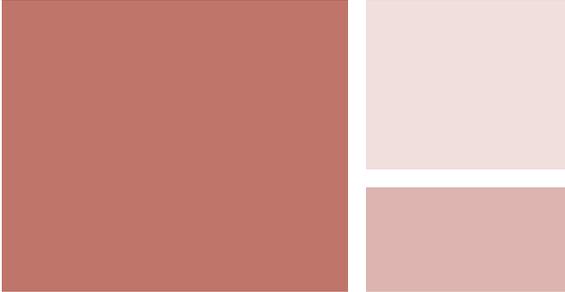


Delaware County 2035
The Land | The People | The Places

Transportation Plan

Improve | Expand | Integrate



DRAFT
SEPTEMBER 2017

Transportation Plan

September 2017 Draft

Prepared By:

Delaware County Planning Department
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RESOLUTION of the DELAWARE COUNTY COUNCIL
Transportation Plan

WHEREAS, the Pennsylvania Municipalities Planning Code (Act 247 of 1968, as amended and hereinafter the "MPC") requires that every county in the commonwealth adopt a comprehensive plan, which plan shall consist of, among other basic elements, a plan for land use; and

WHEREAS, the County of Delaware has previously prepared Delaware County 2035 as the framework and land use component of said comprehensive plan; and

WHEREAS, the County of Delaware has prepared the *Transportation Plan* as the transportation component of Delaware County 2035; and

WHEREAS, the plan was prepared in consultation with local municipalities, PennDOT, SEPTA, and the Delaware Valley Regional Planning Commission; and

WHEREAS, the purpose of said plan is to create an overarching vision for the movement of people and goods in Delaware County; to provide guidance for decision-making regarding transportation; and to provide a context for working cooperatively with municipal, regional, and state governments and agencies to improve the transportation system; and

WHEREAS, the County held a public hearing on December 13, 2017 after complying with the notice and 45-day public review and comment requirements of the MPC; and

WHEREAS, pursuant to the requirements of the MPC, the Delaware County Planning Commission has reviewed the *Transportation Plan* and is recommending that County Council adopt the plan as a component of the Delaware County 2035.

NOW, THEREFORE, BE IT RESOLVED by Delaware County Council that the *Transportation Plan* is hereby adopted as part of Delaware County 2035.

Approved December 13, 2017.



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County Clerk

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Background

1

Chapter 1: Background

Delaware County features a robust and mature transportation system that has grown significantly over the past century. There are several key assets that influenced Delaware County’s historical development patterns. Perhaps the most important is the Delaware River, which has been a significant resource since the time of Native American settlement. Today, the river serves as a port for industries located along the riverfront. With the expansion of international trade and shift in the production of natural gas, these riverfront properties are being repurposed for new uses within the same industry.

Other transportation assets include Philadelphia International Airport, Interstates 95 and 476 (colloquially referred to as the Blue Route), and Southeastern Pennsylvania Transportation Authority (SEPTA) bus, light rail, heavy rail, and regional rail services. The County’s transportation infrastructure continues to affect and be affected by surrounding land uses. Regional focus is shifting toward a diversified, multimodal transportation system that includes not only automobiles but also transit users, bicyclists, and pedestrians. As capacity needs increase and the feasibility of immediate infrastructure expansion or reconstruction is challenged, transportation alternatives will be instrumental in the creation of a more efficient network.

DELAWARE COUNTY 2035

Delaware County 2035 consists of a central *Land Use Policy Framework Plan* and number of related and interconnected, but more detailed, component plans. The *Land Use Policy Framework Plan* establishes an overall vision for the future of the County through the year 2035. It also sets policies for development, redevelopment, conservation, and economic initiatives. The plan provides the County’s 49 municipalities with a framework for the strategic use of public resources to improve the quality of life for all its residents. In accordance with the Pennsylvania Municipalities Planning Code (MPC), the plan “establishes objectives of the municipality concerning its future development, including, but not limited to, the location, character, and timing of future developments.”

Some of the component plans – addressing additional planning-related elements within the County – have already been developed, such as the *County Open Space, Recreation, and Greenway Plan*; more are under development. Each component plan will use the same framework and build off of the land use policies laid out in the *Framework Plan*. Individual municipal plans serve as a basis for these policies. This *Transportation Plan* is the transportation component plan of Delaware County 2035. The organizational structure of the comprehensive plan and its components is shown below.

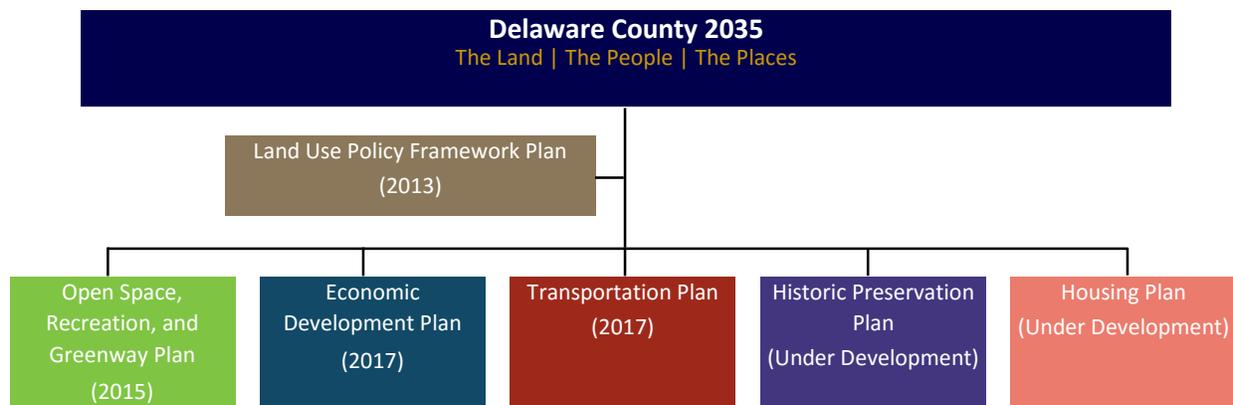


Figure 1-1: Organizational Structure of Delaware County 2035.

The County Profile section of the *Framework Plan* is organized by the key themes of Delaware County:

The Land:

- A Range of Housing Options
- Natural Resources Protection
- Quality Community Services and Facilities
 - Health Care
 - Higher Education
- Utilities

The People

- Demographics
 - Aging in Place
 - Race, Ethnicity, and Diversity
- Energy
- Employment

The Places

Delaware County 2035 recognizes the importance of supporting growth in the County through the celebration of community character - that is, the sum of qualities that makes each neighborhood and municipality a distinct place. The Delaware County 2035 community framework organized the diverse place types of the County into four Character Area types, which are broad areas with similar development patterns and characteristics, and four types of Central Places, which are community focal points that reinforce or establish a sense of place and character. The planning areas (or community framework) (see the Delaware County Profile section for more detailed description of each) identified in the *Framework Plan* are:

Character Areas

- Mature Neighborhoods
- Growing Suburbs
- Open Space
- Greenways

Central Places

- Urbanized Center
- Town Center
- Neighborhood Center
- Activity Corridor

The Land Use Framework chapter of the *Framework Plan* details prioritized objectives, policies, and actions that County and municipal decision makers can take to address their common issues and challenges. Recommendations are presented for each of the eight place types listed above. The plan also identifies place-making themes that were derived from the themes represented in the County's municipal comprehensive plans. They address general goals for improvement across the County. Themes related to economic development include:

- **Sustainable Development Patterns** – development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This also includes development which can be adapted for future uses and focuses on development around existing centers.
- **Multimodal Transportation** – a connected transportation system that supports pedestrians, public transit, bicycles, and motor vehicles.
- **Community Investment and Revitalization** – focusing investments on existing communities and infrastructure within each municipality; recognizing that our existing communities have provided valuable places to live, work, and shop for generations and should be valued for their importance within the region.
- **Multi-municipal Partnerships** – municipal partnerships on a variety of projects at a variety of levels from informal information sharing to formalized joint contracting. Working with neighboring communities allows for efficiencies of scale and coordinated development across municipal lines.
- **Quality Community Facilities** – municipalities strive to maintain strong community facilities, which include both publicly and privately maintained facilities, and to make use of existing facilities and services in developed areas where possible before expanding into areas that do not currently have those facilities provided. Adopting a “fix-it-first” policy conserves resources and ensures that the pace of development does not exceed the community’s ability to support it.
- **Healthy Lifestyles** – promoting a built environment and programs that encourage active transportation and recreation and make provisions for access to healthy food options for all citizens.
- **Community Character** – planning for new construction within the context of existing landscapes and development while recognizing that with the growth of our region new development will in fact change the landscape of the County. New development and redevelopment should fit in with the existing or desired character of the community.
- **Regional Economic Development** – promoting long term and sustainable economic goals that help boost Delaware County’s position in a global future.

TRANSPORTATION PLAN

As mentioned previously, the *Transportation Plan* follows the structure of the land use policies established in the *Framework Plan*. The intent of the *Transportation Plan* is to serve as a guide and resource for countywide, multi-municipal, and municipal transportation planning efforts. It examines the policies and trends identified in the *Land Use Policy Framework Plan* with specific regard to transportation in the County. It is important to note that much of the plan implementation, particularly as related to planning and zoning, remains the responsibility of municipal officials. The County’s powers are limited to suggesting refinements to local actions that reflect the common issues, goals, and strategies shared by the municipalities.

As the County’s comprehensive plan, Delaware County 2035 addresses a range of issues facing the County, including those related to transportation. This plan primarily focuses on developing long-range policies for the efficient and safe movement of people and goods in Delaware County. The research and analysis conducted for and presented in this plan, in conjunction with the framework established in the *Framework Plan*, inform the actions established in this plan. To organize all of this information, this plan utilizes the organizational strategy of Character Areas and Central Places that was established in the *Framework Plan*.

Delaware County's transportation network is composed of five networks: the *road network*, the *transit network*, the *freight transport network*, the *bicycle network*, and the *pedestrian network*. Though this document makes separate recommendations for each of the five networks, it is important to remember that these networks are interconnected.

Connection with Delaware County 2035

As a component of Delaware County 2035, it is important to consider how the *Transportation Plan* correlates with and reinforces the County land use strategy established by the *Framework Plan*. The place-making themes from the *Framework Plan* are an important factor in much of the *Transportation Plan*. The place types identified in the *Land Use Framework Plan* are utilized explicitly throughout the *Transportation Plan* to frame the discussion of transportation within the context of Character Areas and Central Places. Using the place types as the foundation for the discussion on transportation allows for an informed conversation regarding what is preferred and appropriate for the desired community characters identified in the *Framework Plan*.

The following are the countywide objectives from the *Framework Plan*. The intent of this plan is to build upon the objectives established in that document with specific regard to transportation. As such, the *Framework Plan* objectives guide the specific goals, objectives, and actions of this *Transportation Plan*.

Delaware County 2035: Land Use Policy Framework Plan

Objectives

LU 1:

Create desirable places to live by ensuring that land resources are allocated for uses that will achieve the following:

- Accommodate and enhance established community character and planned growth;
- Support viable transportation and infrastructure systems;
- Include a range of housing options;
- Protect natural and historic resources;
- And provide for adequate community facilities.

LU 2:

Encourage compatible land use, redevelopment, and revitalization that will protect the stability and enhance the character of Mature Neighborhoods.

LU 3:

Encourage context-sensitive design and sustainable development and redevelopment.

LU 4:

Preserve, connect, and expand greenways and open space to protect natural and historic resources, and promote healthy lifestyles.

LU 5:

Improve land use compatibility and accommodate population growth, institutions, services, and culture to strengthen economic competitiveness. One series of policies and actions is presented for Urbanized Center, Town Center, and Neighborhood Center since they share a common objective.

LU 6:

Promote economic redevelopment and development, while preserving community character and improving accessibility.

(Delaware County Planning Department 2013)

GOALS

Three overarching goals were identified to guide transportation planning efforts in the County. They are the result of coordination with stakeholders, public survey, and research and analysis of existing transportation needs and opportunities. The goals of the *Transportation Plan*, which take into account the aforementioned objectives are:

Goal 1: Improve

Improve the safety and capacity of all modes through adaptable and innovative solutions.

Goal 2: Expand

Expand the transportation network so residents have multimodal access.

Goal 3: Integrate

Integrate all modes into one complete system.

One of the County's goals is to improve the safety and capacity of the transportation network to make travel safer for all users and to limit traffic congestion as the region's population continues to grow. Improvements include design and engineering upgrades, regulation where users and modes converge, and the alteration of circulation patterns.

The County aims to expand the transportation network by increasing the frequency of public transit, extending public transit service to underserved areas, installing bicycle and pedestrian facilities, and supporting multimodality.

Finally, Delaware County is dedicated to supporting multimodal transportation. A strong multimodal network can help reduce travel time, decrease congestion, and improve safety conditions along major corridors.

The three goals identified serve as the basis for recommendations made in this plan. The objectives and actions in the plan often relate to more than one of the three goals. Therefore, objectives and actions are organized by transportation network, rather than by goal, and reflect the specific needs and opportunities discussed for each network.

DELAWARE COUNTY PROFILE

Current conditions in Delaware County provide the background and necessary context to understand the local economy and opportunities that may be available to advance transportation. The Delaware County Profile identifies the key assets that have contributed to the current social, economic, infrastructural, and environmental characteristics of the County. The profile utilizes the land use framework of Central Places and Character Areas of Delaware County 2035 to advance the goals, objectives, and recommendations for transportation. An analysis of demographic, social, and economic indicators provides insight into current and future trends that will impact County economic development and consequently transportation demand. A review of County transportation initiatives and programs preceding this plan provides an understanding of what has been accomplished and what may be beneficial for planning for future growth.

As discussed, the *Framework Plan* organizes the County into distinct planning areas with common characteristics. The community framework planning areas (Character Areas and Central Places) are used

to meaningfully organize the long range planning policies. These area classifications are also extremely useful in discussing the history of growth and development patterns as well as transportation issues. Due to some common features of different Character Areas, they may face similar transportation challenges. It is important to note that these areas were designed to be self-identified by municipalities, and those listed in the plan are not inclusive. The following are the Character Areas and Central Places, as defined in the *Framework Plan*:

Character Areas

Mature Neighborhoods

- Underlying areas that are established and have realized most of their population, employment growth, and infrastructure build-out.
- Some are stable and thriving with affordable housing, access to transit, and a strong community identity.
- Some are experiencing population losses and deteriorating infrastructure systems.
- Over time, the prevalence of Mature Neighborhoods is moving toward the western boundary of the County.
- Revitalization opportunities exist in a variety of scales and locations.

Growing Suburbs

- Underlying areas that have undeveloped or agricultural land remaining and are experiencing or are forecast to experience population growth.
- Mostly residential with primarily single-family detached housing.
- Typically located in western Delaware County.

Open Space

- Underlying area that either remains in a natural state or is used for agriculture; free from intensive development for residential, commercial, industrial, or institutional uses.
- Open space can be publicly or privately owned and may include: forest land, water bodies, wetlands, steep slopes, undeveloped coastal lands, cemeteries, parks, preserves, golf courses, abandoned railroad beds, and utility property.

Greenway

- A linear system of connected natural and man-made elements that function together for public benefit.
- As vegetated buffers, greenways can protect natural habitats, improve water quality, and reduce the impacts of flooding in floodplains.
- Proximity and access to Greenways has an impact on quality of life.

Central Places

Urbanized Center

- A medium-to-large scale community consisting of a multiple street central business district surrounded by mature residential neighborhoods.
- Land uses are mixed and consist of a range of scales and density.
- Well-connected street grid network, sidewalks, and mass transit.
- Transit-oriented developments may exist around regional rail lines and bus ways.
Examples: 69th Street (Upper Darby/Millbourne), Chester City, Darby, Lansdowne, Media, Wayne

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Town Center

- A small-scale community consisting of one main street or town square surrounded by neighborhoods.
- Land uses are mixed and mostly consist of small-scale, low-intensity businesses, services, and cultural resources that serve the community.
- Residential fabric typically consists of medium-size blocks with a range of building types, including apartments and single-family residences, promoting a walkable environment.
- Transit-oriented developments may exist around regional rail lines and bus ways.

Examples: Boothwyn, Concordville, Havertown, Marcus Hook, Morton, Newtown Square, Parkside, Ridley Park, Swarthmore

Neighborhood Center

- An area at an intersection of roads and/or commuter rail/bus lines surrounded by neighborhoods.
- Typically has definable focal point and/or a mix of commercial, retail or civic uses.
- Often a walkable destination.
- Has a unique history or sense of a community within the larger neighborhood setting.

Examples: Aldan, Aronmink, Aston Mills, Booths Corner, Chadds Ford, Collingdale, Gradyville, Secane, Sharon Hill, University Crossing (Chester), Wallingford

Activity Corridor

- A linear-shaped place flanking major transportation corridors or highway interchanges with intense development and where public transport facilities, mixed land uses, and people are centrally focused.
- Varied width, density, and design depending on the local context and underlying character.
- A variety of retail, social, and employment opportunities integrated with high density residential functions.
- Although some are auto-centric, Activity Corridors can become more walkable, connect to neighborhoods, and include attractive streetscapes.

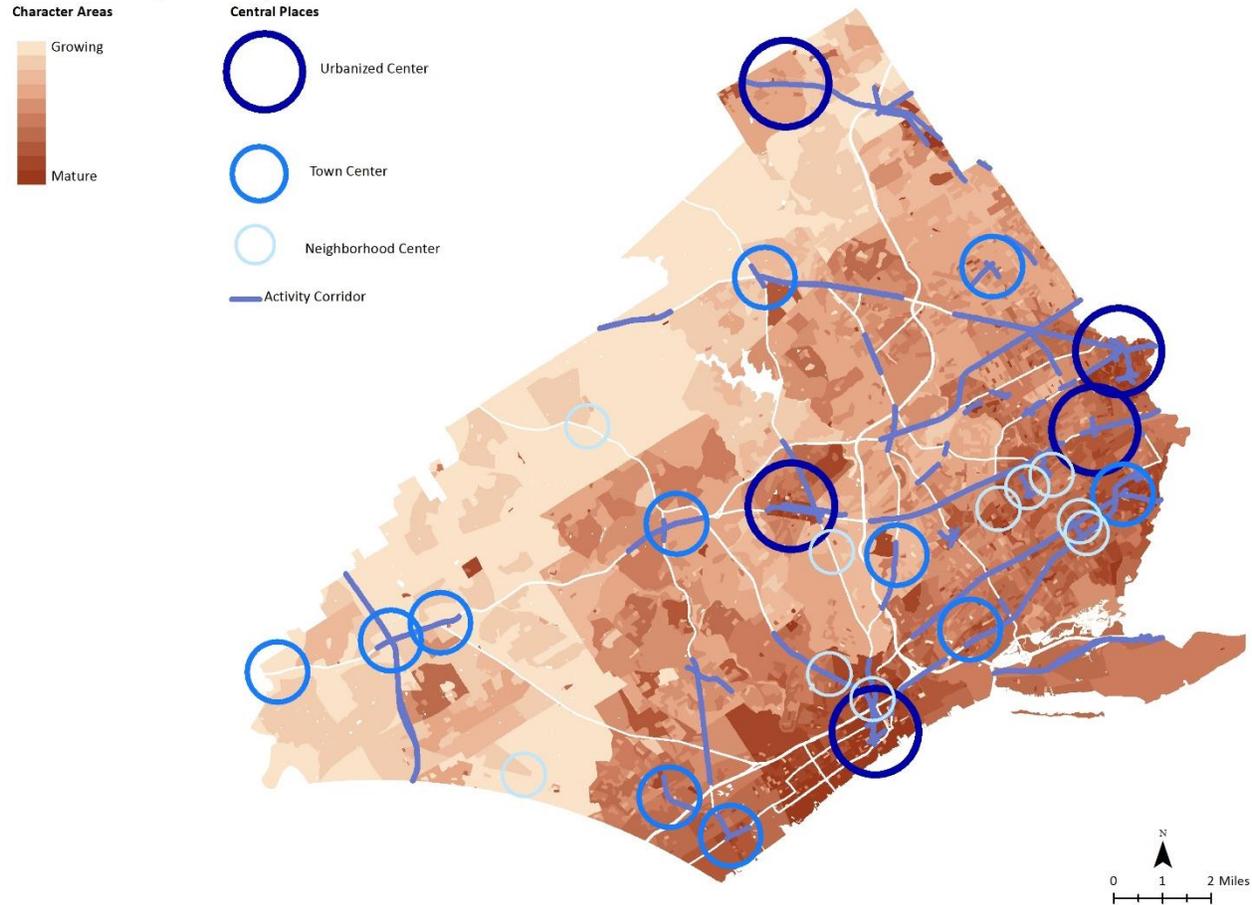
Examples: Highway Routes 1, 3, 13, 202, 252, 291, 320, 352, 452, and 491; Trolley Lines 101, 102, 11, and 13; Norristown High Speed Line

The two underlying Character Areas, Mature Neighborhoods and Growing Suburbs, have distinct differences that significantly affect the approach to transportation planning. Mature Neighborhoods (concentrated in the eastern and southern portions of the County) generally have greater access to multimodal transportation options and well-connected sidewalk networks.

Nevertheless, these neighborhoods are faced with pressure from increased traffic congestion on infrastructure that was built for smaller volumes. Growing Suburbs (typically the western and northern portions of the County), on the other hand, typically have little-to-no access to public transit and are not walkable. The Central Places and Activity Corridors of the County tend to draw many design features from the underlying Character Area. The map below shows the Character Areas and Central Places, as established in Delaware County 2035.

Map 1-2: Character Areas and Central Places

Delaware County Community Framework



Population

Population trends are important to consider in transportation planning as more individuals lead to more movement within a region, and, in this case, within Delaware County. Delaware County's population peaked in 1970, reaching 603,465 residents; the population had decreased to 550,864 residents by 2000. According to the United States Census Bureau, Delaware County's overall population remained relatively stable between 1980 and 2010. Despite a few minor fluctuations, the population changed from 555,007 (1980) to 558,979 (2010), representing only a 0.2% increase. The population is expected to continue to grow to approximately 585,000 residents in the coming decades.

Shift in Delaware County’s Population between 1980 and 2010

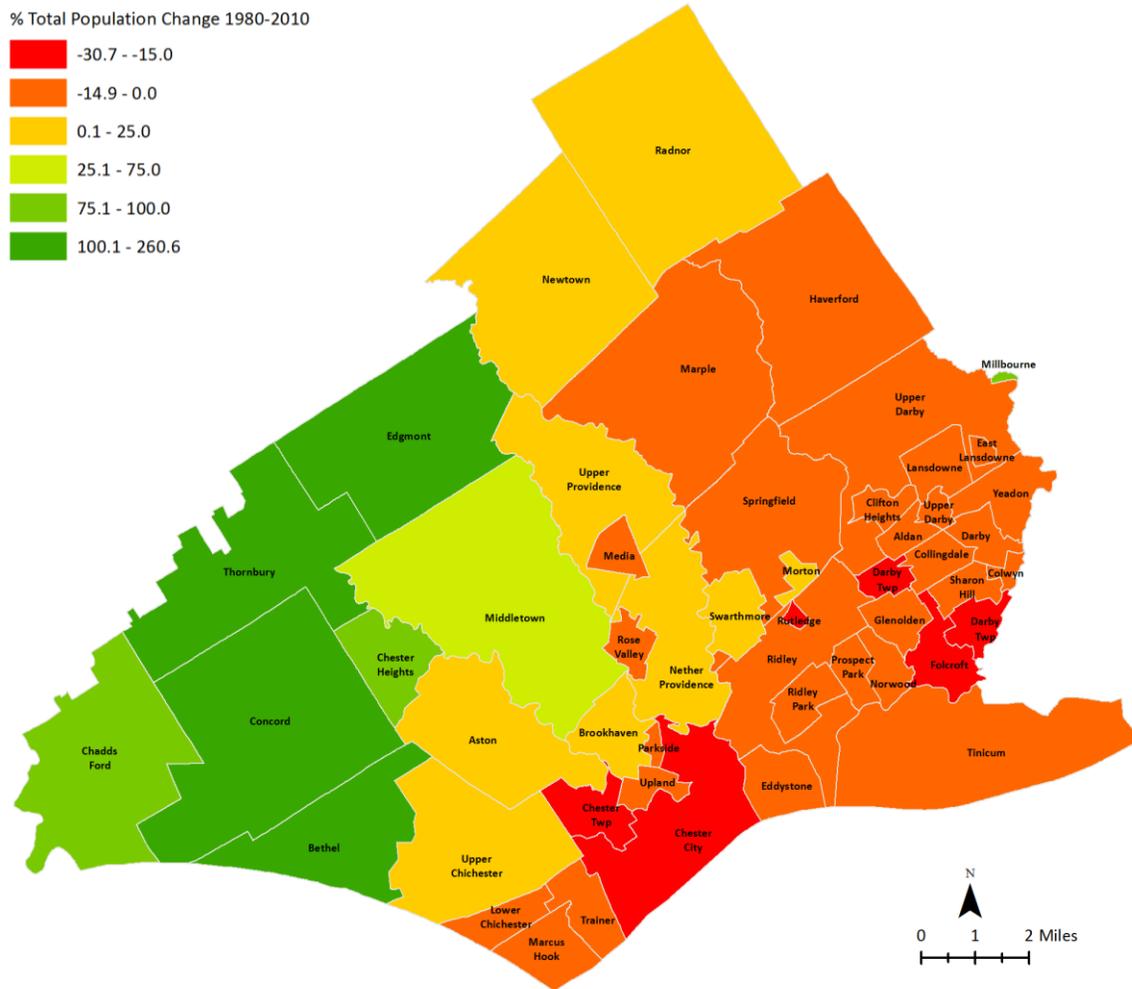
Countywide population figures do not reflect the significant demographic shift that occurred between 1980 and 2010. The population seems to have shifted from the County’s Mature Neighborhoods (eastern and southern municipalities) to its Growing Suburbs (northern, central, and western municipalities). Table 1-1 shows the five municipalities that experienced the greatest percentage decrease population and the five municipalities that experienced the greatest percentage increase in population. All five municipalities that experienced tremendous population losses are Mature Neighborhoods in the southern and eastern parts of the County. Those municipalities that experienced tremendous population growth are Growing Suburbs in the western and northern parts of the County (See Map 1-3 for clarification).

Table 1-1: Municipalities with the Greatest Population Change (1980-2010)

Population Losses		Population			Population Gains		Population		
Municipality	1980	2010	% Change	Municipality	1980	2010	% Change		
Chester Township	5,687	3,940	-30.72%	Bethel Township	2,438	8,791	260.58%		
Chester City	45,794	33,972	-25.82%	Edgmont Township	1,410	3,987	182.77%		
Darby Township	12,264	9,264	-24.46%	Concord Township	6,437	17,231	167.69%		
Folcroft Borough	8,231	6,606	-19.74%	Thornbury Township	3,653	8,028	119.76%		
Rutledge Borough	934	784	-16.06%	Chester Heights Borough	1,302	2,531	94.39%		

Source: US Census, 1980 and 2010

Map 1-3: Total Population Change (1980-2010)

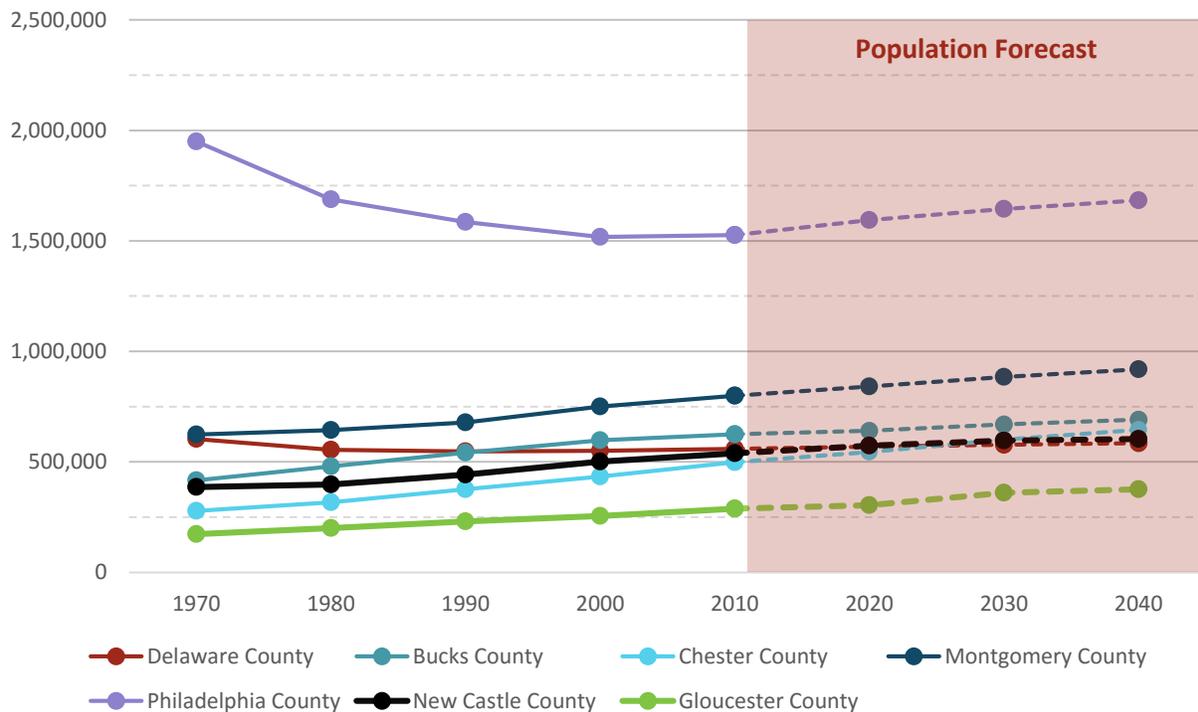


This demographic shift has not been reflected in the County’s transportation network that supports these populations. The transit network in particular did not expand as quickly as these Growing Suburbs developed. As a result, the western and northern parts of the County are underserved by public transit, reflecting a stark comparison with the more complete transit network in the eastern and southern parts of the County. Transportation network expansion in Growing Suburbs has focused on private automobile usage, and thus, roadways have expanded with few-to-no accommodations for pedestrians, bicyclists, or transit riders.

Population Trends for Delaware County and Surrounding PA, NJ, and DE Counties

Due to the fluidity of borders when it comes to the movement of people and goods, the population trends of all surrounding counties, including those in Delaware and New Jersey, should also be examined. Everyday individuals and goods move into and through Delaware County. The increasing populations of surrounding counties will thus undoubtedly add pressure to the County’s transportation infrastructure and network. As shown in Chart 1-1, Bucks, Chester, Gloucester, Montgomery, and New Castle Counties are expected to experience a population growth of at least ten percent between 2010 and 2040. On the other hand, Delaware County’s population is expected to grow by a steadier five percent in the same time period.

**Chart 1-1: Population by County (1970-2040)
 (1970-2040)**



Source: U.S. Census, compiled by DCPD 2016; DVRPC Population Forecasts 2016; Wilmapco Population Forecasts 2016

Current Subdivision and Land Development Activity

Records indicate that the high rate of development activity experienced in Delaware County in the past continues today although at a more moderate rate compared to the years leading up to the Great Recession between 2008 and 2010. Land use regulations are changing across the County to encourage more mixed use development, which calls for multimodal transportation planning for the flow of residents, workers, tourists, and goods to the same Urbanized Center and Town Center destinations.

Table 1-2 lists the total number of residential units reviewed by the Delaware County Planning Department (DCPD) between 2002 and 2015. It should be noted that the units in the table are not guaranteed to have been built or be built in the future. The chart serves as an indicator of development and redevelopment activities and trends.

The table indicates a tremendous number of proposed residential units from 2002 through 2006 before a significant downturn in 2007. Non-residential proposals in Delaware County peaked at over 3.8 million square feet in 2007. There was a significant downturn in this type of development activity in 2009.

**Table 1-2: Proposed Development in Delaware County
(2002-2015)**

Year	Proposed	
	Residential Units	Non-Residential Square Footage
2002	959	2,401,162
2003	1,413	1,286,956
2004	1,217	1,471,915
2005	2,132	2,635,509
2006	1,183	3,064,621
2007	629	3,876,008
2008	615	3,254,918
2009	343	900,810
2010	1,334	1,187,539
2011	221	1,069,066
2012	1,230	1,354,435
2013	837	717,084
2014	500	1,797,991
2015	712	2,671,058
Total 2002-2009	8,491	18,891,899
Total 2002-2015	13,327	27,689,072

Proposed (not necessarily constructed) development.
Source: DCPD, 2016

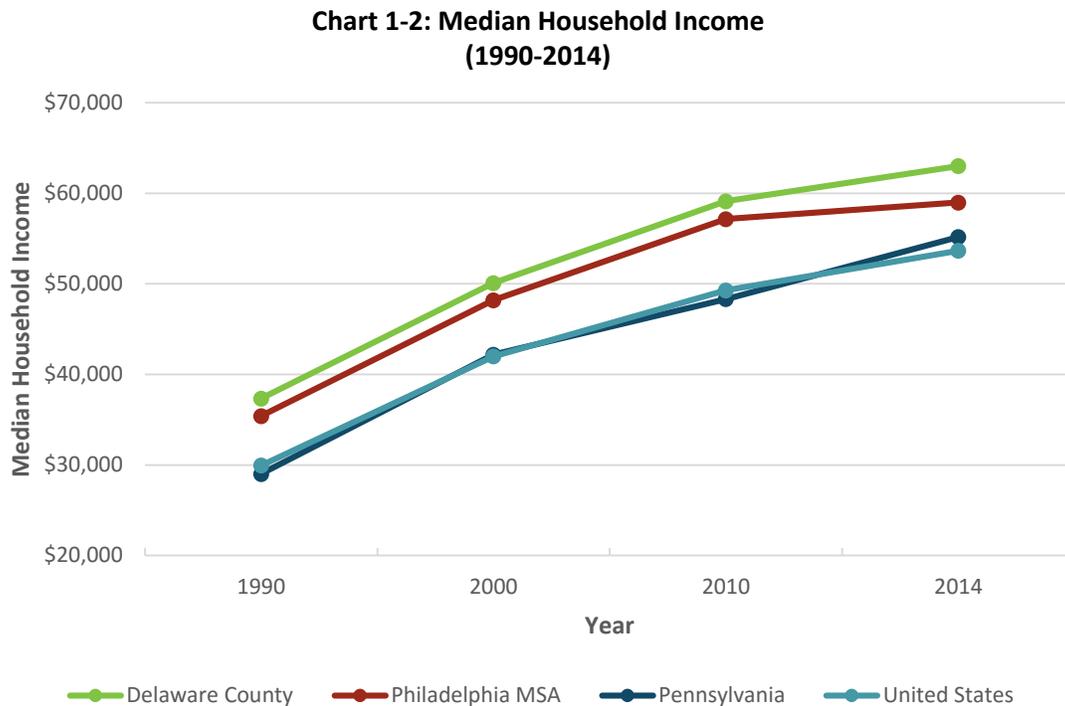
Between 2002 and 2015, Concord Township – one of the municipalities in the County with the highest population growth rates – had the greatest number of both proposed residential units and proposed non-residential square footage in the County. Other Growing Suburbs also led the way in terms of residential growth and development during this time period.

Demographics

Delaware County is a developed county projected to experience steady, modest population growth in the coming decades. The County has become more diverse since reaching its population peak in the 1970s, with African-American, Asian, Hispanic, and other racial and ethnic groups comprising a larger percentage of the population. The population is also “aging in place,” with long-time residents in older age groups remaining in the County rather than retiring elsewhere. The County’s levels of educational attainment and median incomes are strong relative to Pennsylvania and the country as a whole, reflecting a workforce qualified to fill the well-paying jobs in the region.

Increasing Incomes

The median household income for Delaware County, as shown in Chart 1-2, has experienced steady and continuous increases from 1990 through 2014.



Source: DCPD 2016; U.S. Census, 1990 and 2000; American Community Survey – 2010 and 2014, 1-year estimates

The County median household income has remained strong relative to the five-county region of the Philadelphia metropolitan statistical area (MSA), the state of Pennsylvania, and the country as a whole. County median incomes exceed those of the three progressively larger geographies, with the County most closely aligning with the Philadelphia MSA and exceeding those of Pennsylvania and the United States by larger margins.

At the municipal level, median household incomes are the highest in municipalities comprised predominantly of Growing Suburbs in central and western Delaware County while the Mature Neighborhoods and Urban Centers of older, established townships and boroughs in eastern and southern parts of the County have lower median household incomes. As noted earlier, there is variation in the conditions of Mature Neighborhoods and Central Places, and some older neighborhoods and Urban and Town centers maintain high median incomes.

The County's strong median household income is indicative of its proximity and access to well-paying jobs in the employment centers of Philadelphia and Montgomery Counties, as well as the strong County economic base that provides a variety of skilled, well-paying jobs for residents.

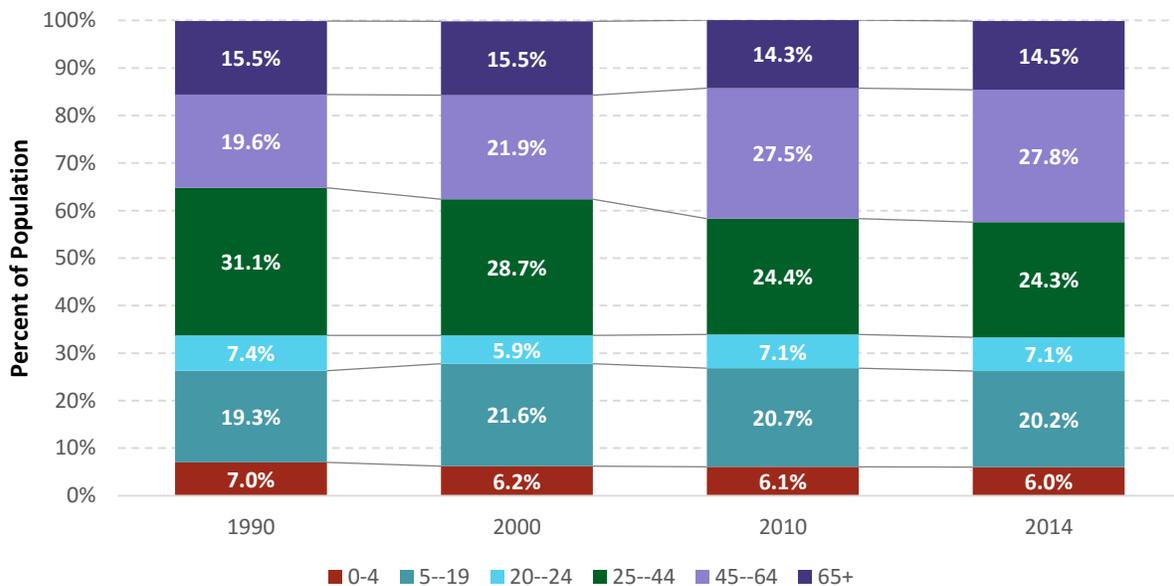
Aging Population

Delaware County is trending towards an aging population. Chart 1-3 shows that through the 1990s, the largest age group as a percentage of total population was the 25 to 44-year-old cohort. As of the 2010 Census and through the 2014 ACS, this cohort was surpassed by the 45 to 64-year-old cohort, and the 25 to 44-year-old demographic has continued to become proportionally smaller.

The 20 to 24-year-old age group decreased significantly in 2000, going from 7.4 percent of the County population to 5.9 percent, yet rebounded close to 1990 levels in 2010 and through 2014 although still slightly below 1990 levels. A slow but continuous decline in the 0 to 4-year-old age group suggests that the County’s aging trends will continue with decreasing numbers of newborns aging into the general population. The decline in the 0 to 4-year age group in the County may reflect, in part, the current trend of a decrease in the average household size nationally.

The declines in the 20 to 24-year-old and 25 to 44-year-old age groups suggests the County is not retaining recent college graduates upon entering the workforce, and more adults in their prime working years are not residing in the County. Although the percentages are lower compared to the state, the County’s population is older than that of the United States as a whole.

**Chart 1-3: Age Distribution of Delaware County
 (1990-2014)**



Source: U.S. Census -1990 and 2000, and American Community Survey, 2104

Household Characteristics

Household characteristics have tremendous implications on the transportation network. Two characteristics in particular – housing stock and vehicles available – are analyzed in this section. Both indicate the capacity and potential of alternative modes of transportation. A diversity in housing types indicates a potential for transit-focused investment due to high population density and limited roadway capacity. Number of available vehicles per household can indicate whether individuals in a particular area are more inclined to take public transit, ride a bicycle, or walk to destinations within and outside the County.

Housing Stock

Delaware County’s housing inventory is truly diverse. The County boasts a more even distribution of single-family detached, single-family attached, and multifamily (2 or more units) structures compared to the other three southeastern Pennsylvania suburban counties. Delaware County has the lowest percentage of single-family detached structures among the suburban counties, and it is slightly behind Montgomery County in terms of highest percentage of multifamily structures. Of course, the distribution

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of these three categories differs greatly between municipalities. For example, in Springfield Township, 84.0% of the housing stock consists single-family detached homes, 7.8% of homes are single-family attached units, and 8.2% are multifamily structures. On the other hand, in the City of Chester, 9.8% of structures are single-family detached, 62.3% are single-family attached, and 27.7% are multifamily. Ridley Park best reflects countywide housing stock in terms of type distribution.

The County’s housing stock is, for the most part, much older than that of the other counties. Sixty-five percent of homes were built prior to 1960. Both of these factors – a mix of housing types and aging structures – favor transit-oriented redevelopment.

Table 1-3: Delaware County Housing Stock Characteristics (2011-2015)

Total Housing Units	222,249 units
1-unit, detached	45.4%
1-unit, attached	30.5%
2 units	4.9%
3 or 4 units	4.2%
5 to 9 units	2.8%
10 to 19 units	3.4%
20 or more units	8.5%
Mobile home	0.3%
Boat, RV, van, etc.	0.0%

Source: 2010-2014 American Community Survey 5-Year Estimates

Vehicles Available

As a whole, there are considerably fewer 2- and 3- vehicle households in Delaware County compared to the other southeastern Pennsylvania suburban counties. This statement is particularly true with regard to Mature Neighborhoods, such as the City of Chester. Thirty-four percent of Chester City households have no vehicles available for use, 44.9 percent have one vehicle available, 15.5 percent have two vehicles, and 5.8 percent have three or more vehicles available. On the other hand, Aston Township, Concord Township, Haverford Township, and Middletown Township – all of which can be considered Growing Suburbs due to their low population densities – have a considerably higher percentage of households with two or three vehicles available for use.

The heavy dependency on automobiles could be explained by the lack of public transit and low walkability and bikeability of Aston Township, Concord Township, and Middletown Township. However, Haverford has a complete sidewalk network, access to multiple modes of public transit, and highway connections. At the same time, due to heavy traffic, particularly in Havertown, the roadways are not always safe for all users, making travel by private vehicle a more convenient option for many.

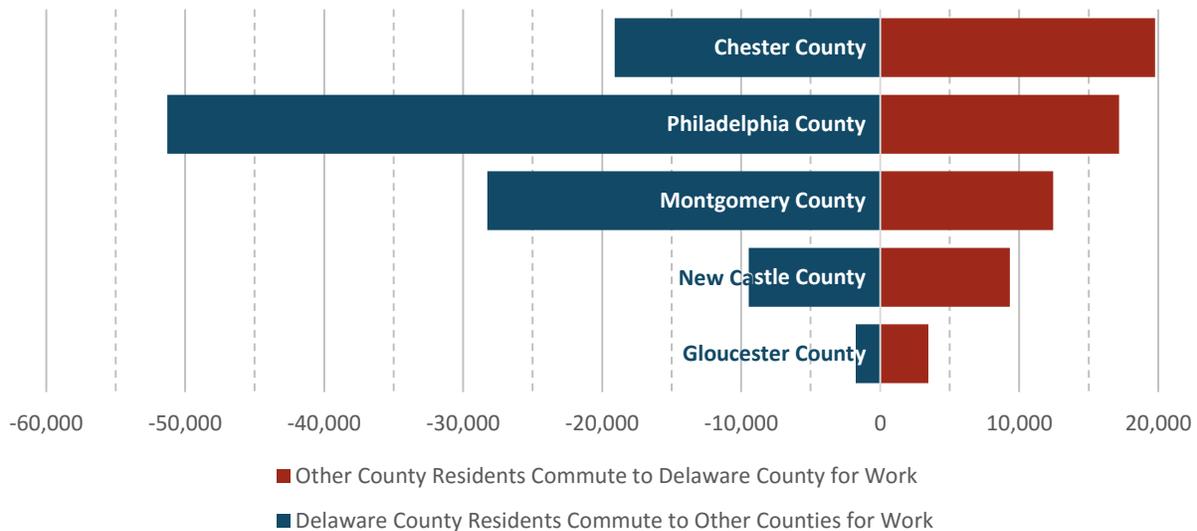
Commuting Patterns

Due to Delaware County’s strategic location (it borders the states of Delaware and New Jersey, as well as Philadelphia), its roadways are connectors for residents traveling to and from Delaware County, Philadelphia, New Jersey, and Delaware for work. At the same time, the vast majority of individuals traveling from any location within Delaware County will end their trip in another location in Delaware County. Seventy-seven percent of all trips that start in Delaware County end in Delaware County, and

approximately 60.7 percent of Delaware County residents work in Delaware County (DVRPC 2012 Household Travel Survey). It can thus be deduced that many of the trips made with origin in Delaware County are of relatively short distance.

Chart 1-4 shows that a significant number of residents commute outside of the County for employment as well. According to the 2009-2013 American Community Survey Five-year Estimates, over 50,000 Delaware County residents work in Philadelphia while fewer than 20,000 Philadelphia residents work in Delaware County. A similar deficit of workers occurs with Montgomery County (nearly 30,000 County residents work in Montgomery County while fewer than 15,000 Montgomery County residents work in Delaware County). County residents also commute to Chester, Gloucester, and New Castle Counties for work, but a more balanced flow of workers exists with these counties. Employment location is heavily influenced by access to jobs. For instance, Center City Philadelphia, a major employment center in the country, is extremely accessible from Delaware County via public transit. This attracts a significant number of people who work in the City but choose to live in Delaware County.

Chart 1-4: Inflow/Outflow of Workers



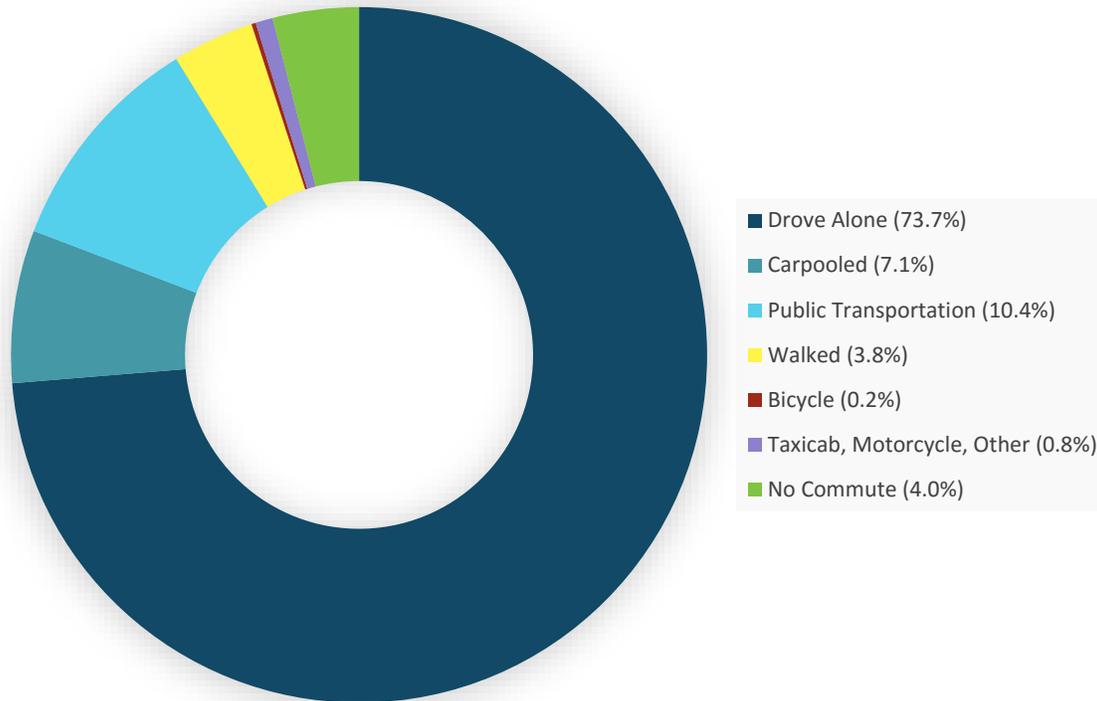
Source: U.S. Census Bureau American Community Survey, 2009-2013 Five-Year Estimates

With regard to means of transportation, Delaware County is unique among the Pennsylvania suburban counties in the Delaware Valley Region. A lower percentage of Delaware County workers drives alone to work; a higher percentage walks to work; a much higher percentage takes public transportation; and a lower percentage works at home than workers from Bucks, Chester, and Montgomery Counties (see Chart 2-1 below). Approximately 75 percent of Delaware County residents drives alone to work in a car, truck, or van. However, only 7 percent of the working population in the County carpools to work. The majority of carpoolers – 5.8 percent – engage in only a two-person carpool. The estimated number of workers per car, truck, or van is extremely low: 1.05 (Commuting Characteristics by Sex, 2011-2015 ACS 5-year Estimates). As a result, Delaware County workers alone are responsible for approximately 222,768 of the vehicles using Delaware County’s roadways daily, not including public buses.

There has been a shift from private vehicle usage and toward public transportation over the past 15 years in the nine-county Delaware Valley Region. Approximately 10.4 percent of Delaware County residents take public transit (a portion of which includes bus transportation) *to work*, and 9.7 percent of Delaware County residents take public transit for *any* trip (2011-2015 ACS 5-year Estimates, 2012-2013

DVRPC Household Travel Survey). In the nine-county Delaware Valley Region, those living in Delaware County are the second-most likely to take public transit to work or any other destination (2012-2013 DVRPC Household Travel Survey). Delaware County is a leader in terms of both public transit supply and public transit demand, which could prove economically advantageous as the overall demand for public transportation in the region continues to rise.

Chart 1-5: Delaware County Residents' Means of Transportation to Work



Source: data from Commuting Characteristics by Sex, 2011-2015 ACS 5-year Estimates

While walking and bicycling are not as common as other modes of transportation, they are important modes to consider in planning Delaware County's transportation network. Like public transit, these two modes have become increasingly popular in the past decade. If trends continue, walking and bicycling will continue to account for a larger proportion of shorter trips. The DVRPC 2012-2013 Household Travel Survey results show that approximately 12.3 percent of County residents walk part or all of any given trip, and approximately 0.8 percent rides his or her bicycle (DVRPC 2012 Household Travel Survey).

HISTORICAL TRANSPORTATION TRENDS

Planning practices, demographic shifts, and lifestyle changes have informed transportation planning in the United States. Though planning is largely place-dependent, regardless of national trends, national trends do provide meaningful context to better understand Delaware County's transportation network.

In the post-World War II decades, suburban areas across the country grew rapidly. In 1956, then President Dwight D. Eisenhower authorized the Interstate Highway System, intended to create a national network of connected highways. The resulting increase in regional access between large metropolises gave individuals the opportunity to live in suburban neighborhoods and commute into cities for work via private vehicle.

Metropolitan Planning Organizations (MPOs) were created as a requirement of the Federal-Aid Highway Act of 1962 to help allocate federal transportation funding based on regional needs. The designation of MPOs highlighted the necessity of regional planning for the transportation network. The Delaware Valley Regional Planning Commission (DVRPC) serves this function for southeastern Pennsylvania and southern New Jersey. This emphasis on regional planning particularly focused on constructing the Interstate Highway System, including Interstates 95 and 476 (the Blue Route).

Public transit ridership suffered as a result of increased regional access via the highway system and an increase in automobile ownership. In terms of freight, cargo was increasingly moved by truck, as opposed to rail, which was faster. In the late 1960s and 1970s, major rail companies, such as Pennsylvania Railroad and New York Central, began to merge to avoid bankruptcy. Ultimately, railroad companies were consolidated under one federally-designated company, Conrail, in 1976. Conrail took ownership of all assets from these companies, operating the portions of the system that were profitable. Conrail also operated the passenger rail service of these companies through a contract with SEPTA. SEPTA took full ownership of the commuter rail assets and property in 1983. The history and formation of these rail companies has led to a complex contemporary system of active and inactive rail lines with various titles of ownership and easements.

As in much of the United States, suburban communities flourished and matured in the 1970s, 1980s, 1990s, and early 2000s in the Philadelphia Metropolitan Area. Employers began to move offices from center city Philadelphia into isolated, suburban office parks. This created a major shift from one major employment center (Center City Philadelphia) to a multitude of satellite employment centers. Commuting patterns reversed. An increasing number of workers began to travel from center city in the morning peak hours and toward center city in the evening peak hours. In addition, more suburban residents began to work in their own, or other, suburban communities. Between 2000 and 2015, the percentage of Delaware County residents that works in another county has decreased from approximately 46 percent to 40 percent (Census 2000 Summary File 3; 2011-2015 ACS Estimates).

The design of residential developments generally included wider streets without sidewalks; they also reflected a shift from a traditional urban grid pattern to organic urban form (marked by numerous cul-de-sacs). The disconnected nature of such street networks in the suburban United States limits pedestrian mobility and hinders transit's ability to serve suburban communities. It is exacerbated by wide arterial roadways between developments. Driving time has increased due to automobile dependency and increased congestion. Decreased ridership on commuter trains between the 1970s and late 1990s exacerbated funding issues faced by transit companies, ultimately leading to a reduction in service. For example, SEPTA discontinued rail service to West Chester Borough in 1986 due to a reduction in ridership and deteriorating track conditions.

A cultural shift occurred in the United States between the 1980s and early 2000s that emphasized healthy living. Exercise became more popular, and individuals drove to parks that provided exercise circuits and multi-use trails for walking and running. SEPTA ridership began to increase steadily in Delaware County in the mid-1990s, suggesting a lifestyle shift. The prominence of exercising continued to grow into the 2000s and laid the foundation for some of the current desire to live in walkable communities near downtowns and main streets. Instead of driving to recreational facilities to walk, individuals seem to increasingly desire to walk in their neighborhoods.

In 2010, Philadelphia experienced population growth for the first time in approximately 50 years. In recent years, employers have begun to move back to Philadelphia. The freight industry has been tremendously affected by the digital economy since the early 2000s. An increase in local deliveries has forced the industry to expand beyond the transport of capital goods to the distribution of consumer goods.

Today's desire to live in walkable communities, whose characteristics are embodied in older neighborhoods, has placed a tremendous amount of pressure on roadways in more Mature Neighborhoods. Creative transportation alternatives are necessary to sustain quality of life and improve the transportation network. Alternative and active transportation, such as bicycling and walking, and the recent evolution of certain traditional modes, such as couriers and messengers, are crucial components of the contemporary transportation network.

TRANSPORTATION PLANNING EFFORTS

DELAWARE COUNTY

Delaware County and its constituent municipalities have undertaken a variety of transportation planning efforts that have shaped the evolution of the transportation network. County, municipal, and corridor plans have led to the formation of this *Transportation Plan*, which is a culmination of all of these efforts.

The most notable County-level highway project emerged in 1950s, as the Interstate Highway System was taking form. In 1958, I-476, colloquially known as the "blue route," was chosen as the path for the major north-south highway connector through Delaware County. The construction of I-476 was controversial and costly. Though construction began in 1967, the Delaware County portion was not completed until 1991. Subsequent highway planning efforts included the *Delaware County Highway Plan* (1977).

Alternative modes of transportation, specifically public transit and active transportation, have been the focus of more recent studies as well. Such plans include the *Delaware County Public Transportation Study* (1977), *Western Delaware County/Baltimore Pike Transit Options* (1996), the *Delaware County Long-Range Bus Service Study* (2001), and the *Delaware County Bicycle Plan* (2009).

Delaware County is represented on the DVRPC Board, Regional Technical Committee (RTC), and RTC Pennsylvania Subcommittee. Taking into account RTC recommendations, the board approves DVRPC's Planning Work Program, Long Range Plan (LRP), and Transportation Improvement Program (TIP) and amendments. The County supports, advises, and provides contractual services to municipalities when requested for transportation funding applications. The County has also provided technical expertise on numerous advisory committees, including the Walkable Chadds Ford Committee (2016-2017).

MUNICIPAL EFFORTS

Individual municipalities have undertaken transportation or traffic plans or studies in the face of multiple major land development proposals. Townships such as Newtown and Middletown have hired professional consulting firms to help them better understand how these developments would affect traffic conditions and overall quality of life. The resulting plans or studies have provided advice to the municipality and justifications for requiring developers to make transportation system improvements.

REGIONAL PLANS AND PROGRAMS

DVRPC, as mentioned above, is the Philadelphia region's MPO. It is required to prioritize transportation investments for funding with federal and state dollars through the LRP and TIP. County transportation planners coordinate with DVRPC to develop these LRPs and TIPs. DCPD transportation planners advocate for the County and its municipalities in obtaining funding for needed projects. Funding for constructing or improving large-scale projects such as I-95, I-476, and US 322 or smaller-scale projects such as intersection or traffic signal improvements or bicycle/pedestrian facilities are included on the TIP.

STATEWIDE PLANS AND PROGRAMS

The Pennsylvania Department of Transportation (PennDOT) plays a major role in studies and projects across the County. PennDOT Engineering District 6-0, which is responsible for the state-maintained transportation network in southeastern Pennsylvania, reviews applications for local funding. On the other hand, the state office considers projects for state or federal funding. Once the TIP is adopted by the DVRPC Board, PennDOT develops a statewide Transportation Program which identifies projects and funding. Currently, the federal and state gas tax and other revenue sources pay for these improvements. In 2013, Pennsylvania Act 89 increased state funding sources to help pay for critical highway, bridge, and public transit projects. This action has undoubtedly positively influenced planning in Pennsylvania, and more resources are available for new projects beyond maintenance projects.

EMERGING TRANSPORTATION TRENDS

As a long-range planning document, this plan must consider the potential changes that may affect Delaware County in the 21st century. Thus far, this plan has discussed historical trends and the current transportation system of the County; however, there are also shifts which may or may not occur.

Shift to Central Places

Across the country, the population has shifted back to city centers over the past 15 years. In Delaware County, this has generally materialized in a shift towards Central Places, such as Media Borough, which are serving as the cultural and economic centers of the County. These neighborhoods are desirable for their walkability, transit access, and mix of uses. It is anticipated that this trend will continue, changing commuting patterns and the transportation needs of the County.

Electric Vehicles

Electric vehicles are one of the many technological innovations that have entered and changed the private vehicle market in recent years. Increased use of electric vehicles would certainly have an impact on the County's land uses and transportation infrastructure; today, one can find charging stations in retail parking lots. Furthermore, a widespread use of electric vehicles could help improve air quality.

The environmental effects of electric vehicles are overwhelmingly positive, but the use of electricity to power vehicles presents an important funding issue. Some states have been experimenting with mileage taxes, taxing drivers per mile driven as opposed to by the gallon (of gas). This method could be seen to disincentivize the use of clean fuel, however. Government officials must find a way to raise funds for our transportation system without impinging on citizens' privacy or overtaxing individuals who make environmentally-friendly choices.

Transportation on Demand

Transportation on demand, an industry dominated by Transportation Networking Companies (TNCs), has dramatically changed travel within urban areas. TNCs use software to match riders with nearby drivers. At the moment, transportation on demand uses solely roadway infrastructure. A market boom in this industry with demand stemming from those who do not own or have access to a vehicle could place additional pressure on the County's – and the region's – aging infrastructure.

Transportation on demand may either complement or compete with public transit in the future. One way in which this service can complement public transit service is by improving access to public transit stops and stations. In addition, some TNCs are moving toward investments in shared transportation models, larger vehicles, and autonomous vehicles. These projects have the potential to increase connectivity in areas where public transit ridership is low and justifying investment is challenging.

Chapter 1: Background

There is some concern that transportation on demand may replace transit service because door-to-door service can result in faster trips, although time savings would be reduced if all transit were replaced by TNC service due to increased congestion. Though the industry is growing now, the effects of this service on the transportation network are still unknown. Its impacts depend heavily on whether transportation on demand's share in the transit industry will continue to expand.

Autonomous Vehicles

Timeline estimates for the full deployment of these vehicles on the road ranges from five to twenty years (Presentation: *PennDOT's Preparations for Autonomous Vehicles*, DVRPC Regional Technical Committee meeting presentation on October 11, 2016). Senate Bill No. 1268 gives PennDOT the ability to create policies for autonomous vehicles. The bill currently includes a provision for the safe testing of the autonomous mode (*SB 1268*, PA Legislature). On December 6, 2016, Pennsylvania's Autonomous Vehicles Testing Policy Task Force, chaired by PennDOT, released a draft policy for autonomous vehicle testing in the Commonwealth of Pennsylvania. The guidelines set forth in the policy document were the result of a collaborative effort between state, federal, and private-industry officials, including the Federal Highway Administration, AAA, Carnegie Mellon University, General Motors, Uber, the University of Pennsylvania, SAE, and the Pennsylvania Motor Truck Association. Regulations for truck platooning – the travel of multiple (three to four) autonomous trucks equipped with technology that allows the vehicles to communicate with one another – are also being defined at the federal level.

There are two autonomous vehicle business models: the *private ownership model* and the *shared mobility model*. The private ownership model describes vehicles produced by car manufacturers. These vehicles are not completely autonomous, and they will be available for private ownership. The shared mobility model describes fully automated vehicles produced by technology companies and transportation networking companies (TNCs) for ride-sharing trips. The industry may move toward a combination of the two models, depending on the market and industry collaborations.

Autonomous vehicles have the potential to greatly reduce the number of collisions, as 90 percent of collisions are due to human error (Presentation: *Autonomous Vehicles' Potential Impacts on City and Regional Mobility*, DVRPC RTC meeting presentation on October 11, 2016). Autonomous vehicles could also make mobility more accessible to all.

There are still uncertainties surrounding the transition phase during which a combination of vehicles with varying autonomy levels will share the roadway. Riders will also need to depend on autonomous vehicles' choice in life or death situations (e.g., imminent pedestrian crashes). Lastly, an estimated 50 percent of transit trips are under five miles. If an autonomous vehicle can make a five-mile trip more affordable (through cost sharing), the shared mobility model could have the potential to replace transit (Presentation: *Autonomous Vehicles' Potential Impacts on City and Regional Mobility*, DVRPC RTC meeting presentation on October 11, 2016).

Public Private Partnerships

Due to the simultaneous aging of infrastructure and rapid innovation in the transportation technology sector, more funding is needed to improve and enhance the County's transportation network. Across the globe, public-private partnerships are helping spur the design and construction of projects that benefit the public. In Delaware County, these partnerships have led to improved access and facilities at bus stops and regional rail stations. As SEPTA moves toward a ridership-based approach to planning, such partnerships could be key in providing last-leg transit service to new business parks, residential neighborhoods, town centers, and recreational facilities. Roadways in areas where there is new development could also provide an opportunity for public-private agreements for engineering improvements and maintenance.

Domestic Energy Growth

In the United States, the production of domestic oil has increased by almost 60 percent since 2013 (Beyond Traffic, USDOT). In addition, the Energy Information Administration expects the United States to be a net exporter of natural gas by 2020. The Marcellus Region, mostly located in West Virginia and Pennsylvania, is the largest producing shale gas basin in the United States, accounting for almost 40% of U.S. shale gas production. Marcellus Region production has increased dramatically over the past seven years, increasing from 2 billion cubic feet per day (Bcf/d) in 2010 to its current level of 18 Bcf/d (*Marcellus Region Drilling Productivity Report*, United States Energy Information Administration, April 2017). Oil and gas production trends could continue to alter in the coming years, and a push for the construction of new pipelines may be felt across the nation.

The energy sector is thriving in Pennsylvania, and Delaware County is a regional leader in energy efficiency and renewable energy. Energy hub-related products can allow for a diverse economy including elements used in a range of consumer goods. Both sectors provide a strong economic benefit by employing local installers and contractors.

It is anticipated that the recent growth in domestic energy production will continue in Delaware County, particularly if roadway and rail infrastructure can continue to support this industry. It is likely that communities along the Delaware River will see more development pressure along the riverfront, and the river will see increased ship traffic. The communities along the riverfront and I-95 may consequently experience greater demand for housing and increased commercial use, particularly from service and restaurant businesses looking to capitalize on increased employment in the area.

Flexible Working Space

Flexible working space in the County will offer a variety of businesses and individuals with the opportunity to grow and/or adapt to changing markets. These spaces, such as business accelerators, will provide individuals looking to start a company with the space necessary without a large financial outlay or the need to commit to a long-term lease. These opportunities will help to create a culture of innovation in the County that expands the economy into new markets. Additionally, maker spaces will provide space designed to create products or prototypes and often provide some training and basic tools. While heavy industry has left many areas of the County, these spaces will be repurposed for light industrial uses, such as shipping and receiving or assembling products. As flexible working space increases, commuting patterns and freight activity will change.

While the outcomes of these trends are unknown at this time, care should be taken to incorporate these and unpredicted changes into shorter-term economic development plans in the County.

LOOKING AHEAD

The County profile, along with the survey of current conditions and review of local, national, and twenty-first century transportation planning trends were all used in shaping the goals, objectives, and actions of this *Transportation Plan*. It is important to consider that transportation planning is an ongoing effort. As circumstances change, so should the objectives and efforts of individual municipalities. For that reason, Countywide goals and strategies, which address common issues and needs, are outlined in this plan. The objectives and actions established in this plan reflect the goals and strategies with regard to different road and transit typologies, which are presented in the following two chapters. As traffic and travel patterns evolve and increasing emphasis is placed on more dynamic transportation infrastructure, different objectives and actions may become more relevant.



Road Typologies 2

Chapter 2: Road Typologies

OVERVIEW

Delaware County's variety of land uses, natural resources, topography, and urban morphology have helped shape the characteristics of its road typologies. The three main federal functional classifications are represented in the County: arterial roads, collector roads, and local roads.

This chapter identifies Delaware County-specific typologies, for which definitions are rooted in the federal functional classifications. Delaware County's road typologies are described by design and conditions. Rather than adopting the broader rural versus urban distinction made at the state and federal levels, this plan considers the more specific distinction between Mature Neighborhoods and Growing Suburbs within the urban context.

Road Classifications

While the County-identified road typologies do not exactly match the federal functional classifications, their descriptions reflect similar terminology. The federal functional classifications are the foundation for the Delaware County road typology distinctions. Therefore, it is important to define these classifications before delving into County road typology existing conditions, opportunities, and recommendations.

The road classifications are determined by functional class – arterial, collector, and local. Within two of these functional classes, there are subcategories. The federal functional classification system is outlined and defined as follows.

Principal Arterial

These roadways provide the highest level of service at the greatest speed for the longest uninterrupted distance, with some degree of access control.

Interstate

Designated by the Secretary of Transportation, Interstates are the highest classification of arterials. They are designed to accommodate long-distance travel between major urban areas. I-95 and I-476 are the only two interstates in Delaware County.

Other freeways and expressways

Freeways and expressways describe roads that are only accessible by on- and off- ramps. Travel lanes on freeways and expressways are usually separated by a physical barrier. The only example in Delaware County is the Media Bypass section of U.S. Route 1.

Other

Other principal arterials are designed similarly to interstates and freeways, but they serve abutting land uses and do not act as a physical barrier between areas. Examples in Delaware County include, but are not limited to, U.S. Route 202, U.S. Route 1, PA Route 3, and U.S. Route 30.

Minor Arterial

Minor arterials serve shorter trip lengths and may be part of local bus route networks. Examples of urban minor arterials in Delaware County include, but are not limited to, Providence Road north of the U.S. Route 1 interchange, PA Route 320, and PA Route 491.

Chapter 2: Road Typologies

Collector

These roadways provide a lower level of service at a lower speed for shorter distances by collecting traffic from local roads and connecting them with arterials. Delaware County has many urban collectors, including Brinton Lake Road in Thornbury and Concord Townships and Ardmore Avenue in Haverford.

Major Collector

Major collectors are longer, have fewer intersections, have higher traffic volumes, and are characterized by higher speeds than minor collectors.

Minor Collector

Minor collectors serve shorter distances and lower density areas. They also are characterized by lower speeds and fewer signalized intersections than major collectors.

Local

Local roads are all of those not defined as arterials or collectors. They primarily provide access to land with little or no through movement. Urban local roads in Delaware County include Ridge Road in Chadds Ford Township and Elwyn Road in Middletown Township.

The following table compares the functional classifications based on travel characteristics. These same features are referred to in the descriptions of Delaware County’s road typologies. Annual Average Daily Traffic (AADT) is the typical daily traffic on a road segment for all the days in a week over a one-year period. Daily Vehicle Miles of Travel (DVMT) refers to the number of miles traveled by vehicles during one day.

Table 2-1: Relationship between Functional Classification and Travel Characteristics

Functional Classification	Distance Served/ Length of Route	Access Points	Speed Limit	Distance between Routes	Usage (AADT and DVMT)	Significance	Number of Travel Lanes
Arterial	Longest	Few	Highest	Longest	Highest	Statewide	More
Collector	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Local	Shortest	Many	Lowest	Shortest	Lowest	Local	Fewer

Source: U.S. Department of Transportation, Federal Highway Administration, *Highway Functional Classification Concepts, Criteria and Procedures (2013 Edition)*

Map 2-1 on the following page shows the Federal Highway Administration road classifications for major roadways within Delaware County. There are more Principal Arterial roads in the more densely populated eastern neighborhoods, and there are more urban local roads in the less densely populated western part of the County.

Map 2-1: Delaware County FHWA Road Classifications



Population and Roadway Capacity: Delaware County in the Regional Context

Delaware County is located at the heart of the tristate area of southeastern Pennsylvania, northeastern Delaware, and southwestern New Jersey. Map 2-2 highlights the state and federal highway connections that Delaware County provides to the surrounding counties in all three states. The surrounding counties' population in the three states will be increasing at a rate of at least seven percent overall by 2040 (Delaware Valley Regional Planning Commission, Analytical Data Report 18-A March 2013; The Delaware Population Consortium). As the population continues to grow in this area, roadway capacity needs will change. Current road conditions, opportunities, and recommendations should be identified for the County's distinct road typologies in order to implement sound transportation policies for the future.

Chapter 2: Road Typologies

As mentioned in Chapter 1, Delaware County’s population is expected to increase steadily at a rate of five percent through to 2040. The relatively low rate of population growth for a county in the Delaware Valley Region is explained by the County’s comparatively high population density, particularly in the east. Population trends show a westbound shift from mature, dense neighborhoods in eastern Delaware County to historically more rural areas in the west. This shift influences urban growth patterns as well as roadway characteristics. Delaware County has been following an urban growth pattern in line with that of the greater Delaware Valley Region, which is demonstrated in Chart 2-1 below.

Map 2-2: Delaware County Regional Context

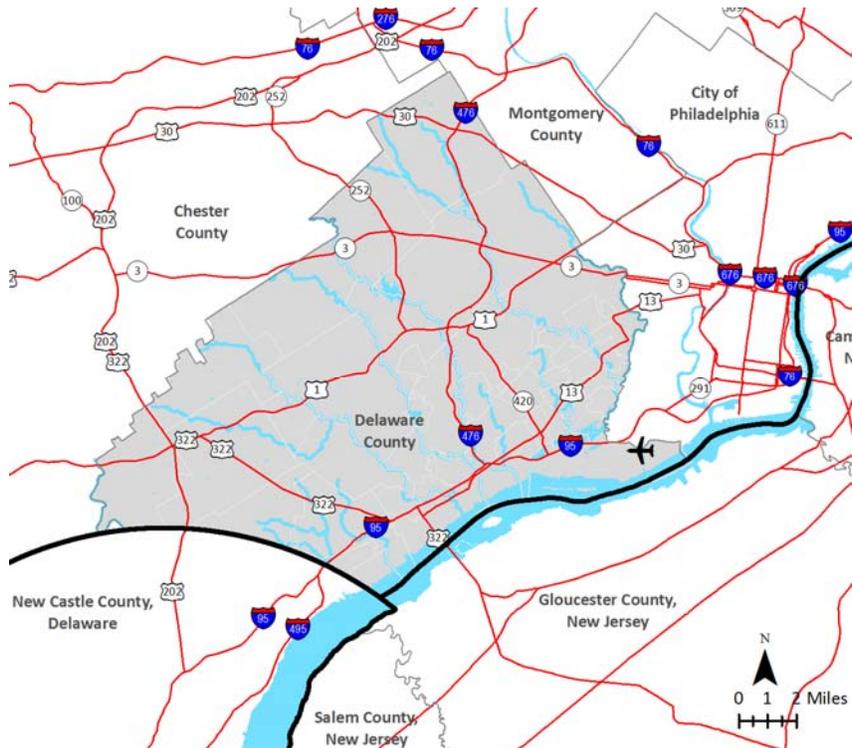
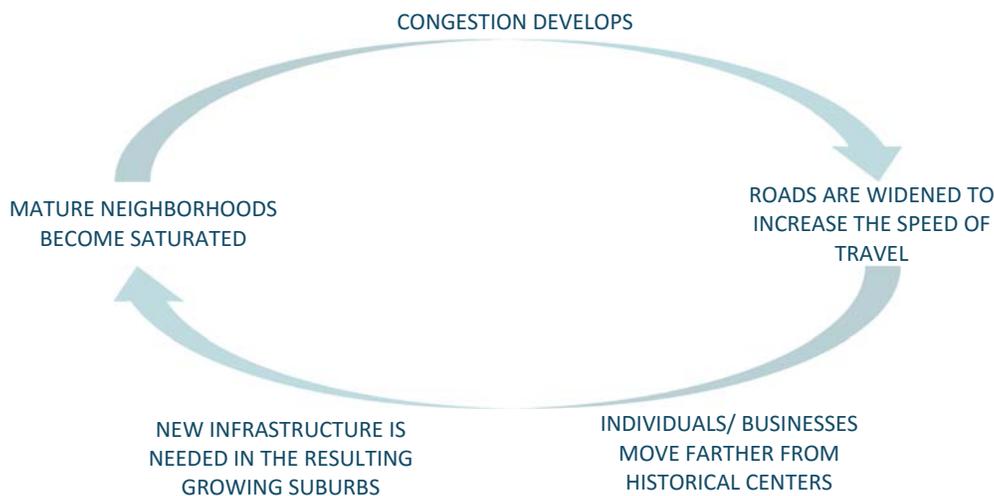


Chart 2-1: Urban Growth Pattern



Source: DCPD 2016; PennDOT & NJDOT *Smart Transportation Guidebook, 2008; Delaware County 2035*

Delaware County Road Typologies Background Information

The *Land Use Policy Framework Plan* organizes Delaware County into Character Areas and Central Places. Character Areas are defined by transformation patterns, while Central Places are distinguished by their urban morphology. Because transportation and land use planning are indivisible, the two primary Character Areas – Mature Neighborhoods and Growing Suburbs – were used to frame the distinction between road typologies. These two Character Areas have experienced very different development patterns. As a result, each road typology has unique features, requires distinct solutions, and presents different opportunities depending on whether it is found in a Mature Neighborhood or Growing Suburb. The County’s road network is composed of these ten typologies, and Table 2-2 summarizes the Mature Neighborhoods/Growing Suburbs dichotomy as it relates to Activity Corridors, Arterial Streets, Collector Streets, and Local Streets in Delaware County.

Main Streets and Highways do not fall under one or the other category because they maintain core characteristics, regardless of where they are located. Main Streets encompass those roads which traverse historic urbanized centers, such as Route 30 in Wayne (Radnor Township) and State Street in Media (Media Borough). Main Streets are distinct from Activity Corridors in that they are characterized by lower speeds, and they are more conducive to pedestrian traffic. While they are more prominently found in Mature Neighborhoods, one of the broader goals of Delaware County 2035 is to continue to encourage new design of Main Streets in Growing Suburbs. Delaware County has numerous high-speed Highways. While they may transect residential neighborhoods, highways prevent inter-neighborhood connections and sever the urban fabric.

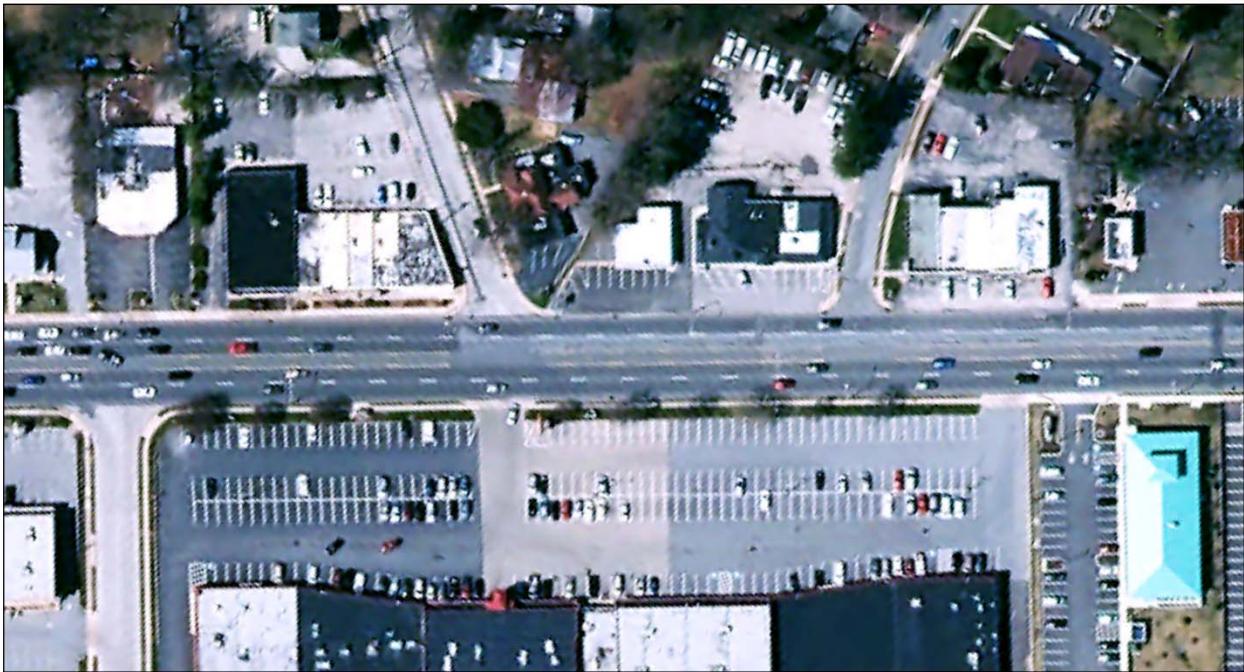
Highways, Main Streets, and Activity Corridors are distinguished by surrounding land uses, urban morphology, and historic preservation efforts. Specific segments of a Highway can be a Main Street or an Activity Corridor, and a roadway can transition from Main Street to Activity Corridor to Highway.

The degree of connectivity of the countywide network varies. This Plan aims to promote actions that lead to a safer road network that accommodates both motorized and non-motorized transportation. Thus, the issues presented by each road typology must be understood and addressed. The following sections highlight the existing conditions of Delaware County’s roadways and suggests ways in which to further strengthen the road network.

Table 2-2: Delaware County Road Typologies

	Mature Neighborhoods	Growing Suburbs
Activity Corridor		
Arterial Street		
Collector Street		
Local Street		
	Main Street	Highway
		

Source: DCPD 2016.

MATURE NEIGHBORHOODS – ACTIVITY CORRIDORS**CURRENT CONDITIONS**

Activity Corridors are characterized by high traffic volume, high speed traffic, high commercial density, and numerous intersections with Arterial Streets. Access to Activity Corridors is crucial because they offer many commercial destinations. Access management to parking areas along these roadways is strong in some Mature Neighborhoods and weak in others. While the presence of a traffic signal at the entrance of a commercial complex is a sign of good access management, signals along these major corridors are often disjointed. Between municipalities, there is frequently no coordination of traffic signal timing. Some of the Activity Corridors in Delaware County are older roadways, and the intersections tend to be organically aligned, instead of being at a 90-degree angle. Entrances that are at a 90-degree angle with the Activity Corridor are safer and more visible from the main roadway.

Lane geometries are varied due to the age and maintenance of a particular section of roadway. Bus stops are common along these roads, but they are not easily accessible from or well-integrated into the surrounding neighborhoods. Buses usually stop in the right hand travel lane. The time to destination for bus riders is long due to the numerous bus service stops and traffic along the corridors.

Commercial lots have limited shared parking. There are no pedestrian or vehicular connections between commercial developments, and these corridors are characterized by numerous curb cuts, which add potential traffic conflicts. Activity Corridors have very few crosswalks. Crosswalks are present only at signalized intersections. Commercial signage is prevalent, and some is in the right-of-way. Large signage is both unappealing and distracting to drivers. The numerous commercial destinations along these corridors instigate a high number of left turn movements. Left turn lanes with limited storage may cause vehicle queuing to spill over into adjacent through lanes, especially during peak periods this may cause additional congestion and increased conflicts. In some cases, such as at the intersection of PA Route 3 and PA Route 252, left turn signals allow only one to two motor vehicles to turn left during one signal phase. In addition, there is limited deceleration space for right-turn movements, leading to high-speed turns that put pedestrian safety at risk.



Figure 2-1: PA Route 3/Market Street in Upper Darby is the quintessential Mature Neighborhood Activity Corridor.

OUTLOOK

Activity Corridors in Mature Neighborhoods have experienced a lot of changes over the past two decades. Numerous businesses that once occupied the auto-oriented developments along these roadways suffered during and after the Economic Recession. Consumerism has changed drastically; there is a new focus on service, experience, and authenticity. Some auto-oriented developments are being redeveloped to include mixed uses, and these may consider other transportation modes in their design. Others are performing poorly, while still generating traffic and presenting circulation challenges.

As a result of these land use changes, as well as other major roadways in the area reaching their capacity, Activity Corridors are expected to experience an increase in traffic. Increased pedestrian access between developments and the promotion of transit to relieve congestion will be crucial to the success of Activity Corridors. These roads can benefit from improvements to help manage countywide traffic and increase safety for all users. The key attributes below describe the characteristics that will make Activity Corridors of the future thrive.

Key Attributes

Mature Neighborhood Activity Corridors of the future...

- Are Complete Streets with facilities for all road users;
- Incorporate green areas for stormwater management, cooling pavement temperatures, and attractiveness;
- Reduce left turn movements to limit conflicts;
- Have improved signal timing and upgraded, protected sidewalks;
- Include marked crosswalks and improved vehicular and pedestrian access to commercial developments;
- Integrate bus stops into major employment sites;
- Introduce shared parking facilities;
- Limit curb cuts;
- Have realigned intersections (90 degrees);
- Remove superfluous signage;
- Use LED for traffic signals and street lighting; and
- Incorporate Intelligent Transportation Systems (ITS).

