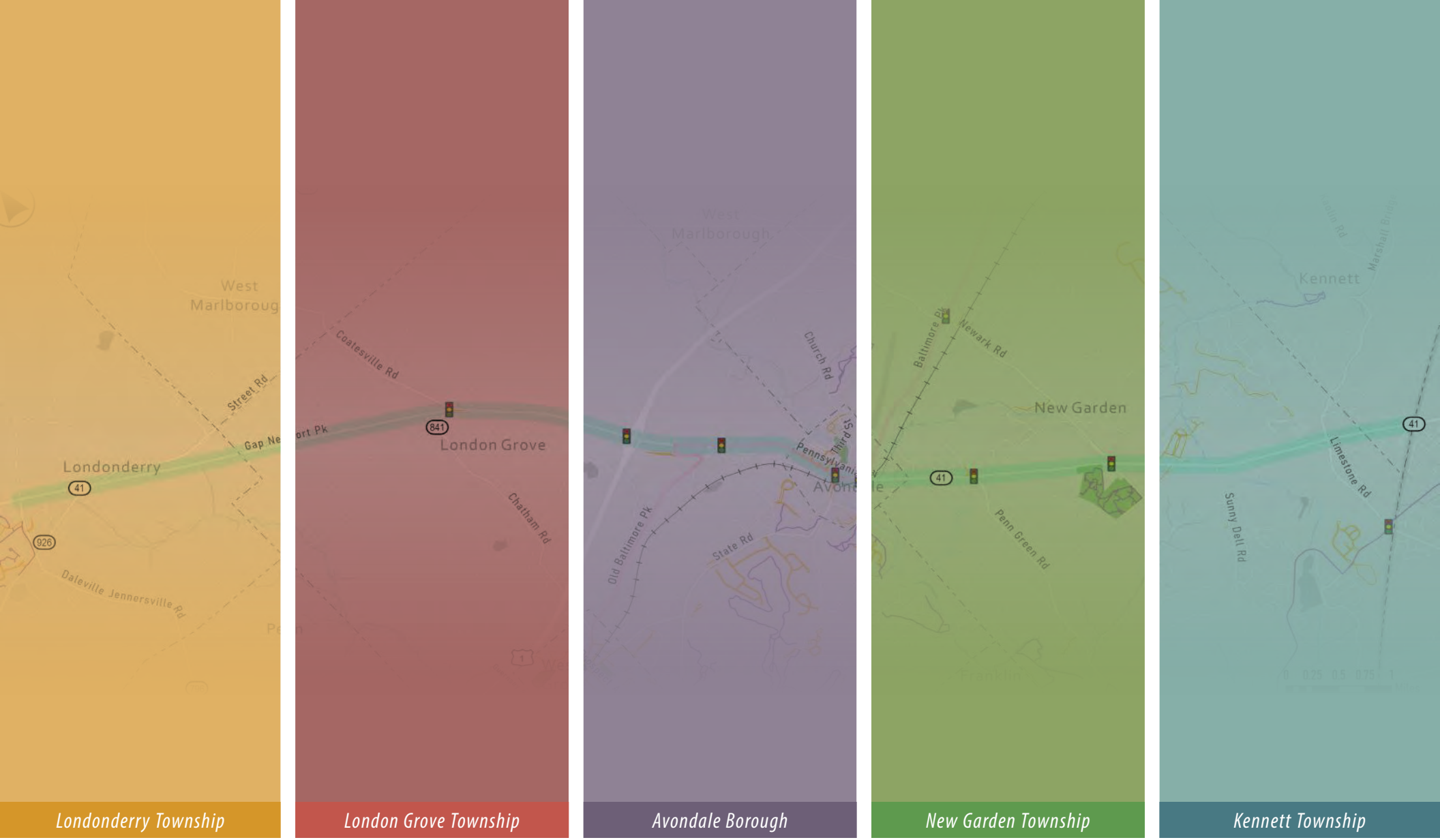


Londonderry Township | *London Grove Township* | *Avondale Borough* | *New Garden Township* | *Kennett Township*

ROUTE 41 PLANNING STUDY

BOWMAN CONSULTING GROUP LTD.

October 2024

Bowman

Route 41 Planning Study

The Route 41 Planning Study provides a long-term guide to:

- Enhance safety, convenience, and accessibility for all users
- Support key local industries and businesses
- Reflect the character of the diverse communities along the corridor

The study segment evaluates the corridor between Route 796 and Route 7 in Southeast Chester County, Pennsylvania. This planning effort sought to synthesize relevant findings and recommendations of numerous past planning studies, ongoing PennDOT transportation projects and major land development plans along the corridor, current public and municipal concerns to identify a comprehensive and cohesive plan for the future of Route 41.

The preparation of this document was financed in part with funds provided by Chester County though the Chester County Planning Commission's Vision Partnership Program competitive grant. Further, the municipal project sponsors included Londonderry Township, London Grove Township, New Garden Township, and Kennett Township. Each of these municipalities provided steering committee members to collaborate with the project consultant during the preparation of the study. Also, Avondale Borough participated in the study advisory committee meetings.

Consultant:
Bowman Consulting Group Ltd.
835 Springdale Drive, Exton, PA 19341

CHAPTER 1: BACKGROUND

INTRODUCTION

In 2022, four sponsor municipalities in southern Chester County were awarded a Vision Partnership Program (VPP) grant from Chester County to develop a transportation study and corridor improvement plan for Route 41. The study limits are from Route 796 in Londonderry Township to the Route 7 interchange in New Garden Township. Route 41 within these limits is a vital corridor for the movement of people and goods in southern Chester County. It traverses communities with a wide range of land use patterns and population densities, from rural and agricultural areas to urban and suburban settings. A significant proportion of its vehicle traffic consists of freight, including truck traffic that is serving local freight-intensive industries, as well as regional freight traffic that is simply passing through.

Perhaps because of these competing needs, the corridor has been the subject of more than a few previous planning efforts. Several projects that were conceived through those efforts have obtained committed funding and are now advancing through the project development process. This study incorporates those past efforts and presents a comprehensive vision and plan for the corridor that builds upon the significant improvements to be implemented on the corridor over the next decade.

