

## Draft Purpose and Need Statement

This document identifies the deficiencies in the existing transportation system and the transportation needs arising from these deficiencies, and it explains the purpose of the project in the study area of the Draft Environmental Impact Statement (DEIS) for increased transit service to King of Prussia, PA. The Purpose and Need Statement is the foundation of the National Environmental Policy Act (NEPA) planning process. It provides the rationale and justification for undertaking a major federal investment and forms the basis for the range of alternatives to be studied in a NEPA document.

The Purpose and Need embodies transportation conditions that are observable and data-supported, as well as problems and needs articulated by the public and stakeholders. Public and stakeholder input regarding problems and needs contained in this draft will occur during the informal scoping meetings, formal NEPA Scoping Meetings for the DEIS, through the development of the DEIS, and during the formal comment period on the DEIS. In this Purpose and Need Statement, the purpose of the proposed action is stated, the deficiencies in the existing transportation system and the foreseeable long-term consequences of these deficiencies are documented, and the needs arising from these deficiencies and supporting the purpose assertions are described. The Purpose and Need Statement serves as a cornerstone for the development and evaluation of alternatives.

### 1.1 Purpose of the Project

The purposes of the proposed project are to provide faster, more reliable, public transit service that:

- Offers improved transit connections to King of Prussia/Valley Forge area from communities along the existing Norristown High Speed Line, Norristown and Philadelphia;
- Improves connectivity between major destinations within the King of Prussia/Valley Forge area; and
- Better serves existing transit riders and accommodates new transit patrons.

The project need stems from deficiencies of current transit services in terms of long travel times, delays due to roadway congestion, required transfers leading to two or more seat trips, and destinations underserved, or currently not served, by public transit. These needs are strengthened by growing travel demands in the King of Prussia and Valley Forge areas generated by existing and future economic development opportunities.

A deficiency in transit service in Montgomery County has been identified for more than 20 years in regional studies and local plans. King of Prussia/Valley Forge, a major suburban activity center, has experienced growing population and employment that has led to increased congestion on local roadways and surrounding highways. There are several concentrations of major commercial development including the King of Prussia Mall (KOP Mall), the second largest mall in the United States, the King of Prussia business park, and the Valley Forge Convention Center and Casino. Additional significant commercial, industrial, and residential development exists and is planned for the area. Despite this concentration of development and the increased amount of travel to and from the area, the only existing transit to King of Prussia from Philadelphia and Norristown consists of bus service which is slow and unreliable because it operates on congested roadways and highways. The closest rail station to King of Prussia on the Norristown High Speed Line (NHSL) is located approximately 2 miles east of the KOP Mall. Travelers who use the NHSL must

transfer from rail to bus service for the remainder of the trip to King of Prussia. There is a large population of transit dependent riders who work in King of Prussia and live in Philadelphia, Norristown, and other communities along the NHSL. This population is negatively impacted by the poor connectivity and unreliability of the existing transit services. Given the study area's extensive road congestion, additional bus service is not feasible. Bus riders are subject to the same congestion delays as motorists, as buses share the roadway travel lanes. The project proposes to reduce or eliminate these deficiencies. .

## **1.2 Context**

### **Land Use and Development**

The greater King of Prussia (KOP)-Valley Forge area of Upper Merion Township, Pennsylvania, located in Montgomery County, is at the confluence of several major highways: the Pennsylvania Turnpike, I-76 (Schuylkill Expressway), Route 422, and Route 202. Located in southeastern Pennsylvania, it is about 15 miles away from Philadelphia and over the past five decades has developed into one of the most important activity centers in the Philadelphia region. While this location has served to make the area attractive for commercial development, continually increasing levels of traffic and congestion have raised concerns. A key concern from project stakeholders is that increasing congestion will make the area less attractive for future development and degrade the livability of the area.

The greater King of Prussia (KOP)-Valley Forge area is a major suburban employment center. As with most suburban employment centers, the vast majority of commuters arrive by automobile.<sup>1</sup> Outside of Center City Philadelphia, it is the largest employment submarket in the Philadelphia region. The entire township of Upper Merion has over 57,000 jobs. The core employment area, anchored by the KOP Mall (comprising The Plaza at King of Prussia and The Court at King of Prussia) covers over 300 acres and has over 9,900 jobs, while the office / business park area north of the Pennsylvania Turnpike covers about 700 acres and has over 26,800 jobs.<sup>2</sup>

The KOP Mall is the largest shopping mall on the East Coast of the United States and the largest shopping mall in the United States in terms of leasable retail space (ranked by square footage of retail space). It has over 400 businesses in its Plaza and Court sections, and it attracts about 20 million visitors annually, or about 55,000 per day<sup>3</sup>. As a major employment center, it draws employees from a wide geography; many live in Philadelphia<sup>4</sup>.