MATURE NEIGHBORHOODS – ARTERIAL STREETS



CURRENT CONDITIONS

Arterial Streets in Mature Neighborhoods experience high traffic volumes, but traffic is concentrated during rush hours. These roadways are high speed, though they have a greater number of intersections than Activity Corridors. Arterial Streets in Mature Neighborhoods generally have four travel lanes. There are few crosswalks that cross Arterial Streets, though many can be found paralleling the roadway, providing a crossing from one side to the other at the end of a Collector Street. Sidewalks are usually found adjacent to the roadway, though landscaping and buffering is limited. Bus service is prevalent along these roadways, but it is not integrated into the surrounding neighborhoods. These streets serve smaller commercial uses, such as service and professional offices found in older homes that were retrofitted for office space or in-home office spaces.



Figure 2-2: PA Route 291 in the City of Chester divides residential and civic uses to the north from industrial waterfront uses to the south.

OUTLOOK

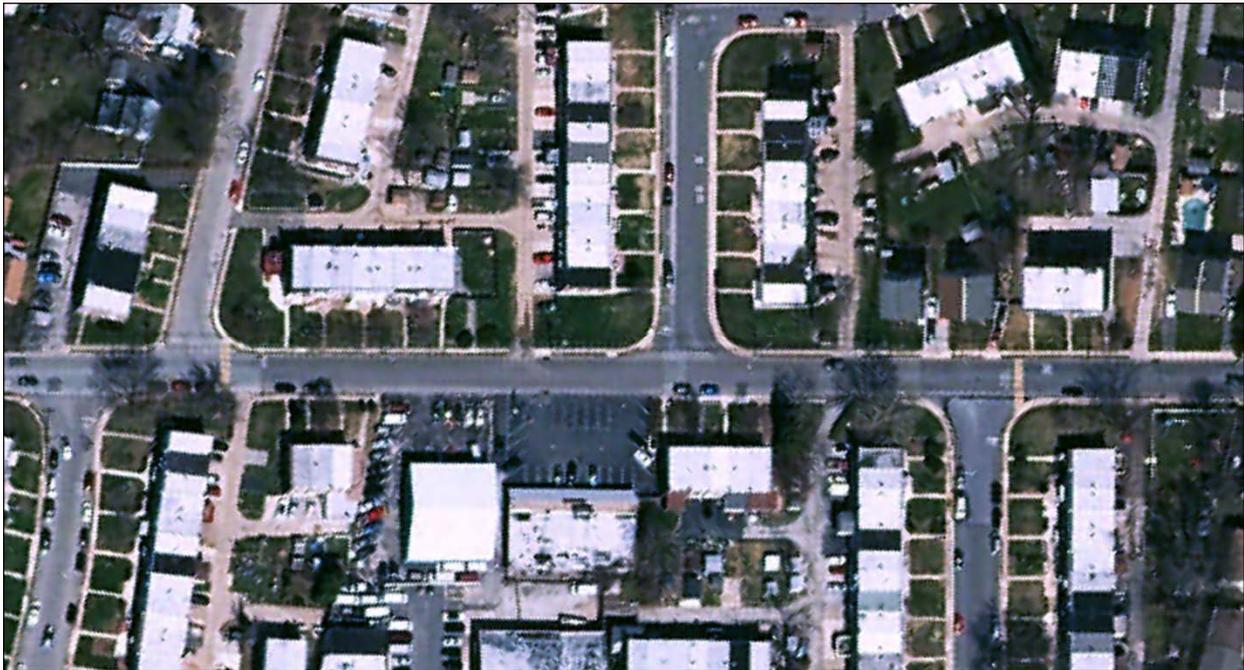
Because Arterial Streets have fewer destinations than Activity Corridors and are not designated highways, they have been increasingly absorbing traffic from local highways when conditions are poor. At the same time, these streets often have necessary on-street parking, high density surrounding land uses, and minimal right-of-way to spare. For Arterial Streets to be able to continue to serve local as well as through traffic, steps should be taken to incorporate the following key attributes in their design.

Key Attributes

Mature Neighborhood Arterial Streets of the future...

- Are Complete Streets with facilities for all road users;
- Incorporate green areas for stormwater management, cooling pavement temperatures, and attractiveness;
- Consider bus-only and truck-only lanes where feasible;
- Integrate bus service into surrounding neighborhoods;
- Improve signal timing;
- Remove unnecessary on-street parking;
- Install marked crosswalks and improve vehicular and pedestrian access to commercial developments;
- Consider mid-block crossings;
- Include bicycle and protected pedestrian facilities;
- Consider pedestrian signal phasing; and
- Use LED for traffic signals and street lighting.

MATURE NEIGHBORHOODS – COLLECTOR STREETS



CURRENT CONDITIONS

Collector Streets “collect” vehicular traffic from local streets. They are a prime source of cut-through traffic between one Activity Corridor or Arterial Street to another, as local drivers attempt to avoid traffic congestion and traffic lights. This behavior results in a high speed roadway in an otherwise residential area. A good example of a Collector Street in a Mature Neighborhood is State Road in Upper Darby, Delaware County.

This roadway typology is wider than the local streets that intersect it. Collector Streets consistently have narrow sidewalks on both sides, and they have numerous, unaligned intersections. Curb cuts to residences along these streets are common and pose ADA sidewalk compliancy issues. Sidewalks are often restricted near intersections due to landscaping. Painted crosswalks are prevalent; communities in Mature Neighborhoods of the County are in the process of upgrading all intersections to include ADA compliant ramps.

Numerous stop signs can be found along – and leading onto – Collector Streets, yet these streets have few signalized intersections. Uses along these streets are primarily residential, though civic uses, such as schools and parks, can sometimes be found. Bicycle and pedestrian activity is common, but the roadways may not properly accommodate these users.



Figure 2-3: Highland Avenue in the City of Chester serves numerous residential streets in the neighborhood surrounding the Highland Avenue regional rail station.

OUTLOOK

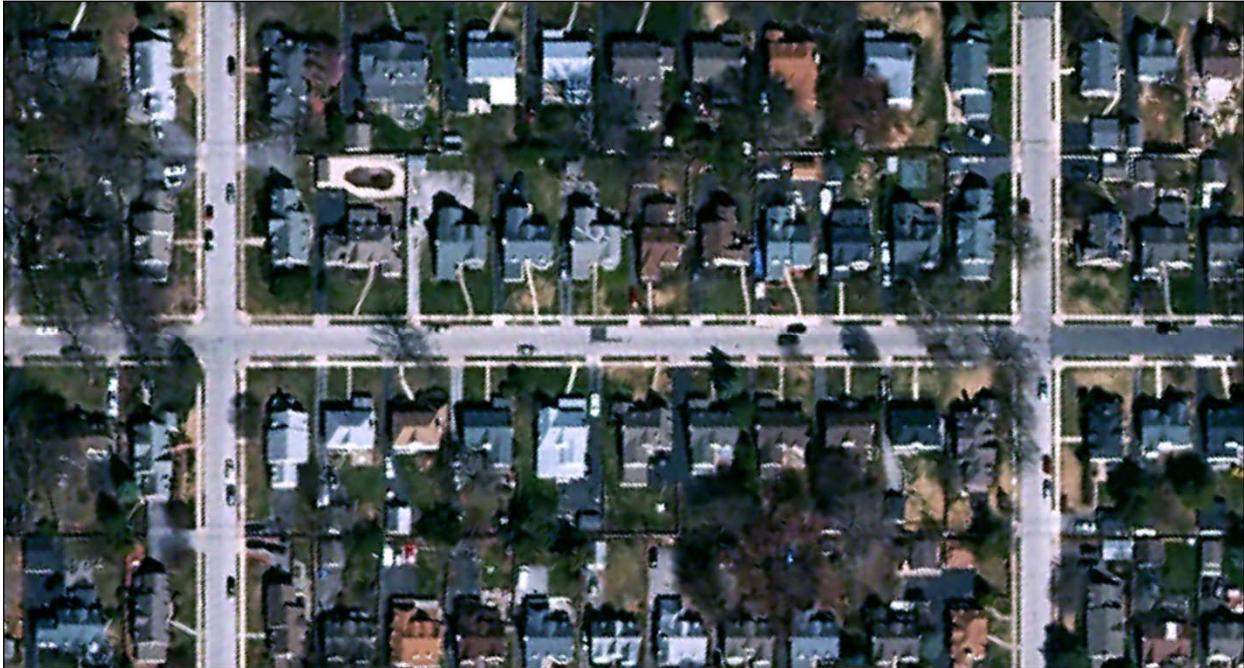
Collector Streets in Mature Neighborhoods are in dire need of maintenance. These roads are traveled by all users to reach Arterial Streets and Activity Corridors from local streets. The high number of non-signalized intersections complicates left turn movements onto Collector Streets and causes traffic delays. As the County's population increases, these roads are expected to experience more traffic. At the same time, they must continue to serve the predominantly residential and civic uses surrounding them. The key attributes listed below should be considered in planning for the Collector Streets of the future.

Key Attributes

Mature Neighborhood Collector Streets of the future...

- Are Complete Streets with facilities for all road users;
- Have appropriate level of access to bus service;
- Include left turn signals;
- Have improved signal timing;
- Add signalized intersections or roundabouts;
- Include bicycle facilities;
- Have upgraded sidewalks and more visible crosswalks;
- Consider pedestrian signal phasing as an option for foot traffic;
- Improve signals at grade-crossings;
- Incorporate more street lighting; and
- Use LED for traffic signals and new street lighting.

MATURE NEIGHBORHOODS – LOCAL STREETS



CURRENT CONDITIONS

Local Streets are primarily residential streets; in-home offices or homes converted into offices are rare. Even though they have narrow cartways, some Local Streets are high speed because they are used as cut-through streets to avoid traffic on Collector Streets. Speeding is of particular concern on these roads because pedestrians and bicyclists will use the roadway as a shared space with vehicles. Local Streets experience low traffic volumes, and bike lanes or sharrows are not marked on these streets.

In Mature Neighborhoods, Local Streets have good sidewalk networks. Sidewalks tend to be narrow. Crosswalks typically are not marked, but they may not be necessary due to low speeds and an abundance of stop signs at local street intersections. In most neighborhoods, parking is allowed on both sides of the street. Some streets are one-way roads with parking on both sides. Sightlines may be restricted by parking. Though streetscaping is not prevalent, many of these streets are lined with trees from adjacent residential properties.



Figure 2-4: Copley Road at the heart of Upper Darby Township is a Local Street in a higher density Mature Neighborhood.

OUTLOOK

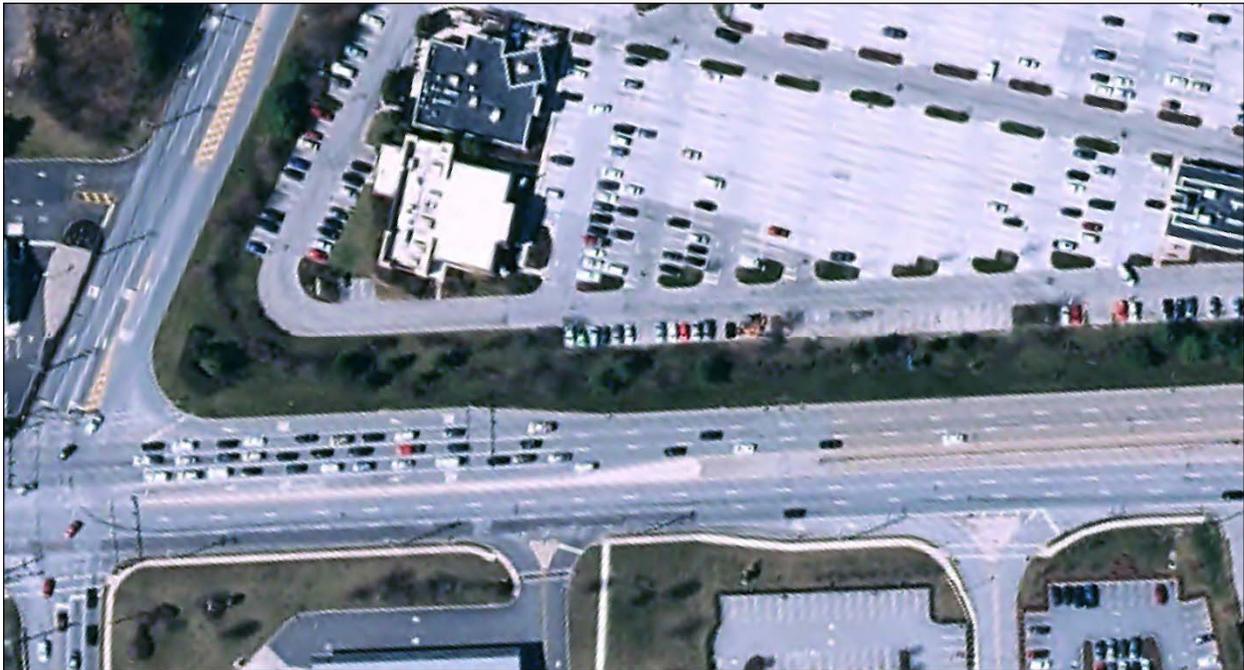
Residential areas in Mature Neighborhoods are not anticipated to experience an increase in density that would affect traffic flow and circulation on Local Streets. Nevertheless, if traffic continues to increase at the current rate, Local Streets may be more frequently used as Collector Streets where possible to reach Arterial Streets or Activity Corridors. Speeding will continue to be a concern in these neighborhoods in any scenario. In order to limit these instances, improve safety, and maintain quality of life on residential streets, a number of measures can be taken. These measures are encompassed in the key attributes listed below.

Key Attributes

Mature Neighborhood Local Streets of the future...

- Introduce traffic calming measures;
- Include bicycle facilities;
- Have upgraded sidewalks and more visible crosswalks, where necessary;
- Incorporate safety strategies and improved visibility at intersections with Collector Streets;
- Enforce speed limits more rigorously;
- Use LED for new street lighting; and
- Create more inter-neighborhood connections through the construction of pedestrian paths and elimination of cul-de sacs.

GROWING SUBURBS – ACTIVITY CORRIDORS



CURRENT CONDITIONS

Activity Corridors in Growing Suburbs are extremely wide – four to eight lanes – and very high speed. They have full shoulders as well as right turn deceleration lanes. These roadways are surrounded by a high concentration of big-box retailers and other large-scale commercial uses, and they experience high traffic volumes. While bus service is common, these corridors have no pedestrian or bicycle amenities. Buses usually stop in the shoulder of the roadway, leaving passengers to walk a long way along the street to their final destinations. Crosswalks are rare, and those that are present are dangerous and not easily visible. Some bus routes are directly integrated into activity sites.

Access to parking for vehicles is well-managed but marked by a small number of large intersections with multiple turn lanes and turning movements. These factors further decrease bicyclist and pedestrian safety and comfort. Access to smaller sites is generally right turn in-, right turn out-only.

Turn lanes are long; therefore, traffic continuing straight does so more smoothly. Signals are usually well-timed because there are fewer signalized intersections than in Mature Neighborhoods. Jurisdictions are also larger in Growing Suburbs; coordination between fewer municipalities is easier.



Figure 2-5: U.S. Route 202 traverses Concord and Chadds Ford Townships in Delaware County. It serves as the major connector roadway between Wilmington, Delaware and West Chester Borough, Chester County. U.S. Route 202 is also recognized as an important freight corridor.

OUTLOOK

The population of Growing Suburbs is projected to increase at a more rapid rate than that of Mature Neighborhoods. Thus, Activity Corridors in Growing Suburbs can be expected to experience higher traffic volumes. While they are currently slightly wider than their counterparts in Mature Neighborhoods, their high speeds may not continue to be sustained unless a vision is applied in planning for the future of these roadways. Wider rights-of-way provide tremendous opportunity for the incorporation of green stormwater infrastructure, pedestrian and bicycle facilities, and traffic management. The following key attributes should be incorporated in future planning for Growing Suburb Activity Corridors.

Key Attributes

Growing Suburb Activity Corridors of the future...

- Incorporate green medians to reduce crossing distances for pedestrians, improve stormwater management, and enhance the streetscape;
- Consider mid-block crossings as safer alternatives to multiple turn lane intersections;
- Improve signage at intersections;
- Include marked crosswalks and improve vehicular and pedestrian access to commercial developments and bus stops;
- Integrate bus stops into sites for safer passenger boarding;
- Provide adequate bus stop facilities and signage;
- Limit curb cuts and introduce shared parking facilities;
- Include upgraded sidewalks with a protective buffer;
- Use LED for traffic signals and street lighting;
- Incorporate Intelligent Transportation Systems (ITS); and
- Are Complete Streets with facilities for all road users.

GROWING SUBURBS – ARTERIAL STREETS



CURRENT CONDITIONS

Growing Suburb Arterial Streets are high volume, high-speed, and typically four to six lanes wide. High traffic volumes are primarily concentrated during rush hours. They are essentially rural highways, as a limited number of parcels along them are used. They are surrounded primarily by single family residences and the occasional office, commercial, or school property.

These roadways have few, highly engineered intersections, most of which are signalized. The turn lanes at intersections are short, causing vehicles that are turning to block traffic going straight. There are no bicycle or pedestrian amenities and narrow or limited shoulder facilities. Buses use these routes to connect to activity corridors.



Figure 2-6: U.S. Route 1 in Chadds Ford Township is narrower and more winding than more eastern segments of the route. The land surrounding this portion of U.S. Route 1 is predominantly vacant, with scattered residential and commercial uses.

OUTLOOK

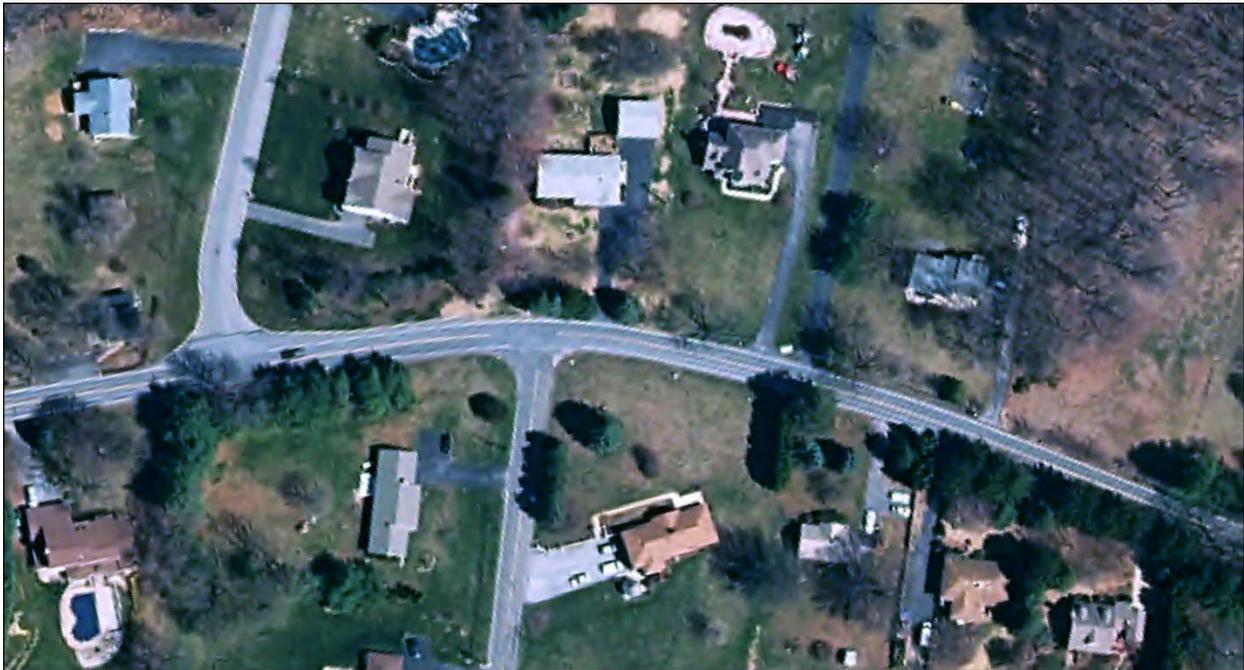
Like Activity Corridors in Growing Suburbs, Arterial Streets in Growing Suburbs will experience more traffic in years to come as Delaware County’s population increases. Nevertheless, a distinct approach will be needed to planning these roadways in the future because of the predominantly residential – as opposed to commercial – uses surrounding Arterial Streets. The following are key attributes to be incorporated in the planning of Growing Suburb Arterial Streets.

Key Attributes

Growing Suburb Arterial Streets of the future...

- Incorporate green medians for storm water management and reduced crossing distances;
- Consider bus-only and truck-only lanes where feasible;
- Incorporate bus service and bus stops;
- Have longer left-turn lanes;
- Reduce speed limits;
- Include bicycle facilities;
- Install or upgrade sidewalks (include a protective buffer);
- Reduce the number of direct access points;
- Improve visibility at intersections;
- Consider pedestrian phasing;
- Use LED for street lighting;
- Have more visible crosswalks; and
- Convert streets into Complete Streets with facilities for all road users.

GROWING SUBURBS – COLLECTOR STREETS



CURRENT CONDITIONS

Growing Suburb Collector Streets are usually narrow, two-lane, high-speed roadways. These roads are winding; consequently, intersections are generally misaligned. They have limited-to-no shoulder facilities and are not well lit because they serve relatively rural areas. Some of these roadways have steep banks, and drainage issues are common. Because of the rural nature of the surrounding landscape, there are many trees close to the roadway. Thunderstorms can thus leave sections of these roads impassable.

They are surrounded by large, residential parcels, and there are many direct driveway connections to these streets from single-family homes and farmhouses. Intersections are not well signalized, and sightlines at intersections are restricted due to road geometry and sloped banks. These roadways are often used as cut-throughs to Arterial Roads, which results in heavy traffic volumes similar to arterial roadways. Combined with the unique geometry of the Collector Street, this high traffic volume can lead to dangerous situations. Smithbridge Road in Chadds Ford is a Growing Suburb Collector Street that parallels Route 1 in Concord and Chadds Ford Townships. This road has dense vegetation on both sides that limits visibility, and it experiences high traffic volumes.

Transit access is generally not found on these roads. Transit in the western part of the County is still limited to a few bus routes, and there is currently no transit hub in western Delaware County. Though bicyclists often use these roadways for long trips, there are no pedestrian or bicycle amenities.



Figure 2-7: Concord Road in Concord Township runs parallel to U.S. Route 322 for its length in that township. Concord Road serves as a Collector Road for developments, and it is also fronted by single family homes.

OUTLOOK

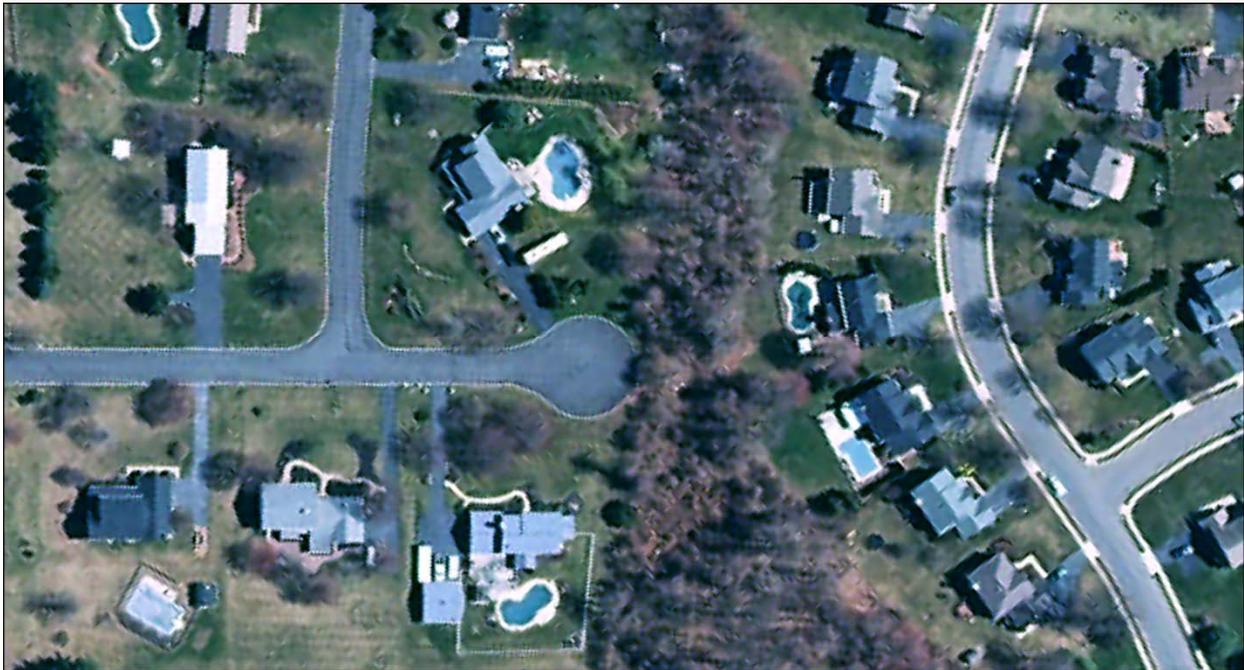
Collector Streets in Growing Suburbs serve as high-speed cut-through roadways, despite the solely residential nature of their surrounding land uses. Collector roads should not only be safer but provide more possibilities for alternative modes of transportation in order to increase connectivity between residential neighborhoods. Furthermore, population increase will result in an increase in capacity demand. Higher traffic volumes and limited access could create issues in emergency situations, such as natural disasters. The rural nature of the landscape can be best maintained by planning for future lifestyle, population, and traffic circulation pattern changes. The following key attributes should be considered in the design of Growing Suburb Collector Streets.

Key Attributes

Growing Suburb Collector Streets of the future...

- Incorporate bus service and bus stops;
- Reduce speed limits;
- Include bicycle facilities, protected sidewalks, and marked crosswalks;
- Improve visibility and alignment at intersections;
- Realign roadways where possible;
- Incorporate signalized intersections or roundabouts;
- Use LED for street lighting;
- Incorporate traffic calming measures; and
- Convert streets into Complete Streets with facilities for all road users.

GROWING SUBURBS – LOCAL STREETS



CURRENT CONDITIONS

Local Streets in Growing Suburbs are solely residential streets. Neighborhoods in these areas are low-density and composed of single-family homes. The street network geometry is not linear like a grid network. As a result, roads are not well-connected, and cul-de-sacs and dead ends are common.

These streets are usually not straight, but they are engineered in such a way that sightlines are not a problem. Differently from Local Streets in Mature Neighborhoods, they have wide cartways that encourage speeding. Some newer developments have complete sidewalk networks, whereas older developments do not have sidewalks. There is an overall lack of bicycle and pedestrian facilities. Much like in Mature Neighborhoods, these roads are treated as shared spaces for bikers, pedestrians, and drivers. Though the wideness of these roadways provides space for multiple users and uses, it also encourages speeding. Exiting these neighborhood streets is difficult due to speeding and sightline issues at the intersections with Growing Suburb Collector Streets.



Figure 2-8: Partridge Lane is a cul-de-sac residential development in Concord Township. The homes on this street were built in the early 1990s; the roadway and development reflect the style of that era.

OUTLOOK

Local Streets in Growing Suburbs do not provide adequate pedestrian, bicycle, or vehicular connectivity to meet future needs. Cul-de-sacs and dead ends pose an obstacle in emergency situations. Local Streets could further benefit from improved access to public transit, which can be made possible through added pedestrian and bicycle facilities. The wideness of Local Streets in Growing Suburbs provides opportunity for installing such amenities. The following key attributes describe future Growing Suburb Local Streets.

Key Attributes

Growing Suburb Local Streets of the future...

- Improve the safety of shared space through bicycle/pedestrian-designated space;
- Incorporate traffic calming measures;
- Have new and upgraded sidewalks;
- Create pedestrian and bicycle connections to public transit;
- Improve visibility at and safety of intersections with Collector Streets;
- Use LED for new street lighting; and
- Create more inter-neighborhood connections through the construction of pedestrian paths and elimination of cul-de-sacs.

CENTRAL PLACES – MAIN STREETS**CURRENT CONDITIONS**

Main Streets are characterized by low speeds and narrow cartways. They have visible crosswalks at intersections, wider sidewalks, street trees, and street furniture. Main Streets are extremely pedestrian friendly and host a number of mixed uses. As a result, they experience high pedestrian traffic volumes. Their prioritization of pedestrian versus vehicular traffic often leads to perceived parking issues. Parking demand creates access issues for those properties that have small, private lots. There are many curb cuts which conflict with pedestrian traffic. Because of their mixed-use nature and, oftentimes, historic significance, Main Streets are an important destination for locals and tourists alike. They are highly accessible and usually served by a nearby regional rail station. These streets also provide excellent access to distinct modes of public transportation.

Buildings on Main Streets are rear-loading; they usually have alley access in the rear to make the delivery of goods easier. This characteristic in turn preserves the zero lot lines and wide sidewalks found along these streets. The sidewalks and roadway network link the Main Street to surrounding neighborhoods. On-street parking, whether parallel or at an angle, is common. Some Main Streets, such as Lancaster Avenue/US Route 30 and North Wayne Avenue in Wayne, allow only very short-term, metered on-street parking while other Main Streets, such as West State Street in Media, allow longer-term, metered parking.

Signalized intersections are prevalent on some Main Streets, such as those previously mentioned. Others, however, do not have signalized intersections. Park Avenue in Swarthmore, for example, does not have any signalized intersections. Main Streets that do not have signalized intersections tend to have higher volume intersections at their beginning and end. The presence of signalized intersections, as well as other traffic mediation tools, greatly depends on the underlying federal classification of the main street. Lancaster Avenue/US Route 30 in Wayne is an urban principal arterial, and West State Street in Media is an urban local street.



Figure 2-9: State Street in Media Borough is a multimodal hub. It has a complete sidewalk and crosswalk network, multiple bicycle parking stations, and trolley stops.

OUTLOOK

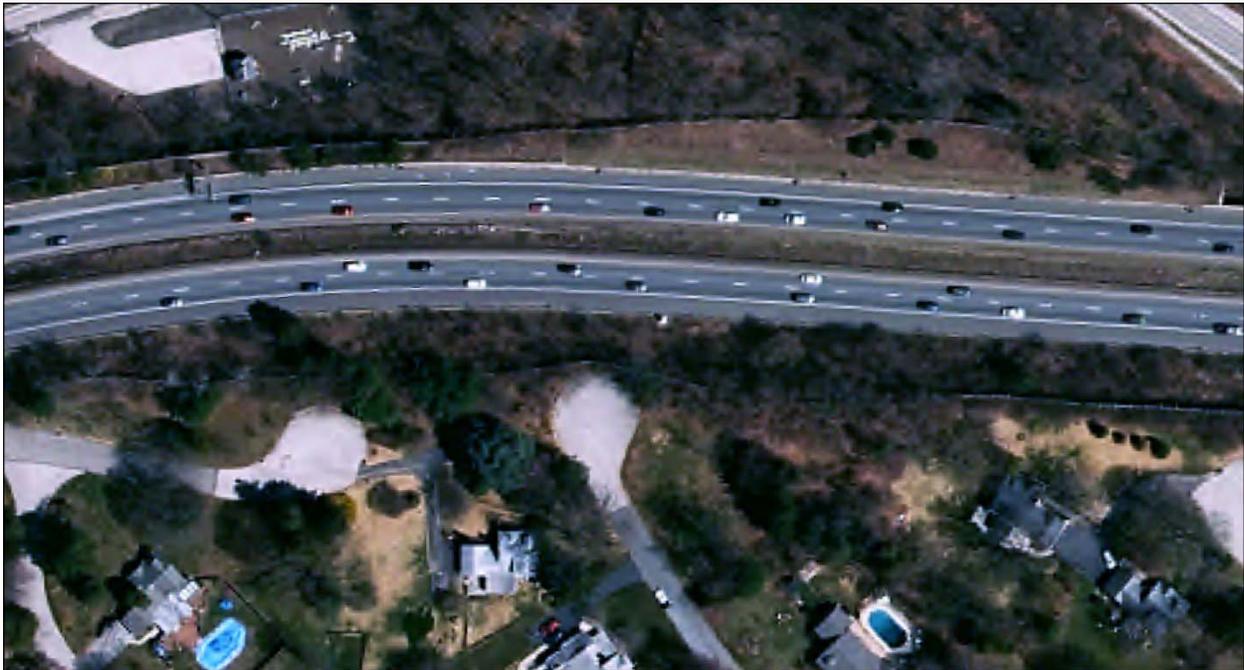
Main Streets are the core of Delaware County’s Central Places. Central Places have experienced rapid economic growth in recent years, mainly due to an increase in retail and residential uses along Main Streets. Because Main Streets are at the center of these hubs, traffic tends to be concentrated along these roadways. In order to alleviate congestion, maintain the “downtown” character of these streets, and encourage walkability, the following key attributes can be applied in planning Main Streets.

Key Attributes

Main Streets of the future...

- Improve the safety of shared space through bicycle/pedestrian-designated space;
- Convert front-in angle parking to back-in angle parking;
- Reduce the number of on-street parking spaces;
- Provide marked buffers between on-street parking spaces and traffic;
- Include new and upgraded sidewalks;
- Include marked crosswalks and improved vehicular and pedestrian access to commercial uses;
- Consider pedestrian signal phasing;
- Utilize nearby parking garages to promote walkability;
- Enforce parking time limits and utilize higher meter rates to increase parking turnover;
- Include bicycle facilities (particularly bike parking);
- Create ADA-accessible connections to public transit;
- Incorporate traffic calming measures; and
- Are Complete Streets with facilities for all road users.

HIGHWAY



CURRENT CONDITIONS

Highways are high speed and high volume roadways. In Delaware County, these roads are between four and eight lanes wide. Acoustic and air pollution often affects surrounding communities; for example, in Chester Township and Chester City, I-95 transects residential neighborhoods. Highways create physical barriers between older, established communities, and there is limited access to or across highways. There are no local intersections, so cars, pedestrians, or bicyclists cannot cross a highway at any point other than an underpass or overpass. It is certainly not safe for pedestrians or bicyclists to traverse a highway.

In 1993, the Blue Route (I-476) was designated a State Scenic Byway by the PA State Legislature, and the legislation prohibits new off-site advertising, such as billboards. As a result, I-476 is more attractive than I-95 and has a less blighted landscape. I-95 in Delaware County, especially from the Delaware state line to I-476, also suffers from deteriorated pavement, bridges, and guiderails, has more trash and debris on the road's shoulders and along the road, and is too close to some homes to the detriment of those residents. I-95 drivers entering Pennsylvania from the state of Delaware are aware of the roadway deterioration after crossing the border. This results in an unwelcome entrance to Pennsylvania and Delaware County.



Figure 2-10: I-95 traverses Lower Chichester Township, Upper Chichester Township, the City of Chester, Chester Township, Upland Borough, Ridley Township, Ridley Park Borough, and Tinicum Township in Delaware County.

OUTLOOK

Delaware County's Highways are operating beyond their capacity. In the case of accidents or local emergencies, traffic on these roadways is immobilized. Even under typical conditions, these roadways experience longer average travel times during rush hours due to traffic volumes. Looking to the future, conditions on the County's Highways will not improve unless drastic measures are taken, such as those listed as key attributes below.

Key Attributes

Highways of the future...

- Improve the safety of on- and off-ramps;
- Incorporate green areas for storm water management, cooling pavement temperatures, and attractiveness;
- Implement bus-only, truck-only, and High Occupancy Vehicle (HOV) lanes;
- Implement hard shoulder running;
- Provide safe bicycle and pedestrian connections at interchanges;
- Eliminate superfluous signage;
- Provide clearer signage at exits;
- Enforce speed limits;
- Enhance the user experience and aesthetics (of I-95) through the addition of landscaped welcome signs, pavement improvements, trash clean up, shoulder sweeping, new guardrails, billboard removal, and sound barriers;
- Include designated pull-over areas;
- Have park-and-ride lots at interchanges with potential connections to public transit; and
- Incorporate Intelligent Transportation Systems (ITS).



Transit Typologies 3

Chapter 3: Transit Typologies

OVERVIEW

Delaware County has the strongest public transportation network among the suburban, southeastern Pennsylvania counties in terms of variety of transportation modes and ridership. More people take public transit to work in Delaware County than in any of the other three suburban counties.

While transit mode is one way to differentiate between transit typologies, this criterion alone does not capture the comprehensiveness of Delaware County's transit infrastructure. As surrounding land uses were considered for identifying road typologies, they were also used to identify the County's transit typologies.

The transit typologies presented in this chapter were defined by mode and the surrounding land uses of transit stops and stations. The County's transit system is divided into eight typologies, based primarily on the physical characteristics of the stops or stations for different modes of public transportation. Many of the stations in the County fit into multiple categories, but all are included in the eight described in this chapter. The eight categories are: Regional Rail Central Stations; Regional Rail Commuter Stations; Light Rail Central Stops; Light Rail On-Street Stops; Light Rail Residential Stops; Bus Basic and Improved Stops; and Transit Hubs.

Population and Transit Station/Stop Capacity

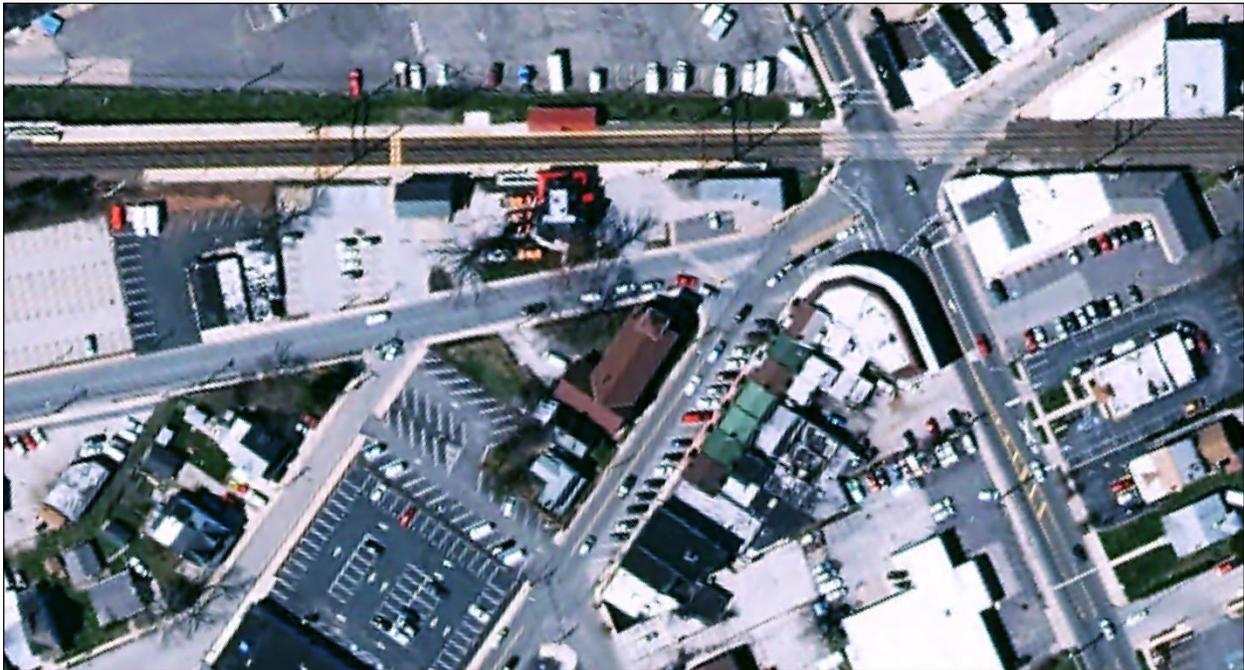
As mentioned in Chapter 2, the projected increase in Delaware County's population has the potential to lead to increased roadway congestion in dense urban areas. Public transit is both an attractive and viable alternative mode of transportation. The northeast is home to some of the nation's oldest public transit systems, and SEPTA's infrastructure is one of the oldest in the United States. Station structures, railroads, and vehicles are continuously upgraded and retrofitted. It is an ongoing process due to the scale of the network that SEPTA owns, maintains, and operates. Much of the transit infrastructure in Delaware County is in disrepair or out of date, and SEPTA is spending significant funds to upgrade it.

If transit ridership continues to increase at the current pace, more stress will be placed on aging infrastructure, presenting new maintenance challenges. Some transit stations require improvements to accommodate not only more passengers but also a *diversity* of passengers. For example, wheelchair accessibility must be improved (see Appendix E for more details).

Should the recent trend of more rapid growth in the Growing Suburbs continue, public transit service may be necessary in areas where no transit service currently exists. New service could also affect station characteristics, for example, the need for more parking or retail spaces to accommodate longer commutes.

It will be important to consider improvements and additions to public transportation infrastructure on a case-by-case basis in order to apply context-appropriate enhancements. The following sections address each of the seven transit typologies in more detail. Some stations or stops may easily be encompassed by more than one typology. These categories are to be used as a tool for decision-makers when deciding what actions are most suitable based on which typology they believe best embodies a particular station's characteristics. The current conditions, outlooks, and key attributes for each typology are outlined on the following pages.

REGIONAL RAIL – CENTRAL STATIONS



CURRENT CONDITIONS

Regional Rail Central Stations are found on three of the four SEPTA regional rail lines that run through Delaware County. These stations are surrounded by high density, mixed use land uses, and anchor destinations. Central Stations tend to have limited parking directly at the station due to their locations in highly developed areas. The station parking is normally supplemented with private or municipal lots at those central stations where demand for parking is consistently high.

Many passengers walk to these stations or take advantage of the available bus and multimodal connections. Though users typically come from nearby, some may prefer to take a line other than the one that is geographically closest. This behavior is due to the difference in reliability or service frequency of distinct regional rail lines. For example, the Wilmington/Newark Line reliability/on-time performance (OTP) has always been lower than the Media/Elwyn Line because Amtrak operates on and has priority over the Wilmington/Newark Line, subjecting SEPTA trains to regular delays. On-time performance on the Media/Elwyn Line is high, which explains passengers traveling north to the Media/Elwyn Line when they live near the Wilmington/Newark Line.

Central Stations are typically surrounded by good sidewalk networks with visible crosswalks. Bicycle parking is also more common at central stations; nevertheless, the number of spaces is lower than a desirable level to help alleviate private vehicle parking issues at central stations. Station platforms have multiple access points, yet platform conditions vary greatly from station to station. Similar to Commuter Stations, usage of Central Stations peaks at AM/PM rush hours. On the other hand, usage is relatively steady throughout the rest of the day. Central Stations experience slower, longer outflows of riders from peak train arrival during the PM rush hour, and the presence of separate parking lots eases car traffic.



Figure 3-1: Swarthmore Station is centrally located in Swarthmore Borough within walking distance of many destinations.

OUTLOOK

Regional Rail Central Stations serve as important access points for cultural and economic centers, or Delaware County's Central Places. Central Places are expected to continue to experience population growth in the coming years. One could expect this to lead to an increase in public transit usage. Delaware County can ensure that Central Stations continue to support the walkable and mixed use communities that they serve by considering the list of key attributes below in planning future Regional Rail Central Stations.

Key Attributes

Regional Rail Central Stations of the future...

- Are designed for ADA vehicle access;
- Provide adequate, ADA-compliant pedestrian, wheelchair, and bicycle access from surrounding neighborhoods with sidewalks, marked crosswalks, and bicycle facilities;
- Have high level platforms for increased service efficiency;
- Have been consolidated where spacing was previously poor;
- Enable transit signal prioritization;
- Provide real-time information;
- Incorporate bicycle parking and repair stations, passenger shelters, and seating; and
- Include fare payment devices.

REGIONAL RAIL – COMMUTER STATIONS



CURRENT CONDITIONS

Different from Regional Rail Central Stations, Regional Rail Commuter Stations have large parking areas. These stations are typically surrounded by low density residential uses, though higher-density stations can have many commuter station characteristics. Most users drive to commuter stations even though most commuter stations have bus and multimodal access. These stations experience very high AM/PM peak usage and limited use throughout the rest of the day.

Commuter Stations do not have the same pedestrian access as Central Stations, and most users drive to the station. It is very common for riders to be picked up or dropped off at these stations. They have limited pedestrian connections, as they are frequently located on arterial streets. Furthermore, reverse commuters generally do not have the option of walking to their final destination.

Because of the lack of sidewalks in the vicinity, it is difficult to walk up to these stations. The parking area fills quickly in the morning, and users come from far-reaching locations. Because a large number of cars leave at the same time in the PM peak rush hour, localized traffic on surrounding streets is common. Platform conditions vary greatly between the different Commuter Stations, and they typically have one or two controlled access points.



Figure 3-2: Commuters using Elwyn Station regularly fill the station's parking lot beyond its capacity.

OUTLOOK

Delaware County's Growing Suburbs are experiencing population growth at a significantly higher rate than Mature Neighborhoods. Many Regional Rail Commuter Stations are located in Growing Suburbs. If traffic congestion continues to make commuting more difficult, the use of Commuter Stations could increase in the future. Because they are often located in auto-oriented communities, Commuter Stations accommodate automobiles better than Central Stations, but demand for parking spaces has grown beyond what is available at some stations. It will be increasingly important to improve access to Commuter Stations for pedestrians, bicyclists, and transit users as well as drivers in the coming years. The following list of key attributes concerning Commuter Stations should be considered for future development.

Key Attributes

Regional Rail Commuter Stations of the future...

- Are designed for ADA vehicle access;
- Provide adequate, ADA-compliant pedestrian, wheelchair, and bicycle access from surrounding neighborhoods with sidewalks, marked crosswalks, and bicycle facilities;
- Have high level platforms for increased service efficiency;
- Provide real-time information;
- Incorporate bicycle parking and repair stations, passenger shelters, and seating;
- Include fare payment devices;
- Incorporate wayfinding signage for improved station visibility; and
- Provide multimodal connections, specifically bus service.

LIGHT RAIL – CENTRAL STOPS



CURRENT CONDITIONS

Light Rail Central Stops are found in medium- to high- density mixed-use commercial/residential neighborhoods. Very few of the outbound stops have shelters because most travel is inbound during the morning hours and outbound in the evening (on the way home from work). Almost none of these stops have designated parking, and they are directly connected to the surrounding sidewalk network. The bike parking at these stops is heavily used. Light Rail Central Stops are typically found along Collector Streets, and they have low platforms.



Figure 3-3: Aronimink Station in Drexel Hill is positioned at the intersection of Woodland Avenue and Burmont Road near the core of the Aronimink Neighborhood Center.

OUTLOOK

The use of Light Rail Central Stops may increase as Central Places continue to be viewed as desirable places to live. SEPTA's trolley modernization will result in a greater seating capacity on light rail vehicles, granting more people access to this transportation mode in communities surrounding Central Stops. The following key attributes would aid in fully realizing Central Stops' potential.

Key Attributes

Light Rail Central Stops of the future...

- Are designed for ADA vehicle access;
- Provide adequate, ADA-compliant pedestrian, wheelchair, and bicycle access from surrounding neighborhoods with sidewalks, marked crosswalks, and bicycle facilities;
- Provide real-time information;
- Provide low-friction pre-boarding fare payment;
- Enable near-level boarding;
- Include bicycle parking, passenger shelters, and seating; and
- Maintain a state of good repair.

LIGHT RAIL – ON-STREET STOPS



CURRENT CONDITIONS

Light Rail On-Street Stops are most frequently found in high-density commercial areas along Main Streets. The trolley tracks run directly in the middle of the street, and trolley cars share the street with vehicular traffic. In Delaware County, the Route 11 and Route 13 trolleys operate exclusively on-street, while portions of Routes 101 and 102 operate on-street.

These stops are indicated like bus stops; they typically have no passenger shelters and signs are attached to utility polls on the sidewalk. Passengers must step into the street before boarding; therefore, loading and unloading occurs in travel lanes and affects traffic flow and, sometimes, passenger safety.

On-street stops lead to significantly slower travel times due to road crossings and the inefficient embarking and disembarking of riders. In addition, crossings are not gated or controlled, and trolleys do not have Transit Signal Priority (TSP) capability, which would allow them to reduce stop time at traffic signals by either extending a green light or shortening a red light.



Figure 3-4: The 101 Trolley operates on State Road in Media, stopping in traffic for passengers to board and alight.

OUTLOOK

Light Rail On-Street Stops provide direct access to street level destinations. SEPTA's trolley modernization will not only increase seating capacity, providing more people access to Light Rail On-Street Stops, but it will also improve the safety of such stops. The following key attributes should be considered for Light Rail On-Street Stops moving forward.

Key Attributes

Light Rail On-street Stops of the future...

- Are designed for ADA vehicle access;
- Provide adequate, ADA-compliant pedestrian, wheelchair, and bicycle access from surrounding neighborhoods with sidewalks, marked crosswalks, and bicycle facilities;
- Have been consolidated where spacing was previously poor;
- Enable transit signal prioritization;
- Provide real-time information;
- Incorporate green areas for stormwater management, cooling pavement temperatures, and attractiveness in modern stop design where appropriate;
- Provide low-friction pre-boarding fare payment;
- Include bump-outs or pedestrian refuge islands that provide near-level boarding;
- Include bicycle parking, passenger shelters, and seating; and
- Have detectable warning strips.

LIGHT RAIL – RESIDENTIAL STOPS



CURRENT CONDITIONS

Light Rail Residential Stops are found in predominantly residential neighborhoods, on or off of local streets. Distinct from On-Street Stops, they are not located in central commercial locations but rather are surrounded by residential uses. Users generally reach these stops by foot, yet some of these stations have small parking areas. Bike parking usage is low compared to Light Rail Central Stops because most users walk, not bike, to the stop.

Outbound shelters at these stops are rare because nearly all travel is morning inbound or evening outbound. Therefore, few riders wait on outbound platforms – a pattern that intensifies as stations get farther away from 69th Street Transportation Center. The platforms are low. Many of the Norristown High Speed Line stations fall under the Light Rail Residential Stop category.



Figure 3-5: County Line Station in Radnor is located within a residential neighborhood and could serve as an important transit access point for the surrounding community with improved pedestrian and bicycle access.

OUTLOOK

Walkable communities with transit access are highly valued in congested and growing regions. As a result, Light Rail Residential Stops are a key part of enhancing and promoting walkable communities. By being located in residential areas, Residential Stops have the capacity to provide transit commutes to work for Delaware County residents. Considering the following key attributes for improvements to Light Rail Residential Stops can help to maximize their potential.

Key Attributes

Light Rail Residential Stops of the future...

- Are designed for ADA vehicle access;
- Provide adequate, ADA-compliant pedestrian, wheelchair, and bicycle access from surrounding neighborhoods with sidewalks, marked crosswalks, and bicycle facilities;
- Have been consolidated where spacing was previously poor;
- Provide real-time information;
- Provide low-friction pre-boarding fare payment;
- Enable near-level boarding;
- Include bicycle parking, passenger shelters, and seating;
- Provide multimodal connections, specifically bus service; and
- Incorporate wayfinding signage for improved stop visibility.

BUS – BASIC AND IMPROVED STOPS



Figure 3-6: This Improved Stop for the 119 Bus along Baltimore Pike in Concord Township as excellent ADA access and a well-designed shelter.



Figure 3-7: This Basic Stop for the 109 Bus along Baltimore Pike has sidewalk access but is lacking passenger amenities.

CURRENT CONDITIONS

Bus stops in Delaware County fall into two categories: Basic Stops and Improved Stops. Basic and Improved Stops are treated as one transit typology because very few Improved Stops currently exist in Delaware County. Furthermore, Improved Stops are found along the same service routes as Basic Stops. The former are not affiliated with a higher level of bus service (e.g., Bus Rapid Transit). Basic Stops make up the majority of bus stops and vary depending upon the characteristics of the surrounding community.

Basic Stops are just that – basic. They are marked by a small sign, usually attached to a utility pole, and they are not easily accessible. In Mature Neighborhoods, Basic Stops are usually connected to the sidewalk network; near high-density commercial and residential areas; and typically near crosswalks. Basic Stops in Mature Neighborhoods are close together – partially due to the denser street network in these areas. Riders can wait for the bus either on the sidewalk or on a separate, concrete pad. Buses stop in travel lanes at these stops. In Growing Suburbs, Basic Stops are very far apart. They are not easily accessible by foot and are located along arterial and collector streets. There are virtually no sidewalk connections to – or between – stops. Because there are no sidewalks, most stops have no standing area, so users are forced to wait on grass. This issue makes it particularly difficult for disabled users to access bus service at these stops. Basic Stops in these areas are located on the shoulder of the roadway, as opposed to travel lanes. Many Basic Stops would benefit from the integration of Improved Stop characteristics, including ADA access ramps and visually appealing shelters.

Improved Stops have shelters that are very visible from the street with ADA access and passenger seating. Most are illuminated at night and provide transfers to multiple bus routes. These bus stops are not owned by SEPTA; they are owned and maintained by a municipality or local business. Maintenance of the different stops is inconsistent due to distinct ownership.



Figure 3-8: This Improved Bus Stop in Concord incorporates passenger safety, access, and comfort improvements.

OUTLOOK

Many Delaware County roads are operating at or above capacity, and population growth is expected to continue in the Growing Suburbs. Additional vehicles on already crowded roadways could result in increased traffic congestion, longer travel times, and accompanying environmental consequences. By providing improved bus infrastructure where feasible, some of the potential transportation challenges posed by population growth can be mitigated. Further investment in bus stop infrastructure could help phase out dangerous Basic Stops, making Improved Stops the more common bus stop variety.

Key Attributes

Bus Stops of the future...

- Have improved ADA access including a level, paved loading pad, an adjacent paved waiting area, and a direct pedestrian path;
- Provide adequate, ADA-compliant pedestrian, wheelchair, and bicycle access from surrounding neighborhoods with sidewalks, marked crosswalks, and bicycle facilities;
- Have been consolidated where spacing was previously poor;
- Provide real-time information;
- Provide low-friction pre-boarding fare payment;
- Enable near-level boarding;
- Include bicycle racks, passenger shelters, lighting, and seating at select stops;
- Adhere to SEPTA Bus Stop Guidelines;
- Incorporate branding of enhanced bus service routes; and
- Enable transit signal prioritization.

TRANSIT HUBS



CURRENT CONDITIONS

There are three transportation centers in Delaware County: 69th Street Transportation Center in Upper Darby, Darby Transportation Center in Darby Borough, and Chester Transportation Center in the City of Chester. Transit Hubs are major multimodal interchanges; they experience and have the capacity for high volumes of transit passengers and modes. In Delaware County, they are surrounded by local destinations and Central Places. Transit Hubs are located on or along a Main Street near an arterial road, so they are easily accessible by car. The area surrounding Transit Hubs is highly walkable, and bicycle travel to and around these stations is common. Some users park their bikes at Transit Hubs while others take their bikes onto regional rail or bus service.

Transit Hubs tend to be a catalyst for development in an area. 69th Street Transportation Center in Upper Darby, for example, has stores, restaurants, and SEPTA ticket offices. When the 69th Street Transportation Center opened in 1908, the surrounding land was rural. Today, the transportation center is at the heart of a mixed-use district that has bars, restaurants, retail shops, apartments, and a concert venue. The Darby Transportation Center was recently renovated, and its refurbishment led to other improvements in the immediate vicinity. While some passengers travel to these hubs for the aforementioned uses that surround them, others use them as changeover stations and take other modes of transportation to other destinations.



Figure 3-9: Upper Darby's 69th Street Transportation Center is a major transit hub for both Delaware County and the SEPTA system.

OUTLOOK

With growing transit use in Delaware County, transit hubs will play an integral role in facilitating movement throughout the region in the years to come. Transit hubs need to serve users of several modes of transportation well. They represent a unique opportunity for economic development in surrounding communities. To strengthen the multimodal character of transit hubs and capitalize on their economic development potential, the following key attributes should be considered in the planning process.

Key Attributes

Transit Hubs of the future...

- Are designed for ADA vehicle access;
- Provide adequate, ADA-compliant pedestrian, wheelchair, and bicycle access from surrounding neighborhoods with sidewalks, marked crosswalks, and bicycle facilities;
- Include bicycle parking and repair stations;
- Incorporate safe drop-off and pick-up areas for cars, as well as adequate parking facilities;
- Provide real-time information;
- Include adequate and improved lighting;
- Incorporate wayfinding signage for improved transit hub visibility; and
- Maintain a state of good repair.



Movement of People 4

Chapter 4: Movement of People

OVERVIEW

The road, bicycle and pedestrian, and transit networks together comprise the portion of the County's greater transportation network dedicated to moving people. These networks share much of the transportation infrastructure in Delaware County. It is thus important to consider them one comprehensive transportation network composed of multiple, interlocking networks. While the broader network includes freight transportation, this chapter focuses on the movement of people – as opposed to goods - using various modes of transportation.

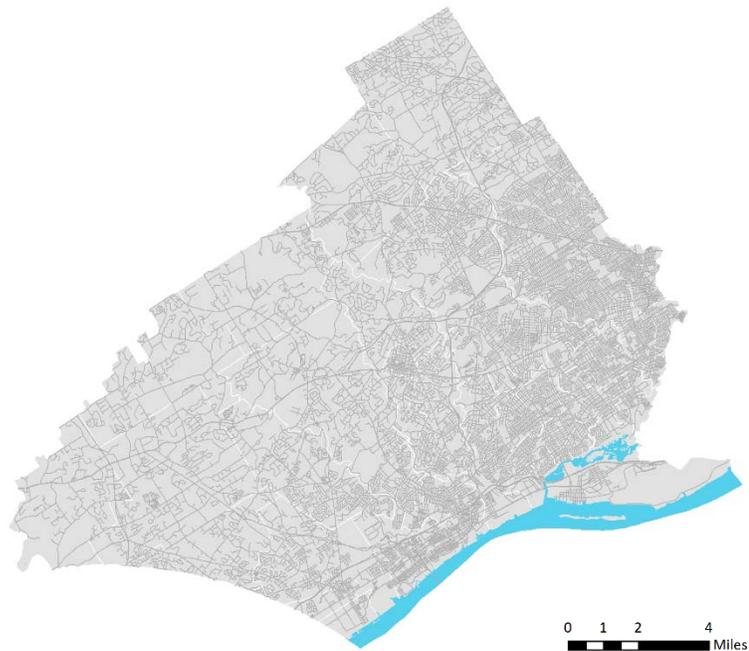
All three of these networks contribute to health, safety, and traffic issues. Attention to the relationship between these three networks can help identify visions and projects that will increase the efficiency and timeliness of motorized transportation throughout Delaware County.

The specific networks discussed in this chapter can be distinguished by user. The road network is used primarily by private automobile drivers for commuting. The transit network functions primarily to transport transit passengers. The bicycle and pedestrian networks include facilities for active transportation, namely bicycling and walking. The following sections provide detailed analyses, a description of planning efforts to date, and a vision plan. It is important to note that while there are county-owned bridges in Delaware County, roads are owned by PennDOT or the municipality in which they are located.

ROAD NETWORK

Delaware County's street network is visibly denser in the eastern part of the County, closer to the City of Philadelphia. The southern part of the County that encompasses the City of Chester, another large urban center, also has a denser street network. In the west, there are fewer local streets, and local street patterns do not reflect the traditional grid that is characteristic of eastern Delaware County. Rather, local residential streets are commonly dead-ends and cul-de-sacs in the west. These street network characteristics can be observed in Map 4-1, a map of all roads in the County.

Map 4-1: Delaware County Complete Road System



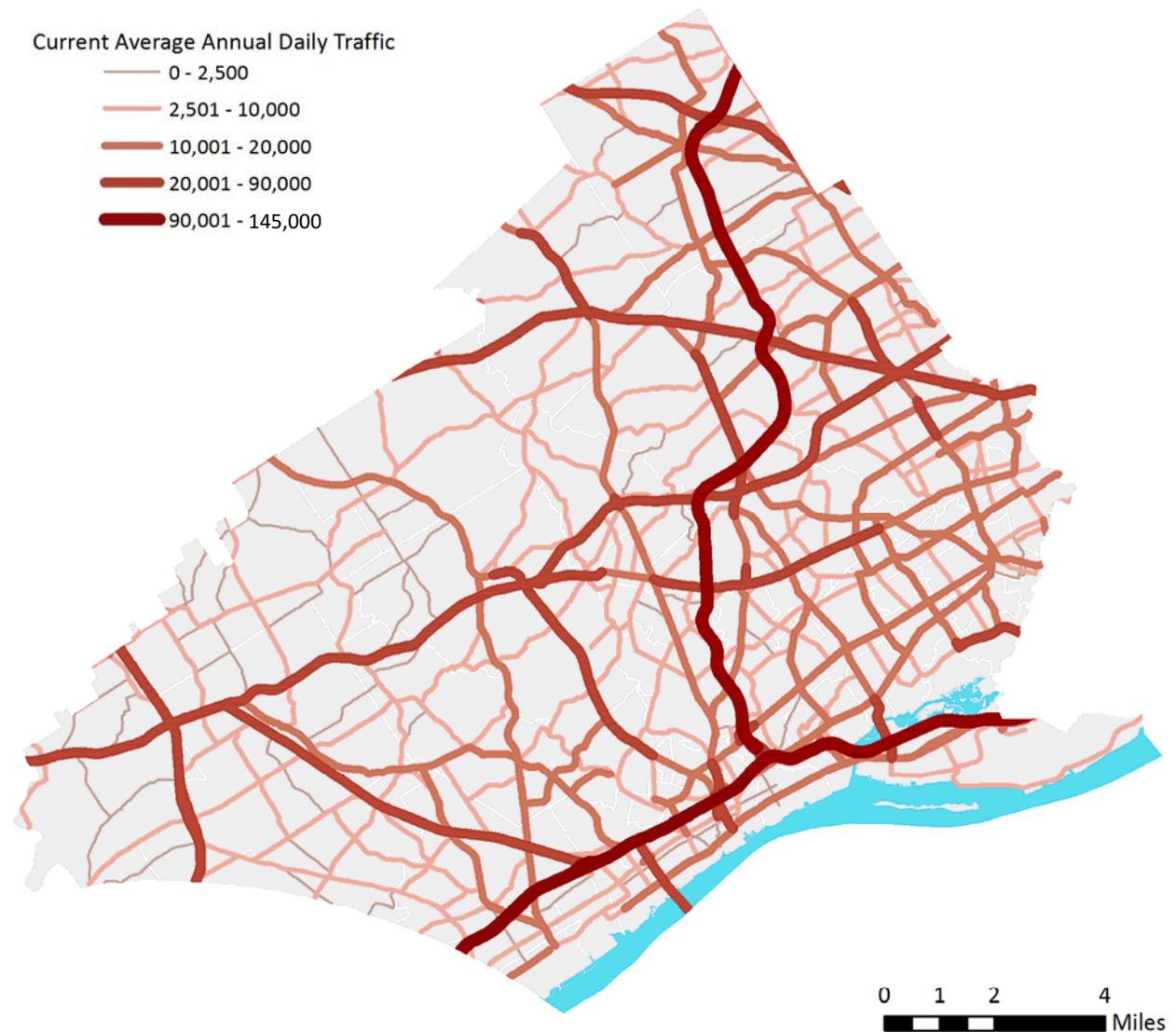
TRAFFIC VOLUME

Two of the region's most important Interstates – 95 and 476 – run through Delaware County. Forty-six percent of all drivers who get onto I-95 in Delaware County exit I-95 in Philadelphia (95revive.com, 2016). There is a large amount of outbound and through traffic mostly to other Pennsylvania counties, Philadelphia in particular (2010-2014 ACS 5-year Estimates). Many workers

Chapter 4: Movement of People

from the other Pennsylvania counties in the Philadelphia Metropolitan Statistical Area travel through Delaware County to reach work via I-476 and I-95 in particular, but U.S. Route 1, U.S. Route 202, and U.S. Route 322 also experience high traffic volumes. As a result, these five highways in Delaware County experience extremely heavy traffic during rush hours. Map 4-2 below shows traffic volumes for major roads in Delaware County.

Map 4-2: Current Average Annual Daily Traffic



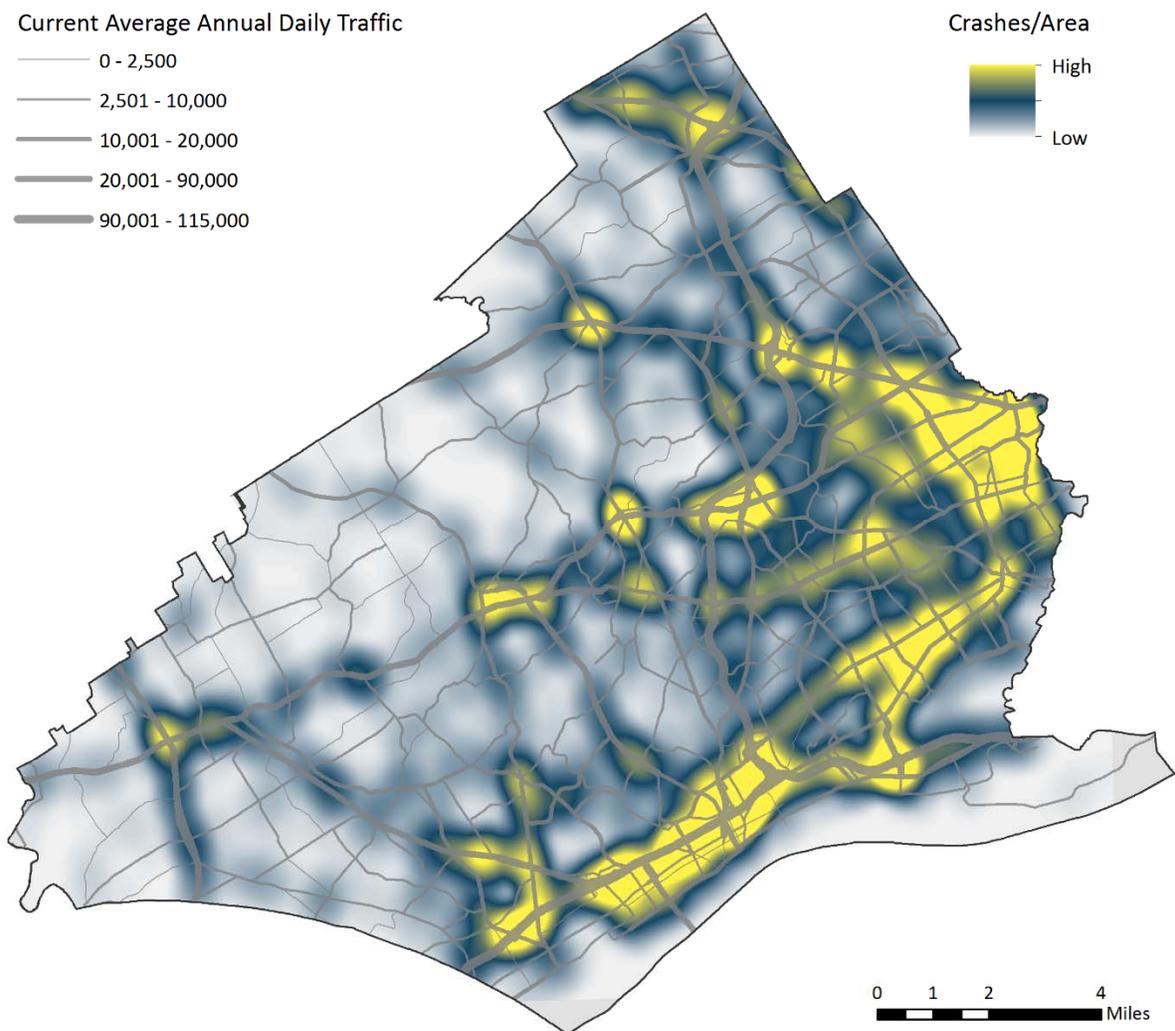
I-476 and I-95 experience the heaviest traffic volumes, and generally, roads in the eastern part of the County have higher traffic counts than those in the west. In the east, all roadways – whether characterized as Activity Corridors, Arterial Streets, Collector Streets, Local Streets, Main Streets, or Highways – experience heavy traffic. On the other hand, in the west, heavy traffic is mostly limited to Activity Corridors, Arterial Streets, Main Streets, Highways, and some Collector Streets. Over the course of the past few decades, roadway improvement project proposals for Delaware County have

demonstrated a concern for and response to changing capacity needs through the widening of roadways. One significant contemporary example is the widening of U.S. Route 322 (Conchester Highway) in the western part of the County.

CRASH DATA

Roadway safety is of utmost importance in Delaware County. The County strives to eliminate crash-related fatalities and serious injuries. As a result, reviewing countywide crash data was crucial in the formation of the transportation objectives and actions set forth in this plan. Crash data made available by PennDOT facilitated the analysis of crashes based on three main criteria: design and engineering characteristics, modes of transportation, and behavior. The exact location of crashes is sensitive information and may not be published in this plan. The cumulative historical crash data for the time period between 2010 and 2014 is shown in Map 4-3 below.

Map 4-3: Cumulative Historic Crash Data (2010-2014)



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The map above shows the cumulative location of crashes that occurred in Delaware County between 2010 and 2014. Collisions shown include all (fatal and non-fatal) motorized vehicle crashes. Data points include car collisions with other cars, car collisions with bicycles and pedestrians, small and heavy truck collisions, school zone accidents, motor cycle accidents, and bus accidents. The occurrence of crashes can be observed on the basis of three distinct components: design, transportation mode, and human behavior. These influencers are described in detail in the following sections.

Road Design

One particular aspect of road engineering and design – intersection design – has the greatest influence on countywide crash rates. Intersections are known to be tremendously dangerous because they are the point at which vehicles intersect. Conflict points were discussed in Chapter 2: Road Typologies with reference to Activity Corridors in Mature Neighborhoods. This section discusses the design and engineering characteristics including intersection type and traffic control device type. The five most common intersections in Delaware County were chosen for analysis. Table 4-1 lists the *total* number of intersection crashes for each type of intersection design.

The combination of the number of travel lanes – typically four to six, T- and four-way intersections, and center turn lanes results in numerous traffic conflict points, particularly along Activity Corridors in Mature Neighborhoods. Figure 4-1 shows traffic conflict points at a four-leg, at grade, signalized intersection, a common intersection found along the prototypical Mature Neighborhood Activity Corridor.

A traditional intersection has 32 vehicle-to-vehicle conflict points, while a roundabout only has 8 vehicle-to-vehicle conflict points. Roundabouts reduce the number of vehicle-pedestrian conflict points from 16 in a traditional intersection to just 8 in a roundabout. Further, the traditional intersection has 16 crossing conflict points, which tend to be those points at which angle or left-turn crashes occur and are more severe. Roundabouts reduce the number of crossing conflict points to zero. While roundabouts to

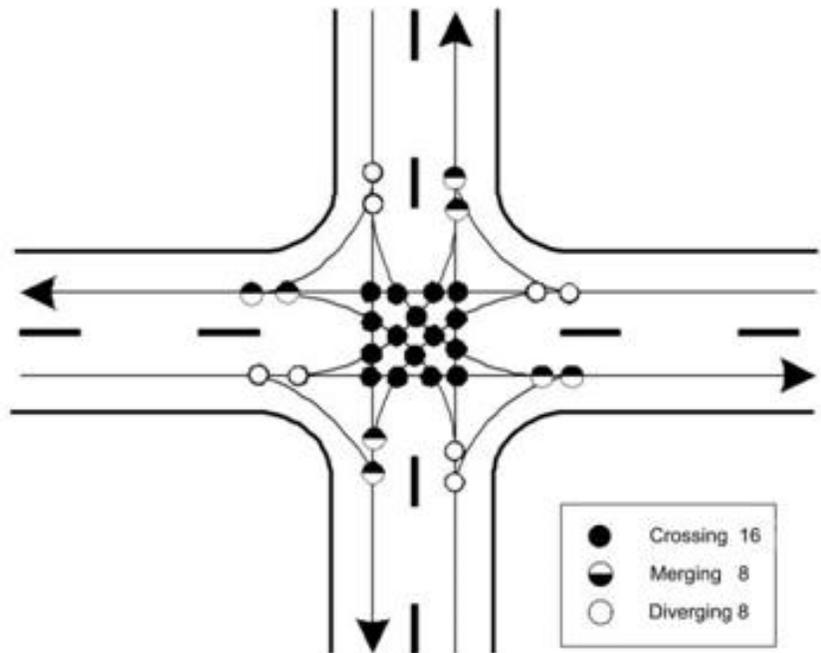


Figure 4-1: Typical Four-leg Signalized Intersection. Source: U.S. Department of Transportation, Federal Highway Administration.

Table 4-1: Number of Intersection Crashes by Intersection Type (2010-2014)

Intersection Type	Number of Crashes
Four-way Intersection	5,893 crashes
“T” Intersection	3,795 crashes
“Y” Intersection	326 crashes
Multi-leg Intersection	149 crashes
Traffic Circle or Roundabout	10 crashes

Source: PennDOT 2010-2014 Crash Data

not eliminate crashes, they help to significantly reduce the number and severity of crashes when they do occur.

While traffic control devices, such as flashing traffic signals and yield signs, help manage conflict points, they do not eliminate them. The most common signal types – traffic signals and stop signs – are the devices most commonly found at the site of intersection crashes.

Table 4-2 below lists the *total* number of intersection crashes for each type of traffic control device found at the crash site.

Table 4-2: Number of Crashes by Signal Type in Delaware County (2010-2014)

Signal Type	Number of Crashes
Flashing Traffic Signal	100 crashes
Traffic Signal	5,799 crashes
Stop Sign	2,276 crashes
Yield Sign	172 crashes

Source: PennDOT 2010-2014 Crash Data

Some shared characteristics were observed at intersections with the highest crash rates in Delaware County. For example, intersections where the number of lanes is inconsistent on opposite sides of the intersection due to additional turning lanes or the narrowing of the right-of-way, seem to be more dangerous. Grade crossings, for example intersections where trolleys and cars must share the roadway are also particularly dangerous. Some sites had on-street parking up to the corner of the intersection. It may be possible that parked cars make it difficult for vehicles to maneuver at an intersection; they also may cause visibility issues. Intersections of one-way streets with collector or arterial roadways could be susceptible to higher crash rates. A couple of dangerous intersections have short left-turn signals, and some allowed U-turns. Lastly, maintenance conditions, such as unclear striping and uneven pavement were noted at the observed intersections. These characteristics may not directly contribute to high crash rates at certain intersections, but they were shared among many of the observed intersections.

Transportation Mode

Truck-related crashes occur primarily on the two interstates – I-95 and I-476 – and U.S. Route 322. I-95 and I-476 are federally-designated freight corridors, which explains the more frequent occurrence of truck-related crashes compared to other roadways. U.S. Route 322 provides a major east-west connection in the County from I-95 to U.S. Route 1, but this roadway is too narrow and operating over capacity. U.S. Route 322 is a PennDOT improvement project. Widening of the roadway began in 2017.

In terms of active transportation, namely bicycling and walking, crashes occur most frequently in denser urban areas and the neighborhoods immediately surrounding transportation centers. The majority of pedestrian collisions occur on roadways with medium traffic volumes, based on County averages (between 10,501 and 20,000 vehicles per day).

Human Behavior

The majority of crashes in Delaware County in 2015 involved mature drivers over the age of 65. Distracted, unrestrained (no seatbelt), impaired, and aggressive driving crashes were also common in that order (PennDOT Pennsylvania Crash Information Tool). Other behaviors, such as speeding and ignoring traffic signals, can also increase the likelihood of a vehicle collision.

Air Quality

In 2012, the Environmental Protection Agency (EPA) lowered the PM_{2.5} standard level from 15.0 micrograms per cubic meter to 12.0 micrograms per cubic meter.

That year, Delaware County was a stand-alone particulate matter nonattainment area (geographic area that does not meet Federal air quality standards) in the Delaware Valley region. Delaware County and DVRPC appealed the finding because the Delaware County monitor is located in an industrial neighborhood, near I-95.

Delaware County attained the 2012 PM_{2.5} NAAQS average for 2013-2015 because, based on data available in EPA’s Air Quality System (AQS), the certified annual design value for 2013-2015 was 11.6 micrograms per cubic meter. This value is below the 12.0 micrograms per cubic meter standard.

In December 2016, the EPA issued final determination that Delaware County is in air quality compliance under the Fine Particulate Matter standard.

ON-ROAD MOBILE SOURCES OF EMISSIONS

Transportation is one of the five major sources of emissions (FHWA Transportation Air Quality Selected Facts and Figures). On-road mobile sources (cars, trucks, and buses) account for 38% of nitrogen oxides (NOx), 14% of volatile organic compounds (VOCs), and 3% of particulate matter 2.5 micrometers or less in size (PM_{2.5}) (*Transportation Conformity Demonstration: Connections 2040 Long-Range Plan and FY 2017 Transportation Improvement Program for Pennsylvania*, DVRPC, July 2016).

Pollution decreases overall quality of life. High levels of NOx, VOCs, and PM_{2.5} from transportation emissions pose health risks to those exposed. Though Delaware County is an attainment area, transportation planning in the County should address air quality as well as mobility issues. Federal funding and approval to improve infrastructure is granted to those transportation projects that are consistent with air quality goals for the area (*The Transportation Planning Process Briefing Book*, fhwa.dot.gov), which is an important consideration in the prioritization of roadway projects.

Concrete and asphalt used for transportation infrastructure are impervious materials. They do not allow stormwater to infiltrate, causing damage to transportation infrastructure as well as flooding. It is important to consider ways to improve new and existing infrastructure in such a way to mitigate the potential negative impacts of an increase in extreme weather events and sea level rise.



Figure 4-2: The 800 block of Percy Street in Bella Vista is the City of Philadelphia’s first porous green street. It is an example of GSI implementation on low impact roadways in dense urban areas, such as those in eastern and southern Delaware County. Source: Philadelphia Water Department

FURTHER CONSIDERATIONS

Contemporary trends and the need for increasing roadway capacity will certainly shape Delaware County's transportation network. Bridges and roadways will continue to require costly maintenance. At the same time, it is important to encourage new, innovative projects with great long-term benefits. The actions set forth in the Action Plan were derived from the analyses of the road network as it pertains to motor vehicles and their interaction with non-motorized transportation. Delaware County roadways should provide facilities and be safe for all users. Delaware County seeks to support mobility and increase access to mobility for its residents through sound design, collaboration, and vision.

Parking

In most areas of Delaware County, free parking is abundant and, in some cases, excessive. Over the past few decades, land has been developed in such a way that encourages driving (highlighted by the presence of large, empty shopping center parking lots) and discourages the use of public transit, biking, and walking.



Figure 4-3: Front-in angle parking in Wayne along U.S. Route 30 and perpendicular streets makes it difficult and dangerous for cars to leave a parking spot.

Vehicular parking is insufficient at most commuter train stations in Delaware County. In addition, not all train stations or transit stops have nearby bicycle parking. Even multi-use trails lack adequate parking facilities. If TNCs, bicyclists, and walkers continue to expand their modal share, the need for parking will decrease across the region. Thus, allocation and location of parking spaces should be reevaluated to maximize their efficiency.

Apart from being an eyesore, poorly planned parking can also pose a threat to safety. Front-in angle parking inhibits visibility because cars must back out directly onto a roadway. Back-in angle parking is a safer alternative that reduces the risk of collision with other vehicles, pedestrians, and bicyclists upon leaving a parking space.

Travel Demand Management (TDM)

Travel Demand Management (TDM) refers to the application of strategies and policies to reduce or redistribute travel demand to help a network operate more effectively. TDM strategies are often necessary in areas where major roadways have reached their capacity. It is not feasible to increase single occupancy vehicle (SOV) capacity for all roadways.

RideECO

Delaware County participates in RideECO, the commuter benefit program from DVRPC. RideECO allows employers and commuters to save by putting pre-tax dollars towards fares on many modes of public transportation.

Bike sharing, carpooling, and programs that allow employees to pay for public transit and vanpooling with pre-tax dollars are all strong TDM strategies. The benefits of such programs include cost savings, health benefits, environmental benefits, and traffic reduction. TDM will continue to be a pillar for maintaining current level of service as the demand for increased roadway capacity continues to grow in Delaware County.

Complete Streets

Complete Streets are roadways that are designed to be safe for all users, regardless of their age or ability. A Complete Street has facilities for pedestrians, bicyclists, transit riders, and motor vehicle drivers. The specific design of a Complete Street will differ based on the urban environment of a specific geographic location. Ideally, a Complete Street in Delaware County would include sidewalks, any type of bicycle facility, accessible public transit stops and stations, shelters for transit riders, safe intersections and crossings, and traffic calming measures where appropriate. Complete Streets are not only safer, but they can help reduce congestion. By providing comfortable facilities for alternative transportation, Complete Streets encourage commuters to leave their cars for other modes. Furthermore, Complete Streets benefit health through active transportation, equity by granting all residents the possibility to travel, and the environment through the reduction of vehicle emissions.

Vision Zero

Simply put, Vision Zero is the goal of improving road safety for all users to eliminate all traffic fatalities and severe injuries. It emphasizes the close coordination of engineering, education, and enforcement to improve the safety of the transportation system. Perhaps most commonly, Vision Zero stresses traffic calming measures and allocating appropriate space in roadway design for pedestrians and bicyclist.

BICYCLE AND PEDESTRIAN NETWORKS



Figure 4-4: Children and teenagers can frequently be seen riding their bicycles along Main Street in Darby Borough.



Figure 4-5: Media Borough is a popular downtown destination for those who enjoy walking, due to its pedestrian-friendly street design.

Non-motorized transportation is a significant part of Delaware County's multimodal transportation network. The County's bicycle and pedestrian networks help provide access not only to destinations but also to public transit. This access contributes to the expansion and integration of the County's transportation network as a whole. A strong bicycle or pedestrian network gives those who live in areas where the road and transit networks are less extensive the ability to reach transit stops.

Bicycle and pedestrian mobility make Delaware County not only more resilient but also more economically competitive. As mentioned in the County's Economic Development Plan, the American population has been moving back to urbanized centers over the past 15 years. In Delaware County, Central Places, such as Media Borough, have experienced an increase in population. Such neighborhoods are desirable due to their mix of uses, transit access, and walkability. Four out of five Millennials, who currently compose the largest share of the American workforce, desire to live in places with transportation options. Therefore, improving pedestrian or bicycle access to transit stops and Central Places could make Delaware

County more attractive to this social cohort, attracting new residents or maintaining younger ones as the population ages.

These two networks are not only crucial to enhancing Delaware County's transportation network, they increase quality of life by promoting healthy lifestyles. The estimated percentage of workers over the age of 16 that bikes to work has not changed over the course of the decade between 2006 and 2016 (American Community Survey 1-Year Estimates). While the percentage of Delaware County workers walking to work is not increasing, the population is increasing, which means that an increasing number of residents will bicycle or walk to work in the future. This plan identifies existing conditions and focal areas for pedestrian and bicycle circulation. The aim is to implement strategies that will guide the completion of Delaware County's bicycle and pedestrian network.

BICYCLE NETWORK

The County seeks to implement a countywide bicycle network that can be used by bicyclists of all comfort and skill levels. The completed bicycle network in Delaware County will include on-road bicycle facilities and multi-use trails. Connections between on-road facilities and multi-use trails are important in providing access to destinations, which are often located on major roadways in the County.