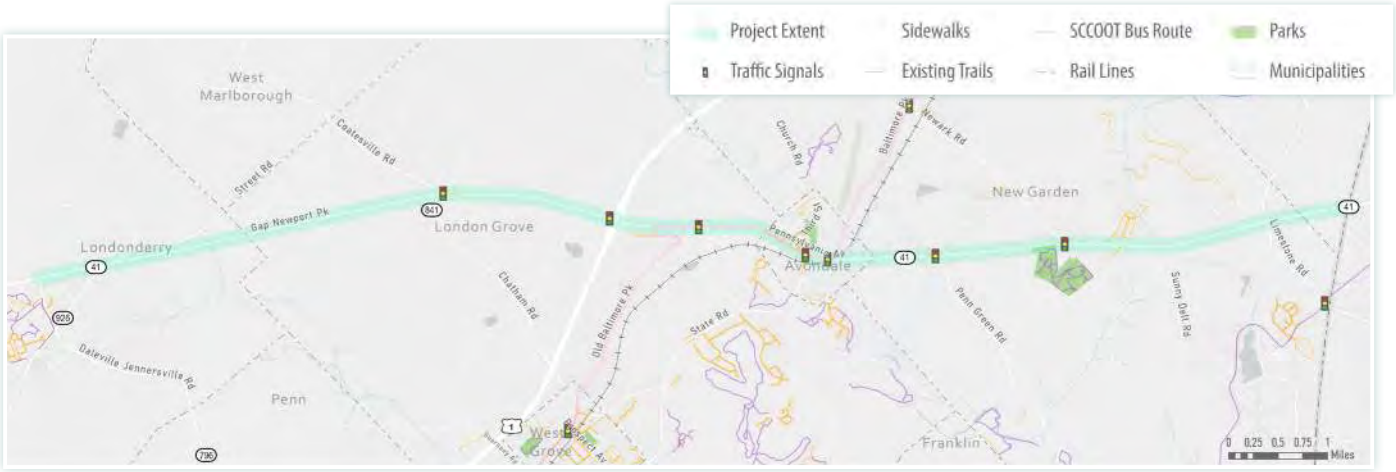
STUDY PURPOSE & NEED

As this plan will detail, existing conditions along the Route 41 corridor present challenges for its users. Route 41's alignment within the study area, being neither north-south nor east-west, creates skewed intersections that can be confusing and difficult for drivers to navigate safely. Relatively high traffic volumes, including truck traffic, make for congested conditions in some locations. High vehicle speeds leave many users feeling unsafe and uncomfortable. Pedestrians and bicyclists have few off-road facilities, such as sidewalks or trails, that allow them to access destinations safely and comfortably along and across the corridor. Finally, parts of the corridor are prone to flooding during significant storms.

The Ongoing Projects section of this chapter describes several funded projects on the corridor that are in varying stages of implementation. These projects are generally focused on specific intersections. As a complement to these efforts, the municipalities involved in this study seek to look holistically and comprehensively at the Route 41 corridor, particularly with regard to how the intersection improvement projects will fit together and what additional improvements may be appropriate for other areas of the corridor. A proactive approach of developing a regionally supported list of transportation improvements for the corridor will facilitate improved coordination and collaboration between the municipalities, Chester County, and PennDOT.

STUDY AREA

The study area for this project is the Route 41 corridor from Route 796 in Londonderry Township to the Route 7 interchange in New Garden Township. In between these points the corridor also traverses London Grove Township and Avondale Borough, with its traffic impacting neighboring Kennett Township. This study examines the corridor, including its major intersections, as well as the transportation network that surrounds it.



PREVIOUS PLANS & STUDIES

PREVIOUS PLANS & STUDIES

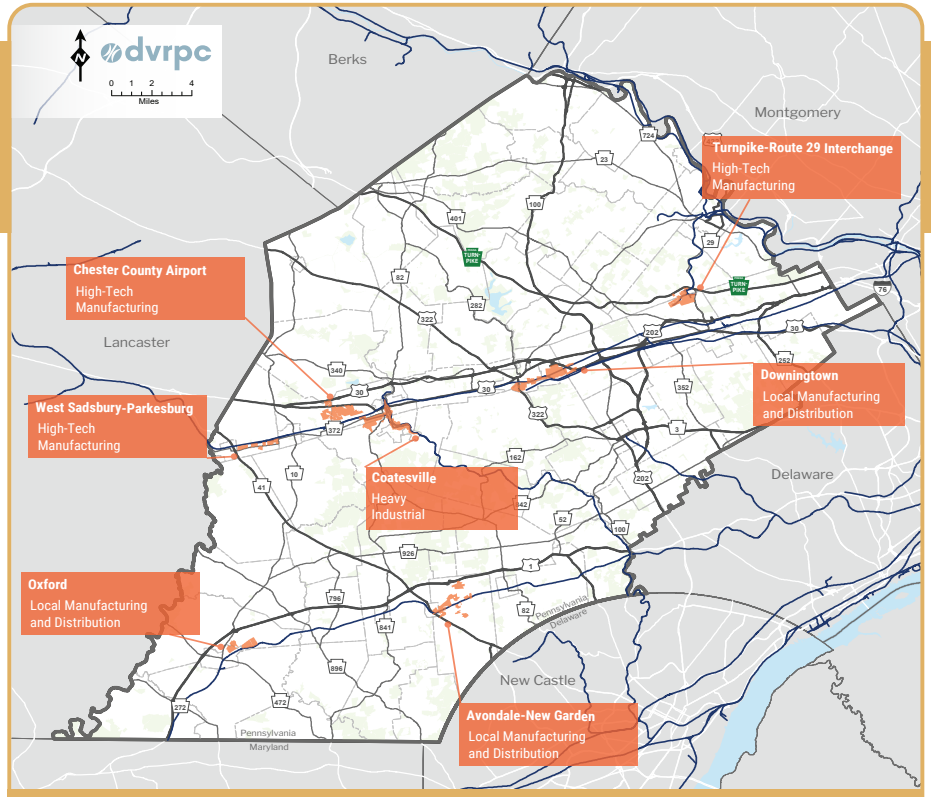
The Route 41 Transportation Study and Corridor Improvement Plan builds upon the many previous plans and projects that have impacted the corridor and informed the project team's understanding of its history and its potential future.

Chester County Transportation Priority Projects – 2023

Every two years, Chester County releases its Transportation Priority Projects (TPP) publication. This is an agreed-upon list of transportation projects in Chester County (backed by letters of support from the legislators representing Chester County) that are priorities for funding and implementation. The project list is also used to establish which projects the county will be prioritizing for inclusion in the next regional Transportation Improvement Program (TIP) update. The 2023 TPP notes that the portion of Route 41 in Chester County that is the subject of this study is a "corridor safety improvements area". It also documents the Route 41 and Route 926 and the Route 41 and State Street intersection projects as well as the Route 41 over White Clay Creek bridge project. These projects are included on the current TIP and are discussed in greater detail below.

Chester County Freight Plan – 2023

This study was developed by the Delaware Valley Regional Planning Commission (DVRPC) at the request and under the guidance of Chester County. The plan profiles the freight-intensive industries and locations and identifies a plan to support and further develop those industries while attempting to mitigate the negative impacts of freight movement. The plan identifies Route 41 as a significant freight corridor. About 7.5% of all non-internal freight vehicle trips in Chester County enter or exit the county via Route 41. The plan also identifies "freight centers". These designations are intended as a planning tool to help regional partners better understand the priorities, challenges, and opportunities created by these important regional centers. One such center relevant to the Route 41 corridor is the Avondale-New Garden Freight Center. This center contains 16 freight-intensive developments which are served by Route 41 and other roadways as well as the Octoraro Branch rail line and the Avondale Transload Center, in Avondale Borough. The plan recommends that the county lead an effort to, among other things, designate a primary truck route network, incorporate freight into Complete Streets recommendations, and engage in multimunicipal planning.



Greater Philadelphia Freight Centers in Chester County

There are four different Freight Center typologies in Chester County:

Heavy Indsutrial: A Heavy Manufacturing Freight Center is a node focused around heavy industrial land uses involved in the manufacturing of goods. These centers are served by freight rail access.

Distribution and Logistics: A Distribution and Logistics Freight Center is a node with a high concentration of regional and national serving distribution and logistics businesses. These centers are often located around key highway interchanges with access to both port gateways and consumer markets.

High-Tech Manufacturing: A High-Tech Manufacturing Freight Center is a node focused around advanced manufacturing land uses and businesses. These centers rely less on major freight rail and maritime facilities but are well located relative to highway facilities.

Local Manufacturing and Distribution: A Local Manufacturing and Distribution Center is a node focused around locally serving small manufacturing and distribution facilities. These are less dependent on prime location near interstate interchanges, but are well served by smaller highway facilities and proximity to consumer populations.

