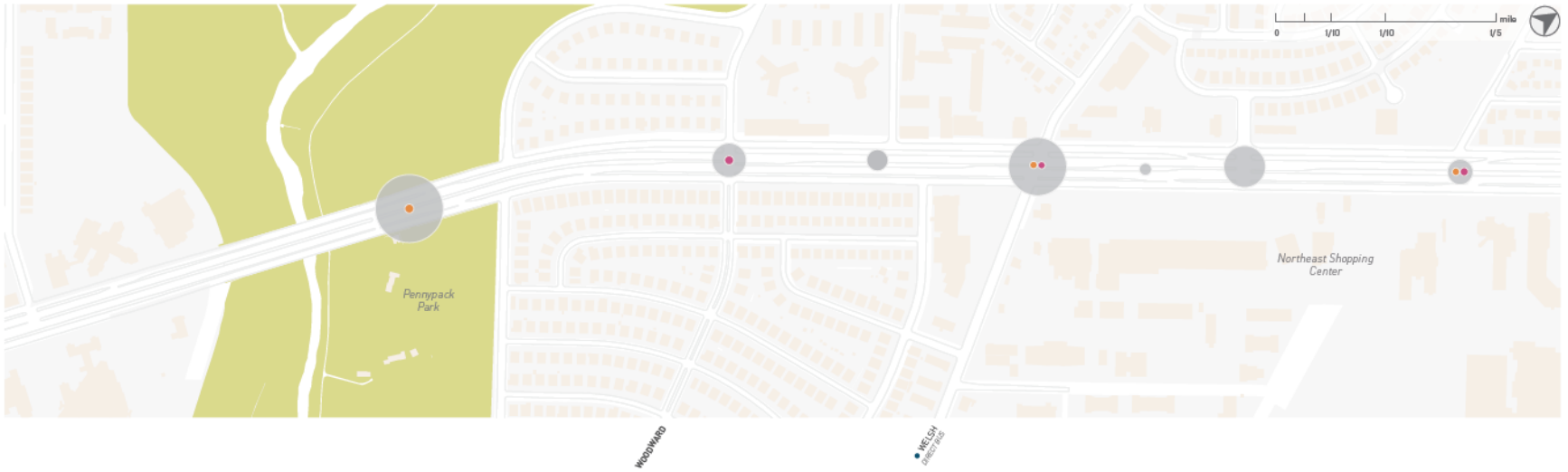
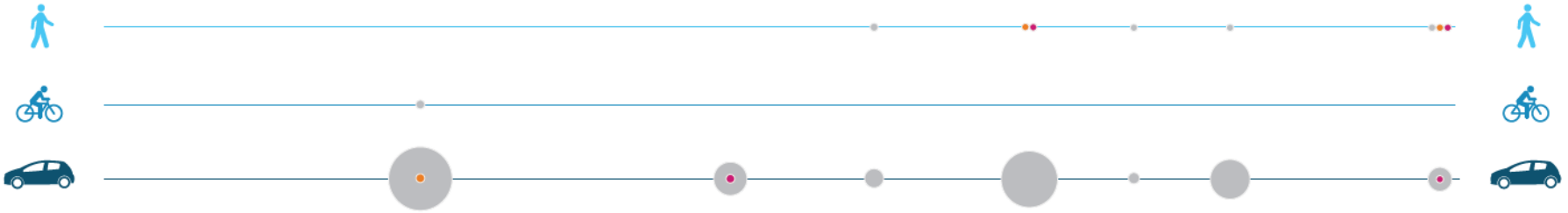
Crash Analysis