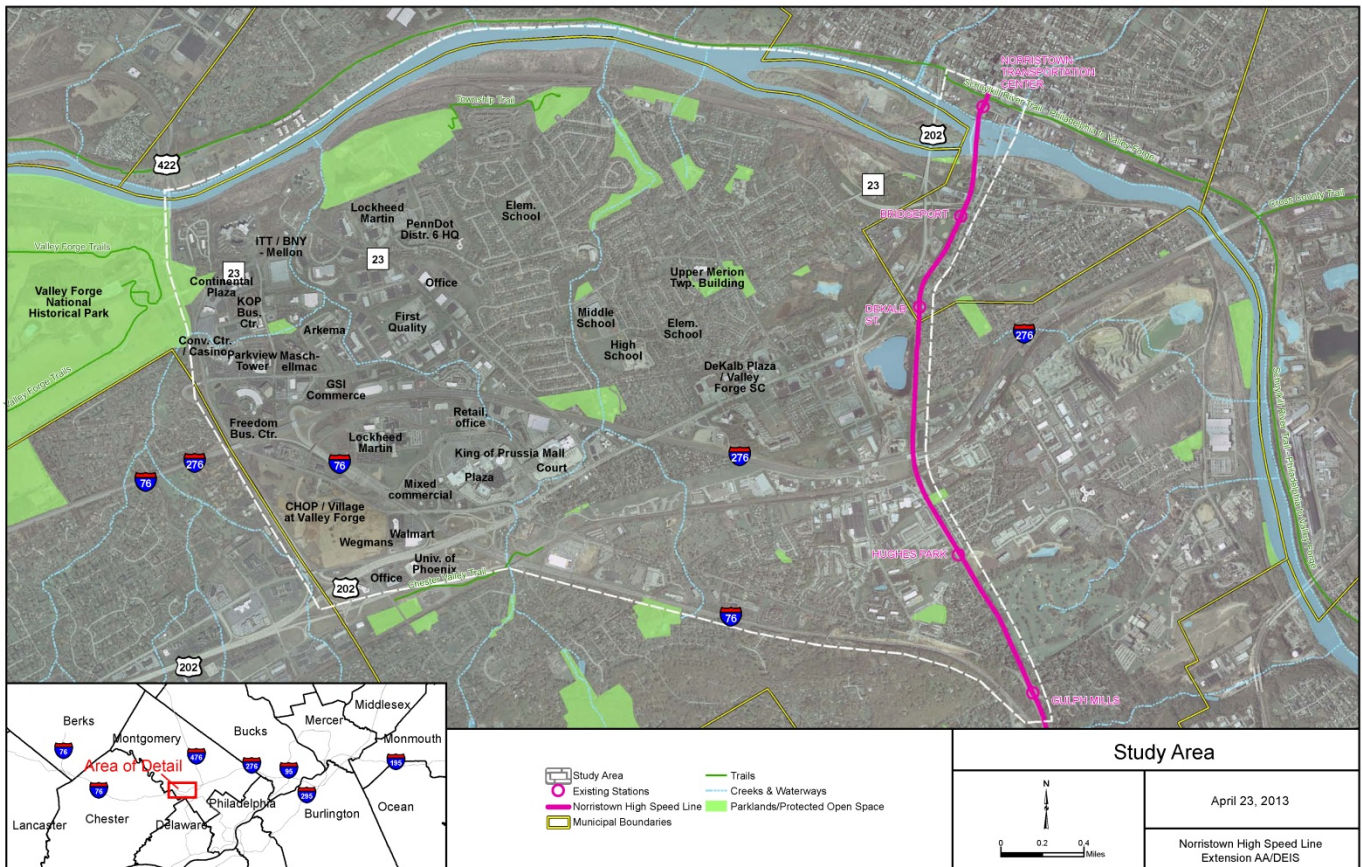
The study area also includes another major regional destination in the Valley Forge Casino Resort and Convention Center. The casino portion, opened in March 2012, has 600 slot machines and 50 table games, along with restaurants and bars and a spa. Two hotels (Radisson and Casino Tower) provide 486 rooms. The convention center has about 100,000 square feet of meeting space and 54,000 square feet of exhibit space.

The study area for the DEIS encompasses the King of Prussia/Valley Forge activity center and is bounded roughly by the Schuylkill River, Route 422, I-76 (Schuylkill Expressway), and the existing NHSL (see Figure 1). Most of the study area is located within Upper Merion Township; small portions lie within Bridgeport and Norristown. The main general land uses in Upper Merion Township are residential (32%), commercial (21%), and industrial (9%).

Commercial activity includes business, office, hotel, light industrial, and warehouse uses. Major employers such as Lockheed Martin, GSI, and Arkema, make this area their home. Other key destinations in the study area include the following (see Figure 2):

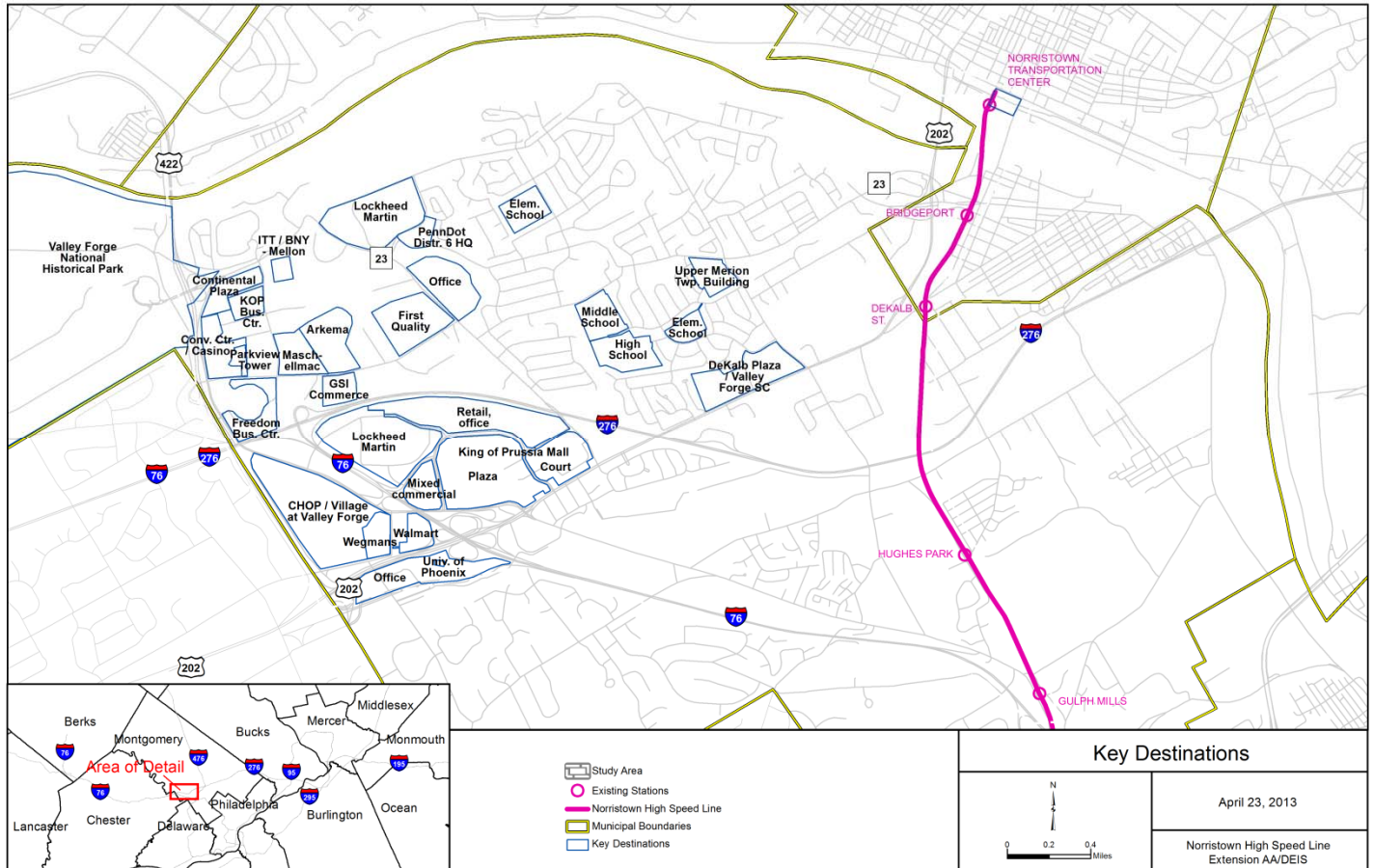
- Valley Forge National Historical Park
- KOP Mall
- Valley Forge Casino Resort and Convention Center
- Freedom Business Center and the King of Prussia business park
- Upper Merion High School, Upper Merion Middle School, and two elementary schools
- Upper Merion Township Building
- PennDOT District 6 Headquarters