Southern Chester County Circuit Trail Feasibility Study – 2021

This study from the Chester County Planning Commission examined the feasibility of developing a multi-use trail that would connect the communities in southern Chester County to the Circuit, the Greater Philadelphia area's network of interconnected multi-use trails. The study focused on two potential trail corridors, one paralleling Baltimore Pike and the other paralleling the US Route 1 Expressway. It ultimately found that it is not currently feasible to develop a multi-use trail along the entirety of either corridor. The plan does, however, recommend implementing a mix of trail

PREVIOUS PLANS & STUDIES

and on-road facilities that would create a robust bicycle network in southern Chester County. These recommendations include developing the "Baltimore Pike Bikeway", which is envisioned as a continuous corridor from the Kennett area to Nottingham with branding and wayfinding elements. The corridor would broadly parallel Baltimore Pike and employ varying facility types as appropriate and feasible for the given context.

Baltimore Pike intersects with Route 41 in two locations near to one another in the study area. It first intersects Route 41 in Avondale Borough near the at-grade crossing of the freight rail line and then also in London Grove Township near the London Grove Village shopping center. The proposed Baltimore Pike Bikeway would have cyclists use a segment of Route 41 in these two municipalities. On this segment of Route 41, the plan recommends the implementation of buffered/separated bike lanes and split-mode (shared roadway) facilities. Bicycle and pedestrian facilities (including a multi-use trail and an additional buffered/separated bike lane) would continue north on Route 41 up to the London Grove Village shopping center. The plan also notes that implementation of the Baltimore Pike Bikeway would require bicycle and pedestrian improvements at the intersection of Route 41 and Baltimore Pike in London Grove Township.

Chester County Complete Streets Policy – 2021

Chester County's Complete Streets Policy envisions that roadways in the county will "meet the mobility needs of all users and provide for all appropriate modes of transportation with an emphasis on safety, equity, and environmental responsibility". An ideal complete street might include, in addition to car travel lanes: sidewalks, bicycle lanes, crosswalks, and sheltered bus stops. While the county does not own roadways, this policy is consistent with PennDOT's "Connects" program, which requires consideration of all modes and users as part of projects included on the Statewide Transportation Improvement Program (STIP). For local roads, the county's policy relies on its municipalities to adopt, practice, and enforce the Complete Streets policy. The municipal role in the Complete Streets policy comes through planning (including zoning and subdivision/land use ordinances), design and implementation (including land development and permit reviews), and maintenance.

Avondale Borough Comprehensive Plan – 2019

Avondale Borough is perhaps uniquely impacted by traffic volumes and conditions on Route 41. The roadway is also Avondale's primary commercial corridor, known as Pennsylvania Avenue in the borough. This comprehensive plan notes resident concern over the speed and volume of traffic, which can make crossing Pennsylvania Avenue difficult and uncomfortable. The plan recommends traffic calming measures and specified intersection improvements intended to improve the safety and comfort of bicyclists and pedestrians. It also recommends implementing a left turn lane on southbound Pennsylvania Avenue approaching either the Fifth Street, Fourth Street, or Third Street intersection to provide easier access to Chatham Street.

Kennett Area Freight Transportation Study – 2019

This study, undertaken by the Delaware Valley Regional Planning Commission (DVRPC), examines freight movement in and around a six-municipality study area including Kennett Square Borough, Avondale Borough, Kennett Township, East Marlborough Township, London Grove Township, and New Garden Township. It explores strategies to "advance freight movement and better manage the community impacts of vital local industries." Relevant to Route 41, the plan recommends median gateway treatments and overhead speed displays at both entrances to Avondale Borough. It also notes that high-visibility crosswalks and rectangular rapid-flashing beacons (RRFBs) can be effective in borough settings for improving pedestrian safety and comfort when crossing major roadways. The plan also recommends that the municipalities form a working group to establish a truck route network to try to keep trucks on routes that are suitable and able to accommodate them.

New Garden Township Comprehensive Plan Update – 2018

One of the primary goals identified in the New Garden Township Comprehensive Plan Update is to "Improve the overall appearance, function, and safety of the Route 41 corridor". To accomplish this goal, the plan recommends: the implementation of township gateways and cohesive streetscape concepts in different areas of the corridor; creating a balance of redevelopment where appropriate while preserving open space and agricultural use; enacting safety and operations improvements at key intersections as well as bicycle and pedestrian improvements on the corridor; and introducing transit service on the corridor with connections to Delaware. The plan identifies several priority intersections to be evaluated for improvements, including Route 41's intersections with Sunny Dell Road, Penn Green Road, Sharp Road, and Limestone Road. Finally, the plan recommends the implementation of a consistent three-lane cross-section with a center turn lane throughout the corridor.

PREVIOUS PLANS & STUDIES

Landscapes 3 – 2018

Landscapes3 is Chester County's Comprehensive Plan. It is a policy document developed with the input of county stakeholders that, among other things, establishes a preservation and growth vision for the county and its municipalities and guides local municipal planning and implementation. The plan designates "landscapes" throughout the county that describe current land use contexts and offer principles for future development. The segment of Route 41 that is the focus of this study passes through a diverse range of landscape types, including Rural, Agricultural, Suburban, Suburban Center, and Urban. Additionally, this corridor is identified as a focus area for safety improvements.

Chester County Multimodal Circulation Handbook – 2016

This guide from the Chester County Planning Commission provides resources and best practices for the planning and design of pedestrian and bicycle infrastructure in Chester County. The report draws on guidance from PennDOT, American Association of State Highway and Transportation Officials (AASHTO), Federal Highway Administration (FHWA), and National Association of City Transportation Officials (NACTO), among others.

Kennett Township Comprehensive Plan – 2015

This comprehensive plan notes Route 41's important regional function for commuters, business, and truck transport. It also notes that there have been a relatively high number of crashes on the southern part of Kaolin Road, which carries heavy volume towards Route 41 in New Garden Township. The plan recommends that Kennett coordinate with New Garden for a Road Safety Audit for the segment of Kaolin Road leading to and from Route 41 and then implement the recommended improvements of that study.

Baltimore Pike for Everyone – 2015

This plan from the Chester County Planning Commission looks at Complete Streets strategies for Baltimore Pike from its intersection with Route 52 to Oxford Borough. Complete Streets are roads that are safe and comfortable for all users, whether they are driving, biking, walking, or accessing public transportation. The plan contains recommendations for a segment of Route 41 that spans Avondale Borough and London Grove Township. These recommendations include the extension of sidewalks north of Avondale Borough along Route 41 as well as bicycle and pedestrian improvements at the intersection of Route 41 and Baltimore Pike in London Grove Township. The plan also calls for traffic calming measures through the corridor that include a gateway treatment north of Avondale Borough, on-street parking, and curb bump outs.

London Grove Township Comprehensive Plan – 2011

The London Grove Township Comprehensive Plan acknowledges and incorporates the work of PennDOT's Route 41 Planning Study. It also emphasizes the local importance of the Village of Chatham, which is located in and around where Route 41 and Route 841 intersect. The plan recommends implementing traffic calming features, including gateway treatments, on the approaches to the village and well as sidewalks and crosswalks within it. It also broadly envisions that Route 41 south of Old Baltimore Pike will have sidewalks on both sides of the road. Additionally, the plan lays out a series of access management recommendations for uses along the corridor. Finally, the plan notes that there would need to be greater density and improved pedestrian facilities to support transit service on the corridor.