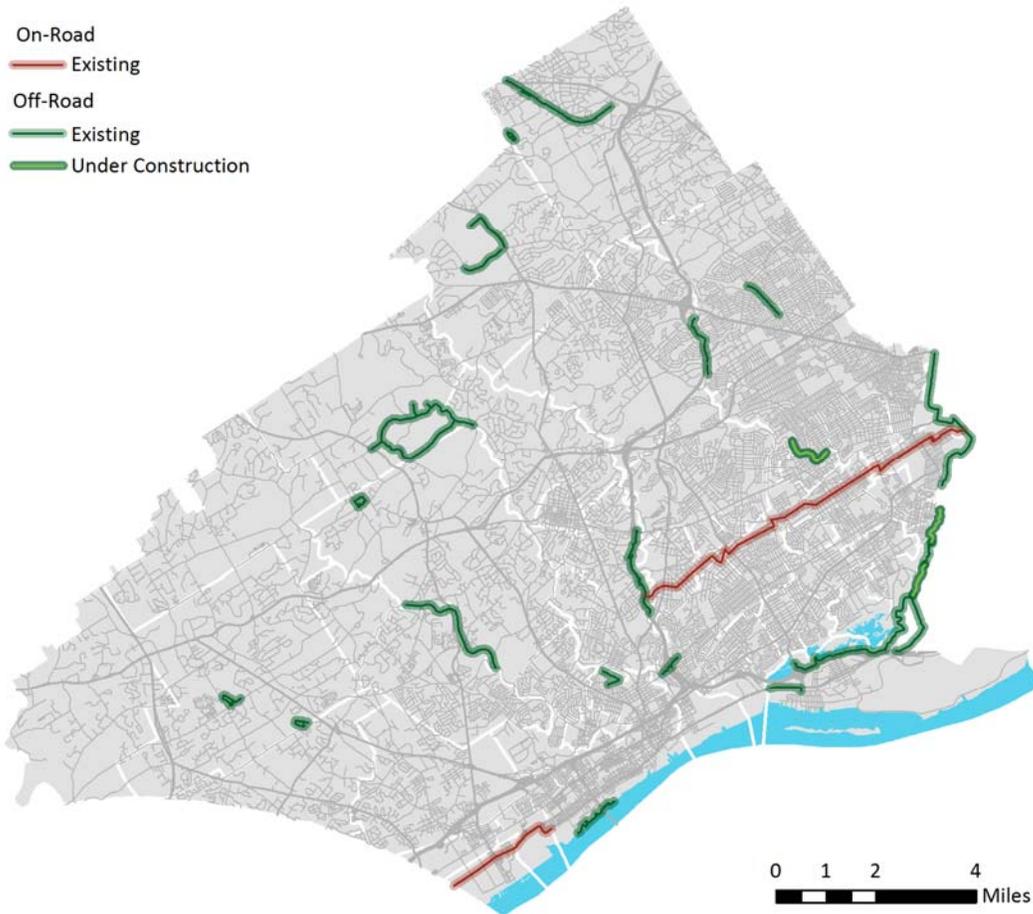
This plan identifies Bicycle Corridors, which encompass Activity Corridors and Arterial Streets in the County as well as the Collector Streets that lead to them. The Bicycle Corridors in this plan include most of the Primary Routes identified in the 2009 *Delaware County Bicycle Plan*. Numerous commercial destinations, civic institutions, and transit stops and stations are located along these roadways. As a long range vision, Delaware County would like to expand the bicycle network to make these corridor connections. While this plan does not prioritize specific segments for the immediate implementation of bicycle facilities, the Bicycle Corridors highlight those areas to and along which Delaware County is dedicated to improving access. It is important to reiterate that while there are county-owned bridges in Delaware County, roads are owned by PennDOT or the municipality in which they are located. As a result, the County will work with PennDOT and municipalities to implement the bicycle network by providing technical assistance and encouraging Complete Streets policies.

Existing Conditions

Approximately 47.64 miles of on-road and off-road bicycle routes are either existing or in progress in Delaware County (Map 4-4). The longest existing on-road bicycle route is known as Bicyclists' Baltimore Pike. It is 8.41 miles long and runs parallel to Baltimore Pike on Rose Valley Road, Yale Avenue, West Sylvan Avenue, South Morton Avenue, Mitchell Avenue, Franklin Avenue, South Avenue, Providence Road, Lansdowne Avenue, Wycombe Avenue, Baily Road, Fern Street, North Longacre Boulevard, Rose Street, and Whitby Avenue. The signed route stretches across nine municipalities in eastern Delaware County, from Rose Valley Road in Nether Providence to Cobbs Creek Parkway in Philadelphia.

The East Coast Greenway includes five-foot bicycle lanes on each side of the street from the Delaware State line to Green Street (0.95 mile) and from Church Street to east of Walnut Street (0.3 mile) in Marcus Hook Borough. U.S. Route 13 is a shared roadway from Green Street to Church Street (0.2 mile) in Marcus Hook's downtown area. There are bicycle lanes along U.S. Route 13 and the portion of PA Route 291 on one side of the street in Trainer Borough. The total length of the Greenway is approximately 2.4 miles in Marcus Hook and Trainer Boroughs. Differently from Bicyclists' Baltimore Pike, the East Coast Greenway is a multi-use trail for the majority of its completed stretch; the bicycle-only segments in Marcus Hook and Trainer are exceptions.

Map 4-4: Existing On-road and Off-road Bicycle-friendly Routes

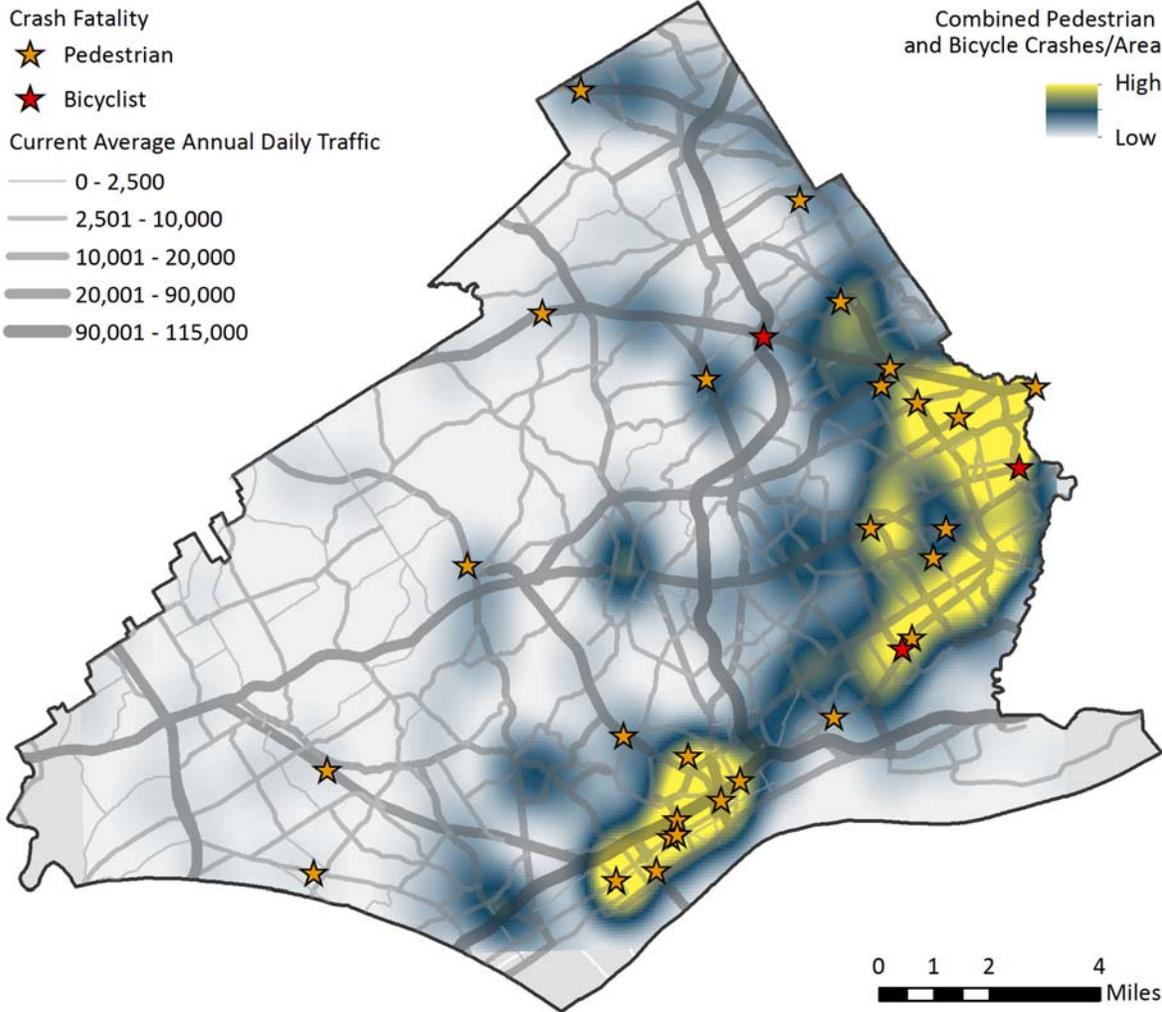


Currently, the requirement for a Bicycle Occupancy Permit (BOP) to implement bicycle facilities on PennDOT roadways is a barrier in developing the on-road bicycle network. The BOP requires municipalities to agree to maintain bicycle facilities. Unfortunately, this demand is too burdensome for some municipalities, and goals to make certain roadways more bicycle-friendly cannot come to fruition. Given the obstacles posed by the BOP, PennDOT has developed a BOP pilot program. Under the program, bicycle facilities will be striped and maintained by PennDOT. Two routes being considered in Delaware County for this program are PA Route 320 in Springfield Township and Sugartown Road in Radnor Township.

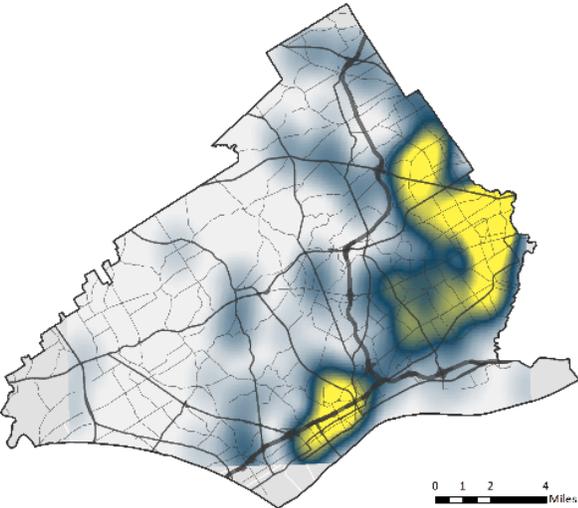
Crash Data

Safety is paramount when planning transportation infrastructure for bicyclists. Delaware County continues to work toward eliminating crash-related fatalities and serious injuries. Analyzing crash data can help target specific areas and identify roadway characteristics that pose a threat to cyclists. Historically, bicycle collisions have been geographically concentrated in the County’s denser urban areas, such as Upper Darby. These areas tend to have a traditional grid street network and a mix of uses (and consequently, numerous destinations). Areas surrounding major transit hubs, such as the Chester Transportation Center, 69th Street Transportation Center, and Darby Transportation Center are also hot spots for bicycle collisions due to their multimodality. Multiple modes are used to access these centers and make first- and last-mile connections. Therefore, it is especially necessary for the surrounding road network to accommodate all users. Map 4-5 below shows the geographic location of cumulative bicycle and pedestrian crashes between 2010 and 2014.

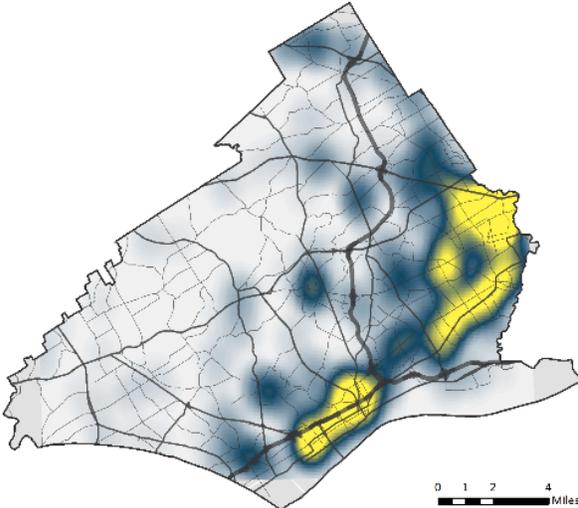
Map 4-5: Delaware County Bicycle and Pedestrian Crashes (2010-2014)



Bicycle Crashes



Pedestrian Crashes



Bicycle Counts

Specific sections of roadway in Delaware County frequently traveled by bicyclists of all ages and abilities were studied to collect representative data on bicycle trips and document existing conditions. Though a roadway may be heavily used by bicyclists, it may not have the available right-of-way to include on-road, vertically separated, or horizontally separated bike paths. Manual counts were conducted along three of the identified bicycle corridors: Darby Road in Haverford, Lansdowne Avenue in Upper Darby, and Route 352 in the City of Chester (see Appendix F for more information). Manual counts, as opposed to automated counts, are advantageous for two main reasons. They allow data to be collected about who is bicycling and what facilities cyclists are using (sidewalk versus the roadway). The three data collection locations were chosen based on their position along an identified bicycle corridor; proximity to a major attractor, such as a school or university; and crash significance.

Findings from this preliminary, localized study showed that children (individuals under the age of 18) comprised a large proportion, though not the majority, of bicyclists on the observed roadways. On Darby Road, most individuals traveled on-road, even against vehicular traffic. On the other hand, bicyclists on Lansdowne Avenue and Edgmont Avenue tended to use the sidewalks for travel. Though the speed limit is 35 miles per hour on all three roadways, a few clear design and regulation distinctions can be noted between Darby Road and the other two roadways. Darby Road has on-street parking on the southbound side, a landscaped median in the portion of the roadway studied, and a designated school zone in front of Haverford Middle School. These features may act as traffic calming measures that either directly (by slowing motor vehicular traffic speeds) or indirectly (by increasing perceived safety) promote the use of the roadway – as opposed to sidewalks – for bicycling. These preliminary observations are simply hypotheses that will provide the basis for the County’s pursuit and support of further studies to identify priority local routes for bicycle travel.



Figure 4-6: Darby Road in Haverford Township is a popular local bicycle route, but it also has high car traffic volumes. Haverford Middle School fronts this roadway, and some students ride their bicycles to and from school.

Current Planning

Three significant parallel efforts to integrate and connect Delaware County’s bicycle routes are the *Delaware County Bicycle Plan* (2009), the Countywide Primary Trail Network, and The Circuit Trails. The *Delaware County Bicycle Plan* was the County’s first document that prioritized the implementation of on-road bicycle facilities throughout the County. Following the adoption of this *Transportation Plan*, the County will create a bicycle plan that reflects new policies set forth in this plan. The Countywide Primary Trail Network identifies trails that form a network of interconnected, non-motorized travel and recreation routes throughout Delaware County, some of which connect to existing and proposed trails in adjacent counties. The Circuit Trails is a regional network of multi-use trails in the Greater Philadelphia area.

The Delaware County Bicycle Plan (2009)

The Delaware County Bicycle Plan, adopted in 2009, was the County's active bicycle policy document prior to the adoption of this *Transportation Plan*. The Delaware County Bicycle Plan determined the feasibility of bicycle improvements by analyzing the road network using two factors: bicycle demand and the distance to specific trip attracters (i.e., schools, recreational facilities, employers, and transit). Bicycle demand was measured for specific routes by combining survey results with crash data. The length of a specific segment was considered in the analysis of trip attracters, in order to avoid automatically prioritizing longer segments. The *Bicycle Plan* identified Primary, Secondary, Tertiary, and Connecting routes; together these comprised the On-road Bicycle Improvement Network. The Primary Routes were those that were determined to be of highest priority for improvement. The objectives of the *Bicycle Plan* will be considered in future iterations of the County's bicycle planning efforts as Delaware County continues to strive to convert roads into Complete Streets.

Countywide Primary Trail Network

The Countywide Primary Trail Network was adopted in April 2015 as defined in the *Open Space, Recreation, and Greenway Plan Volume II: Countywide Greenway*. The Primary Trails are conceptual trail corridors, and they serve as the main spokes in the countywide trail network. The purpose behind creating the Primary Trail Network is to guide the County and municipalities to create meaningful connections for non-motorized transportation. Delaware County has prioritized 25 Primary Trails. These trails are referred to as Proposed Multi-use Trails in this Transportation Plan in order to more easily convey the multi-use versus solely-bicycle distinction emphasized in this Plan. It is important to note that while most multi-use trails are off-road, some segments of these trails may be on-road due to topographical, land use, and right-of-way constraints. The County's Primary Trails/Proposed Multi-Use Trails are included in Map 4-6.

The Circuit

The Circuit includes the following trails in Delaware County: the Octoraro Rail Trail, the East Coast Greenway, the Newtown Square Trail, the Valley Forge to Heinz Refuge Trail, the Chester Creek Trail, Ridley Creek State Park Trail, Darby Creek Trail, and Radnor Trail. The goal of The Circuit is to connect communities and provide a means for recreating or commuting. Not all trails are Circuit trails. Circuit trails must be off-road, ten feet or wider, multi-purpose, paved, and connected to already-approved Circuit Trails. The Countywide Primary Trail Network encompasses all of the Circuit Trails in Delaware County.

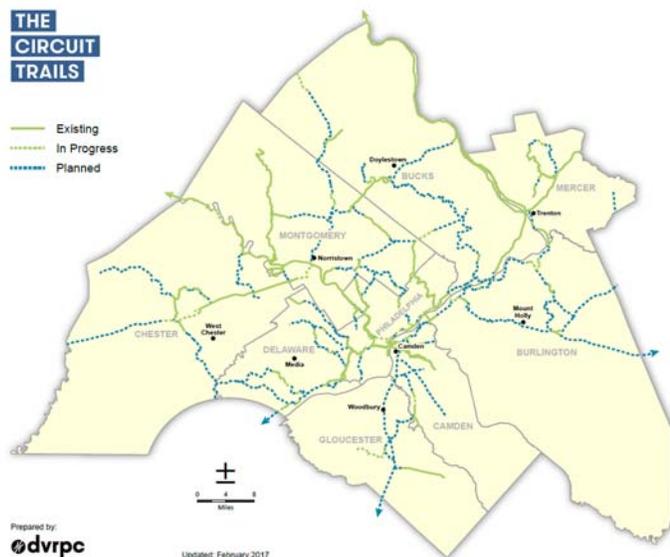


Figure 4-7: The Circuit Trails will connect communities across the Delaware Valley Region through a comprehensive trail network. There are currently nine completed segments in Delaware County, and six are in progress. Source: DVRPC

The Comprehensive County Bicycle Network

Proposed Multi-Use Trails

As mentioned previously, the Countywide Primary Trail Network trails are referred to as Proposed Multi-use Trails in this document. Though these trails have been identified and addressed in *Delaware County's Open Space, Recreation, and Greenway Plan (2015)*, they are included in this document because they represent critical bicycle-friendly infrastructure. Because they represent such an important piece to the non-motorized transportation puzzle, multi-use trails cannot be ignored in the planning of new bicycle routes. The proposed off-road trail system from the *Delaware County Open Space, Recreation, and Greenway Plan (2015)* should be completed to provide an off-road option for bicycle commuters for work, school, and other utilitarian trips.

Bicycle Corridors

Bicycle Corridors are the County's long-range focus for the implementation of bicycle facilities. As mentioned previously, the Bicycle Corridors identified in this plan include most of the Primary Routes identified in *The Delaware County Bicycle Plan (2009)* as well as the surrounding Collector Streets that can be used to access them or make similar connections. The County considers the bicycle-friendliness of Collector Streets that connect to Activity Corridors and Arterial Streets just as important in the creation of a complete network that provides safe access to points of interest.

The corridors have been identified based on the connections they provide to colleges and universities, commercial centers, business parks, major employers, public parks, transit stops, schools, historic sites, and multi-use trails. Some of these corridors include bicycle-friendly streets. Integrating more bicycle facilities throughout the network would increase mobility and access and reduce motor vehicular traffic generated by shorter trips.

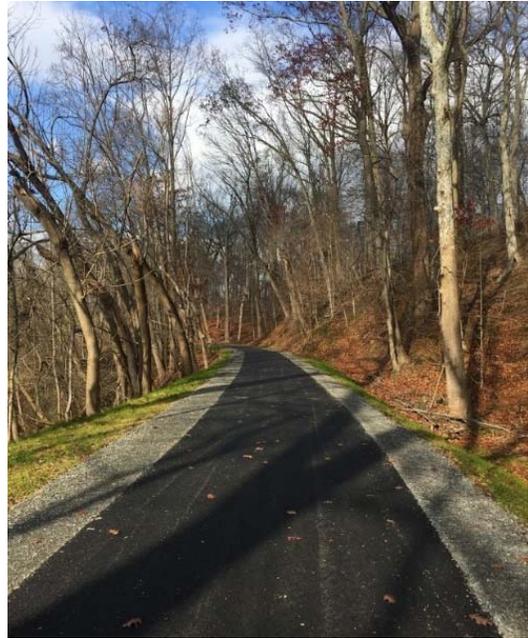


Figure 4-8: The Chester Creek Trail is a County Trail that will connect the City of Chester to Wawa Station.

The Comprehensive County Bicycle Network

Together, the bicycle corridors and multi-use trails form the comprehensive Bicycle Network, composed of focal connections for the implementation of on-road bicycle facilities and off-road routes (see Map 4-6). This proposed network uses the information presented in Delaware County 2035, namely the identification of Central Places and Activity Corridors, in conjunction with the primary routes identified in the 2009 *Delaware County Bicycle Plan* in order to define a countywide network that emphasizes needed, non-motorized travel connections between origins and destinations.

Map 4-6: Delaware County Bicycle Network



PEDESTRIAN NETWORK

While the Bicycle Network (as well as the Road, Transit, and Freight Networks) functions as a countywide network, the Pedestrian Network is composed of many small webs of sidewalk connections that serve specific destinations or origin points. While a resident will not walk from western Delaware County to Eastern Delaware County along an Activity Corridor, he or she may walk on neighborhood streets, whether they are Local Streets, Collector Streets, Arterial Streets, Activity Corridors, or Main Streets to reach work, school, the supermarket, or shops.

Walkability helps support an efficient, multimodal transportation network. This plan defines a walkable area as those which have complete sidewalks within a ½ mile radius, or a ten-minute walk. In addition to supporting multimodality, pedestrian access to various destinations greatly increases individuals' level of physical activity (Walkable Communities webinar 10/13/16). Physical activity is important to help sustain wellbeing and good quality of life.

Existing Conditions

The County's Mature Neighborhoods typically have strong sidewalk networks, particularly in residential neighborhoods and in areas surrounding regional rail stops. At the same time, because many of these sidewalks were built decades ago, they do not meet current ADA width and access ramp requirements. Furthermore, many are in disrepair or poorly planned, with obstacles such as utility poles and uneven surfaces obstructing passage. So while the infrastructure is present in Mature Neighborhoods, sidewalks are in need of improvements that can facilitate walkability and thereby promote economic growth.

In Growing Suburbs, a small number of major roadways that provide the sole access to public bus transit have sidewalks. Furthermore, crosswalks at intersections and mid-block crosswalks that could provide access to destinations are missing links. Crosswalks are particularly needed along U.S. Route 1 and PA Route 3 (West Chester Pike) to provide connections from transit stops to employers and between large-scale retail developments.

Current Planning

Countywide Sidewalk Mapping

The County began a sidewalk mapping initiative in Spring 2016. Sidewalks within a 1/2-mile radius of regional rail stations, bus stops, and schools have been mapped. The data includes features on both

Walking and Health

Walking at least thirty minutes per day can help reduce the risk of coronary heart disease and stroke; improve blood pressure, blood sugar levels, and blood lipid profile; aid in the maintenance of body weight; reduce the risk of osteoporosis; reduce the risk of certain types of cancer; and reduce the risk of type 2 diabetes (American Heart Association).

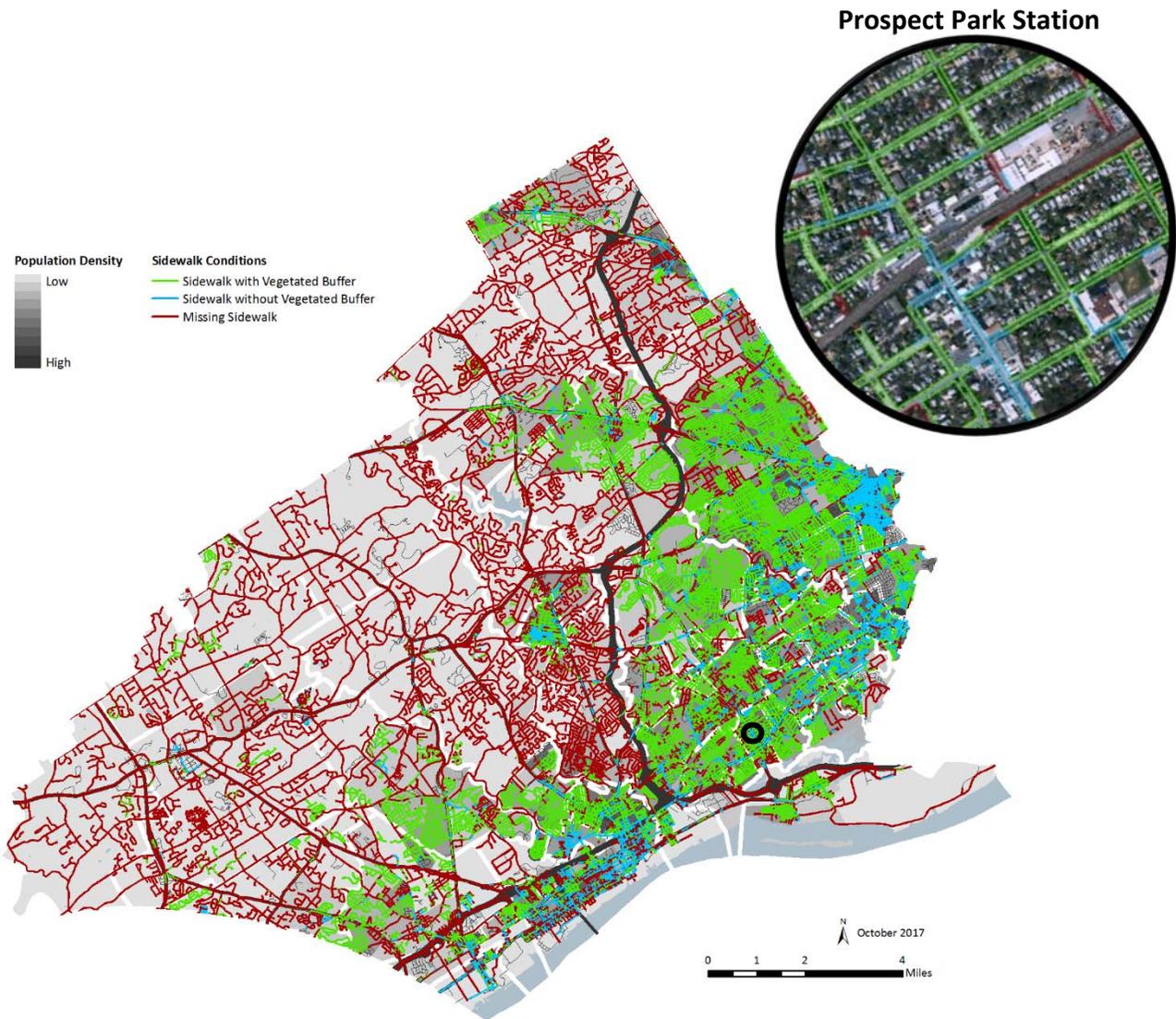
Walking 2 to 2.9 miles per hour for at least 150 minutes per week can also help reduce the risk of Breast Cancer, Alzheimer's Disease, depression, and anxiety disorders (Beyond the First Step: The Many Benefits of Walking and Walkability, January 11, 2017).



Figure 4-9: Upper Darby is a Mature Neighborhood with a strong sidewalk network in both its commercial and residential neighborhoods.

sides of the street – as opposed to road centerline data – and identifies one of three sidewalk conditions for a specific block: sidewalk with vegetated buffer, sidewalk without vegetated buffer, or missing sidewalk. Conditions were mapped for both sides of the roadway in order to highlight distinctions in accessibility.

Map 4-7: Delaware County Sidewalk Mapping



Delaware County Sidewalk Inventory Report

The Delaware County Planning Department worked on one pedestrian planning document in concurrence with this Plan: *Steps toward Walkability: Delaware County Sidewalk Inventory*. The report stemmed from the Department’s sidewalk mapping efforts; sidewalk conditions in certain areas highlighted the need for further study and pedestrian planning.

The purpose of the report is to show how information about sidewalk conditions and accessibility can be used to plan walkable neighborhoods. The report includes Countywide recommendations to improve

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pedestrian infrastructure and walkability. In order to concretize recommendations, *Steps toward Walkability* presents case studies and findings to support and promote walkability in Delaware County.

The case studies identified fall under the following categories: schools, transit stops/stations, central places/activity corridors, mature/growing residential neighborhoods, and additional areas of concern such as senior living facilities. The project also includes the publication of an online story map for students and parents, which will allow them to view sidewalk conditions within a ½-mile radius of a particular school. This interactive tool is important for the dissemination of information about neighborhood sidewalk conditions, and it could potentially spur an increase in the number of students who walk to school.

Research findings from *Steps toward Walkability* have brought to light many important implications of the effect of transportation on economic development. For example, in Haverford Township, unsafe pedestrian crossing conditions on Lawrence Road at Jacalyn Drive drove Haverford Township School District to redistrict its elementary schools. Elementary school students living on the western side of Lawrence Road changed school from Lynnwood Elementary School, which is immediately on the opposite side of Lawrence Road, to Coopertown Elementary School, which is approximately three miles from the same neighborhood. This redistricting was implemented for the safety of school children who were previously forced to cross Lawrence Road at a dangerous point.

The Comprehensive County Pedestrian Network

Proposed Multi-Use Trails

Multi-use trails are an important part of the pedestrian network, as well as the bicycle network. They do not only function as public recreational spaces; multi-use trails can serve as pedestrian commuter routes. One terrific example of such a trail is Radnor Trail in Radnor Township. Due to its proximity to U.S. Route 30, the Radnor Trail connects commercial centers, business parks, major employers, public parks, private indoor recreation facilities, transit stops, and historic sites. These off-road connections are just as important a part of the pedestrian network as they are of the bicycle network. Once again, these connections should be extended, consistent with the goals outlined in Delaware County's *Open Space, Recreation, and Greenway Plan* (2015).



Figure 4-10: The township-owned Radnor Trail was completed in 2005, along what was once part of the Philadelphia and Western Railway Company Track.

Sidewalks and Crosswalks

While many communities in the eastern and southern parts of Delaware County have good sidewalk connections, the safety and accessibility of these facilities could be improved. Sidewalks should either be widened where there are utility poles obstructing passage, or utility poles should be relocated. Sidewalks in disrepair also pose a danger to walkers and can make wheelchair passage impossible.

Crosswalks are also crucial in improving connectivity. Safe crossings are important, especially in areas with high speeds and high vehicular and pedestrian traffic volumes. For example, business districts, school entrances, and transit stops should have sidewalks and crosswalks that aid access. Across the County, many basic bus stops are neither linked to a sidewalk nor found near a crosswalk leading to a particular destination. Passengers may get dropped off and need to cross to the other side of a busy roadway in the absence of a pedestrian signal or crosswalk, which is extremely dangerous. The County has been actively involved in taking steps to improve these conditions. The design of the U.S. Route 322 Improvement Project includes sidewalk connections to bus stops and pedestrian crossings.

Ideal Design Characteristics

The ADA requires that sidewalks have no level change greater than $\frac{1}{2}$ of an inch. Sidewalks in poor conditions may not meet this standard due to cracks and breakage that result in an uneven plane. Sidewalks are required to have curb ramps no steeper than 1:12 ratio (1 inch of height per every 12 inches of length). Ideally, sidewalks should be at least four feet wide and have a minimum one- to two-foot vegetative buffer.

Green Stormwater Infrastructure (GSI) can be incorporated into vegetative buffers to improve drainage on major roadways. GSI can also make a walkable urban landscape more attractive. One way to improve the visibility of crosswalks is to add lighting at pedestrian crossings. In areas with heavy pedestrian traffic, pedestrian phases during which only pedestrians may move within an intersection could help aid the swift and safe movement of pedestrian traffic. Push-activated enhanced signals with sounds and flashing lights may be appropriate in some Central Places.



Figure 4-11: Brick paver crosswalks, such as the one that guides pedestrian access to Swarthmore Station, are more visible to drivers and can help make crosswalks safer.



Figure 4-12: In 2016, the City of Chester completed a streetscape project in downtown Chester City. The project included the reconstruction and upgrade of sidewalks, ADA ramps, and crosswalks surrounding the Chester Transportation Center.

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In Growing Suburbs, path connections could be made between separate residential developments. In denser urban areas, traffic signal timing alterations during known peak pedestrian hours could be used to improve overall traffic flow and circulation. The presence of sidewalks in residential neighborhoods and within a ½ mile radius of schools or transit stops and stations can greatly improve safety and accessibility. Areas defined as Urbanized Centers, Town Centers, and Neighborhood Centers in Delaware County 2035 would benefit from sidewalks.

FURTHER CONSIDERATIONS

Walking has health and environmental benefits. Furthermore, it gives access to nearby destinations to some who may otherwise be constrained because they do not have a car, a driver's license, or cannot afford public transit. Sidewalks also provide safe access to public transit, supporting public transit ridership. Contemporary trends toward more walkable communities will certainly influence the types of improvement projects that will dominate the County transportation scene looking to and beyond 2035. Active transportation could certainly contribute toward the solution to the growing roadway capacity issues the County is experiencing. The Action Plan details how Delaware County plans to continue to encourage alternative transportation projects, studies, and initiatives.

PUBLIC TRANSIT NETWORK

Public transit is a vital piece of Delaware County's overall transportation network. Driving rates here in southeastern Pennsylvania are well below the US urban average (SEPTA FY 2017 Operating Budget), and rates of public transit ridership are relatively high. In Delaware County, 10.4 percent of residents take public transit to work, a much higher percentage than in Bucks, Chester, and Montgomery counties (2011-2015 ACS 5-year Estimates). Trends strongly suggest that an increasing number of Delaware County residents will take public transportation to and from work in the future (2010-2014 ACS 5-year Estimates, 2012-2013 DVRPC Household Travel Survey). Therefore, it is important to support the improvement and expansion of public transit in the County.

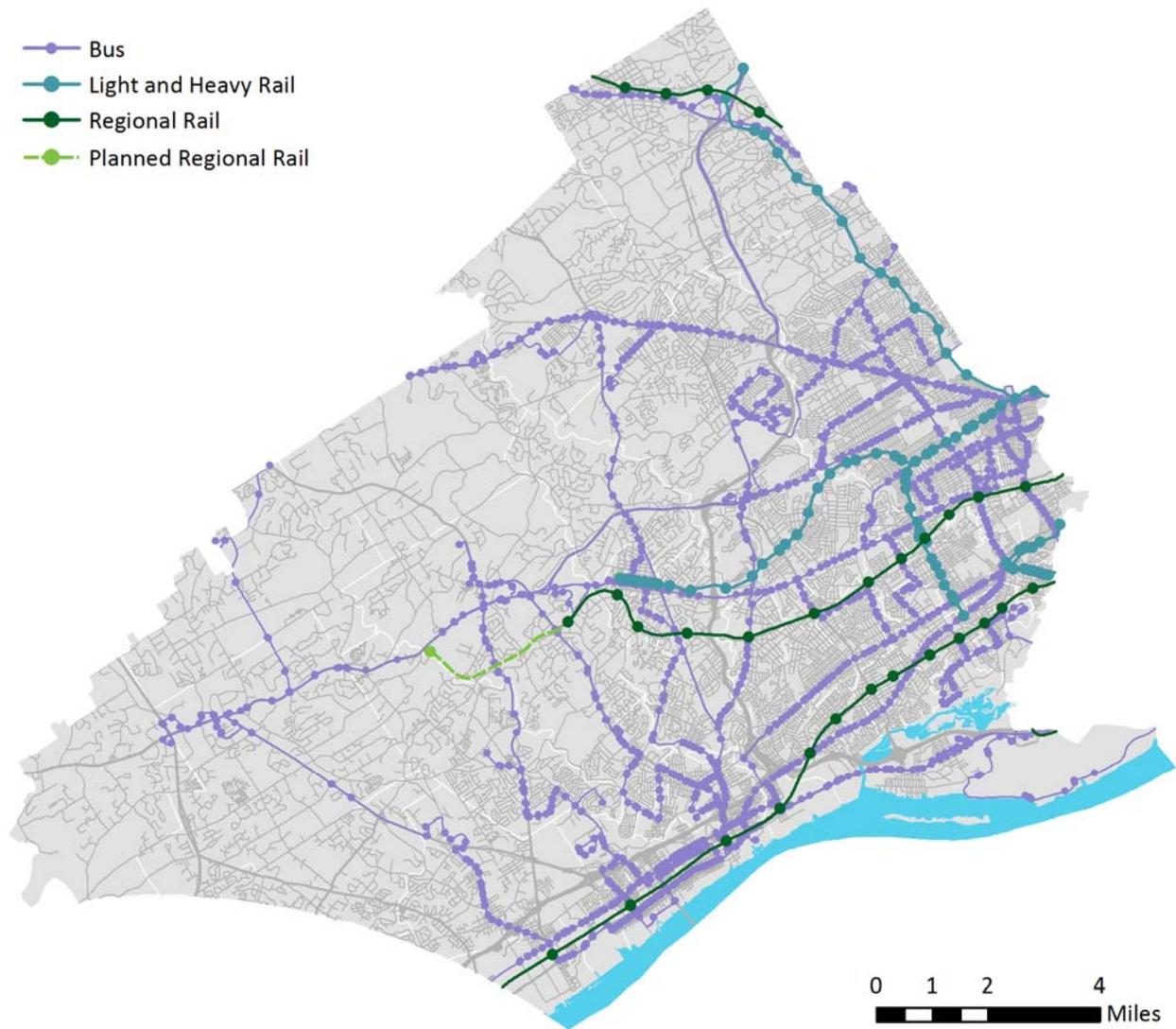


Figure 4-13: SEPTA's 101 Trolley, one of 36 Delaware County transit routes, runs on-street through Media Borough.

Transit service in Delaware County is comprised of regional rail, light and heavy rail (trolley and high speed/elevated lines), and bus service operated by the Southeastern Pennsylvania Transportation Authority (SEPTA). The County's public transit network is shown on Map 5-8 on the following page. Four regional rail lines operate in Delaware County: the Paoli/Thorndale, Media/Elwyn, Wilmington/Newark, and Airport Lines. Light and heavy rail in the County consists of four trolley lines: the 11, 13, 101, and 102; as well as the high speed/elevated rail lines, the Norristown High Speed Line (NHSL) and Market-Frankford Line (MFL). The County is also served by 26 bus routes, 25 of which operate on a regular schedule, while the Market-Frankford Line Owl (MFO) Bus operates on a more specialized schedule with service between 12:00 and 5:00 AM during weekdays as a substitute for MFL service. Delaware County's 36 SEPTA routes are the most of any suburban county and carry an average of 367,115 passengers a day (SEPTA Route Statistics 2016).

Quality of public transportation service varies throughout Delaware County, with the eastern region enjoying the highest variety in available modes and lines, as well as the best access to transit lines with high service frequency. However, opportunities for transit improvement in the form of increased frequency, accessibility, and connectivity still exist in the east. Transit options are more limited in the western portion of Delaware County where relatively few bus routes operate and regional rail service only exists in the southernmost region. Western Delaware County is home to many communities considered to be Growing Suburbs, which are experiencing development of new shopping centers, business centers, and homes. As western Delaware County becomes more urbanized, public transit may become a logical alternative to traffic congestion in denser areas. A western transportation hub, something that the County currently lacks, will be increasingly vital to reducing traffic congestion and improving commuters' quality of life.

Map 4-8: Delaware County Public Transit Network



Mobility

More than 27,000 Delaware County residents use public transportation to commute to work (2011-2015 ACS 5-year Estimates). Besides commuting to work, County residents, workers, and visitors alike take public transit to access essential services like education, health care, recreation, and social opportunities.

Some populations are especially dependent on public transit because they are not able to drive. Nationally, people with disabilities make up roughly 40 percent of the Americans who have difficulties getting the transportation they need (US Department of Transportation: Bureau of Transportation Statistics, 2003). Quality paratransit, public transportation services for people with disabilities, helps many people achieve a level of mobility that would otherwise be difficult to attain. Many Delaware County residents rely on ADA accessible public transportation and paratransit to meet their transportation needs. Forty-four percent of all suburban paratransit usage in the SEPTA system is generated here (SEPTA FY 2017 Operating Budget). Senior citizens, some of whom do not drive, also benefit greatly from public transportation service.



Figure 4-14: The ADA lift on this bus provides access for passengers using wheelchairs, and the yellow detectable warning strip at the edge of the boarding area helps vision-impaired passengers board safely.

Other people rely on public transportation because of the heavy financial burden presented by car ownership. According to the 2010-2014 American Community Survey 5-Year Estimates, more than 18 percent of Delaware County residents have a household income at or below \$24,999. For these residents, the average annual cost of owning and operating a vehicle, \$8,558 (AAA, Your Driving Costs, 2016), comprises more than one-third of total household income. Meanwhile, the cost of a year's supply of SEPTA Monthly Anywhere TrailPasses, which provide travel on all SEPTA modes, is \$2,448 and amounts to less than one-tenth of such residents' household income. For many Delaware County residents, it is not possible or at least practical to commute solely by public transportation due to gaps in the County's transit network, but for those households which can use transit along with active transportation to drive less or own fewer vehicles, cost savings can be achieved.

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Environment

Public transit has many environmental benefits which it achieves through its ability to move several people in relatively few vehicles. At full capacity, a 40-foot SEPTA bus can seat 40 passengers, while the average sedan can seat just five. Even when transit vehicles operate at less than full capacity, they still consistently carry more passengers than cars. In the US, the average transit bus carries 10 passengers, while a rail car carries 25, and a private automobile carries just 1.6 (FTA, *Transit's Role in Environmental Sustainability*, 2016). This means that public transportation requires less energy per person than automobiles, uses roadway space more efficiently, and produces fewer emissions.



Figure 4-15: Transit vehicles use roadway space efficiently. This image produced by the Cycling Promotion Fund shows the roadway space and number of vehicles required to transport 69 people via different modes of transportation. The bus uses the least space, followed by bikes and cars.

As transit reduces roadway congestion, it also reduces vehicle idling and operating time, which results in fewer emissions and decreased fuel consumption. Transit further benefits the environment by allowing for denser land use patterns, which result in shorter travel distances; less impervious surfaces in the form of new roads, parking lots, and buildings; and more land available for open space and ecosystem functions.

Nationwide, public transit provides annual carbon reductions equal to the annual carbon storage capacity of 29 million acres of forest. Additionally, more than 4 billion gallons of gasoline are saved and 37 million metric tons of carbon dioxide emissions are avoided every year through the use of transit (American Public Transportation Association, 2015 Public Transportation Fact Book). At the regional level, through mode shift, congestion relief, and land use and development impacts, SEPTA's transit operations prevented the release of more than 1.2 million metric tons of CO₂e from the transportation sector in 2015, which is equivalent to taking 272,797 cars off the roads for a year (SEP-TAINABLE 2020, 2017).

PUBLIC TRANSIT SERVICE

Historical Ridership Trends

In recent years, public transit ridership has increased in Delaware County. Regional rail ridership, in particular, has skyrocketed, growing by 35.6 percent between 2004 and 2016. Combined ridership for Delaware County’s light and heavy rail and seven most popular suburban buses has increased, too, growing by 4.6 percent between 1996 and 2016.

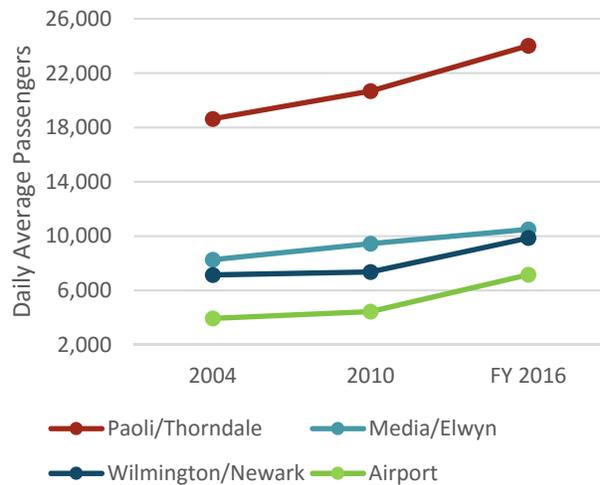
Regional Rail

Ridership on each of Delaware County’s regional rail lines has grown in recent years, in keeping with the trend in the wider SEPTA region where regional rail ridership growth has outpaced transit ridership growth (SEPTA FY 2017 Operating Budget). The Paoli/Thorndale Line, SEPTA’s most popular regional rail line, has seen the largest increase in ridership over the past 12 years. Today, it carries 5,382 more passengers a day than it did in 2004, a 28.9 percent increase.

Light and Heavy Rail

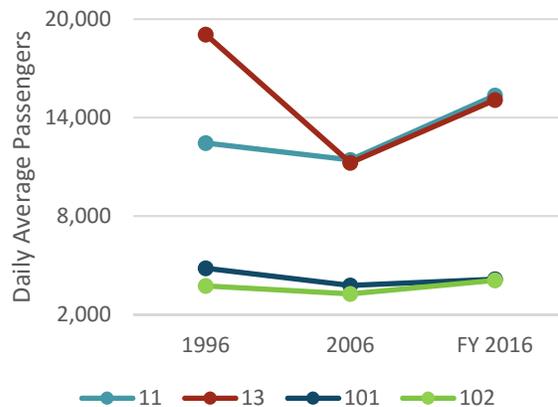
Combined ridership on Delaware County’s light and heavy rail lines, including the NHSL, MFL, and all four trolleys, has grown 3.6 percent in the 20-year period between 1996 and SEPTA Fiscal Year 2016. However, trolley ridership is down 3.5 percent in the past 20 years, even though two of Delaware County’s four trolleys, the 11 and 102, have experienced growth over that time period. Ridership on both of Delaware County’s high speed/elevated rail lines, the NHSL and MFL, has grown over the past 20 years. Ridership on the MFL increased 2.7 percent. The NHSL did exceptionally well over the most recent 20-year period with an increase in average daily ridership of 4,860 passengers or 71.9 percent. A seven-day City Transit Division workers’ strike that occurred in 2005 during the reporting period for Fiscal Year 2006 may explain the dip in ridership that light and heavy rail experienced that year.

Chart 4-1: Regional Rail Ridership in Delaware County (2004-2016)



Source: SEPTA Route Statistics 2016, ROR Reports 2004 and 2010

Chart 4-2: Trolley Ridership in Delaware County (1996-2006)



Source: SEPTA Route Statistics 2016, ROR Reports 1996 and 2006

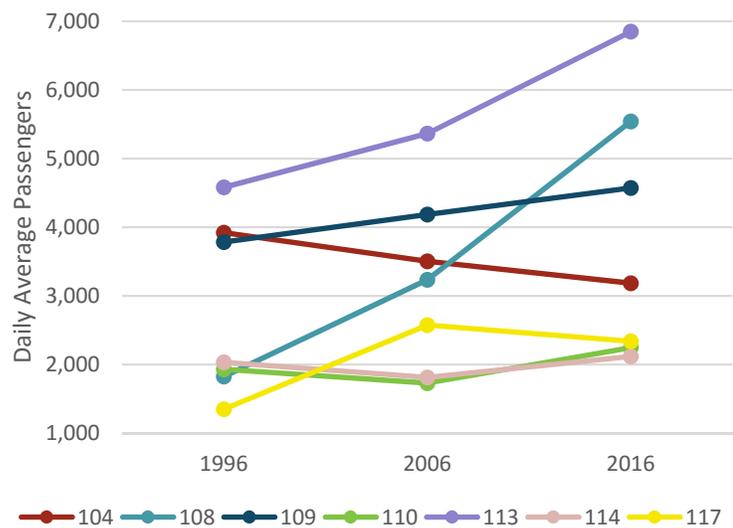
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Bus

Of the seven most popular suburban buses operating in Delaware County, six have seen ridership grow in the past 20 years, as seen in Chart 4-3. The seven most ridden suburban buses have seen a net increase in ridership of 38.2 percent in the same period. The most significant growth among top suburban buses has been on the 108 Bus, which has experienced ridership growth of over 200 percent since 1996.

City buses with service to Delaware County have fared differently. Of the County’s six city buses for which there is historical ridership data (no data is available for the MFO Bus), four have grown over the past 20 years. However, despite the number of city buses experiencing ridership growth, the County’s city buses have lost ridership overall. Two of the top three routes, the 21 and 65 Buses respectively, have lost 28.2 and 10.4 percent of their ridership over that period.

Chart 4-3: Top Suburban Bus Ridership in Delaware County



Source: SEPTA Route Statistics 2016, ROR Reports 1996 and 2006



Figure 4-16: The 109 Bus, SEPTA’s 4th highest ridership suburban bus, has seen steady ridership growth. Enhancements like this roundabout in Swarthmore are helping to improve service in Delaware County.

Current Ridership

On an average weekday, passengers make more than 1.1 million trips on SEPTA (SEPTA Operating Facts Fiscal Year 2016). Some of these passengers travel on suburban routes operated by SEPTA’s Suburban Transit Division, which operate primarily outside of Philadelphia, while others travel on city routes operated by SEPTA’s City Transit Division, which operate primarily within Philadelphia.

Delaware County is served by both suburban and city routes. The 22 suburban routes (bus, trolley, and NHSL) in the County carry a daily

average of 59,064 passengers. Delaware County’s 10 city routes (bus, trolley, and MFL) carry an additional 256,506 passengers a day. Regional rail service operates outside of the suburban/city distinction. SEPTA’s four regional rail lines with service to Delaware County carry a daily average of 51,545 passengers (SEPTA Route Statistics 2016). Individual regional rail lines have some of the highest ridership of any of Delaware County’s public transit lines, but light and heavy rail as well as buses carry more passengers than regional rail on a modal basis.

Delaware County supports public transit service well, and many of the transit lines operating in Delaware County carry high numbers of passengers. The County hosts more transit lines than any other SEPTA suburban county and SEPTA’s ten best performing (in terms of ridership) suburban lines. The Market-Frankford Line (MFL), which is the highest performing city line, also has stops in Delaware County where it reaches its terminus at 69th Street Transportation Center, a significant transit hub connected to several other high ridership lines. Ridership information for Delaware County’s top transit lines is displayed in the table below along with ridership rankings for those lines.



Figure 4-17: The 11 Trolley, one of 10 city lines serving Delaware County, has experienced recent ridership growth.

Table 4-3: Top-Ten Ridership Transit Lines in Delaware County

Line Type	Daily Ridership	Ridership Rank
NHSL High Speed	11,620	1 st *
113 Bus	6,860	2 nd
108 Bus	5,541	3 rd
109 Bus	4,572	4 th
101 Trolley	4,143	5 th
102 Trolley	4,075	6 th
104 Bus	3,186	7 th
117 Bus	2,339	8 th
110 Bus	2,246	9 th
114 Bus	2,120	10 th
MFL Elevated	187,449	1 st *

Source: SEPTA Route Statistics 2016

*NHSL and MFL are both ranked first because SEPTA classifies NHSL as “suburban” division service and MFL as “city” division service.

Access

The longest distance many people are willing to walk to access transit is a half-mile. Map 5-8 shows where transit lines operate in Delaware County, as well as how residential density is distributed within walkable distances surrounding transit stops. Communities in eastern Delaware County enjoy the best access to public transit. They also support public transit well, as they are home to many Mature Neighborhoods with high residential densities and concentrated activity along transit corridors and around transit hubs.

Access to transit service is more limited in western Delaware County. The southernmost communities in the western section of the County have access to the Wilmington/Newark Line, but the only transit operating in most western communities is infrequent bus service. Somewhat sparse transit coverage in the west is partly a function of the less compact land use there, which results in fewer people living near transit lines and destinations that are less centrally located along transit corridors. However, since many western municipalities are Growing Suburbs, expected to experience significant growth over the coming decades, higher levels of service from transit will be needed there in the future. Transit access should be considered as development occurs in these areas in order to maximize the potential for public transit to serve the future needs of the residents of western Delaware County.

In places with adequate geographical coverage from public transportation service, access to that service can be hindered by physical and nonphysical barriers. Physical barriers to transit service present a challenge to transit users reaching transit stops and boarding transit vehicles. These physical barriers vary with urban form, but they can include obstacles such as gaps in the sidewalk network, unmarked street crossings, unpaved waiting areas, and transit vehicles which are difficult to board for mobility-impaired people. Access to useful and timely information regarding public transportation is also important. Signs for transit stops which are poorly placed or hard to read, a lack of real time information to inform transit users of a vehicle’s actual arrival time, a lack of transit system maps showing bus service, and complicated transit fare systems can make service difficult to access. Improving physical

Map 4-9: Public Transit Service Coverage



Real Time Information

Real time information (RTI) lets transit riders know where their vehicle is in real time and when it will actually arrive, allowing them to plan accordingly. It eliminates the anxiety of waiting for a late vehicle without an updated arrival time.

RTI reduces passengers’ perceived waiting time, which enhances transit’s attractiveness and makes it more competitive with driving. It can also boost ridership, as it did in New York City where ridership grew by 2 percent on buses with RTI (The impact of real-time information on bus ridership in New York City, 2015).

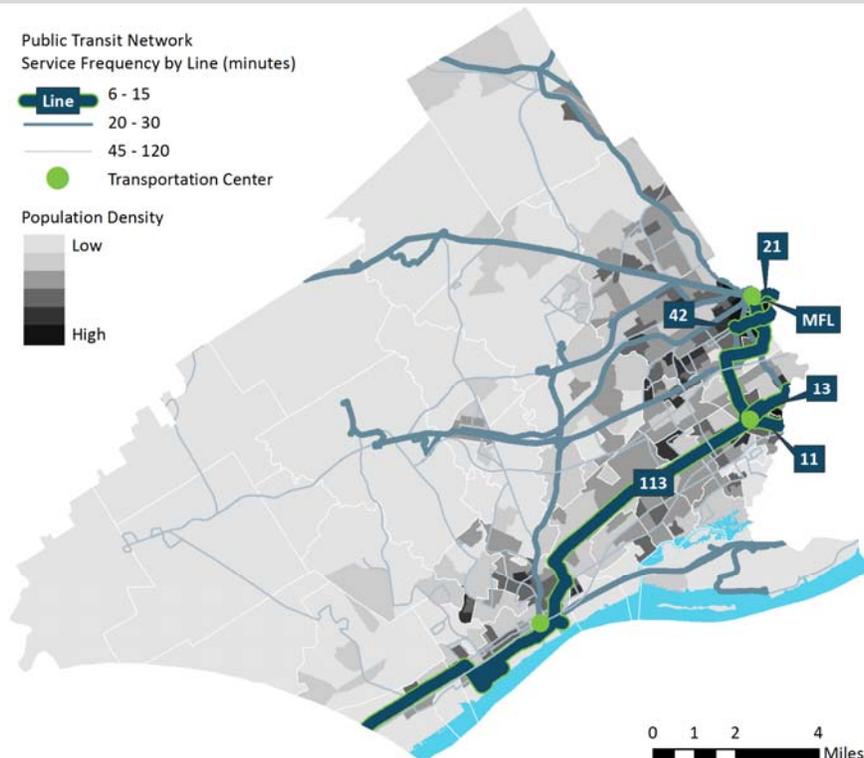
access to transit and access to information concerning transit can make public transportation more attractive and user-friendly.

Service Frequency and Span

People can only ride transit vehicles as often as those vehicles stop nearby to let them board. This is why frequency, how often a transit vehicle stops for passengers to board, is such an important aspect of the public transportation network. Frequent service frees transit users from the need to plan their day around a transit schedule. They can expect that transit will be coming fairly soon for most of the day. In Delaware County, high frequency transit service, service that stops every 15 minutes or less from AM Peak to PM Peak, does exist, but it operates mostly in the eastern part of the County. This is a result of the residential density and intensity of activity surrounding the transit corridors in this part of the County and their connections to Philadelphia. The County's service frequency is shown in Map 5-9 below. Delaware County's six bus and light/heavy rail high frequency lines carry more than two-thirds of all daily trips taken on Delaware County public transportation lines. The 113 Bus, the only high frequency suburban bus in the County, carries over 21 percent of all Delaware County suburban bus riders, despite the fact that the 113 Bus is just one of nineteen, or 5 percent, of suburban buses operating in the County.

Span of service, the amount of time that a transit line operates over the course of a day, is another feature that defines its usefulness to riders. A transit line with a long service span is accessible to many people because it can serve people who work odd shifts and need late night or early morning service. In Delaware County, two light and heavy rail lines in addition to six buses operate between 23 and 24 hours a day during weekdays, providing passengers with transit for virtually all hours of the day. These long-span lines are well-riden, carrying 236,983 passengers a day, over 64 percent of total Delaware County public transit line ridership. Extending span of service on more transit lines in the County would

Map 4-10: Delaware County Public Transit Service Frequency



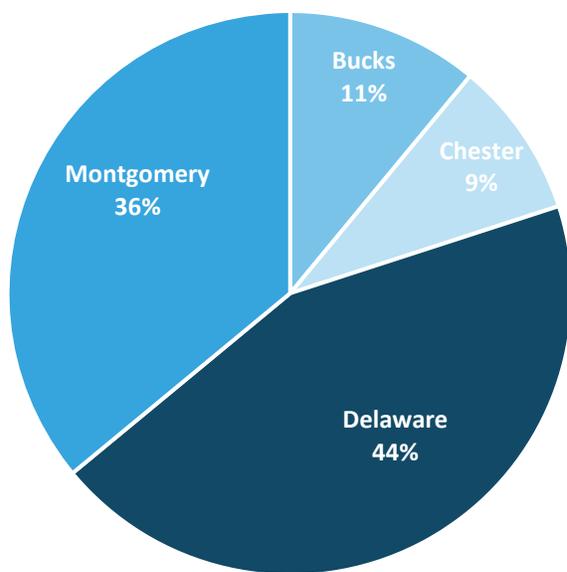
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allow more people to utilize transit, improving the mobility of residents and creating an opportunity to grow transit ridership.

DEMAND RESPONSIVE TRANSPORTATION/PARATRANSIT

Not all public transportation in Delaware County operates on fixed routes. Demand responsive transportation allows users to reserve trips with a user-selected origin and destination. Demand responsive services can be used by anyone, but they are geared toward people with disabilities and senior citizens. Paratransit is a type of demand responsive transportation that solely serves the transportation needs of people with disabilities. Community Transit of Delaware County, Inc., a private, nonprofit transportation company certified by the Pennsylvania Public Utility Commission provides both demand responsive and paratransit service in collaboration with SEPTA in Delaware County.

Chart 4-4: Suburban County Paratransit Usage



Source: SEPTA Fiscal Year 2017 Operating Budget

Community Transit programs provide reduced fare transportation for senior citizens and people with disabilities as well as fully funded transportation to qualifying medical facilities for Medical Assistance consumers. Individuals can reserve transportation through Community Transit for any trip that has its origin and destination in Delaware County. Limited service to destinations in Philadelphia, Montgomery, and Chester Counties is also available. Delaware County residents reserve an average of 2,167 Community Transit trips a day (<http://ctdelco.org/>).

SEPTA’s Customized Community Transportation, or CCT Connect, provides paratransit service to individuals with disabilities. Users of CCT Connect can travel whenever and wherever SEPTA fixed route transportation operates. Delaware County accounts for 44 percent of all SEPTA paratransit usage, more than any other

suburban county (SEPTA FY 2017 Operating Budget). It is important to note that SEPTA is not the sole provider of paratransit service in the region, as such Chart 4-4 does not capture every paratransit trip in the region. Nonprofit transportation companies, such as Community Transit in Delaware County and ROVER Community Transportation in Chester County, also provide paratransit service.

FURTHER CONSIDERATIONS

Bus Rapid Transit/Enhanced Bus Service

Bus Rapid Transit (BRT) is a specialized type of bus service that achieves faster travel times, shorter waiting times, and a more comfortable experience than traditional bus service through a variety of transit improvements, including limited stops located at major intersections and unique branding to signify a higher level of service. Enhanced Bus Service (EBS), sometimes referred to as BRT-lite, incorporates some of the features of BRT to reduce travel times and provide a more comfortable ride, while incurring lower costs than BRT. In recent years, BRT and EBS have been implemented in several places both nationally and internationally, and in many cases, they have been successful in reducing travel time and increasing ridership.

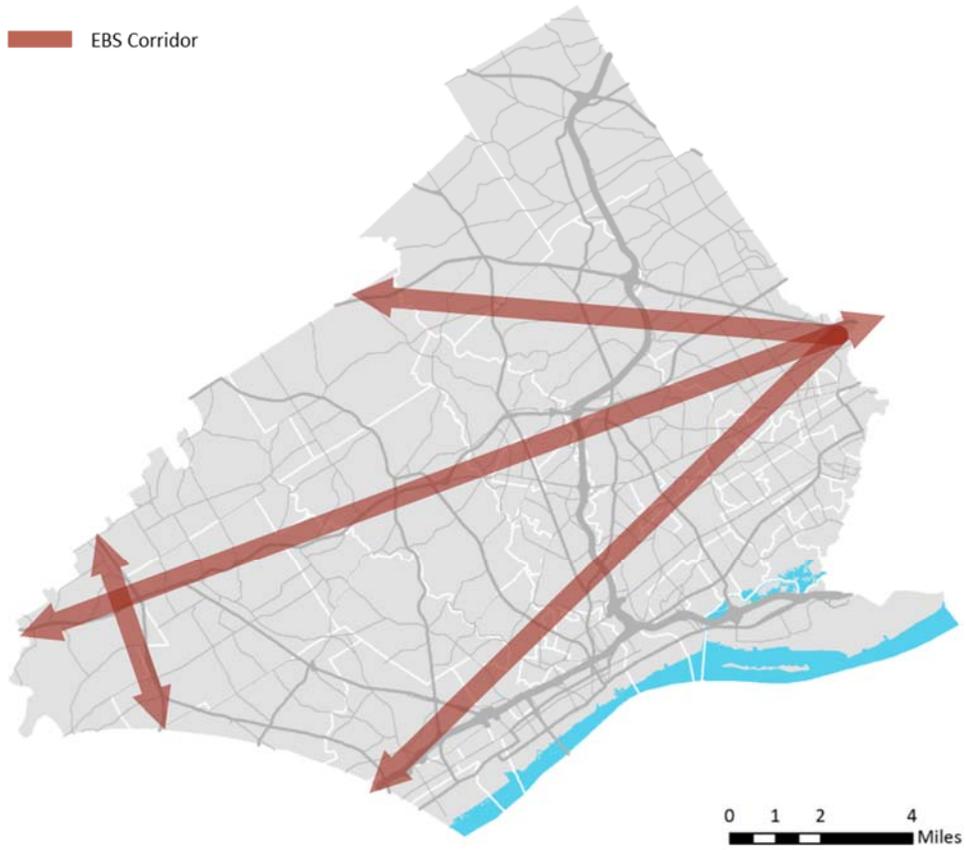


Figure 4-18: Eugene, Oregon’s BRT vehicles run in a dedicated lane, and stations are outfitted with several upgrades. Source: National Institute for Transportation and Communities

In Delaware County, efforts to implement EBS have begun. The West Chester Pike Coalition, a diverse group of stakeholders along West Chester Pike, was formed following the release of DVRPC’s *Enhanced Bus Service on West Chester Pike* (2016). The West Chester Pike Coalition aims to improve mobility along the corridor through a variety of methods including EBS. Delaware County can maximize the benefits of enhanced service on West Chester Pike by identifying other corridors which may be ideal for EBS in order to create a well-connected EBS network. A countywide EBS network could lead to better utilization of bus service, combatting the

growth of traffic congestion and vehicular emissions while also providing improved access to economic, social, and recreational opportunities for many residents. The map below shows the County’s Proposed EBS Network which was identified with consideration given to current bus service, public transit connectivity, and existing and future land use and population density in surrounding areas.

Map 4-11: Conceptual Enhanced Bus Service Network



High Speed Rail

The Federal Railroad Administration (FRA) is in the midst of a comprehensive planning process which will result in an investment plan effective through 2040 for the Northeast Corridor (NEC), a rail line stretching from Washington, D.C. to Boston with several stops at cities in between, including Philadelphia, Wilmington, and Newark, Delaware. FRA has identified a Preferred Alternative for improvements to the NEC, which would create two new Amtrak stations with intercity and regional rail service in the area: one at the Philadelphia International Airport and one at a location in Eddystone known as Baldwin. These station additions would be accompanied by the addition of new track segments from Baldwin Station to 30th Street Station connecting to the airport along the way. Placement of a new Amtrak station at Baldwin rather than Chester City would represent a missed opportunity for the FRA to support local and regional planning efforts to advance transit-oriented development and strengthen urban centers with intercity rail service.

Improved NEC service is projected to result in an increase in regional rail trips as well as intercity rail trips in the area on both the NEC and the connected corridor of the Keystone Line, which operates alongside the Paoli/Thorndale Line in Delaware County. A modal shift toward rail is also expected to occur as a larger share of travelers opt for rail service over automobile, air, bus, and other transit options due to rail’s improved reliability; increased service frequency and capacity; reduced travel times; and access to new destinations, including the airport. The modal shift is projected to reduce automobile vehicle miles travelled (VMT) and may help to relieve roadway congestion, easing future strain placed on the County’s roadways. Projections indicate that the Preferred Alternative would also result in a decrease of criteria pollutant and greenhouse gas emissions and a reduction in energy use, which would lower the transportation network’s environmental impact in Delaware County. Additional environmental benefits could be achieved by integrating Amtrak service into Chester Transportation Center, which is primed to capitalize on intercity rail service through transit-oriented development.

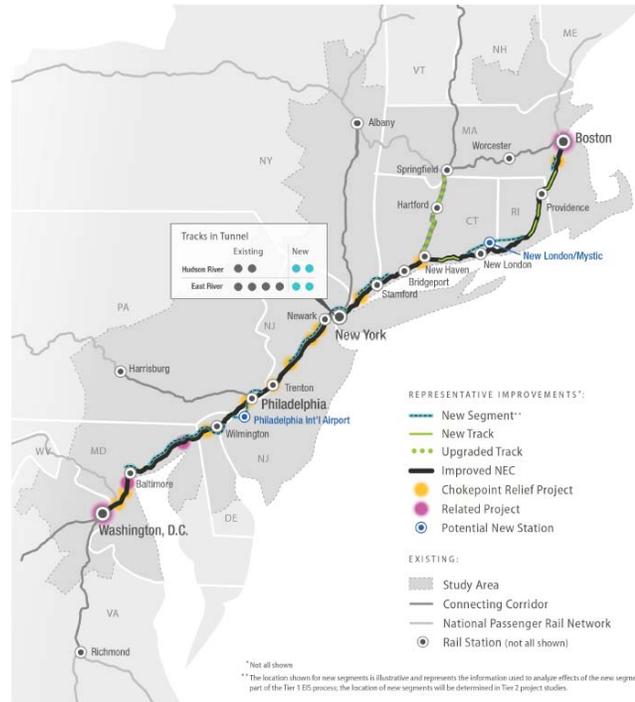


Figure 4-19: The NEC FUTURE Preferred Alternative includes a new Amtrak station and track segment in Delaware County.

Amtrak to Chester

The Chester Transportation Center (CTC), located in Chester’s central business district, is served by SEPTA regional rail and seven bus routes. Automobile access is also strong; the intersection of I-95 and I-476 is about 1.5 miles from the CTC.

Chester is also an urban center with a significant population. It has several major attractions, including a university, a Major League Soccer stadium, and a casino. The city, County, and region may benefit from intercity rail service to Chester along the NEC.

VISION PLAN

The County's vision for the future of its transportation network is ambitious and optimistic. The following is a synopsis of the current conditions and the future, or ideal, conditions of the network. The future conditions are those that Delaware County will strive to achieve.

Current Conditions

- The outdated design of high volume roadways and intersections makes roads less safe.
- Congestion is increasingly an issue on major roadways. Alternatives to increasing single occupancy vehicle capacity are being analyzed.
- Existing bicycle and pedestrian facilities have the potential to make strategic connections, but some are fragmented and poorly maintained.
- Delaware County has a strong public transit network. More investment in infrastructure and vehicles is needed to sustain ridership trends.



Figure 4-20: The bike lanes on PA Route 291 in Trainer were the first piece of the ECG completed in Delaware County.

Future Conditions

- Delaware County will have Complete Streets.
- Delaware County will have a complete bicycle network.
- Congestion will be mitigated by an increase in active transportation and public transit use.
- Public transit facilities will be ADA compliant and provide adequate access for all users.
- Public transit service will be more efficient, and ridership will continue to increase as a result.
- Real Time Information will provide trip information to all users of the transportation network.
- Transit-supportive land development will occur along transit corridors, making public transit a practical option for more County residents and workers.
- Safety will be improved and crashes will be reduced through improvements to transportation infrastructure and Complete Streets policies.



Figure 4-21: The brick crosswalks on East 14th Street in Chester City provide safe access to Widener University.



Figure 4-22: Primos Station's high-level platform exemplifies new infrastructure for greater efficiency.



Movement of Goods 5

Chapter 5: Movement of Goods

OVERVIEW

Freight transportation is the movement of raw materials and consumer goods using public and private infrastructure. It is frequently thought of as encompassing solely the transport of large, industrial cargo. However, with the rise in just-in-time (JIT) logistics and web-based retail sales, the number of residential and downtown deliveries of consumer goods is on the rise.

When commuter travel routes and freight movement routes do not overlap, they intersect. While people and goods may sometimes travel by different modes, they often share the same transportation infrastructure. For this exact reason, freight transportation planning is a crucial component of the transportation planning process. The future transportation network must be planned in such a way that accommodates and complements all uses in order to be safer and more efficient.

Delaware County's freight system is one of the most robust in the Delaware Valley Region; it includes truck, rail, maritime, air, and pipeline transportation. Truck transportation encompasses all cargo movement and commercial deliveries by motor vehicle on roadways. Rail refers to freight train activity. Maritime refers to ship movement via the Delaware River. Maritime activities and truck transportation go hand-in-hand, as usually trucks are used to transport goods once they arrive at port terminals. Air refers to airplane transport. While air travel is used to transport both passengers and cargo, the bulk of activity at Philadelphia International Airport facilities found within Delaware County is cargo-related. Finally, pipelines are the underground pipe system through which gas, oil, and similar products are transported. These five modes constitute the Delaware County freight transportation network.

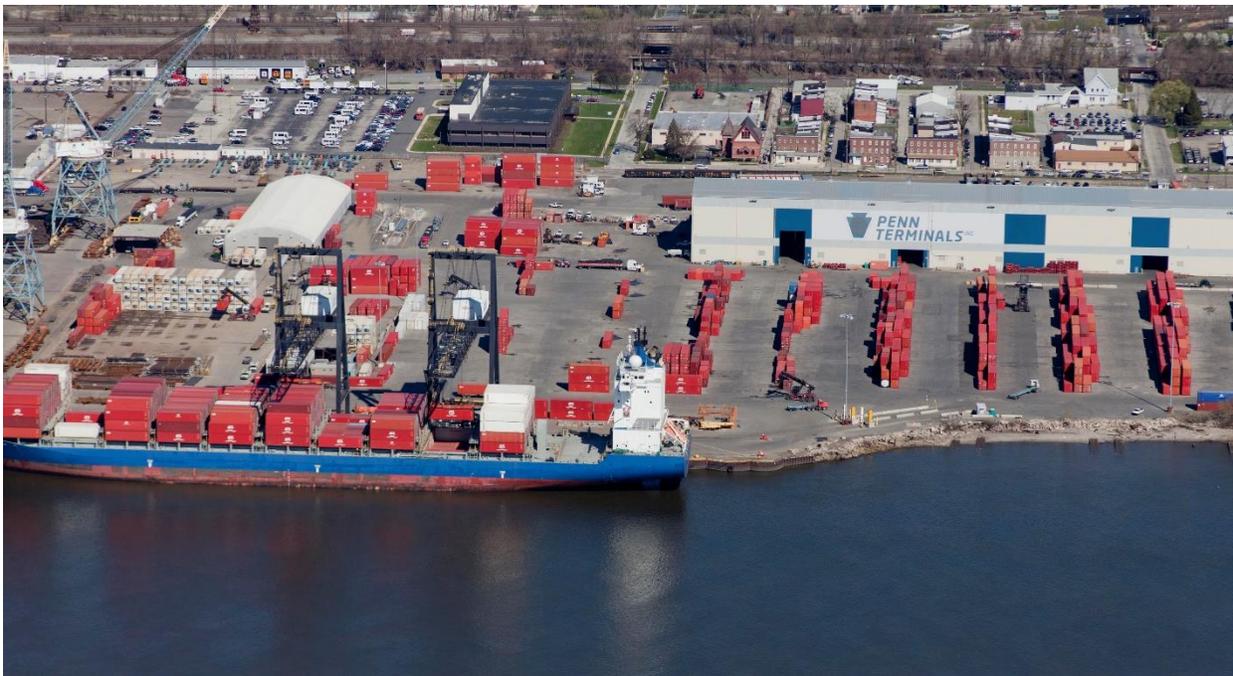


Figure 5-1: Penn Terminals is one of Delaware County's six maritime ports. A variety of international cargo arrives, leaves, and is sorted at this facility. It is an intermodal terminal with on-dock rail service provided by Conrail, CSX, and Norfolk Southern. Source: Pennsylvania Department of Environmental Protection

DELAWARE COUNTY'S FREIGHT ECONOMY

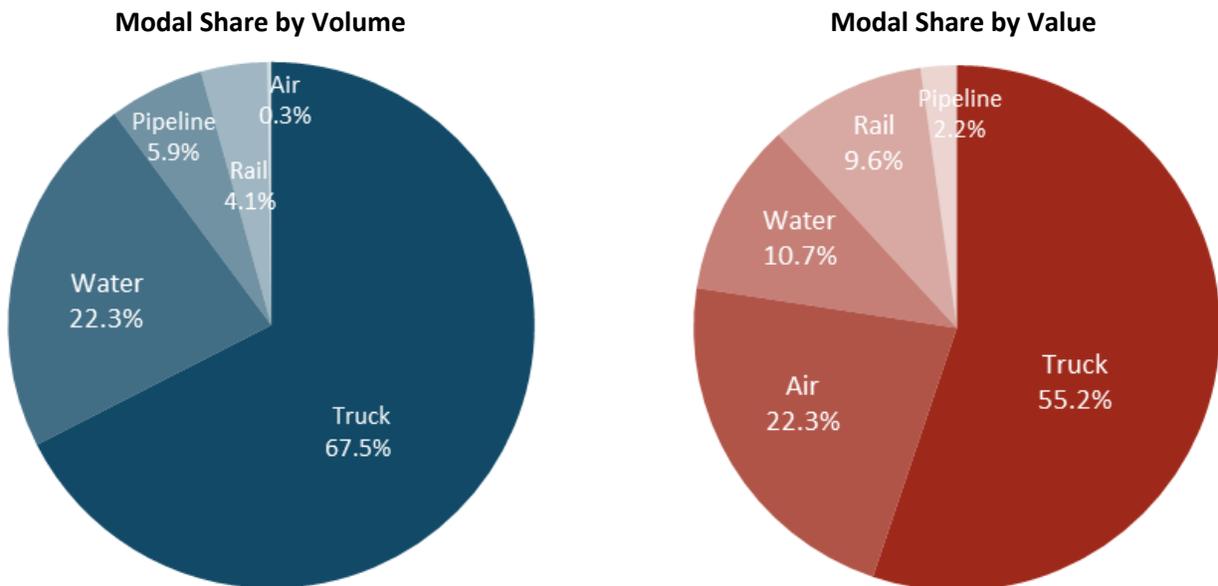
In Delaware County, private companies transport the majority of goods both domestically and internationally. The goods movement industry is a valuable asset to Delaware County, and the County's strategic geographic position and community cohesiveness should be optimized. Freight can be a good neighbor if the public and private sectors work together to strike a balance between economic activity and externalities. Close collaboration between public and private entities in planning can create jobs locally and protect both residents' and freight operators' interests.

Snapshot of Domestic and International Trade

In 2011, petroleum or coal products were the top *domestically* traded commodity by volume – 22,582,670 tons – and value - \$19,837,086,384. Petroleum or coal products are transported primarily via truck. Not surprisingly, truck transportation accounts for approximately 68 percent of the modal share in tons transported and 55 percent of the value share.

It is important to note, however, that the commodity market is in the process of evolving. The energy economy in Delaware County is shifting from the production of petroleum and coal products to the transport of natural gas. This trend will result in a change in how energy sources are transported using existing – or new – infrastructure. The chart below reflects the modal share of domestic freight movement into, out of, and within Delaware County in 2011.

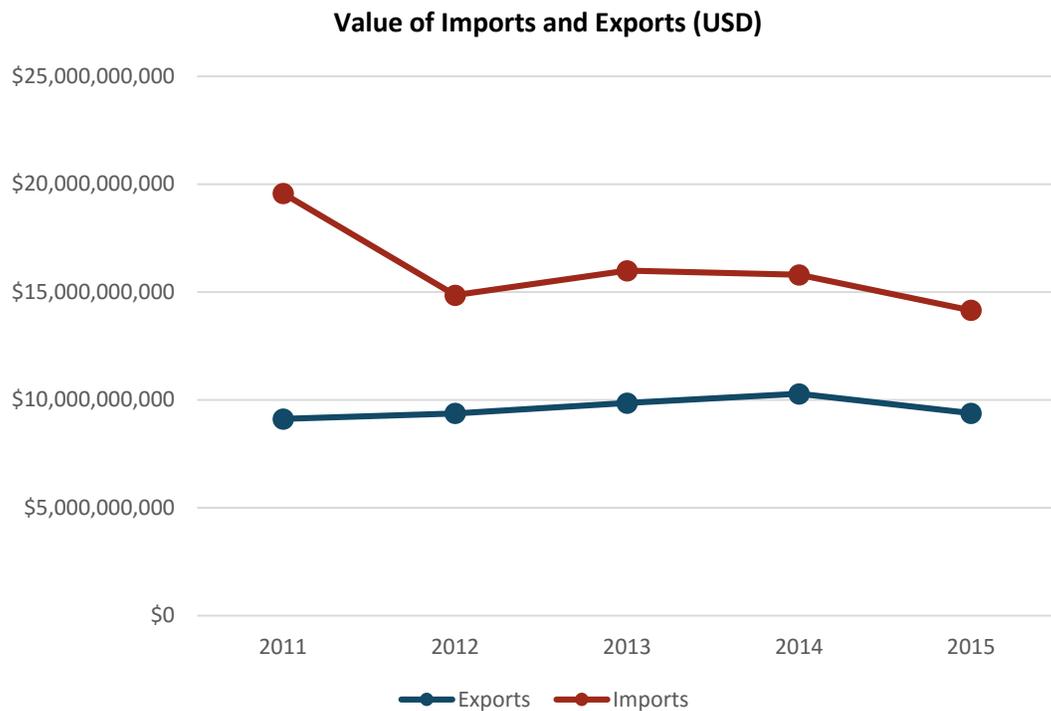
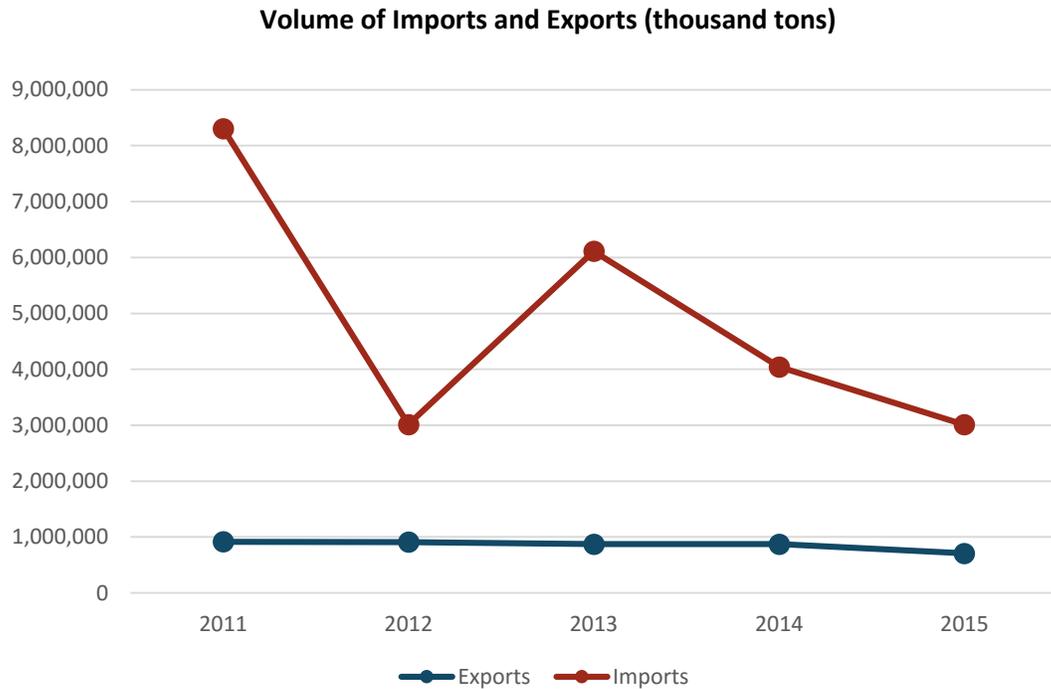
Chart 5-1: 2011 Delaware County Domestic Trade



Source: DVRPC analysis of 2011 IHS TRANSEARCH

In recent years, there has been a fall in international trade into and out of Delaware County ports (see Chart 5-2). Yet the deepening of the Panama Canal is expected to lead to a larger influx and outflow of international goods via water due to increased capacity for larger ships.