Figure 1 Study Area





**Figure 2 Key Destinations**



## Transportation

The NHSL operates between the 69<sup>th</sup> Street Transportation Center in Upper Darby Township in Delaware County, Pennsylvania and the Norristown Transportation Center, in the Municipality of Norristown, in Montgomery County, Pennsylvania. Connections to SEPTA's regional rail system are available at the Norristown Transportation Center via transfer to the Manayunk-Norristown Rail Line, a commuter rail line providing rail service between Norristown and downtown Philadelphia, and to SEPTA bus routes. At the 69<sup>th</sup> Street Transportation Center, connections can be made to Center City Philadelphia via SEPTA's Market-Frankford Line, and to other parts of Delaware and Chester Counties via SEPTA's Route 101 and 102 Trolleys, and 18 SEPTA bus routes.

The existing NHSL is 13.5 miles long; 12.75 miles are double-tracked and 0.75 mile is single-track, including the railroad bridge/viaduct crossing the Schuylkill River. Power for the NHSL is provided by an energized third rail that is adjacent to the tracks. Although the NHSL passes through Upper Merion Township, the rail line runs about two miles east of the KOP Mall. Reaching the KOP Mall and other activity centers in the study area from the NHSL requires a transfer to/from bus service. Six SEPTA bus routes serve the study area and these routes are described later in this section.

Besides service to Norristown and Upper Darby, the NHSL serves a number of important origins and destinations along its line including academic institutions such as Haverford College, Bryn Mawr College, Villanova University, Eastern University, Cabrini College, and Rosemont College, as well as Bryn Mawr Hospital and several dense residential Main Line communities.

Figure 3 Norristown High Speed Line

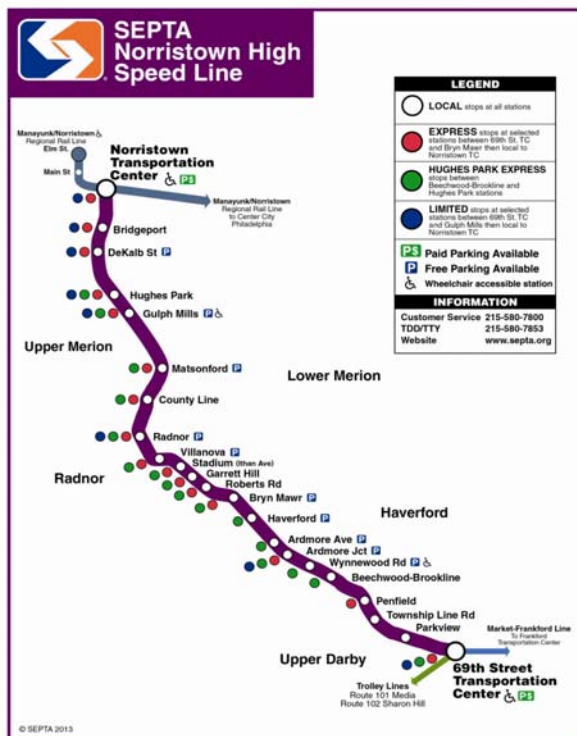


Table 1 shows the current average weekday loads at each station for both the northbound and southbound directions. These data show that the busiest stations, after the 69<sup>th</sup> Street Transportation Center and Norristown, are Bryn Mawr, Gulph Mills, Ardmore Junction, Radnor, Penfield, and Hughes Park.

When the NHSL was first constructed and for many years that followed, the predominant direction of travel was the traditional peak-direction, suburb-to-city commute to the 69<sup>th</sup> Street Transportation Center with a transfer to downtown Philadelphia via the Market Street subway line in the morning and reversing the pattern in the late afternoon. However, beginning in the 1970s and into the 1980s, the passenger flow gradually shifted to a reverse commute from Philadelphia. The reverse commute phenomenon largely reflected intensive office development near the Radnor Station but also service sector employment at Bryn Mawr Hospital. Subsequent extensive land development in Upper Merion Township and in the study area, in particular, contributed to new work and shopping trips. However, NHSL passengers must transfer to bus at Gulph Mills, Dekalb Street, or Norristown to reach the KOP Mall and other major destinations in the study area.

Average weekday ridership on the NHSL has seen a relatively steady increase over the past decade. In comparison to all of SEPTA's Suburban Transit Routes, the NHSL is ranked first in terms of having the highest average daily ridership.

Six SEPTA bus routes serve the study area; they are Bus Routes 92, 99, 123, 124, 125, and 139 (see Figure 4). Table 2 provides data for each route on its number of daily trips, number of trips on the Schuylkill Expressway (I-76), total mileage traveled on the Schuylkill Expressway, average speed on the Schuylkill Expressway, average weekday ridership, cumulative on-time performance, and annual ridership.

Ridership has been increasing over the past several years on the bus routes serving the study area. The most recent counts show that over 4,000 average daily bus passenger alightings and disembarkings are made at stops on bus routes that serve the mall.<sup>5</sup>

Bus riders, however, are subject to the same congestion delays as motorists, as buses share roadway travel lanes. As Table 2 indicates, a total of 181 buses from Bus Routes 123, 124, and 125 travel a total of 1,949 miles each weekday on the Schuylkill Expressway (I-76). Travel speed survey data compiled by the DEIS study team show the low average vehicular speeds along the Schuylkill Expressway eastbound during the morning peak period and westbound during the evening peak period.

As a result, Bus Routes 124 and 125, which run the longest distance on the Schuylkill Expressway (14 miles per one-way trip), have the lowest cumulative on-time performance in the entire SEPTA bus system. SEPTA's on-time performance standard is 85%, but the on-time performance rates for these routes are 64% and 62%, respectively.