Route 41 Planning Study – 2010

The Route 41 Planning Study was prepared for PennDOT nearly a decade ago and covers very nearly the same limits of Route 41 as does this study. The project needs are defined as: (1) Improve safety conditions; (2) Accommodate future corridor mobility; (3) Improve intersection operations; (4) Improve existing infrastructure. The study identifies "Improvements Areas" and assesses which project need or needs applies to each, ultimately developing improvement recommendations for nine total areas along the corridor. These improvements are intended to be viewed as serving specific local needs at each location and can therefore be developed independently of one another.

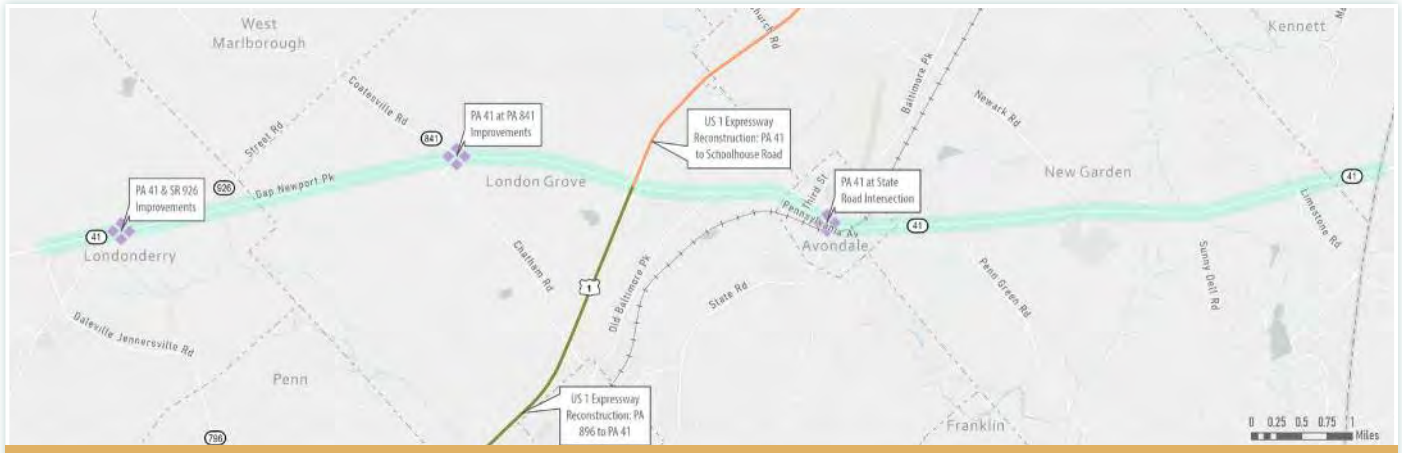
A Two Lane Alternative for Pennsylvania Route 41 – 2002

This report was commissioned by an advocacy group known as S.A.V.E. (Safety, Agriculture, Villages, and Environment). S.A.V.E.'s work, including this report, was influential in directing future Route 41 improvements away from the bypass and roadway widening options that were previously proposed at the time. The goal of S.A.V.E.'s study was to focus future efforts on projects that would improve safety while minimizing environmental and agricultural impacts.

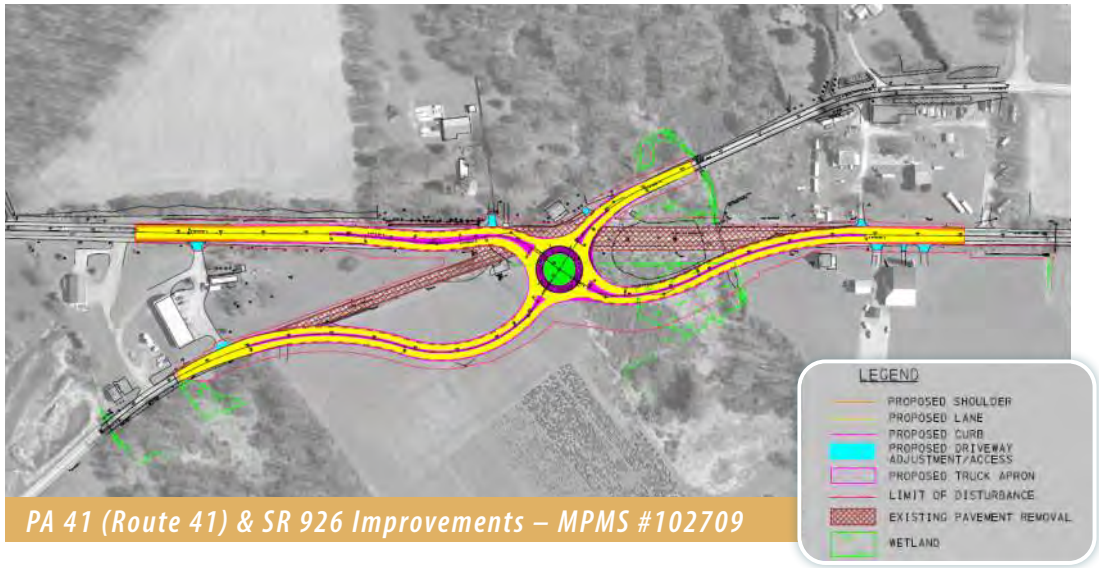
ONGOING PROJECTS

PennDOT Projects

There are several significant projects on the corridor that are scheduled to be implemented in the next several years. These projects have dedicated funding and are advancing through the project development process. The purpose of these projects is to improve safety and accommodate future traffic demand. Because the Route 41 corridor has a diagonal alignment through southern Chester County, there are a number of intersections that pose safety challenges arising from offset/skewed alignments and sight distance limitations. The projects identified seek to address these and other concerns at some of the corridor's most significant intersections.



TIP Project Map



PA 41 (Route 41) & SR 926 Improvements – MPMS #102709

PA 41 (Route 41) & SR 926 Improvements – MPMS #102709

A roundabout will be implemented at this intersection. The project entered the construction phase as of December 2023 was substantially constructed in 2024.

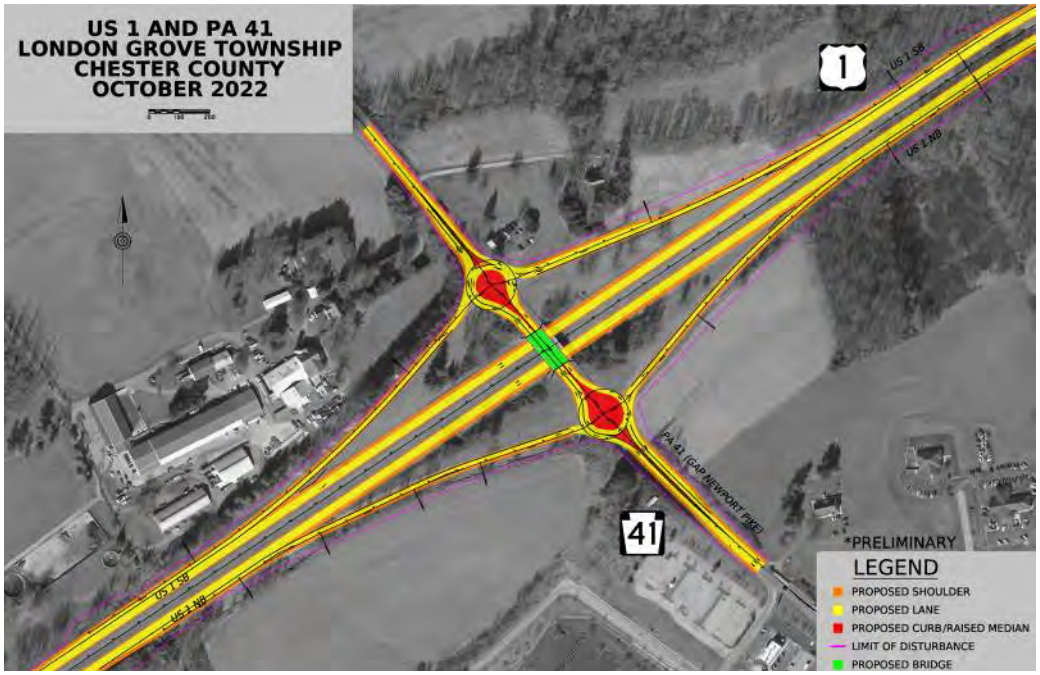
PA 41 (Route 41) at PA 841 Improvements – MPMS #102708