Chart 5-2: 2011-2015 Delaware County International Trade



Source: DVRPC analysis of 2011 IHS TRANSEARCH

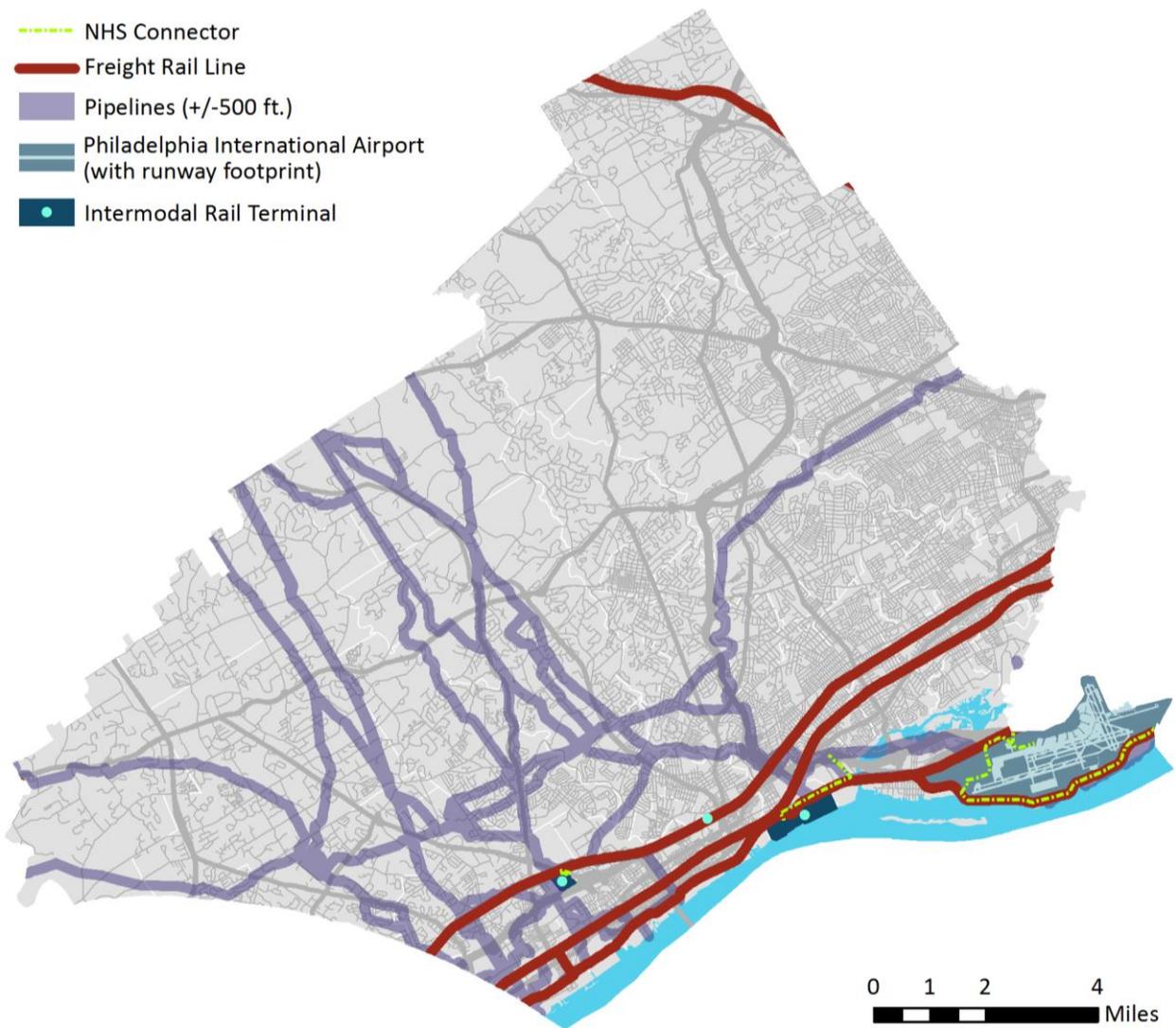
Chapter 5: Movement of Goods

Larger trends and changes, such as shifts in the United States energy market and the deepening of the Panama Canal, are expected to lead to a growth in the freight industry in Delaware County. The modal share may also shift away from truck transportation to transportation via pipeline and water. This prediction is based on increasing roadway congestion affecting the former and the increased capacity of the latter.

Delaware County Freight Infrastructure

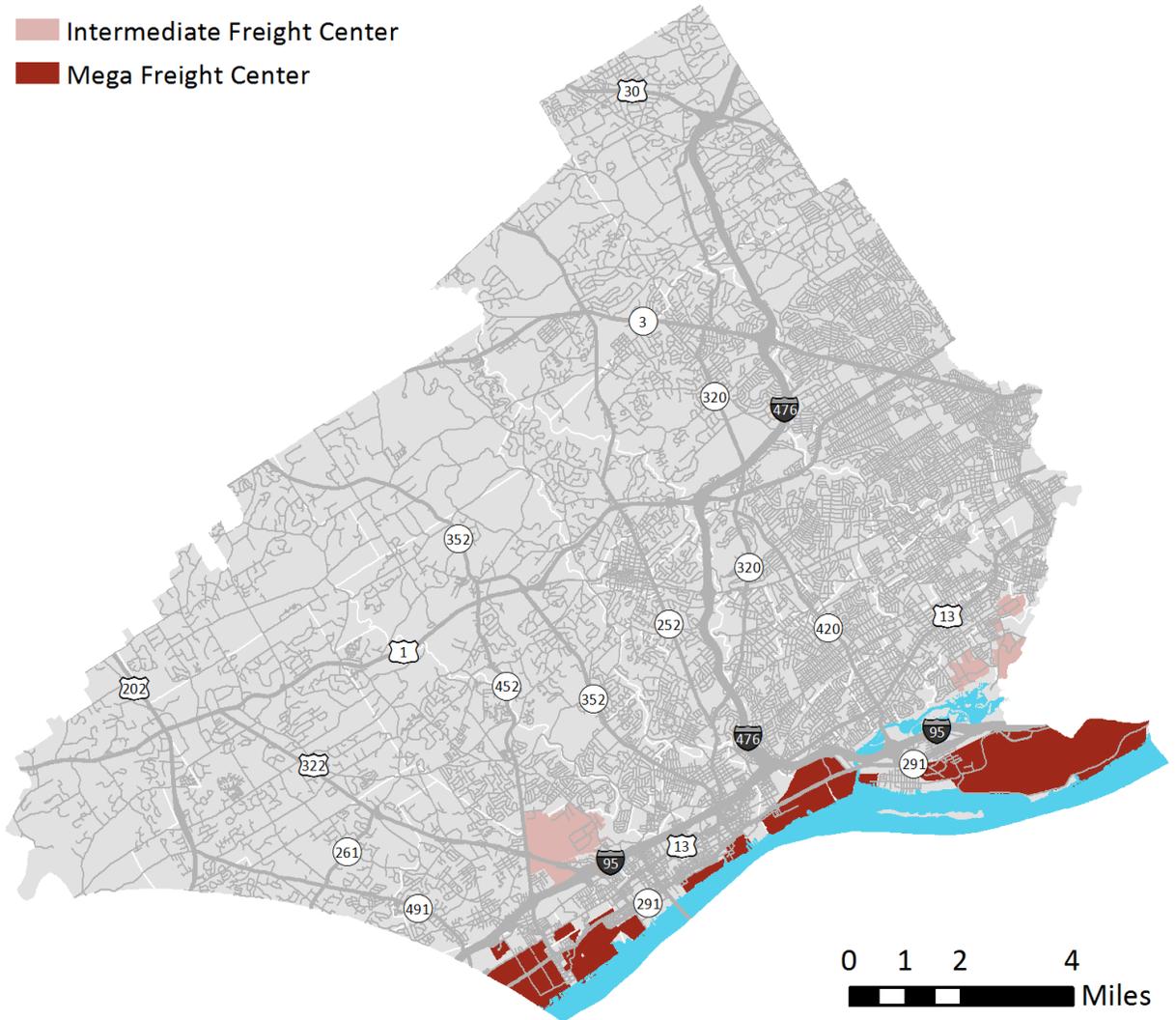
Delaware County is one of the three southeastern Pennsylvania counties with access to the Delaware River. The County’s riverfront has historically been home to a number of heavy industrial facilities. The County is geographically strategic for all modes of freight transportation, due to its crucial interstates, National Highway System connectors, major US/PA routes, expansive freight rail network, riverfront access, Philadelphia International Airport’s Cargo City, and a UPS facility. Map 5-1 below highlights the main attributes of Delaware County’s freight movement-related infrastructure.

Map 5-1: Delaware County Freight Movement Infrastructure Network



Delaware County has three Mega Freight Centers (1,500 acres or larger) and two Intermediate Freight Centers (between 250 and 699 acres in size), as identified by the Delaware Valley Regional Planning Commission. The predominant land use of these centers is heavy manufacturing, followed by transportation, light manufacturing, distribution, and utility (*The Delaware Valley Freight Center Inventory*, DVRPC, April 2012). All of the Mega and Intermediate Freight Centers in Delaware County are located within five miles of an Interstate highway; these are shown in Map 5-2 below.

Map 5-2: Delaware County Mega and Intermediate Freight Centers



Together, the Mega and Intermediate freight centers employed 33,372 individuals in 2009 (*The Delaware Valley Freight Center Inventory*, DVRPC, April 2012). This number does not include those employed in relation to downtown, residential, and business park deliveries.

Chapter 5: Movement of Goods

Map 5-3 below shows the County's Supply Chain Centers. These include downtown delivery nodes and smaller existing industrial land uses, such as the tank farm in Bethel Township.

Map 5-3: Delaware County Supply Chain Centers

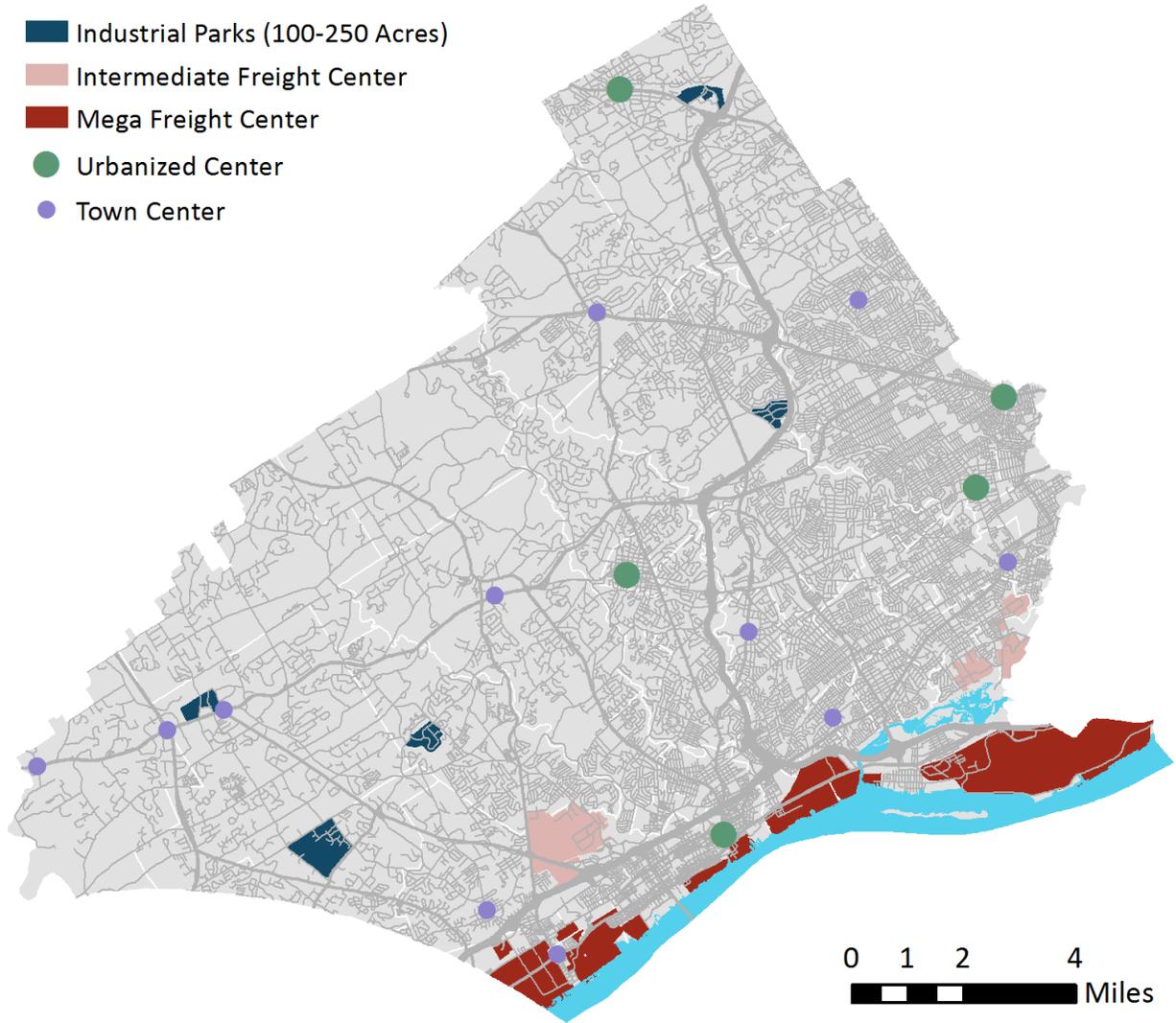


Chart 5-3: Number of Jobs and Average Annual Salary in Delaware County (Manufacturing and Transportation/Warehousing)

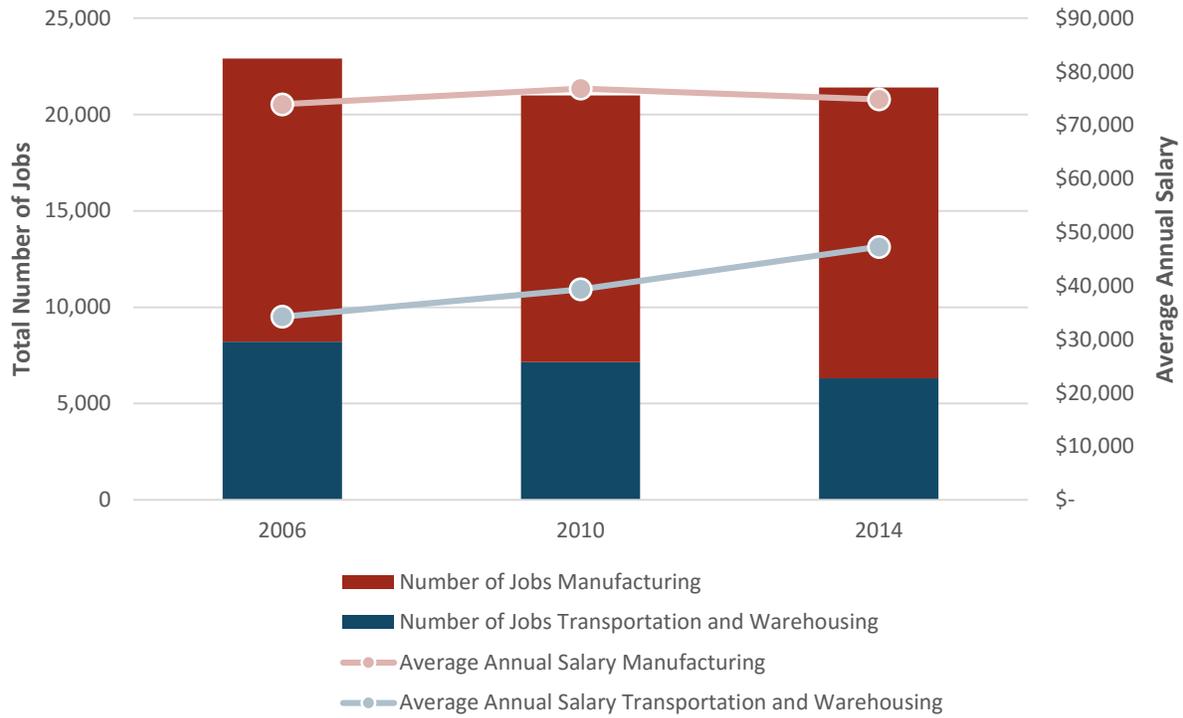
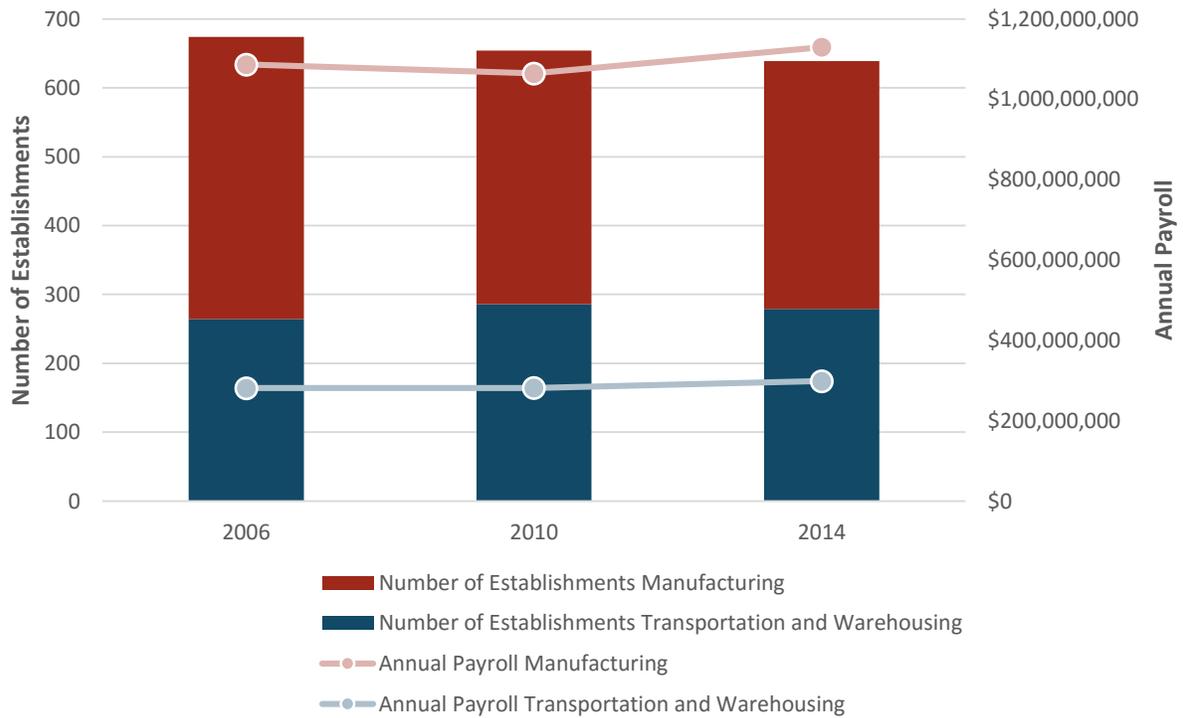


Chart 5-4: Number of Establishments and Annual Payroll in Delaware County (Manufacturing and Transportation/Warehousing)



Source: US Census, County Business Patterns 2006, 2010, 2014.

2006-2014 Employment Trends

Manufacturing

Establishments

Decrease from 410 to 360

Jobs

Increase from 14,697 to 15,094

Salaries

Increase from \$73,938 to \$74,863

Transportation and Warehousing

Establishments

Increase from 264 to 279

Jobs

Decrease from 8,214 to 6,309

Salaries

Increase from \$34,233 to \$47,293

While the number of establishments decreased between 2006 and 2014, the number of jobs increased. The opposite trend was observed in the transportation and warehousing sector: the number of establishments increased while the number of jobs decreased. One possible explanation is the proliferation of smaller distribution sites. The transportation and warehousing sector has evolved in such a way that is more efficient, and fewer employees are needed to move or sort goods. In fact, courier movements account for 57 percent of economic output from freight transportation (*Freight in Delaware County*, DVRPC, August 2011).

Average annual salaries have increased in both sectors. While the minimal salary increase for manufacturing jobs may be a result of natural inflation, the salary increase for transportation and warehousing jobs is significant. This jump may be due to an increase in the need for fewer, high skilled workers.

NETWORK

The Countywide freight network operates at four distinct scales: international, national, regional, and local. Goods are moved differently within a city boundary, within a region, across state boundaries, and across national borders. The distance traveled, commodities transported, vehicles used, and mode selected are all factors that depend upon the scale of the shipment operation and demand for a particular commodity.

The division of this chapter into distinct modes of transport does not deny or exclude the fact that goods movement is becoming increasingly multimodal. Nevertheless, in terms of infrastructure used, time needed, goods transported, and distances traveled, the freight transportation network is best simplified by a mode distinction. The following sections delve into how each mode operates at each scale in Delaware County.

COMMODITIES TRANSPORTED

It is important to note that the commodity flow data presented in the following sections refers to goods movement to or from Delaware County ports or freight terminals. The data presented is not a snapshot of those goods that remain within the County for consumption or use. Furthermore, receivers or shippers may or may not be Delaware County operators, even though goods are received at and shipped from facilities in Delaware County. Frequently, airplanes and ships substitute one another in the transport of certain goods. For example, commodities that may require expedited shipping or climate control, such as fabric, fish, and cork arrive via airplane, while less sensitive commodities, such as cereals, are shipped via ship.

TRUCK TRANSPORTATION

OVERVIEW

The truck transportation subsector within the transportation industry provides on-road transportation of cargo using motor vehicles, namely trucks and tractor trailers. Trucking is the most prominent freight mode in Delaware County, responsible for moving 68 percent of all freight by tonnage and 55 percent of all freight by value (*Freight in Delaware County*, DVRPC; DVRPC analysis of 2011 IHS Transearch). According to the DVRPC simulation model, trucks log 1,029,800 miles on Delaware County roadways on an average day, with light trucks accounting for more vehicle miles than heavy trucks. In 2012 trucking generated \$107,467,000 in revenues in Delaware County (U.S. Census Bureau, 2012 Economic Census).

There are two types of truck transportation activities: general freight trucking and specialized freight trucking. General freight trucking handles a wide variety of general commodities transported via container or van trailer.

General freight establishments provide local pickup, local sorting and terminal operations, line-haul, destination sorting and terminal operations, and local delivery. General freight trucking generated \$67,865,000 in revenues in 2012. General freight trucking can be further subdivided based on distance traveled into local and long-distance general freight trucking.

Specialized freight trucking is the transportation of cargo that requires specialized transportation equipment (e.g., flatbeds, tankers, or refrigerated trailers) due to its size, weight, or shape. Specialized freight trucking involves the local or long-distance transportation of institutional, household, and commercial equipment and furniture. Specialized freight trucking includes both local and long-distance deliveries. This specific subsector contributed \$39,602,000 in revenues (U.S. Census Bureau, 2012 Economic Census). In Delaware County, specialized freight trucking establishments provide both local and long-distance services, but, typically, establishments focus on one or the other.

Infrastructure

The County has 29 miles of interstates and expressways (Media Bypass), 79 miles of National Highway System (NHS) roads, 3 NHS connectors, 15 interstate highway interchanges, and 1 truck rest area.

Highway Performance Measures

Freight transportation is a particularly time-sensitive industry. Traffic congestion results not only in delays but also revenue losses for companies, reduced income for truck drivers (who are paid by the mile), and increased emissions due to time spent idling. Average speeds and emissions are those which should be monitored most closely with regard to transportation planning and the public interest.

Employment Trends

Total Trucking

In 2012, 679 individuals were employed by 79 separate truck transportation establishments in Delaware County (U.S. Census Bureau, 2012 Economic Census). By 2014, the number of truck transportation establishments reached 80, and the number of workers in the subsector reached 740 employees (2014 County Business Patterns).

General Freight Trucking

In 2012, there were 44 general freight trucking establishments with 394 paid employees in Delaware County. In 2014, there were 397 employees.

Specialized Freight Trucking

In 2012, there were 35 specialized freight trucking establishments in Delaware County that employed 285 workers. By 2014, the number of establishments reached 36, and the number of those employed in this group reached 343 (2014 County Business Patterns).

Average Speed

The following table displays the average speeds on Delaware County’s two primary highways, I-476 and I-95. The data displayed is a summary and simplification of the highway performance measures calculated and provided by DVRPC. The speed limit on both roadways is 55 miles per hour (mph) in Delaware County.

Table 5-1: Truck Average Speed

Time of Day	Truck Average Speed on I-476	Truck Average Speed on I-95
12:00 a.m.-7:00 a.m.	50-60 mph (NB/SB)	50-60 mph (NB/SB)
7:00 a.m.-9:00 a.m.	20-30 mph (NB) 40-50 mph (SB)	40-60 mph (NB/SB)
9:00 a.m.-3:00 p.m.	50-60+ mph (NB/SB)	50-60+ mph (NB/SB)
3:00 p.m.-7:00 p.m.	40-50 mph (NB/SB)	10-20 mph (NB/SB, S of I-476) 60+ mph NB (N of I-476) 10-20 mph SB (N of I-476)
7:00 p.m.-12:00 a.m.	50-60 mph (NB/SB)	50-60 mph (NB/SB)

Source: DVRPC Philly Freight Finder: Highway Performance.

U.S. Route 13 and PA Route 291 both connect the heavy industrial riverfront communities of Marcus Hook Borough, Trainer Borough, and Chester City, and Route 291 also crosses Eddystone Borough, Ridley Township, and Tincum Township. These two routes experience low average speeds of between 10 and 30 miles per hour throughout the day (DVRPC Philly FreightFinder).

Emissions

The average diesel-fueled heavy truck emits more than twice as many hydrocarbons per mile and more than 15 times as many nitrous oxides as the average passenger car. In the United States, trucking is the largest contributor to freight-related air pollution. Reducing congestion on the County’s roadways would help reduce emissions.



Figure 5-2: PA Route 291 in Tincum Township, Ridley Township, Eddystone Borough, Chester City, and Trainer Borough is an important truck route that provides arterial access to industrial properties along Delaware County’s riverfront.

SCALE OF OPERATION

Trucks make two types of trips: long-distance or local. Truck trips are conducted differently – and goods are moved distinctly – based on whether commodities are being moved within a metropolitan region or across state or national borders.

National and International

Long-distance general freight trucking establishments provide trucking service between metropolitan areas and sometimes across United States borders. There are 18 *long-distance general freight trucking* establishments with 218 employees in Delaware County. In 2012, long-distance general freight trucking revenues in Delaware County reached \$41,338,000.

Both truckload (TL) and less than truckload (LTL) carriers are included in this industry. TL carriers transport one large shipment and do not stop for multiple pickups. This service is generally used for shipments that weigh more than 20,000 pounds. LTL shipment is used to transport small freight. It is more cost-effective because freight from multiple customers is loaded onto one vehicle. At the same time, this service stops multiple times to load and unload freight.

Regional and Local

Local freight trucking involves same-day trips within one metropolitan area and its adjacent nonurban areas. Trucks return to the trucking establishment of origin within 24 hours (U.S. Census Bureau, 2012 Economic Census). Of the 44 general freight trucking establishments in Delaware County, 26 provide *local general freight trucking services*. 176 individuals were employed in Delaware County local general freight trucking in 2012. Revenue from all local trucking business activities in the same year was reported at \$26,567,000.

DOMESTIC TRADE PATTERNS

Inbound commodities reach Delaware County via truck from every state in the United States, except Alaska and Hawaii. Outbound commodities leave Delaware County for every state, except Alaska and Hawaii. While truck transportation moves both inbound and outbound commodities nationally, most movement of domestic commodities into and out of Delaware County is regional. In other words, goods bound for Delaware County by truck tend to come from the Mid-Atlantic/Northeast region, and goods leaving Delaware County by truck tend to remain within the Mid-Atlantic/ Northeast region.

Inbound

While most inbound truck movement is regional, Baton Rouge, New Orleans, Cleveland, Toledo-Fremont, Minneapolis, Mobile, Augusta, and San Francisco-Oakland are significant trading partners as well. In terms of cargo volume, Harrisburg, Southern New Jersey, the New York Metro Area, and Houston are the top trading partners in that order. In terms of cargo value, the New York Metro Area, Boston, Harrisburg, and Houston are the top trading partners, in that order. Of the top ten trading partners for inbound commodities, Houston is the only one not in the Mid-Atlantic or Northeast. Short truck trips to and from distribution centers, as well as to the airport, comprise the majority of inbound commodity flows in terms of both volume and value.

Top Inbound Commodities in 2011

1 *Secondary Traffic from Warehouses and Distribution Centers*

2,852.6 thousand tons; \$3,193.5 million

2 (volume) *Broken Stone or Riprap*

1,662.1 thousand tons; \$15 million

2 (value) *Air Freight Drayage to the Airport*

67.6 thousand tons; \$686.9 million

(DVRPC processing of the 2011 HIS Global Transearch database)

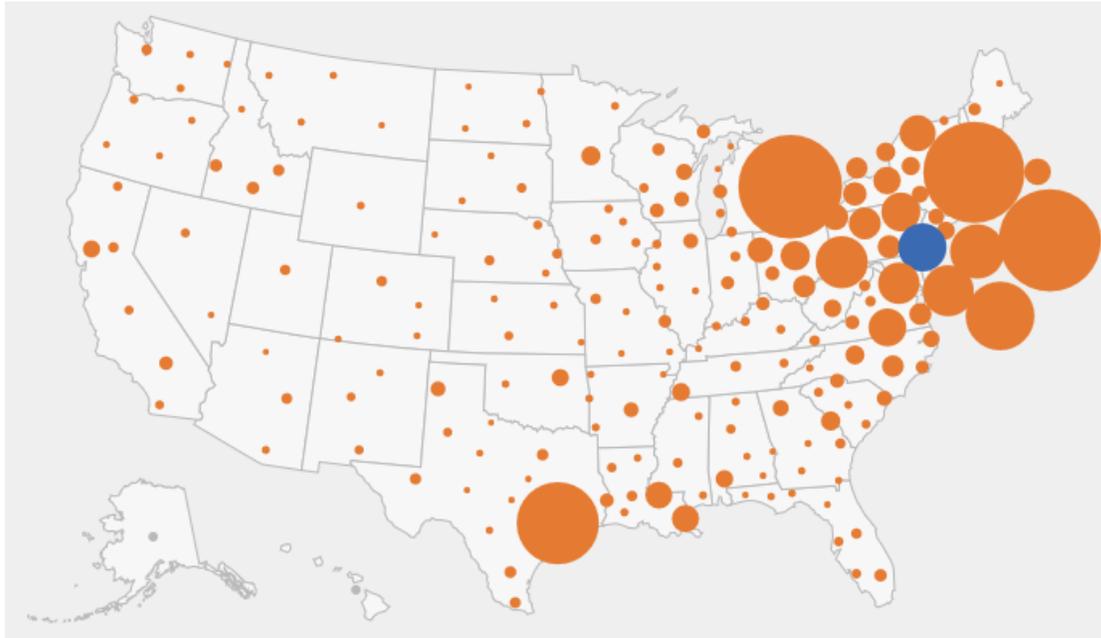


Figure 5-3: The map from DVRPC's PhillyFreightFinder data platform shows which locations in the United States are the **source of the highest volumes of inbound commodities transported by truck to Delaware County.**

Outbound

Outbound commodity flows are even more regional, as opposed to national, than inbound flows. The top (in terms of volume) outbound trading partners are the New York Metro Area, the Washington D.C. Metro Area, Harrisburg, and Chester County. In order of value, the most valuable cargo shipments leave Delaware County for the New York Metro Area, the Washington D.C. Metro Area, Harrisburg, and Boston.

Top Outbound Commodities in 2011

- 1 Petroleum Refining Products**
15,866.7 thousand tons; \$14,496.7 million
- 2 Liquefied Gases**
1,341.9 thousand tons; \$1,090.1 million

(DVRPC processing of the 2011 HIS Global Transearch database)

Beyond the Northeast and Mid-Atlantic regions, Raleigh, North Carolina and Cleveland, Ohio are Delaware County’s top outbound domestic trading partners with regard to shipment volumes. With regard to shipment values, Greensboro, North Carolina and Raleigh, North Carolina are the County’s top trading partners for outbound commodities via truck.

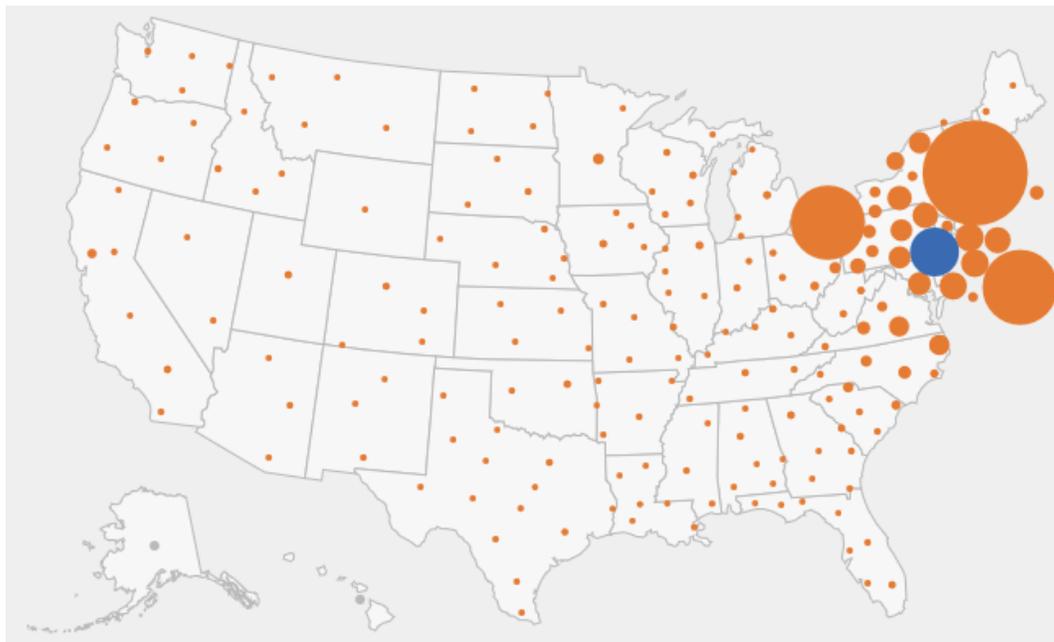


Figure 5-4: The map from DVRPC’s PhillyFreightFinder data platform shows the United States destinations of the highest volumes of outbound commodities transported by truck from Delaware County.

Within

Crude products of coal, gas, and petroleum are the most commonly transported goods by truck within Delaware County. They account for 80,000 tons of commodities transported within the County with a value of \$67.7 million. Movements between warehouse and distribution centers within Delaware County were the second most common; 25.8 thousand tons of goods were moved in 2011 with a total value of \$28.9 million.

COURIER AND MESSENGER TRANSPORTATION

OVERVIEW

Couriers and messengers provide intercity or local delivery of packages. Services include express delivery services. These entities do not operate under a universal service obligation; in other words, they are not required to provide a certain level of service to all residents.

Packages transported by courier or messenger can be handled by one individual without the use of special equipment. As a result, collection, pick-up, and delivery are done swiftly with minimal capital costs; machinery may be used to sort items. Messengers have the flexibility to use more environmentally friendly modes for the transport of goods such as bicycle, foot, small truck, or van. In 2012, the sector generated \$322,134,000 in total revenue in Delaware County.

Employment Trends

Courier and Messenger

In 2012, there were 3,101 employees at 41 courier and messenger establishments in Delaware County.

National Industry Trends

Historic county-level data is not available for this industry. National trends, however, indicate an eight percent increase in the number of courier and messenger establishments between 2002 and 2012 (from 12,655 establishments to 13,799 establishments). There was a six percent decrease in paid courier and messenger employees during the same period (from 561,514 employees to 529,489 employees).

Despite a fall in the number of employees, the courier and messenger industry experienced an increase in revenues in the ten-year period. In 2002, total revenue was reported to be \$58,164,869,000, and in 2012, total revenue was reported to be \$69,361,977,000. These figures are not adjusted for inflation, but it is evident that this sector is growing and more such deliveries are being made.

Infrastructure

Couriers and messengers primarily use local streets and collector streets. Nevertheless, sometimes goods are moved via major roadways, depending on the distance and the road network of a particular area.

For downtown deliveries, Local Streets in Mature Neighborhoods are those most commonly traversed by these smaller vehicles. Bike lanes are uncommon on these streets, and while most mature neighborhoods have a strong sidewalk network, the conditions of pedestrian facilities vary. Small trucks and vans must share these roadways with other motor vehicles. On narrow streets, stopping for delivery can cause traffic delays in residential areas.



Figure 5-5: U.S. Route 202 in Concord and Chadds Ford Townships experiences frequent truck and courier traffic.

SCALE OF OPERATION

Regional, National, and International

Courier and express delivery services involve the multimodal shipment (i.e., air and on-road) of small packages. Courier and express delivery establishments are part of a larger network that renders services

Chapter 5: Movement of Goods

between metropolitan areas or urban centers. There are 18 such establishments and 2,806 courier and express delivery employees in Delaware County. Industry group revenues reached \$292,840,000 in 2012.

Local

Local messenger and delivery services include small shipments within a single metropolitan area or urban center. In Delaware County, this industry group has 295 employees, 23 establishments, and generated \$29,294,000 in revenues in 2012. These establishments do not operate as part of a broader network.

TRADE PATTERNS

Courier and messenger services move a wide variety of goods, including clothing, cosmetics, legal documents, small household items, produce, electronics, and other smaller items. As mentioned previously, courier and express delivery services involve multimodal shipment. For example, assume one orders a bath gel online that is only available in Portugal. The item will be shipped from Portugal and transported using a variety of modes, including airplane transportation. Some commodities may be stored locally in distribution centers or lockers, and the courier or messenger service is responsible only for last-mile delivery.

RAIL

OVERVIEW

In terms of tonnage, freight rail only moves four percent of commodities in Delaware County. Its modal share of commodities by value is ten percent. Overall, freight rail is the fourth most popular mode of goods transport.

The County's freight rail network is ample and includes 51 miles of freight tracks and six yards and intermodal terminals. Three major freight rail companies dominate the Delaware County landscape: Conrail (Consolidated Rail Corporation), CSX, and Norfolk Southern. Conrail is owned by CSX and Norfolk Southern; the company provides local rail service. Its service areas are shared assets of the two parent companies, which operate long distance freight trains on the freight railroad tracks in Delaware County.



Figure 5-6: The Main Street and 6th Street grade crossing in Darby Borough is the only grade crossing in the nation where an active freight rail line crosses an active fixed-rail transit line, with vehicular and pedestrian movement through the intersection. The freight rail line is owned and operated by CSX. Source: DVRPC

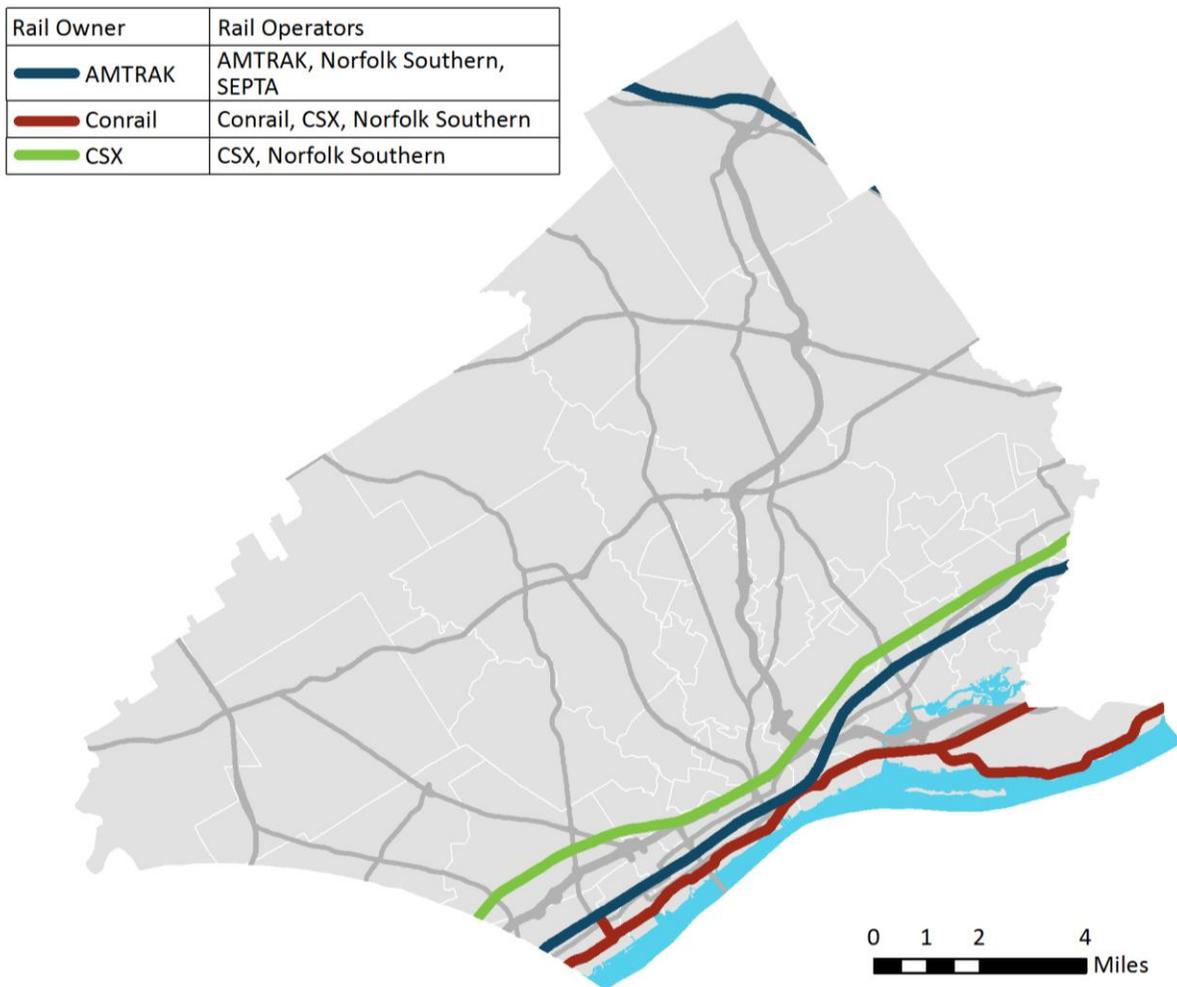
Infrastructure

All of Delaware County's freight railroads are Class I railroads, which are defined by the Federal Surface Transportation Board (STB) as having more than a minimum threshold value of annual carrier operating revenue. These railroads primarily operate long-haul service over high-density intercity traffic lanes.

Seven U.S. railroad systems are classified as Class I, including the CSX and Norfolk Southern systems that traverse Delaware County (PennDOT Freight Plan).

There are four main railroad lines used to transport inbound and outbound commodities through Delaware County: CSX’s Philadelphia Subdivision line, Conrail’s Chester Secondary line, Amtrak’s Northeast Corridor line, and Amtrak’s Keystone/Main line. The two Amtrak lines are used primarily for passenger service, but Norfolk Southern and Conrail freight trains occasionally use them. The CSX and Conrail lines in Delaware County are used solely for freight. However, a portion of the Chester Secondary line in Philadelphia is also used by SEPTA’s Airport regional rail line; this segment, owned by the City of Philadelphia, is leased to SEPTA for passenger rail service and this section of track cannot be used for freight between 4:00 a.m. and 12:00 a.m. However, between 12:00 a.m. and 4:00 a.m., when SEPTA Airport line service is not operating, Conrail operates on this segment, serving freight shippers and receivers on the Chester Secondary line between Tinicum Township and Marcus Hook Borough.

Map 5-5: Ownership/Operation of Railroads Used for Freight Movement in Delaware County



SCALE OF OPERATION

Goods can be shipped internationally, nationally, regionally, and locally by rail. Freight rail is most efficient for moving heavy freight over long distances, and the majority of commodities transported via rail are bulk commodities.

Regional Corridors

I-95 Freight Rail Corridor

Delaware County is part of the I-95 Freight Rail Corridor, the southeastern Pennsylvania rail corridor that contains the CSX mainline and parallels I-95 at Chester north through Philadelphia to the New Jersey/Pennsylvania border at Yardley (*Pennsylvania Intercity Passenger and Rail Freight Plan*, PennDOT, 2010). This corridor accommodates double-stack trains, and its main track is 286K compliant, which means it can handle newer, heavier (286,000 pound) train cars. The line runs south from Newark, New Jersey through Philadelphia, Wilmington, Baltimore, Washington D.C., and Richmond to Florida. This line is crucial in providing a coastal freight connection from the Mid-Atlantic to the Southeast, and it provides multiple connections to CSX's East-West routes. The portion of the CSX I-95 line that transects Delaware County – designated as Corridor 3, Segment 3-2 – runs from Philadelphia to Wilmington.

Northeast Corridor (NEC)

Amtrak's Northeast Corridor (NEC), designated as Corridor 4 and Segments 4-1 to 4-4, connects Boston, New York, and Washington D.C., with services to Portland, ME and south to Richmond, VA. Many segments of the NEC are used for local rail freight movements in Delaware County. Most of these trains are operated by Norfolk Southern and CSX during nighttime hours. An estimated 48 trains will run on this segment per day by 2035 (Mid-Atlantic Rail Operations Phase II Study: Final Report. I-95 Corridor Coalition. December 2009).

The scale of rail freight operation is dependent upon the available infrastructure. The companies that operate within Delaware County have a rail network that is limited to the eastern United States (with a small segment reaching Canada). Conrail, Norfolk Southern, and CSX own railroads solely in the eastern United States.

International

CSX, one of the rail freight operators in Delaware County, owns infrastructure that connects to Montreal, Canada. As a result, the County's rail freight infrastructure is part of a larger, international network that facilitates the movement of goods to and from Canada.

National

Differently from truck transportation, most inbound and outbound rail freight movement in Delaware County occurs on a national level – across state boundaries and beyond regional boundaries. The County's busiest rail freight line is the CSX Philadelphia Subdivision line, which closely parallels I-95.

Regional Goods Movement

Regional freight rail movement is mostly limited to outbound movements to the Mid-Atlantic Region. The Mid-Atlantic Region is composed of: Pennsylvania, Maryland, Delaware, New Jersey, Virginia, West Virginia, and Washington D.C.

Local Goods Movement

Though other counties in the Delaware Valley Region were not among the top ten trading partners for inbound and outbound commodities transported via rail in 2011, Bucks and Gloucester Counties were strong trading partners for outbound commodities, while Philadelphia and Gloucester Counties were strong inbound commodity trading partners.

DOMESTIC TRADE PATTERNS

Inbound

In 2011, little inbound freight movement occurred via rail within the region, with most commodities being moved inbound from central states, such as Michigan, Ohio, Illinois, Missouri, Kentucky, and Tennessee. Most motor vehicles were transported into the County from Detroit, Michigan. Georgia, Alabama, and Louisiana were also significant trading partners in 2011.

Outbound

Most outbound trade occurred within the Mid-Atlantic Region, with most freight destined for Virginia, New Jersey, and Pennsylvania within that region. Other outbound commodity trading partners were located in Indiana, Illinois, Wisconsin, Michigan, Ohio, Arizona, Tennessee, Georgia, and Texas.

Top Inbound Commodities in 2011

1 *Motor Vehicles*

565.8 thousand tons; \$5,130.3 million

2 *Liquefied Gases, Coal or Petroleum*

197.2 thousand tons; \$188.4 million

(DVRPC processing of the 2011 HIS Global Transearch database)

Top Outbound Commodities in 2011

1 *Plastic Matter or Synthetic Fibers*

301.8 thousand tons; \$653.2 million

2 *Liquefied Gases, Coal, or Petroleum*

44.7 thousand tons; \$44.2 million

(DVRPC processing of the 2011 HIS Global Transearch database)

Within

The only commodities moved by rail within Delaware County are Plastic Matter or Synthetic Fibers. These account for 184.5 thousand tons moved with a cargo value of \$399.5 million.

MARITIME

OVERVIEW

Moving goods via water is the most energy efficient and environmentally friendly means of cargo transport per ton. It is also one of the lowest cost shipping solutions. Water transportation is, however, the slowest freight transportation mode, making it best suited for large shipments of lower-cost goods and raw materials (PennDOT Freight Plan).

The Delaware River is one of the County's greatest assets from an environmental, economic, and social standpoint. The municipalities of Marcus Hook, Trainer, and Eddystone Boroughs, Chester City, and Ridley and Tinicum Townships front the Delaware River. The country's largest ports have depths between 45 and 50 feet, and by mid-2017, the Delaware River channel will be deepened to 45 feet. Its new depth will increase access to larger vessels. Larger ships from Asia will be able to navigate the River. The increased capacity may allow Delaware County – and Delaware Valley Region – ports to accept and handle break-bulk commodities that are being handled by ports elsewhere in the country (PennDOT Freight Plan).



Figure 5-7: Ships can regularly be seen traversing the Delaware River from the coast of Marcus Hook Borough.

Infrastructure

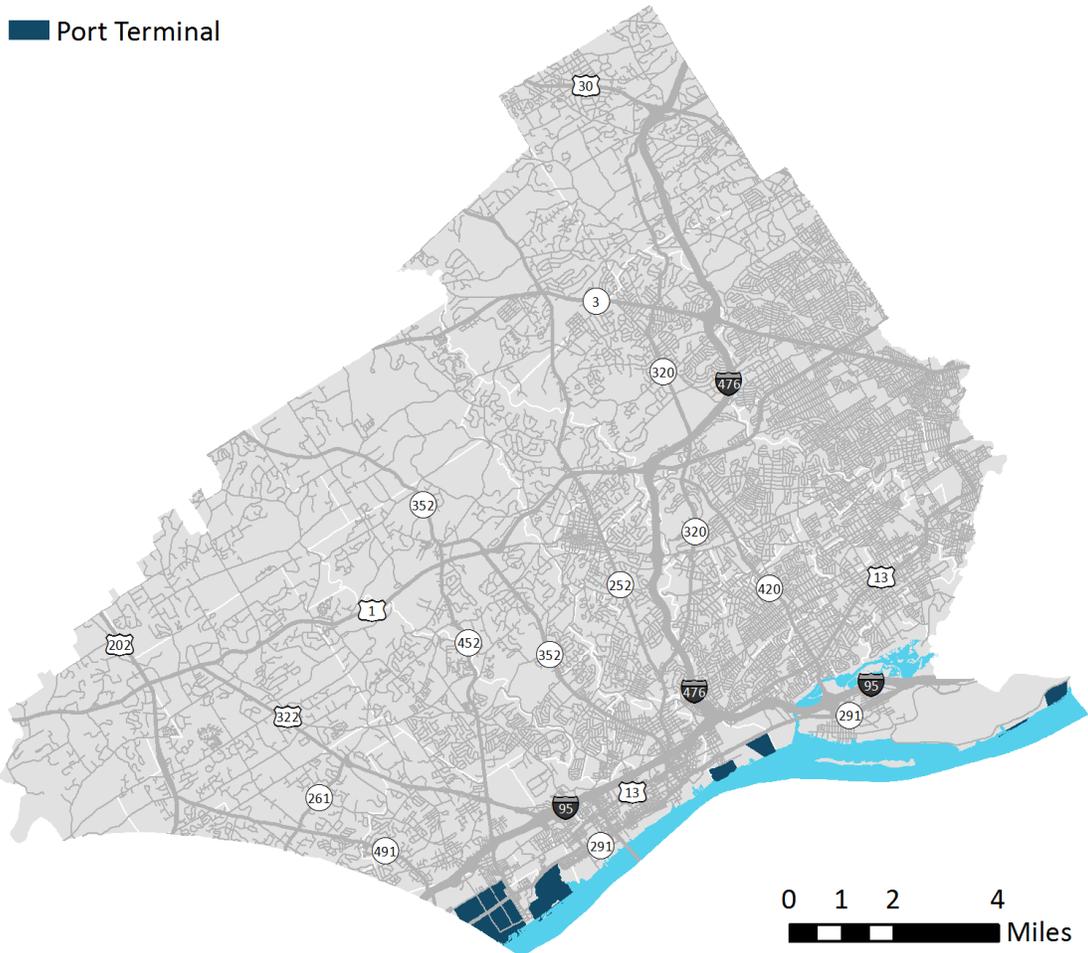
Delaware County has six ports along the Delaware River from west to east: Marcus Hook, Trainer, Penn Terminals, Eddystone, Hog Island, and Fort Mifflin. All are bulk terminals, with the exception of Penn Terminals, which is a general cargo terminal. General cargo refers to goods that are loaded individually. Bulk cargo refers to cargo shipped in bulk. Containerized cargo is cargo moved in intermodal containers. The commodities data presented in this section is an aggregate of all types of cargo, generally defined as vessel data.

The Panama Canal

The deepening of the Panama Canal allows vessels larger than 275 meters in length, or “post-Panamax” ships, to reach ports in Delaware County. This new capacity has the potential to attract new industry, as well as lead to the expansion of existing industry in these riverfront communities.

In Map 5-6 below, one can note that trucks require access over local streets to reach riverfront ports.

Map 5-6: Delaware County Port Terminals



SCALE OF OPERATION

International

Goods received and shipped at Delaware County ports are exported from and imported to all regions of the world. Specifically, Delaware County's maritime trading partners are Africa, Asia, Australia and Oceania, Europe, North America, and South and Central America. Europe is the County's primary maritime trading partner.

National, Regional, and Local

In 2011, some inbound and outbound trade occurred between Delaware County and locations in Texas, Louisiana, Mississippi, South Carolina, North Carolina, and Illinois. Nevertheless, most goods movement into and out of Delaware County river ports by ship occurs within the Northeast.

DOMESTIC TRADE PATTERNS

Inbound

The primary trading partner for domestic inbound commodities is Southern New Jersey. Philadelphia County, the New York Metro Area, and Gloucester County follow suit. In 2011, 7,075,234 tons of goods worth \$4,432.8 million arrived through Delaware County river ports.

Outbound

The top trading partner for domestic outbound commodities is the New York Metro Area, followed by Philadelphia County, Washington D.C. Metro Area, and Gloucester County in New Jersey.

Within

Petroleum Refining Products were the most commonly moved commodity via water within the County. 363.9 thousand tons of these products with a value of \$332.4 million were moved within Delaware County by ship in 2011. Miscellaneous Coal and Petroleum Products were the second most moved commodity within the County. 79.1 thousand tons of these products with a value of \$67.8 million were moved via water within the County.

Top Inbound Commodities in 2011

1 *Crude Petroleum*

5,865.6 thousand tons; \$3,419.5

2 *Petroleum Refining Products*

1,067.9 thousand tons; \$973.8 million

(DVRPC processing of the 2011 HIS Global Transearch database)

Top Outbound Commodities in 2011

1 *Petroleum Refining Products*

2,676.2 thousand tons; \$2,444.8 million

2 (volume) *Crude Products of Coal*

142.6 thousand tons; \$120.6 million

2 (value) *Miscellaneous Organic Chemicals*

79.7 thousand tons; \$136 million

(DVRPC processing of the 2011 HIS Global Transearch database)

INTERNATIONAL TRADE PATTERNS

The following sections highlight key vessel data, which is a combination of data for both break bulk and containerized cargo, for international maritime trade. As mentioned previously, Europe is Delaware County’s largest maritime trading partner. Mineral Fuel, Oil, Bitumen Substitutes, and Mineral Wax were the most exported commodities via ship in the first ten months of 2016.

Top Inbound Commodities

Jan 1, 2016 – October 31, 2016

Africa *Mineral Fuel, Oil, Bitumen Substitutes, and Mineral Wax*

3,232.4 tons; \$1,115.5 million

Asia (volume) *Mineral Fuel, Oil, Bitumen Substitutes, and Mineral Wax*

6.8 thousand tons; \$6.4 million

Asia (value) *Organic Chemicals*

1.1 thousand tons; \$13.8 million

Australia and Oceania *Special Classification Provisions*

0.1 thousand tons; \$0.6 million

Europe (volume) *Iron and Steel*

186 thousand tons; \$245.8 million

Europe (value) *Organic Chemicals*

20.5 thousand tons; \$329.6 million

North America *Mineral Fuel, Oil, Bitumen Substitutes, and Mineral Wax*

360.8 thousand tons; \$131.8 million

South and Central America *Edible Fruits and Nuts, Citrus Fruit or Melon Peel*

119.2 thousand tons; \$57.5 million

(DVRPC processing of the 2011 HIS Global Transearch database)

Top Outbound Commodities

Jan 1, 2016 – October 31, 2016

Africa *Mineral Fuel, Oil, Bitumen Substitutes, and Mineral Wax*

14.7 thousand tons; \$9 million

Asia *Mineral Fuel, Oil, Bitumen Substitutes, and Mineral Wax*

23.7 thousand tons; \$13.2 million

Australia and Oceania *Mineral Fuel, Oil, Bitumen Substitutes, and Mineral Wax*

50.6 thousand tons; \$34.2 million

Europe (volume) *Mineral Fuel, Oil, Bitumen Substitutes, and Mineral Wax*

289 thousand tons; \$123.3 million

Europe (value) *Plastics and Articles Thereof*

50.4 thousand tons; \$280.7 million

North America *Paper, Paperboard, and Articles Including Paper Pulp*

0.03 thousand tons; \$0.03 million

South and Central America (volume) *Miscellaneous Edible Preparations*

0.5 thousand tons; \$0.6 million

South and Central America (value) *Nuclear Reactors, Boilers, Machinery, and Parts*

0.08 thousand tons; \$0.7 million

(DVRPC processing of the 2011 HIS Global Transearch database)

AIR

OVERVIEW

Philadelphia International Airport (PHL) is Delaware County’s sole airport and is owned and operated by the City of Philadelphia. The majority of PHL property, the main runways, some of the terminals (including the International Terminal), Cargo City, and the United Parcel Service facility are located in Tinicum Township. Despite the fact that PHL is a major airport that serves the greater Philadelphia region (and has local noise and traffic impacts in Tinicum Township), no other entities have any authority over its operations.

There is one nonscheduled chartered freight air transportation establishment in Delaware County, dedicated solely to air transportation of cargo – not passengers – with no regular routes and schedules. There are also two passenger air transportation establishments in Delaware County. One is a scheduled passenger air transportation establishment, and the other is a nonscheduled chartered passenger air transportation establishment. While both of these primarily engage in the transport of passengers, cargo and freight may also be included on board (2012 U.S. Economic Census).



Figure 5-8: The UPS facility is located in Tinicum Township.

While airplanes are the most costly transportation mode, shipping by air is the fastest and most reliable method. As a result, time-sensitive, high-value, and perishable goods are shipped via air. In Pennsylvania, air cargo is important for the support of the state's high-technology and biomedical industries (Pennsylvania Freight Transportation Plan).

Infrastructure

Philadelphia International Airport Cargo City is located in Tinicum Township, Delaware County. Cargo City includes freight facilities for the Fed Ex Ship Center, Delta Cargo, American Airlines Cargo, Lufthansa Cargo, Alaska Air Cargo, United Airlines Cargo, American Airlines Cargo, and Southwest Airlines Cargo.

UPS has a large facility in Tinicum Township as well. It is an intermodal facility; freight is moved into and out of this facility via airplane, large trucks, and smaller delivery vehicles.



Figure 5-9: Philadelphia International Airport is located in both Delaware and Philadelphia Counties. Cargo City is located in Delaware County, and most passenger air terminals are located within Philadelphia.

Roadway connections to Cargo City and the Philadelphia International Airport provide the necessary critical infrastructure for the delivery of goods to and from the facilities. Increasing connectivity between these modes can help cut shipping costs and make freight movement more efficient.

SCALE OF OPERATION

International, National, Regional, and Local

Airplanes have the capacity to travel much longer distances, overseas, at a much greater speed. Therefore, airplanes are often the best mode for the transport of international cargo, especially lighter freight. Inbound and outbound commodities reach and leave Philadelphia International Airport from almost every state in the United States. Local movement of freight via air occurs within the Philadelphia Metropolitan Area between Delaware County and Burlington County, New Jersey. No freight air transport occurs *within* Delaware County.

DOMESTIC TRADE PATTERNS

Inbound

The largest quantities of inbound commodities come from across the country – California – and offshore – Hawaii.

Outbound

The largest volumes of commodities bound for destinations beyond the Northeast Region reach locations in the states of California, Florida, Texas, and Washington. Boston, however, is the primary trading partner for outbound commodities.

Top Inbound Commodities in 2011

1 (volume) *Mail and Express Packages*

11.7 thousand tons; \$30.5 million

1 (value) *Electrical Equipment*

6.3 thousand tons; \$1,406.5 million

2 (volume) *Food Products*

7.6 thousand tons; \$56.3 million

2 (value) *Manufacturing Products*

2.2 thousand tons; \$1,324.3 million

(DVRPC processing of the 2011 HIS Global Transearch database)

Top Outbound Commodities in 2011

1 *Electrical Equipment*

19.9 thousand tons; \$4,477.1 million

2 (volume) *Mail and Express Packages*

7.9 thousand tons; \$20.7 million

2 (value) *Miscellaneous Manufacturing Products*

2.6 thousand tons; \$1,582.3 million

(DVRPC processing of the 2011 HIS Global Transearch database)

INTERNATIONAL TRADE PATTERNS

Foreign trade commodities that are not transported via water are transported via air. Europe is Delaware County's largest international trading partner with regard to international commodities transported by aircraft as well.

Top Inbound Commodities

Jan 1, 2016 – October 31, 2016

Africa (volume) *Apparel Articles and Accessories, Not Knit*

0.2 thousand tons; \$7 million

Africa (value) *Coffee, Tea, Mate, and Spices*

0.05 thousand tons; \$15.3 million

Asia *Pharmaceutical Products*

2.3 thousand tons; \$468.8 million

Australia and Oceania (volume)

Nuclear Reactors, Boilers, Machinery, and Parts

0.004 thousand tons worth \$0.1 million

Australia and Oceania (value) *Coffee, Tea, Mate, and Spices*

0.003 thousand tons; \$0.5 million

Europe (volume) *Nuclear Reactors, Boilers, Machinery, and Parts*

3.0 thousand tons; \$217.6 million

Europe (value) *Pharmaceutical Products*

2.3 thousand tons; \$2,845.6 million

North America (volume) *Plastics and Articles Thereof*

0.07 thousand tons; \$0.4 million

North America (value) *Pharmaceutical Products*

0.02 thousand tons; \$128.6 million

South and Central America (volume)

Edible Vegetables and Certain Roots and Tubers

0.3 thousand tons; \$0.3 million

South and Central America (value)

Special Classification Provisions

0.003 thousand tons; \$4 million

(DVRPC processing of the 2011 HIS Global Transearch database)

Top Outbound Commodities

Jan 1, 2016 – October 31, 2016

Africa *Pharmaceutical Products*

0.1 thousand tons; \$17.8 million

Asia (volume) *Nuclear Reactors, Boilers, Machinery, and Parts*

0.5 thousand tons; \$49.1 million

Asia (value) *Pharmaceutical Products*

0.3 thousand tons; \$145.3 million

Australia and Oceania *Pharmaceutical Products*

0.03 tons; \$4.5 million

Europe (volume) *Nuclear Reactors, Boilers, Machinery, and Parts*

5.8 thousand tons; \$582.9 million

Europe (value) *Optic, Photo, Medical, or Surgical Instruments*

4.8 thousand tons; \$872.4 million

North America *Electric Machinery, Sound Equipment, Television Equipment, and Parts*

0.5 thousand tons; \$246.9 million

South and Central America (volume)

Miscellaneous Edible Preparations

0.08 thousand tons; \$0.6 million

South and Central America (value)

Electric Machinery, Sound Equipment, Television Equipment, and Parts

0.008 thousand tons; \$7.8 million

(DVRPC processing of the 2011 HIS Global Transearch database)

PIPELINE

OVERVIEW

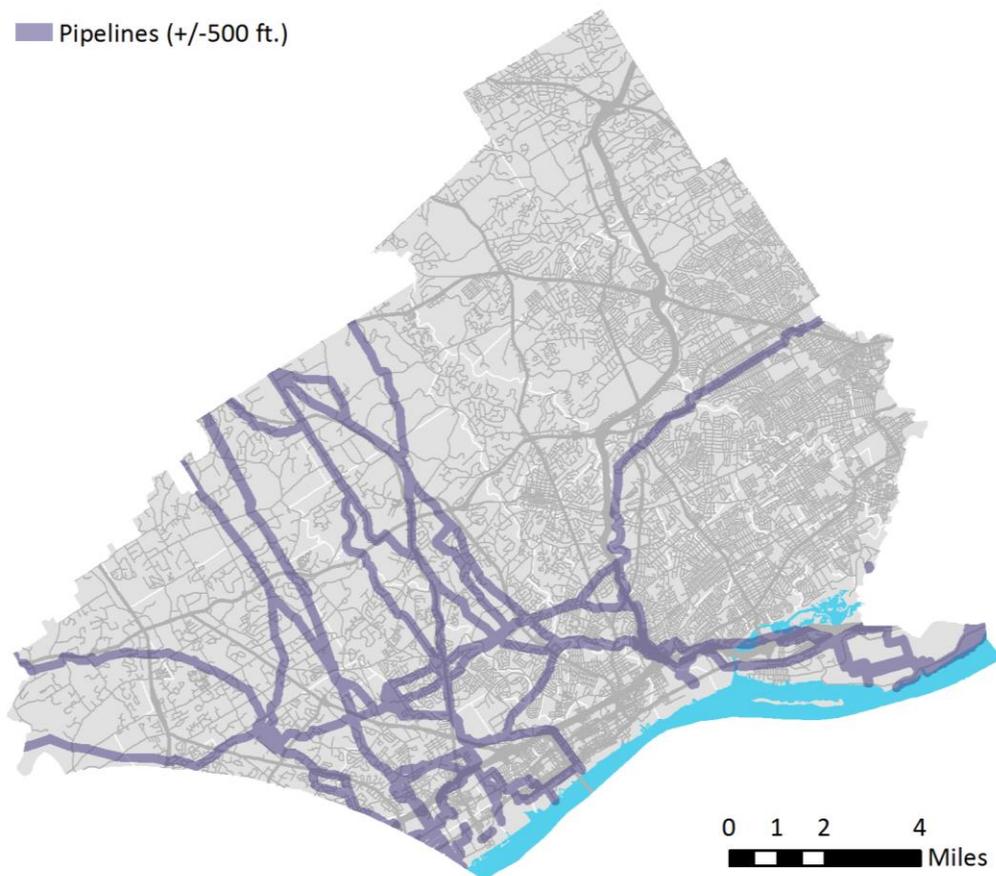
Pipeline transportation is a subsector of the transportation industry that uses transmission pipelines to transport products, including crude oil, natural gas, refined petroleum products, and slurry. A pipeline establishment is an industry within this subsector. Census data is not available regarding the number of individuals employed in pipeline transportation in Delaware County. Nevertheless, according to the U.S. Economic Census, there were five pipeline establishments in the County in 2012.

Infrastructure

As of October 2016, Delaware County had 287.89 miles of underground pipeline infrastructure. This mileage will soon increase due to the construction of an addition pipeline to Marcus Hook. Two types of pipes are found in the County: liquid and gas. Liquid pipes are typically used to transport crude oil, hazardous liquids, highly volatile liquids, and multiple (liquid) products. Gas pipes are typically used to transport natural gas. Most pipelines in Delaware County are gas pipes.

Map 5-8 shows the pipelines in Delaware County with an approximately 500-foot buffer. Pipelines are located in the less dense areas, as well as the more industrial neighborhoods of the County. Most of the neighborhoods in the northeastern and southeastern parts of the County do not have any pipeline infrastructure.

Map 5-7: Delaware County Pipelines



SCALE OF OPERATION

In the United States, the production of domestic oil has increased by almost 60 percent since 2013 (Beyond Traffic, USDOT). In addition, the Energy Information Administration expects the United States to be a net exporter of natural gas by 2020. Oil and gas production trends could continue to alter in the coming years, and a push for the construction of new pipelines may be felt across the nation.

National, Regional, and Local

There are three types of distribution at the national, regional, and local level, respectively: transmission, distribution, and gathering. Transmission is the transport of a product thousands of miles from its processing facility, across the continental United States. Distribution is the supply of a product to homes and businesses through local distribution mains and service lines. Finally, at the most localized level, gathering involves the collecting of a product from production wells to the large, cross-country transmission pipelines.

DOMESTIC TRADE PATTERNS

In 2011, crude petroleum accounted for 2,788.2 thousand tons (\$1,585,200,000) of domestic inbound commodities via pipeline. However, the shift from crude oil to natural gas for energy is occurring across international energy markets and will affect the volume and value of crude petroleum that is transported through Delaware County. As oil prices drop and the United States increases its stake in the production of natural gas, freight transport will focus more on the transportation of the latter, which can be transported across long distances through gas pipelines.

Natural gas is the most commonly transported commodity via pipeline in Delaware County. Differently from crude oil and other liquids, natural gas is both transported and stored within the pipeline network.

One example of the local impacts of this international market shift is the new Marcus Hook Industrial Complex. The complex will include terminalling and have a storage capacity of approximately 3,000,000

Commodity Highlights

In 2011, crude petroleum accounted for 2,788.2 thousand tons (\$1,585.2 million) of inbound pipeline commodities.

Natural gas is the most commonly transported commodity via pipeline in Delaware County.

barrels of Natural Gas Liquids. The facility will be able to receive natural gas liquids via marine vessel, pipeline, truck, and rail and deliver via marine vessel, pipeline, and truck. The new facility also has the potential to create a new, local pipeline movement of propylene from the new industrial complex in Marcus Hook Borough to the Monroe Energy site in Trainer Borough, where it would be used to create polypropylene.

VISION PLAN

Current Conditions

- The volume and value of international goods moved through Delaware County has fallen dramatically.
- Congestion is increasingly an issue, and longer travel times lead to financial losses.
- In denser urban areas, trucks cut through residential areas to avoid traffic on major roadways.
- Grade crossings are not designed in such a way that ensures pedestrian, bicyclist, and motorist safety.
- Localized freight movement traffic along the waterfront impede resident access to this area.
- Supply Chain Centers offer employment opportunities for Delaware County residents in the manufacturing, transportation, and warehousing sectors.



Figure 5-10: Trucks regularly travel south on Engle Street from I-95 to turn left onto U.S. Route 13.

Future Conditions

- Delaware County will have designated truck routes for the safe and timely passage of trucks.
- Congestion will be mitigated by an increase in active transportation and public transit use, as well as the creation of freight-only facilities.
- Travel times will be reduced as a result of the increased efficiency of the transportation network.
- Grade crossings across the County will be made safer for all those who traverse these intersections.
- More freight industry jobs will be created in Delaware County.
- Waterfront access will be improved and made safer.
- Nuisances, such as acoustic pollution, caused by freight-related economic activities will be mitigated.



Figure 5-11: The Chester Riverwalk provides access to the riverfront in Chester City, while exposing both the industrial landscape and natural beauty of the area.



Action Plan 6

Chapter 6: Action Plan

OVERVIEW

The purpose of this plan is to guide Delaware County and its municipalities in the planning, creation, and maintenance of a transportation network that aligns with the three goals of this Plan: improve, extend, and integrate. In order to do so, the County and municipalities must work together to implement the actions identified in this plan. It requires a long-term, coordinated effort that involves consistent communication with the public.

HOW THE COUNTY SHOULD USE THIS PLAN

In implementing the County's comprehensive plan, Delaware County 2035, this Transportation Plan can be used to direct the transportation projects and priorities. The objectives and actions listed throughout the Plan provide the path for the County to meet the overarching goals of improving, expanding, and integrating the transportation network.

HOW MUNICIPALITIES SHOULD USE THIS PLAN

The Transportation Plan is intended to serve as a resource for municipalities. Municipalities should reference this plan when developing their own comprehensive transportation plans and incorporate the countywide vision as appropriate. The actions listed throughout this plan, and compiled below, offer actions for municipalities to work toward these goals.

ACTION PLAN

The actions detailed throughout this plan are intended to provide direction for Delaware County and municipalities in implementing the County transportation vision. A full list of the objectives and corresponding actions, along with timing, can be found in Table 6-1.

Table 6-1: Action Plan

OBJECTIVE		
TR 1	Support the implementation of Complete Streets in the County.	
ACTION	<i>Delaware County will...</i>	
TR 1.1	Provide Complete Streets technical information to municipalities and encourage the adoption of municipal Complete Streets policies.	●
TR 1.2	Encourage public-private partnerships between businesses and municipalities to invest in transportation improvements, alternative transportation modes, and congestion mitigation measures.	●
TR 1.3	Promote, support, and assist in the creation and adoption of municipal bicycle and pedestrian plans.	●
TR 1.4	Facilitate coordination between municipalities for consistency in maintenance practices.	●
TR 1.5	Work with PennDOT and municipalities to implement the County's Bicycle Network, improve sidewalk connectivity and conditions, and improve transit stop facilities.	●
TR 1.6	Identify priority roadways for Complete Streets implementation.	●
TR 1.7	Develop Complete Streets guidelines for all roadway typologies.	▲
TR 1.8	Maintain sidewalk data as needed to reflect changes in countywide sidewalk conditions.	●
TR 1.9	Work with PennDOT and municipalities to identify and implement best practices for signalization timing and alternative designs at intersections.	●
	<i>Municipalities are encouraged to...</i>	
TR 1.10	Adopt Complete Streets policies.	●
TR 1.11	Develop bicycle and pedestrian plans to implement improvements in a targeted manner.	●
TR 1.12	Work cooperatively to plan and implement multi-municipal multi-modal facilities and infrastructure.	●
TR 1.13	Make necessary zoning changes to encourage Complete Streets implementation, and include incentives for developers to provide pedestrian and bicyclist connections to and within new developments.	●
TR 1.14	Create a municipal wayfinding signage plan for distinct users.	◆
TR 1.15	Incorporate green stormwater infrastructure in transportation improvement projects.	●
TR 1.16	Work with PennDOT to identify and implement best practices for signalization timing and alternative designs at intersections.	●

▲ : Short Range (1-5 Years) ◆ : Medium Range (5-10 Years) ● : Ongoing

OBJECTIVE

TR 2

Improve the safety of Delaware County’s transportation network.

ACTION *Delaware County will...*

TR 2.1	Study intersection safety at intersections across Delaware County and work with municipalities and PennDOT to make improvements.	●
TR 2.2	Continue to participate in the Regional Safety Task Force and Delaware County Traffic Incident Management Task Force to identify safety actions.	●
TR 2.3	Work with regional partners to continue to monitor on-road mobile source emissions and encourage sustainable transportation solutions.	●
TR 2.4	Develop stronger relationships with freight railroads and continue to advocate for safer at-grade intersections, particularly in neighborhoods with civic and residential uses.	●
TR 2.5	Identify and assess innovative funding streams to address County and municipal bridge, road, and safety issues.	●
TR 2.6	Collect and maintain an inventory of projects and pursue funding for them.	▲
TR 2.7	Support municipalities in adopting and implementing Vision Zero policies.	●

Municipalities are encouraged to...

TR 2.8	Support safety educational programs for residents.	●
TR 2.9	Implement safety actions identified by the County and regional partners.	●
TR 2.10	Provide information to residents about on-road mobile source emissions in critical areas, as well as suggestions on how to help improve air quality.	◆
TR 2.11	Identify potential improvements to on-street parking to enhance safety for motorists, pedestrians, and bicyclists.	●
TR 2.12	Work with regional partners to identify and improve dangerous transit station and stop conditions.	●
TR 2.13	Adopt Vision Zero policies to eliminate fatalities and serious injuries on roadways.	●

▲ : Short Range (1-5 Years) ◆ : Medium Range (5-10 Years) ● : Ongoing

OBJECTIVE

TR 3 Increase the modal share of alternative transportation.

ACTION *Delaware County will...*

TR 3.1	Conduct a countywide walkability survey to aid municipalities in planning more walkable communities.	▲
TR 3.2	Continue to work with PennDOT and municipalities to discuss bike lane maintenance options.	●
TR 3.3	Serve as an example for employers to encourage alternative modes and methods of commuting to work by providing incentives to County of Delaware employees to take transit, car pool, bicycle, and walk to work.	●
TR 3.4	Support the DCTMA in outreach efforts to employers and employees to encourage alternative modes and methods of commuting to work and school.	●
TR 3.5	Encourage the use of park-and-ride facilities in the County.	●
TR 3.6	Work with partner agencies and municipalities in connecting off-road routes to transit stations and other destinations.	●
TR 3.7	Continue to work with multi-municipal coalitions to address multimodal improvements along corridors.	●
TR 3.8	Assist in the implementation of safe routes to school.	●
TR 3.9	Develop and maintain a bicycle plan to prioritize implementation of the bicycle network in the County.	▲

Municipalities are encouraged to...

TR 3.10	Adjust their zoning and subdivision and land development ordinances to include incentives for multimodal facilities as features of new developments.	●
TR 3.11	Plan activities and events that promote active transportation and transit use, such as Walk to Work Day, Walk to School Day, Safe Routes to School, and Bike to Work Day.	●
TR 3.12	Provide information to public and private entities regarding alternative transportation modes.	●
TR 3.13	Incorporate regulations for changing vehicle technologies, fueling facilities, and movement patterns into their zoning codes.	◆
TR 3.14	Coordinate with adjacent municipalities to create sustainable transportation connections.	●
TR 3.15	Adopt zoning ordinances that minimize the impacts of parking, regulate the design of these facilities, and change parking minimum space requirements to maximum space requirements.	●

▲ : Short Range (1-5 Years) ◆ : Medium Range (5-10 Years) ● : Ongoing

OBJECTIVE
TR 4 **Increase mobility by expanding public transit access and integrating multimodal facilities.**

ACTION *Delaware County will...*

- TR 4.1 Coordinate strategic investments in the transportation network to improve multimodal connectivity. ●
- TR 4.2 Provide technical assistance to municipalities to improve multimodal access to transit stations and stops. ●
- TR 4.3 Work with partners to increase the application of transit initiatives, programs, and transit commuter incentives. ●
- TR 4.4 Study transit-oriented development (TOD) potential of appropriate transit stations. ▲
- TR 4.5 Identify appropriate levels of bicycle and car parking across the county. ◆
- TR 4.6 Identify opportunities to improve access to paratransit service. ▲

Municipalities are encouraged to...

- TR 4.7 Require the development of safe bicyclist and pedestrian routes within a ½-mile of public transit stops or stations and along significant transit corridors. ▲
- TR 4.8 Develop incentives for new developments to improve access to public transit. ▲
- TR 4.9 Prioritize public transit needs in municipal comprehensive plans. ●
- TR 4.10 Make allowances for higher density in areas with transit-oriented development (TOD) potential. ●

OBJECTIVE
TR 5 **Enhance public transit service.**

ACTION *Delaware County will...*

- TR 5.1 Facilitate collaboration between municipalities and SEPTA to identify transit needs in communities. ●
- TR 5.2 Continue to support enhanced bus service. ●
- TR 5.3 Encourage public-private partnerships between businesses and municipalities to address shared transit needs. ●
- TR 5.4 Continue to work with SEPTA to ensure bus routes address changing needs of the community. ●
- TR 5.5 Continuously identify transit station needs and work with SEPTA and municipalities to make improvements. ●
- TR 5.6 Study current transit service and needs to identify areas that would benefit from and support service improvements. ◆

Municipalities are encouraged to...

- TR 5.7 Work with employers to encourage the use and efficiency of transit services to alleviate congestion along major municipal corridors. ●
- TR 5.8 Work with SEPTA to optimize service coverage. ●
- TR 5.9 Adopt comprehensive plans, zoning ordinances, and subdivision and land development ordinances that promote, prioritize, and enable transit service and facilities. ●

▲ : Short Range (1-5 Years) ◆ : Medium Range (5-10 Years) ● : Ongoing

OBJECTIVE
TR 6 **Improve freight infrastructure to strengthen Delaware County’s industrial economy and communities.**

ACTION *Delaware County will...*

TR 6.1	Encourage intermodal freight connections to alleviate pressure on roadways.	●
TR 6.2	Work with municipalities to plan designated corridor-wide truck routes and encourage their adoption.	▲
TR 6.3	Develop guidelines for public engagement in the permitting process for freight transportation infrastructure projects and industrial developments.	▲
TR 6.4	Continue participating in federal, state, and regional planning and funding efforts related to freight transportation and corridors.	●
TR 6.5	Encourage communication between public and private entities.	●
TR 6.6	Continuously analyze freight movement trends in the County and provide publicly available information.	●
TR 6.7	Study areas for potential quiet zones along railroad grade crossings.	◆
TR 6.8	Convene a Delaware County Freight Movement Task Force for public and private stakeholders to discuss the best growth strategy.	◆
TR 6.9	Explore the possibility of freight-only facilities, including overnight truck parking, in the scope of major roadway and railway improvement projects.	●
TR 6.10	Support rail and bridge improvements that accommodate changing freight rail and maritime movement needs.	●
TR 6.11	Work with partners to identify, study, and implement safety improvements to dangerous grade crossings.	●
TR 6.12	Assist regional partners and municipalities in implementing strategies for Critical Urban Freight Corridors in the County.	●
TR 6.13	Work with other counties and legislators to explore the creation of a Regional Airport Authority for ownership and operation of PHL Philadelphia International Airport.	◆

Municipalities are encouraged to...

TR 6.14	Explore the possibility of freight-only facilities, including overnight truck parking, in the scope of major roadway and railway improvement projects.	●
TR 6.15	Identify, adopt, and sign designated truck routes that consider height, weight and turning restrictions and community concerns.	◆
TR 6.16	Discourage idling of trucks in parking and loading zones.	●
TR 6.17	Identify local freight improvements and innovative funding and implementation strategies.	●
TR 6.18	Ensure that industrial zoning allows for adequate port capacity for riverfront properties.	●

▲ : Short Range (1-5 Years) ◆ : Medium Range (5-10 Years) ● : Ongoing

ROLES AND RESPONSIBILITIES

The two primary implementers of this plan are the County and Delaware County municipalities. Other agencies and organizations can contribute as partners, informational resources, and as sources of technical assistance. It will take the combined efforts of many government agencies, organizations, officials, stakeholders, and motivated citizens to implement all the ideas and actions presented in this plan. This section will lay out roles of implementation and sources of assistance for the implementation of the Transportation Plan.

MUNICIPALITIES

Municipalities play a significant role in transportation planning and implementation. They establish long-range, community-centered visions for future growth and development through their comprehensive plans and implement plans through zoning and subdivision and land development (SALDO) ordinances. The goals and objectives of comprehensive plans and the parameters for development established through zoning and a municipal SALDO have an impact on the transportation network by establishing the type, location, timing, and intensity of new growth or redevelopment.

Municipalities also have an impact on the transportation network through the development and maintenance of a community transportation system and infrastructure networks, including streets, sidewalks, and traffic signals. Local governments can nurture robust, multi-modal transportation networks through zoning code requirements and land use development. Involvement at the municipal level requires participation by governing bodies, local planning commissions, and citizen committees and advisory boards focused on efficient and effective transportation.

DELAWARE COUNTY

Under the leadership of Delaware County Council, the Planning Department will be responsible for the implementation of many of the action items in this plan.

Planning Department

The Planning Department coordinates the development of the County's comprehensive plan, including Delaware County 2035 and associated component plans. The *Land Use Policy Framework Plan* establishes and classifies the County into place-based Character Areas and Central Places which provide the framework for this *Transportation Plan*. The Department also provides municipal outreach and community assistance services to help local governments improve transportation facilities. The Planning Department works with regional transportation and planning agencies such as PennDOT, SEPTA, and DVRPC to improve the transportation system through planning activities and the programming of funding.

Delaware County Public Works Department

The Delaware County Public Works Department oversees the design and construction of county-owned bridges. The department is also closely involved in the design and implementation of County trail projects.

Delaware County Department of Emergency Services

The Delaware County Department of Emergency Services provides the County with emergency communications and emergency management services. Emergency Services dispatches police, fire, and ambulance services within the County. It also collects information pertaining to the storage and

transportation of hazardous substances in accordance with the U.S. Superfund Amendments and Reauthorization Act of 1986 (SARA) and Pennsylvania Act 165-1990.

IMPLEMENTATION PARTNERS AND SUPPORT

In addition to the County and its municipalities, many other organizations, agencies, and groups have a role to play in implementation of this plan. Some of them can provide technical assistance while others may be able to provide funding for projects. Existing organizations and programs detailed in the following sections can help to further the goals of this plan and help implement its action items.

COMMONWEALTH OF PENNSYLVANIA

There are many agencies at the state level that can play a role in implementing the actions contained in this plan. The following is a list of state agencies available to provide funding and technical assistance for implementation of this plan:

Commonwealth Financing Authority (CFA)

The Commonwealth Financing Authority (CFA) was established in 2004 as an independent agency of the Department of Community and Economic Development to administer Pennsylvania's economic stimulus packages. The CFA holds fiduciary responsibilities over the funding of programs and investments in Pennsylvania's economic growth. The CFA funds the Multimodal Transportation Fund program.