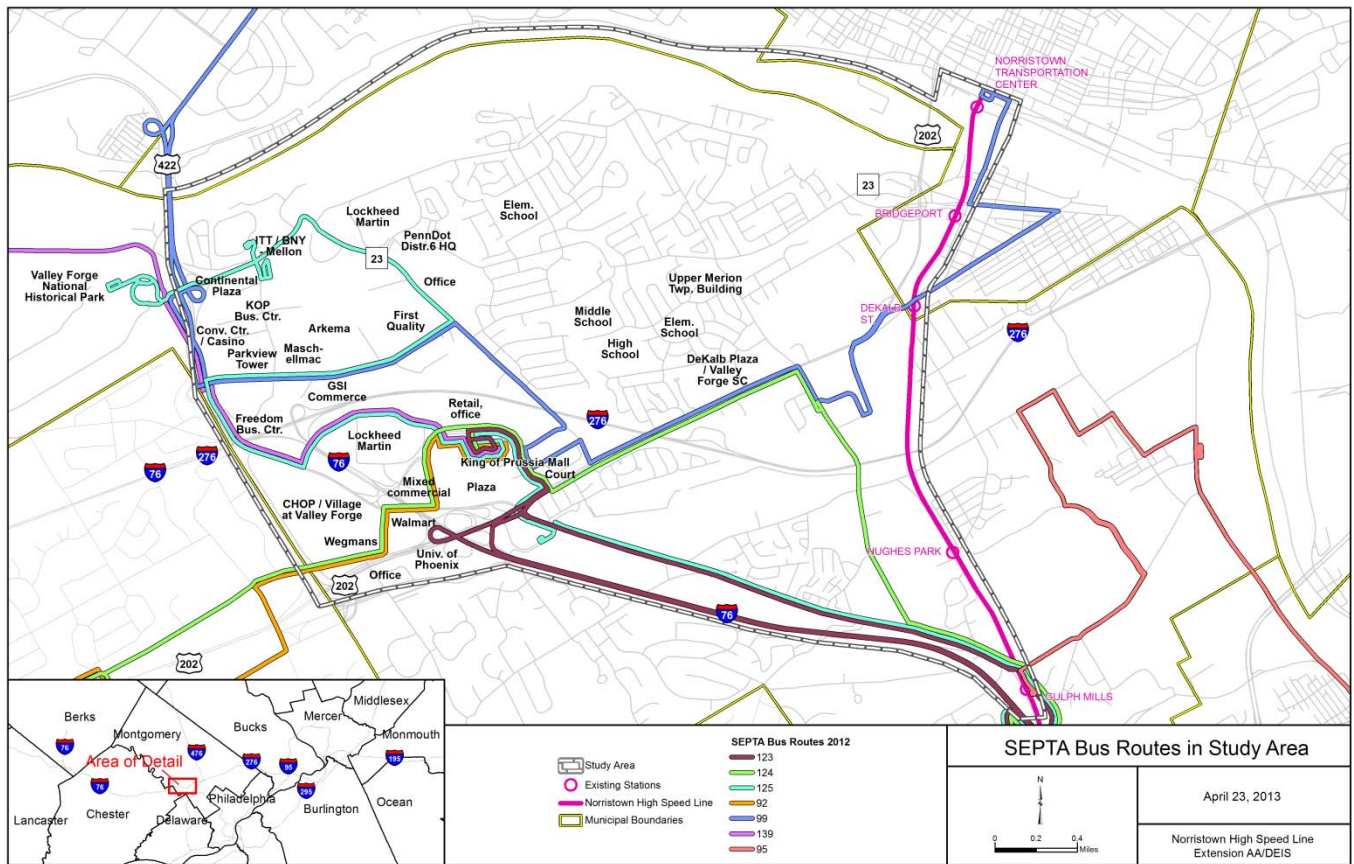
**Table 1 NHSL Average Weekday Passenger Loads**

Station	Northbound			Southbound	
	Ons	Offs		Ons	Offs
69th St. Transportation Center	5768	23		0	5547
Employee Platform	0	0		106	45
Parkview	16	30		35	14
Township Line Road	24	63		73	14
Penfield	27	272		261	25
Beechwood Brookline	18	179		187	20
Penfield	28	146		148	29
Ardmore Junction	103	614		592	95
Ardmore Avenue	13	80		88	13
Haverford	19	177		167	19
Bryn Mawr	87	797		709	79
Roberts Road	26	74		76	22
Garrett Hill	16	106		99	12
Stadium	12	125		135	6
Villanova	32	142		139	30
Radnor	58	371		389	68
County Line	2	31		24	1
Matsonford	6	30		43	7
Gulph Mills	71	689		640	49
Hughes Park	50	262		243	30
DeKalb Street	15	175		251	12
Bridgeport	31	120		112	16
Norristown	0	1944		1809	0
Not Identified	64	82		97	56
<b>Total</b>	<b>6,586</b>	<b>6,532</b>		<b>6,423</b>	<b>6,209</b>

Source: SEPTA, *Automatic Passenger Count Data*, Spring 2012.



**Figure 4 Study Area Bus Routes**



**Table 2: Summary of Bus Service Levels and Operations**

Bus Route	Number of Weekday Bus Trips	Number of Trips on I-76	Total Miles on I-76	Avg. Speed on I-76 EB AM (mph)	Avg. Speed on I-76 WB PM (mph)	Weekday Ridership	On-Time Perform.	Number of Saturday Bus Trips	Number of Sunday Bus Trips	Annual Ridership
<b>92</b>	28	No service along I-76				400	73%	20	n/a	113,600
<b>99</b>	64	No service along I-76				1,295	79%	57	33	385,900
<b>123</b>	55	55	220	20.29	16.87	1,443	74%	52	43	414,100
<b>124</b>	59	59	811	20.29	16.87	1,715	64%	51	37	511,070
<b>125</b>	71	67	918	20.29	16.87	1,800	62%	52	38	516,600
<b>139</b>	32	No service along I-76				415	81%	21	n/a	118,090

Sources: SEPTA Route Statistics, bus schedules, Control Center monthly reports, AECOM travel time survey.

Because the NHSL does not serve the major destinations in the study area, transfers to SEPTA bus service are required for NHSL passengers to reach key destinations like the KOP Mall or the King of Prussia business park. SEPTA Bus Routes 124 and 125 currently connect with the NHSL at the Gulph Mills station, while Route 99 connects with the NHSL at the DeKalb Street and Norristown stations. As a result, using the existing NHSL to reach key destinations in the study area requires a minimum of a two-seat transit trip and introduces the time penalties and inconvenience that a transfer requires in order to complete the entire trip.

The study area encompasses the King of Prussia Business Improvement District (KOP-BID). The KOP-BID is approximately 1,900 acres and includes the retail area encompassing the KOP Mall and The Village at Valley Forge (the former Valley Forge Golf Course), the business and industrial park bounded by First Avenue, Allendale Road and Route 23, the Route 202 commercial corridor, the Henderson Road corridor and the South Gulph Road corridor (see Figure 5). The KOP-BID derives its revenues from special assessment fees on commercial properties. The KOP-BID has used some of its revenues to fund physical improvements including landscape improvements to four medians along US 202 and three medians along First Avenue and “Welcome to King of Prussia” gateway signage at four major points of entry to the area.