Construction of a roundabout is planned at this location. This intersection is at the heart of the Village of Chatham, which has been the subject of planning efforts to calm traffic and enhance walkability. To this end, gateway treatments have been implemented on Route 41 at the approaches to the village. Installation of a roundabout will further these efforts while also improving traffic safety and efficiency at this intersection, which currently has a confusing layout. The roundabout project is currently in the Alternative Analysis phase. This will be followed by the Preliminary Design, Environmental Evaluation, and Final Design phases.

ONGOING PROJECTS

PA 41 (Route 41) at US 1 Interchange – MPMS #14581

Over the course of the next decade, the US Route 1 Expressway in southern Chester County is going to be reconstructed, with the project limits being from Schoolhouse Road in East Marlborough Township to the Pennsylvania-Maryland border. This will also involve the reconstruction of the interchange areas, allowing for new configurations that will improve safety, efficiency, and multimodal access. At the US Route 1 interchange area, the preferred alternative involves constructing two roundabouts on Route 41 on either side of the bridge over US Route 1. These improvements are to be constructed as part of a segment (PA 896 to PA 41 (Route 41)) of the broader reconstruction project. Construction of this segment is scheduled to begin in the Spring of 2027 and be completed in late 2029. London Grove Township has requested a bike lane along Route 41 on the bridge over US Route 1.



PA 41 (Route 41) at State Street Intersection – MPMS #110311

This PennDOT project seeks to address the geometry and capacity constraints of the Route 41 and State Street intersection in Avondale Borough. PennDOT and local leaders are working to identify a preferred alternative that will improve sight distance, turning movements, pedestrian and bicycle access, and operational efficiency while preserving nearby cultural and historic resources. This project is ongoing and in the initial study phase.

PA 41 (Route 41) over White Clay Creek – MPMS #78617

This PennDOT project is for the rehabilitation and restoration of the bridge carrying Route 41 over the White Clay Creek in Avondale Borough. Due to the bridge's condition, there is currently a weight limit for vehicle use of the bridge, which adversely impacts emergency responders and freight movements. This project is ongoing and in the initial study phase.

SIGNIFICANT LAND DEVELOPMENTS

INTRODUCTION

Much of the Route 41 corridor is undeveloped. In some parts of the study area, it is preferred by the municipality and the county that it remain undeveloped so as to preserve agricultural uses or open space. In others, an appropriate level of new development is desired. Chapter 2 of this report details how Chester County's comprehensive plan, Landscapes3, identifies each part of the corridor according to the preferred vision of local and regional stakeholders.

Larger land developments can have meaningful impacts on a corridor. For instance, they may significantly alter the appearance (i.e. the "streetscape"), bring new residents and/or amenities to the community, and generate new traffic. When a larger land development is proposed, the developer works with the municipality and PennDOT to ensure that the transportation impacts generated by the proposed development are appropriately mitigated through improvements in the immediate area. Through this process, the municipality also assesses the project in regard to its consistency with the municipal vision, expressed through its comprehensive plan, its subdivision and land use ordinances, and any other adopted plans relevant to the area. The proposed developments listed below are in different stages of the land development process. As none have been yet approved, the descriptions are subject to change as the process continues.

Yeatman Tract Development (London Grove Township)

A proposed land development in London Grove Township would be sited near the southeastern corner of the intersection of Route 41 and US 1. The developer proposes nearly 300 housing units with a mix of townhomes and single-family detached homes, a convenience market with fueling stations, and an additional non-residential outparcel. The development would access Route 41 via Glen Willow Road, Moxley Lane, and through a new access proposed to be built to the north of Moxley Lane. London Grove Township and PennDOT are working with the developer to ensure that appropriate transportation improvements are implemented as part of the project and that they are consistent with the township's vision for the Route 41 corridor.

London Grove West Apartments (London Grove Township)

On the opposite side of Route 41 from the proposed development described above, a developer proposes to build an apartment complex consisting of nearly 200 units northwest of the London Grove Village shopping center. Residents would use Hepburn Road to access Route 41. London Grove and PennDOT will work with the developer to ensure that appropriate transportation improvements are implemented as needed.

White Clay Point (New Garden Township)

There is an active proposal for a mixed-use development that would include elements on both sides of Route 41 from the Route 7 interchange to Sunny Dell Road. It is proposed to build 468 housing units as well as 108,200 square feet of retail space (including a grocery store, a pharmacy, a bank, and several restaurants), a 19,200 square-foot medical office building, and a 5,000 square-foot convenience store with 12 fueling positions. The preliminary plans indicate that if the development were to be built, the project would involve improvements or alternations to Route 41 as well as to the Sharp Road and Sunny Dell Road intersections.

Quarry Site Development (Avondale Borough)

A residential development consisting of 179 townhouses is proposed to be built on a former quarry site, bounded by Baltimore Pike and Church Street. The primary entrance and exit of the development would be on Baltimore Pike. This project is at a relatively early stage. Initial plans have been conceptually discussed with Borough Council and discussions will be ongoing as the project moves forward.

PROJECT PROCESS & SCHEDULE

EXISTING CONDITIONS ANALYSIS

Previous Plans & Studies

Utilize and build upon previous plans and studies, such as the respective municipal comprehensive plans, the Route 41 Planning Study, and the Southern Chester County Circuit Trail Feasibility Study.

PennDOT TIP Projects

Closely coordinate the planning process with PennDOT's Transportation Improvement Program (TIP) projects along the corridor.

Field View

Identify and incorporate findings from field inventory and data collection.

COMMUNITY OUTREACH

Facilitate a community-driven planning process with various methods of engagement, including three Task Force meetings, an online survey, and three public meetings.

Corridor Visioning

Establish a corridor vision with input from the Task Force and community.