Pennsylvania Department of Community and Economic Development (DCED)

The Pennsylvania Department of Community and Economic Development (DCED) works to foster opportunities for Pennsylvania business to grow sustainably and for communities to succeed in a global economy. The DCED accepts applications on behalf of the CFA every year for the Multimodal Transportation Fund, which provides funding for transportation projects, such as the development or rehabilitation of transportation assets, streetscape improvements, street lighting, sidewalk enhancements, pedestrian safety, and transit-oriented development.

Pennsylvania Department of Transportation (PennDOT)

The Pennsylvania Department of Transportation (PennDOT) works with local governments, the private sector, planning partners, and others to maintain Pennsylvania's transportation network. The Department works to relieve traffic congestion, maintain the transportation network in a state of good repair, and foster the movement of goods. PennDOT also strives to directly enhance the safety and capacity of alternative modes of transportation, particularly bicycling and pedestrian infrastructure, across the Commonwealth. The Department's work relates directly to many action items identified in this plan; as such, it is an important partner in implementation. PennDOT provides state funds from Act 89, such as public transit funds, the Multimodal Transportation Fund, and Green Light Go.

In 2017, PennDOT launched PennDOT Connects, a program that initiates an early dialogue and partnered decisionmaking with stakeholders in the transportation project process to help communities achieve their visions. It requires collaboration with Metropolitan Planning Organizations (MPOs) and Rural Planning Organizations (RPOs) before project scope development. PennDOT has identified some specific points of discussion for the program, including safety, bicycle and pedestrian facilities, transit access, stormwater management, utility considerations, local and regional plans and studies, and freight-generating land uses. The requirements are being implemented on projects on the state's 2017-2020 Transportation Improvement Program (TIP), and PennDOT is incorporating PennDOT Connects into its manuals and program processes.

Pennsylvania Public Utility Commission (PUC)

The Public Utility Commission was created by the Pennsylvania Legislative Act of March 31, 1937 (and the Public Utility Law of May 28, 1937), which abolished the Public Service Commission.

The PUC has a regional office in Philadelphia, which serves as one of the administrative coordinating points for enforcement officers and administrative law judges. This office also has employees from the PUC's Bureau of Consumer Services. The PUC works to ensure safe and reliable utility service at reasonable rates, and it was created to protect the public interest and educate utility consumers.

FEDERAL

Federal Highway Administration (FHWA)

The Federal Highway Administration (FHWA) is an agency within the U.S. Department of Transportation that provides financial and technical assistance to state and local governments to ensure the safety of roadways. The FHWA supports state and local governments in the design, construction, and maintenance of the Nation's highway system (Federal Aid Highway Program) and federally and tribal-owned lands (Federal Lands Highway Program). FHWA provides important guidance on safety improvement features, including data-driven solutions based on analysis of road diets and innovations at the state and local levels. FHWA can also provide important funding for the implementation of these measures.

United States Department of Transportation (DOT)

The United States Department of Transportation (DOT) is the federal department responsible for ensuring that the United States' transportation system meets vital national interests and enhances quality of life. The DOT hosts a number of smaller transportation agencies with more specialized missions, including the Federal Aviation Administration (FAA), Federal Railroad Administration (FRA), Federal Transit Administration (FTA), and the Federal Highway Administration (FHWA). Several programs and initiatives are administered by DOT and its agencies, including FASTLANE grants, TIGER grants, and the Safer People, Safer Streets Initiative.

Federal Transit Administration (FTA)

The Federal Transit Administration (FTA) provides financial and technical assistance to public transit systems, oversees safety measures, and helps develop transit-related technology research. FTA funding is vital to the maintenance, enhancement, and expansion of the SEPTA system. Federal funds, most of which come from the FTA, typically supply 80 percent of funding for SEPTA capital projects.

PARTNERS IN THE REGION

Southeastern Pennsylvania Transportation Authority (SEPTA)

The Southeastern Pennsylvania Transportation Authority (SEPTA) is the regional public transportation authority responsible for serving Philadelphia and its surrounding Pennsylvania counties: Bucks, Chester, Delaware, and Montgomery. SEPTA collaborates with regional partners to ensure that their transit needs are met in a number of ways, including the development of transit planning guidelines, such as the *SEPTA Bus Stop Design Guidelines*, to aid municipalities in planning for SEPTA bus service.

City of Philadelphia – Philadelphia International Airport (PHL)

The Philadelphia International Airport (PHL) is the largest airport in Pennsylvania and the Delaware Valley Region. PHL is the fifteenth busiest airport in the world in terms of aircraft movements; in 2013

there were 432,884 aircraft movements at PHL. It contains more than two hundred employers and employs more than 20,000 people. PHL accounts for 141,000 jobs across the region.

Delaware Valley Regional Planning Commission (DVRPC)

The Delaware Valley Regional Planning Commission (DVRPC) is the Philadelphia region's designated Metropolitan Planning Organization (MPO), which also conducts regional planning and offers a variety of funding programs for transportation projects. Most notably, DVRPC is responsible for the maintenance and administration of the Transportation Improvement Program (TIP), the regional list of priority transportation projects that are federally or state funded, along with non-federally funded projects that are regionally significant. DVRPC also completes a long-range plan (LRP) every four years with a minimum 20-year horizon. The LRP identifies regionally significant projects and outlines guidelines for the future of the regional transportation network. DVRPC is actively engaged in congestion management, corridor planning, transportation systems management and operations, safety, modeling and analysis, freight and aviation, bicycle and pedestrian planning, and transit planning on a regional level.

Delaware River Port Authority (DRPA)

The Delaware River Port Authority (DRPA) operates and maintains four bridges that cross the Delaware River, including the Commodore Barry Bridge. The authority is also involved in transportation and economic development projects associated with these facilities.

INSTITUTIONS, ORGANIZATIONS, BUSINESSES, AND UTILITIES

Bicycle Coalition of Greater Philadelphia

The Bicycle Coalition of Greater Philadelphia is an influential bicycle advocacy group founded in 1972. The Bicycle Coalition has partnered with community, government, public, and private actors to make the region's roadways safer and more bicycle friendly. The Bicycle Coalition strongly supports the completion of the Circuit Trails and has assisted in the effort to add 200 miles of bike lanes across the Delaware Valley Region.

Delaware County Transportation Management Association (DCTMA)

The Delaware County Transportation Management Association (DCTMA) is a private, non-profit organization dedicated to improving Delaware County's transportation network. The DCTMA has a number of programs to provide education to the public and meet the needs of businesses and municipalities. The DCTMA currently provides employee shuttle services to and from Fair Acres and Brinton Manor. The organization also plans to provide shuttle service for SAP's headquarters in Newtown Square. The DCTMA organizes the Community Traffic Safety Program (CTSP) administered by Delaware County. In this capacity, the DCTMA has taken an active role in promoting highway safety in the County. The DCTMA also strongly advocates for the use of alternative transportation modes, particularly for I-95 commutes.

Riverfront Alliance of Delaware County (RADDC)

The Riverfront Alliance of Delaware County (RADDC) is a consortium of private sector corporations and non-profit institutions. These corporations and institutions are unified in the mission to develop and implement programs that can spur economic, social, and physical change in Delaware County's riverfront communities. Some of the RADDC's priorities include increasing the rate of homeownership, ensuring public safety, and marketing the region as an exciting place to live, work, and play. The RADDC

partners with government entities, foundations, businesses, and residents to strive to achieve these goals.

Conrail, CSX, Norfolk Southern, Pipeline Companies

Private freight transportation companies utilize freight rail, maritime infrastructure, airways, and pipelines to move goods safely and efficiently through and within Delaware County. These companies construct and maintain most of the infrastructure that is needed to support freight movement. Freight movement is prominent in Delaware County's riverfront municipalities, and it also affects other communities across the county. Private entities are often important partners in the improvement of transportation infrastructure and network safety.

PECO and Aqua

PECO is an electric and natural gas utility subsidiary of Exelon Corporation, which is the nation's largest energy provider. PECO is based in Philadelphia and has been serving the Greater Philadelphia area for more than 130 years. PECO provides both electric and gas to customers in Delaware County.

Aqua provides water service to communities in Delaware County. The company was founded in 1886, when a group of Swarthmore College professors was granted a charter to supply water to the residents of Springfield Township in Delaware County. Aqua provides water and wastewater services to approximately three million people in eight states. Aqua's water sources includes surface water from Crum, Ridley, and Chester Creeks and the Delaware River.

United States Coast Guard

The United States Coast Guard is one of the United States' five military services. The Coast Guard protects marine transportation systems and infrastructure in U.S. ports, inland waterways along U.S. coasts, and on international waters.

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Appendices

APPENDIX A: GLOSSARY OF ACRONYMS

AAA – American Automobile Association
AADT – Average Annual Daily Traffic
ADA – Americans with Disabilities Act
BOP – Bicycle Occupancy Permit
BRT – Bus Rapid Transit
CFA – Commonwealth Financing Authority
DCPD – Delaware County Planning Department
DCED – Pennsylvania Department of Community and Economic Development
DCTMA – Delaware County Transportation Management Association
DRPA – Delaware River Port Authority
DVRPC – Delaware Valley Regional Planning Commission
EBS – Enhanced Bus Service
EPA – Environmental Protection Agency
FHWA – Federal Highway Administration
FRA – Federal Railroad Administration
FTA – Federal Transit Administration
GSI – Green Stormwater Infrastructure
HOV – High Occupancy Vehicle
ITS – Intelligent Transportation Systems
JIT – Just-in-Time (logistics)
LED – Light-emitting Diode
LTL – Less Than Truckload
LRP – Long Range Plan
MFL – Market-Frankford Line
MFO – Market-Frankford Owl
MPO – Metropolitan Planning Organization
NEC – Northeast Corridor
NHS – National Highway System
NHSL – Norristown High Speed Line
PennDOT – Pennsylvania Department of Transportation
PHL – Philadelphia International Airport
PUC – Pennsylvania Public Utility Commission
RADC – Riverfront Alliance of Delaware County
RTC – Regional Technical Committee
SAE – Society of Automotive Engineers
SALDO – Subdivision and Land Development Ordinance
SARA – U.S. Superfund Amendments and Reauthorization Act of 1986
SEPTA – Southeastern Pennsylvania Transportation Authority
SOV – Single-occupancy vehicle
TDM – Travel Demand Management
TIP – Transportation improvement Program
TL – Truckload
TNC – Transportation Networking Company
TOD – Transit-oriented Development
TSP – Transit Signal Priority
USDOT – United States Department of Transportation

APPENDIX B: GLOSSARY OF TERMS

ACCESSIBILITY: In transportation planning, the ease with which a location can be reached or a vehicle or structure can be entered.

ACTIVE TRANSPORTATION: Non-motorized transportation, which includes walking, cycling, skateboarding, wheelchair travel, and other human-powered modes.

AGING-IN-PLACE: The ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level.

AGRICULTURAL: Land developed with crops, pastures, orchards, tree farms, or other agricultural uses. The farmstead and associated buildings are also agricultural. Single or double lot split-offs with house are included in the agricultural classification.

AUTONOMOUS VEHICLES: Also known as self-driving cars, these are smart vehicles that need little or no human input to operate. Autonomous vehicles use vehicular communications systems to sense environmental factors, communicate with roadside units and traffic control systems, and engage in vehicle-to-vehicle communication. There are varying degrees of vehicular autonomy.

BACK-IN ANGLE PARKING: Parking designed with the stall lines flipped so that drivers back into the stall and drive forward when leaving.

BIKE-SHARE: A service through which bicycles are made available for individual use for a fee for short trips. It may be a public, private, or public-private initiative.

BROWNFIELD: A former industrial or commercial site where future use is affected by real or perceived environmental contamination.

BUMP-OUT/BULB-OUT: Another term for curb extension. It is an area of expanded curbing that extends across a parking lane. It is a common traffic calming measure that also helps reduce pedestrian crossing distances.

BUS RAPID TRANSIT (BRT): A specialized type of bus service that achieves faster travel times, shorter waiting times, and a more comfortable experience than traditional bus service. Rapid or enhanced service is achieved through improvements including reduced number of stop locations.

CAR SHARE: A service through which cars are made available for individual use for a fee for short trips. It may be a public, private, or public-private initiative.

COMPLETE STREETS: Roadways that are designed to be safe for all users, regardless of their age or ability. A Complete Street has facilities for pedestrians, bicyclists, transit riders, and motor vehicle drivers.

COMPREHENSIVE PLAN: A land use and growth management plan which establishes broad goals and criteria for municipalities to use in preparation of their comprehensive plans and land use regulations.

CONFLICT POINTS: Points at an intersection at which collisions – whether associated with merging, diverging, or crossing movements – are *possible*.

Appendix B: Glossary of Terms

CORRIDOR: A roadway or rail right of way that is identified as a principal link within or through a community. A transportation corridor typically provides access to public transit options. Linear agglomerations of mixed use areas that include retail are common along transportation corridors because of the number of people that travel on them.

ENHANCED BUS SERVICE (EBS): sometimes referred to as BRT-lite, incorporates some of the features of BRT to reduce travel times and provide a more comfortable ride, while incurring lower costs than BRT. In recent years, BRT and EBS have been implemented in several places both nationally and internationally, and in many cases, they have been successful in reducing travel time and increasing ridership.

GRADE CROSSING: A place where a railroad and road (or two rail lines) cross at the same level.

GREEN STORMWATER INFRASTRUCTURE (GSI): An approach to managing rainwater that reduces stormwater runoff and mitigates flooding. Water is filtered by soil and plants.

HARD SHOULDER RUNNING: The temporary or permanent use of a roadway shoulder facility for vehicular traffic.

HIGH OCCUPANCY VEHICLE (HOV): A vehicle with a driver and one or more passengers. Carpools, vanpools, and transit buses are all examples of HOVs.

IMPERVIOUS: A material that does not allow water to infiltrate, thereby causing flooding.

INFILL: The use of land within a built-up area, typically for the reuse and repositioning of obsolete or underutilized buildings and sites. May involve a change of type or density of land use.

INTELLIGENT TRANSPORTATION SYSTEMS (ITS): Technologies aimed at improving traveler safety and knowledge. Such include car navigation, traffic control systems, variable message signs (with warnings or real-time information), speed cameras, and automatic number plate recognition.

LAND USE: Land use is characterized by the arrangements, activities, and inputs people undertake in a certain land cover type to produce, change, or maintain it.

LOADING PAD: Concrete pad from which transit users access the transit vehicle.

LOW-FRICTION FARE PAYMENT: A payment strategy intended to enable efficient wheelchair access while reducing boarding and alighting times for all passengers. Specifically, off-board fare collection or fare collection at multiple doors.

MOBILITY: The ability to move between origin and destination or between destinations using any mode of individual or collective transportation.

MODE OF TRANSPORTATION: A type of transportation or means of getting from one place to another, including train, trolley, bus, bicycle, walking, motorcycle, car, and van. Multimodal transportation refers to a connected transportation system that supports cars, bicycles, pedestrians, and public transit.

MOTORIZED TRANSPORTATION: Transportation by vehicle with an engine such as by car, truck, van, train, airplane, ship, or similar modes.

MULTIMODAL: Characterized by several different modes of transportation – active and motorized.

MULTI-USE: In transportation, this term refers to use of a facility for all forms of active transportation, e.g., multi-use trail.

NATURAL RESOURCES: Assets such as soils, woodlands, wetlands, and agricultural lands, along with hydrologic features such as rivers, lakes, and streams, that occur naturally within the County’s landscape. This includes important habitat areas and the wildlife that they contain. Though sensitive to human disturbance, these resources have notable environmental, recreational, visual, and economic benefits, creating a needed balance between growth and their conservation.

NEAR-LEVEL BOARDING: A design feature of boarding platforms that allows transit vehicles to enter and exit stops more quickly. Near-level platforms are between eight and 11 inches in height, thereby allowing an operator to deploy an ADA-compliant ramp.

PARK-N-RIDE FACILITY: A designated area where automobile drivers park their cars or commuters are dropped off to take public transit.

PARKING MAXIMUM: A zoning regulation that defines the maximum – as opposed to the minimum – parking required in a particular zoning district.

PEDESTRIAN REFUGE ISLAND: An island between opposing lanes of travel that is at least six feet in length and provides respite to pedestrians.

PEDESTRIAN SIGNAL PHASING: A type of signal phasing in which the pedestrian signal phase is activated only when all other signals are red, prohibiting all motor vehicular movements while pedestrians are crossing the road.

PERFORMANCE MEASURES: Data collected to compare the performance of a transportation system over time.

REAL-TIME INFORMATION (RTI): Data about the location of transit vehicles that is available to transit users through mobile device apps or at transit stations.

RIDERSHIP: The number of passengers using a particular form of public transportation.

SERVICE FREQUENCY: The frequency with which a transit line serves a particular stop on its route.

SINGLE OCCUPANCY VEHICLE (SOV): A vehicle with only one passenger – the driver.

STORMWATER MANAGEMENT: The process of reducing runoff and improving water quality through the implementation of the proper facilities and regulations.

STREETSCAPES: Refers to urban roadway design and conditions as they impact street users and nearby residents. Streetscaping recognizes that streets are places where people engage in various activities, including but not limited to motor vehicle travel. Streetscapes are an important component of the public realm (public spaces where people interact), which help define a community’s aesthetic quality, identity, economic activity, health, social cohesion, and opportunity, not just its mobility.

Appendix B: Glossary of Terms

STREET NETWORK: The pattern of interconnecting roadways in a particular geographic area, e.g., grid network.

SUPPLY CHAIN: The sequence of processes involved in the production and distribution of a commodity.

THE CIRCUIT: A regional network of hundreds of miles of multi-use trails in Greater Philadelphia.

TRANSIT: A service that moves people from one place to another. It can be public or private, individual or collective.

TRANSIT ORIENTED DEVELOPMENT: Compact, pedestrian and biking-friendly, mixed-use development containing medium-to-high density residential, office, and retail uses within walking distance of certain rail transit stations. Well planned TOD should incorporate good design principles and an appropriate mix of uses around rail transit stations to promote transit use and create vibrant neighborhood centers at these locations.

TRAFFIC CALMING: A transportation planning tool used to address high traffic volumes and speeding; reduce collision frequency and severity; reduce cut-through traffic; and increase access for all modes of transportation.

TRANSPORTATION ON DEMAND: Term used to describe services that allow you to reserve – and pay for – an immediate transit trip via mobile application.

TRAVEL DEMAND MANAGEMENT (TDM): The application of strategies and policies to reduce or redistribute travel demand to help a network operate more effectively. Such strategies include, but are not limited to, bike sharing, carpooling, and telecommuting.

TRUCK PLATOONING: The close movement of a group – or platoon – of trucks equipped with vehicle-to-vehicle (V2V) communication. This method for moving cargo increases roadway capacity and vehicle efficiency.

UNDEVELOPED/UNIMPROVED LAND: Vacant land areas are areas that are undeveloped and not clearly wooded, nor agricultural, nor developed.

WALKABILITY: The level of pedestrian-friendliness of an area.

ZONING ORDINANCE: A document adopted by municipal governments that classifies all land into residential, commercial, industrial, planned development, and/or overlay districts. It describes in detail the permitted density and uses allowed in each zoning district and that lists the specific regulations that govern each land use.

APPENDIX C: DATA SOURCES FOR MAPPING

Map 1-1: Delaware County

Delaware County Planning Department (DCPD)

Map 1-2: Delaware County Community Framework

DCPD

Map 1-3: Total Population Change (1980-2010)

DCPD

Map 2-1: Delaware County FHWA Road Classifications

Municipal Boundaries and Water Features; DCPD

Road Classifications; Federal Highway Administration (FHWA)

Map 2-2: Delaware County Regional Context

DCPD

Map 4-1: Delaware County Complete Road System

DCPD

Map 4-2: Current Average Annual Daily Traffic

Municipal Boundaries and Water Features; DCPD

Traffic Volume; Pennsylvania Department of Transportation (PennDOT)

Map 4-3: Cumulative Historic Crash Data (2010-2014)

Crashes; PennDOT

Municipal Boundaries and Water Features; DCPD

Map 4-4: Existing On-road and Off-road Bicycle-friendly Routes

DCPD

Map 4-5: Delaware County Bicycle and Pedestrian Crashes (2010-2014)

Crashes and Traffic Volume; PennDOT

Roads; DCPD

Map 4-6: Delaware County Bicycle Network

DCPD

Map 4-7: Delaware County Sidewalk Mapping

Municipal Boundaries, Roads, Sidewalks, and Water Features; DCPD

Population Density; U.S. Census Bureau, American Community Survey (ACS) 5-Year Estimates. 2010-2014

Map 4-8: Delaware County Public Transit Network

Municipal Boundaries, Roads, and Water Features; DCPD

Transit Network; Southeastern Pennsylvania Transportation Authority (SEPTA)

Map 4-9: Public Transit Coverage

Municipal Boundaries; DCPD

Population Density; U.S. Census Bureau, ACS 5-Year Estimates. 2010-2014

Transit Network; SEPTA

Map 4-10: Delaware County Public Transit Service Frequency

Municipal Boundaries and Water Features; DCPD

Population Density; U.S. Census Bureau, ACS 5-Year Estimates. 2010-2014

Transit Network; SEPTA

Map 4-11: Conceptual Enhanced Bus Service Network

DCPD

Map 5-1: Delaware County Freight Movement Infrastructure Network

Freight Network; Delaware Valley Regional Planning Commission (DVRPC)

Municipal Boundaries, Roads, and Water Features; DCPD

Appendix C: Data Sources for Mapping

Pipelines; United States Department of Transportation (US DOT), National Pipeline Mapping System (NPMS)

Map 5-2: Delaware County Mega and Intermediate Freight Centers

Freight Centers; DVRPC

Map 5-3: Delaware County Supply Chain Centers

Freight Centers; DVRPC

Industrial Parks, Municipal Boundaries, Roads, Town and Urbanized Centers, and Water Features; DCPD

Map 5-4: Number of Freight Industry Jobs within 2-mile Radius of Supply Chain Centers

Freight Industry Employment; U.S. Census Bureau, County Business Patterns. 2014

Municipal Boundaries and Water Features; DCPD

Supply Chain Centers; DCPD and DVPRC

Map 5-5: Ownership/Operation of Railroads Used for Freight Movement in Delaware County

DCPD

Map 5-6: Delaware County Port Terminals

Municipal Boundaries, Roads, and Water Features; DCPD

Port Terminals; DVRPC

Map 5-7: Delaware County Pipelines

Municipal Boundaries, Roads, and Water Features; DCPD

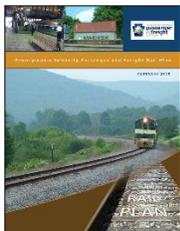
Pipelines; USDOT, NPMS

APPENDIX D: RELEVANT PLAN REVIEW

To inform the Transportation Plan, a review was conducted of statewide, regional, countywide, municipal and multi-municipal, and adjacent county plans. Some of the relevant documents which were reviewed for this plan do not solely focus on transportation but still provide valuable analysis of transportation issues and recommendations for improvement.

Many recent plans stress the importance of making transportation networks more multimodal to address growing traffic congestion and lengthening travel times in the face of spatial and fiscal constraints which limit the practicality of roadway capacity expansion. Coordination and collaboration between various stakeholders through public-private partnerships and multi-municipal initiatives is frequently encouraged to maximize resources and streamline project planning and implementation.

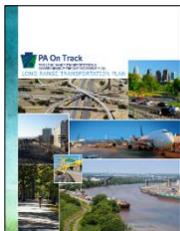
STATEWIDE PLANS



Pennsylvania Intercity Passenger and Freight Rail Plan 2010

Area: Statewide

This plan establishes a vision for what Pennsylvania's passenger and freight rail system will look like in 2035. It presents a set of goals that will help achieve the rail system vision and outlines the most significant challenges affecting the rail system today. A set of core principles are identified to guide improvement efforts.

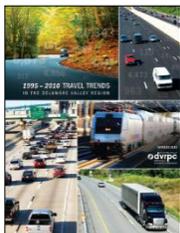


PA On Track **PA's Long Range Transportation and Comprehensive Freight Movement Plan** 2015

Area: Statewide

This plan is the most recent update of Pennsylvania's multimodal long range transportation plan and its first comprehensive freight movement plan. It emphasizes prioritization, projects, and system performance in the four goal areas of system preservation, safety, stewardship, and personal and freight mobility. Progress in each goal area is tracked through performance measures.

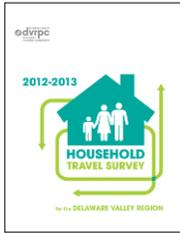
REGIONAL PLANS



1995-2010 Travel Trends 2013 **In the Delaware Valley Region**

Area: Regional

This report analyzes travel survey data collected in 2010 and compares it to 1995, 2000, and 2005 travel surveys. Each survey collected data on vehicle type, annual VMT, change in VMT, traffic volumes on major highways, peak hour travel, and transit vehicle volumes to name a few of the metrics reviewed.



2012-2013 Household Travel Survey
For the Delaware Valley Region

2015

Area: Regional

This report analyzes household, person, vehicle, and trip data from the nine-county DVRPC region and the methods through which the data was obtained. Last surveyed in 2000, this survey will improve upon DVRPC's most recent dataset and will be used in the calibration of a new activity-based travel demand model.



Connections 2040
Plan for Greater Philadelphia

2013

Area: Regional

The long-range transportation plan from DVRPC outlines its vision for the Greater Philadelphia region outlined by four core principles: Manage Growth and Protect the Environment, Create Livable Communities, Build the Economy, and Establish a Modern Multimodal Transportation System. These principals help identify needed transportation investments to achieve the future set out in the guiding principles.

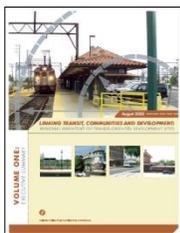


Crash data Review of Rail At-Grade Crossings
In the Delaware Valley

2011

Area: Regional

This study analyzes both Pennsylvania and New Jersey crash databases for crashes involving motor vehicles and trains at an at-grade crossing in the DVRPC region. The analysis also considers the crash implications resulting from an at-grade crossing on crashes between vehicles occurring within proximity of a rail crossing. From 2007 to 2009, only one reported crash occurred in Delaware County involving a freight train in Tinicum Township of the Chester Secondary Line crossing of the Jansen Avenue and Old Tinicum Island Road intersection.

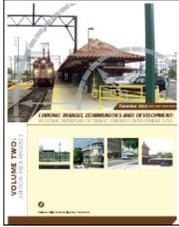


Linking Transit, Communities, and Development
Volume I: Executive Summary

2003

Area: Regional, Chester City, Eddystone Borough, Marcus Hook Borough, Springfield Township

Part one of a three volume study, this report provides background information concerning TOD, both benefits and barriers, in addition to outlining the study's process, inventory selection criteria, and recommendations for funding and implementation within the Delaware Valley region. The inventory was conducted using a combination of field views, aerial photo interpretation, and research and discussions with pertinent agencies and staff. Delaware County transit locations selected for the inventory include: Baldwin Tower, Chester Transportation Center, Marcus Hook Station, and the Springfield Mall.



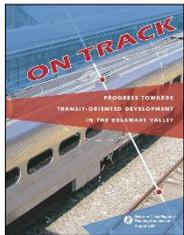
Linking Transit, Communities, and Development

2003

Volume II: Station Area Profiles

Area: Regional, Chester City, Eddystone Borough, Marcus Hook Borough, Springfield Township

A continuation of "Linking Transit, Communities, and development", Volume 2 presents station profiles for 45 stations selected in the Delaware Valley region, of which four were selected for study in Delaware County: Baldwin Tower, Chester Transportation Center, Marcus Hook Station, and the Springfield Mall. The goal of this study is to inventory the region's rail stations (of which 340 total fixed-stations exist) to determine a priority list of "Transit-Oriented Development (TOD) Opportunity sites", in furtherance of the goals and policies of DVRPC's adopted Year 2025 Horizons long-range plan. Each profile consists of an analysis of current level of service, ridership, connecting transit routes, parking, land use, zoning, current station amenities, access, current master/comprehensive planning for the station area, and each area's redevelopment potential.



On Track

2007

Progress Towards Transit-Oriented Development in the Delaware Valley

Area: Bucks, Chester, Delaware, and Montgomery Counties in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer Counties in New Jersey

This study evaluates progress towards TOD at rail stations and some bus stops throughout the nine-county DVRPC region. For the purposes of the study, progress toward TOD consists of completed or in-progress TOD or TOD-related plans, grants to study or implement TOD, development interest or involvement in station areas, or a proposed or completed TOD. Data was gathered through municipal surveys and helped DVPRC create an inventory of TOD-related activity at over 100 transit stations. The study concludes with discussion of challenges to TOD.



SEPTA Bus Stop Design Guidelines

2012

Area: Regional

This report synthesizes four interrelated elements that comprise a transit stop; stop location, in-street design, curbside design, and passenger amenities. SEPTA provided this report as a set of guidelines when designing surface transit stops for municipalities in the SEPTA service area, local developers, and other local partners. These guidelines are based on a review of standards and best practices applied nationally, in addition to discussions with area planning commissions and departments.



SEPTA Regional Rail Station Shed Analysis

2010

West Trenton, Elwyn, Warminster, and Fox Chase Lines

Area: Clifton Heights Borough, Media Borough, Middletown Township, Morton Borough, Upper Providence Township

At the request of SEPTA, DVRPC performed a series of regional rail station shed analyses along the West Trenton, Elwyn, Warminster, and Fox Chase Lines to help define the geographic areas transit riders originate from at select stations in 2009-2010. Elwyn Line stations included in this analysis are Clifton-Aldan, Morton, Media, and Elwyn. A station shed analysis consists of license plate surveys and provides a potential insight into the rationale of transit riders and their selection of a particular station which may be influenced by fare zone, parking availability, frequency of service, and a station's physical location along a road network for ease of access. The analysis showed a larger station shed for Elwyn and Media Stations which included areas as far west as southeastern Chester County, while the Morton and Clifton-Aldan Stations had slightly smaller, more centralized station sheds contained within central Delaware County.



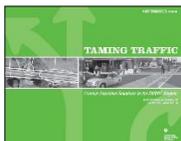
Shifting Gears

2011

Regional Bicycle Outreach and Priority Setting

Area: Regional

A regional report conducted by DVRPC in 2010, Shifting Gears serves as an outreach document whose purpose is to better understand bicycling in the region, particularly to determine safety and accessibility issues at select locations throughout the DVRPC region. This study also surveyed over 1,800 cyclists and non-cyclists to gauge levels of bicycling experience, confidence, and incentives to encourage increased levels of bicycling. Locations were chosen based on a number of factors including volume of bicycle-related crashes, proximity to regional attractors, and location relative to other bicycle facilities. Eight locations in Delaware County were selected as "recommended priority locations" which were in part influenced by the County's Bicycle Plan.



Taming Traffic

2006

Context-Sensitive Solutions in the DVRPC Region

Area: Regional, Sharon Hill Borough

Conducted in 2006, DVRPC studied traffic calming as a way of addressing the negative effects of traffic in the region. Of the two locations selected for further study, a one mile stretch of Chester Pike (US 13) in Sharon Hill Borough was selected, which offered the study team a great case study for applying context-sensitive solutions (CSS) along the heavily traveled corridor. The study identifies six factors generating excess traffic and offers ten strategies for mitigating this. The study also provides cost estimates and potential funding sources.



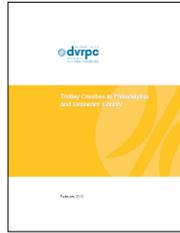
Taming Traffic: State of the Practice

2011

Context-Sensitive Solutions in the DVRPC Region

Area: Regional, Sharon Hill Borough

Culminating a five-year effort to study traffic calming at various locations throughout the region, this document serves as a summary of these case studies, their problems, conceptual improvements, and cost estimates and potential funding sources to apply context-sensitive solutions (CSS) in each of the study areas. This document serves as a CSS toolbox for other municipalities in the region.

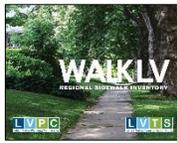


Trolley Crashes in Philadelphia and Delaware County

2013

Area: Regional, Aldan Borough, Clifton Heights Borough, Collingdale Borough, Colwyn Borough, Darby Borough, Media Borough, Nether Providence Township, Sharon Hill Borough, Springfield Township, Upper Darby Township, Yeadon Borough

Analysis in this report includes reviews of PennDOT databases of trolley crashes in the region. It found that most crashes occurred at Center City locations, and very few occurred in suburban areas. Crashes occurred most often at intersections, which is consistent with previous findings.



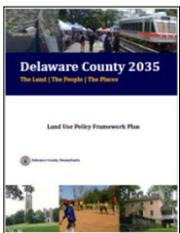
Walk LV

2016

Area: Lehigh and Northampton Counties

This study by the Lehigh Valley Planning Commission inventories sidewalk coverage for Lehigh and Northampton Counties to identify isolated sidewalk networks, analyze sidewalk and trail connectivity, and assess the quality of pedestrian access to transit stops. Walk LV is intended to promote an interconnected network of pedestrian-accessible transportation corridors. Sidewalk data collected in the study serves as a resource for local municipalities.

COUNTYWIDE PLANS



Delaware County 2035: Land Use Policy Framework Plan

2013

The Land | The People | The Places

Area: Delaware County

This plan serves as the framework for the countywide comprehensive plan. It highlights the importance of the transportation network and emphasizes that key transportation improvements can spur redevelopment, particularly transit oriented development. A major policy of this plan is to “*coordinate multi-modal transportation planning to ensure a full range of safe and efficient services.*”



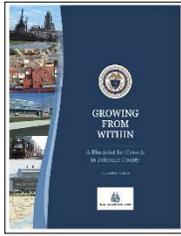
Delaware County Bicycle Plan

2009

Area: Delaware County

This plan identifies corridors in the County for on-road bicycle improvements based on survey information and prior crash statistics. It was developed to serve as a necessary guide to the implementation of bicycle improvements.

Appendix D: Relevant Plan Review



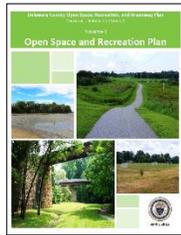
Growing from Within

2013

A Blueprint for Growth in Delaware County

Area: Delaware County

This plan serves as the County’s economic development strategy. It cites the transportation network, including rail, air, and ports and waterways, as vital to the health of the regional economy. It highlights the County’s robust transportation network and waterfront capacity as emerging themes and opportunities. Objective 6 encourages transit-oriented development and recommends developing a branding strategy for transit corridors and stations.



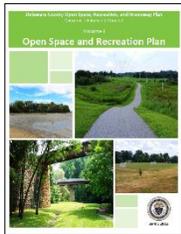
Hazard Mitigation Plan

2016

2016 Update

Area: Delaware County

The County Hazard Mitigation Plan must be updated every 5 years. The plan identifies and profiles both natural and technological (or human-made) hazards from which the County is at risk. The plan recognizes transportation crashes (vehicle, rail, waterway, and air), including any subsequent hazardous material releases or pedestrian deaths, as significant hazards. The plan notes the increase in transport of oil products through the County via rail. As part of the planning process, an action plan was developed that lists several notable approaches to reducing these risks.



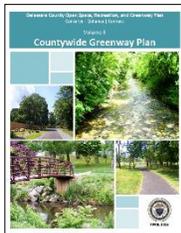
Open Space, Recreation, and Greenway Plan

2015

Volume I: Open Space and Recreation Plan

Area: Delaware County

This plan is the first adopted component plan of *Delaware County 2035*. One of the three overarching goals of this plan (Conserve, Enhance, Connect) is to increase and enhance the environmental or recreational value of developed and undeveloped lands. It highlights the important of both complete streets and green streets in achieving this goal. The third goal is to develop a greenway network that connects both natural features and people to community and regional destinations. The plan recommends realizing this through local and regional trail connections.



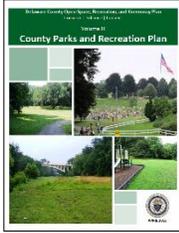
Open Space, Recreation, and Greenway Plan

2015

Volume II: Countywide Greenway Plan

Area: Delaware County

Volume II identifies and details the proposed 130-mile Countywide Primary Trail Network, including an action plan to begin implementing the Network. The Primary Trail Network was designed to serve as the “spines” of the trail network within the County and to serve in a larger, multi-modal transportation network connecting to commercial, cultural, and recreational hubs.



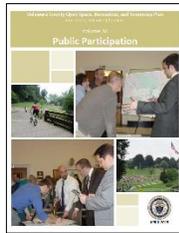
Open Space, Recreation, and Greenway Plan

2015

Volume III: County Parks and Recreation Plan

Area: Delaware County

The County Parks and Recreation Plan includes long-range vision plans for several County parks, all of which highlight public transportation and access to the park as vital to their success and potential.



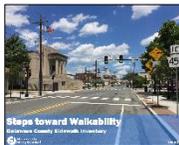
Open Space, Recreation, and Greenway Plan

2015

Volume IV: Public Participation

Area: Delaware County

Volume IV of the Plan documents public participation involved in the process, including an online survey with nearly 1,300 responses, public meetings, and stakeholder interviews. These efforts helped guide the objectives and actions identified in the plan, including the Primary Trail Network and other trail connections.



Steps toward Walkability: Delaware County Sidewalk Inventory

2017

Area: Delaware County

The Delaware County Planning Department mapped sidewalk coverage on both sides of the road for all roads within a half-mile of transit stations, schools, and select case studies of central places, residential neighborhoods, and areas of special concern within Delaware County. The report offers design recommendations that address pedestrian network shortcomings identified in case studies and summarizes available funding sources to implement walkability improvements.

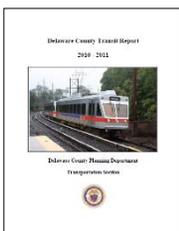


Subdivision and Land Development Ordinance

2016

Area: Delaware County

The Delaware County Subdivision and Land Development Ordinance (SALDO) is designed to protect the health, safety, and welfare of residents of the County by establishing reasonable standard of design and procedures for the orderly layout and development of land. The County SALDO is the governing subdivision and land development ordinance for 21 of the 49 Delaware County municipalities.



Transit Report

2011

Area: Delaware County

The Transit Report provides an account of all public transit routes serving Delaware County as of September 30, 2011. The Report reviews ridership, level of service, and financial feasibility for regional rail, bus transit, light rail transit, and high-speed rail. It examines data from prior years to identify trends.

MUNICIPAL AND MULTI-MUNICIPAL PLANS

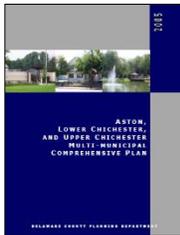


A Plan for Aronimink Station

2009

Area: Upper Darby Township

Identified as a historic TOD and an important retail district in need of further study in Upper Darby Township's 2004 Comprehensive Plan, "A Plan for Aronimink Station" identifies specific revitalization needs for its business district including streetscape improvements, traffic calming strategies, façade improvements, gateway improvements, and residential and commercial parking improvements.

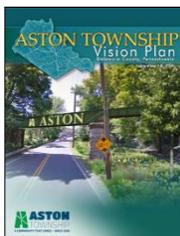


Aston, Lower Chichester, and Upper Chichester Multi-Municipal Comprehensive Plan

2005

Area: Aston Township, Lower Chichester Township, and Upper Chichester Township

This joint effort recognizes the ability of an effective transportation system to not only improve mobility, but also to expand jobs and educational opportunities and enlarge the labor pool and market for commercial endeavors. Primary recommendations are to work with PennDOT to provide input during reconstruction of Conchester Road (US 322) and study dangerous intersections to identify potential improvements.



Aston Township Vision Plan

2014

Area: Aston Township

This plan was prepared to identify priority actions to enhance the economic sustainability and quality of life in the Township. It details current demographics and includes a market analysis. The plan highlights the opportunity to create “gateways” at several entrances into the Township. Main transportation highlights of this plan include the proposal of a traffic circle and redevelopment at Five Points Intersection and recommendations for improvements to Bridgewater Road.

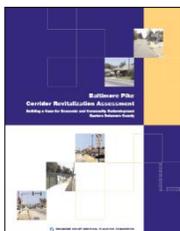


Baltimore Avenue Corridor Revitalization Plan

2007

Area: Clifton Heights Borough, East Lansdowne Borough, Lansdowne Borough, Upper Darby Township, Yeadon Borough

This plan was completed to develop a strategy to increase economic vitality and transportation access for a 4.5-mile-long corridor along Baltimore Avenue. It includes a wide range of transportation recommendations, including improving pedestrian safety, shortening block sizes, placing parking lots behind buildings, and regreening.



Baltimore Pike Corridor Revitalization Assessment Building a Case for Economic and Community Redevelopment

2001

Area: Clifton Heights Borough, East Lansdowne Borough, Lansdowne Borough, Upper Darby Township, Yeadon Borough

This plan addresses a host of issues affecting Baltimore Pike in Eastern Delaware County, including inconsistent zoning and land use along the corridor, uninviting streetscapes, inadequate pedestrian facilities, increasing levels of traffic congestion, and deteriorating public transit facilities. The plan recommends more consistent zoning, revitalization plans, and various streetscape and transit facility improvements.



Beautification and Greenway Plan

2002

Industrial Heritage Parkway

Area: Chester City, Eddystone Borough, Marcus Hook Borough, Ridley Township, Tinicum Township, Trainer Borough

The Industrial Heritage Corridor, a nearly 10-mile segment of PA Route 291 and US Route 13, encompasses six Delaware County municipalities: Chester City; Ridley and Tinicum Townships; and Eddystone, Marcus Hook, and Trainer Boroughs. Bordered by the Delaware River to the south and I-95 to the north, this corridor hosts diverse land uses from open space, industrial, high density residential, a downtown commercial core, and a planned trail segment through the East Coast Greenway. With these uses, motor vehicles, freight vehicles, and transit vehicles utilize the corridor making pedestrian connections from each municipality to the river a difficult endeavor. This study provided conceptual improvements to the entire corridor to improve the safety of pedestrians and motorists using road diets in portions of the corridor, as well as enhanced crosswalks and beautification of the streetscape. This study identified an overall theme for the corridor, and provided an opportunity to incorporate a Complete Street concept.

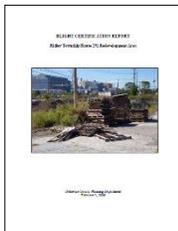


Bethel Township Comprehensive Plan

2006

Area: Bethel Township

This plan aims to provide growth management strategies for the Township. It states that there are no major commercial or institutional centers that act as destinations and most of the populations travels out of the township for employment and major shopping. Problems identified include the intersection of Foulk Road and Concord Road; intersection of Bethel and Foulk Roads, and the Garnet Mine Road ramp on US 322. It highlights the need for alternative transportation modes, including trails, for the growing population.



Blight Certification Report

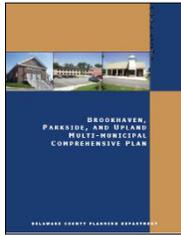
2006

Ridley Township/Route 291 Redevelopment Area

Area: Ridley Township

A blight certification report reviews existing conditions in a given area based on seven criteria enacted through the Pennsylvania Urban Redevelopment Law which include: Unsafe, unsanitary, inadequate or overcrowded conditions; Inadequate planning; Excessive land coverage; Lack of proper light, air and open space; Faulty street and lot layout; Defective design and arrangement of buildings; and Economically or socially undesirable land use. An area needs to meet only one of the seven criteria to be deemed a blighted area in Pennsylvania under these stipulations. The area in question is bound by Stewart Avenue to the west, Route 291 Industrial Highway to the south, Darby Creek to the east and south, and Interstate 95 and Darby Road to the north; specifically 25 parcels totaling 52.2 acres. The report found five of the seven criteria to be met on various parcels including “Faulty street and lot layout”.

Appendix D: Relevant Plan Review

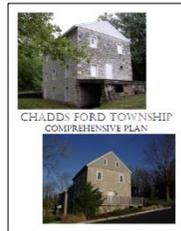


Brookhaven, Parkside, and Upland Multi-Municipal Comprehensive Plan

2009

Area: Brookhaven Borough, Parkside Borough, and Upland Borough

The Multi-Municipal Comprehensive Plan develops a shared vision for these three boroughs. The intent of the plan is to preserve the character and economic stability of the communities while encouraging diverse land uses and provide a pedestrian-oriented and human-scaled streetscape and urban design. Major recommendations related to transportation include studying intersections for safety improvements and reviewing dangerous segments of certain roads, including Chester Creek Road and Dutton Mill Road.

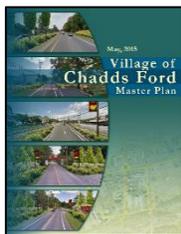


Chadds Ford Township Comprehensive Plan

2010

Area: Chadds Ford Township

This plan, the township’s first comprehensive plan since 1972, aims to provide the Township the “with an opportunity to proactively implement policy objectives that positively influence its future.” Several objectives that relate to transportation were included in the plan, including enhancements to the US 202 and US 1 corridors through the township. The need to identify traffic calming measures and coordinate with neighboring communities were also identified.

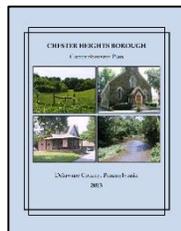


Chadds Ford Village Master Plan

2015

Area: Chadds Ford Township

The Chadds Ford Village Master Plan is a recommendation in the Chadds Ford Township Comprehensive Plan, the Brandywine Creek Greenway Concept Plan, and the 2013 Brandywine Creek Greenway Strategic Action Plan. The goal of the Master Plan is to address the Village of Chadds Ford’s relationship with Route 1, which cuts the historic Village in two, disconnecting pedestrian and bicycle routes and causing heavy motor vehicular traffic. The master plan describes the existing conditions of the area and makes recommendations for improvements. Finally, it suggests actions for implementation, priorities, and possible funding sources.

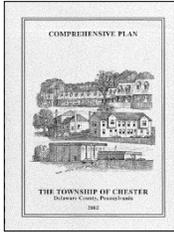


Chester Heights Borough Comprehensive Plan

2013

Area: Chester Heights Borough

This comprehensive plan seeks to promote a community that is economically and socially diverse that values and preserves its rural, open space heritage and character. Transportation improvements that were identified in the plan include the installation of sidewalks along Walnut Hill Boulevard and Red Roof Drive, improvement of the Darlington Road shoulder, realignment of the Smithbridge Road and Valley Brook Road intersection, traffic calming measures at multiple intersections, and bicycle routes along Valley Brook Road.



Chester Township Comprehensive Plan

2002

Area: Chester Township

This plan cites four goals related to land use, transportation, and community facilities and services. The plan highlights several transportation projects underway at the time, such as nearby US 322 ramps to PA 291. It also emphasizes the importance of evaluating the current road system and transit network as it will likely be “basically the same fifty years from now.”



Chester Riverfront & Community Rail Access Study

2011

Area: Chester City

This study centers on three scenarios for Chester City's Highland Avenue Station on SEPTA's Wilmington/Newark Regional Rail Line. The scenarios include analyzing retaining the existing station with an annual maintenance cost of \$75,000, replacing the station at its current location for a cost between \$25-27 million, or relocating the station to a more advantageous location at a cost of \$17-20 million for a street-level station or \$25-27 for an elevated station. The study proposes either a new Highland Avenue Station at its existing location or a new station at a different location which provides for better rail access for the city.

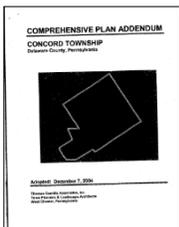


Cobbs Creek Connector Trail Feasibility Study

2007

Area: Colwyn Borough, Darby Township, Tincum Township

This feasibility study examines the possibility of an off-road, multi-use trail along the Cobbs and Darby Creeks from the John Heinz Wildlife Refuge to 70th Street, the current terminus of the Cobbs Creek Trail. This trail would minimize road crossings and allow for continuous travel from the refuge to the existing trail which runs through West Philadelphia to 63rd and Market Streets. The Cobbs Creek Connector would link three important regional trail systems; the Cobbs and Darby Creek trail systems in Delaware and Philadelphia Counties, the Tincum- Fort Mifflin system (a future East Coast Greenway segment), and the Schuylkill River Trail. The study investigates opportunities and constraints along the proposed trail alignment and provides recommendations for implementation.



Concord Township Comprehensive Plan

2004

Area: Concord Township

The Concord Township Comprehensive Plan includes several amendments. The plan emphasizes development along the major thoroughfares in the township to preserve rural character elsewhere. It identifies the need for improvements to multiple intersections (including at US 1 and US 202) and the importance of updating rural roads in the township that have experienced increased volume with development. Other improvements noted include better bus service along Baltimore Pike and enhanced pedestrian access to commercial centers on US 202 and US 1.

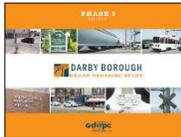


Darby Borough Comprehensive Plan

1991

Area: Darby Borough

This plan stresses the opportunity that could be gained from rehabilitating existing structures to help the borough maintain its unique character while taking advantage of its regional context. Specific transportation recommendations include improving pedestrian access and mobility and developing Darby Transportation Center as a transit hub for the County.



Darby Borough Grade Crossing Study

2013

Phase I

Area: Darby Borough

This study analyzes two unique CSX freight crossings within Darby Borough: the Main Street crossing and the 5th Street crossing. The report documents the various levels of pedestrian, vehicular, freight, and public transportation activities at the two locations and provides various improvement scenarios including upgrading existing equipment, installation of secondary safety measures such as four quadrant gates or channelization devices, changing traffic patterns of motor and transit vehicles at the intersections, providing a fully grade-separated crossing, and community-based improvements such as public education campaigns and improved walking routes.

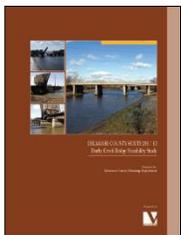


Darby Borough Strategic Vision Plan

2010

Area: Darby Borough

This plan was completed by a team of graduate students at University of Pennsylvania. The plan examines existing conditions and opportunities. It identifies several potential development alternatives, including a preferred alternative. Several of the strategies identified include linking and expanding the regional greenway network; building memorable spaces and catalyzing community engagement; adaptively reusing historic structures; encouraging consistent residential and commercial land use; and unifying street character and enhancing the pedestrian experience. The plan particularly emphasizes the connections provided by the Darby Transportation center.

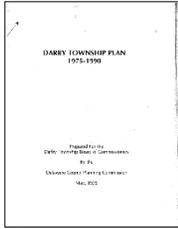


Darby Creek Bridge Feasibility Study Delaware County Route 291/13

2005

Area: Ridley Township, Tincum Township

This planning and engineering study analyzes alternatives and determine the most feasible route for the East Coast Greenway to span Darby Creek which included three options: utilizing the existing PennDOT bridge for Route 291, constructing a new structure immediately downstream of the Route 291 bridge, and constructing a new structure along the existing railroad right-of-way. The identified preferred alternative is to utilize the existing PennDOT bridge in conjunction with PennDOT's redesign of the bridge superstructure.



Darby Township Comprehensive Plan

1975

Area: Darby Township

This plan was completed over 40 years ago and reinforces the unique issues different areas of Darby Township face. In terms of transportation, the plan focuses on the influence MacDade Boulevard has on the township.



Darby Strategic Vision Plan

2010

Area: Darby Borough

With a vision to create a more habitable, healthy, and diverse urban environment that attracts residents and visitors from local and regional areas, this study outlines five goals to help attain the vision. Goals related to transportation include “increase circulation connectivity,” which was further outlined to be achieved by “unifying street character and enhancing pedestrian user experience” and “link and expand the regional greenway network”. Transportation projects include construction of the Darby Creek Trail, a new pedestrian crossing over 9th Street, a new pedestrian bridge over Darby Creek east of 9th Street, Main Street streetscaping, traffic lights for Darby Transportation Center, and enhancing pedestrian connections to parking lots in the Central Business District (CBD).



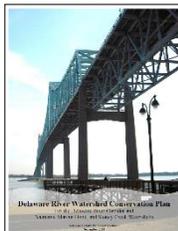
Delaware County Route 291/13

2005

Industrial Heritage Parkway and Greenway Landscape and Signage Guidelines

Area: Chester City, Eddystone Borough, Marcus Hook Borough, Ridley Township, Tincicum Township, Trainer Borough

This plan creates guidelines for the development of the East Coast Greenway as part of the Industrial Heritage Parkway. It includes conceptual streetscape designs, including an on-road bicycle lane, for various typologies along the route. It also includes preliminary signage design.



Delaware River Watershed Conservation Plan

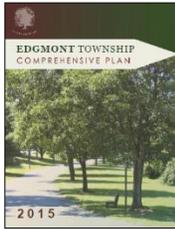
2014

Delaware River Corridor and Naamans, Marcus Hook, and Stoney Creek Watershed

Area: Aston Township, Bethel Township, Chester City, Chester Township, Eddystone Borough, Lower Chichester Township, Marcus Hook Borough, Ridley Township, Tincicum Township, Trainer Borough, and Upper Chichester Township

This plan serves to identify the unique characteristics of the study area with the goal to conserve and enhance them. It cites the transportation network, particular the Delaware River, as a driver of the cultural heritage of that area. The transportation network, including I-95 and public transportation, remains a crucial piece of the community and industry in this part of the County.

Appendix D: Relevant Plan Review



Edgmont Township Comprehensive Plan

2015

Area: Edgmont Township

This plan is guided by three principles: conservation, growth management, and sustainability. As part of these principles, it plans to guide growth to portions of the Township that are already developed and enhance accessibility in these areas. This includes maintaining a modern and efficient road network that accommodates alternative modes of transportation.



Enhanced Bus Service on West Chester Pike

2016

Area: Upper Darby Township, Haverford Township, Marple Township, Newtown Township, and Edgmont Township in Delaware County and Willistown Township, Westtown Township, East Goshen Township, West Goshen Township, and West Chester Borough in Chester County

This DVRPC study builds on previous planning efforts focused on the West Chester Pike corridor and outlines improvements that could be made along the corridor to support enhanced bus service (EBS). In the study, EBS is defined as branded bus service that is faster, more comfortable, and better connected than existing bus service. The study identifies actions that can be taken to implement EBS on the corridor, including the action of creating a West Chester Pike Coalition consisting of local stakeholders. It also highlights funding sources that can be utilized to make recommended improvements.

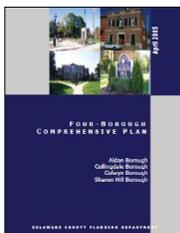


Folcroft Borough Comprehensive Plan

1982

Area: Folcroft Borough

This plan addresses many major issues and opportunities in the borough at time of publication, including the construction of the Blue Route, Philadelphia Airport, and commercial growth. It also stresses that the borough is comprised of many distinctly defined neighborhoods. The plan states that transportation of hazardous materials through Folcroft poses a risk and improvements to roadways and intersections should be planned to reduce risk.



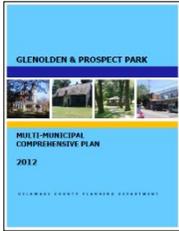
Four-Borough Comprehensives Plan

2005

Aldan Borough, Collingdale Borough, Colwyn Borough, Sharon Hill Borough

Area: Aldan Borough, Collingdale Borough, Colwyn Borough, Sharon Hill Borough

This plan was developed for the four closely integrated boroughs. Similar to other comprehensive plans, this plan recommends studying dangerous intersections in more detail and installing gateway signage to each of the boroughs.

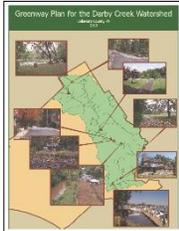


Glenolden and Prospect Park Multi-Municipal Comprehensive Plan

2012

Area: Glenolden Borough, Prospect Park Borough

This plan seeks to guide Glenolden and Prospect Park into economically and socially vibrant communities that encourage ongoing growth and redevelopment. This comprehensive plan also recommends studying intersections for possible improvements, implementation of traffic calming measures, and access management along MacDade Boulevard and Chester Pike.

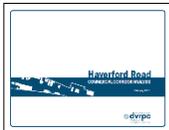


Greenway Plan for the Darby Creek Watershed

2010

Area: Aldan Borough, Clifton Heights Borough, Collingdale Borough, Colwyn Borough, Darby Borough, Darby Township, East Lansdowne Borough, Folcroft Borough, Glenolden Borough, Haverford Township, Lansdowne Borough, Marple Township, Millbourne Borough, Morton Borough, Newtown Township, Norwood Borough, Prospect Park Borough, Radnor Township, Ridley Park Borough, Ridley Township, Rutledge Borough, Sharon Hill Borough, Springfield Township, Upper Darby Township, Yeadon Borough

This plan identifies a trail network for the entire Darby Creek Watershed. It identifies major natural, recreational, and cultural destinations as “hubs” with a series of trails connecting them, that act as “spokes.” The spokes are connected through the Darby Creek Trail, which spans nearly the entire length of the watershed, primarily following Darby Creek.



Haverford Road Commercial Corridor Analysis

2013

Area: Haverford Township

Identified as an implementation strategy within the "US 30 (Lancaster Avenue) Corridor Study", this study focuses on an important commercial corridor through Haverford Township on Haverford Road between Hathaway Lane and the Eagle Road/Wynnewood Road intersection. This area is bounded by the Ardmore Junction and Wynnewood Road NHSL stations. This study builds upon previous revitalization efforts to further develop strategies to enhance the pedestrian environment, promote commercial properties, and improve access to existing transit by means of a road diet along a stretch of Haverford Road between Ardmore Avenue and Karakung Drive.

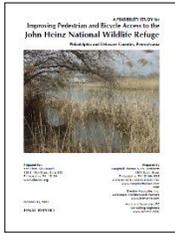


Haverford Township Comprehensive Plan

1988

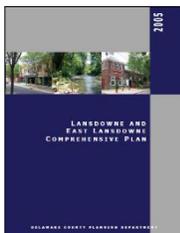
Area: Haverford Township

Haverford’s comprehensive plan seeks to guide development to protect the health, safety, and welfare of its residents. This plan identifies several locations for transportation enhancements to improve safety and effectiveness of travel. Many recommendations focus on widening roadways to add travel lanes and wider shoulders.



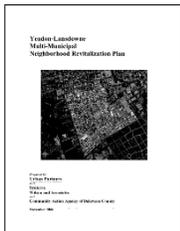
Improving Pedestrian and Bicycle Access to Heinz Refuge 2007
Feasibility Study

Area: Prospect Park Borough, Tinicum Township
 This feasibility study investigates the possibility of creating pedestrian- and bicycle-friendly connections to the John Heinz Wildlife Refuge from four nearby locations to provide access to neighboring communities. These four locations include a potential entrance along PA 420, the Jansen Avenue Bridge, the former Chester Short Line Trolley bed, and Eastwick Station. This study proposes three major improvements: bicycle and pedestrian improvements; a new grade separated crossing utilizing the abandoned trolley right-of-way; and an off-road trail from Eastwick Station to the refuge's eastern entrance at 86th Street and Lindbergh Boulevard.



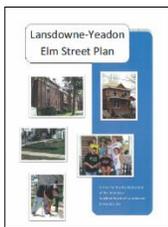
Lansdowne and East Lansdowne 2005
Multi-Municipal Comprehensive Plan

Area: Lansdowne Borough and East Lansdowne Borough
 This plan states a desire to promote redevelopment that fits within the context of the community and enhances its unique character. It identifies several specific intersections that need safety improvements, with particular attention paid to clearing up sightlines.



Lansdowne-Yeadon 2006
Multi-Municipal Neighborhood Revitalization Plan

Area: Lansdowne Borough, Yeadon Borough
 This plan seeks to improve the neighborhood through programmatic and infrastructure improvements. In particular, it recommends maintaining the character of the neighborhood while also providing a range of housing options and upgrading neighborhood streets when “cost-effective opportunities avail themselves.”



Lansdowne-Yeadon Elm Street Plan 2010

Area: Lansdowne Borough, Yeadon Borough
 This plan covers the area that is locally referred to as “Interboro.” The primary elements of this Plan are to create a strong connection between the neighborhood and Lansdowne’s Main Street Area; to capitalize on the transit-oriented assets of the neighborhood; and to develop a five-year strategy for implementation.



Managing Access in Newtown Square 2010

Area: Newtown Township
 This study provides a detailed analysis of Newtown Square, a neighborhood of Newtown Township at the intersection of PA 3 (West Chester Pike) and PA 252 (Newtown Street Road). The analysis recommends reconfiguring access to accommodate redevelopment of the northwest quadrant of the intersection; consolidating and closing of some driveways along PA 252; defining driveway openings with curbing, building a grid of local roads along the east side of PA 252 to remove direct access to the arterial highway; and improving pedestrian circulation.

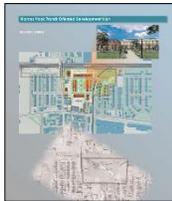


Marcus Hook Borough Comprehensive Plan

2002

Area: Marcus Hook Borough

This plan identifies a vision for Marcus Hook which consists of a safe community that fosters socially and economically healthy environments. Transportation recommendations include enhanced pedestrian crossings, better parking at Marcus Hook Train Station, and reconstruction of the Market Street Bridge over the Amtrak railroad tracks.

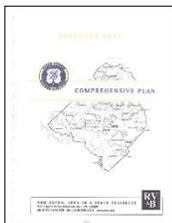


Marcus Hook Transportation Oriented Development Plan

2005

Area: Marcus Hook Borough

With its intention to serve as a resource binder, the Marcus Hook Transit Oriented Development Plan presents a TOD Site Plan and conceptual design recommendations for redevelopment surrounding the Marcus Hook SEPTA station. This TOD plan includes analyses of the following: market conditions, transportation, station location, and traffic flow. The report also provides updated TOD zoning ordinance language. The TOD area identified is an existing seven-acre vacant property east of the existing SEPTA station and the Market Street Bridge (US 452).



Marple Township Comprehensive Plan

2007

Area: Marple Township

Marple's comprehensive plan provides an overview of demographic and development trends and identifies major issues and opportunities. Specific transportation recommendations include endorsing regional PA 3 studies and recommendations, particularly developing an access management overlay along West Chester Pike.



Media Borough Comprehensive Plan

2015

Area: Media Borough

This plan brought together numerous stakeholders in the borough to create a plan to "maintain and enhance the Borough as a sustainable, economically vital, diverse, and culturally rich community." Transportation objectives in the plan include enhancing pedestrian mobility and connectivity, instituting traffic calming measures, and redesigning "problematic, awkward, or obsolete intersections to improve traffic flow and pedestrian mobility."

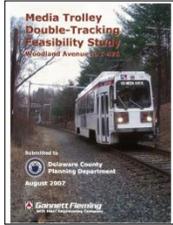


Media Borough Bike Facility Implementation Plan

2016

Area: Media Borough

The Media Borough Bike Facility Implementation Plan was developed by the Media Borough Environmental Advisory Council to guide the implementation of the recommendations from Media's comprehensive plan for a network of in-street bicycle facilities. In the plan, a network of sharrows, bike lanes, and supplemental strategies is identified based on public input and analysis of Media's street network and potential nearby trail connections.

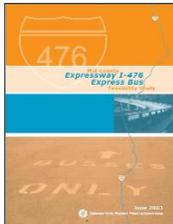


Media Trolley Double-Tracking Feasibility Study
Woodland Avenue to I-476

2007

Area: Media Borough, Nether Providence Township, Springfield Township

This feasibility study was commissioned to investigate preliminary costs associated with the construction of a second track along a 1.5-mile segment where single-track trolley operations from Woodland Avenue in Springfield Township to the “96” switch west of the I-476 overpass currently exists. Three potential build alternatives were found: Alternative 1 from Woodland Avenue to “96” switch (1.5 miles totaling \$18.7 million); Alternative 2 from Woodland Avenue to Springfield Mall (0.7 miles totaling \$9.9 million); and Alternative 3 from Springfield Mall to “96” switch (0.8 Miles totaling \$12.2 million). Each alternative provides an estimated impact to SEPTA maintenance costs in addition to projected ridership growth and additional revenue associated with increased ridership. Build Alternative 2 was deemed the most feasible when considering the ramifications of ongoing grade crossing improvements that would migrate opposing trolley movements westward into single track territory near the Springfield Mall.

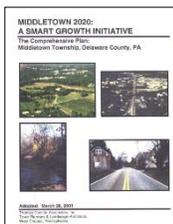


Mid-County Expressway I-476 Express Bus Feasibility Study

2003

Area: Eddystone Borough, Haverford Township, Marple Township, Nether Providence Township, Springfield Township, Swarthmore Borough, Radnor Township, Ridley Township

This study investigates the feasibility of operating express bus service on I-476 between Chester City, and the King of Prussia and Plymouth Meeting Malls. The study also explores alternatives for service including shuttle service to the Philadelphia Airport via a proposed park-and-ride lot located off the expressway. Each scenario is evaluated based on demographic data, comparative travel times, and projected ridership forecasts. Express service on I-476 (37 minutes) was found to be significantly faster than existing service from Chester City to the King of Prussia Mall (76 minutes) via the Route 118 bus. While time savings were found, forecasted ridership increases were too low to consider the feasibility of adding the service at that time.

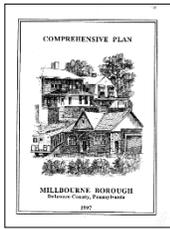


Middletown 2020: A Smart Growth Initiative
Comprehensive Plan

2001

Area: Middletown Township

Middletown Township completed this plan at a time when they were experiencing tremendous growth. As such, it highlights the importance of preserving remaining open space. It also identifies “Missing Links” in the circulation system which would provide new connections and better traffic flow in the township. Many of these focused on the intersection of Route 1 and Baltimore Pike.

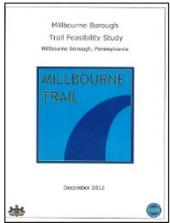


Millbourne Comprehensive Plan

1997

Area: Millbourne Borough

This plan focuses on improving the developed community. The former Sears property, approximately 15 acres, is the subject of some of the most important recommendations. Transportation recommendations include improvements to Market Street as well as pedestrian and public transit facilities.



Millbourne Trail Feasibility Study

2012

Area: Millbourne Borough

This plan examines the potential to develop a multi-use trail from 69th Street Terminal to Philadelphia near the 63rd Street Station. It would include a connection into the Millbourne TOD site and the proposed Valley Forge to Heinz Refuge Trail.



Morton Borough Comprehensive Plan

2003

Area: Morton Borough

This plan identifies a vision of Morton Borough that preserves the character of the area while encouraging diverse land uses and supporting business. The plan recommends upgrades to traffic control devices at major intersections, increased safety at railroad crossings, and implementation of traffic calming measures on residential roads used as bypasses.

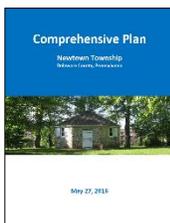


Nether Providence, Rose Valley, and Swarthmore Multi-Municipal Comprehensive Plan

2006

Area: Nether Providence Township, Rose Valley Borough, and Swarthmore Borough

This multi-municipal plan provides tremendous background and context into the issues and opportunities in these communities. Transportation recommendations include a focus on increasing transportation options, preparing site-specific plans for transit nodes, developing a pedestrian and bicycle accessibility plan, reducing barriers to walking and bicycling, beautifying corridors, and developing roadway improvement plans for major corridors.



Newtown Township Comprehensive Plan

2010

Area: Newtown Township

This plan identifies current goals and objectives in the areas of land use, housing, transportation/circulation, natural resources, historic resources, and community facilities and utilities. With regards to transportation, the plan points to access management, traffic calming, and route road maintenance as methods for improvement. It also identifies a need to improve pedestrian and bicycle facilities through implementation of Complete Streets. Streetscape improvements are also recommended, and potential public transit service adjustments are identified, such as new service to the interior of Ellis Preserve and Paoli Station. Enhanced bus service along West Chester Pike is identified as a potential improvement, and bus stop accessibility and shelter improvements are identified as needs.



Norristown High Speed Line Parking and Pedestrian Access Study

2014

Haverford Township

Area: Haverford Township

This study identifies opportunities to increase parking capacity for passengers utilizing NHSL stations within Haverford Township while also improving multimodal access at each station, including bicycle and pedestrian improvements. This study also provides preliminary station area planning for transit-supportive economic development and redevelopment at each station.

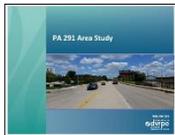


Norwood Borough Comprehensive Plan

2004

Area: Norwood Borough

Norwood Borough developed this plan to foster socially and economically healthy environments. The plan’s recommendations include developing a streetscape design for Chester Pike and Winona Avenue, improving traffic signals on Chester Pike, addressing use of residential roads as bypasses, and performing a traffic study of the central business area.



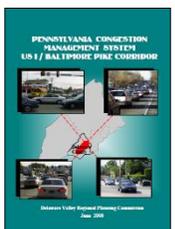
PA 291 Area Study

2015

Access Management Study

Area: Chester City, Eddystone Borough, Ridley Township

This study addresses access management issues pertaining to goods movement, public transit, vehicular traffic, and bicycle and pedestrian facilities and access within the study area. Focusing on safety and mobility improvements, special consideration is given to riverfront access, with a balance between industrial and local resident use. Transportation recommendations include implementing a new cross-section for PA 291 to incorporate a vegetative center median and bike lanes, making improvements to multimodal links from stations to nearby neighborhoods, continuing to develop the Circuit Trail network and the East Coast Greenway, upgrading crosswalks over Route 291, and developing a wayfinding signage program for heavy vehicles and freight movement along the corridor.



Pennsylvania Congestion Management System

2000

US 1/Baltimore Pike Corridor

Area: Aldan Borough, Aston Township, Chester Heights Borough, Clifton Heights Borough, East Lansdowne Borough, Edgmont Township, Haverford Township, Lansdowne Borough, Marple Township, Media Borough, Middletown Township, Millbourne Borough, Morton Borough, Nether Providence Township, Ridley Township, Rose Valley Borough, Springfield Township, Swarthmore Borough, Upper Darby Township, Upper Providence Township, Yeadon Borough

This plan evaluates the stretch of US 1 that travels through Delaware County. It examines segments and major intersections and identifies several methods to improve traffic flow.



Planning Area 1 Action Plan Renaissance Program

2003

Area: Lower Chichester, Marcus Hook Borough, Trainer Borough

Focused on creating a series of vibrant, healthy communities connected by a network of open spaces for pedestrians and bicyclists, this action plan for Lower Chichester Township and Marcus Hook and Trainer Boroughs presents the following transportation improvements: rerouting SEPTA 113/114 bus service through commercial areas; relocation of the Marcus Hook SEPTA station; implementation of streetscape enhancements identified in the Rt. 13/452 Beautification Plan, 13/291 Industrial Heritage Parkway, and East Coast Greenway Plan; and coordination of streetscaping tying together the relocated train station, Market Street, and the Delaware River waterfront.

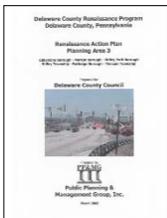


Planning Area 2 Action Plan Renaissance Program

2003

Area: Chester City, Chester Township, Parkside Borough, Upland Borough

With the objective of a five-year revitalization strategy for municipalities within the county, this action plan's transportation-related improvements include improving awareness of transportation mobility options for underprivileged citizens, creating walking trails and greenways, and improving the Edgmont Avenue Corridor and the Central Business District of Chester City through streetscaping.

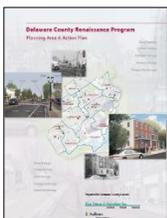


Planning Area 3 Action Plan Renaissance Program

2003

Area: Eddystone Borough, Morton Borough, Ridley Park Borough, Ridley Township, Rutledge Borough, Tincicum Township

With a larger area than the previous two planning areas, Planning Area 3 suggests a bevy of improvements ranging from industrial corridor improvement projects to traffic coordination and safety, to highway ramp reconstructions. Highlighted projects include access improvements to Tincicum Industrial Park, street signage and pedestrian improvements, and closed-loop signal systems for the PA 291/US 13 corridor, MacDade Boulevard, and PA 420.

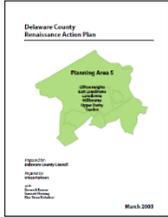


Planning Area 4 Action Plan Renaissance Program

2003

Area: Aldan Borough, Collingdale Borough, Colwyn Borough, Darby Borough, Darby Township, Folcroft Borough, Glenolden Borough, Norwood Borough, Prospect Park Borough, Sharon Hill Borough

This plan outlines many transit facility improvement projects. The plan includes considerations for implementation of a new north/south bus route through the project area, particularly within Norwood and Glenolden Boroughs; extension of Route 115 north of the Delmar Loop to the MacDade Mall; extensions of Route 107 to PA 420 after service to the MacDade Mall and MacDade Boulevard; functional and aesthetic enhancements to regional rail stations; support for economic development surrounding regional rail stations; and identification of intermodal opportunities.



Planning Area 5 Action Plan

2003

Renaissance Program

Area: Clifton Heights Borough, East Lansdowne Borough, Lansdowne Borough, Millbourne Borough, Upper Darby Borough, Yeadon Borough

This action plan identifies two train station and three roadway improvement projects. The two transit-related improvements include station area improvements for Fernwood-Yeadon and Lansdowne Stations. Roadway improvement projects feature the reconstruction of Long Lane, widening of Union and Nyack Avenues, and implementation of traffic signal coordination throughout the project planning area.

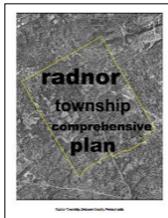


Primos Station Access & Development Opportunities Study

2015

Area: Aldan Borough, Upper Darby Township

Focused on capitalizing on the recently renovated Primos Station in Upper Darby Township, this DVRPC-led study focuses on station parking and utilization, intermodal access, and land use redevelopment potential. This report provides various design alternatives for establishing the Primos neighborhood as a destination along the Media/Elwyn Line and provides various market analyses to determine the appropriate use and scale of TOD surrounding the station. Pedestrian and bicycle access to the station is also considered, and improvements outlined in all design alternatives include upgrading pedestrian and bicycle facilities adjacent to the station which become hazardous at peak train and motor vehicle rush hours.

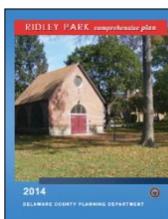


Radnor Township Comprehensive Plan

2003

Area: Radnor Township

As with many comprehensive plans, Radnor Township’s plan focuses on preserving the unique character that has developed over time. The transportation recommendations include identifying priority roadway projects, identify gaps in sidewalk facilities, improving the sidewalk network within the Wayne Business District, and preserving the quality of “scenic roads.”



Ridley Park Comprehensive Plan

2014

Area: Ridley Park Borough

This plan states the vision for the Borough is to have “inviting residential neighborhoods and [a] walkable, vibrant downtown linked by a network of parks, greenspace, and lake.” Recommendations in the plan include increasing walkability in the town center, implementing a parking management and supply program, beautifying Swarthmore Avenue and Chester Pike, and developing a long-range corridor plan for Chester Pike.



Ridley Township and Eddystone Borough

2011

Multi-Municipal Comprehensive Plan

Area: Ridley Township

This plan identifies a desire to create a “hometown” feel to maintain a high quality of life and attract residents. The transportation portion of the plan highlights needed improvements to MacDade Boulevard, PA 291, major intersections, and railroad crossings. The plan also identifies a need to create vision plans for major corridors.



Route 3, West Chester Pike

2006

Land Use and Access Management Strategies

Area: Edgmont Township, Marple Township, Newtown Township

This study outlined goals and objectives centered on growth management strategies, vehicular and pedestrian circulation, and community character goals within the western stretch of West Chester Pike (PA 3) within Delaware County. Specific transportation-related projects identified include an overall service frequency increase for Route 118 servicing Newtown Town Center, amenity and access improvements for bus stops within Edgmont Township, a feasibility study for bus rapid transit along the Pike, increasing engagement with developers and municipalities earlier in the plan approval process, coordination of new projects along the Pike between municipalities and PennDOT, and access management.



Route 202 ES1 Improvements Report

2011

Area: Bethel Township, Chadds Ford Township, Concord Township, Thornbury Township

This plan examines the environmental and land use conditions along US 202 and the potential impacts that improvements to the highway may have on the study area. It identifies potential land use and local planning conditions as they pertain to the roadway.



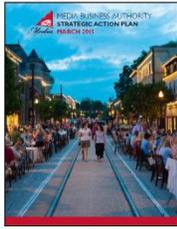
Springfield and Clifton Heights

2011

Joint Comprehensive Plan

Area: Clifton Heights Borough, Springfield Township

This plan focuses on redevelopment and revitalization, particularly along Baltimore Pike. It emphasizes focusing development to locations that allow phasing-in of specific transportation and community improvements. It also recognizes the problems associated with drivers using residential roads as bypasses and the need for safety improvements at intersections. The plan also identifies a need to increase pedestrian access to transit stations and to examine the potential of TOD near regional rail stations and Springfield Mall and Woodland Avenue Stations.



Strategic Action Plan

2015

Media Business Authority

Area: Media Borough

Utilizing community input from surveys conducted of downtown businesses, restaurateurs, and borough officials, in combination with precedent research, the Media Business Authority’s Strategic Action plan highlights the importance of Baltimore Avenue pedestrian crosswalk enhancements and beautification, as well as improved wayfinding signage which is unified and informative. Other recommended projects include a reconfigured western approach to the borough along Baltimore Avenue and State Street, a gateway lighting and signage program for the Media “5 Points” area along PA 252, a Plum Street Pedestrian Mall improvement, and a parking garage at Baltimore Avenue and Orange Streets.

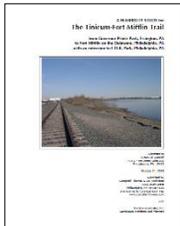


Thornbury Township Comprehensive Plan

2004

Area: Thornbury Township

Thornbury’s comprehensive plan sets several goals for the township, including preserving and enhancing community character. The transportation goal and corresponding objectives include a review of existing roads to establish safety and traffic flow improvements, identify corridors that may be appropriate for enhanced pedestrian and bicycle facilities, and coordination with SEPTA to provide better transit access.



Tinicum-Fort Mifflin Trail

2005

Feasibility Study

Area: Tinicum Township

This report is a feasibility study for an 11.3-mile multi-use trail (mainly off-road) from Governor Printz Park in Tinicum Township to Fort Mifflin with an extension to FDR Park in Philadelphia. Serving as a segment of the East Coast Greenway, major destinations along this trail include the historic Fort Mifflin, the Philadelphia Airport and its associated hotels and businesses, United Parcel Service, in addition to points both north and south of the project area along the nearly 3,000 mile long trail from Maine to Florida. Connections are also identified to provide access to the nearby John Heinz Wildlife Refuge and the Schuylkill River Trail.

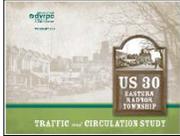


Tinicum Township Comprehensive Plan

1981

Area: Tinicum Township

This plan focuses on several key issues to the township, particularly changes to industry and challenges posed by flooding. It also addresses a desire to increase public transit access and limit the adverse effects of I-95 and airport construction.



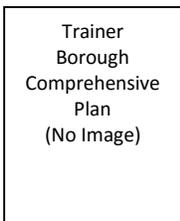
Traffic and Circulation Study

2014

US 30: Eastern Radnor Township

Area: Radnor Township

This study examines existing, proposed, and potential pedestrian and vehicular traffic issues along the US 30 corridor near Villanova University. This study is an extension of the *US 30 (Lancaster Avenue) Corridor Study: Creating Linkages and Connecting Communities*, as part of a follow-up effort to formalize the study’s recommendation into implementation. Focused on traffic and circulation, the first part of the study analyzes pedestrian counts crossing US 30 at Church Walk and Ithan Avenue, while the second investigates how pedestrians circulate through Villanova’s main campus. For traffic operations, the study area was modeled under existing conditions and various improvement scenarios, resulting in three build alternatives.

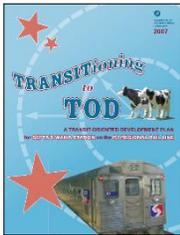


Trainer Borough Comprehensive Plan

1978

Area: Trainer Borough

Trainer’s comprehensive plan lays out a vision for the borough moving forward. Much has changed since the plan was completed, and the borough would benefit from an update to address more contemporary issues.



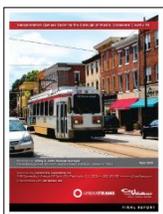
TRANSITIONing to TOD

2007

A Transit-oriented Development Plan for SEPTA’s Wawa Station

Area: Chester Heights Borough, Middletown Township

This study includes a plan for TOD for the pending extension of the Media/Elwyn Line to Wawa Station. This report provides recommendations to guide growth and development near the station, including topics such as land use, comprehensive planning, zoning, development opportunities, and access management.

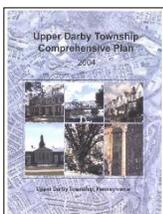


Transportation Options Study for the Borough of Media

2009

Area: Media Borough

A 2007 TCDI-funded project, this transportation demand management (TDM) study researches the borough’s parking capacity, particularly within the business district, to determine whether appropriate levels of parking exist. Parking capacity is defined by patterns of parking use and needs, and the study provides a host of TDM strategies to mitigate parking pressures from both County employees and visitors to State Street.



Upper Darby Township Comprehensive Plan

2004

Area: Upper Darby Township

This comprehensive plan lays out a vision for quality facilities and resources; safe, clean, vital neighborhoods accessible to all; vibrant, attractive, safe commercial and employment centers; and safe, efficient, accessible transportation. Specific transportation recommendations include better parking management around 69th Street, improved traffic flow and safety at major intersections, and improvements to and completion of the sidewalk network.

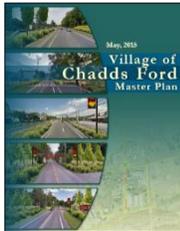


Upper Providence Comprehensive Plan

2005

Area: Upper Providence Township

The vision established in this plan is of a township that is a quiet, green, rural community. Transportation objectives of this plan include redesigning several intersections along PA 252, identifying traffic calming measures to implement on collector and arterial roads, and enhancing the Media train station. The plan also identifies several transportation network “deficiencies” that warrant further study.

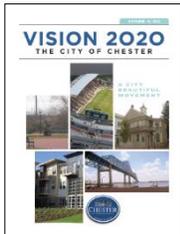


Village of Chadds Ford Master Plan

2015

Area: Chadds Ford Township

This plan was created after several plans identified the need and opportunity to improve the safety of pedestrians and bicyclists in the Village of Chadds Ford. This plan creates a strategy to improve streetscaping and enhance pedestrian crossings, among other improvements.



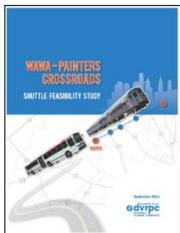
Vision 2020

2012

The City of Chester

Area: Chester City

The city’s comprehensive plan sets forth a vision where Chester City is “the first choice to live, work, and play.” The plan cites the importance of investing in its road network in order to spur economic investment in the area. It also identifies “Revitalization Target Areas,” which include the area known as Rivertown and the Central Business District, among others. As part of this, it states a need to enhance the Chester City Transportation Center to accommodate more service.