The KOP-BID recently received a \$500,000 three-year Congestion Mitigation and Air Quality (CMAQ) grant from the Delaware Valley Regional Planning Commission (DVRPC), the Metropolitan Planning Organization (MPO) for the region. The grant will provide partial funding for a commuter transit shuttle service connecting the King of Prussia business park to SEPTA’s rail system at the Norristown Transportation Center and Wayne Station. The commuter transit shuttle is slated to start operations in spring 2013. The shuttle will be in service Monday-Friday during the morning and evening commute, providing an alternate option for King of Prussia employees and help fill the “last mile” gap between rail and key destinations in the study area.

**Figure 5 KOP-BID Coverage Area**



### 1.3 Project History

Deficiencies in transit service to the study area have been identified in various forms for more than 20 years in regional transportation studies and in Upper Merion Township's adopted 2005 Land Use Plan. In 2003, SEPTA completed the NHSL (Route 100) Extension Draft Alternatives Analysis (AA).<sup>6</sup> This study, conducted in accordance with Federal Transit Administration (FTA) guidelines, identified a full range of alternatives, screened alternatives and evaluation of the feasibility and costs to extend the NHSL to the study area. The study identified and evaluated four different alignments between the NHSL and the KOP Mall, and it identified a feasible alignment beyond the mall. The study was coordinated with other studies then occurring for SEPTA's proposed Cross-County Metro and Schuylkill Valley Metro services.<sup>7</sup>

SEPTA did not adopt the recommended alignment as the Locally Preferred Alternative for the NHSL extension as other transit projects at that time were considered higher priorities; however, DVRPC did include the project in the *Connections 2035 Plan*, which is the region's fiscally constrained long-range transportation plan.

Planning studies to date for transit extensions or restoration projects within the Pennsylvania portion of the greater Philadelphia region have not met federal cost effectiveness ratings or delivered viable financing plans. However, the federal rating system has changed significantly with MAP-21. Existing land use and economic development criteria are valued differently, as are mobility and cost effectiveness. The following list describes key changes since the 2003 study.



- DVRPC's regional travel demand model, which is the basis for forecasting transit ridership and traffic volumes for major transportation projects, has been updated to a new platform and reflects 2010 transit ridership.
- KOP-BID and Upper Merion Township are working together on a new zoning overlay for the King of Prussia business park and the US Route 202 corridor. The ordinance will include land use changes to support mixed-use and compact transit oriented development, especially in the vicinity of future transit stations.
- Both Upper Merion Township and Montgomery County have completed updates to their comprehensive and land use plans to help support a higher transit service levels.
- DVRPC's adopted, fiscally constrained Long-Range Transportation Plan (*Connections 2035*) includes higher transit service levels in the study area.
- There are two new prospects for funding sources -- the Commonwealth of Pennsylvania passed an Act that allows for public-private partnerships; and KOP-BID was formed with the intent of providing funding for capital projects in the KOP area.
- The study area continues to experience growth and investment in its retail, dining, hospitality, office, and tourism sectors. In order to remain competitive and to help shape this new growth and development/redevelopment in a more sustainable way, transportation investments specifically focused on increasing transit access to major study area destinations are critically needed. The need for this project cannot be ignored.

#### **1.4 Study Area Setting**

The Schuylkill River National Heritage Area includes portions of the study area. The study area contains a few streams, notably Trout Creek and Crow Creek (Abrams Creek), which drain to the Schuylkill River, which serves as the study area's northern border. The study area is comprised of a highly complex area of folded, faulted, and altered geologic formations with varying characteristics. Some of these geologic formations contain limestone and dolomite rocks that can subside and create sinkholes, potentially undermining foundations and roadways.<sup>8</sup>

The study area is highly developed with minimal amounts of vacant land (Upper Merion Township's Land Use Plan estimated vacant land at 4% in 2005). Despite this minimal amount of vacant land, Upper Merion Township continues to receive numerous land development proposals each year, with most of the development in the form of intensification and redevelopment of previously developed properties.

The following sections provide information on current and future conditions relating to land use, demographics, and transportation, including transit service.

##### **1.4.1 Existing Land Use**

Existing land use development in the study area can be characterized as typical suburban development with segregated uses. Much of Upper Merion Township's commercial development has occurred in single blocks of one use, with large areas that only contain offices or industrial development and other large areas that only contain retail development. A similar pattern occurs with residential land uses. However, Upper Merion Township recognizes that this pattern of land development is not sustainable. As a result, Upper Merion Township's Land Use Plan recommends a number of methods to create a more sustainable

environment, to improve traffic circulation, to improve the aesthetic quality of major transportation corridors, and to protect and maintain existing residential neighborhoods. Upper Merion Township's Land Use Plan states that the township will encourage the use of public transportation by "encouraging transit-oriented design within a quarter of a mile of the proposed and existing station stops for the Route 100 trolley (NHSL). Transit-oriented developments should encourage a mix of uses, and should be walkable, with buildings and parking areas designed to make walking as easy as possible. Transit-oriented development has a beneficial impact on neighbors by reducing the need to drive to various locations in the immediate area, thereby reducing congestion." (p. 28). The Township's Land Use Plan discusses the opportunity to revise their zoning and development regulations to foster mixed-use development and improve the appearance, function, and impact of commercial corridors and activity centers. The KOP-BID and Upper Merion Township are currently actively working to revise portions of the Township's zoning code to enable more compact development and encourage mixed-use development within King of Prussia's Suburban Metropolitan Zoning district and improve future development patterns along Route 202/DeKalb Pike. The accessibility that could be afforded by higher levels of transit to activity centers in the study area is the impetus for change.

### **Commercial/Office/Industrial**

The commercial center of the study area is anchored by the KOP Mall, which occupies an area bounded by the Pennsylvania Turnpike, Route 422, Route 202, and Allendale Road. The KOP Mall comprises about 2.6 million square feet of commercial space.<sup>910</sup> Other key uses in the area immediately surrounding the KOP Mall are Lockheed Martin's regional headquarters and the Overlook at King of Prussia shopping center.