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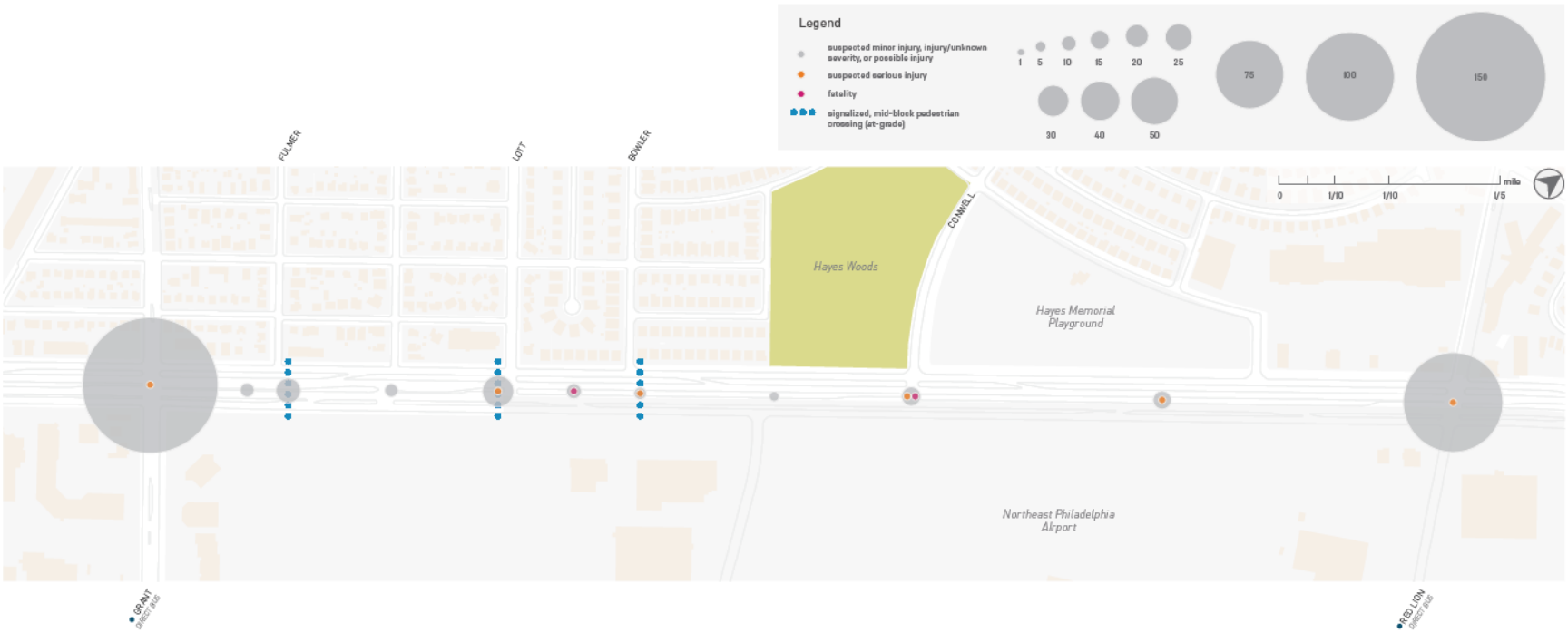

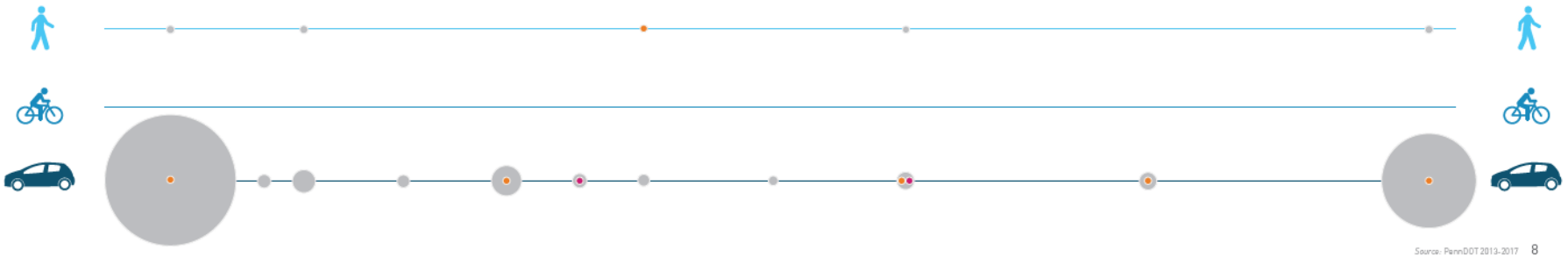

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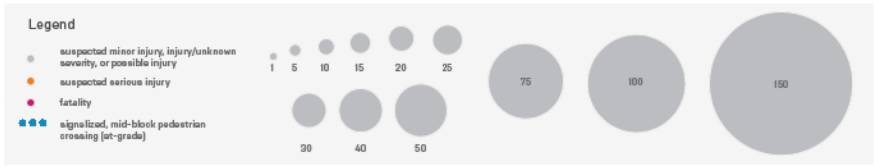