Wawa-Painters Crossroads Shuttle

2011

Feasibility Study

Area: Chadds Ford Township, Chester Heights Borough, Concord Township, Middletown Township

The study examines the feasibility of a potential shuttle bus from Painter’s Crossroads to the future Wawa Station on the Media/Elwyn Line. The study reveals very poor pedestrian-oriented development and auto-oriented commercial properties around the station. Ridership forecasts were not conducted at the time because the timing of the extension of the Media/Elwyn Line to Wawa Station was uncertain. The study finds that travel to and through the area via public transit is time-consuming and not well coordinated, with limited operations hindering service in the auto-centric development. The study suggests measures would need to be taken to increase ridership, such as installation of a park-n-ride lot, improved bicycle and pedestrian facilities, and changes in land use to allow for denser development patterns.



Wawa to West Chester Regional Rail Extension

2011

Ridership Forecast

Area: Aston Township, Chadds Ford Township, Chester Heights Borough, Concord Township, Edgmont Township, Media Borough, Middletown Township, Rose Valley Borough, Thornbury Township, Upper Providence Township

This plan forecasts ridership for a potential extension of the Media/Elwyn line from Wawa Station to West Chester Borough.



Yeadon Borough Comprehensive Plan

2001

Area: Yeadon Borough

This plan envisions a Yeadon Borough that is unique in character, highly walkable, and “feels like ‘home.’” Transportation objectives for the borough include working with surrounding communities to develop better traffic flow, developing a parking plan for central business districts, implementing traffic calming on major corridors, and beautifying corridors. The plan identifies improved access to public transit as a priority, along with improved public transit station facilities.

ADJACENT COUNTY PLANS



**Baltimore Pike for Everyone
 Complete Street Strategies for Baltimore Pike**

2015

Area: Chester County

Identified in the "Housing and Transportation Options for Southern Chester County" study in 2014, this plan recommends improvements that aim to convert a 20-mile portion of the Baltimore Pike Corridor into a complete street including transit improvements for SCCOOT, pedestrian facilities, traffic calming and access management improvements, bicycle facilities, and multi-use facilities such as trails. Specific improvements, including an ordinance review of all eleven municipalities, were conducted and provided in the study.



**Central Chester County Bicycle and Pedestrian Circulation
 Plan**

2015

Area: Chester County

A bicycle and pedestrian plan for seven central Chester County municipalities that supports walking, bicycling, and using public transportation. The overall goal of this plan is to connect the towns of Downingtown, Exton, and West Chester through a comprehensive network to connect local and regional destinations that improves safety and access for all users.



Chester County Public Transportation Plan

2014

An element to Landscapes2 – Chester County Comprehensive Policy Plan

Area: Chester County

An element of Landscapes2, Chester County's comprehensive plan, this plan identifies public transportation needs for Chester County residents over a 25-year period. The plan is presented through three critical focus areas; System, Environment, and Experience. These focus areas address items such as service quality/reliability, first mile/last mile connections, new service requests, land uses around transit stops and stations, and marketing of existing services, to name a few.



Chester County Transportation Improvements Inventory

2015

Area: Chester County

This document serves as the source of identified transportation needs and proposed transportation projects in Chester County. This inventory contains proposed roadway, bridge, bicycle/pedestrian, freight, and public transportation projects that have been identified by either the County and/or municipalities over time in planning documents or through regional partners such as SEPTA, DVRPC, and PennDOT. In total, \$4.7 billion of transportation improvements were identified.



Landscapes2

2009

Chester County Comprehensive Policy Plan

Area: Chester County

An update to Landscapes, Chester County's 1996 comprehensive plan, Landscapes2 focuses planning efforts on reinvestment in urban centers, updating and maintaining the road system and associated infrastructure, expanding public transportation and alternative transportation options, guiding growth to preserve open space, and promoting cooperative planning which strengthens existing partnerships and fosters new ones.



Making Your Downtown Improvements Last

2009

Design, Installation, and Maintenance Guide

Area: Montgomery County

A guide meant to inform planning officials on the importance of properly designing, installing, and maintaining proper street furniture and other amenities found in revitalizing downtowns and town centers. This guide covers improvements in three sections: hard surfaces, vegetation, and street lights and furniture. Hard surfaces cover sidewalks, crosswalks, streets, plazas, and graffiti. Vegetation provides a list of recommended tree species to plant in downtowns and include analysis on drainage, soil, exposure, and maintenance. The last section discusses street lights and appropriate street furniture including bus shelters, trash receptacles, bicycle racks, wayfinding signs, and more.

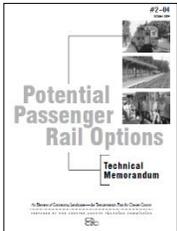


Montco 2040: A Shared Vision
The Comprehensive Plan for Montgomery County

2015

Area: Montgomery County

Montgomery County's comprehensive plan, *Montco 2040: A Shared Vision* consists of three interconnected themes: Connected Communities, Sustainable Places, and Vibrant Economy. Many of the County's transportation goals can be found under each of the three themes and special attention is paid to highlight the County's commitment to invest in improving roadway conditions and existing bridges; improving public transit access, service and frequency; expanding on the existing countywide trail system through municipal and regional trails; improving bicycle and pedestrian networks including expansion of sidewalk networks and on-road bicycle facilities; and increasing use of travel demand management strategies. In total, 114 distinct transportation projects are identified in the plan.



Potential Passenger Rail Options – Technical Memorandum 2004
An Element of Connecting Landscapes – the Transportation Plan for Chester County

Area: Chester County

An element of Landscapes, Chester County's comprehensive policy plan, this report investigates eight potential new or extended rail services within Chester County. Of the three projects that most directly affect service within Delaware County, the extension of the Paoli/Thorndale Line to Atglen Station ranks as a "High Priority", the Media/Elwyn extension to West Chester ranks as a "Low Priority", and the Octoraro Passenger Rail service is rated as a "Long Term Priority".



Sustainable Green Parking Lots

2015

Area: Montgomery County

This report, completed by the Montgomery County Planning Commission, serves as a guidebook to retrofitting surface parking lots and better integrating them into their environment. The guidebook provides many examples within the County that integrate a combination of re-greening techniques and parking demand management strategies. The guidebook also provides model ordinance language which would allow municipalities to adopt strong, more effective zoning codes around parking to provide a more consistent countywide policy on green parking lots.

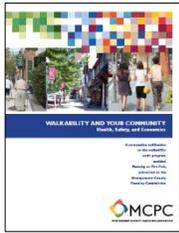


Walk Montco: Montgomery County Walkability Study

2016

Area: Montgomery County

The Montgomery County Planning Commission's walkability study reviews existing sidewalks and trails to determine the walkability of various neighborhoods within the county. It analyzes walkability at some common destinations and provides recommendations for pedestrian network improvements. It also makes general land use and design recommendations for improved walkability and outlines available funding sources for project implementation.



Walkability and Your Community Health, Safety, and Economics

Area: Montgomery County

This document points to a lack of walking in regional communities as one factor in creating localized and regional traffic congestion. The report highlights the health, environmental, and economic benefits of walking and calls attention to walking's role in creating safe, livable communities for users of all abilities. The document further mentions the impacts of sidewalks, ADA compliance, intersection design, and traffic calming to make streets more pedestrian-friendly.

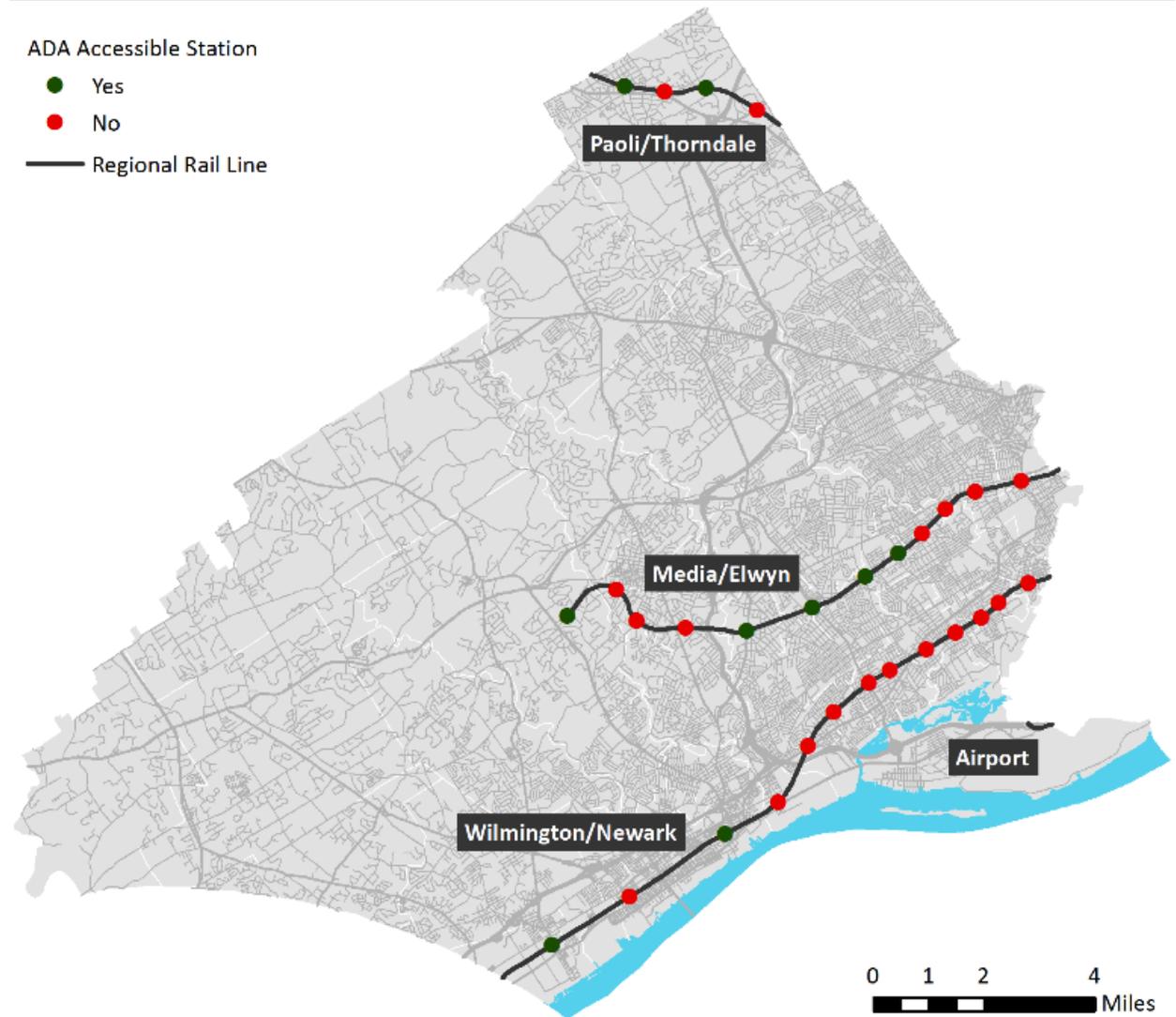
2014

APPENDIX E: SEPTA STATION ACCESSIBILITY

ADA Accessibility of Transit Stations

ADA accessible stations provide complete access for people with disabilities. Accessibility on Delaware County’s four regional rail lines varies. The Paoli/Thorndale line has the highest percentage of accessible stations (50 percent), while the Wilmington/Newark line has the lowest percentage (6.7 percent). Improvements to access are needed throughout the transit network, but changes are coming. Accessibility improvements are planned to be made systematically through SEPTA’s capital program, and any new or newly altered stations or stops are required to meet the American with Disabilities Act Accessibility Guidelines.

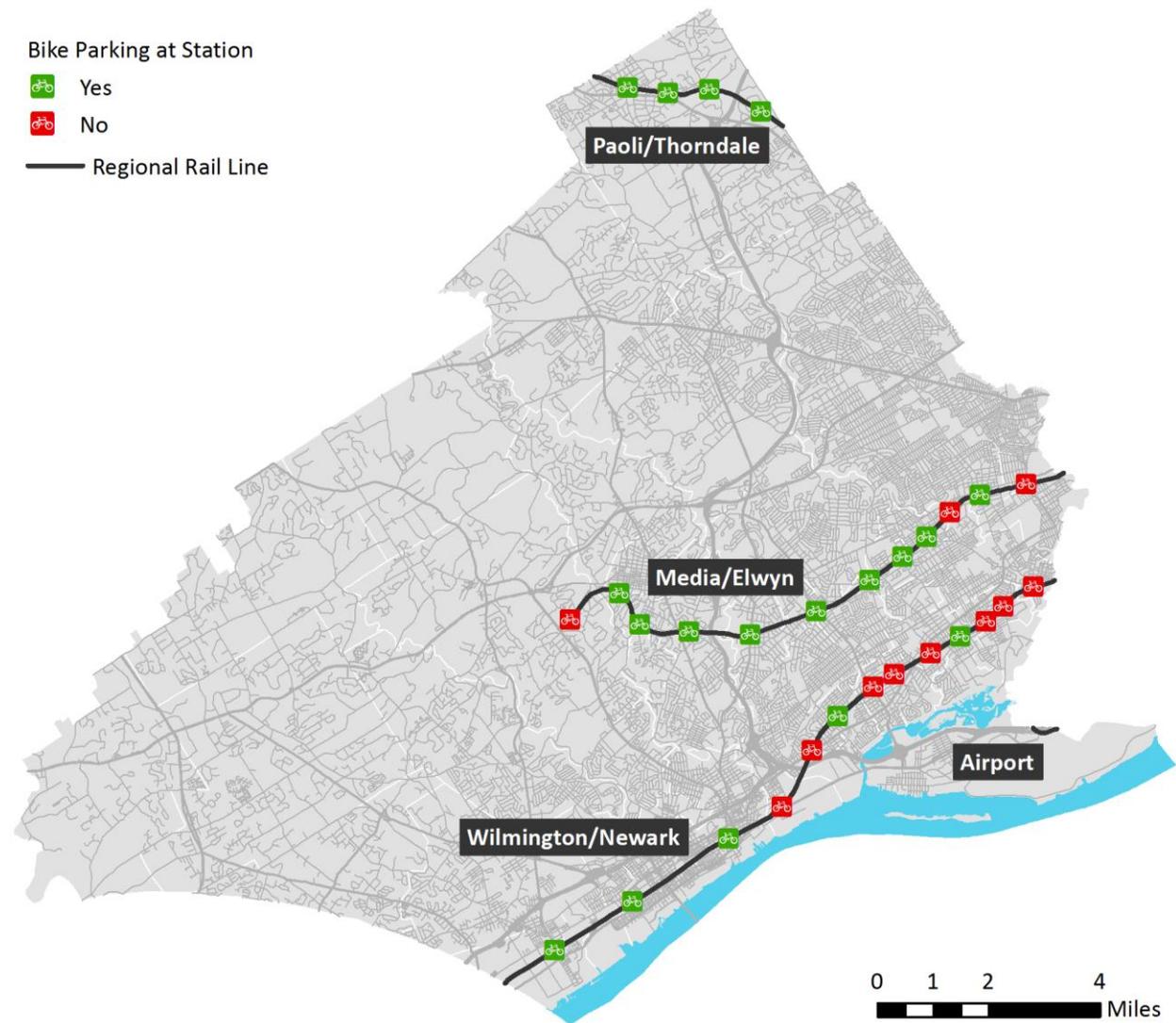
Map E-1: Delaware County Regional Rail Station ADA Accessibility



Bicycle Parking at Transit Stations

Delaware County’s growing public transit ridership is creating increased demand for parking space at many transit stations. Some of the growing demand can be satisfied through the installation of bicycle parking, which comes at a much lower cost than automobile parking expansion and requires less physical space. Providing bicycle parking also creates an opportunity to grow ridership by creating multimodal access, accommodating a more diverse range of transit users. Bicycle parking is most readily available on the Paoli/Thorndale line where all four stations are outfitted with bicycle racks. The Wilmington/Newark line has the lowest share of stations with bicycle parking – only five out of thirteen stations have bike racks.

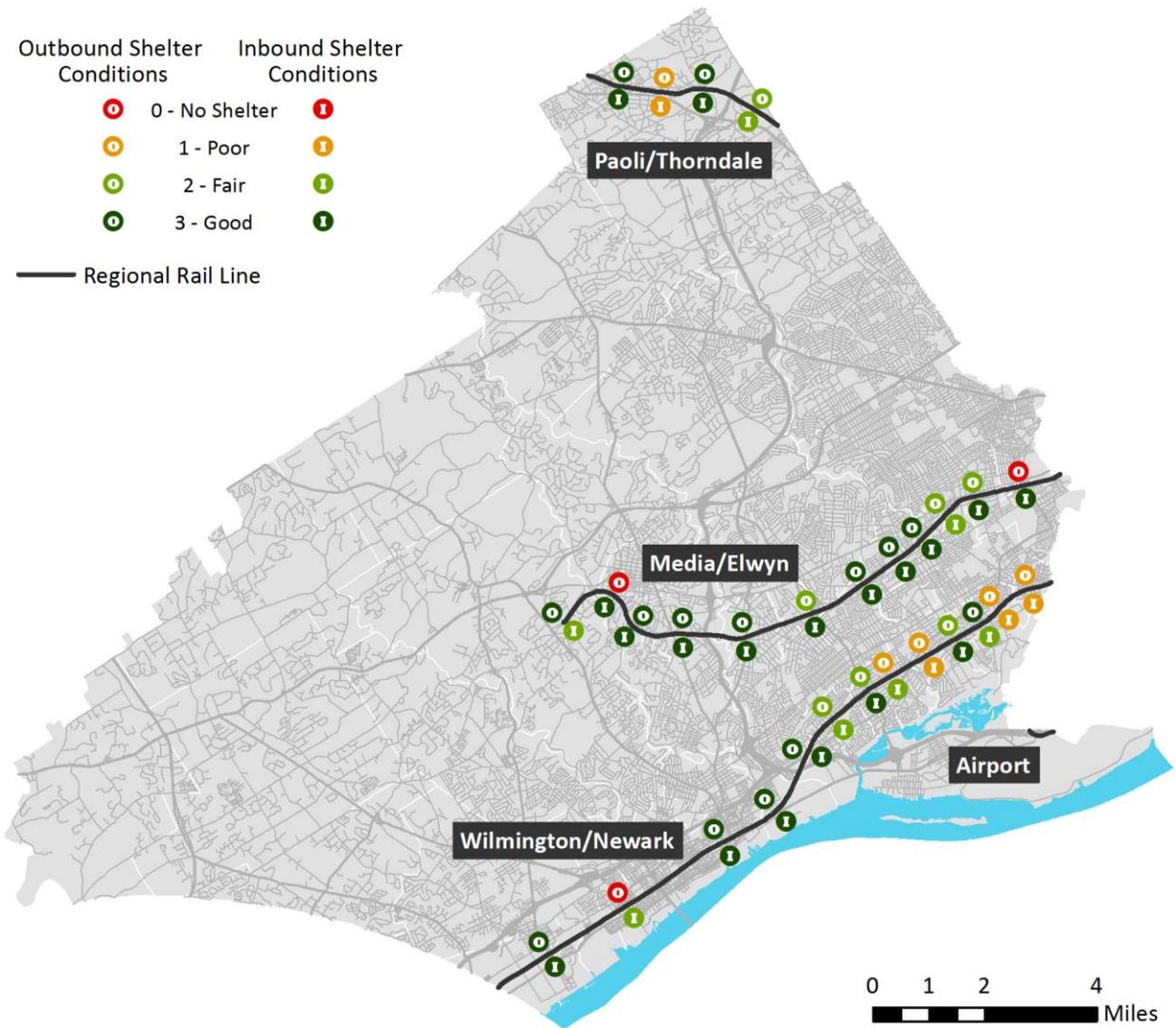
Map E-2: Delaware County Regional Rail Station Bicycle Parking



Transit Station Shelter Conditions

Shelters improve passenger comfort at transit stations. Not all stations have shelters, but in Delaware County all regional rail stations are equipped with a shelter on at least one platform. The conditions of shelters vary depending on factors such as age, materials, and the surrounding environment. Shelter conditions are best on the Media/Elwyn line where most shelters are in fair or good condition, while shelter conditions are the poorest on the Wilmington/Newark line where many shelters are poor.

Map E-3: Delaware County Regional Rail Station Shelter Conditions



APPENDIX F: BICYCLE COUNTS

DARBY ROAD, LANSDOWNE AVENUE, AND EDMONT AVENUE (SR 352)

Table F-1: Summary of Roadway Characteristics for Bicycle Count Locations

	Darby Road	Lansdowne Avenue	Edgmont Avenue
Number of Lanes	4-5 Lanes	2-4 Lanes	2-4 Lanes
Speed Limit	35 mph	35 mph	35 mph
Traffic Volume	13,000 – 19,000 ADT	13,000 – 28,000 ADT	8,200 – 12,000 ADT
Destinations	Haverford Middle School, Haverford High School, Havertown Town Center	Delaware County Memorial Hospital, Upper Darby High School, Monsignor Bonner & Archbishop Prendergast Catholic High School, Lansdowne Avenue Light Rail Station, YMCA	Crozer-Chester Medical Center, Chester Rural Cemetery, Widener University, Deshong Park, Widener Partnership Charter School, The Salvation Army, Chester Transportation Center
Other Features	Grass Medians, On-street Parking, Mid-block Crosswalks, School Zone, Sidewalks, Bus Stops	Trolley Grade Crossing (at Garrett Road), Sidewalks, Bus Stops, Crosswalks at Some Intersections	Sidewalks, Bus Stops, Crosswalks at Some Intersections

Methodology

The following bicycle counts were collected manually. Manual counts allow the counter to document characteristics about the cyclist and what facilities he or she uses to travel. Counts were conducted between 7:00 a.m. and 9:00 a.m. or 7:30 a.m. and 9:30 a.m. on two separate weekday mornings during the same week, with the exception of one location. All counts were conducted in the months of October and early November, 2016. The three data collection locations were chosen based on their position along an identified bicycle corridor; proximity to a major attractor, such as a school or university; and bicycle crash data. The following data tables include the time (in ten-minute intervals), direction, facility used, and rider age for each count.

Manual Count Data

Darby Road

Table F-2: Manual Bicycle Counts – Darby Road

Tuesday, October 18, 2016 7:30 a.m. - 9:30 a.m. 55-65 degrees F, sunny				
Time Slot	Count	Direction	Facility	Rider
7:30-7:40	1	S	sidewalk	child
	1	S	sidewalk	child
	1	S	sidewalk	child
	1	S	sidewalk	child
	1	S	roadway	adult
	1	S	sidewalk	child
	1	S	sidewalk	child
	1	S	sidewalk	child
7:41-7:50	1	S	roadway (wrong way)	child
	1	N	roadway	adult
7:51-8:00	1	N	roadway (wrong way)	adult
	1	N	roadway	adult
	1	S	roadway	adult
8:01-8:10	1	S	roadway	adult
	1	S	roadway	adult
8:11-8:20	0	N/A	N/A	N/A
8:21-8:30	0	N/A	N/A	N/A
8:31-8:40	1	N	roadway	adult
	1	E	roadway	child
	1	S	roadway	adult
8:41-8:50	0	N/A	N/A	N/A
8:51-9:00	0	N/A	N/A	N/A
9:01-9:10	1	N	roadway	adult
9:11-9:20	0	N/A	N/A	N/A
9:21-9:30	1	N	sidewalk	adult
7:30-9:30	20	13 SB, 6 NB, 1 EB	12 road, 8 sidewalk	9 children, 11 adults

Thursday, October 20, 2016 7:30 a.m. - 9:30 a.m. 60-65 degrees Fahrenheit, partly cloudy				
Time Slot	Count	Direction	Facility	Rider
7:30-7:40	1	S	road (wrong way)	child
	1	S	road (wrong way)	child
	1	S	sidewalk	child
	1	S	road (wrong way)	child
	1	S	sidewalk	child
	1	E	road	child
7:41-7:50	0	N/A	N/A	N/A
7:51-8:00	1	N	road	teen
8:01-8:10	1	N	road (wrong way)	adult
	1	S	road	adult
	1	S	road	adult
	1	S	road	adult
8:11-8:20	0	N/A	N/A	N/A
8:21-8:30	0	N/A	N/A	N/A
8:31-8:40	0	N/A	N/A	N/A
8:41-8:50	0	N/A	N/A	N/A
8:51-9:00	1	N	road	adult
9:01-9:10	0	N/A	N/A	N/A
9:11-9:20	0	N/A	N/A	N/A
9:21-9:30	0	N/A	N/A	N/A
7:30-9:30	12	8 SB, 1 EB, 3 NB	2 sidewalk, 10 road	6 children, 1 teen, 5 adults

Appendix F: Bicycle Counts

Lansdowne Avenue

Table F-3: Manual Bicycle Counts – Lansdowne Avenue

Monday, October 24 7:00 a.m. - 9:00 a.m. 52 degrees Fahrenheit, sunny				
Time Slot	Count	Direction	Facility	Rider
7:00-7:10	0	N/A	N/A	N/A
7:11-7:20	1	N	sidewalk	teen
7:11-7:20	1	N	sidewalk	teen
7:21-7:30	1	N	road	teen
7:31-7:40	1	N	sidewalk	teen
7:41-7:50	1	N	sidewalk	adult
7:51-8:00	0	N/A	N/A	N/A
8:01-8:10	1	N	sidewalk	teen
8:11-8:20	1	S	road	adult
8:21-8:30	0	N/A	N/A	N/A
8:31-8:40	0	N/A	N/A	N/A
8:41-8:50	0	N/A	N/A	N/A
8:51-9:00	0	N/A	N/A	N/A
7:00-9:00	7	1 Southbound, 6 Northbound	5 sidewalk, 2 road	5 teens, 2 adults

Wednesday, October 26 7:00 a.m. - 9:00 a.m. 32 degrees Fahrenheit, sunny				
Time Slot	Count	Direction	Facility	Rider
7:00-7:10	0	N/A	N/A	N/A
7:11-7:20	1	N	sidewalk	teen
7:11-7:20	1	N	road	teen
7:21-7:30	0	N/A	N/A	N/A
7:31-7:40	1	N	sidewalk	teen
7:31-7:40	1	N	sidewalk	adult
7:41-7:50	1	N	sidewalk	adult
7:51-8:00	1	N	sidewalk	adult
8:01-8:10	0	N/A	N/A	N/A
8:11-8:20	1	SE	road	adult
8:11-8:20	1	SE	road	adult
8:21-8:30	1	N	sidewalk	teen
8:31-8:40	0	N/A	N/A	N/A
8:41-8:50	0	N/A	N/A	N/A
8:51-9:00	0	N/A	N/A	N/A
7:00-9:00	9	2 Southbound, 7 Northbound	6 sidewalk, 3 road	4 teens, 5 adults

Edgmont Avenue

Table F-4: Manual Bicycle Counts – Edgmont Avenue

Tuesday, October 25, 2016 7:30 a.m. - 9:30 a.m. 52 degrees Fahrenheit, partly cloudy				
Time Slot	Count	Direction	Facility	Rider
7:30-7:40	0	N/A	N/A	N/A
7:41-7:50	1	S	sidewalk	adult
7:51-8:00	0	N/A	N/A	N/A
8:01-8:10	1	S	sidewalk	child
8:11-8:20	0	N/A	N/A	N/A
8:21-8:30	1	W	sidewalk	child
8:21-8:30	1	W	sidewalk	child
8:31-8:40	0	N/A	N/A	N/A
8:41-8:50	0	N/A	N/A	N/A
8:51-9:00	1	S	road (wrong way)	adult
8:51-9:00	1	S	road	adult
9:01-9:10	0	N/A	N/A	N/A
9:11-9:20	0	N/A	N/A	N/A
9:21-9:30	1	S	road	adult
7:30-9:30	7	5 Southbound, 2 Westbound	4 sidewalk, 3 road	3 children, 4 adults

Thursday, November 3rd, 2016 7:30 a.m. - 9:30 a.m. 32-40 degrees Fahrenheit, cloudy				
Time Slot	Count	Direction	Facility	Rider
7:30-7:40	1	N	road	adult
7:41-7:50	0	N/A	N/A	N/A
7:51-8:00	0	N/A	N/A	N/A
8:01-8:10	0	N/A	N/A	N/A
8:11-8:20	0	N/A	N/A	N/A
8:21-8:30	1	W	road	adult
8:21-8:30	0	N/A	N/A	N/A
8:31-8:40	1	S	sidewalk (wrong way)	adult
	1	W	sidewalk	child
	1	W	sidewalk	child
8:41-8:50	1	N	road	adult
8:51-9:00	0	N/A	N/A	N/A
8:51-9:00	0	N/A	N/A	N/A
9:01-9:10	0	N/A	N/A	N/A
9:11-9:20	0	N/A	N/A	N/A
9:21-9:30	0	N/A	N/A	N/A
7:30-9:30	6	2 NB, 1 SB, 3 WB	3 sidewalk (1 wrong-way), 3 road	4 adults, 2 children

Data Limitations

The following data limitations should be considered. First, the data was collected in the months of October and November. While weather conditions were good and the temperatures ranged between 32 and 65 degrees Fahrenheit, some bicyclists who may prefer warmer weather would not have been captured in these samples. Weather conditions affected counts at Edgmont Avenue. While the second count was supposed to be conducted on Thursday, October 27th, data collection was postponed to Thursday, November 3rd due to rain. As a result, counts in that location were not conducted during the same week, as in the other locations. Furthermore, the counts were manual, making unrecognized human error possible. Finally, the sample is very small. In order to account for fluctuations, one would need to count the number of bicyclists in a 24-hour period, multiple days in a row. Nevertheless, these bicycle counts help support the selection and promotion of these routes as important bicycle routes that provide connections to destinations in Delaware County.

Darby Road at Bellemead Avenue, Haverford Township

Staff conducted the first bicycle count on Darby Road on Tuesday, October 18, 2016 between 7:30 a.m. and 9:30 a.m. The second count was conducted on Thursday, October 20, 2016 between the same times. There are a few factors to consider when reviewing data for this location. First, the position is located just north of Haverford High School and Haverford Middle School. School starts at 7:30 a.m.; therefore, counts conducted between 7:30 a.m. and 8:00 a.m. include children commuting to school from home. Secondly, Darby Road is a major north-south connector; therefore, east-west trip counts were limited. Lastly, the count collection point is located along the Route 103 and Route 115 SEPTA bus routes, and there are a few bus stops on that stretch of Darby Road. It is *possible* that bicyclists traveling north were making the last-mile connection by bicycle, while those traveling south were making the first-mile connection to a bus stop. Darby Road displays an excellent opportunity for multimodal transportation improvements due to its heavy foot and bicycle traffic and the presence of multiple bus stops served by two SEPTA bus routes.

Lansdowne Avenue between Garrett Road and Huey Avenue, Upper Darby Township and Lansdowne Borough

Bicycle counts for this location were conducted on Monday, October 24th and Wednesday, October 26th between 7:00 a.m. and 9:00 a.m. Counts were conducted slightly earlier in this location because of the numerous transit opportunities; the hope was to capture transit users heading to work early in the morning. The Lansdowne Avenue trolley stop is located at the intersection of Lansdowne Avenue and Darby Road, and there are numerous bus stops along Lansdowne Avenue and Garrett Road in this area. Therefore, a lot of transit trips can be – and are – made in this area. Bicycle travel in this particular location may be complicated by the topography; northbound cyclists on Lansdowne Avenue must ride up a steep hill. Furthermore, the hilly grade crossing at Lansdowne Avenue and Garrett Road has multiple turn signals and poor signal timing. There are no appropriate facilities to make it safer for cyclists.

Edgmont Avenue and 14th Street, City of Chester

Bicycle counts for this location were conducted on Tuesday, October 25th and Thursday, November 3rd between 7:30 a.m. and 9:30 a.m. The data collection location is located near Widener University, Widener Child Development Center, Crozer Chester Medical Center, the Salvation Army, and a charter school. All five are significant destinations in the area where there is also student and faculty housing. There are numerous SEPTA Bus 117 and Bus 118 bus stops throughout the area. Undoubtedly, the Edgmont Avenue corridor would benefit from improved walkability and bikeability to provide safe, direct access to the City of Chester's business district and Chester Transportation Center.

APPENDIX G: PUBLIC PARTICIPATION

MEETINGS WITH PARTNER AGENCIES

Delaware County planning staff met with SEPTA, PennDOT, and DVRPC to discuss topics of regional significance that affect Delaware County’s transportation network. Delaware County cannot achieve its goals of improving, expanding, and integrating the transportation network without the aid and support of these three regional entities. As a result, Delaware County ensured that all three were involved in the development of the County transportation plan from the beginning. The meeting details are listed below.

Table G-1: Partner Agency Meeting 1

Date – Time	7/25/16 – 10:30 a.m.
Agency	PennDOT
Location	PennDOT District 6-0 Offices, King of Prussia
Attendees	Linda E. Guarini – Transportation Planning Manager (District 6-0) Ashwin B. Patel, PE – Civil Engineer Manager (District 6-0) Chuck Davies – Assistant District Executive (District 6-0) John F. Krafczyk – Assistant District Executive (District 6-0) Tom Shaffer – Transportation Manager (DCPD) Karen Whitaker – Transportation Planner (DCPD) Ryan Judge – Senior Planner (DCPD) Dan Whaland – GIS Specialist (DCPD)

Table G-2: Partner Agency Meeting 2

Date – Time	8/26/16 – 1:00 p.m.
Agency	DVRPC
Location	DVRPC Offices, Philadelphia
Attendees	Michael Boyer – Associate Director of Planning (DVRPC) Brett Fusco – Assistant Manager of Long Range Planning (DVRPC) Ted Dahlburg – Manager of Freight and Aviation Planning (DVRPC) Michael Ruane – Transportation Planner (DVRPC) Tom Shaffer – Transportation Manager (DCPD) Karen Whitaker – Transportation Planner (DCPD) Ryan Judge – Senior Planner (DCPD)

Table G-3: Partner Agency Meeting 3

Date – Time	9/9/16 – 9:30 a.m.
Agency	SEPTA
Location	SEPTA Offices, Philadelphia
Attendees	Byron Comati – Director of Strategic Planning (SEPTA) Liz Smith – Manager of Long Range Planning (SEPTA) Tom Shaffer – Transportation Manager (DCPD) Karen Whitaker – Transportation Planner (DCPD) Ryan Judge – Senior Planner (DCPD) Dan Whaland – GIS Specialist (DCPD)

Appendix G: Public Participation

MEETINGS WITH REPRESENTATIVE MUNICIPALITIES

Delaware County planning staff met with the managers (and engineers, in some cases) of eight Delaware County municipalities: Aldan Borough, Chester City, Concord Township, Darby Borough, Middletown Township, Newtown Township, Springfield Township, and Upper Darby Township. These municipalities were chosen as representative samples of the unique and vast demographic, topographic, and socio-economic characteristics of Delaware County. The goal of the meetings was to talk to municipal managers about the municipalities’ vision for future development and how this transportation plan could respect and support these visions. The meeting details are listed below.

Table G-4: Municipal Meeting 1

Date – Time	9/7/16 – 10:30 a.m.
Municipality	Aldan Borough
Location	Aldan Borough Hall
Attendees	John White – Borough Manager (Aldan Borough) Tom Shaffer – Transportation Manager (DCPD) Karen Whitaker – Transportation Planner (DCPD) Ryan Judge – Senior Planner (DCPD) Dan Whaland – GIS Specialist (DCPD)

Table G-5: Municipal Meeting 2

Date – Time	9/7/16 – 2:00 p.m.
Municipality	Chester City
Location	Chester City Town Hall
Attendees	Latifah Griffin – Director of City Planning (Chester City) Peter Rykard – Assistant Planning Director (Chester City) Lisa R. Gaffney – Deputy Director (Chester Economic Development Authority) Tom Shaffer – Transportation Manager (DCPD) Karen Whitaker – Transportation Planner (DCPD) Dan Whaland – GIS Specialist (DCPD)

Table G-6: Municipal Meeting 3

Date – Time	9/16/16 – 10:00 a.m.
Municipality	Concord Township
Location	Concord Township Building
Attendees	Brenda L. Lamanna – Township Manager (Concord Township) Nate M. Cline – Director (Pennoni, West Chester Office) Tom Shaffer – Transportation Manager (DCPD) Karen Whitaker – Transportation Planner (DCPD) Ryan Judge – Senior Planner (DCPD) Dan Whaland – GIS Specialist (DCPD)

Table G-7: Municipal Meeting 4

Date – Time	9/19/16 – 9:30 a.m.
Municipality	Darby Borough
Location	Darby Borough Hall
Attendees	Mark Possenti – Borough Manager (Darby Borough) Tom Shaffer – Transportation Manager (DCPD) Karen Whitaker – Transportation Planner (DCPD) Ryan Judge – Senior Planner (DCPD) Dan Whaland – GIS Specialist (DCPD)

Table G-8: Municipal Meeting 5

Date – Time	9/19/16 – 11:00 a.m.
Municipality	Middletown Township
Location	Middletown Township Building
Attendees	Bruce Clark – Township Manager (Middletown Township) Meredith Merino – Assistant Manager (Middletown Township) Tom Shaffer – Transportation Manager (DCPD) Karen Whitaker – Transportation Planner (DCPD) Ryan Judge – Senior Planner (DCPD) Dan Whaland – GIS Specialist (DCPD)

Table G-9: Municipal Meeting 6

Date – Time	9/20/16– 10:00 a.m.
Municipality	Newtown Township
Location	Newtown Township Building
Attendees	Stephen Nease – Township Manager (Newtown Township) George Sharretts – Public Works Director (Newtown Township) Eileen M. Nelson – Senior Principal Engineer (Stantec) Tom Shaffer – Transportation Manager (DCPD) Karen Whitaker – Transportation Planner (DCPD) Ryan Judge – Senior Planner (DCPD) Dan Whaland – GIS Specialist (DCPD)

Table G-10: Municipal Meeting 7

Date – Time	9/22/16 – 10:00 a.m.
Municipality	Springfield Township
Location	Springfield Township Building
Attendees	Lee Fulton – Township Manager (Springfield Township) Tom Shaffer – Transportation Manager (DCPD) Karen Whitaker – Transportation Planner (DCPD) Ryan Judge – Senior Planner (DCPD) Dan Whaland – GIS Specialist (DCPD)

Appendix G: Public Participation

Table G-11: Municipal Meeting 8

Date – Time	9/27/16 – 10:00 a.m.
Municipality	Upper Darby Township
Location	Upper Darby Township Building
Attendees	Tom Judge – Chief Administrative Officer (Upper Darby Township)
	Dan Lutz – Director of Public Works (Upper Darby Township)
	Allison Lee – Assistant Township Engineer (Upper Darby Township)
	Jeff Gentile – Director, License and Inspections (Upper Darby Township)
	Tom Shaffer – Transportation Manager (DCPD)
	Karen Whitaker – Transportation Planner (DCPD)
	Ryan Judge – Senior Planner (DCPD)
	Dan Whaland – GIS Specialist (DCPD)

STEERING COMMITTEE MEETINGS

Though planning staff met with partner agencies and certain municipalities individually, it was crucial to receive input from these entities as well as other stakeholders that are crucial in the success of transportation projects throughout our county, such as engineering firms that assist many Delaware County municipalities and non-profit organizations. The following is the list of individuals from different organizations invited to be on the Transportation Plan Steering Committee.

Municipal Representatives

- Aldan Borough- John White
- Aston Township - John Granger
- Chester City- Latifah Griffin
- Concord Township - Brenda Lamanna
- Darby Borough- Mark Possenti
- Haverford Township - Larry Gentile
- Middletown Township - Bruce Clark
- Newtown Township - Stephen Nease
- Ridley Park Borough - Bill Stewart
- Springfield Township - Lee Fulton
- Upper Darby Township - Tom Judge

Partner Agencies

- SEPTA – Byron Comati
- DVRPC – Barry Seymour
- PennDOT – District 6

Engineering Firms

- Catania – Charles Catania, Jr., PE
- Stantec – Eileen M. Nelson, PE
- Pennoni – Nathan M. Cline, PE

Other Stakeholders

- Bicycle Coalition of Greater Philadelphia- Sarah Stuart
- Riverfront Alliance of Delaware County- Mike McGee
- Delaware County Planning Commission- Bill Payne
- Delaware County Transportation Management Association – Cecile Charlton

Steering Committee Meeting #1 – September 30, 2016

This meeting included an introduction to the proposed structure of the planning document and some of the background research conducted for the introductory chapter of the Transportation Plan. The table below lists the details of the meeting.

Table G-12: Steering Committee #1

Date – Time	9/30/16 – 8:30 a.m.
Location	Delaware County Government Center
Attendees	Charles Catania – Township Engineer (Ridley Township) John White – Borough Manager (Aldan Borough) Bill Payne – Commissioner (DCPC) Eileen Nelson – Senior Principal (Stantec) Byron Comati – Director of Planning (SEPTA) Michael Boyer – Associate Director (DVRPC) Nate Cline – Township Engineer (Pennoni/Concord Township) Cecile Charlton – Executive Director (DCTMA) Lauren Turton – Director of Communications (DCTMA) Mike McGee – Executive Director (Riverfront Alliance) William Stewart – Borough Manager (Ridley Park Borough) John Boyle – Research Director (Bicycle Coalition) Lt. Michael Glenn – Patrol Commander (Haverford Township Police) Lorraine Ryan (PennDOT) Jonathan Korus (PennDOT) Mark Possenti – Manager (Darby Borough) James Brown – Manager (PennDOT 6-0) Kevin Heroin – Maintenance Manager (PennDOT 6-0) Lee Fulton – Manager (Springfield Township) Latifah Griffin – City Planning Director (City of Chester) athleen Winfree – Transportation Planner (PennDOT) Linda Hill – Planning Director (DCPD) Justin Dula – Community and Regional Planning Manager (DCPD) Tom Shaffer – Transportation Manager (DCPD) Karen Whitaker – Transportation Planner (DCPD) Ryan Judge – Senior Planner (DCPD) Dan Whaland – GIS Specialist (DCPD)

**Delaware County Transportation Plan
Steering Committee Meeting**

Delaware County Council Meeting Room
Government Center Building

201 W. Front Street, Media, PA 19063

September 30, 2016

8:30 AM

Agenda

1. Welcome and Introductions
2. Delaware County 2035 Comprehensive Plan
3. Transportation Plan Overview
4. Road Typologies
5. Transit Typologies
6. Freight Transportation Typologies
7. Network: Considerations and Analyses
8. Next Steps
9. Questions

Discussion Questions

1. What is the biggest transportation issue facing the County?
2. How do the typologies we identified fit into your community?
3. How has the transportation network changed in your community?
4. What opportunities do you see to improve the transportation network in your community?
5. What transportation trend do you see having the most impact on your community?
6. How will this plan be beneficial to your organization?



Delaware County   delaware county
planning department

Transportation Plan

September 30, 2016 | 1st Steering Committee Meeting

Transportation Plan Steering Committee

Meeting Agenda



- 1 Delaware County 2035 Comprehensive Plan
- 2 Transportation Plan Overview
- 3 Road Typologies
- 4 Transit Typologies
- 5 Freight Transportation Typologies
- 6 Network: Considerations and Analyses
- 7 Next Steps
- 8 Questions

Discussion Questions

What is the biggest transportation issue facing the County?

How do the typologies we identified fit into your community?

How has the transportation network changed in your community?

What opportunities do you see to improve the transportation network in your community?

What transportation trend do you see having the most impact on your community?

How will this plan be beneficial to your organization?

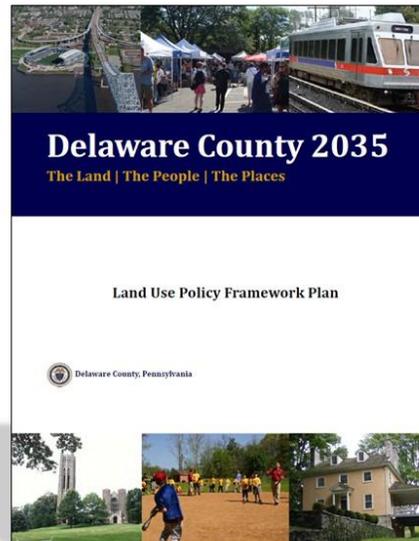
Delaware County 2035 Comprehensive Plan Structure



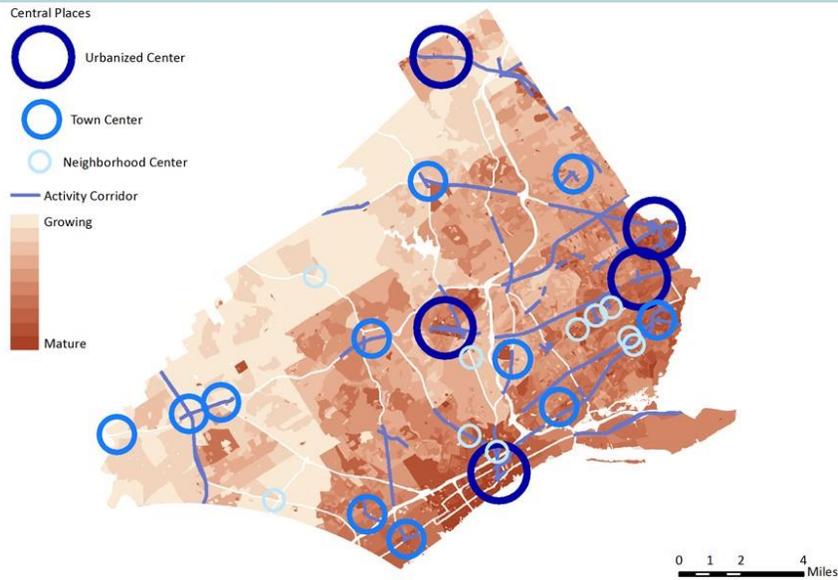
Delaware County 2035 The Land | The People | The Places



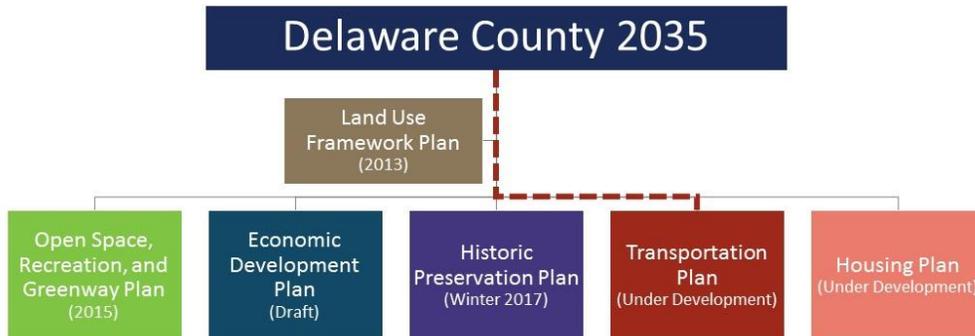
- Adopted November 2013
- Required by PA Act 247
- Framework Plan
 - Established broad policies
 - Foundation for more detailed component plans
 - Resource for municipalities



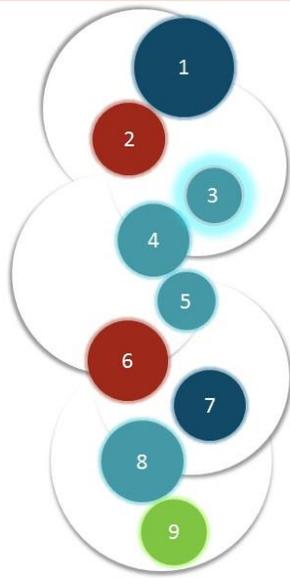
Delaware County 2035 Character Areas and Central Places



Delaware County 2035 Comprehensive Plan Structure

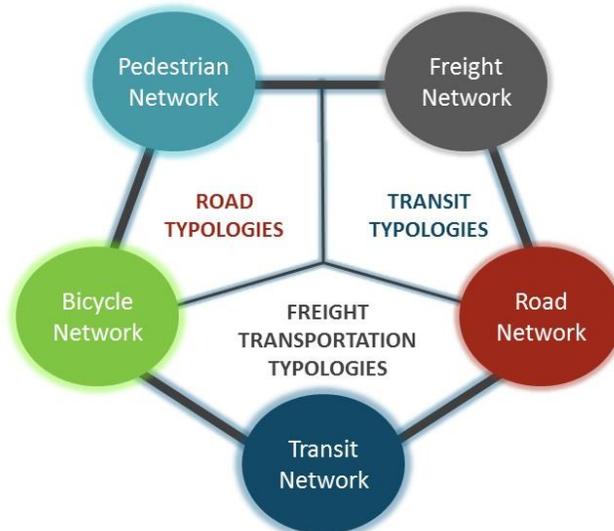


Transportation Plan Planning Process



- Partner Agency and Municipal Meetings
- Develop Typologies and Network Analysis
- Steering Committee Meeting
- Municipal Open House Meetings
- Public Open House and Survey
- Identify Recommendations and Action Plan
- Present Draft to Steering Committee
- Public Presentation and Comment Period
- Plan Adoption

Transportation Plan Plan Organization



Road Typologies



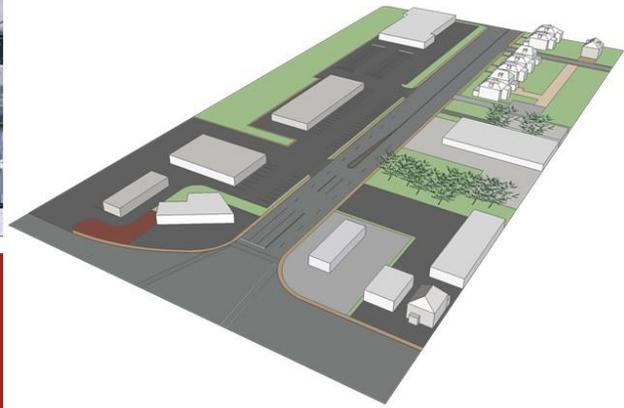
Mature Neighborhoods

Activity Corridors



Baltimore Pike (Springfield)

- High speed, high traffic volume, and commercial density
- Bus stops are common but not well integrated
- Older roadways that are not aligned at a 90° angle
- 4 – 6 lanes
- Traditional T- and 4-way intersections
- Left turn lanes with shallow loading depths



Road Typologies



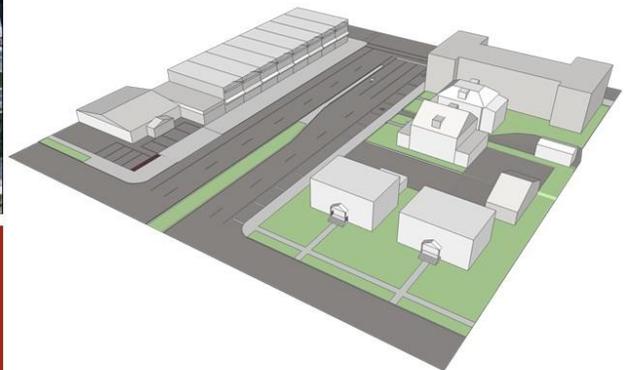
Mature Neighborhoods

Arterial Streets



Darby Road (Haverford)

- High traffic volume concentrated during rush hours
- Greater number of intersections than Activity Corridors
- Few crosswalks across Arterial Street
- Sidewalks with limited buffering
- Smaller commercial uses, such as offices
- Bus service not well integrated





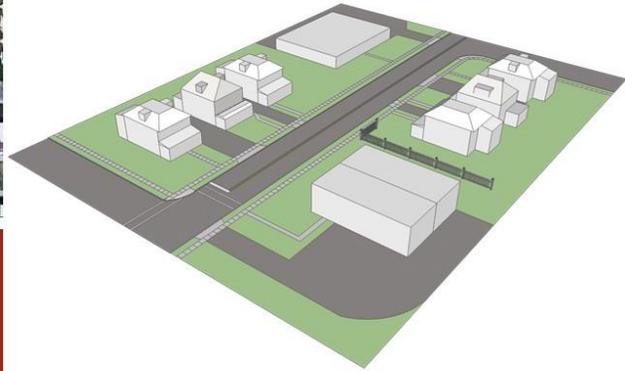
Mature Neighborhoods

Collector Streets



Lansdowne Avenue (Upper Darby)

- “Collect” vehicular traffic from local streets
- Primary source of cut through traffic
- Roadway wider than Local Streets that intersect it
- Numerous stop signs and few signalized intersections
- Narrow sidewalks and ADA compliancy issues
- Surrounding uses primarily residential and civic



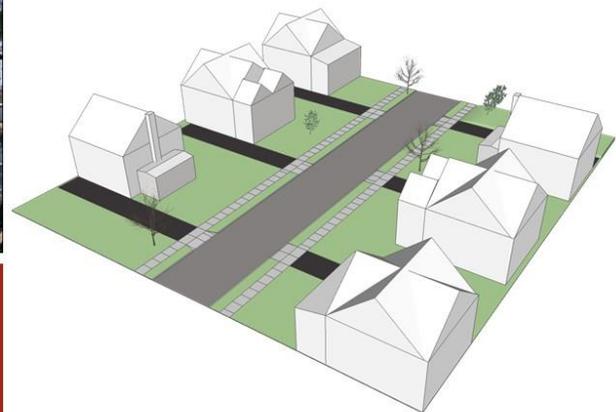
Mature Neighborhoods

Local Streets



Morgan Avenue (Upper Darby)

- Primarily residential streets; offices are rare
- Low traffic volumes
- Narrow cartways, but speeding is a concern
- Some are used as cut through streets to avoid traffic
- Pedestrians, bicyclists, drivers share the roadway
- Strong sidewalk network



Road Typologies

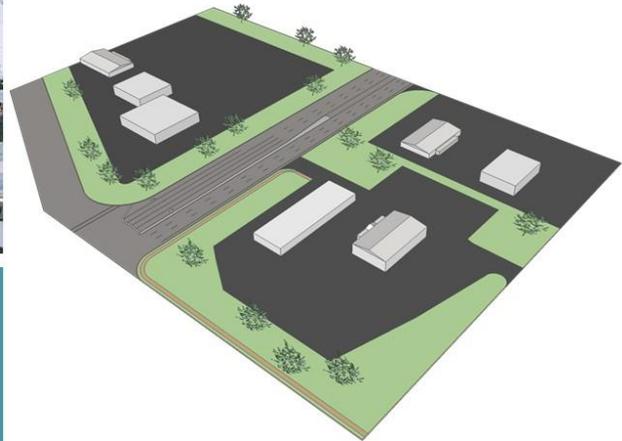
Growing Suburbs



Activity Corridors



- 4 – 8 lanes
- Small number of large intersections
- Very high speed and high traffic volumes
- Surrounding uses predominantly big-box and large-scale
- Bus service
- No pedestrian or bicyclist amenities



Road Typologies

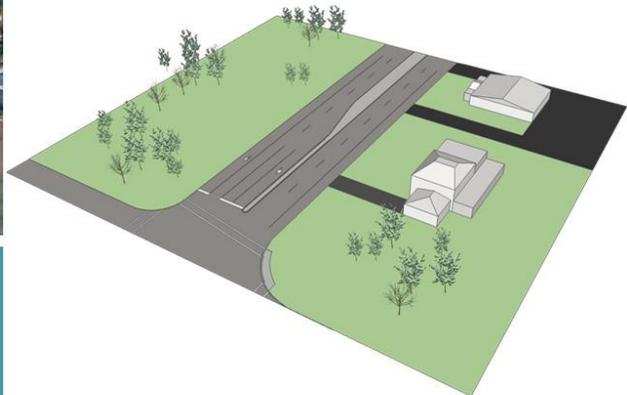
Growing Suburbs



Arterial Streets



- 4 – 6 lanes
- High volume during rush hours and high speed
- Surrounded by single-family homes
- Few and signalized intersections
- Narrow or limited shoulder facilities
- No pedestrian or bicyclist amenities



Growing Suburbs

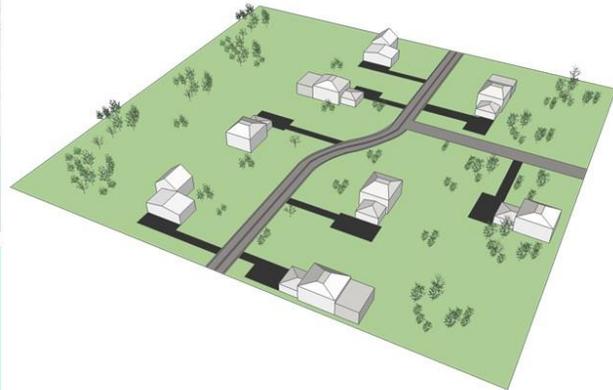


Collector Streets



Bethel Road (Bethel)

- 2-lane, high-speed roadways
- Winding with misaligned intersections
- Serve relatively rural areas
- Used as cut throughs to Arterial Roads
- No bus service
- No pedestrian or bicyclist amenities



Growing Suburbs



Local Streets



Nicole Drive and Wendy Way (Bethel)

- Wider than Mature Neighborhood Local Street
- Surrounding uses solely residential
- Street network is not linear and roads not well-connected
- Not straight but no sightline issues
- Lack of bicycle and pedestrian facilities
- Used as shared roadway



Road Typologies



Mature Neighborhoods & Growing Suburbs

Central Places: Main Streets



- Low speeds and narrow cartways
- Visible crosswalks at intersections, wider sidewalks, street trees, and street furniture
- Mixed uses and pedestrian-friendly
- Rear-loading buildings: alleys common
- Signalized intersections common



Road Typologies



Mature Neighborhoods & Growing Suburbs

Highways



- High speed and high volume
- 4-8 lanes wide
- Acoustic and air pollution
- Physical barriers between older communities
- Limited access to, or across, highways
- Not safe for pedestrians or bicyclists





What is the biggest roadway issue facing the County?

What opportunities do you see to improve the roadways in your community?

How do the road typologies we identified fit into your community?



Central Stations



Morton Station (Morton)

- Surrounded by high density, mixed uses and anchors
- Limited parking
- Multimodal connections
- Good sidewalk networks and visible crosswalks
- Bicycle parking is more common
- Station platforms have multiple access points



Swarthmore Station (Swarthmore)

Transit Typologies



Regional Rail

Commuter Stations



Elwyn Station (Middletown)

- Surrounded by low density residential uses
- Large parking areas
- Parking spaces fill quickly
- High AM/PM usage, low throughout the rest of day
- Limited pedestrian access/ sidewalk connections
- Localized traffic due to users driving to station



Transit Typologies



Light Rail

Central Stops



Aronimink Station (Upper Darby)

- Medium to high density mixed use neighborhoods
- No designated parking
- Strong sidewalk network and good pedestrian access
- Typically found along Collector Streets
- Low platforms



Transit Typologies



Light Rail

On-street Stops



- High density commercial areas
- Found along Main Streets
- Trolley tracks run in the middle of the street
- Trolleys share roadway with vehicular traffic
- No passenger shelters; signs on utility poles
- Passengers must step into the street to board



Transit Typologies



Light Rail

Residential Stops



- Found off of local streets
- Surrounded by residential uses
- Generally reached by foot
- Small parking areas
- Biking to these stations is not common
- Most of the NHSL





Enhanced Stops

- Shelters are very visible
- ADA access
- Illuminated at night
- Multiple buses or modes
- Owned and maintained by townships or organizations
- Designated waiting areas with amenities (e.g., benches)



Basic Stops

- No shelters
- Signs on public utility poles
- **Mature Neighborhoods:**
 - connected to sidewalk network
 - typically near crosswalks
 - stops are close together
 - near high density commercial and residential uses
- **Growing Suburbs:**
 - Stops far apart
 - Not easily accessible by foot
 - Few sidewalk connections to stops
 - Stops located in shoulders





Rail, Light Rail, & Bus

Transit Hubs



69th Street Transportation Center (Upper Darby)

- Major multimodal interchanges
- High capacity for high volumes of transit passengers and different vehicles
- Located on a Main Street, near an arterial road
- Surrounding areas highly walkable and bikeable
- Catalysts for development



Meeting Discussion Questions



What is the biggest transit issue facing the County?

What opportunities do you see to improve the transit network in your community?

How do the transit typologies we identified fit into your community?

Freight Transportation Typologies



Truck and Rail

Truck



Engle and 9th Street (City of Chester)

- Most prominent freight mode in Delaware County
- 29 mi interstate routes, 79 mi national highway, 3 NHS connectors

Rail



10th Street (Marcus Hook)

- I-95 Freight Rail Corridor
- Grade crossings pose traffic and safety issues

Freight Transportation Typologies



Air and Maritime

Air



- Philadelphia International Airport Cargo City located in Tincicum Township, Delaware County
- UPS facility

Maritime



Sunoco Logistics Facility (Marcus Hook)

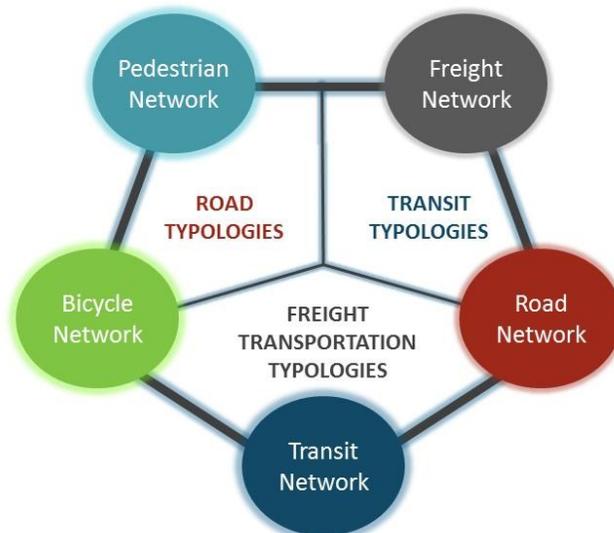
- 6 port terminals
- Crude petroleum and petroleum refining products
- Truck access over local streets to reach ports



What is the biggest issue posed by freight movement in the County?

What opportunities do you see to improve the freight transportation network in your community and countywide?

Which of the freight transportation typologies utilize the transportation network in your community?

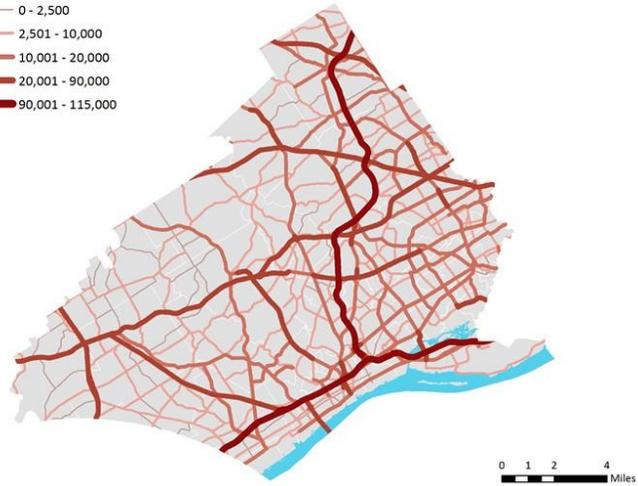
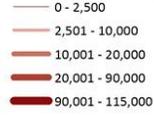




Road Network

- Crash data analysis to identify crucial improvement areas
- Road diets and innovative intersections
- Considering the impacts of trends spurred by the use of technology

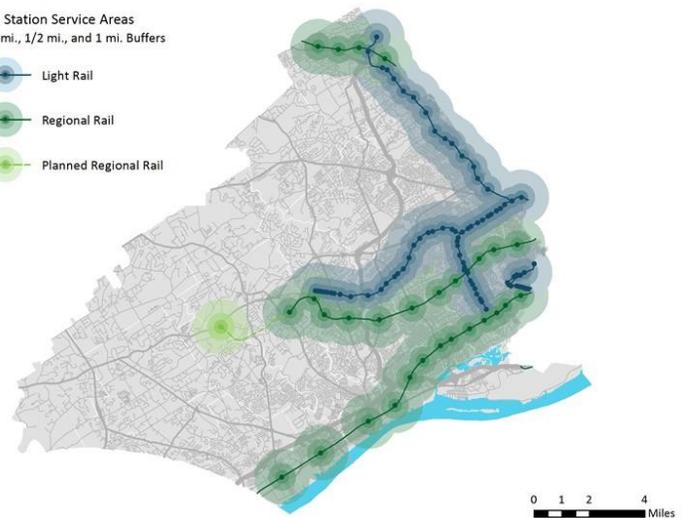
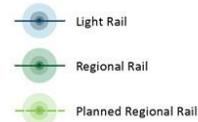
Current Average Annual Daily Traffic



Transit Network

- Ridership analysis
- Potential for new bus transit hubs
- Enhanced Bus Service (EBS)
- Transit Oriented Development (TOD)
- New service areas
- Service extension

Rail Station Service Areas
1/4 mi., 1/2 mi., and 1 mi. Buffers

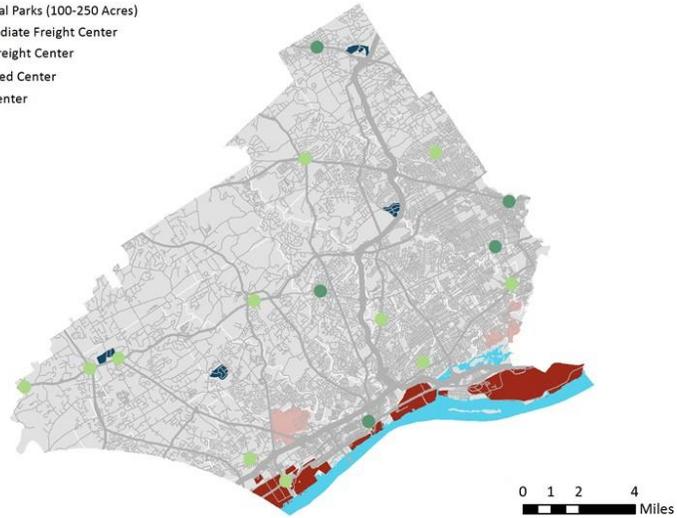




Freight Movement Network

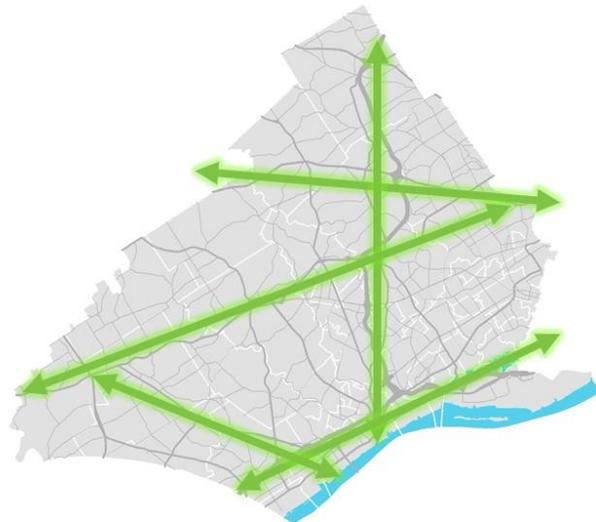
- Consideration of downtown and residential deliveries
- Alternate routes in key areas
- Economic development
- Last mile: smaller vehicles, more efficient distribution
- Complete streets that include freight

- Industrial Parks (100-250 Acres)
- Intermediate Freight Center
- Mega Freight Center
- Urbanized Center
- Town Center



Bicycle Network

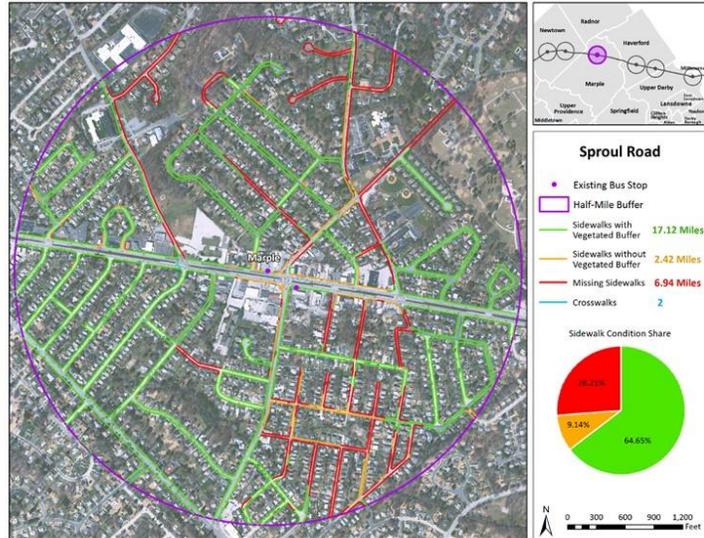
- Delaware County's 2009 Bicycle Plan
- Primary Trail Network
- Consider bike counts (DVRPC) and bike crashes
- Bicycle Network Map:
 - Identify **corridors** that connect multi-use trails and bicycle-only, on-road routes
 - Provide alternative, short-term routes
 - Connect communities, parks, business, and civic destinations
 - Safe routes for bicyclists to traverse interchanges





Pedestrian Network

- Sidewalk Mapping
 - West Chester Pike bus stops
- Sidewalk Inventory Report
 - Schools
 - Transit
 - Central Places/Activity Corridors
 - Areas of Special Concern
 - Residential Neighborhoods



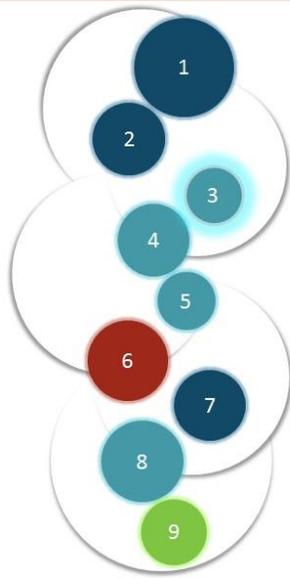
Meeting Discussion Questions



How has the transportation network changed in your community?

What transportation trend do you see having the most impact on your community?

How will this plan be beneficial to your organization?



- Partner Agency and Municipal Meetings
- Develop Typologies and Network Analysis
- Steering Committee Meeting
- Municipal Open House Meetings
- Public Open House and Survey
- Identify Recommendations and Action Plan
- Present Final Draft to Steering Committee
- Public Presentation and Comment Period
- Plan Adoption



Steering Committee Meeting #2 – April 21, 2017

Delaware County planning staff provided steering committee members with an early draft of the transportation plan prior to this date. Planning staff received input from attendees on the proposed policies and the strength of the draft plan in addressing issues that are important to Delaware County communities while acknowledging regional context.

Table G-13: Steering Committee #2

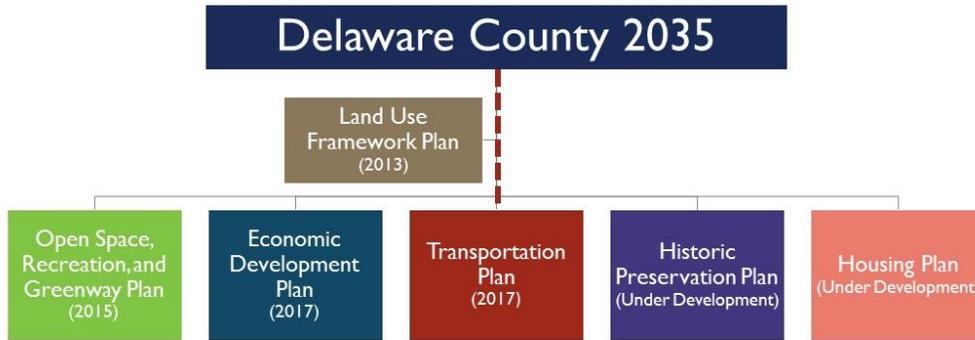
Date – Time	4/21/17 – 8:30 a.m.
Location	Delaware County Government Center
Attendees	Charles Catania – Township Engineer (Ridley Township)
	Sarah Stuart – Executive Director (Bicycle Coalition)
	Eileen Nelson – Senior Principal (Stantec)
	Michael Boyer – Associate Director (DVRPC)
	Nate Cline – Township Engineer (Pennoni/Concord Township)
	Cecile Charlton – Executive Director (DCTMA)
	Stephen Nease – Township Manager (Newtown Township)
	Lauren Fink – Project Manager (DCTMA)
	Tom Shaffer – Transportation Manager (DCPD)
	Karen Whitaker – Transportation Planner (DCPD)
	Ryan Judge – Senior Planner (DCPD)
	Dan Whaland – GIS Specialist (DCPD)



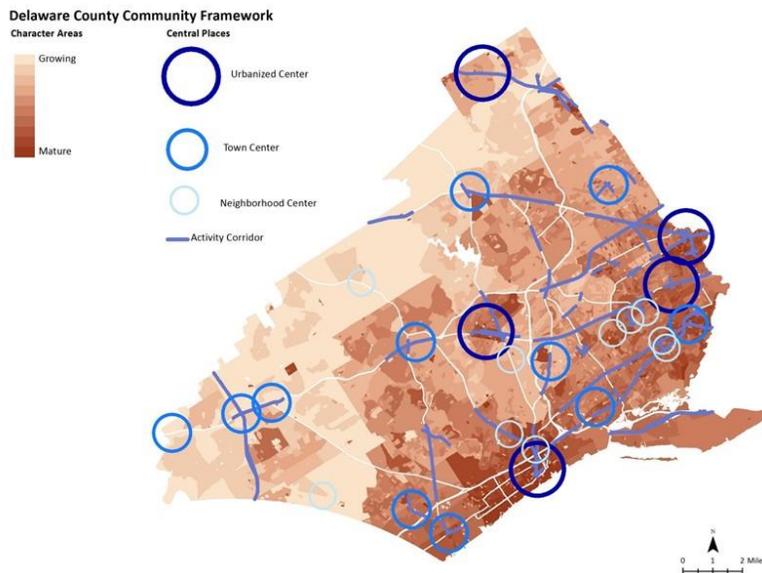
Transportation Plan Steering Committee
April 21, 2017 Meeting Agenda

- 1 Recap: 9/30 Meeting**
 - Delaware County 2035
 - Plan Organization
 - Typologies
- 2 Public Participation**
 - Public Open House Meetings
 - Survey Summary
- 3 Considerations and Analyses**
- 4 Goals**
- 5 Objectives and Actions**
- 6 Next Steps**
- 7 Questions**

Delaware County 2035 Comprehensive Plan Structure



Delaware County 2035 Character Areas and Central Places



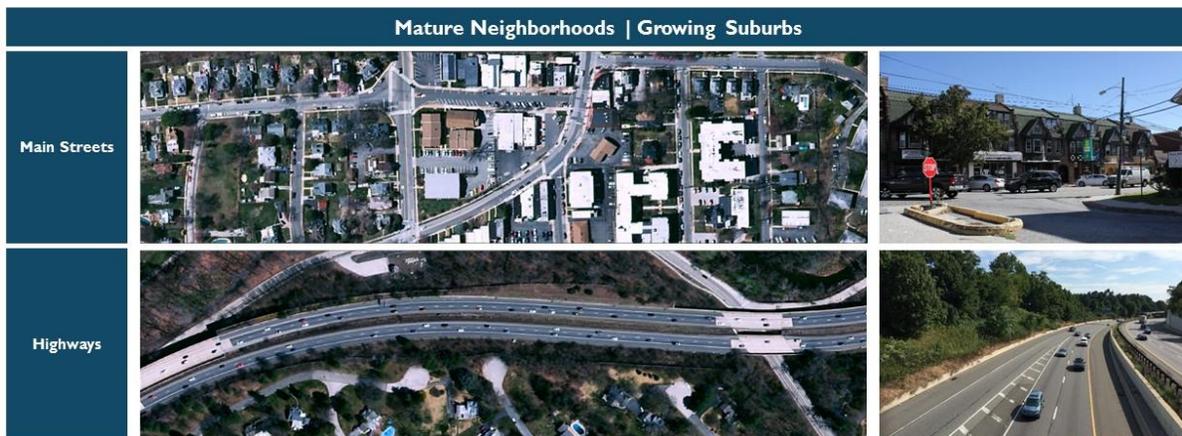
Typologies

Road Typologies



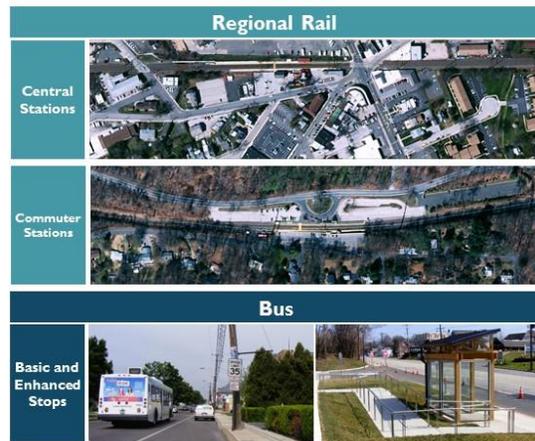
Typologies

Road Typologies



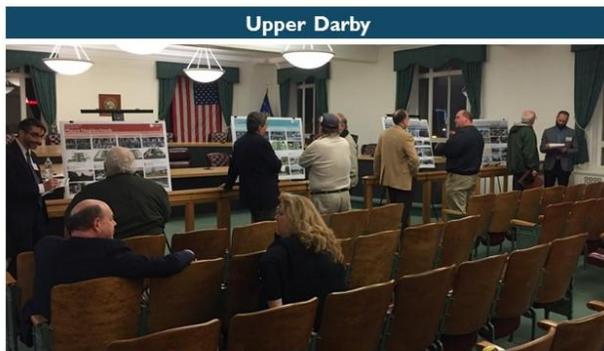
Typologies

Transit Typologies



Public Participation

Open House Meetings



Upper Darby

- **Traffic calming**
- **Safer pedestrian crossings**
- **Improved traffic flow**
- Bicycle facilities at transit stops and stations
- Bus stop passenger amenities and ADA accessibility
- More sidewalks and crosswalks



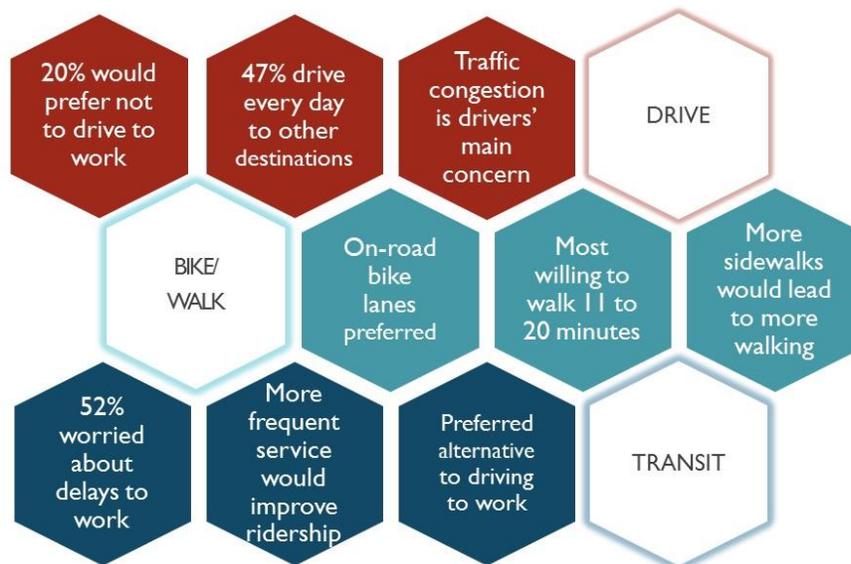
Concord

- **Improved bus service**
- **Intermodal connections to regional rail**
- **Bike network and trail connections**
- Bicycle facilities at train stations and transit hubs
- Bus stop passenger amenities and ADA accessibility
- More sidewalks and crosswalks

Online Survey – Population Sample



Online Survey – Results



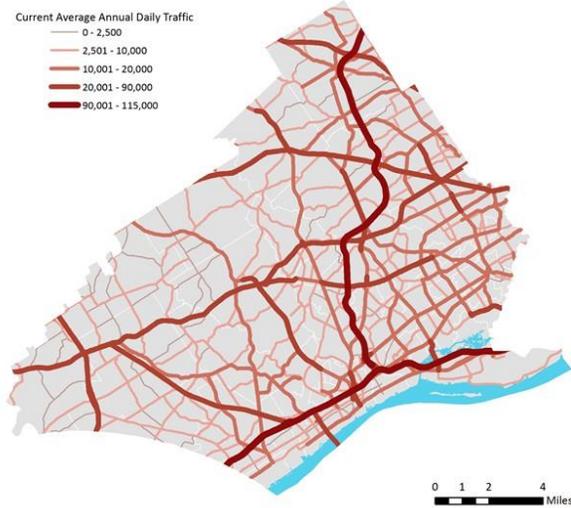
Road Network – Traffic Volume



Current Average Annual Daily Traffic

Current Average Annual Daily Traffic

- 0 - 2,500
- 2,501 - 10,000
- 10,001 - 20,000
- 20,001 - 90,000
- 90,001 - 115,000



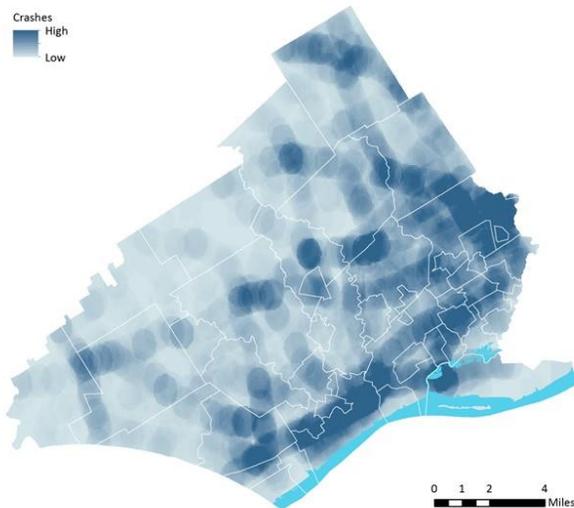
Road Network – Crash Data



Cumulative Crashes (2010-2014)

Crashes

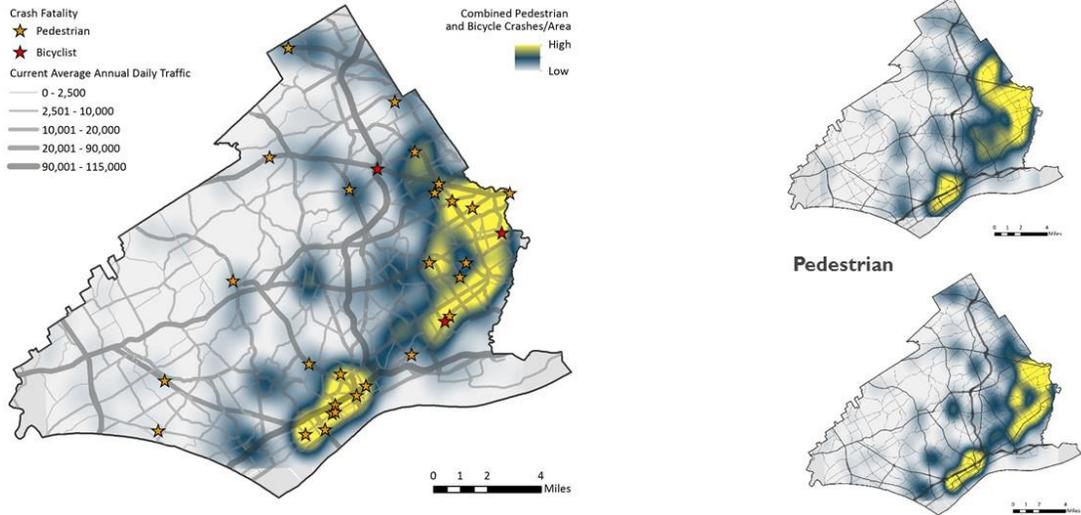
- High
- Low



Bicycle and Pedestrian Network – Crash Data



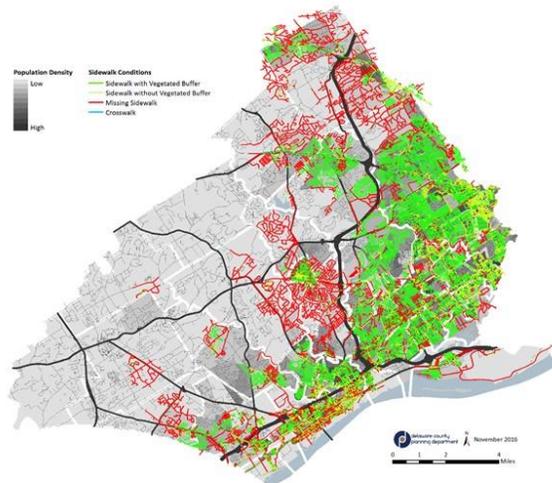
Delaware County Bicycle/Pedestrian Crashes (2010-2014)



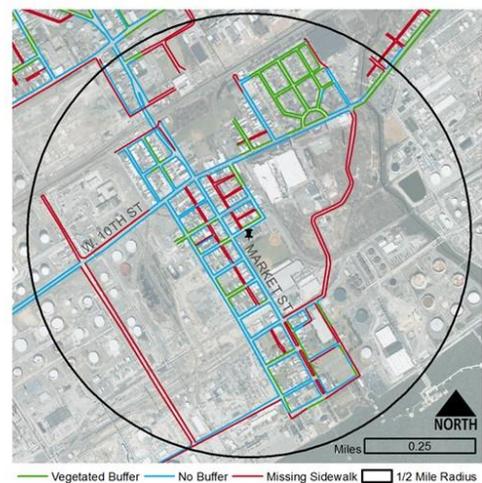
Bicycle and Pedestrian Network – Sidewalk Mapping



Delaware County Sidewalk Mapping (November 2016)



Marcus Hook Elementary School



Considerations and Analyses

Bicycle and Pedestrian Network – Identifying Corridors



Delaware County Bicycle Network (Proposed Corridors)

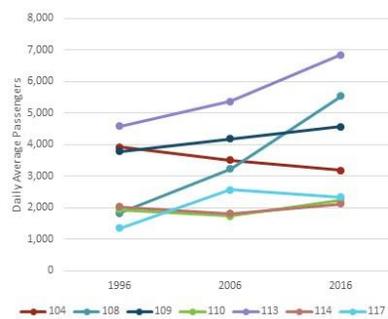


Considerations and Analyses

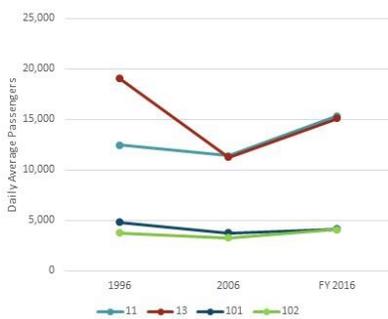
Transit Network - Ridership



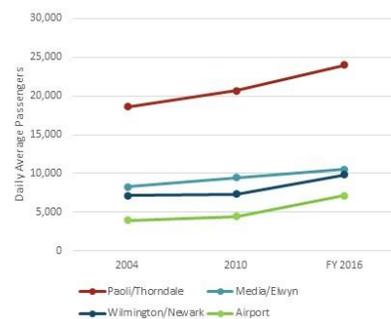
Top Suburban Bus Routes (1996-2016)



Trolley (1996-2016)



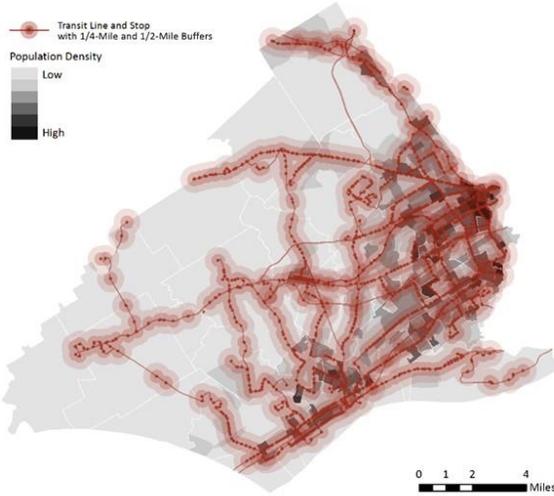
Regional Rail (2004-2016)



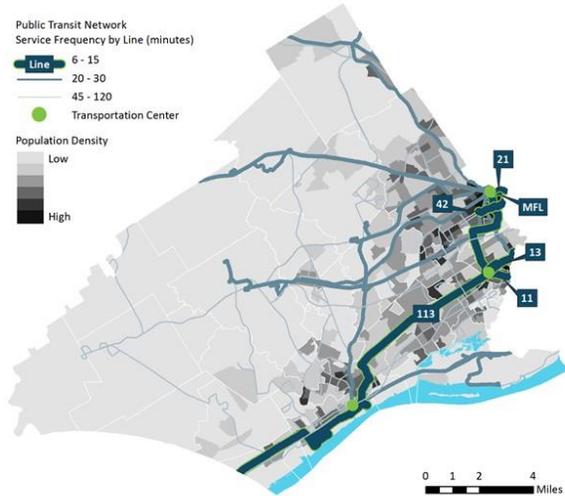
Transit Network – Service



Public Transit Service Coverage



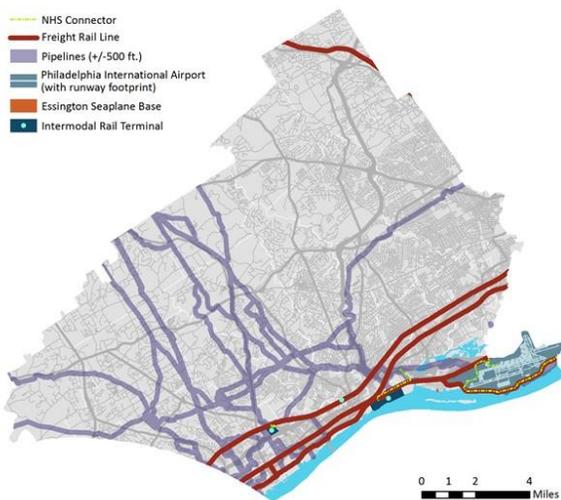
Public Transit Service Frequency



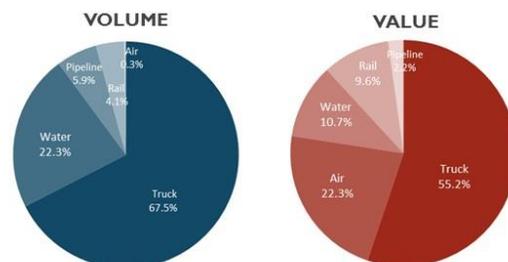
Goods Movement Network – Modes



Freight Movement Infrastructure Network



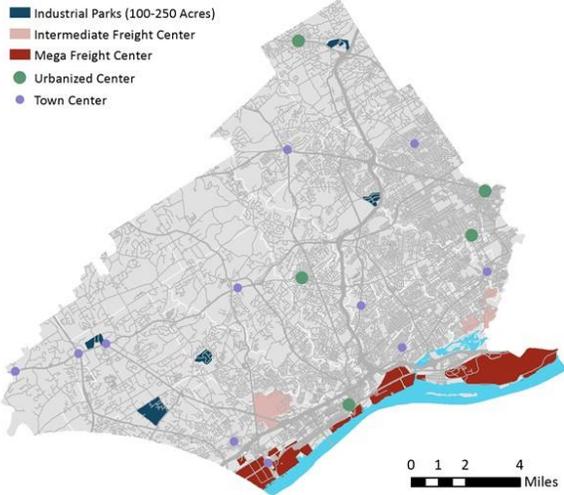
Modal Share in Delaware County



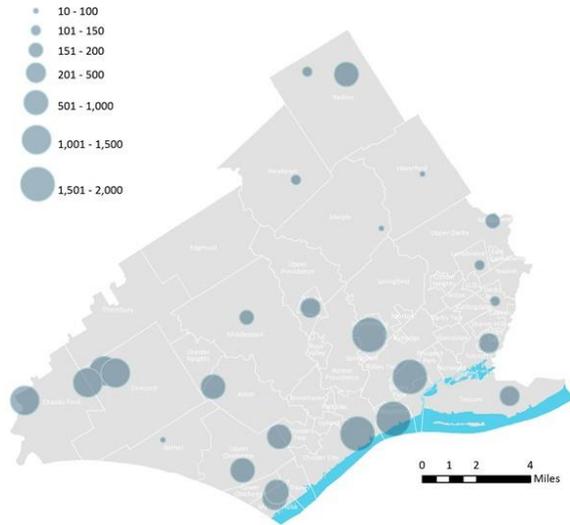
Goods Movement Network – Supply Chain Centers



Supply Chain Centers



Jobs within 2-mile Radius of Supply Chain Centers



Goals



IMPROVE the safety and capacity of all modes through adaptable and innovative solutions.