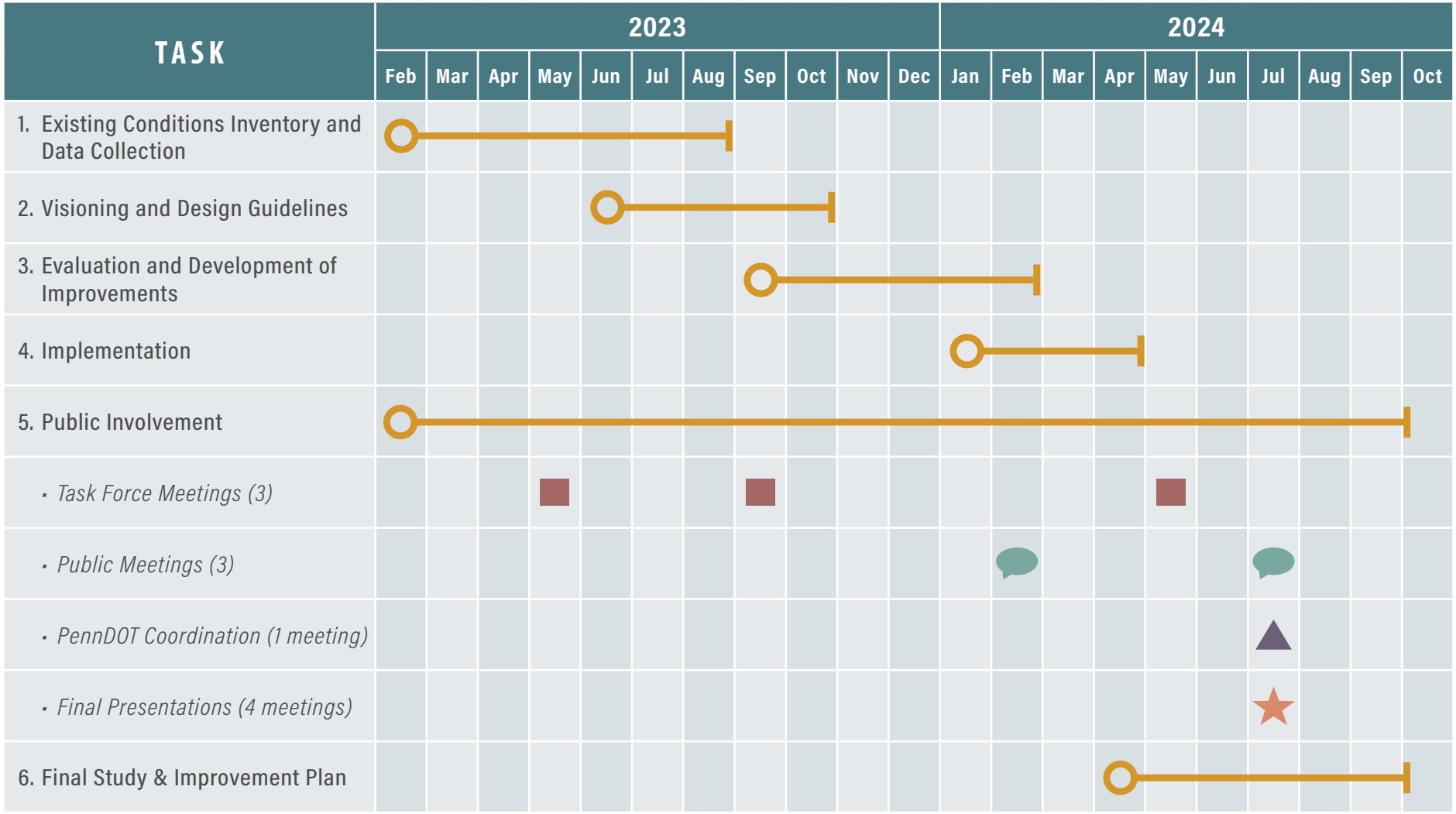
Conceptual Recommendations

Identify and further develop conceptual recommendations for priority projects along the Route 41 corridor.

Implementation Plan

Outline an implementation plan with a funding strategy focused on priority projects.

PROJECT PROCESS & SCHEDULE



STAKEHOLDER & PUBLIC OUTREACH

INTRODUCTION

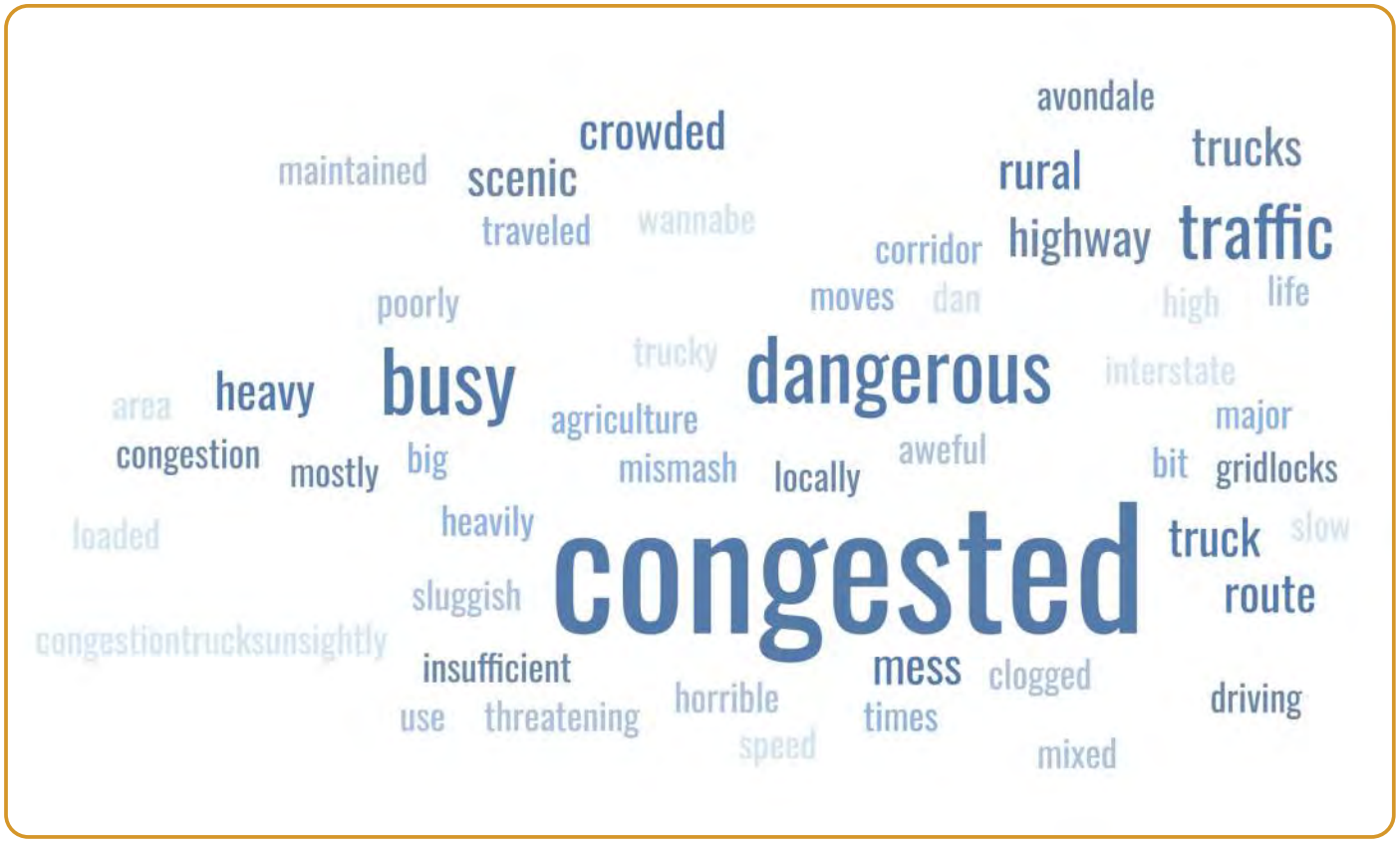
The Route 41 Transportation Study and Corridor Improvement Plan was developed through close coordination with the four sponsor municipalities, other stakeholders, and the public. Summarized below are the key stakeholder and public outreach activities for the project.

Task Force Meetings

A Task Force guided the planning process. Task Force members included representatives from each of the four sponsor municipalities as well as the Chester County Planning Commission and Avondale Borough. The Task Force met three times over the course of the planning process to provide input on the corridor vision and the plan's priority projects as well to assist with the public engagement components of the project.