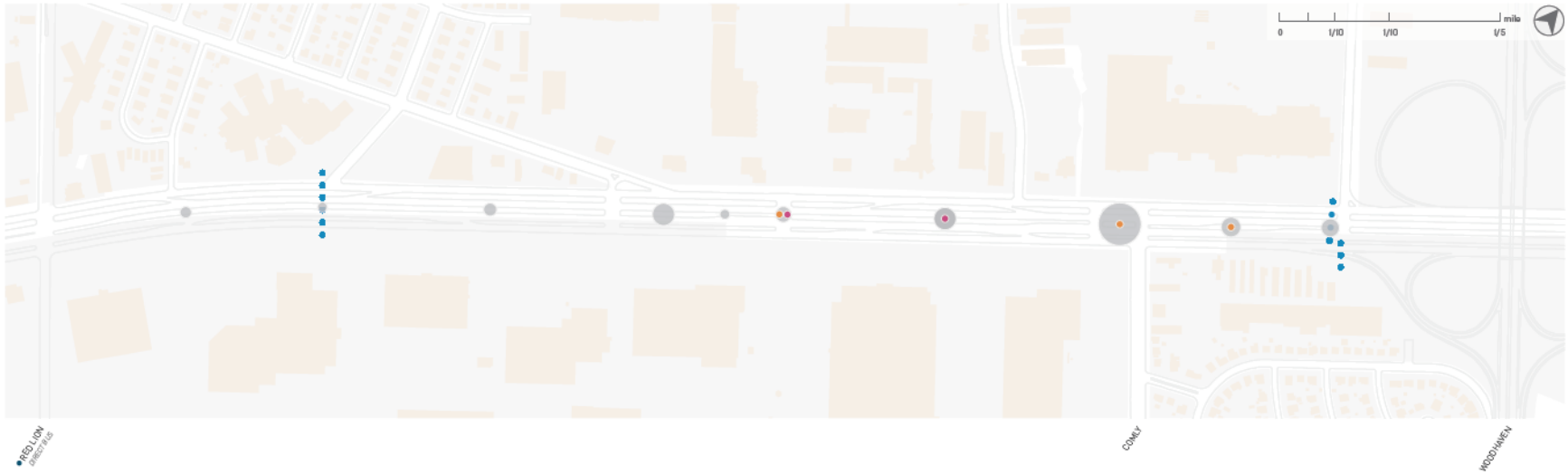

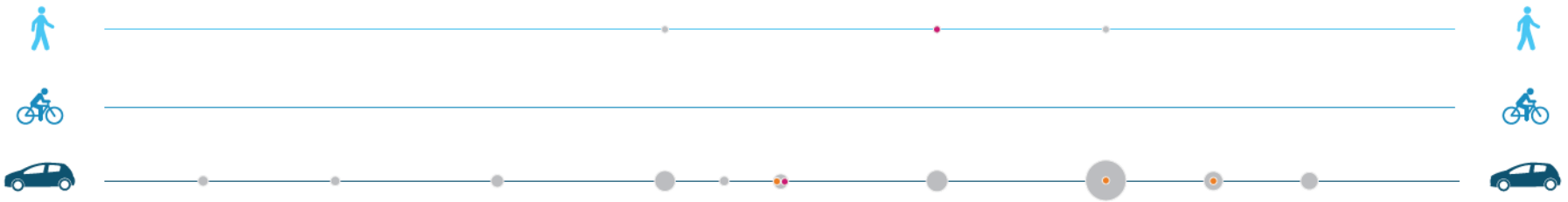

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