EXPAND the transportation network so residents can access more than one mode.

INTEGRATE all modes into a complete system.



OBJECTIVE I

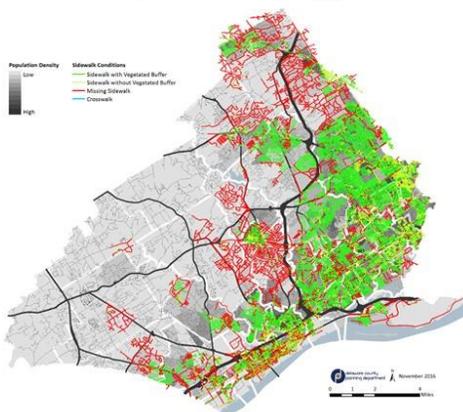
Support the implementation of Complete Streets in Delaware County.



ACTION TR 1.3

Promote, support, and assist in the creation and adoption of municipal bicycle and pedestrian plans.

Delaware County Sidewalk Mapping (November 2016)



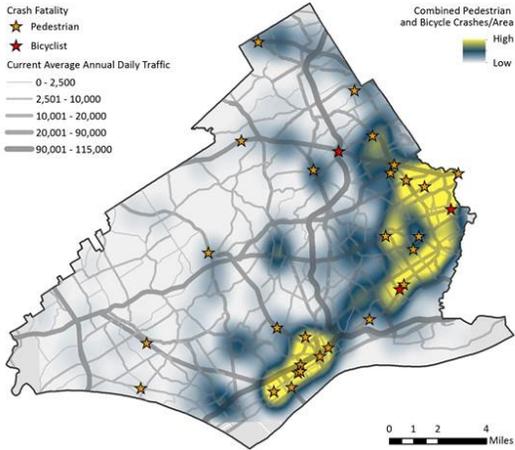
- Provide technical information to inform municipal plans
- Help identify priority areas and areas of concern



ACTION TR 1.6

Identify priority roadways for Complete Streets implementation.

Delaware County Bicycle/Pedestrian Crashes (2010-2014)



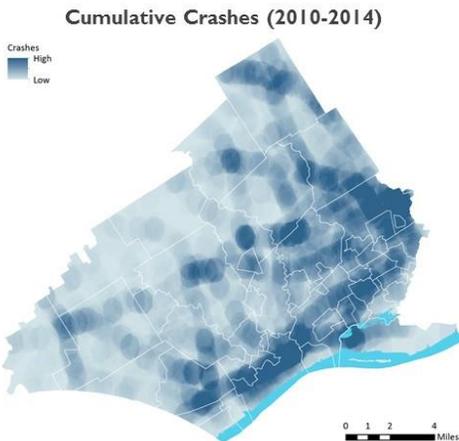
OBJECTIVE 2

Improve the safety of Delaware County's transportation network.



ACTION TR 2.1

Study intersection safety at intersections across Delaware County and work with municipalities and PennDOT to make improvements.



- Analyze intersection design at those with higher crash rates
- Develop recommendations for intersection safety improvement
- Communicate County needs to PennDOT officials



ACTION TR 2.4

Develop stronger relationships with freight railroads and continue to advocate for safer at-grade intersections, particularly in neighborhoods with civic and residential uses.



- Inventory at-grade crossings
- Identify needed safety improvements
- Engage freight operators, partner agencies, and local communities to implement improvements



OBJECTIVE 3

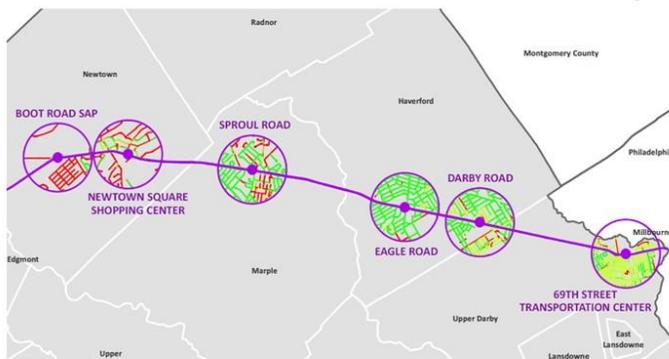
Increase the modal share of alternative transportation.



ACTION TR 3.7

Continue to work with multi-municipal coalitions to address multimodal improvements along corridors.

West Chester Pike: Sidewalks within 1/2-mile Radius of EBS Stops



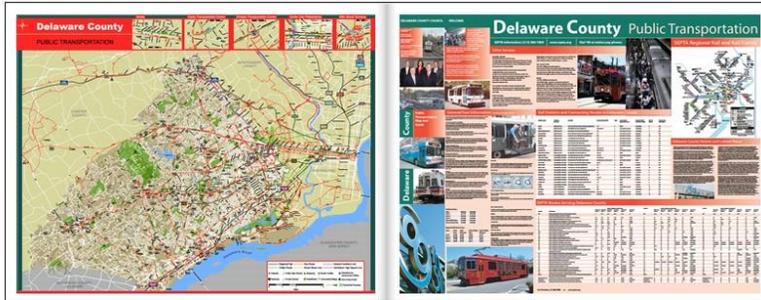
- Identify corridors across the County that could benefit from multi-municipal coordination to achieve common goals
- Unite public and private entities under one vision and mission



ACTION TR 4.3

Work with partners to increase the application of transit initiatives, programs, and transit commuter incentives.

Delaware County Public Transportation Map and Guide



- Produce Delaware County Public Transportation Map and Guide
- Assist in promotion of transit commuter benefits (RideECO)



ACTION TR 4.5

Identify appropriate levels of bicycle and car parking across the County.

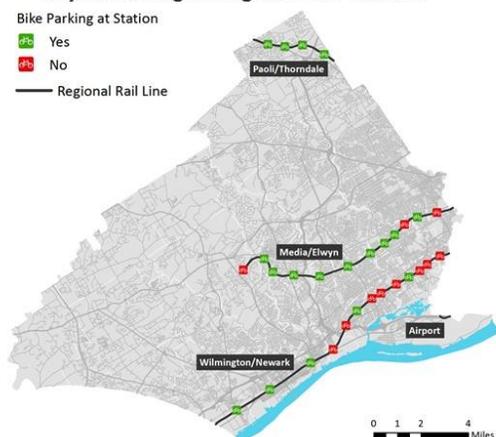
Bicycle Parking at Regional Rail Stations

Bike Parking at Station

Yes

No

Regional Rail Line



- Inventory bike and car parking conditions at popular destinations and transit nodes
- Identify disparities in parking needs and availability
- Share findings with partners to right-size parking and develop alternatives to parking expansion



OBJECTIVE 5

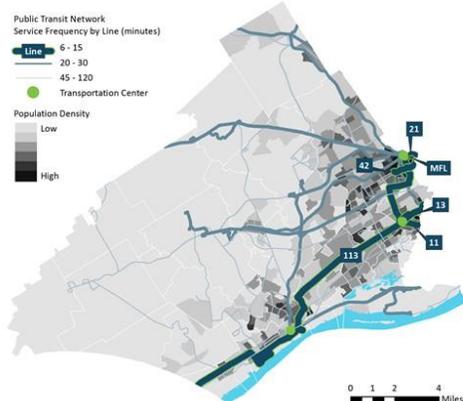
Enhance public transit service.



ACTION TR 5.4

Continue to work with SEPTA to ensure bus routes address changing needs of the community.

Public Transit Service Frequency



- Quality of service – frequency, span, reliability, connectivity, etc.
- Capacity for service – residential density, jobs, etc.
- Identify disparities between service quality and capacity
- Recommend areas for study based on transit analysis

Action Plan
Objectives and Actions



ACTION TR 6.2

Assist municipalities in planning designated truck routes.



- Work with municipalities to reduce nuisance and safety hazards on residential streets
- Analyze current truck routes used and identify preferred alternatives
- Encourage and assist in the creation of online mapping tools that can be made available to truck drivers through municipal websites

Action Plan
Objectives and Actions

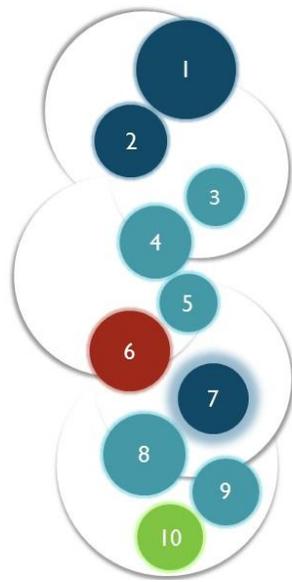


ACTION TR 6.6

Continuously analyze freight movement trends in the County and provide publicly available information.



- Make information about the freight movement industry available to the public
 - Jobs added
 - Modal share
 - Commodities moved
 - New infrastructure projects



- Partner Agency and Municipal Meetings
- Develop Typologies and Network Analysis**
- Steering Committee Meeting
- Open House Meetings
- Survey
- Identify Recommendations and Action Plan**
- Present Final Draft to Steering Committee**
- Public Presentation May 18, 2017
- Public Comment Period
- Plan Adoption**



Appendix G: Public Participation

PUBLIC MEETINGS

Delaware County held two public meetings early on in the planning process to get input from county residents, workers, and visitors on how to make travel in Delaware County better. The meetings were held at both ends (east and west) of the County: in Upper Darby Township and Concord Township. The meeting in Upper Darby was held at the Upper Darby Township Building on November 30, 2016 between 6:00 p.m. and 7:30 p.m. The meeting in Concord was held at the Concord Township building on December 1, 2016 between 6: 00 p.m. and 7:30 p.m. The County Transportation Manager made a brief presentation at the beginning of both meetings. The presentation was followed by an open house session, during which residents could visit six different stations and discuss issues with County planning staff. The following are the details that pertain to the two meetings.

Public Outreach

Delaware County Planning Department



November 2016 News



Planning Matters

- [Delaware County Transportation Plan Public/Municipal Open House Meetings and Survey](#)
- [Delaware County 2035: Economic Development Plan](#)
- [East Coast Greenway Implementation Phase I](#)
- [Planners Portfolio: Downtown Revitalization Case Studies](#)
- [Delaware County Planners Attend Statewide Planning Conference](#)
- [County Sponsors Course in Zoning](#)
- [Planning Commission Presents the William H. Bates Awards](#)

Funding Opportunities

- December 16 – [Multimodal Transportation Fund \(MTF\)](#)
- December 31 – [PECO Green Region](#)
- January 25 – [Keystone Communities Program](#)
- [Additional Information](#)



201 W. Front Street
Media, Pennsylvania 19063
610-891-5200 | www.co.delaware.pa.us/planning

If you were forwarded this email and would like to be added to our subscriber's list, please email AquilinoR@co.delaware.pa.us.
You may also use this email if you wish to [unsubscribe](#).



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Planning Department

Planning Home About Planning™ Development Review™ Programs and Initiatives™ Publications Mapping Demographic Data Forms

Delaware County Transportation Plan

Public/Municipal Open House Meetings and Survey

Delaware County will hold two public/municipal open house meetings and is currently collecting public survey responses for its Transportation Plan.

As part of the planning process for the Delaware County Transportation Plan, the County will hold two open house meetings at which Delaware County residents, workers, and visitors can voice their ideas on how to improve the County's transportation network.

Survey responses are also being collected at this time and are a great way for those who use Delaware County's transportation network to share their thoughts and opinions.

Questions about the Delaware County Transportation Plan? Visit the plan web page:
<http://www.co.delaware.pa.us/planning/programsandinitiatives/TransportationComponentPlan.html>.
You can also contact the Planning Department at 610-891-5200 or Planning_Department@co.delaware.pa.us.

Meetings

Come be part of the crucial planning process as Delaware County develops its Transportation Plan! Input from residents and other users of Delaware County's transportation network are invaluable. DCPD will hold two public/municipal meetings for the Plan:

When: Wednesday, November 30
Where: Upper Darby Township Building
100 Garrett Road
What Time: 6:00 p.m. to 7:30 p.m.
Getting There: For drivers, parking will be available at the Upper Darby Township Municipal Parking Lot at the intersection of Long Lane and Garrett Road. For public transit users, the Upper Darby Township Municipal Building is accessible by bus, trolley, Norristown High Speed Line, and Market-Frankford Line.

When: Thursday, December 1
Where: Concord Township Building
43 South Thornton Road, Glen Mills
What Time: 6:00 p.m. to 7:30 p.m.
Getting There: For drivers, parking will be available at the Concord Township Building. For public transit users, the Concord Township Building is accessible by buses 111 and 119.

Survey

If you live or work in Delaware County, or if you travel to/through the County, DCPD would like to know how you use the transportation network and what you think of it. Your insights will be valuable in helping planners identify opportunities and strategies to improve the County's transportation network.

How long is your commute door-to-door? How often do you walk to your friend's house? Answer these and other questions by completing the survey here: <https://dcpd.typeform.com/to/Ei4s5b>.

201 West Front Street, Media, PA 19063
610-891-4000

[Do you have questions about Delaware County Government? Email us.](#)
[Home / Copyright/Disclaimer County of Delaware, PA](#)
[Technical problems with our site? Email our Webmaster](#)

Transportation Plan
Appendix G: Public Participation

Delaware County Council



Delaware County
@DelcoCouncil

Follow

The public is invited to share ideas to improve Delaware County's transportation network. Please join the... fb.me/11GiPgW4D

11:22 AM - 22 Nov 2016



Delaware County Council
November 22, 2016 · 🌐

Like Page

The public is invited to share ideas to improve Delaware County's transportation network. Please join the Delaware County Planning Department for an open house meeting to discuss the Transportation Plan at 6:00 p.m. on Wednesday, Nov. 30 at Upper Darby Township Building (100 Garrett Road) or Thursday, Dec. 1 at Concord Township Building (43 South Thornton Road, Glen Mills). You are also invited to participate in an online survey so we can better understand your experiences and needs traveling in Delaware County. Here is the link to the survey:
<https://dcpd.typeform.com/to/Ei4s5b>



8 Likes 13 Shares

Like Comment Share

8

13 shares



Write a comment...



DCTMA



Follow

Delaware County Transportation Plan - You can weigh in!

Public/Municipal Open House Meetings and Survey

[co.delaware.pa.us/planning/news/...](http://co.delaware.pa.us/planning/news/)



12:53 PM - 22 Nov 2016 from Media, PA



Follow

Delaware County Transportation Plan - You can weigh in!

Public/Municipal Open House Meetings and Survey... fb.me/5kOyr3TXz

12:53 PM - 22 Nov 2016



The Delaware County Transportation Plan - Share Your Thoughts!



Do you think your neighborhood needs safer crosswalks?

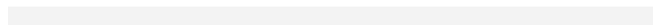
Do you have safety concerns biking to work?

The Delaware County Planning Department will be holding two public/municipal open house meetings for the County Transportation Plan where you can share your thoughts and ideas.

The first meeting will be held on **Wednesday, November 30th at Upper Darby Township Building (100 Garrett Road) from 6:00 p.m. to 7:30 p.m.**

The second meeting will be held on **Thursday, December 1st at Concord Township Building (43 South Thornton Road, Glen Mills) from 6:00 p.m. to 7:30 p.m.**

The Department is also conducting a **survey** - the results will inform the Transportation Plan. [Click here to fill out the survey.](#)



Contact
DCTMA: info@dctma.org
www.dctma.org

[f](#) [t](#) [in](#)

Transportation Plan
Appendix G: Public Participation

DVRPC

 **DVRPC**
@DVRPC Follow

Share ideas to improve Delco's transportation network on 11/30 at Upper Darby Twp Building or 12/1 at Concord Twp Building, 6 – 7:30pm

7:59 AM - 30 Nov 2016

 **DVRPC**
@DVRPC Follow

Delco Planning wants to know how you get around Delco! Your answers will inform the Transportation Plan dcpd.typeform.com/to/Ei4s5b

Like **1**

8:14 AM - 30 Nov 2016

   1

 Delaware Valley Regional Planning Commission shared Delaware County Council's photo.
November 30, 2016 · 

Delaware County Planning Department wants your ideas to improve Delco's transportation network. Open houses tonight and tomorrow, and also an online survey.



Delaware County Council
November 22, 2016 ·  Like Page

The public is invited to share ideas to improve Delaware County's transportation network. Please join the Delaware County Planning Department for an open house ...

[See More](#)

 Like  Comment  Share

 4 Top Comments

 Write a comment...

 **Need a monorail down the 422 corridor to Kop and then extend it to Philadelphia. Provide local transport at Kop like shuttle buses that work a commuter supporting schedule with emphasis at morning and evening travel times tapering at other times allowi... See More**
Like · Reply · November 30, 2016 at 1:24pm

SEPTA



Follow

Hey DelCo riders! Please participate in [@DelcoCouncil](#) 's Transportation Network Survey: dcpd.typeform.com/to/Ei4s5b

Retweets
2

8:02 AM - 23 Nov 2016

1 2

- @Busymom142 · 23 Nov 2016
Replying to @SEPTA_SOCIAL @DelcoCouncil
done!
1
- SEPTA SOCIAL @SEPTA_SOCIAL · 23 Nov 2016
Thanks for taking the time out of your day to complete it Patti! Have a wonderful Wednesday. ^SH
1
- @Busymom142 · 23 Nov 2016
thanks you too. Happy Thanksgiving to all of you.
1 1
- SEPTA SOCIAL @SEPTA_SOCIAL · 23 Nov 2016
To all of us here from our social media team, we wish you the same. Thanks! ^SH

Delaware County Chamber of Commerce

Delaware County Chamber of Commerce
November 28, 2016 · 🌐

If you live or work in Delaware County, or if you travel to/through the County, the Delaware County Planning Department would like to know how you use the transportation network and what you think of it. Your insights will be valuable in helping planners identify opportunities and strategies to improve the County's transportation network.

Be a part of the transportation planning process by participating in Delaware County Council's transportation survey.

<https://dcpd.typeform.com/to/Ei4s5b>

Like Comment

Dean Young Agency - Nationwide Insurance, Jessica Hoffman and Trish McFarland like this.

1 share



Follow

Let your thoughts be heard & be a part of [@DelcoCouncil](#)'s transportation planning process by completing this survey dcpd.typeform.com/to/Ei4s5b

1:06 PM - 28 Nov 2016

1 Retweet

1

Appendix G: Public Participation

Email to Steering Committee, Delaware County Planning Commission, and Municipal Managers

Transportation Plan Update: Open House Meetings and Survey

Good morning,

The next step in our planning process for the Delaware County Transportation Plan has come upon us.

It is important for DCPD to understand how residents and users interact with Delaware County's transportation network. Therefore, the County is holding two public/municipal open house meetings:

When: Wednesday, November 30

Where: Upper Darby Township Building (100 Garrett Road) AND

What Time: 6:00 p.m. to 7:30 p.m.

Getting There: For drivers, parking will be available at the Upper Darby Township Municipal Parking Lot at the intersection of Long Lane and Garrett Road. For public transit users, the Upper Darby Township Municipal Building is accessible by bus, trolley, Norristown High Speed Line, and Market-Frankford Line.

When: Thursday, December 1

Where: Concord Township Building (43 South Thornton Road)

What Time: 6:00 p.m. to 7:30 p.m.

Getting There: For drivers, parking will be available at the Concord Township Building. For public transit users, the Concord Township Building is accessible by buses 111 and 119.

In addition, DCPD is currently collecting survey responses, which will inform the Transportation Plan. **Do you think your neighborhood needs safer crosswalks? Do you have safety concerns biking to work? Answer these and other questions here: <https://dcpd.typeform.com/to/Ei4s5b>.**

Please share these meeting dates and the survey with staff, contacts, and residents in your communities. Involving stakeholders is a crucial part of the planning process in building an integrated, extended, and enhanced transportation network.

We look forward to your participation and contribution.

Sincerely,

Delaware County Planning Department

Materials for Public Meetings Handouts

PLEASE TAKE A MOMENT AT EACH STATION (1-4) TO **WRITE DOWN RECOMMENDATIONS** YOU HAVE TO IMPROVE EACH OF THE ROAD AND TRANSIT TYPOLOGIES IDENTIFIED. WE LOOK FORWARD TO COLLECTING YOUR COMMENTS!

Mature Neighborhoods

1

ROAD TYPOLOGIES

Local Streets	Collector Streets	Arterial Streets	Activity Corridors

Growing Suburbs

2

ROAD TYPOLOGIES

Local Streets	Collector Streets	Arterial Streets	Activity Corridors

PLEASE TAKE A MOMENT AT EACH STATION (1-4) TO **WRITE DOWN RECOMMENDATIONS** YOU HAVE TO IMPROVE EACH OF THE ROAD AND TRANSIT TYPOLOGIES IDENTIFIED. WE LOOK FORWARD TO COLLECTING YOUR COMMENTS!

Light Rail

3

TRANSIT TYPOLOGIES

Central Stops	On-street Stops	Residential Stops

Regional Rail

TRANSIT TYPOLOGIES

Central Stations	Commuter Stations

Transportation Plan
Appendix G: Public Participation

PLEASE TAKE A MOMENT AT EACH STATION (1-4) TO **WRITE DOWN RECOMMENDATIONS** YOU HAVE TO IMPROVE EACH OF THE ROAD AND TRANSIT TYPOLOGIES IDENTIFIED. WE LOOK FORWARD TO COLLECTING YOUR COMMENTS!

Bus

4

TRANSIT TYPOLOGIES	
Basic Stops	Enhanced Bus Stops
<div style="border: 1px solid black; height: 80px;"></div>	<div style="border: 1px solid black; height: 80px;"></div>

Transit Hubs

TRANSIT TYPOLOGIES
Transit Hubs
<div style="border: 1px solid black; height: 80px;"></div>

ADDITIONAL NOTES:

Posters

Delaware County 2035
 Transportation Plan

delaware county
 planning department

Mature Neighborhoods

ROAD TYPOLOGIES

Local Streets	Collector Streets	Arterial Streets	Activity Corridors
OPPORTUNITIES	OPPORTUNITIES	OPPORTUNITIES	OPPORTUNITIES
<ol style="list-style-type: none"> 1 Enhance ADA Compliance of Sidewalks 2 Traffic Calming Measures 3 Bicycle Facilities 	<ol style="list-style-type: none"> 1 Enhance ADA Compliance of Sidewalks 2 Traffic Calming Measures 3 Reduce On-street Parking for Bike Lanes 	<ol style="list-style-type: none"> 1 Enhance ADA Compliance of Sidewalks 2 More Visible Crosswalks 3 Streets for All Users 	<ol style="list-style-type: none"> 1 Incorporation of Green Stormwater Infrastructure 2 LED Traffic Signals 3 Streets for All Users

Delaware County 2035
 Transportation Plan

delaware county
 planning department

Growing Suburbs

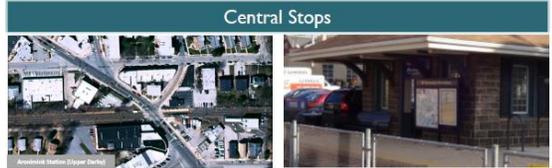
ROAD TYPOLOGIES

Local Streets	Collector Streets	Arterial Streets	Activity Corridors
OPPORTUNITIES	OPPORTUNITIES	OPPORTUNITIES	OPPORTUNITIES
<ol style="list-style-type: none"> 1 Create New Connections 2 Designated Bicycle and Pedestrian Facilities 3 Potential to Increase Safety 	<ol style="list-style-type: none"> 1 Improved Public Transit if Growth Continues 2 Less Congested Roadways Lead to Bicycle Facilities 3 Possibility of Installing New Sidewalks 	<ol style="list-style-type: none"> 1 Streets for All Users 2 Ability to Add Turning Lanes 3 Potential to Improve Bus Access to Developments 	<ol style="list-style-type: none"> 1 Potential for Enhanced Bus Service 2 Streets for All Users 3 Possibility to Extend Pedestrian Infrastructure

Delaware County 2035
 Transportation Plan
Light Rail

delaware county
 planning department

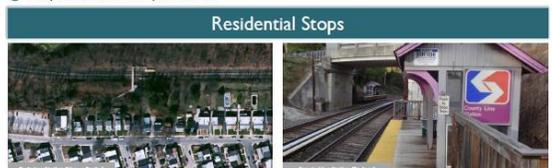
3
Regional Rail
 TRANSIT TYPOLOGIES



- OPPORTUNITIES**
- 1 Bike Parking in Downtown Areas
 - 2 Encourage Multimodality
 - 3 Integrated Stops



- OPPORTUNITIES**
- 1 Better Access/ADA Compliance
 - 2 Trolley Modernization to Improve Service
 - 3 Potential to Consolidate Stops



- OPPORTUNITIES**
- 1 Improve Surrounding Connections
 - 2 Incorporate Bicycle Parking
 - 3 Possible Pedestrian Access and Signage Improvements



- OPPORTUNITIES**
- 1 Improved Signage
 - 2 Real Time Information
 - 3 High-level Platforms



Commuter Stations



- OPPORTUNITIES**
- 1 Bicycle Parking and Facilities
 - 2 Bicycle/Pedestrian Access
 - 3 High-level platforms



Delaware County 2035
 Transportation Plan
Bus

delaware county
 planning department

4
Transit Hubs
 TRANSIT TYPOLOGIES



- OPPORTUNITIES**
- 1 Potential to Incorporate Shelters/Seating
 - 2 Improve Pedestrian Access
 - 3 Lighting



- OPPORTUNITIES**
- 1 Consolidate Stops to Reduce Travel Time
 - 2 Integrate Real Time Transit Information
 - 3 Extend Bus Service



- OPPORTUNITIES**
- 1 Right-of-way for Complete Streets Implementation
 - 2 Install Bike Parking
 - 3 Improve Sidewalks and Crosswalks



Interactive Posters 5-6 – Upper Darby Township 11/30/16 Meeting

Delaware County 2035
Transportation Plan

Mature Neighborhoods

delaware county
planning department

Growing Suburbs 5

CASE STUDIES

Challenges

- 1 Breaks in Sidewalk Network
- 2 Limited Shoulders
- 3 Limited Parked Crosswalks
- 4 Limited Bicycle Facilities

Challenges

- 1 Breaks in Sidewalk Network
- 2 Access Management
- 3 Visibility from Local Roads
- 4 Limited Pedestrian Facilities

What is most important to you?
 Allocate your dots to the improvements that you would most like to see.
 Use the **RED** dots for this section.

What is most important to you?
 Allocate your dots to the improvements that you would most like to see.
 Use the **BLUE** dots for this section.

Bike Facilities	Traffic Flow Improvements	Dedicated Truck Routes	Sidewalks	Public Transit Service/Facilities	Crosswalks	Bike Facilities	Traffic Flow Improvements	Dedicated Truck Routes	Sidewalks	Public Transit Service/Facilities	Crosswalks
•••••	•••••		•••••	•••••	•••••	•••••	•••••		•••••	•••••	•••••
Other	<div style="background-color: yellow; padding: 5px; margin-bottom: 5px;"> Left side (street side) </div> <div style="background-color: yellow; padding: 5px; margin-bottom: 5px;"> side path </div> <div style="background-color: yellow; padding: 5px; margin-bottom: 5px;"> Location for "other" improvements? </div> <div style="background-color: yellow; padding: 5px; margin-bottom: 5px;"> To address the needs of the community </div>					Other	<div style="background-color: yellow; padding: 5px; margin-bottom: 5px;"> Parked bike lane </div> <div style="background-color: yellow; padding: 5px; margin-bottom: 5px;"> side path </div> <div style="background-color: yellow; padding: 5px; margin-bottom: 5px;"> Not in other side lanes </div>				

Delaware County 2035
Transportation Plan

Central Places

delaware county
planning department

6

CASE STUDIES

Urbanized Center

Challenges

- 1 Accommodation of Multiple Modes
- 2 Limited Pedestrian Connections
- 3 Parking
- 4 Heavy Truck Traffic

Activity Corridor

Challenges

- 1 Intersection Safety
- 2 Access Management
- 3 Transit Visibility/Accessibility
- 4 Complex Street Incorporation

What is most important to you?
 Allocate your dots to the improvements that you would most like to see.
 Use the **GREEN** dots for this section.

What is most important to you?
 Allocate your dots to the improvements that you would most like to see.
 Use the **YELLOW** dots for this section.

Bike Facilities	Parking Strategies	Freight Delivery Strategies	Crosswalks/Sidewalks	Public Transit Service/Facilities	Traffic Flow Improvements	Bike Facilities	Parking Strategies	Freight Delivery Strategies	Crosswalks/Sidewalks	Public Transit Service/Facilities	Traffic Flow Improvements
•••••	•••••		•••••	•••••	•••••	•••••	•••••		•••••	•••••	•••••
Other	<div style="background-color: yellow; padding: 5px; margin-bottom: 5px;"> Location for "other" improvements? </div>					Other	<div style="background-color: yellow; padding: 5px; margin-bottom: 5px;"> Location for "other" improvements? </div>				

Interactive Posters 5-6 – Concord Township 12/1/16 Meeting

Delaware County 2035
Transportation Plan

Mature Neighborhoods

delaware county
planning department

Growing Suburbs 5

CASE STUDIES

Challenges

- 1. Sparse to Blank Network
- 2. Limited Shoulders
- 3. Limited Market Crosswalks
- 4. Limited Bicycle Facilities

Challenges

- 1. Sparse to Blank Network
- 2. Access Management
- 3. Mobility from Local Roads
- 4. Limited Pedestrian Facilities

What is most important to you?
 Allocate your dots to the improvements that you would most like to see.
 Use the **RED** dots for this section.

What is most important to you?
 Allocate your dots to the improvements that you would most like to see.
 Use the **BLUE** dots for this section.

Bike Facilities	Traffic Flow Improvements	Dedicated Truck Routes	Sidewalks	Public Transit Service/Facilities	Crosswalks
•••••	•••••		•••••	•••••	•••••
Other			parking		

Bike Facilities	Traffic Flow Improvements	Dedicated Truck Routes	Sidewalks	Public Transit Service/Facilities	Crosswalks
•••••	•••••		•••••	•••••	•••••
Other	Right of Way				

Delaware County 2035
Transportation Plan

Central Places

delaware county
planning department

6

CASE STUDIES

Urbanized Center

Challenges

- 1. Accommodation of Multiple Modes
- 2. Limited Pedestrian Connections
- 3. Parking
- 4. Heavy Truck Traffic

Activity Corridor

Challenges

- 1. Intersection Safety
- 2. Access Management
- 3. Transit Vehicle Accessibility
- 4. Complete Streets Incorporation

What is most important to you?
 Allocate your dots to the improvements that you would most like to see.
 Use the **GREEN** dots for this section.

What is most important to you?
 Allocate your dots to the improvements that you would most like to see.
 Use the **YELLOW** dots for this section.

Bike Facilities	Parking Strategies	Freight Delivery Strategies	Crosswalks/Sidewalks	Public Transit Service/Facilities	Traffic Flow Improvements
•••••	•••••		•••••	•••••	•••••
Other	Right Cost of Parking				

Bike Facilities	Parking Strategies	Freight Delivery Strategies	Crosswalks/Sidewalks	Public Transit Service/Facilities	Traffic Flow Improvements
•••••	•••••		•••••	•••••	•••••
Other	Right Cost of Parking				

Public Meeting #1 – Upper Darby Township, November 30, 2016

Attendee Information

Fifteen individuals attended this meeting, including members of the Bicycle Coalition, the Delaware Valley Bicycle Club, SEPTA staff, Upper Darby Township staff, engineers, and Delaware County residents.

Summary of Handout Responses

Bus

- When school lets out, a lot of students need to catch a bus at a single boarding location. There is no shelter at the location, and even if there were a basic shelter at the site, it wouldn't be large enough to accommodate all of the people who need to use it at once.
- There should be bike racks at some select bus stops.
- There should be bus service from Darby to Springfield Mall, Media, or Delaware County Community College. No direct connection exists from Darby area to central Delaware County.
- Lighting at stops is key.
- Bus turning and stop locations may be inappropriate in some places.
- More bus stops should have benches.
- Real time information at stops would be great.
- Make sure that new developments preserve or enhance access to public transit.
- Buses would be more attractive if they were not wrapped in ads.
- Better lighting at bus stops.
- Work with communities to address stop lines for traffic where changes have been made to bus routes to enable bus to turn easier
- Bathrooms at enhanced stops.
- Coordinate bus updates with municipalities.

Transit Hubs

- There should be more bike racks at transit hubs.
- Bike racks at transit hubs should be covered.
- There's no place for cars to pull in and drop off passengers at 69th St. Transportation Center. Cars stop in the road, which is dangerous and causes traffic delays. Transit hubs should have designated car passenger drop-off areas.
- Repairs are needed at Chester TC.
- Schedules need to be current at transit hubs.
- SEPTA should restore Trolley 13 service to the Darby TC.
- There should be covered bike parking at transit hubs.
- Safety during the building of parking lot and garage in Upper Darby
- Bathrooms at transit hubs.

Light Rail

- **Residential Stops:** Better community access from the Oakview community to Creek Road (102) station.

Other Transit

- Some people have trouble obtaining SEPTA senior citizen passes.
- Pedestrian connections on bridges.

Mature Neighborhoods

- Traffic calming to reduce speed and therefore enhance safety pedestrians and cyclists.

Appendix G: Public Participation

- **Local Streets:** move sidewalks, connect sidewalks, maintain sidewalks. Speed bumps to slow traffic on side streets. Speed bumps. Traffic circle like Swarthmore. Cul-de-sacs in mature neighborhoods provide no visibility.
- **Collector Streets:** pedestrian crossings. Bicycling to school e.g. Lansdowne Avenue. Abandoned lots for parking.
- **Arterial Streets:** Synchronize traffic lights on arterial streets and roads. Pedestrian crossing. Mechanism for bike crossing (often signals don't notice bikes). Public education: green light for car but red hand for pedestrians. Abandoned lots for parking. Traffic signals. Considerations for bicyclists. Narrower shoulder on West Chester Pike. Speeding issues. Crossing for alternative modes at 476 interchanges. Clarify no left turn. Help bicyclists. Parking versus bike lanes versus shopping.
- **Activity Corridors:** More efforts to make people aware that pedestrians have right-of-way. More sidewalks.

Growing Suburbs

- **Local Streets:** More sidewalks.
- **Collector Streets:** More sidewalks.
- **Arterial Streets:** More sidewalks.
- **Activity Corridors:** Pedestrian crossing. Congestion management.

Alternative Modes (Bike/Ped/Other)

- Fill in gaps in sidewalk network
- Make pedestrian and bicycle access across highway interchanges possible. Currently, 476 interchanges are no-go ones for pedestrians and bicycles.
- West Chester Pike is dangerous for pedestrians.
- The period of time given to pedestrians at crosswalk timers is too brief in some locations. Wider roads require longer pedestrian crossing times.
- Bridges and trestles are attractive to bicyclists and pedestrians and can help them cross dangerous intersections.
- Build recreational trail along Newtown Square branch and Cardington branch of old PRR
- Facilitate biking to schools.

Additional Notes

- No place to bike go to recreation
- Decentralized traffic
- Trail options are useful. Newtown Square Trail
- Great transit stations
- Links between suburban destinations
- Traffic safety education
- Vision zero
- People don't stop for pedestrians
- Enforcement improvements
- Complete sidewalk networks
- Diversify outreach and audience

Summary of Posters 5-6 Responses

Poster 5 Interactive Exercise: Mature Neighborhoods

Bike Facilities	Traffic Flow Improvements	Dedicated Truck Routes	Sidewalks	Public Transit Service/Facilities	Crosswalks	Other
8	5	0	11	4	4	Parking: 1

Poster 5 Interactive Exercise: Growing Suburbs

Bike Facilities	Traffic Flow Improvements	Dedicated Truck Routes	Sidewalks	Public Transit Service/Facilities	Crosswalks	Other
7	6 Count includes: -sight distance -speed limit reassessment and enforcement to maintain rural landscape without putting in sidewalks	0	10	7	7	0

Poster 6 Interactive Exercise: Urbanized Centers

Bike Facilities	Parking Strategies	Freight Delivery Strategies	Crosswalks/Sidewalks	Public Transit Service/Facilities	Traffic Flow Improvements	Other
10	7	0	10	3	4	0

Poster 6 Interactive Exercise: Activity Corridors

Bike Facilities	Parking Strategies	Freight Delivery Strategies	Crosswalks/Sidewalks	Public Transit Service/Facilities	Traffic Flow Improvements	Other
9	4	0	7	3	10	0

Public Meeting #2 – Concord Township, December 1, 2016

Attendee Information

Eight individuals attended this meeting, including members of the Bicycle Coalition, Lansdowne EDC, Chester Township representatives, Middletown Township staff, and Delaware County residents.

Summary of Handout Responses

Bus

- Municipalities can require developers to install bus shelters but maintenance on the shelters after installation is a challenge.
- There aren't enough short shuttle buses in Delco. Chester County's Rover system is an example of a good shuttle bus system.
- There should be bus service, possibly shuttle bus service between buses on Route 3 and Route 252.
- Fair Acres lacks shelters despite having high ridership.
- Bus signs are generally hard to read, especially older ones.
- Western Delaware County needs better bus connections to regional rail stations. This would help with the parking challenges at some of the stations. Not everyone needs to commute by car.
- Buses should provide service to Wawa regional rail station.
- Maybe Fair Acres could serve as a western transit hub.
- Basic stops can be dangerous for people with disabilities.
- Make buses more express. Trips are too long.
- Bus routes aren't direct enough. Passengers have to make too many transfers to get where they're going.

Transit Hubs

- 69th Street Transportation Center should have a designated place for drivers to pull in and drop off passengers safely. People stop their cars in the street to let people out currently.
- Transit hubs should accommodate all modes of transportation. There is too much emphasis on parking.
- Transit hubs could be bike share locations.
- There should be a safe drop-off lane for cars at 69th Street TC.

Light Rail

- There should be more bike parking at stations.

Regional Rail

- Rail service ends too early at night.
- There should be more bike parking at stations.

Other Transit

- SEPTA should charge a higher fee for parking at stations. The demand for parking would allow it. The NHSL stations are free parking now.

Alternative Modes (Bike/Ped/Other)

- A woman living in Gradyville asked about accommodating horse riders as one of the modes considered. She mentioned that it used to be possible to ride from her area into Ridley Creek

State Park for trail riding. She thought 4-way stops would be preferable to signalized intersections in some areas.

- There should be a pedestrian bridge over the tracks at the Lansdowne station that would be ADA accessible. The current route to walk from one side of the tracks to the other is to use the sidewalk on the Lansdowne Avenue bridge, which is very steep.
- Elevated, climate controlled walkways like the one in Louisville, KY are great for pedestrians in congested areas.
- Golf carts could be accommodated for short trips in Delco, perhaps with paved trails that parallel roads.

Trails/Bicycle Facilities

- A man from the Delaware County Bike Club noted that both Chester and Montgomery County had more robust trail systems, and that he prefers recreational riding in those counties over Delaware County. He mentioned how Chester and Montgomery Counties own and maintain a number of major trails, rather than leaving it to private groups or municipalities as Delaware County does.
- Deborah Brodeur from Lansdowne Economic Development Corporation said that she would like to see bike lanes on Baltimore Pike continue from West Philadelphia out as far as Lansdowne (they currently end at 61st Street near Cobb’s Creek), particularly as Lansdowne is trying to attract artists and young people to their downtown.
- There should be bike lanes on Baltimore Avenue between Lansdowne and Philadelphia. There are bike lanes on the Philadelphia side of the county border that Delaware County bike lanes could connect to.
- There should be a bikeway on the NHSL right-of-way.

Summary of Posters 5-6 Responses

Poster 5 Interactive Exercise: Mature Neighborhoods

Bike Facilities	Traffic Flow Improvements	Dedicated Truck Routes	Sidewalks	Public Transit Service/Facilities	Crosswalks	Other
9	7	1	7	4	4	0
Count includes: Bike lanes not in car door lane	Count includes: No right on red where pedestrians cross Golf carts or smaller vehicles for shorter trips	Count includes: Last mile with smaller delivery vehicles	Count includes: Side paths			

Appendix G: Public Participation

Poster 5 Interactive Exercise: Growing Suburbs

Bike Facilities	Traffic Flow Improvements	Dedicated Truck Routes	Sidewalks	Public Transit Service/Facilities	Crosswalks	Other
9 Count includes: Protected lanes Not in car door lane	6	0	8 Count includes: Side paths	3	3	0

Specific suggestions for crosswalks:

Mid-block crossings with rapid flashing beacons

More favorable turn radius for short crossing distance and additional sidewalk space

Poster 6 Interactive Exercise: Urbanized Centers

Bike Facilities	Parking Strategies	Freight Delivery Strategies	Crosswalks/Sidewalks	Public Transit Service/Facilities	Traffic Flow Improvements	Other
8	7 Count includes: Right cost for parking	0	4	2	3	0

Poster 6 Interactive Exercise: Activity Corridors

Bike Facilities	Parking Strategies	Freight Delivery Strategies	Crosswalks/Sidewalks	Public Transit Service/Facilities	Traffic Flow Improvements	Other
8	3 Count includes: Right cost for parking	0	6	3	4	0

Public Survey

Purpose and Intent

The intent of the *Delaware County Transportation Plan Survey (2016)* was to give Delaware County residents, workers, and visitors who could not attend the two public meetings the chance to voice their concerns, comments, opinions, and innovative ideas on how to improve the County's transportation network. Building upon themes conducted in regional travel surveys, such as the *DVRPC 2012-2013 Household Travel Survey*, the transportation survey conducted for this plan included targeted questions to gain a better understanding of contemporary travel patterns in Delaware County. Basic information, such as modal share and commuter preferences coupled with open-ended survey responses helped ensure that the plan accurately reflected the needs of Delaware County's communities. While specific projects were not identified as part of this plan, many respondents' comments support projects that have been considered or are planned. Furthermore, the survey responses helped the County Planning Department in the creation of the action items in the Action Plan portion of this document.

Motivation

The Delaware County Planning Department decided to conduct its own survey – as opposed to using existing travel-related data for the County – for a few different reasons. The most recent United States Census was conducted in 2010. Due to the recent, rapid technological changes in all industries, including transportation, 2010 data would not be able to capture such nuances. The *DVRPC 2012-2013 Household Travel Survey* is an excellent source of household travel information. However, the Planning Department took advantage of the opportunity to receive feedback from respondents on specific issues (through long answers to specific questions). Finally, while ACS data includes more up-to-date travel information than the Census, the data merely provides estimates. As a result, in some cases the margin of error can be extremely high, making the data unreliable. Lastly, though the majority of the *Delaware County Transportation Plan Survey* respondents were Delaware County residents, the County was committed to allowing all users of the transportation network, including non-Delaware County residents, to provide critical feedback.

Limitations

The most apparent limitation of the *Delaware County Transportation Plan Survey* was that the sample size was extremely small. Despite a rigorous effort to promote the survey through numerous channels, including on social media, via email, at meetings, and on different websites, online survey responses were collected from only 0.11% of the County's resident population. As a result, in terms of demographic and household income data, this sample does not mirror the County's characteristics. However, when compared to 2010 Census data, general distributions and proportions, such as predominant race and sex, do reflect a vague picture of the County. Furthermore, the modal share reported in this survey is also distributed in a similar way to modal share reported in 2015 ACS 5-year estimates, with driving being the most common mode of transportation to work. As a result, while no decisions could be made based on data from this survey, the long answer responses give great insight into what Delaware County residents – regardless of their personal characteristics – are concerned about when it comes to the transportation network, particularly because the majority of responses repeat the same themes.

Survey Format

The transportation survey was an online public survey created through the online platform Typeform. All users of the Delaware County transportation network were encouraged to respond so the survey was no

Appendix G: Public Participation

limited to County residents. The survey was available online for approximately six weeks between November 21, 2016 and January 3, 2017. There were 46 questions, though some could be skipped based on a respondent’s answer to the previous question. On average, the survey took 15:35 minutes to complete.

Survey Questions

The following are the survey questions.

1 Thank you for participating in the Delaware County Transportation Plan Survey. The purpose of this survey is to collect information about how Delaware County residents travel throughout the County. The results of this survey will inform the Delaware County Transportation Plan.

IMPORTANT: Please do not forget to click "Submit" at the bottom, once you have finished OR if you cannot complete the survey and will not be able to start over at a later time. *

If you do not click "Submit" at the end of the survey, your answers will NOT be saved. You can skip any question. Your responses will be kept confidential and will only be reported in the aggregate.

I accept I don't accept

BACKGROUND INFORMATION

Before we get started, let's get to know a little bit about you.

IMPORTANT: Please scroll to the bottom of the survey and click "Submit" if you cannot complete the survey at this time AND will not be able to start over at a later time.

2 What zip code do you live in?

3 Which category best describes your work status? *Select more than one response if you engage part-time in two or more of the listed activities.*

- Worker (outside home) Worker (at home) Unemployed (looking for work)
- Retired Retired due to disability Student (school/college/university)
- Stay-at-home parent or caretaker Other

4 Do you currently have a driver's license?

- Yes No

5 How many vehicles are available for use in your household?

- None 1 2 3 or more

JOURNEY TO WORK/SCHOOL/OTHER OCCUPATION

The questions in this section refer specifically to work/school commutes, *NOT* other types of trips.

IMPORTANT: Please scroll to the bottom of the survey and click "Submit" if you cannot complete the survey at this time AND will not be able to start over at a later time.

6 What zip code do you travel to for work/school/other occupation? *Please list all that apply.*

7 How long (in minutes) is your door-to-door commute to work/school/other occupation? **If you select either, "A) 0 minutes" or "G) Not applicable," skip to Question 19 after responding.**

- 0 minutes (work at home) Under 10 minutes 10 to 20 minutes
 21 to 30 minutes 31 to 40 minutes More than 40 minutes
 Not applicable

Appendix G: Public Participation

8 How do you usually reach work/school/other occupation? *If you have two occupations, click "other" and specify how you reach each.*

- Car, driving alone Car, carpooling with others
- Bike or walk to transit (bus, train, or trolley)
- Drive to transit (bus, train, or trolley) Biking (the entire way)
- Walking (the entire way) Cab Lyft, Uber, or corporate shuttle Other

9 If you drive to work/school/other occupation every day, which of the following statements best describes you? If you do **not drive** to work/school/other occupation, please skip to Question 12.

- I do not have any other options, and I prefer to drive anyway.
- I do not have any other options, but I would like to use another mode of transportation.
- I do have other options, but I prefer to drive alone.
- I do have other options, but I prefer to carpool.

10 If you had the option, which mode/combination of modes of transportation would you take to work/school/other occupation as an alternative to driving?

- Bike Walk Public Transit Other

11 Briefly explain what is preventing you from taking the alternative mode of transportation you selected in Question 10?

For example, perhaps you live close enough to bike to work and would like to do so, but there are no bike lanes so you don't feel safe.

12 If you take transit to work/school/other occupation, how many transfers do you make to arrive? If you do **not take transit** to work/school/other occupation, please skip to Question 13.

- None. It is a one-vehicle ride. 1 2 3 or more

13 How frequently are you late to work/school/other occupation due to **traffic-related issues**, *regardless of how you commute to work/school/other occupation?*

- Never Once per month Twice per month Once per week
 Twice per week Three or more times per week Other

14 How frequently are you late to work/school/other occupation due to **transit-related issues**, *regardless of how you commute to work/school/other occupation?*

- Never Once per month Twice per month Once per week
 Twice per week Three or more times per week Other

15 What concerns you most about **driving** to work/school/ other occupation, *regardless of how you commute to work/school/other occupation? Choose as many as apply.*

- Speeding/distracted or unsafe driving Roadway conditions Congestion
 Traffic signal timing Heavy pedestrian traffic Heavy truck traffic
 Other

16 What concerns you most about **taking transit** to work/school/other occupation, *regardless of how you commute* to work/school/other occupation? *Choose as many as apply.*

- Frequency of service Service delays/reliability of service
 - Lack of shelters/lighting at stations Security at stations/stops
 - Distance from home to transit Distance from transit to final destination
 - Other
-

17 What concerns you most about **biking** to work/school/other occupation, *regardless of how you commute* to work/school/other occupation? *Choose as many as apply.*

- Security/safety of on-road routes Security/safety of off-road routes (trails)
 - Lack of on-road bike lanes, sharrows, or wayfinding signage
 - Lack of repair stations or bike parking Lighting on roadways/trails/paths
 - Heavy vehicular traffic/reckless driving Distance Other
-

18 What concerns you most about **walking** to work/school/other occupation, *regardless of how you commute* to work/school/other occupation? *Choose as many as apply.*

- Safety/security of possible routes Missing sidewalks Sidewalk conditions
 - Missing crosswalks Crosswalks without traffic signals Distance
 - Motorists not giving pedestrians the right-of-way at crosswalks Other
-

DRIVING PERSONAL VEHICLE TO DESTINATIONS (*other than work/school/other occupation*)

The questions in this section refer specifically to driving trips to destinations, NOT to work, school, or other occupation.

IMPORTANT: Please scroll to the bottom of the survey and click "Submit" if you cannot complete the survey at this time AND will not be able to start over at a later time.

19 How frequently do you drive to a destination *other than work/school/other occupation*? **If you respond "F) Never" to this question, skip to Question 22 after responding.**

- Every day 3 times per week Once per week Once per month
 Twice per month Never Other

20 What destination *other than work/school/other occupation* do you drive to? *Please select all that apply.*

- Retail stores, supermarkets Restaurants, entertainment venues
 Places of worship or community events Relatives' or friends' homes
 Recreational facilities (a park or gym) Medical facility Other

21 What concerns you most about driving to a destination *other than work/school/other occupation*? *Choose all that apply.*

- Speeding/distracted or unsafe driving Roadway conditions Congestion
 Traffic signal timing Heavy pedestrian traffic Other

WALKING TO DESTINATIONS (other than work/school)

The questions in this section refer specifically to walking trips to destinations, NOT to work or school.

IMPORTANT: Please scroll to the bottom of the survey and click "Submit" if you cannot

complete the survey at this time AND will not be able to start over at a later time.

22 How frequently do you walk to a destination *other than work/school/other occupation*? **If you respond "F) Never" to this question, please skip to Question 26 after responding.**

- Every day 3 times per week Once per week Once per month
 Twice per month Never Other
-

23 Where do you walk to *other than work/school/other occupation*? Choose *all that apply*.

- Transportation facilities (i.e., train station, bus stop, etc.)
 Retail stores, supermarkets Restaurants, entertainment venues
 Places of worship or community events Relatives' or friends' homes
 Recreational facilities (a park or gym) Medical facility Other
-

24 How long (in minutes) are you willing to walk to a destination *other than work/school/other occupation*?

- Under 5 minutes 5 to 10 minutes 11 to 20 minutes 21 to 30 minutes
 31 to 40 minutes More than 40 minutes
-

25 What concerns you most walking to destinations *other than work/school/other occupation* in your area? Choose *all that apply*.

- Safety/security of potential routes Sidewalk conditions Missing sidewalks
 Missing crosswalks Crosswalks without traffic signals
 Visually unappealing surroundings

- Lack of interesting destinations within walking distance
 - Motorists not giving pedestrians the right-of-way at crosswalks Other
-

26 What would make you walk to destinations *other than work/school/other occupation* more frequently? Choose all that apply.

- More off-road routes (trails and/or paths) More sidewalks
 - Sidewalks separated from traffic with a buffer More crosswalks
 - More visible/safer crosswalks Nothing, I will not walk to destinations
 - Other
-

BIKING TO DESTINATIONS (other than work/school/other occupation)

The questions in this section refer specifically to bike trips to destinations, *NOT* to work, school, or other occupation.

IMPORTANT: Please scroll to the bottom of the survey and click "Submit" if you cannot complete the survey at this time AND will not be able to start over at a later time.

27 Do you currently own a bicycle?

- Yes No No, but I have a bicycle available to me for use
-

28 How frequently do you ride a bike to a destination *other than work/school/other occupation*? If you respond "F) Never" to this question, skip to Question 31 after responding.

- Every day 3 times per week Once per week Once per month
- Twice per month Never Other

29 Where do you bike to *other than work/school/other occupation*? Choose all that apply.

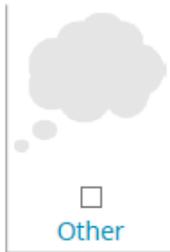
- Transportation facilities (i.e., train station, bus stop, etc.)
- Retail stores, supermarkets Restaurants, entertainment venues
- Places of worship or community events Relatives' or friends' homes
- Recreational facilities (a park or gym) Medical facility Other

30 How long (in minutes) are you willing to bike to any destination *other than work/school/other occupation*?

- Under 5 minutes 5-10 minutes 11-20 minutes 21-30 minutes
- 31-40 minutes More than 40 minutes

31 Which of these **do you/would you** feel comfortable riding your bike on, regardless of whether you currently ride a bike? Choose all that apply.

 <input type="checkbox"/> Trail	 <input type="checkbox"/> Bike Lane	 <input type="checkbox"/> Shoulder	 <input type="checkbox"/> Residential	 <input type="checkbox"/> Collector
 <input type="checkbox"/> Major Road	 <input type="checkbox"/> Elevated Lane	 <input type="checkbox"/> Detached	 <input type="checkbox"/> Protected	 <input type="checkbox"/> Sharrow



32 What would make you ride your bike to *destinations other than work/school/other occupation* more frequently? Choose all that apply.

- More off-road routes (trails) More standard bike lanes on roads
- On-road bike lanes separated from traffic (either elevated, detached, or protected)
- More repair stations and bike parking
- Nothing, I will not ride my bike to reach destinations Other

PUBLIC TRANSIT TO DESTINATIONS (other than work/school/other occupation)

The questions in this section refer specifically to transit trips to destinations, NOT to work, school, or other occupation.

IMPORTANT: Please scroll to the bottom of the survey and click "Submit" if you cannot complete the survey at this time AND will not be able to start over at a later time.

33 How often do you ride public transit to a destination *other than work/school/other occupation*? If you respond "F) Never" to this question, please skip ahead to Question 38 after responding.

- Every day 3 times per week Once per week Once per month
- Twice per month Never Other

Appendix G: Public Participation

34 What types of public transportation do you use to reach destinations *other than work/school/other occupation*? Choose all that apply.

- Train - Regional Rail Train - Norristown High Speed Line Trolley Bus
 Elevated line (e.g., Market-Frankford Line)

35 Where do you ride public transit to *other than work/school/other occupation*? Choose all that apply.

- Retail stores, supermarkets Restaurants, entertainment venues
 Places of worship or community events Relatives' or friends' homes
 Recreational facilities (a park or gym) Medical facility Other

36 How much time do you typically spend on public transit to any destination *other than work/school/other occupation*?

- Under 5 minutes 5-10 minutes 11-20 minutes 21-30 minutes
 31-40 minutes More than 40 minutes

37 How many transfers do you make to arrive at a destination *other than work/school/other occupation*?

- None. It is a one-vehicle ride. 1 2 3 or more

38 What would make you ride transit more frequently to destinations *other than work/school/other occupation*?

- More frequent service

- New service areas/more coverage in areas with little service
- Better station/stop shelters More comfortable vehicles
- Real-time tracking and live schedule updates via mobile phone
- Nothing, I will not ride transit. Other

WISH LIST

This section includes two open-ended questions. We would like to know what's on your mind with regard to getting around in Delaware County!

IMPORTANT: Please scroll to the bottom of the survey and click "Submit" if you cannot complete the survey at this time AND will not be able to start over at a later time.

39 If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?

40 Did we miss anything or do you have any other comments you would like to share with Delaware County?

DEMOGRAPHIC QUESTIONS

Just one last thing: please take the time to fill out the following 6 demographic questions to help us better understand whom we've reached.

IMPORTANT: Please scroll to the bottom of the survey and click "Submit" if you cannot complete the survey at this time AND will not be able to start over at a later time.

41 How old are you?

- Under 10 years 10-19 years 20-29 years 30-39 years
 40-49 years 50-59 years 60-69 years 70-79 years
 80 years or over

42 With which gender do you identify?

- Female Male Other

43 Are you of Spanish/Hispanic/Latino origin?

- Yes No Unsure

44 With which race do you identify? Choose all that apply.

- White/Caucasian Black/African American Asian/Pacific Islander
 American Indian, Native American, or Alaska Native Other

45 Do you or does anyone in your household have a disability that requires mobility assistance, such as a cane, walker, scooter, or wheelchair?

- Yes No Unsure

46 What is your household income?

- Less than \$19,999 \$20,000-\$39,999 \$40,000-\$59,000
 \$60,000-\$79,999 \$80,000-\$99,999 \$100,000-\$149,999
 \$150,000-\$199,999 \$200,000 or more
-

Thank you very much for taking the Transportation Survey. We look forward to reviewing your feedback and ideas. The results will be reported in the Delaware County Transportation Plan. If you have any questions or concerns, please do not hesitate to contact the Delaware County Planning Department.

Once again: please remember to click "Submit" below, or your responses will not be saved.

Submit

Never submit passwords! - [Report abuse](#)

Appendix G: Public Participation

Summary of Results

As mentioned previously, the sample size was small; 620 individuals participated in the survey. Data from 618 responses was analyzed. Two participants responded to only one question, disqualifying these responses from consideration in the final analysis. It is important to note that, based on applicants' work status claim (e.g., Worker (outside the home), Worker (at home), etc.) certain responses were not considered in the analysis of work/school/other occupation commuting characteristics. For example, if an applicant claimed that he or she worked from home, his or her response regarding mode of transportation to work was not considered.

Zip code and demographic data was collected in order to monitor whether the survey results captured Environmental Justice areas and vulnerable populations within the County. The table below compares the demographic characteristics of Delaware County to those of the transportation survey sample.

Table G-13: Demographic Characteristics and Labor Force Statistics

	Delaware County	Survey Sample*
Population	558,979	618
Race		
White	72.5%	90.5%
Black or African American	19.7%	3.1%
Asian or Pacific Islander	4.7%	2.1%
2 or more races	2%	1%
American Indian or Alaska Native	0.2%	0.3%
Hispanic or Latino of any race	3%	1%
Sex		
Male	47.9%	40.5%
Female	52.1%	57.1%
Age		
Under 10 years	12.3%	0%
10 – 19 years	14.5%	0%
20 – 29 years	13.2%	6.3%
30 – 39 years	11.7%	15.3%
40 – 49 years	14.3%	18.1%
50 – 59 years	14.5%	29.5%
60 – 69 years	9.1%	22.7%
70 – 79 years	5.6%	5.2%
80 years and older	4.9%	0.6%
Median Household Income**	\$65,123	\$100,000 – 149,999
Disability***	11.8%	10.3%
Work Status		
Worker (outside home)	59.8%	77%
Worker (at home)	(employment rate)	5.3%
Unemployed (looking for work)	8.2%	1.1%
Retired	NA	11.2%
Retired due to disability	NA	2.3%
Student (school/college/university) – full-time or part-time	NA	2.3%
Stay-at-home parent or caretaker	NA	1.8%

* Residents, workers, and visitors from across the region were encouraged to take this transportation survey. No question was mandatory; therefore, not all respondents answered the demographic questions. The percentages represent the proportion of individuals of the total sample size that claimed to fall under a particular category.

** Respondents were asked to select a range for household income. The ACS median household income is a precise estimate.

*** Respondents were asked if they OR someone in their household had a disability. The ACS percentage is based on individual disability.

The vast majority of respondents – 599 individuals – are Delaware County residents. Respondents from outside of Delaware County were from Chester County, Montgomery County, or Philadelphia. It is clear from the table above that the population sample is more racially homogeneous, much older, and reported a higher median household income than the County population. The fact that the survey was online may have automatically excluded certain populations, such as those who do not have a computer or smartphone readily available for use (e.g., children or low-income individuals). Furthermore, the higher employment rate of the survey sample suggests greater access to computers among respondents, whether at work or due to higher household income levels. The high percentage of older respondents may be a result of their work status; retirees will tend to have more time for public participation than a full-time worker.

Travel to Work/School/Other Occupation

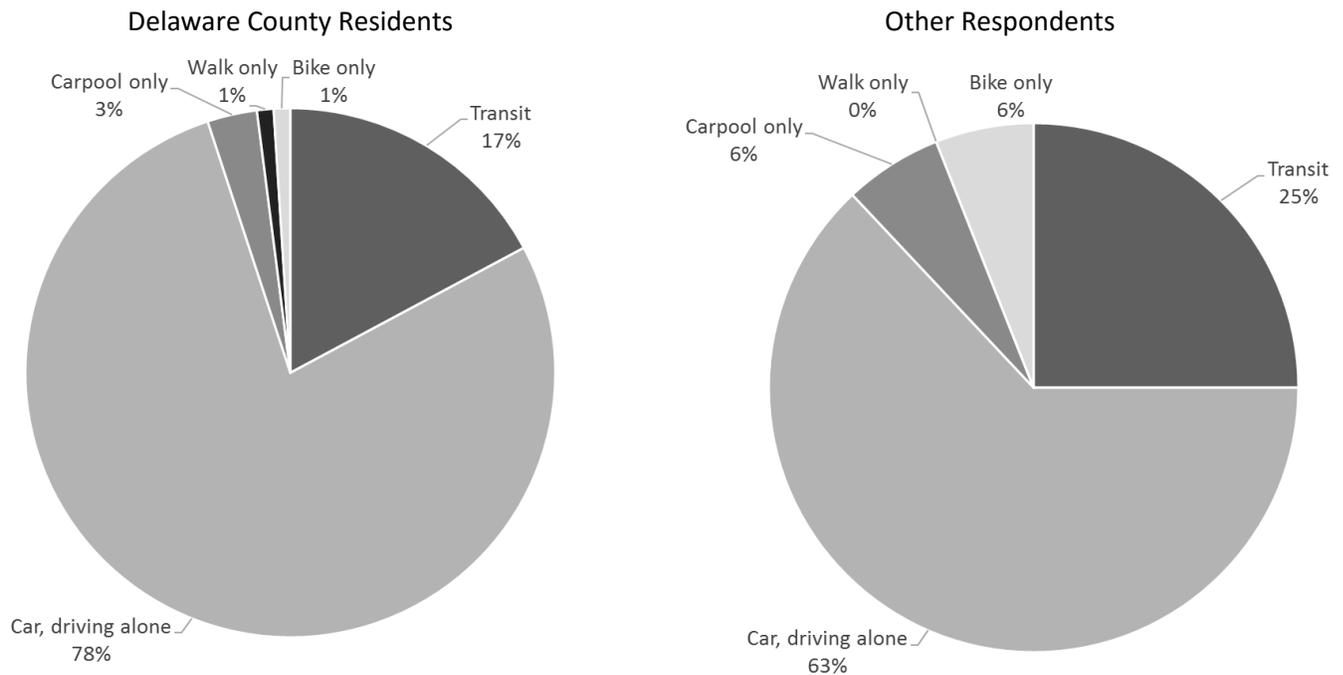
As mentioned previously, the modal share to work/school/other occupation of the survey sample is strikingly close to that of the County. Because this plan is meant to respond to the needs of the County on transportation-related issues, the accuracy of modal share is the most important element when considering travel patterns.

Table G-14: Modal Share to Work or School

Mode	Delaware County	Survey Sample*
Car, driving alone	73.7%	66.5%
Transit	10.4%	14.6%
Carpool	7.1%	3.2%
Walk	3.8%	1.8%
Bike	0.2%	1%

The charts below give a deeper insight into how Delaware County residents’ habits may differ from those of neighboring counties, particularly Philadelphia. The majority of both county residents and non-residents who responded to the survey drive to work/school/other occupation alone by car. Interestingly, smaller percentage of non-Delaware County residents drove alone, while a higher percentage takes transit, only bikes, or only carpools.

Chart G-1: Modal Share to Work or School



It is clear in Table G-14 that the majority of survey respondents drives to destinations every day. Yet, walking is the second-most popular frequent mode, highlighting the importance of safe and new pedestrian facilities.

In terms of travel time, the longest trips were usually those that involved taking transit. This could be due to a number of factors, including longer travel distances and service wait times. The table below reflects the statistical mode – or most commonly repeated value – for travel time reported for each form of transportation.

Table G-15: Travel Time

Transportation Mode	Common Travel Time
Bike or walk to transit	More than 40 minutes
Drive to transit	More than 40 minutes
Carpool	10-20 minutes
Car, driving alone	10-20 minutes
Bicycling	31 to 40 minutes
Walking	Under 10 minutes

The values above show that walking was most common for shorter distances. At an average pace, one can walk half a mile in ten minutes. At the same time, 11.5 percent of drivers claimed that their door-to-door commute to work took under ten minutes. It is possible that some of these drivers could walk to work, but choose not to. For example, if a driver is driving 25 miles per hour on a local road for four minutes, he or she will have driven 1.25 miles. This distance can be walked in 25 minutes or less. Survey respondents who stated that, if they had a choice, they would prefer to walk to work/school/other

occupation, gave a number of reasons for why they do not do so. Beyond distance and travel time, an absence of sidewalks was the most frequently cited deterrent. Some reasons are listed below.

"Depends on the day and the appointments I have...If I have appointments, I can't walk as I need my car."

"Distance."

"Prefer to drive."

"Would take too long."

"I do walk weather permitting."

"Sometimes laziness, time of day too dark and don't feel safe enough."

"There are no sidewalks on any streets from my home to my place of work."

Transit is the second-most popular mode of transportation to work in Delaware County, a statistic which is also reflected in the data collected through the *Transportation Plan Survey*. Furthermore, transit was the most popular alternative mode among respondents. Of those that responded to the question, the largest proportion – 30 percent – listed solely public transit as the alternative mode they would take to work/school/other occupation. However, a few factors are deterring these individuals from doing so. The most common reason among respondents was travel time: commuting by public transit would take much longer than driving. Below is a selection of the variety of reasons given for not taking transit, despite the desire to do so.

"Accessibility."

"Bus stops."

"Convenience."

"Cost, reliability, comfort, convenience, safety."

"Dependability of trolley times."

"Don't feel safe."

"House is not close enough to bus stop and I would have to make a transfer in Chester."

"I like door to door. Don't like standing out in the weather waiting for public transportation."

"That would take much longer than driving directly to work."

"My commute is much shorter if I drive."

"My age."

"No direct bus route."

"No train from Media to West Chester."

"Public transit would be more expensive and take longer."

"Public transit would take two to three times longer than driving. Also schedules are not compatible with my work hours."

"Quicker and safer to drive."

"There is no sidewalk between my house and the train station, I take the train when it snows but I have to walk in the street and it's a busy street and dangerous. Crossing the street to use the sidewalks is dangerous and then I'd have to cross back at another dangerous intersection."

"Timing of when trains come to get me to work in time. I'd have to leave a lot earlier. Driving gives me more flexibility."

"Woefully insufficient parking at SEPTA train stations."

Carpooling was another, less popular alternative, and respondents cited the following obstacles:

"Dependence on someone else."

"Hours of work, other employees don't live close to me."

Appendix G: Public Participation

10.6 percent of respondents stated that bicycling is their only preferred alternative to how they currently commute. This is much higher than the percentage of those who actually commute to work/school/other occupation by bicycle. The following are some reasons that were given for not bicycling.

“Dangerous roadways.”

“Distance and traffic-busy roads”

“Fear for my life. Drivers are discourteous to cyclists and very dangerous to them.”

High traffic areas.”

“No bike lanes.”

“No safe bike route.”

“Weather, and the unpredictable hours of my job are the two biggest limiting factors. I typically bike for 3 months out of the year until the weather is too cold or rainy. The last issue is that there are some dangerous spots on my commute that have no shoulders or sidewalks.”

Many survey respondents listed more than one alternative to their current mode of transportation to work. For example, some listed that they would like to bicycle or walk; however, safety seemed to be of primary concern in these cases. The following are comments from those who would like to bicycle or walk.

“Distance. Work place is too far and crosses too many dangerous roads.”

“I don’t feel safe biking to the grocery store, etc.”

“No shoulder or sidewalk most of the route.”

“Not safe and too far at times.”

“Too much traffic, feel it would take too long and dangerous.”

Travel to Destinations

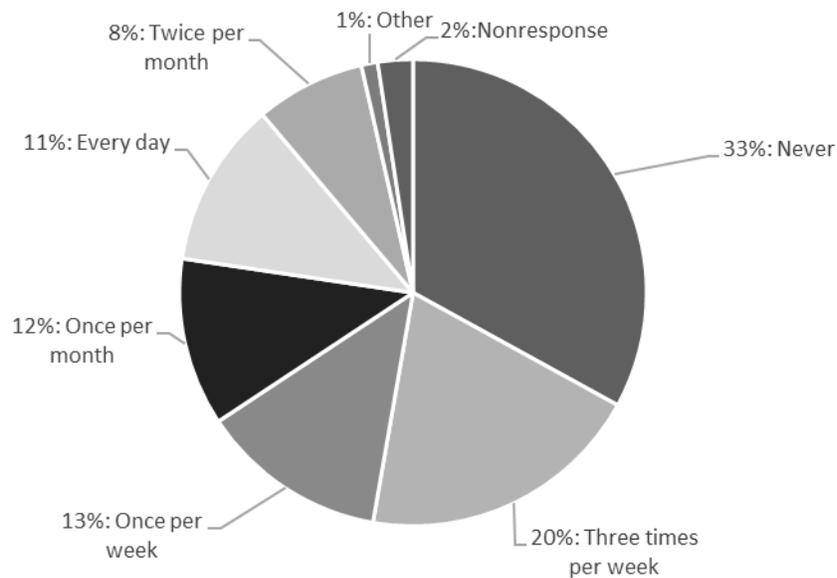
Travel to destinations is much different than travel to work/school/other occupation; one has fewer time constraints and may travel to activities that are closer to his or her residence in many cases (for example, for grocery shopping). The table below shows the percentage of Delaware County residents and other respondents that either drove, walked, bicycled, or took transit to destinations every day. The majority of respondents claimed to drive to destinations every day. However, a much lower percentage of respondents takes transit to destinations than to work/school/other occupation.

Table G-16: Modal Share to Destinations

Transportation Mode	Delaware County Residents	Other Respondents
Drove Every Day	47%	31.3%
Walked Every Day	11%	18.8%
Bicycled Every Day	1.2%	1.3%
Took Transit Every Day	2.2%	0%

As evidenced in the table above, the second-most daily mode of transportation to destinations among respondents is walking. The chart below shows the frequency with which all survey respondents walked to destinations. The majority of Delaware County residents that claimed to walk to destinations every day were from Haverford Township and Media Borough. This reflects that both areas have pedestrian facilities and are popular walking areas; it also highlights that these could be focus areas for active transportation initiatives. Understandably, many Philadelphia resident respondents claimed to walk to destinations every day.

Graph G-2: Frequency of Walking to Destinations for all Respondents



When asked their greatest concern regarding walking to destinations, respondents gave a variety of answers; most commonly, individuals said that missing sidewalks were a concern. However, all multiple choice options were selected at least once, and some provided other explanations, such as “laziness” and “bad weather.” The vast majority of respondents that would consider walking stated that more off-road routes (trails and/or paths) would encourage them to walk more. The majority of respondents were willing to walk between 11 to 20 minutes, and the second most popular time frame selected for walking was 21 to 30 minutes. In other words, the majority of survey respondents are willing to walk up to approximately 1 mile, and many are willing to walk up to approximately 1.5 miles to reach a destination other than work/school/other occupation.

The majority of respondents own a bicycle (54 percent) or have a bicycle available for their use (3.1 percent), and 40.1 percent do not own a bicycle. Nevertheless, an overwhelming majority – 61.5 percent – claimed they never bicycle to destinations. The following table shows the percentage of respondents that feel comfortable riding a bicycle on the ten facilities listed. The percentages shown are based on the number that responded to the relevant question (565 of 618 respondents). Respondents were permitted to select all answers that applied to their situation. In terms of how much time they would spend bicycling to a destination, the majority of survey respondents stated that they would consider bicycling for 21 to 30 minutes to a destination; the second most common response was 11 to 20 minutes. Therefore, respondents generally seemed willing to engage in active transportation for the same length of time (between 11-30 minutes) regardless of the mode (walking or bicycling).

Table G-17: Comfort on Bicycle Facilities

Bicycle Facility	Percentage of Respondents Who Feel Comfortable
Trail	92%
Residential Street	69%
Protected Bike Lane	58%
Bike Lane	53%
Detached Lane	52%
Elevated Lane	48%
Shoulder	27%
Sharrow	13%
Collector Road	8%
Major Road	2%

Unsurprisingly, the majority of respondents stated that more off-road routes (trails) would encourage them to ride their bicycle to destinations.

43.5 percent of respondents never ride public transit to destinations, and 21.4 percent do so once per month. The most common form of public transportation to reach destinations among respondents is regional rail; most respondents stated that they take public transit to restaurants and entertainment venues. Presumably, these establishments are located in urbanized centers and town centers that are located along the regional rail lines. Those who take public transit to destinations stated that they typically spend between 21 and 40 minutes to reach their destination, and for most, it is a one-vehicle ride with no transfers. An overwhelming majority of respondents stated that they would use public transit more frequently to reach destinations if more frequent service were provided.

Survey Respondent Comments

Respondents provided a number of excellent responses to the two open-ended questions in the survey. All completed responses are included in the Survey Workbook in Appendix H, and they can be searched by zip code. It is important to note that some of the public’s recommendations, such as widening U.S. Route 322, are already in project implementation phase. The comments were useful, extremely insightful, and – similarly to the other elements of public participation – helped inform the vision of Delaware County’s transportation infrastructure in the future.

Conclusions

The *Delaware County Transportation Plan Survey* was successful in collecting data about what County residents, workers, and visitors are concerned about with regard to travel around Delaware County. The questions were targeted, and helped gather information about behavior and attitudes toward alternative transportation modes. Understanding people’s attitudes toward public transit, walking, and bicycling is extremely important as congestion mitigation measures are analyzed.