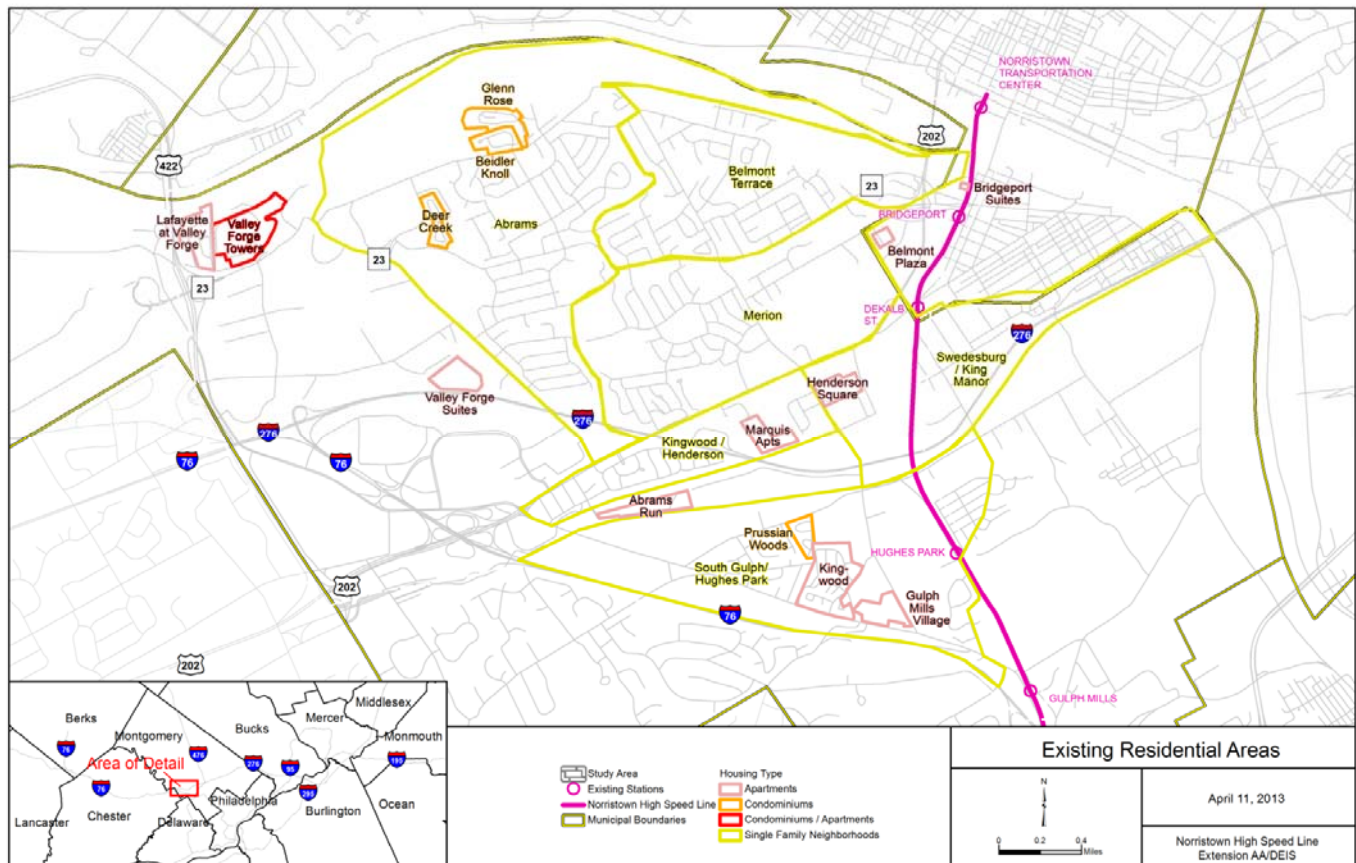
A second major concentration of commercial development is on the north side of the Pennsylvania Turnpike across from the KOP Mall. This area, known as the King of Prussia business park, has a mix of uses including office, warehouse/distribution, and the Valley Forge Convention Center and Casino.

Another major commercial concentration is the Henderson Road area, which lies in the eastern portion of the study area closer to the NHSL. Additionally, another major commercial area is along Route 202/Dekalb Pike. One of the most visible and traveled roads, this roadway and the development along it, especially the shopping centers and other retail development, has occurred over time in a disconnected way so that Route 202 epitomizes sprawling, highway-oriented, commercial development. As development plans are proposed to the Township, it has been working to incrementally improve the corridor by adding sidewalks, consolidating driveways, and orienting buildings to the street.

### **Residential**

Figure 6 shows the major existing single-family neighborhoods and multi-family complexes in the study area. Single-family housing predominates in the area bounded roughly by Route 202, the Pennsylvania Turnpike, Allendale Road, and the Schuylkill River. This area also includes schools, parks, and the municipal complex. The largest multi-family complexes include the Valley Forge Towers, Lafayette at Valley Forge, Rebel Hill, Gulph Mills Village, Kingwood, Marquis Apartments, and Beidler Knoll developments.

**Figure 6 Existing Residential Areas**



## Traffic Conditions

Due to the high volumes of traffic traveling to, from and through the study area, there is a significant amount of traffic congestion. During peak hours, a number of roadways have congestion problems. These areas include most roadways on the western side of King of Prussia, where I-76, I-276, 422, 202, and 23 intersect. Traffic trying to avoid this area can create congestion problems on local roads, such as Croton and King of Prussia Roads, Henderson and Church Roads, or within Valley Forge National Historic Park. In addition, significant congestion problems occur along Route 202, particularly at intersections. When accidents or incidents occur or traffic is rerouted for other reasons, many other roads and intersections in the study area can experience significant congestion problems.

The Schuylkill Expressway or I-76 is the major freeway facility connecting the study area to Center City Philadelphia and serves as a gateway to Philadelphia from the rest of Pennsylvania and southern New Jersey. Additionally, three SEPTA bus routes that serve the study area travel along this facility. Table 3 below displays the volume to capacity (v/c) ratios for this primary travel route for existing conditions (2010) and 2040 No Build conditions by time period as produced from DVRPC's travel demand model. As can be



seen, many segments of the Schuylkill Expressway are approaching capacity or operating above capacity. A v/c ratio below 0.75 (Under Capacity) suggests that the segment is operating well and has capacity to accommodate future traffic growth. A v/c ratio approaching 1.0 (**Approaching Capacity**) suggests that a segment is operating poorly with little capacity available for growth. A v/c ratio over 1.0 (**Over Capacity**) suggests that a segment is operating at failing conditions with no available capacity for growth. Examining the change in v/c ratios by segment from 2010 to 2040 indicates there is not much change, but given that I-76 starts from a position of serious congestion levels it is not surprising. The one place where there is significant change is on the westbound stretch between the Gulph Road ramps and I-476 close the study area.