Public Meetings

A public meeting was held over Zoom on February 1st, 2024. Approximately 200 members of the public virtually attended the meeting. After an overview of the project background and goals, the participants were asked to share one word that describes the Route 41 corridor. This word cloud captures some of their responses, with the most frequently shared words appearing larger. In addition, the project team polled the meeting participants on questions relating to safety, congestion, truck movements, flooding, and accommodating bicycles and pedestrians. Attendees eagerly provided their responses and additional thoughts through the Zoom chat function. This input was well-documented by the project team and it informed the direction of the report's proposals. The project team also fielded questions posed through the Zoom chat and distributed QR codes and links to a public survey, described further on the next page.



STAKEHOLDER & PUBLIC OUTREACH

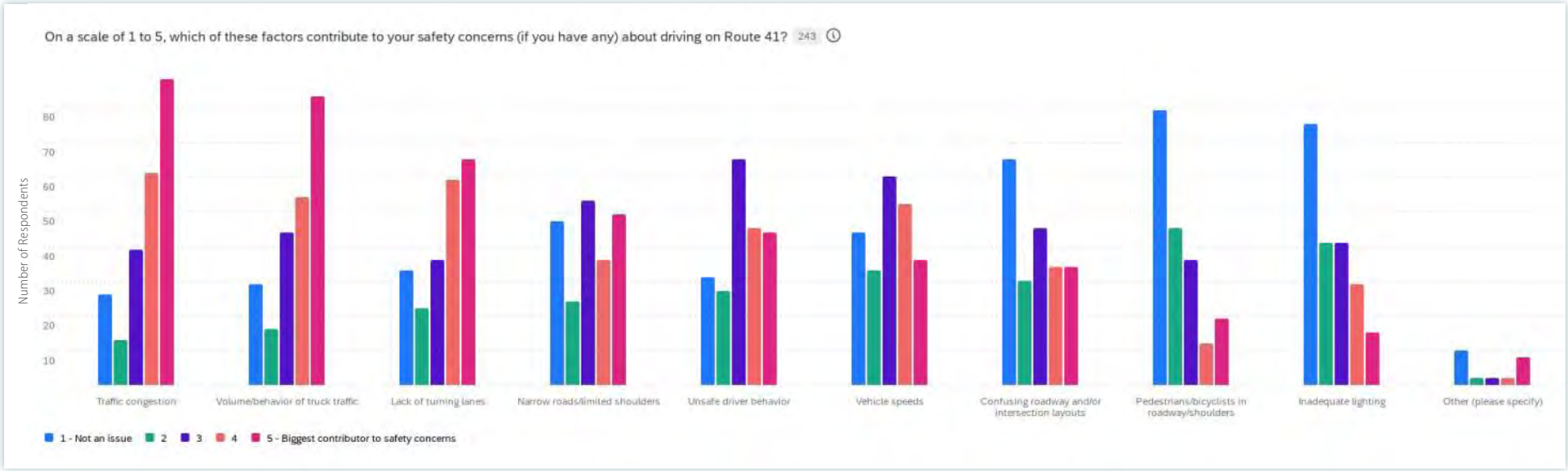
Public Survey

The project team developed an online survey to gather wider feedback on what users of Route 41 view as the most important transportation issues on the corridor, what factors drive concerns about safety, considerations for pedestrian and bicycle facilities, and what specific locations the project team should examine more closely. The survey was open from February 1 until March 8, 2024. Links to the survey were promoted through municipal and county social media, newsletters, and websites as well as through the Transportation Management Association of Chester County (TMACC). It is our understanding that local community groups also promoted the survey. A total of 273 responses were received. The results were used to assess issues along the corridor and develop recommendations and strategies to meet the goals and vision of the community.

Contributing factors that influenced respondents perceptions of safety along the corridor included traffic congestion; truck traffic volume and behavior; vehicle speeding; unsafe driver behavior; and poor roadway conditions.

Relative to providing more pedestrian and bicycle amenities along the corridor, many respondents (108) indicated that the existing conditions were adequate. However, more participants were either in favor of providing more of these amenities or were unsure (135 total). With regard to the provision of more bicycle accommodations along the corridor, most respondents indicated that they would feel most comfortable using an off-road trail or physically separated bike lane.

Individual feedback was also provided by survey respondents and were considered in the corridor recommendations. This feedback included specific locations / intersections, roadway conditions / maintenance, truck traffic and behavior, and how to best accommodate pedestrian / bicycle travel.



CHAPTER 2: EXISTING CONDITIONS

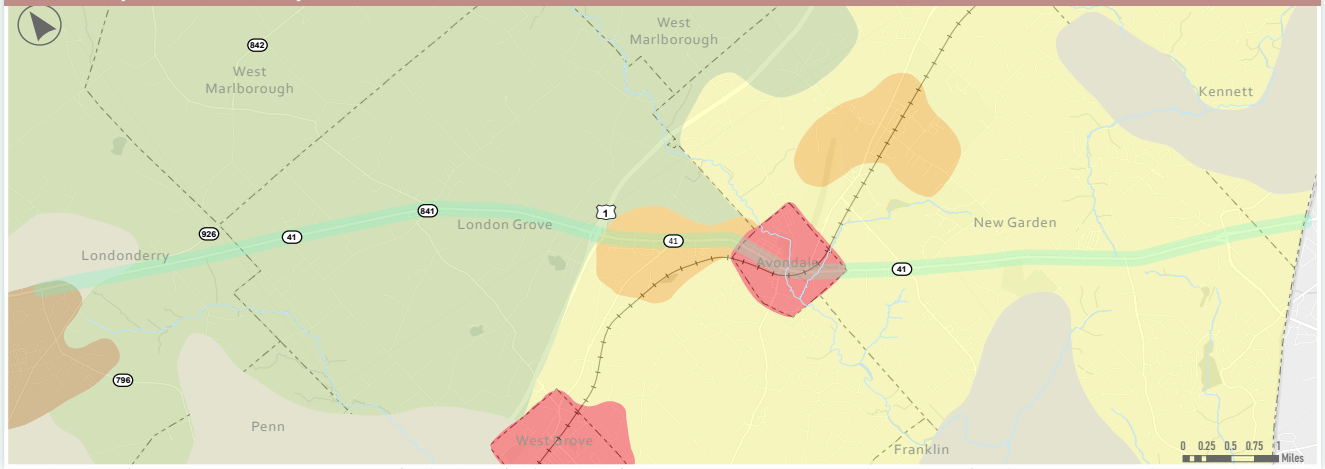
INTRODUCTION

Route 41 is a significant corridor for the movement of people and goods. Throughout the limits of this study, it is also a "Main Street" for residents and businesses, a freight hub for trucks, a rural highway connecting communities, and a suburban arterial with large retailers. This section explores the essential functions that the corridor serves and the residents most impacted by its characteristics and use.

LANDSCAPES3 AREAS

As described above, Chester County's Comprehensive Plan, Landscapes3, designates "landscapes" throughout the county. They are intended to describe the current land use of a given area as well as to offer principles for future development. For each landscape, the plan provides desired visions for types of growth, land use patterns, infrastructure, and design elements. Four of the landscapes are categorized as Growth Areas, which are areas that are best suited to accommodate future growth and development. These Growth Area designations are Urban Center, Suburban Center, Suburban, and Rural Center. The Rural and Agricultural designations are categorized as Rural Resource Areas. Rural Resource Areas are not appropriate for significant growth. They reflect the agricultural and rural character of the county and serve as a focus for preservation efforts. As seen on the accompanying map, the segment of Route 41 that is the subject of this study traverses all of the landscape types in Chester County.