APPENDIX H: SURVEY WORKBOOK

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19003	More safe bike routes is number one. More sidewalks. Total redesign of Haverford Road.	Please work to make major roads such as Haverford, Eagle, Darby, West Chester Pike, etc. safer for bicycle use.
19003	Bike lanes on all roads	No
19003	i would like to see bike lanes on Haverford road. The section from Karakung to Lancaster Ave is scary. And West Chester pike and Darby road.	Delaware county needs to improve its trail system particularly for bikes, foot trails,
19003	More walk signals at very busy intersections, such as on Haverford Rd at Ardmore Ave., and a safer crossing at the bus lane at Haverford Rd. at Ardmore Junction.	I hope that more and safer bike lanes will be prioritized.
19008	Have customer appreciation days and serve coffee, tea, or got chocolate at stations	N/A
19008	Easier congestion flow.	Road construction should be done over night hours...
19008	Traffic congestion in Delaware County is absolutely terrible. There are certain roads I will not drive on because no matter what time of day it is, it's always congested.	There is a terrible intersection where multiple people have either gotten hurt in accidents or some that has resulted in death. The intersection of 320 and springfield road in Broomall is a very dangerous one. Trying to come out of either the Marple Public Library or Candlewood Road is a nightmare. The timing of the traffic lights to allow cars to turn without traffic coming would be a huge improvement and would save lives and injuries.
19008	Bus shelters on West Chester Pike in Broomall would be great in bad weather.	
19008	There are several parks available in my neighborhood (19008), but walking access to them is limited. Kent Park, for example, is very large and has many amenities, however access is limited to driving only, even for the communities that border the park directly.	
19008	Safe bike lanes on major and minor roads.	Ability to turn on red light when there is a clear view of no on coming traffic.
19008	add another lane to I-476	control density on undeveloped land.
19008	Make the merges on the Blue Route logical instead of the sadistic mess they are now.	

Appendix H: Survey Workbook

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19008	More bike lanes and bike routes similar to what's in Chester county. Colored bike lanes.	Create more sidewalks.
19008	No I do not take public transportation.	No.
19008	More hiking trails	no
19010	EXPAND THE BLUE ROUTE TO THREE LANES FROM WEST CHESTER PIKE THEN SOUTH TO 95	
19010	safer roadways without distracted drivers	
19010	Traffic lighting system is pathetic! Make it flow far quicker!	Riding a bike with serious pollution spewing vehicles just promote cancers down the road. Need far more back routes away from vehicles. Need safe supervised bike parking to be assured it will be as I left it when I return to use it. Would help if business would be far more bike parking friendly with indoor or sheltered supervised parking. Also, public transportation should also provide for spontaneous routes depending on the passengers individual needs - via route mapping and scheduling software.
19010	less cars on the road	
19010	the ability to ride my bike to work	no
19013	The sidewalks need to be fixed in many areas if there any.	Nothing that I can think of.
19013	I don't know	No
19014	Better accessibility to public transportation in the Aston area. You really need a car to accomplish anything.	N/A
19014	No trucks on two-way roads	Quicker filling of potholes
19014	Door to Door service without a fee and increased taxes.	Love the County!!
19014	Rt. 322, gut it and start over. I would love safe biking trails that get you around delaware county without having to go on heavily traveled roadway. I know there was chatter about a bike trail but it doesn't seem to include my area.	Traffic lights are a mess. I routinely travel around Aston and Chichester. There are no turn signals on meeting house road and Chichester Ave, and along Rt. 322 coming out of Larkin's corner shopping center and the road across from it and it is a mess, but there are turn signals all along Rt.452 in Aston into RESIDENTIAL areas....why?

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19014	I don't bike, but my millennial children do. Need more/better/safer bike lanes.	
19014	People including drivers, pedestrians, and especially bikers obeying existing traffic laws and being at least a little respectful of other people. Better flow/ light timing	Better parking in urban areas
19014	Less traffic	
19014	add more crossroads in congested areas	
19014	Fix/inspect the bridges. Some bridges are crumbling (i.e. bridge on 322 over Pennell Road). If you are stopped in traffic under some of these bridges and look up it is frightening to see the concrete crumbling away (see above and bridges over I95 in Chester). Fix potholes on I95	322 merge on I95 is horrible. Blue Route no longer meets need of county - need to widen. Is 322 ever going to be widened - hearing this is going to happen for over 40 yrs.
19014	I like the train to the Flower Show. It would be great if more shows had public transit specifically for that show and gave discount tickets if you use public transit!	
19014	more bike friendly roads	none
19014	no	no
19014	parking... it causes a lot of congestion.	
19014	DO something to alleviate all the traffic congestion in Delaware County	no
19014	Less congestion on roads and add bike paths and lanes	Improve the availability and access to shared ride
19014		no
19015	More frequent regional rail trains. Regional rail ticket cost less than parking in Philadelphia.	I enjoy using public transport and hope that Delco will continue to make it a priority.
19015	Safer intersections with better timed traffic signals	
19015	The speeding, distracted and aggressive drivers	No
19015	I would enjoy more direct routes without having to go to the main hub and transfer.	no
19015	Resolve congestion areas Revoke bad drivers' licenses Restrict commercial trucks to off-peak times	
19015		No
19015	3 travel lanes on I-476 between #9/Rt 3 and I-95	No
19015	If the other drivers weren't such idiots.	no

Appendix H: Survey Workbook

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19015	Better bike lanes (protected or designated). Better/cheaper rail options to get into the city (in terms of frequency and location).	No.
19015	More Traffic lights and left lane turning arrows at busy intersections	
19015	road work to e done on 11 pm - 7 am shifts	n/a
19015	Road conditions	No
19015	None	No
19015	Better shelter, more direct routes	No
19017	More sidewalks	No
19018	Create areas for SEPTA buses to pull over on busier streets (i.e. Baltimore Pike) to allow traffic to continue to flow.	
19018	availability for more parking	just add more parking at stops
19018	Less stupid drivers. I have no idea how to make that happen. So I'm lieu of making people smarter, maybe more enforcement of traffic laws?	Thanks for caring.
19018	Timed traffic signals on major roads and smart lights on side roads that only change when traffic is present	
19018	A sidewalk along a busy residential street that leads to a nearby WaWa (Bishop Ave., Upper Darby, PA)	No\
19018	Make the BLUE ROUTE INTI 3 lanes from start to finish	What's up with digging up Clifton roads & adding big pipes ? What was the reasoning ?
19018	School zone protectio	School zone and school bus stop issues. There is a terrible intersection on the east side of Amosland Elementary in Ridley that the crossing guard can't handle. Partly it is her, but it is a difficult area to manage. Also, there are areas where traffic laws are broken on s daily basis (i.e. - People cutting through Penn Pines shopping center at high speed, making illegal turns out of wawa on McDade and 420)
19018	Less congestion on the roads (but I realize how many people need to use them each day). Only suggestion is to make public transit better.	

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19018	Something seriously needs to be done about texting & talking while driving. Hands free is acceptable. The road conditions are terrible in Delaware County. The traffic light timing is off in many parts , no smooth flow for traffic. Constant stop and start.	
19018	Cameras to capture people cutting into lanes at the front of the line when others are have been patiently waiting at traffic lights	
19018	Mandatory hands-free cellphone. People are way too distracted	
19018	Cleanliness. More direct routes. More personal space- like 4-5 people carriages so you won't need to stand or have someone stand over you (I know the latter is not possible, but it is a wish list)	I appreciate the survey. Thank you
19018	More traffic police to enforce safe driving on major roads like Macdade Blvd	More traffic enforcement would fix a lot of problems
19018	Safety	
19018	I have no real issues	No
19018	The bike lane and bike awareness of drivers needs real attention. Providing a safe lane for bikers and making it visible to drivers would be great. Also, having some sort of class or online training for drivers to be more aware of bikes could help with some of the unnecessary accidents.	A lot of issues i find on sidewalks are from overgrowth of bushes taking up half the walk. Is there no regulation on that?
19018	Services offered more frequently and on time	Make the transportation free for children under 15years old, every day of the week.
19018	Make Baltimore Pike, MacDade Blvd and Chester Pike 3 lanes.	We our overpopulated in this county and will always be congested.
19018	none	No
19018	Ease traffic congestion on major roads such as Baltimore Pike in Springfield and Route 322 in Twin Oaks and Upper Chichester as well as repairing potholes	
19018		no
19018	nothing	none
19018	better on time record and cleaner trains/trolleys	no
19018	Direct trolley service from Clifton Heights to the Courthouse.	no

Appendix H: Survey Workbook

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19018	Reduce traffic congestion particularly where the R3 line crosses at the street level and not on an overpass. Route 420 is always congested. And the Blue Route should have been 3 lanes the entire route from 95 to Plymouth Meeting.	
19022	MUCH harsher punishments for violators of aggressive and distracted driving. It is not safe to walk around or bike around. Cars are not aware or concerned with anything outside of their own vehicle. I would happily take transit or bike or walk more, but I do not feel safe sometimes, and I know that officers are as much a risk of this distracted driving as anyone else.	I am actually moving to Bangor Maine after spending my entire life (36 years) in Delco due largely to their much improved transportation infrastructure. The buses always run, the stops are convenient, drivers are courteous, roadways are sensibly laid out, pedestrians ALWAYS have the right of way, and bikes are given room on the road. We will become a one car household when we move (from 2) because it is much more convenient to move about without a vehicle.
19022	476 is a disgrace - way too much congestion thanks to Swarthmore! 322 merging into the fast lane of 95 North - that was brilliant!	Getting on 95 south at Stewart avenue is treacherous moving across 3 lanes when people on 95 going to 476 won't let you in
19023	Better timed traffic signals. More lanes for traffic. For instance, coming south on the blue rt the right lane ends about 0.5 miles BEFORE the first Springfield exit. Everyone blames Bob Edgar. He's dead. Lets make the right lane the exit lane to exit 5!!	Delco is over-populated and people don't want to take Septa if they can help it because of safety issues.
19023	there is an unnecessary amount is signals on the Sharo Hill line. Trolley drivers yank on the horn because cars drive thru the signaled area because the signal RINGS and lights up way before trolley arrives at the intersection. Cars are beeping their horns because the signals are activated yet no trolley is visible. Public transit in Collingdale is NOT community friendly. Public transit in Collingdale is any eye sore with all the signaling - blinking lights are disturbing to those with medical sensitivities!!	Delaware County Public transit has become a visual and auditory impediment down Woodlawn Ave.
19023	The one thing I would change is the frequency of the schedule on the western routes. Sometimes you have to wait an hour or more, if you miss the bus...:-(New fare system at SEPTA discriminates against those who only take public transportation once a week or less...

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19023	fill in pot holes, construction work done at night rather during the day	
19023	get the children, adults, pedestrians out of the streets when they are not in proper crosswalks or riding bikes without helmets. Recommend enforcing the laws regarding pedestrians, i.e. jaywalking, helmets under 12 - if the parents aren't smart enough or don't care enough to teach their children, ticket them. Enforce the current laws	Society has become very lax with regard to the rules of the road. Parking too close to intersections, crosswalks, stop signs, fire hydrants. Laws are not being enforced
19023	Enforcement of existing traffic laws	
19023	More biking trails. I currently ride the Chester County bike trails. I'd rather stay close to home and have a safe bike trail along Darby Creek - with pretty much flat trails - no major hills - starting from Darby along the creek to Radnor or elsewhere.	
19023	I would like to see a bike trail similar to the Chester County Bike Trail in Delaware County possibly starting in Darby Borough along the Darby Creek.	
19023	condition of roads, amount of congestion	
19026	I wish lansdowne ave between township line road and the lansdowne&Garrett rd lanes matched up end to end to make the flow of traffic less confusing to drivers and bikes and pedestrians by repainting the lanes so there is a center turning land and shoulder lanes for bikes and emergencies. Then the lane going down across the trolley tracks into Lansdowne will already be one lane and no need to hold up traffic patterns trying to merge and bikes get a shoulder to safely ride in the road with motorist commuters to share the road similarly like was done on Garrett road bridge into bishop ave.	
19026	Better shelters for bus stops that truly shelter people from the weather and are well lite.	

Appendix H: Survey Workbook

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19026		Speed limits and traffic violations are not enforced on major roads. While I know it is important for our police to be diligent where crime is concerned, I believe there should be more traffic police to enforce the speed laws. In my opinion, speed limits are NOT suggestions!
19026	Traffic is a huge problem. It can take over 30 minutes to go 5 miles.	
19026	Timing of lights...ex West Chester Pike	No
19026	Better enforcement of existing traffic laws. Speeding in residential areas is rampant. Crosswalks are not obeyed. Reckless driving on major roadways is dangerous.	No
19026	Better timing on traffic signals. I would rather travel at a slower speed and not have to stop. This would ease congestion. This is particularly true on West Chester Pike from Eagle Road to the Blue Route where poor signal timing creates massive traffic jams at all times of the day or night and leads to unsafe driving conditions.	More off road trails in southeast Delaware County
19026	Police should enforce stop signs. In my neighborhood, 4 out of 5 cars not only do not stop, they barely slow down!!	
19026	many lights in the township are not times properly. For instance, on State Road at City Avenue that light is not timed so that it matches the light at Drexline. So, there is generally a high volume of traffic along State Road sometimes running down to Burmont. Also, the lights on City Avenue at Route 320 are not times properly. Those are only two suggestions.	the traffic use to flow smoothly on the strip of road between 252 and 926, but no longer does because those lights are not properly timed. also, something should be done on Baltimore Pike between Bishop Avenue and 320. That traffic comes to a stop especially this time of the year. I stay away from that part of Delco because of the traffic. I expect those stores could do better if the traffic situation were resolved.
19026	We need sidewalks along Garrett Road, so those of us who live in Drexel Hill, can walk to locations along Baltimore Pike Safely. It's dangerous to walk along the shoulder, especially around the curve.	Nothing else I can think of at the moment.

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19026	<p>Timing of the lights - left hand turn from route 3 on to rt 1 going towards Drexel hill lets maybe 3rs go through. Make the merge from route 3 to North Bound 476 better - maybe both center and left lane merge? This is a major congestion area and so unsafe. Maybe barriers so you can cut over at last second?</p> <p>The entrance to Bonner Prendie from Landsdowne Ave - the left hand turn at the incline is so dangerous especially for new drivers!</p>	
19026	Please make pedestrian crosswalks safer.	Drivers who do not obey the signs for pedestrian crosswalks which is a state law. Maybe some police presence, especially at high traffic times.
19026	better traffic light timing to move traffic along.	how about getting schools and businesses to be more flexible in schedules to spread out rush hour traffic.
19026	Better enforcement of traffic laws. Too many distracted drivers holding or talking on their cell phones. Too many people running stop signs and speeding. I feel like the infrastructure is already 90% in place it's just stricter enforcement would hopefully correct people's bad habits.	N/A
19026	I would make walking more inviting by creating better environment for it. Parking is always an issue for more business development (near the post office is terrible).	
19026	N/A	No
19026	Fix potholes and broken sidewalks. Alleviate congestion on Bond Ave closest to Hillcrest elementary	Installing speed humps, especially on Kenwood rd where vehicles speed, go through stop signs and do not stop for school buses picking up and dropping off students!!!!
19026		None that I can think of
19026	Less congestion	
19026	LOVE TO SEE BIKE LANES, AND IDEALLY OFF ROAD LANES AND/OR BIKE OVERPASSES OVER MAJOR ROADS.	I FEEL OUR SOCIETY IS TOO CAR CENTRIC. I PREFER TO SEE MORE PEDESTRIAN, BICYCLE AND PUBLIC TRANSIT ORIENTED APPROACH.

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What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19026	Something needs to be done on Township Line Road between State Road and West Chester Pike. Haverford and Upper Darby Township. People drive too fast morning, noon and night. We need turning lanes. Too many accidents. Too many people make left turn heading north on Route 1 into Kohls parking lot.	
19026	Improve congestion!!	Car Share?
19026	More people using public transit, which necessitates public transit improvements.	Driving on residential streets is hampered by the numbers of cars parked on the streets
19026	Delaware county traffic is awful! Too many people live here using roads designed for a much smaller population	Widen the Blue Route!
19026	a green arrow light on township line and edmonds ave 1200 block , there is one on the havertown side but not the drexel hill side . Have seen many fender benders and close calls at this intersection .	
19026	make Township Line Rd safer, too many cars speeding way beyond the speed limit, flashing school light at Township Line Rd & Burmont RD, is a joke , i have seen many,many cars do more than 15 miles per hour.	
19026	I'd like to see the 110 and 111 buses and 101 trolley run on a more staggered schedule compared to each other. All 3 pass near my house & leave 69th at the same time.	Overall DELCO doesn't seem bike friendly, I usually drive my bike to Chester Co. to ride.
19026	slower speed limits are needed with enforcement	
19026	Synchronization of traffic lights on major roads. To much stopping and starting. And leave speed limits on major roads at 35 to 40 MPH.	Please keep the Democrats out of County Governance. They will only mess things up.....
19026	Relieve traffic congestion on 476 and RT3	
19026	Tell freak'n drivers to be more courteous!	DELCO needs to be cleaned up of trash!
19026	Specifically and clearly marked bike lanes and routes. Safe road shoulders	Please improve the roads and repair all potholes well.
19026	Too many junkies at stops. Needles and baggies are around the stops. Where there is drugs there is crime	Good People of Delco are moving out to chestco and bucksco. Because of places like Upper Darby Twp. With way too High taxes

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19026	<p>I would add sidewalks to at least one side of every street, and would require corner properties with tall hedges/bushes to trim them to a safe height that allows visibility of cross traffic.</p> <p>I would definitely install a "cross traffic does not stop"-type of sign at the intersection of Shadeland and Burmont in Drexel Hill.</p>	
19026	<p>Ease congestion. I will always take side roads/residential roads to avoid busier streets because I will not be held up by another vehicle. However that is not the case once I reach West Chester Pike to get on 476 every day. The backlog of traffic in the right lane is frustrating. Once on there it is okay until you reach Rt 30 and THAT backs up. If I go further (I realize this part is MontCo) the ramp to 76 backs up because of the merging in to two lanes and it's close proximity to the Gulph Mills exit</p>	<p>More recreational trails, please.</p>
19026	<p>Create a trail system</p>	
19026	<p>Better timed traffic signals (or re-timed on a regular basis...~3yrs) and more traveler information. i.e.: times on 476 to certain destinations. (VMS signs in arterials containing this info)</p>	
19026	<p>Speed. Drivers are distracted and speeding EVERYWHERE.</p>	<p>Police the school zones and neighborhoods to stop some of the speeding</p>
19026	<p>Better enforcement of 15mph in school zones. Living near an elementary school and also working at one, I see entirely too many drivers speeding through and our children are at risk.</p>	<p>Thank you for this opportunity!</p>
19026	<p>Better traffic management and less construction during peak hours.</p>	
19026	<p>Less congestion</p>	
19026	<p>More direct routes. More left turn lights. Better traffic light timing. Speed bumps on back roads. Rolling stop enforcement. Litter free bus stops. Option to buy 2 or 3 year auto tags.</p>	

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19026	More parking around 69th street station. Also improving the area around it to attract more people. Also would like to see more trails and nature paths in upper Darby.	
19026	Less congestion	No
19026	The local police need to control speed better! We need to add more train service to destinations	We need to control speed and trucks through residential areas
19026	Better areas to cross streets. Safer neighborhoods	
19026	More police to pull over cars speeding, making illegal turns, and not stopping at red lights/stop signs.	Township Line Road is dangerous. Stop cars from making illegal turns into and out of Quarry Center and Kohl's.
19026	<p>During my 45 years of driving, I've experienced many more cars on the road. Drivers have become more rude and aggressive.</p> <p>Police and judges should crack down on uninsured, unlicensed and DUI motorists. There should be ZERO Tolerance for such infractions. No second chances. This alone would reduce number of cars.</p> <p>Also, cars with obvious PENNDOT violations should be immediately taken off the road by police. More specifically, cars with dark windows and shaded licence plate covers. These cars typically are driven by aggressive drivers, and even potential or latent criminals</p>	
19026	Encourage ride sharing/ car pooling to reduce vehicles on the roads- limit # vehicles per household to reduce congestion-	
19026	Better use of stop signs with not all 4 way stops at every intersection	
19026	Pave the streets in my neighborhood. They are a mess and haven't been done in years. Look AWFUL!!	The conditions of the streets in my neighborhood are a disgrace considering the taxes we pay!!
19026	Septa that travels from place to place in the county without having to go into 69th street (I.e. Drexel hill to radnor)	
19026	more transit options, frequency of service	
19026	Better traffic light timing and stop people for texting when they are driving	texting when driving is very unsafe and will cause more accident

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19026	Add more bike lanes, add more bus routes	
19026	Bike trails throughout Delaware County connecting townships to one another like the Schuylkill Trail does would be marvelous!	Please ticket cars that speed along Township Line in Drexel Hill on a regular basis. It is very dangerous!
19026	I ONLY USE PUBLIC TRANSPORTATION IN BAD WEATHER AND IF WE GO TO PHILADELPHIA FOR CHRISTMAS TO SEE AN EXHIBIT.	
19029	Make Weekend transit in the suburbs more frequent.	
19032		To have more frequent buses. Also more buses going to other places without having to transfer so often.
19033	For driving my car, traffic light timing is very bad on MacDade blvd and Chester pike	no
19033	More left hand turning lanes and turning arrows Improved timing on traffic signals Wider shoulders on roads Better road repairs- too many potholes! More traffic signals at dangerous intersections. More bike lanes	The county has many old roads that need widening. In addition, new sidewalks and curbs are needed for safety- I am reluctant to walk places because I am afraid of falling on uneven, broken sidewalks or tree roots.
19033	Make the blue route 476 3 lanes and whoever did the work in Montgomery county do the work you know as soon as you hit Delco on the 476 it's a mess	We need sidewalks on major roads in Ridley Township
19033	Add a lane to the blue route and 76	
19033	Lots of drivers illegally using shoulder to speed by northbound blue route bottleneck from start to exit 5 in morning rush hour--ticket those idiots!	
19033	Have less frequent Septa trains that cause backups everyday	no
19036	More weekend service.	Nope you covered them all
19036	Better traffic rule enforcement.	
19036	Increase the width of existing roadways to make them more bicyclist friendly and safe - create a network. turning lanes to help ease traffic flow which makes it safer for pedestrians, bicyclists and drivers. An example, MacDade Blvd.	
19036	Lower fares, don't go on strike every 4 years, be reliable. Be safe.	

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19036	<p>First, thanks for the opportunity to voice my suggestions. I tend to commute from Delco into Penns Landing area in Philly. I mostly use Lindberg to get there. In parts of the ride there are huge amounts of trees and bushes that need to be trimmed that force you into the middle of the road. They definitely need to be looked at, as the majority are in medians on public right of way. The S 84th Street Bridge over Darby Creek in Darby Township is awful! How no one has been killed there is beyond me. There is no shoulder, or room to get across the small bridge there. On the bridge are jersey barriers on the sidewalks that seem to be doing nothing, and could be used to make a pedestrian/bike lane across the narrow bridge. For the sheer volume of folks that need to use this path to get to Lindberg, so they can access the city, this is a major hindrance. Even after the bridge is cleared there is no shoulder when passing by the Montlawn Cemetery. As graves are pushed up to the road, I do not know, other than creating a raised narrow sidewalk how you could make this critical transit area safer. The only other option would be to extend a bike path from Bonsall Ave in Darby TWP across Darby Creek to connect with the trails of Eastwick Park. All of the land there seems to be Wetland Greenspace anyway. Washington Ave, in Philly has multitudes of contractors who drop nails, screws staples and debris on the road. I have spent over \$200 in new tubes and tires on this road. Could the city purchase a small street sweeper for just the bike lanes? Last item, please widen the sidewalks on the West Passyunk bridge over the Schuylkill River. The bridge and sidewalks are pretty good, but the sidewalks on the west side of the bridge are terrible.</p>	<p>Overall I am super happy with how much the county has done, and how transparent the process has been. This has to be one of the best developing area for pedestrians and bikes in the country. Raised bike lanes would be great, but so would some safer options to cross the creeks and rivers. There are a lot of bike riders that just need to get to work, so a speedy bikes only lane next to the rail lines would be amazing. These could be like a bike expressway, with limited exits at Penrose, Passyunk and Gray's Ferry. Thanks for listening/reading!</p>
19036	ON TIME REGIONAL RAIL SERVICE	Yes lighting is terrible in my area (Glenolden), therefore I don't feel safe walking at night
19036	Fix road & traffic	No

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19036	I work at the Emergency Services Training Center in Sharon Hill and we could use a bus stop near our office.	
19036	YES! Make speeding fines through residential areas VERY STRICT - along w/ppl that pass and turn when older ppl are trying to cross streets, etc. some of what I see out there is criminal!	Nope
19036	BUS running more often	no
19037	No	I can ride for free and still will not use public transport.
19038	Bike lanes or sharrows on collector roads (especially ones connecting to transit stops in the suburbs). More frequent service on Septa bus route 77. Better coordination of train/bus and bus/bus connection times. Bike lockers at Septa stations.	
19039		Fix the problem of traffic backup on 352 where traffic backs up from 452 intersection to past Penn State. Often rreferred to as "the Penn State traffic line".
19041	Sidewalks on both sides of Haverford Road. And more attention to speeding drivers	
19041	A paved trail that connects Haverford Reserve to the regional trail system-. Being able to safely connect to other trails is key. The current effort to complete small sections is nice but inadequate, taking to long and does not provide a destination for bikers.	
19043	Add another lane to the blue route	No
19043	Regional rail to malls - Springfield, Christiana, Park City, Franklin Mills, KOP. Enforce quiet on quiet cars for Septa regional.	
19043	Better road surfaces	
19050	synched traffic signals	lack of lighting in residential areas is obvious to those who come to delco
19050	More buses on street.	No
19050	Timeliness, less distance between bus stops, better lighting at bus stops, more frequent offerings across the board to decrease overcrowding	

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19050	I would love to see either a bike lane (a buffered lane, especially) OR an additional bus route on Baltimore Pike from Church Lane to the 61st Street trolley turnaround. I see so many bicyclists attempting to use that stretch to cross into the city, and I'm sometimes one of them. It's just not safe at all--and I feel like this bike lane would only encourage more bike commute/less car commute. If I had to pick an alternative, it would be great to have a bus route travel down Baltimore Pike to provide easy connection to the 34 trolley line. This would make my work commute so much smoother, I would rely less on my car, and I would be encouraged to make more trips via bike or transit into the city for recreation.	
19050	Presently, we have very hazardous walking and biking on Providence Road between Lansdowne Ave and Darby Creek, with much walking to/from the Lansdowne Regional Rail station and buses on Lansdowne Ave. Also, I believe this is on the bike route between West Phila. and Swarthmore/Media.	We should have better signage throughout to alert drivers to give pedestrians (and bikers) at least the same consideration they would give other vehicles. I was nearly hit last night by an aggressive driver who turned in front of me when I was looking for cars that were turning toward me from the other direction. Police need to be alert for this kind of aggressive driving toward pedestrians and ticket those drivers to the max.
19050	Cleaner, more modern, safer facilities at 69th Street	No
19050	better timed lights	none
19050	dedicated biking/walking trails, for example, along Darby Creek	
19050	More and better bike lanes	No

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19050	improve pedestrian facilities on BBP on Providence Road in Yeadon going up the hill to Lansdowne Avenue. There are sections with no sidewalks, shoulders or safe places to walk. Because of limited road crossings across Darby Creek, there are many pedestrians who must walk on this route and no safe place to be. I would like to see side paths or sidewalks on BOTH SIDES.	We must create more continuous trails that connect to the CIRCUIT starting with Darby Creek all the way from John Heinz to Radnor Twp. I thoroughly support all the items suggested by Friends of Haverford Trails and Friends of Upper Darby Trails. I will send an email with the specifics to Tom Shaffer so that all my concerns are reported to DCPD.
19050	Not being penalized for buying a ticket on the train if there is no other option.	
19050	more frequent service on route 115	
19050	More frequent trains.	I live near Baltimore and Lansdowne Ave. in Lansdowne. This corner is served by the 109 and 113 busses. They arrive within 5 minutes of each other. It would be helpful if the schedules were staggered so that a bus to 69th street is available more often.
19050	More frequent buses on the 113 route. The bus is always crowded no matter what time of the day it comes.	I think that overall transportation isn't an issue in this area. Sidewalks could use some fixing in some areas. When walking with a stroller, it becomes difficult to push it and you're made to walk in the street. Some Sidewalks are bad and when it rains, they pond heavily, causing you to walk in the street. Bike lanes and safe places for bikes is needed. My son often rides his bike to school and I worry about the lack of safety in regards to the cars being so close and him crossing traffic.
19050	The overwhelming ugliness and the crowded conditions of the main spoke roads--Balt Pike, MacDade, Chester (W.Ch Pike and County Line less so). Dispiriting. Dangerous to pedestrians, bicycles, and civic life. Wherever possible, plant shade trees, shrink parking lots, add green medians and pleasant bike/walkways etc as a traffic calming device.	I think social status is a huge factor -- middle class people are embarrassed to be seen "naked" without their metal bubble in public (unless they're jogging), or worse, having to cede control of their precious "I'm so busy" time and wait at a transit stop. Thus almost everyone in my liberal town drives 4 or 5 blocks rather than walking, and many would never dream

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		of riding the buses / El with poor people. How to address this aspect? I also appreciate the practical difficulties of restructuring eastern DelCo to suit such varied transport needs. Thanks for doing your best.
19050	Frequency of buses	None
19050	More frequent service.	
19050		Unified signage for Delaware County for signs, trash cans etc.
19050	make the transportation areas more brightly lit, not dim and in more visible area where you're not scared about getting mugged.	
19050	Crack down on inattentive drivers who are texting, on the phone, and frequently don't stop at stop signs or run red lights	Get serious about the many causes of inattentive driving
19050	Congestion in Lansdowne on Baltimore and Lansdowne Avenue is awful. I wish there were safer alternate routes that are direct connect to main routes.	I feel there is more emphasis and improvements on areas close to the county seat and less work on transportation issues closer to Philadelphia in Delaware County.
19050	More bike paths	
19050	more sheltered bus stops and good lighting	the sidewalks in Lansdowne are dreadful. They are often broken, missing, uprooted by trees or have hedges encroaching on the sidewalks. It used to be a good place to walk.
19050	Improve traffic flow	
19050	Change the timing of the new stop lights in Lansdowne. They are too long and only allow 3-4 cars at a time.	See #39
19050	either decrease the vehicular traffic in some way or provide more bike- and foot-safer routes. i walk home to lansdowne from 69th St for exercise and whether i take garrett rd, marshall/plumstead of 69th/long ln, there are scary stretches without good lighting and with lousy sidewalks. in some spots on garrett i actually have to walk IN the street for a bit.	this may not be a county issue so ignore if so, but: traffic volume + road design near of lansdowne ave where it meets baltimore is inadequate, and many many cars cut into the surrounding neighborhoods to bypass traffic lights. perhaps the lights are ill-timed too, i don't know. but volume is too high for the roads there. lansdowne ave is too narrow for the volume.
19050	Remove vegetation overgrowth and make sure sidewalks are not cracked.	

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19050	Less aggressive driving and distracted driving.	More parking is needed at regional rail stations.
19050	More trains/trolleys, fewer buses. Buses are so hard to read on and get stuck in traffic.	I love Philadelphia's narrow one-way streets. It makes it so friendly to pedestrians! This is something we should work to maintain.
19050	Put a light at the crosswalk of Baltimore Avenue and Runnemeade in Lansdowne	No, but thanks for asking
19050		
19050	create a better bike route around Hoffman park.Scottsdale road is lovely but very dangerous because there is no shoulder or sidewalk	I live in Lansdowne because of the walk ability and access to transportation. But we do need more lights on Baltimore Ave(esp near Runnymede).I see a trend toward alternate (to car)forms of transportation becoming more socially acceptable. Removing the stigma of PT would improve the neighborhood feel of the area, along with the obvious congestion and environmental impact.
19050	The roads need to be repaved. There are too many bumps and holes. Not good for the cars	
19050		
19050	We need better and more bikes lanes	
19050	Traffic calming measures on busy roads like Marshall ave.	We desperately need a controlled crosswalk in front of Historic Lansdowne Theater - so many near misses involving children.
19050	Fewer cars on the road.	There needs to be more enforcement at crosswalks on busy roads.
19050	We need stop sign on Union Ave and LaCrosse Ave, in Lansdowne, as it's difficult to cross the street to go to the Post Office.	Yes, at the corner of Highland Ave and LaCrosse Ave, there needs to be the signs for fines if the motorists don't stop for the stop signs. Many just pause, some just go through.
19050	The 7:01 train would be on time and would have 5 train cars.	I really wish cars would actually stop for pedestrians in the crosswalk across from the parking lot in Lansdowne (across from the old theater). It would also be nice to have better way to cross the street in front of the public library - maybe a pedestrian-triggered traffic light?

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19050	Please stop catering to automobiles in urban development. It's bad for safety (including for automobile drivers--2 of my car-driving friends have been killed this year in bad accidents caused by inattentive drivers, another is paralyzed, and yet another friend, a bicyclist, is in a coma from a hit-and-run driver!) and bad for the environment. We need real alternatives for people across all ages and abilities.	Environmental concerns--in addition to energy, air and water concerns, how much of the litter that we see is tossed out of cars?
19050	Heated transit stops.	
19050	add more service on 115 bus	
19050	none	none
19060	Add a train from the Concordville/Chester Heights area to Collegeville area.	no
19060	Actually have some sort of transportation plan with funding to implement. It seems like it's just a hodge podge of uncoordinated activities. Roads aren't so much engineered as just paving over whatever.	The intersection of Baltimore Pike and 451 is insane. Traffic backs up northbound (toward Media) for a mile purely due to poor traffic signals.
19060	I think certain intersections and road congestion need to be addressed desperately especially with the growing population of residences in my zip code 19060. The Foulk Rd/Concord Rd/Valleybrook/Chelsea intersection is awful in design and is always backed up with cars/congetion. There is no good way to get into Aston. Typically 452 North (Pennell Rd) is always backed up as well. The Garnet Mine Road access to 322 is so dangerous. Something needs to be done about this traffic pattern to make it more safe. People driving cars don't follow the signs and people make left turn all the time from 322 onto Garnet Mine Road. Also, traffic on Baltimore Pike North up by the YMCA in Media is terrible as well. The traffic light at 452/Baltimore Pike is very short for cars trying to travel straight through this light on Baltimore Pike and there is typically always traffic backed up here!	I would love to see more biking/running paths in my area as there are very few. In order to get to any you need to drive to a large park like Ridley Creek. I would love to see trails incorporated in with our town of Garnet Valley.
19060	Bike lanes to and from public places like shopping eating.	
19060	widen 322. Time traffic lights better at Pennell Rd/ Concord Rd.	

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19060	Train to Wawa	
19060	<p>The intersection at Concord/Foulk/Valleybrook/Chelsea roads is frequently a nightmare. I will go out of my way to avoid this more direct route because the lengthier drive is often faster.</p> <p>Also, there should be a safer way to turn left from 352 onto Linvilla Road. There is a turn lane, but we desperately need a left hand turn light. Cars frequently have to pull into the intersection and wait for the light to turn red before even one car can turn left during a light cycle.</p>	
19060	Stop building so many new residential developments with no thought or plan as to how the roads will accommodate all the traffic & how it will impact overcrowding in schools	
19060	More sidewalks or trails in suburbs. Roads are too narrow and hilly to walk/bike safely. Kids aren't safe biking even around neighborhood due to people speeding through to avoid traffic lights on main roads.	Timing of lights on main roads. More safe turning lanes. Confusing or outdated exits on highways. 322 near foulk rd is horrible-- GPS nightmare for out-of-towners. Accidents weekly!!
19060	Connect all adjacent developments with Safe walking and bicycling route or crosswalk	You can not walk or bicycle to +95% of all adjacent developments. I live 1 mile from GV high school with 4 developments between my house and the school. I can not walk or bike to the school w/o walking on 3-4 very dangerous roads that do not have sidewalks or bike lanes. They only have gravel culverts with high speed traffic.
19060	More recreational trails and open space.	
19061	On Meeting House Road in Boothwyn, PA there are NO sidewalks on the south side making it difficult for our children to walk to school. They either have to walk in the grass. Also, the sidewalks on Meeting House Road near the Middle School are in horrible condition. If it rains, it puddles and freezes in the winter. If there were more sidewalks, I believe more people would walk around town creating less congestion on Chichester Ave.	I would also like to comment on traffic congestion on Chichester Avenue during rush hour AM & PM. It's horrible. Not sure if the traffic lights are not synced properly, but it is a nightmare. Also there should be turning lights on Meeting House Road at Chichester Avenue especially during school hours. It's impossible to turn onto Chichester Avenue.

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19061	Fix shelter's of the train stops and lighting and maybe even security camerasand these detour routes in these small community where traffic makes it difficult for local residents to get out	When 95 is gridlock we suffer in the small community along the Delaware River where 291 can handle the traffic till it hits Trainer and Marcus Hook where it's single lane with lots of children and elderly to get to 495 or Naamans Rd ,, and why would someone change the Lane's in Marcus Hook by the refinery from 2 to 1 lane .
19061	The intersection of Concord Road and Chichester Avenue. There should be a left turn lane when traveling West on Concord Rd to get onto Chichester Ave. Seen a lot of close calls for accidents with cars going straight using the right turn lane.	
19061	Less congestion, less personal crime	No
19061	At Chichester & Meetinghouse Rds. in Boothwyn, left turn signal in all directions. Also, open Floral Lane access to Conchester Hwy.	No
19061	Driving is needed because of the way our county is designed. You can t just walk to a store or market!	
19061	Resort to odd and even last digit of licence plate as utilized in 1970's during gas crisis,non commercial vehicles would only be able to drive on odd/even daily rotation during rush hours,unless it requires medical visit or unavoidable instance/holiday travel,etc.documentation required or stickers issued by state for students,etc.for nominal annual fee,and apply only to densely traveled areas such as urban areas interstates etc.! Such measures will be implemented sooner or later as current volumes of traffic are and will be unsustainable	Stricter penalties on par with DUI penalties for cell phone use combined with stricter enforcement
19061	Regional rail line scheduling - change the time of the 5:14 p.m. Marcus Hook line since it never comes at 5:14 p.m. like the other 5:14's.	
19061	Better stations for Reginal Rail	
19063	realtime data on traffic status and transportation issues.	Motorized scooters are a big benefit to transportation needs.

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19063	Enforcement of traffic laws regarding cyclists. Prohibition of cyclists on roads without a 3ft shoulder and on roads where the speed limit is >25mph.	
19063	There are no instructions related to fares or how to pay. The main reason that I don't use public transit is that it is confusing and if you mess up you get yelled at.	
19063		
19063	Septa really needs to significantly improve their regional rails. More reliable service is a must. Canceling trains due to crew shortages is absolutely outrageous!	More bike lanes!!
19063	Parking availability at train stations Drivers allowing right of way to pedestrians in cross walks, particularly on providence road at Holy House Condominium	
19063	Safety	
19063	My most personal and immediate concern is the congestion in Western Delaware County (Middletown Township), where I travel by vehicle the most. My secondary concern, for the many that may use them, would be more available and safe pedestrian and bike paths, with connections to public transit, which may help alleviate vehicular congestion and benefit the environment.	In Western Delaware County, I daily see large SEPTA buses with only 2-5 passengers. It seems a waste of money and unnecessary addition to air pollution. Although I wholeheartedly support public transit, I would love SEPTA consider smaller buses on less traveled, suburban routes. Smarter usage.
19063	I live in Media borough. I enjoy biking within the borough and would like to ride to outside the borough to other locations but no bike lanes and narrow roads with no shoulders keep me from doing so.	No
19063	More sidewalks	No

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What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19063	I live near the Baltimore Ave - Olive St. Intersection where drivers routinely run the Baltimore Ave stoplight after it turns red. By the time the "free" flowing traffic has passed through, it's almost time for your side (as a pedestrian) of the light to turn red and you have to rush across the "Pike" to beat it. Very annoying and getting worse.	I think a regular plan to trim tree branches overhanging major thoroughfares is necessary - particularly on older trees. Every time a major rain/snow storm with high winds comes through, there's a good number of large branches that end up on the sidewalks and streets. I live on Baltimore Ave where the problem occurs regularly. On one occasion a very large branch broke off and struck a car below. The driver wasn't injured, thank God, but the next one might not be so fortunate.
19063	I really like the idea of having sidewalks and bike lanes. I really wish there were sidewalks in my neighborhood and ideally every street because it's a whole lot safer than walking on the street especially on the roads in my area, which have many twists and turns that could cause a pedestrian to be in harm's way. The sidewalks could double as bike lanes/paths as well thereby killing two birds with one stone. Delaware county's safety would greatly benefit if sidewalks were installed on all roads that don't already have them	
19063	Fix I 95 in Chester area. Add second level so traffic flows better.	Delaware County needs walking and biking trails. Also sidewalks should be added along all major roads.
19063	Delaware County is notorious for reckless drivers that run stop signs & traffic lights, speed through residential neighborhoods, block intersections on light changes, and aggressive driving behavior. I would not consider walking or biking anywhere near a public road until these problems are resolved. It's risking your life even in a vehicle, until these problems are resolved. They should be addressed first vs. adding construction projects at taxpayers expense.	
19063	Way too much new housing, stop destroying historical homes/areas, fix congested areas	

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19063	More biking, walking trails to destinations such as transportation connections and retail and recreation facilities.	
19063	Ease traffic - somehow - on 476	Can we please have school zone lights turned off when school is closed?
19063	I don't want to see more roads or more lanes, but there has to be a better way of moving traffic around the Granite Run Mall area. It shouldn't take 20 min to travel 2 miles.	
19063	better stops	no
19063	parking in Media	
19063	synchronize traffic lights	Improve intersection at 352 and 1.
19063	Enforcement of basic driving laws. People run stop signs, drive/push through red lights and block the intersections making traffic worse, distracted driving and speed. It has gotten out of control in Delco: the area around Rt1 & Sproul is a nightmare, Township Line is frightening and despite deaths on that road nothing seems to be done, the Media/Middletown area seems to have daily accidents on Rt.1 and the bypass - it's ridiculous.	The impact of developments/shopping centers has greatly impacted transportation, and planning commissions have to do better to work out density and road/transportation permissions.
19063	Better Timing at certain Traffic Lights, some are way to short while others are way too long.	If you're going to let mini cities be built you need to make sure the roads can handle the additional traffic load. Most CANNOT handle the usage they have today.
19063	TIMING ON THE LIGHTS COULD BE MUCH BETTER.	NA
19063	Improve road conditions (pot holes)	
19063	Timing of traffic lights. Left turn arrows on to short for some intersections.	
19063	Installation of sidewalks nearby residence to make walking safer	
19063	476 needs 3 lanes of traffic each way from Media to 95	Texting and Facebook while driving is the worst problem right now.
19063	PLEASE put in a traffic light at Penncrest High School!!!! Second request-fix many potholes.	In addition to a much-needed traffic light at Penncrest High School, there should be sidewalks and bike lanes/paths for students and teachers to travel to/from school safely.

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What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19063	Exiting Riddle Hospital needs a left turn arrow.	The left turn arrow from 452 south onto route 1 north is too short. The timing at this intersection is very poor
19063	<p>Neighborhood roads need to be restricted to commuter and through traffic. Major arteries need to be widened to accommodate increasing traffic so no one cuts through neighborhoods. I live on Old Forge Road in Media/Middletown and the speed limit needs to be reduced from 35 to 25 (signs actually conflict; some say 25, some 35). Commuters SPEED right past my kids standing at the bus stop doing 45 mph in the 400 feet they have between stop signs. I have asked the state police to sit in my driveway to easily catch speeders but they are too busy...additional traffic slowing devices are needed. A better timed light for right turning traffic from Old Forge onto 352S is also needed...timed with the light at Barren/Pennell. Traffic is always backed up through the Old Forge intersection and you can't turn even when green. The 352/452 intersection is also dangerous to left turning traffic and needs to be widened with turning lanes. Thanks for listening.</p>	
19063	Better timing at traffic lights and more left turn signals at major intersections (such as Knowlton Road and 352). Better enforcement of traffic laws regarding no left hand turns (such as the intersection of 352 and the Media Bypass).	
19063	Anything for less cars on the road. Biking and Public Transportation improvements. I live in a pretty walkable area, but outside of that I pretty much have to drive. Unless I'm going to Philly then I will occasionally take the train.	
19063	More sidewalks and bike lanes. Better enforcement of traffic laws (speeding, stop sign violations, unsafe entering into traffic from side streets, parking lots).	I sure do appreciate your asking for this feedback. I hope you will use it to inform planning and to improve traffic patterns in the County. It's getting so congested at times that it's unpleasant to live here.
19063	Better traffic light cordornation	None
19063	better timing on traffic lights	we do need more bike lanes

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19063	Enforcement of stop signs. Too many rolling stops even with pedestrians around	
19063	More sidewalks, preferably with buffers. Street lighting along sidewalks on busy roads would be nice, too. Also complete bus shelters! It is extremely depressing waiting for the bus by those poles. Plus it looks uncomfortable for the elderly and/or disabled.	
19063	Timing of lights in Media on Baltimore pike intersections Rt 252 and Batty Road	
19063	More roundabouts - I think the new one in Swarthmore works well for controlling traffic	
19063	Lights at Riddle Hospital need left turn arrow when exiting the Hospital.	Intersection light at Routes 1 and 452 needs longer times for left turns.
19063	Dedicated bike lanes or paths between towns and communities	Yes. Employer support and incentives for cycling and EV use.
19063	More sidewalks and crosswalks!!! We encourage an anti-pedestrian culture by refusing to install them. Also, need to extend regional rail to western suburbs.	
19063	More enforcement of traffic laws	
19063	My street has no sidewalks/shoulders	I would love to take public transportation, especially if there were more parking at the transit stations. It is entirely frustrating to select a train for travel plans, drive to the station and arrive well in advance, not find a parking space, And Then, have to drive downtown ANYWAY, and NOW, AFTER CAREFUL PLANNING AND EARLY DEPARTURE FROM HOME You're LATE!!!!!!!!!!!! AND you may not have the cash to pay for downtown parking
19063	Better cycling accomodations	Improve on-time performance of regional rail
19063	Less traffic	

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What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19063	I really enjoy biking to get places in DelCo and have no problem riding far distances to do this. However, it is very scary biking on roads that have no shoulders when people are also distracted drivers - texting, talking the phone, and speeding. So i think having roads with bigger shoulders would lessen my fear. It would also allow for more walking/running. I also run to get places sometimes. There are some roads that make it almost impossible to run or bike to get to certain places....or cause you to have to make your journey much much longer, to avoid the very dangerous section. Thus, if more roads had wide enough shoulders I would be happier, although having a trail specifically for biking would be phenomenal.	Why is the speed limit on Baltimore Pike between Media and Swarthmore 45 miles per hour? I live just off this road near the Blue Route and people drive 50+ mph in this section and blow red lights due to excess speed. It's so dangerous and seems to be no reason to allow such speed in a residential area. I would like Delco to take a look at reducing the speed in this section.
19063	reduce traffic. stop building in delaware county. too congested.	please work to alleviate the heavy volume of traffic off of 252, bishop hollow road, and providence roads in upper providence and newtown townships. thank you.
19063	I don't use it often enough to give advice. I will only take the regional at times to go to the city once in a while. Any other methods of transit, I don't feel safe.	Nope - maybe stop building additional housing communities. We are getting over-populated.
19063	Some peace and quiet!!!	Stop sign only on one side of street - Veterans Square and State Street in Media - walking very dangerous for pedestrians.
19063	Can't really say.	No
19063	Add real-time, realistic line-specific updates to yr website.	Sadly, clean restrooms anywhere would be a great breakthrough. There are pretty good ones at 30th St. There nasty dirty ones at 69th St. I'm not aware of ANY elsewhere. It would be nice, but probably not realistic.
19063	More sidewalks and more parking at stations	
19063	More attractive & comfortable bus stops (I live in Media). More frequent evening train service.	
19063	More bike lanes and bike parking	

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19063	more biking programs for kids Making it safer for kids to walk/bike to their activities or to see friends Bike safety programs in schools	Thank you for asking. Make non-vehicular traffic a more desirable transportation option.
19063	More trails	
19063	Some dedicated bike lanes	No
19063	improvements for cyclists	
19063	Separated or dedicated bicycle trails and sidewalks.	No
19063	Safe bike lanes in densely populated communities.	
19063	Greater transit coverage throughout the region. Especially more transit options from suburbs to airport.	
19063	slow traffic and improve walking access at intersections on 252 between the rose tree park and nether providence for walkers and bikers.	open the 3rd street bridge in media; getting to businesses on macdade blvd is a harrowing experience in some areas.
19063	less congestion	
19063	Better real time arrival and more comfortable seats with Wi Fi	I enjoy driving but the traffic by Rocky Run YMCA is what drives me crazy coming home
19063	Just too much traffic	Not at this time
19063	Make county roads more amenable to biking - more bike lanes or even marked shoulders. Something to improve auto traffic congestion points/bottlenecks - e.g. Route 1 in Middletown from Route 352 interchange up to and through Route 452. Baltimore Pike from Route 476 interchange east through Springfield and Upper Darby Townships - traffic signal timing improvements, I think.	County roads need to become more pedestrian and bike friendly/easier to use for pedestrians and bikers. Not local roads - but arterial roads - Route 1 from Media West, Baltimore Pike, arterial roads at interchanges. Traffic bottlenecks - such as those cited above - should be addressed in a variety of ways.
19063	mORE TRAILS	NO
19063	More bike lanes, shoulders, Watch for cyclist sign under stop signs!	Some Septa buses are not carrying any passengers sometimes. The routes that carry few, or no passengers should be adjusted, so that the buses do not run, at that time or place.
19063	Improve road infrastructure and timing of lights.	NO

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What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19064	Better time traffic lights to ease congestion. Increase speed limits to move traffic along. Ticket vehicles that ride in the left lane (should be for passing only).	Traffic lights need to be better timed to keep traffic flowing.
19064	Have traffic flow better on Springfield Road, especially during morning and evening rush hours. A typical 10 minute ride to and from work takes up to a half hour some days.	No
19064	Road conditions	No
19064	finish road work to eliminate the detours	no
19064	Timing traffic signals to keep traffic moving.	Traffic message boards to indicate problems or incidents/areas to avoid.
19064	The condition of the roads. Route 420 between Powell Road and Baltimore Pike in Springfield is horrible.	You did not give the options to select none for things such as where do you ride a bike to, especially after you have selected that you do not own a bike.
19064	Aligning traffic signals w/traffic patterns (e.g. - BAD - 19064 1. left turn light at 420/S Rolling Rd - you can sit there through 2 full signals, even thru lite traffic patterns 2. Baltimore Pike is HORRIBLE in every zip 3. Route 1/320 intersections 4. commute traffic with trains Secane train station, Morton Train station. GOOD - the changes in Media (Providence Rd & Rose Tree Roads.) And why on earth does traffic at major intersections have to stop while trains load and unload for regional rails & trolleys?	Too many stop signs, especially in Drexel Hill. Stop signs serve a purpose, but at every corner can be more of a distraction. And one of the options regarding commuting with a bike - is the option for safe bike storing/parking. I don't think I saw that.
19064	Improve bicycle infrastructure with dedicated bike lanes, sharrows and off road paved trails where possible.	
19064	bus or rail routes that connect suburban stations without going to 69th street.	
19064	I cannot use the 101 and 102 trolleys because they are not handicapped accessible(I use a walker)	
19064	Widen 476 south of Upper Darby Exit	
19064	Wider roads or shoulders/bike lanes	
19064	Traffic congestion needs to be fixed and there needs to be more bike friendly roads.	na
19064	Additional off road bike trails	No
19064	User friendly bike lanes	

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19070	More bike racks at train stations with more lightening so we can lock our bikes without fear of them being stolen or damaged. More people are using bikes to get to train stations on and they only have 4spots that are always full.	No
19070	Late night regional rail service to Center City, Philadelphia	No
19070	more police to hand out speeding tickets and red light violations on Baltimore pike	
19070	Widen the blue route between I-95 to route 3 and change the south exit to I-95 with better signage Keep up speed you have a full lane ahead	Get route 322 completed its killing the traffic and is dangerous. Route 1 through Middletown Twp, maybe some day the development at 1 and 452 will proceed, in the meantime Widen the intersection as if it were going to be built its killing the traffic in the area.
19070	More pedestrian crosswalks, especially near transit stations, such as regional rail stations. More enforcement of the traffic laws by local police. Too many reckless drivers using cell phones, ignoring stop signs and traffic lights and speeding.	
19070	more frequent train service on weekends	When will Media train line service be interrupted for the major bridge repair or replacement?
19070	easier access and better routes	no
19070	More rigorous enforcement of traffic laws on the Blue Route during rush hour. Get the reckless drivers off the road.	no additional comments
19070	more frequent septa rail service	
19070	More parking for commuters and cheaper transit pricing	
19073	Bus signal priority on West Chester Pike. Transit connections (circulator bus service?)from 19073 to Regional Rail in say, Villanova (closest Regional Rail stop).	
19073	better traffic management, cooperation between municipalities to coordinate signal timing	no
19073	None	No
19073	Sidewalks in my neighborhood! Also improvements to 252 for traffic	No

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What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19073	Clean up the sidewalks on residential streets. "Use and Occupancy" requirements for real estate transfers don't help when people have been living in their houses for decades.	Nope
19073	The traffic and congestion in Delco is horrible, especially in Newtown Square, it's like the Exton of Delco	Yes if your going to put out a survey spell check it and question #12 is wrong!
19073	too many distracted drivers/ aggressive drivers	
19073	Less congested roadways, better road conditions (potholes)	Make it greener!
19073	Avoiding over development - more thought involved in development to avoid total gridlock. Building the infrastructure BEFORE adding a million shops. Delaware county is much worse than Chester County regarding total gridlock/traffic mess. They build roads decades after creating a traffic problem - playing catch up. And having distinct bike lanes (where people won't be run over if they want to take an alternate route - the shoulder of a busy roadway is not enough). And having sidewalks for walking in town - similar to Bryn Mawr.	
19073	A sign at Bryn Mawr Ave. Alerting drivers to watch for oedestrians.	No thank you
19073	The traffic is horrendous, particularly on Route 252 between Paoli and Media. And with more building taking place, all signs indicate the problems will only get worse. Construction of some sort of by-pass or adding additional lanes would help alleviate some of the congestion, as well as better timing of the traffic lights.	

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19073	<p>Marple-Newtown school district busing is terrible...they will not come into the Liseter development further than the main clubhouse. Additionally, I have 2 children that go to Episcopal Academy which is direct adjacent to the Liseter development. Marple-Newtown busing will not go directly to the school in the morning...instead there is a 40 minute ride that includes a transfer station. The issue with busing to EA is unacceptable and adds to the heavy congestion in the morning along 252 and Darby-Paoli road - many parents drive their kids to school because of the poor busing situation.</p>	<p>There is no safe way to walk into the commercial part of Newtown Square from the areas to the north. No sidewalks along 252, no bike lanes - nothing. We would enjoy walking to restaurants and shops (e.g. the new Whole Foods and restaurants like Casey's and Fellini) - but this is currently not safe.</p>
19073	<p>Improve traffic. We don't need more side walks unless we want a city feel. Traffic is awful and residential planning is left up to the townships which are creating these horrible traffic problems.</p>	
19073	<p>Traffic laws (4ft law, for example) need to be enforced - too often cars/trucks have come too close to me on my bicycle. Bike lanes should be considered in all road work(thought this was a state mandate?). Shoulders should not all be made into turning lanes and eliminate safe places for cyclists.(Also eliminates space for emergency vehicles) North on Rt 252 at Goshen Road, the made the shoulder into a right turn lane and now there is no where for cyclists to be safe there. This has become common place for motorists to use "road shoulders" as a turn lane, because they're too impatient to wait. The new turn left on Red law should be repealed - too many people will abuse it like they currently abuse the right turn on red law.</p>	<p>I would invite law makers and enforcement agencies to ride in traffic some time to see what we're up against. I would be happy to do this in the spring or some warm Sunday.</p>
19073	<p>Bike/ pedestrian walkway along busy roads especially 252 south of route 3.</p>	
19073	<p>sidewalk and widen 252 below route 3</p>	<p>timing of traffic lighjts can be improved to facilitae traffic flow</p>

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What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19073	Sidewalks along Rt. 252 south of Rt. 3 in Newtown Square. So much new housing & development in Newtown require sidewalk. Worker are unsafely walking on narrow shoulders along Rt.252 south of West Chester Pike!	No
19073	Better traffic signal timing on West Chester Pike in Newtown Square	
19073	Alleviate congestion.	No.
19073	I would like to see my local roads widened with improved lighting and the removal of obstructions in sight lines -- elimination of shrubbery that hides intersections and the straightening of very curvy roads.	Yes, my neighborhood is poorly served by bus transportation and a mile to walk to the bus stops on weekends is too far for senior citizens. My neighborhood needs busses to be routed into the shopping centers, because it is suicidal for slower walking senior citizens to cross West Chester Pike on foot. The pedestrian walk lights do not allow sufficient time and the drivers are too impatient.
19073	adding a sidewalk on PA-252 from Cornerstone Drive / Troop Farm Road north to PA-3 (West Chester Pike)! It is critically needed.	the congestion on the roads around Newtown Square are terrible; there seems to have been NO traffic study or traffic planning when all of the new housing was approved. very bad!
19073	better street conditions	
19073	More sidewalks	I would walk to stores if there were sidewalks
19073	More bus service connecting rapid transit along Rt. 252 -- bus from Chester to U Darby and over to Newtown Sq to Paoli	
19073	Bike lanes in all major and secondary roads.	This is odd, but require all cyclists, runners and walkers who must exercise in the roads due to no sidewalks, to wear "hi viz"/reflective clothing. Thank you!
19073	Trash cans at Septa Stops and more trash pickups at Septa stops.	
19074	More direct routes, so you would not have to go into Chester and switch buses. Regional rail have later trains on weekends, so you could stay in the city past 11.	The ramp meter lights cause more congestion on the Blue Route (476). Traffic flow would be much better.

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19076	Improved public transportation options to reduce traffic.	There are a lot of intersections that are dangerous to pedestrians.
19076	Amosland Road, near interboro high, cars speed in both directions, I've written to prospect park police, and got no reply. It's very hard to cross the street. So many drivers speed down the street, not during school hours, but when professionals are trying to get to train.	Yes, enforce speed limits. Get digital speed limit signs so driver's can see they are driving 50 mph in a 25mph zone. Put safe crossings in for pedestrians
19076	Better sidewalks/road conditions	
19076	At less travelled intersections, make sure technology exists so the traffic signals only change if they need to. Make heavily-used roads (322) more than 1 lane! This was effective on Route 252 near Rose Tree Park. Traffic is too heavily congested.	
19076	Regional rail straight to Montgomery county. Currently goes to center city first	
19076	I would love it if there were more North-South public transportation options (as opposed to the many that radiate out from Philadelphia in a northwest/west/southwest linear fashion).	Great work on the survey!
19076	Better SEPTA availability, as far as run times. Less traffic/congestion.	No, you did a great job.
19076	More bus stop locations so people don't have to go out of their way and take more buses than necessary because of the way routes are set up. And that the public transportation come on time and not leave early even if it's within a 5 minute window of the time they are supposed to be a specific bus stop.	I do what I have to do in order to get to work as of the moment, but I'm working on getting my license so I can drive because I would prefer to drive over all else.
19076	More lane access...	None
19078	Really need to improve reliability and early / late departure scheduling.....not everyone works 9a-5p....	Would be more scenic and appealing if they kept the roadways and side areas clean / manicured and clear of potholes/road surface issues.
19078	less traffic	na
19078	More routes offered in my community.	In my community, Ridley Township, there is currently no public transportation available for students to reach our middle school or high school from any outlying region of the school district.

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What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19081	More regional rail service (later hours, more service on weekends)	
19081		Problems with cars blocking side walks in the residential area I live in. Police don't enforce and I've seen wheelchair and strollers forced into the street to get through. So unsafe.
19081	enforcing stopping at cross walks, more paths/attractive places to walk	the police need to enforce stopping at cross walks
19081	More and safer bike lanes.	
19081	better bike lanes!	Improved sidewalks, and lighting
19081	Detached and protected bike lanes and sidewalks for walking.	We need to make Delaware County more bike and walking friendly.
19081	Should add a bus line on 252; should extend Media Elwyn line to West Chester again	Kids in Delso insist on driving if there were bus lines going past high schools to retail centers the kids would be more independent; without more lines criss crossing kids get landlocked.
19081	Widen the roads to make them more bike friendly. Too many roads don't even have shoulders. Include signage telling motorists that cyclists have a right to the road and a lane of traffic when a shoulder is not available.	Make DC more bike friendly, please!
19081	Widen the blue route	
19081	Less congestion, motorists more courteous. Suggest better enforcement of traffic laws and adding lanes to the Blue Route & 95.	A dedicated, long-distance bike trail network from center city Philadelphia through Delaware and Chester Counties, like MontCo has with the Schuylkill River Trail system.
19081	More bike lanes and trails, and better sidewalks	The intersection of Yale Ave and Park Ave in Swarthmore is a very busy intersection and my husband and I often feel unsafe crossing it. Sometimes cars there fail to stop or even slow down at the sign. Better lighting and or traffic enforcement at this intersection might be helpful.
19081	More bike lanes, driver training regarding bikes belonging on the road and have the same right away as a car	
19081	bike lanes	n0

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19081	A traffic light on park and Yale Ave in Swarthmore, PA, septa trains showing up on time, speed more heavily enforced in 25 mph areas espionage Michigan and Yale Ave. (Seen people easily doing 60 while walking on the sidewalk on Michigan towards Fairview)	Bike lanes are a big issue. The reason I wont bike anywhere is because of the lack REAL bike lanes. Not just the ones listed on Google as a bike lanes but ones that are clearly marked and divided from heavy traffic into Philadelphia. Even local ones are too dangerous to bike on because of blind corners/hills and aggressive drivers.
19081	Helicopter	Make 476, blue route, 3 lanes and open shoulders during rush hrs from rt 30 on. Make 95 better around 476, 3 lanes on 95 and 1 exit to 476
19081	More bike lanes and bike trails like they have in Philadelphia, Montgomery, Chester and Bucks Counties.	We are very happy with the service from SEPTA as well. We would like it if the Media/Elwyn line were extended further west to Wawa and West Chester.
19081	Better side walks	No, thank you
19081	Improve experience on alternative travel modes (public transit, biking, & walking), e.g. more frequent transit service, more bike facilities	
19081	Later weekend service on Regional Rail.	
19081	add left turn lanes where appropriate?	
19081	More actual bike routes and rails-to-trails to connect communities.	We need to reduce traffic and air pollution. The county needs to create interconnecting bike routes and rails-to-trails to connect communities. And also to save open space so there can be such trails. Also, the county needs to market and publicize the biking routes and recreational trails!
19082	Greater frequency, more bus routes	

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What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19082	My husband is legally blind and the cross lights are to short or non existent.They should all have voice recognition.Victory Ave is the worse! Cars don't yield even with a cross light.Also people aim for him. I am also handicapped and use a cane.I never make it across the street before the light changes.West Chester Pike in Havertown by the acme is awful.The sidewalks are uneven.I fell last new years eve.at the light in front of the parking lot.State Rd. and West Chester Pike needs voice crossing.The right turn on red makes it hard to cross there.Golf Rd. and Elm Rd crossing WCP is horrible. I've seen many accidents.Maybe a light would help.I've seen people trying to use a motorized chair across from the police station in UD and must go in the street because of bushes and meters.	Maybe cameras would make it safer at certain intersections.
19082	Make a trail from the old rail line that ran from Philadelphia to Newtown Square. Much of that old ROW is underutilized in Upper Darby. Havertown has started to develop this trail but Upper Darby needs to work on its portion.	
19082	The roads are a mess; many pot holes and poorly patched roads. Fix the roads!!!!	Safety is a big concern with public transportation. 69th Street Terminal is a scary place and it is not very clean. You can smell urine as you walk on the sidewalk near the Terminal. It is not very well cared for. Oh and I have witnessed drug deals and people shooting up drugs under the elevated cross walk.
19082	traffic signals on trolley routes	n.a.
19082	More scenic and safe parks to ride bike or walk around. Better safety and cleanliness in 69th Street Subway station and surrounding areas and walk home.	I hope our local government will take positive action, eliminate stagnation and corruption, and especially improve Upper Darby to a great transportation hub and great quality of life with affordable housing in good condition and vibrant retail venues.
19082	Please make bus stops after the intersection, NOT before - they block traffic!	

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19082	Update traffic signals with smart technology , better timing. Redesign 476 for better traffic flow , better integration of transit in major areas to alleviate congestion.	
19082	Incentives to ride transit and safer bike lanes	
19082	safer crosswalks	Yes my husband needs to go to the Moore Eye Institute at Springfield hospital. There aren't any walk lights. I wonder why with a school at the intersection! Also at the Lawrence park shopping center there aren't any crosswalks, just a light with a button. You are forced to cross with traffic. Well when the turn lane gets the light you are doomed. Also in order to get to it you need to walk through a parking lot. This is hard for my blind husband and myself , with a handicap, to get to the doctors. The bus stop is in the parking lot and you can't exit the bus anywhere else except one stop with no sidewalks!
19082	dedicated bicycle routes	we would volunteer to help
19082	Cell phone usage while driving. tickets need to be given and higher fines	no
19082	Make it safer. For drivers, working on how to keep drivers from over speeding especially on the bigger roads. That helps people who like to walk and bike around. Transit, honestly has to be make it safer so the passenger doesn't feel in any danger.	
19082	Make it safer	
19082	traffic and parking	
19082	Less traffic, more frequent public transportation routes, less aggressive/reckless drivers	no
19083	More frequent road resurfacing. Better traffic signal timing to keep traffic on main arteries moving more smoothly. Additional lanes or road widening at choke points.	
19083	Public rail transport to King of Prussia. More trails	

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19083	Honestly, the congestion is so bad at times that I do not know what to suggest.	No
19083	More dedicated right-of-way light rail.	The mid-century "hub and spoke" layout of greater Philadelphia transit system doesn't serve my needs very well. I, like many people, work west of my home. When the system was built, everyone commuted from outlying parts of the city or the suburbs into Center City. If I could get from Haverford Township to Media directly, say in half an hour rather than the full hour it now takes me, I'd be riding public transport 3-4 days a week.
19083	Better information regarding options to the community (possibly through Commissioners, Libraries, local newsletters, social media groups, etc.	
19083	Better traffic light timing - correlate timing to traffic conditions and make left turn arrows, alternate greens, etc. consistent. Some intersections have what seems like random timing, which can be confusing and lead to accidents.	No
19083	Add more light rail lines	This is the right time to rebuild infrastructure and reinstitute more public transportation other than buses.
19083	More enforcement of stop signs and speed limits	All crosswalks should have broad lines in the middle especially in shopping areas
19083	Schools start later - don't like school buses during commuting time	
19083	timed traffic lights on West Chester Pike between blue route and manoa road. Bike lanes on Manoa road especially near West Chester Pike (both sides)	Do NOT make Township Line one lane each direction (with middle turn lane) between Drexel Ave and State Road!!
19083	More bike lanes or wider roads to make biking safer	

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19083	Reduce traffic volume (which you can't do), have more traffic lights with sensors to stay green when there is no traffic in the cross streets and timed so @ ## MPH you will not have to stop at other lights (think Chestnut St), and always better road maintenance.	
19083	Pave and widen existing trails	Please work on Darby Creek trail so access to the reserve is easier
19083	More frequent regional rail trains. A bus up City Ave from Route 3.	
19083	OMG there are so many cars! I wish I had a recommendation -	
19083	Haverford's CREC (old Haverford Hosp Site) recreation fields, trails and building only accessible by car because Darby road is so narrow and dangerous, move the stupid wall and add a bike lane. Add a bike lane to West Chester Pike and Haverford Rd and Lancaster Ave. Lower the speed limit on hilly roads like Manoa, 3 children in the area have been hit by cars	the roads in general are good with good signing and painted lines
19083	More sidewalks and separated bike lanes.	I would use SEPTA options more frequently (particularly the R100) if service was more predictable and I had some way of knowing when the train would actually arrive. I would also like to bike more (and bike more with my kids), but without designated and separate bike lanes, it does not seem worth the risk to my personal safety. We do use Karakung on Sundays during the months that it is closed, but that is obviously for recreation and not transportation.
19083	As someone who walks miles every day, I witness a lot of bad driving: speeding, phoning/texting, turning when pedestrians have right of way and not turning on lights at dusk. How about providing brief reminders on these topics when renewing driver's licenses? Also, going through red lights-- it's not okay even when you think you should have made the light but were stuck behind someone waiting to turn.	Could you share the results with Montgomery County planners as well? I live close to the county line so much of my walking takes me into Montco. They need to fill in some sidewalk gaps on major thoroughfares such as Wynnewood Rd., Haverford Rd. and Lancaster Ave.

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What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19083	Biking and Walking areas removed from traffic congestion.	
19083	Make our major roads safe for bikes or build trails that serve the same purpose. It's difficult to use bikes as transportation when there are no shoulders or bike lanes.	Bike lanes! Bike paths!
19083	More walking and bike trails	
19083	Improved road design to avoid congestion at places like junction routes 3 and 476.	
19083	Congestion on Eagle Road in Havertown.	No.
19083	Solar Crosswalks on major roadways: Chester Pike, Sharon Hill.	
19083	Redesign outdated school zone lights/signs to be more noticeable and effective. Drivers seem to be oblivious to school zones, or not take them seriously.	Family bike safety workshops could be offered in spring and fall to teach children, parents and any interested residents the rules of the road for bikes. Children love to bike to school, but parents thinks it's too dangerous, and don't know bike rules to teach their children. It's an important skill to learn in order to decrease dependence on cars and decrease traffic congestion; also gives kids confidence, independence and better health.
19083	clearly marked lanes, density based traffic signals	
19083	More routes that run further outside city.	Adding designated bike lanes are an ok idea, but in some areas, they are impractical & would make traffic a bigger mess.
19083	Cleaner, safer stations	No
19083	Bike lanes.	No.
19083	Having shoulders or bike path to ride on on every road	Montgomery county and Chester County and other surrounding counties have long bike trails that accommodate commuters. Delaware County needs to do the same.

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19083	The worst part of my commute (drive to work) is trying to get through Havertown. If the Blue Route backs up, no cars can cross route 3. I travel south to Media. Even navigating the length of Eagle road is a hassle. Horrible road conditions for a year's now. The lights seem to be timed to maximize the wait for the Eagle traffic, allowing Darby traffic to move smoothly. So frustrating!	
19083	Bike paths/lanes, better public transportation and schedules	More rails to trails
19083	Heavy fines and loss of license for aggressive drivers who attempt to intimidate or frighten cyclists. Signs on roads should not only indicate share the road, but that drivers that do not share the road can be fined and lose their drivers license. One mistake by a driver can lead to a loss of life.	Thank you for allowing me an opportunity to share my opinions.
19083	More protected/safe bike lanes. More crosswalks.	no
19083		Improve Community Transit service and lower the age to 60.
19083	more service	no
19083	Intelligent traffic lights, take down many "No Turn On Red" signs, enforce no hand held devices.	
19086	A high speed train that connects to other regional rail lines!	
19086	Sidewalks and crosswalks in Wallingford. Wider bike lanes. My kids cannot safely bike to school and I cannot bike to the train because it is simply too dangerous. In particular, the southern end of 252 near 320 and from that intersection to the Swarthmore train station.	Sidewalks, crosswalks, and bike lanes!!! Improved SEPTA reliability would be amazing, but I honestly don't have too much hope for that.
19086	Safer walking paths, more sidewalks. Less congestion, better traffic flow on Baltimore Pk	No thank you
19086	Expand 476 from 4 lanes to 8	
19086	Add as many sidewalks as possible as quickly as possible in Wallingford. It is a haven for speeding, cut-through drivers that is dangerous to residents (particularly children)!	

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19086	More sidewalks, which are sufficiently buffered from the roadway; more parking at SEPTA Regional Rail stations	The "sidewalk" situation along Rt. 252 through Nether Providence is extremely dangerous. A traditional sidewalk with a sufficient buffer from the roadway is needed to protect the children that attend the 3 schools along that strip.
19086	Add regional rail lines from the ends (or middles) of the spokes to the other spokes	
19086	Improve the surfaces on Rte 252 and Brookhaven Roads in Nether Providence Twp. Better even, widen Rte 252 to allow for a shoulder and/or bike lane.	We need more bike lanes!
19086	More bike lanes	Create more bike lines and have wider shoulders on the roads. I live in Wallingford, on Brookhaven Road, sidewalks would be great. It is incredibly dangerous to walk to the train station. There is just no place to walk.
19086	Traffic on 476 is horrible and there should be 3 lanes in each direction from 95 to the Turnpike.	Wallingford needs sidewalks! It's simply not safe for kids to walk to Nether Providence Elementary in the street, and as a parent, it makes me nervous because there are no sidewalks. As a society, we want our kids to be more active, yet in Wallingford, walking or riding bikes must be done in the street.
19086	Increase dedicated bike lanes and increase frequency and quality of SEPTA service	

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19086	<p>Better road conditions and more trails for bicycling, especially short connector trails that would allow biking/walking between two neighborhoods. A better shoulder for bikes to use would be helpful. I live in Wallingford, PA and there are many neighborhoods that could be connected with short trails. This would allow bicycles and pedestrians to stay off busier roads but still get to their destination.</p> <p>I would also like to see increased traffic enforcement. Many local roads are narrow and cars are speeding and not leaving enough room for bikes.</p>	
19086	<p>Better light timing on 352, 252, and Rte 1 Equal lanes on the Blue Route Parking/Shuttle to venues like the Tower or Mann</p>	<p>Traffic in and around Springfield, Clifton Hts and Broomall is ridiculous. Good Luck!</p>
19086	<p>Barely any sidewalks, unreliable regional rail. Bike lanes!!!</p>	<p>Nope, thanks!</p>
19087	<p>bike lane on lancaster ave through radnor township would be life changing.</p>	
19087	<p>Safer roads and bike pathes</p>	<p>No</p>
19087	<p>more extensive trail system, better on-road lanes/protection</p>	
19094	<p>The left driving lane should be used for passing only!!</p>	<p>Time the street lights better and use the left driving lane for passing only.</p>
19094	<p>Add a third lane to Blue Route (476).</p>	<p>Bullens Lane needs a traffic signal at Chester Rd before someone is killed there. The wall makes it very difficult to see traffic coming when making left turn.</p>
19094	<p>BUSES RUNNING EVERY 15 MINUTES TO AVOID OVER CROWDING. EXPECIALLY EARLY IN THE MORNING. THE 113 BUS IS OVER CROWDED AND MOST TIMES I HAVE TO STAND.</p>	
19104	<p>Add a decent bike route from West Philadelphia to Media, especially focusing on mitigating steep slopes around Darby Creek and Crum Creek, and improving the generally poor state of bicycle facilities along the Baltimore Pike Bike Route</p>	<p>Nah.</p>

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What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19143	More bike lanes, slower traffic, faster/more frequent busses	The transit transfer questions should be ON AVERAGE. There might be different numbers of transfers depending on where I am going. On average, there is 1.
19145	more buses to more areas	no
19154	More polite drivers & more drivers that are not tired. Cleaner buses & restrictions on letting dirty smelly people on the buses. Its unsanitary.	Drivers are overworked & its dangerous. I have seen it first hand.
19317	Reduce congestion with alternative means of transportation. Walk or biking trails for trips less than 3 miles. Low passenger volume means of public transport for local trips (3-15 miles). Look at MIT Intelligent transportation Labs- Mobility of the future;Dynamit 2.0 predictive supply and demand; TRIPOD multi-modal; Intelligent Transportation Research Center	None
19317	decreased traffic	
19317	More bike trails.	
19320	Widen RT 352 to 4 lanes between RT 1/Baltimore Pike and RT 3 (West Chester Pike)	
19342	Adequate tax money to keep all the roads safe and working effectively to keep all the heavy traffic moving as expected.	Provide support for creating more walking trails in delco.
19342	Fix the roads. The potholes and crumbling roads are a disgrace. Also time the lights on major roads like Rt1 and Rt 3	
19342	addressing congestion in Eastern Delco	no
19342	Better road maintenance for potholes/cracked streets.	
19342	Light timing and/or traffic flow on route 1 Baltimore pike intersections should be improved. Signals alone can impact my commute by 5 to 10 minutes, and traffic consistently jams up at certain intersections at busy times (e.g. pennell rd). Also, I don't feel that the on ramp meters on 476 are effective.	
19342	Extension of regional rail and buses to reduce traffic congestion.	

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19342	More trails for biking/walking to connect neighborhoods to parks & shopping venues. Changing Glen Mills station to West Chester station into a rails-to-trails would be great!	
19342	I have a major problem with intersections like 452/Rt. 1& 322 at Walmart. The traffic signals throughout the area need to be computerized and set up for time of day programming.	It is ridiculous to have traffic bouncing from light to light within a 100 yards of one another. The gas and time wasted is almost obscene. If you do nothing else, fix the synchronization of traffic signals on the major roadways.
19342	Traffic lights on main thoroughfares should be timed to eliminate constant stop-and-go driving, and everything should be more pedestrian-friendly - neighborhoods, shopping centers, and roads.	The "town center" design is horrendously inconvenient. Bottlenecks to get in and out, virtually no sidewalks, and shoppers have to walk through the line of moving cars to get in and out of stores. Dumbest use of space ever! In a town, you park once and stroll safely up and down the blocks, crossing at lights.
19342	Elwyn needs a real station where you can purchase tickets. Also a loader clearer PA system	What is the point of flashing red lights at busy intersections like 352 & valley road? It serves no helpful purpose.
19342	Better roads, less congestion, more accurately timed traffic lights, less distracted drivers	Very concerned about the increased development in Delco especially the tracts along Route 1 & 202 with no significant road improvements
19342	Extend the Media Rail Line back to West Chestet	
19342	Get rid of speed traps like upper Providence police on Baltimre Pike hill	Its a good place to live and work
19342	Timing of traffic lights, especially in the Springfield and West Chester areas.	No
19342	Crack down on distracted & unsafe drivers	N/A

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What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19342		<p>Many of the questions are very important to those living in the central to northern part of Delco and I believe they are legitimate concerns and needs for many of those in our county. Living in the southern end of the county is a little different---driving is the most practical currently in this environment. Though I would like to see better public transportation to encourage those working in the city, for example, to take public transportation instead of driving. With that being said, as it stands now, our roadways have been seriously neglected. We have grown enormously and the numbers of cars per family and the number of people driving has gone far beyond the capacity of our roads. We need some serious consideration given to a plan for providing improved roadways to handle the enormous amount of traffic. In the 40 years I have lived here, it seems that there has only been talk about our roads and very little action. The lack of planning and implementing has made the job even more difficult, the decisions harder, and the impact on businesses and citizens potentially devastating. We need vision and a plan for the future before it is too late---and I am hoping it is not too late already. Going back to what I said initially, any plan should be in conjunction with improving and encouraging the use of public transportation as well. At this point, I don't think one can happen effectively without the other. And, of course, this would all work into what seemed to be some of the major line of questioning in your survey----providing better and safer driving, walking and biking infrastructure in the county.</p>

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
19342	Get the cars off the road	
19342	Improve the traffic light timing at the Rts. 452 and 1 intersection. It backs up traffic on Rte 1, unnecessarily.	
19342	Within Media they should close off state street to vehicles. They should only let the trolley through. The section from Monroe to Lemon Streets should only be pedestrian traffic. They on way people would walk more is if there were safer sidewalks.	
19342	Less congestion, more drivers who follow the rules of the road. NO distracted driving. Drivers stay in their lane and actually stop at red lights.	Accessibility to those with disabilities; or the elderly who can no longer drive a car.
19342	More public transportation near my home in Western DelCo.	
19342	I would like to see the bus route to Chadds Ford extended from Mac Donalds to Glen Eagle Square and then to the Wegman's shopping center.	Nice survey.
19342	Adjust the light length on northbound route 1 at 452. Traffic backs up all the time there. Horrible and will only get worse as granite run and other real estate along this route is even further developed.	
19355	352 needs to be expanded, the traffic on the road cause so much delay.	
19373	Light rail to both Philadelphia and Baltimore...right up and down US 1/Baltimore Pike.	<ol style="list-style-type: none"> 1. Connect Delaware County to other existing transit networks 2. Deal with the increasing congestion especially in Concord Township-- perhaps connect some back roads between 322 and 202 to get traffic off of Baltimore Pike 3. PLEASE fix the timing of the lights on 322 between US 1 and I-95, especially at Walmart and the new Wawa. They are atrocious and create most of the congestion. 4. Fix the potholes. I know many are state roads, but it is a nightmare.
19373	We desperately need a left turn signal turning from Dilworthtown Road onto Rt 202. I have often waited through 4 lights to make a left turn.	Too many bikers use Dilworthtown Road and I find this quite dangerous as there are many blind curves.

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19373	Increase lanes on route 322	
19373	4 way stop at dilworthtown and westtown Thornton roads,widen 352 from forge road to exit for route 1 to alleviate congestion	
19380	An additional lane each direction between Providence and Delchester	Very easy commute for me via car, no easy "quick wins" that would encourage me to switch
19380	Better train station / information services	No
19382	less congestion	none
19382	Enhance availability of bike paths.	
19460	I only drive to Delaware County to visit my family. It's an easy drive, just lots of stop signs	
19465	Some type of transportation from the Paoli train station to my place of employment in Newtown Square	not enough transportation options to get to our campus in Newtown Square. We want to encourage our employees to take public transit but there is little to offer. Just adding a bus route down rt252 from Paoli to Ellis Preserve in Newtown Square would be a big plus for those who could use the R5 and then shuttle to our campus.
Entry not valid.	Bike lanes or some sort of buffer against traffic for the Bicyclists and walkers. Some sort of improvement in Septa. High prices and poor service are their trademarks.	It seems our Townships and Cities keep adding more traffic lights, more stop signs, more signs in general, yet traffic, road rage, tailgaiting , speeding and accidents have done nothing but increase. Driving is a nightmare anymore. Riding a bicycle and walking in certain areas is extremely dangerous. I think this phenomena of angry drivers can not be fixed by new traffic regulations, if anything they are making things worse. As a bicycle rider in Delco I am hoping for some more bike lanes, and possibly some sanity from the nutty impatient drivers out there.
Entry not valid.	Bike Lanes!	

What zip code do you live in?	If you could change one thing to improve your Delaware County transportation experience, what would it be? Do you have any specific recommendations?	Did we miss anything or do you have any other comments you would like to share with Delaware County?
Entry not valid.	Improve pedestrian safety	<p>Try to keep courthouse employee parking contained, not using residential streets leaving no parking for residents.</p> <p>Remove defunct crosswalk in front of Media Presbyterian .</p> <p>Improve Plum crosswalk on State St for example blinking lights along surface of crosswalk.</p> <p>I have had 4 extremely close calls while walking in Media Borough within the last 6 months while watching for traffic and following all signs and traffic lights</p>
Entry not valid.	Designated bike lane/sidewalk on Rose Valley Road in Media	<p>Rose Valley Road is dangerous to walk along or bike along. There is no shoulder to walk on and most of it does not have any place to step off on when meeting cars. We are just asking to have a car hit a pedestrian on this road.</p>
	<p>Remove turn on red signs, also remove yield and stop signs with right only.no one reads them anyway</p> <p>Sidewalks to make safer travel conditions.</p>	
	less traffic	<p>Sidewalks on North Orange Street, it is a traveling nightmare.</p> <p>more bike lanes and pedestrian cross walks are needed</p>

APPENDIX I: PUBLIC COMMENT