**Table 3: I-76 V/C Ratios – 2010 and 2040 No Build Conditions**

<b>I-76</b>	<b>2010 Base Year</b>				<b>2040 No Build</b>			
<b>Westbound</b>	<b>AM</b>	<b>MD</b>	<b>PM</b>	<b>NT</b>	<b>AM</b>	<b>MD</b>	<b>PM</b>	<b>NT</b>
Gulph Rd to US-202	1.04	0.93	1.20	0.78	1.05	0.93	1.12	0.76
I-476 to Gulph Rd	1.01	0.87	1.06	0.71	1.17	1.00	1.17	0.82
Hollow Rd to I-476	1.08	0.96	1.16	0.86	1.10	1.00	1.19	0.89
Belmont Rd to Hollow Rd	1.24	1.11	1.33	0.95	1.24	1.15	1.36	0.99
City Ave to Belmont Rd	1.24	1.13	1.38	0.95	1.23	1.16	1.39	0.98
Montgomery Dr to Roosevelt Blvd	0.90	0.87	1.09	0.65	0.87	0.88	1.09	0.67
Girard Ave to Montgomery Dr	0.93	0.89	1.11	0.67	0.90	0.90	1.12	0.68
<b>Eastbound</b>	<b>AM</b>	<b>MD</b>	<b>PM</b>	<b>NT</b>	<b>AM</b>	<b>MD</b>	<b>PM</b>	<b>NT</b>
US-202 to Gulph Rd	1.24	1.08	1.29	0.93	1.19	1.09	1.29	0.92
Gulph Rd to I-476	1.22	1.11	1.31	0.98	1.21	1.14	1.33	0.96
I-476 to Hollow Rd	1.18	0.99	1.20	0.93	1.18	1.02	1.19	0.94
Hollow Rd to Belmont Rd	1.32	1.12	1.37	1.00	1.33	1.15	1.37	1.01
Belmont Rd to City Ave	1.35	1.13	1.38	0.97	1.36	1.16	1.38	0.97
Roosevelt Blvd to Montgomery Dr	1.11	0.93	1.06	0.76	1.14	0.96	1.08	0.78
Montgomery Dr to Girard Ave	1.13	0.95	1.08	0.78	1.16	0.98	1.11	0.80

#### **1.4.2 Existing Transit Service**

Six SEPTA bus routes serve the study area, and ridership has been increasing over the past several years. The most recent counts show over 4,000 average daily bus passenger trips are made to/from stops on bus routes that serve the mall.<sup>11</sup> Bus travel, however, is subject to the same delays as are motorists due to congestion on the study area roadways. Because the study area is largely developed, expanding or building bus-only lanes on roadways to address the congested conditions would be difficult.

The projected increases in employment and population will exacerbate the existing situation. The impacts of these traffic conditions on SEPTA bus service are already substantial; future conditions will be worse. The congested roadways mean that buses are challenged to operate on schedule and bus travel times are not predictable. As previously described, Routes 124 and 125 have on-time performance rates that are considerably below the SEPTA standard. Not only does this obviously inconvenience riders, it also means that it is very difficult to operate the network of services reliably and in a manner that optimizes interconnectivity and mobility. And since bus transit does not offer a favorable travel time comparison to travel by automobile, transit is not a competitive travel option to those who have access to automobiles.

Because the NHSL does not serve the KOP Mall or the King of Prussia business park, transfers to SEPTA bus service are required for NHSL passengers to reach these key destinations. Passengers must transfer to a SEPTA bus at the Gulph Mills station, the DeKalb Street station or the Norristown Transportation Center to complete their entire trip. As a result, using the existing NHSL to reach key destinations requires a minimum of a two-seat transit ride and introduces the time penalties and inconvenience that a transfer requires in order to complete the entire trip.

#### **1.4.3 Changing Land Use**

Upper Merion Township's Land Use Plan and zoning ordinance provide the framework for potential future growth. Most land in the township is developed or preserved; the township estimates that only 4% of its land is now undeveloped.<sup>12</sup> Thus, most future development likely will be redevelopment of some type.

While the township has not designated any official redevelopment areas, the Land Use Plan does identify potential "mixed-use" areas and "important tracts," as well as establishing a proposed land use map.<sup>13</sup> The map of potential mixed-use areas recommends a major "transit-oriented mixed-use" area encompassing most of the King of Prussia commercial core area. A stated goal of the Land Use Plan is to create a sustainable environment and create more compact, mixed-use development. To achieve this, the Land Use Plan contains a "Transit-Oriented, Mixed-Use" overlay land use designation which is intended to encourage compact, walkable development around future train stations and the existing station at Hughes Park. The Plan notes that a mix of apartments, elderly housing, retail stores, offices, and hotels might be appropriate in these transit-oriented areas, with all development designed to make walking to the train stations as safe and convenient as possible.

To further the Land Use Plan goals, Upper Merion Township and the KOP-BID are revising the Township's zoning code to improve future land use conditions along DeKalb Pike (Route 202) and the First Avenue area in the King of Prussia business park. The project will lay out a vision for the future of both of these corridors

and will develop a new zoning code or overlay district that will improve the overall land use patterns, encourage walkability and public transportation use, and allow for mixed use development.

#### **1.4.4 Population and Employment Growth**

##### **Population**

DVRPC adopted population forecasts project that Upper Merion's population will increase from 28,394 in 2010 to 32,661 in 2040, which is a significant increase of 15%, or 0.5% annually. Other municipalities along the NHSL will have projected overall population increases ranging from 0.2% (Haverford) to 15.8% (Bridgeport).<sup>14</sup>

##### **Employment**

DVRPC recently released (September 2012) updated municipal-level employment projections. These data show that Upper Merion's employment will rise from 57,136 in 2010 to 62,172 in 2040, an 8.8% increase. Although the percentage increase is modest, the absolute increase of 5,036 is impressive. It is equivalent to an increase of more than two-thirds of the KOP Mall's employment or almost two new Lockheed Martins. The total employment in the King of Prussia submarket of the greater Philadelphia region is the highest in the region, outside of Center City.<sup>15</sup>

#### **1.4.5 Transit Service Markets**

The main transit service markets are the following:

- **Employees:** Persons who currently work or could work in the study area. Reverse commuters are those who work at key destinations in the study area but live elsewhere along the existing NHSL. Smaller market segments may include persons who work near other current or potential stations in the area or at locations further to the north or west.
- **Residents:** Persons who currently live or might live in the study area and currently work or might work at locations near transit stations or stops or need to travel to these locations for other reasons. Segments of this market may include persons who work in Philadelphia or Norristown, persons who work at other locations close to the city, and/or persons who live further to the north or west.
- **Shoppers and Others:** The study area contains the largest mall in the United States in terms of leasable retail space and other major trip attractors (Valley Forge Convention Center and Casino). Additionally the NHSL provides service to major colleges and universities along its existing length. SEPTA provided additional bus service to the routes serving the King of Prussia Mall this past Thanksgiving and Black Friday and have done so in the past.
- **Transit-dependent persons:** Persons who do not have access to a personal car or use transit by choice. Also includes other persons living in Philadelphia, Upper Darby, and Norristown who have limited reverse commute opportunities.

Growing population and employment in the study area and region has resulted in increasingly congested roadways. Existing land use patterns in the region have increased the amount of suburb-to-suburb travel to and from the study area's major activity centers and have also increased the amount of urban-to-suburban (reverse trip-making) from urban centers (Norristown, Upper Darby and Philadelphia) to suburban centers

(KOP and Valley Forge). The existing NHSL is primarily oriented to accommodate travel in and out of Upper Darby, Philadelphia and Norristown. The only transit service available for travel to activity centers in the study area is bus service, which can be slow and unreliable because it operates on the highly congested roadway system especially during peak hours.

The transit-dependent populations in the study area as well as the urbanized centers of Philadelphia, Upper Darby and Norristown are adversely affected by limited connectivity, and the unreliability of the existing transit services to/from the study area. Linking Upper Darby, Norristown and Philadelphia to KOP and Valley Forge as the largest concentration of employment and future economic development in the greater suburban Philadelphia area is a critical need.

Ridership data on the six current SEPTA bus routes in the study area, as shown in Table 2 and NHSL passenger loads, as shown on Table 1, provide a good indication that a transit market already exists for trips destined to the study area, and to and from Philadelphia, Upper Darby, and Norristown and from other points along the existing NHSL.

### **1.5 Need for the Project**

As shown in the description of the study area in Section 1.4 *Study Area Setting*, there is a demand for a high quality, increased transit service to/from the study area. This demand is not met because of the limitations of the existing transportation infrastructure and the deficiencies in current transit service. Specifically, the need for increased transit service has three components: (1) the need for faster, more reliable public transit service; (2) the need for better transit connections to and within the study area; and (3) the need for transit service to better serve existing patrons and accommodate new patrons.

#### **1.5.1 Need for Faster, More Reliable, Public Transit Service**

The current SEPTA bus service is the only transit option for access to the KOP-Valley Forge activity center (project study area). The increasing ridership on the six study area bus routes shows the demand for transit service to this area. Nonetheless, existing bus service does not provide optimal conditions for its riders within the study area. The bus routes are somewhat circuitous in order to reach all the destinations in the study area; this pattern increases travel times, and riders are subject to the same delays as are motorists due to congestion on the study area roadways. This situation can create unreliable and especially long travel times for riders, and it likely makes existing bus service an unrealistic option, particularly for riders making transfers. As a result, the major destinations of the KOP Mall, the King of Prussia business park, and the Valley Forge Convention Center and Casino are underserved by the existing bus service. Thus, there is a need for a faster, more reliable, public transit service that would provide a quality and convenient ride.

#### **1.5.2 Need for Improved Transit Connections to and Within the King of Prussia/Valley Forge Area**

The current SEPTA bus routes are limited in the area that they serve, the connections that they can make, and the transit service quality (speed and reliability) that they can offer. For example, NHSL riders from communities along the existing NHSL, and in Norristown and Philadelphia, currently must transfer to bus service to reach the key destinations within the study area. This minimum two-seat transit trip incurs the inconvenience of a travel time penalty to connect to major destinations in the study area that are only two miles or so from the existing NHSL line.

Adding to the inconvenience of transit travel within the study area, transfers among bus routes are required in some cases. Existing bus service provides some connections between major destinations in the study area, but not all existing and planned destinations are served by transit. As Upper Merion Township implements their Land Use Plan goal of more sustainable, mixed use development, the demand for transit connections will increase. Taken together, there is a need to address the inconvenience of two-seat or more transit trips that have one or more destinations in the study area.

### **1.5.3 Need to Better Serve Existing Transit Patrons and Accommodate New Patrons**

Related to the first two areas of need, the current bus service provides a limited supply of transit service for the study area. Bus capacity is a function of the vehicle size and the number of daily and peak hour trips that each route is able to provide. Even if the bus routes were an attractive option to more people, service capacity is constrained by existing vehicle size and the number of possible trips per route. The constraints of traffic congestion, lack of opportunity to increase and assure more roadway capacity, and physical geography, limit the solutions which could be used to address these needs. To meet growing ridership demands as evidenced by the existing and growing transit market to/from the study area, high-quality increased transit service with capacity to accommodate future forecast ridership is warranted.

### **1.6 Goals and Objectives**

The following goals and objectives of the proposed project complement the purpose and need, and focus on related transportation, economic, and environmental issues.

- Develop a cost-effective and reliable increased transit service to KOP-Valley Forge
  - Provide adequate frequency of service and operational redundancy
  - Develop the increased transit service using an alignment with acceptable operating conditions (grades, radii, etc.) and that is feasible and reasonable to build, operate, and maintain
  - Use a corridor with the ability to acquire ROW or negotiate operating easement/rights without undue difficulty
- Mitigate the growth of traffic congestion on study area roadways
  - Increase the share of trips using transit to access the study area
- Improve the accessibility of transit in the study area
  - Increase the number of transit options for travelers
  - Provide high-quality transit service to study area activity centers
  - Improve the connectivity of transit services
- Increase the effectiveness of transit on a regional basis
  - Increase transit system ridership
  - Increase transit system revenue

- Support sustainable future economic growth in the area
  - Serve new markets with transit services to support development of residential, employment, shopping, tourism, educational, medical, entertainment, and other uses
  - Provide the basis for transit-oriented development and design
- Avoid or minimize adverse community and environmental effects
  - Avoid or minimize impacts to sensitive environmental resources
  - Avoid or minimize negative impacts to neighborhoods
  - Avoid or minimize negative impacts to businesses

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<sup>1</sup> DVRPC, April 15, 2013, NHSL Study Model Run 12a Calibration

<sup>2</sup> Acreage calculated from parcel database provided by Upper Merion Township. Jobs numbers are from DVRPC demographic forecast data.

<sup>3</sup> King of Prussia District (KOP-BID) *Report to the Community 2013*, from Simon Property Group.

<sup>4</sup> DVRPC, April 15, 2013, NHSL Study Model Run 12a Calibration

<sup>5</sup> King of Prussia Stop Summary, All Day, SEPTA.

<sup>6</sup> SEPTA formerly referred to the NHSL as Route 100.

<sup>7</sup> Route 100 Extension Alternatives Analysis, Executive Summary

<sup>8</sup> Upper Merion Township, Land Use Plan, Adopted October 6, 2005

<sup>9</sup> Upper Merion Township: data in email November 29, 2012

<sup>10</sup> King of Prussia District (KOP-BID) *Report to the Community 2013*, from Simon Property Group.

<sup>11</sup> King of Prussia Stop Summary, All Day, SEPTA.

<sup>12</sup> Upper Merion Township, Land Use Plan webpage, <http://www.umtownship.org/index.aspx?NID=342>

<sup>13</sup> Ibid.

<sup>14</sup> *Analytical Data Report #18*, DVRPC, May 2012

<sup>15</sup> <http://www.dvrpc.org/webmaps/empforecasts/>