Landscapes3 Areas Map



Urban Center
Historic downtowns and established neighborhoods that serve as civic, economic, and population centers.

Suburban Center
Regional economic, population, and transportation centers with varying land uses.

Suburban
Predominantly residential communities with locally-oriented commercial uses and community facilities.

Rural Center
Mix of housing, commercial, and institutional uses that serve the surrounding rural and agricultural areas.

Rural
Open and wooded lands, with scattered villages, farms, and residential uses.

Agricultural
Large concentrations of active and diverse farm operations, along with related support services.

It should also be noted that Landscapes3 was finalized and adopted in 2017. Conditions on the ground are ever-changing as time passes and it is understood that these designations will likely be at least somewhat revised in the next Chester County comprehensive plan update. Findings from this plan will contribute to that eventual update.

Landscapes3 Areas
- Urban Center
- Suburban Center
- Suburban
- Rural Center
- Rural
- Agricultural
- Municipalities
- Project Extent
- Rail Lines

DEMOGRAPHICS

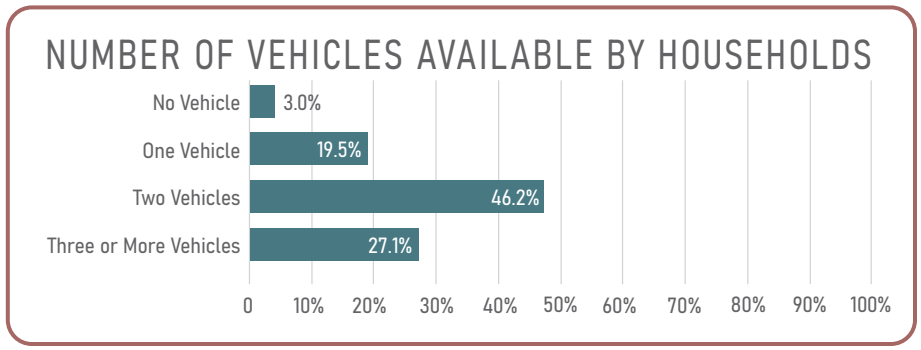
Study Area

Approximately 32,347 people live in the Census tracks that comprise the project area according to the most recent Census estimates. This summary identifies some of the key demographics that impact how people move along the corridor. Also, recent Federal legislation focuses on future investments to advance environmental justice and benefit disadvantaged communities. This section provides a high level summary of various demographics and potential disadvantaged communities that can be further evaluated as project funding is pursued should these Federal initiatives continue.

Income & Access to Transportation Options

Income and vehicle access are major factors influencing transportation decisions. According to data from the Census, the median household income in the project area is $153,337, which is higher than the median household income of Chester County as a whole ($118,574). The percentage of households without access to a vehicle is very low.

Percentage of income spent of transportation is another important factor of transportation access. Within the project area, median-income families spend 24.1% of their income on transportation (roughly 2% higher than the county). Furthermore, low-income families spend 66.6% of income on transportation (around 6% higher than the county).



% of Income Spent on Transportation:

24.1% MEDIUM-INCOME FAMILIES

66.6% LOW-INCOME FAMILIES

70.2% DRIVE ALONE TO WORK

27.8 MINS MEAN COMMUTE / TRAVEL TIME

27.0% PEOPLE OF COLOR

3.8% LIMITED ENGLISH SPEAKING HOUSEHOLDS

3.3% HOUSEHOLDS BELOW POVERTY LEVEL

18.1% POPULATION OVER THE AGE OF 65

9.9% PERSONS WITHOUT A HIGH SCHOOL DIPLOMA

3.9% HOUSEHOLDS WITH NO ACCESS TO A VEHICLE

Vulnerable Populations

An Equity Analysis performed by the Delaware Valley Regional Planning Commission (DVRPC) looks at demographics at the Census tract level and identifies the proportion of the tract's population that could potentially be disadvantaged according to nine indicators (Youth, Older Adults, Female, Racial Minority, Ethnic Minority, Foreign-Born, Limited English Proficiency, Disabled, and Low-Income). These percentages are then compared to the nine county greater Philadelphia region as an Indicators of Potential Disadvantage (IPD) score that can be viewed in the map above.

The project area contains multiple municipalities with Census tracts that rank high in IDP composite values (London Grove Township, New Garden Township, and Kennett Township) indicating concentrations of potentially disadvantaged individuals. In addition, some areas have specific indicators that are well above averages for the region. Relative to the region, the Census tracts encompassing London Grove Township have well above average Ethnic Minority populations and New Garden Township contains Census tracts that are well above average in Ethnic Minority, Foreign-Born, and Limited English Proficiency populations.

TRANSPORTATION SYSTEM

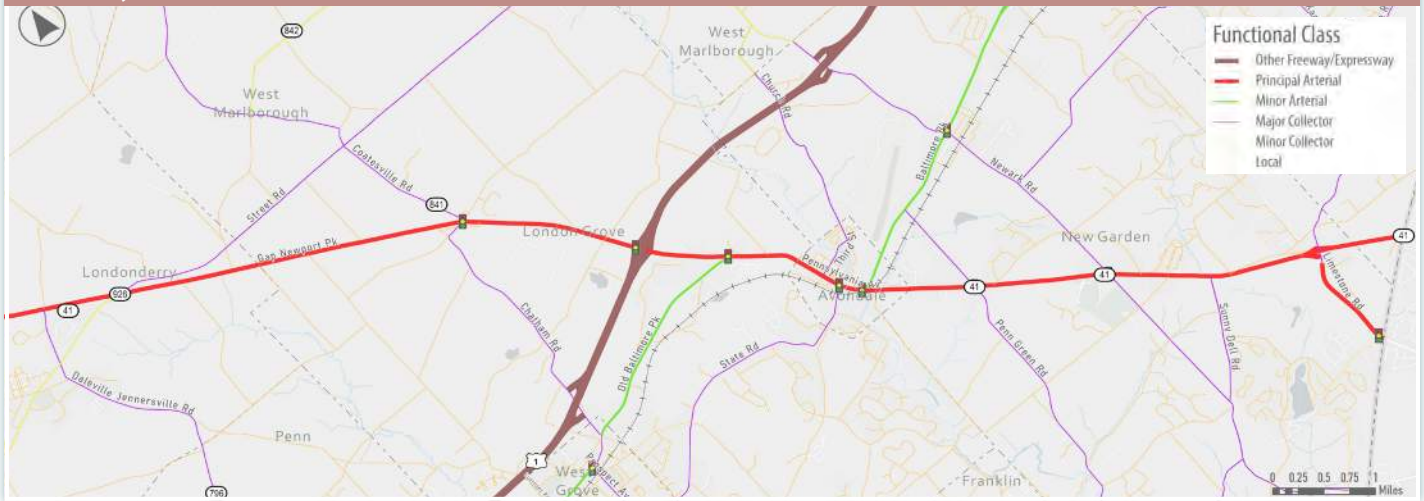
Roadway Network

This study is focused on the Route 41 corridor from Route 796 in Londonderry Township to the Route 7 interchange in New Garden Township. Route 41 through this section is a Principal Arterial generally consisting of one lane in each direction with occasional turning lanes throughout. The speed limit is 45 mph through most of the corridor with speeds reduced to 35 mph in Avondale Borough and the Village of Chatham.

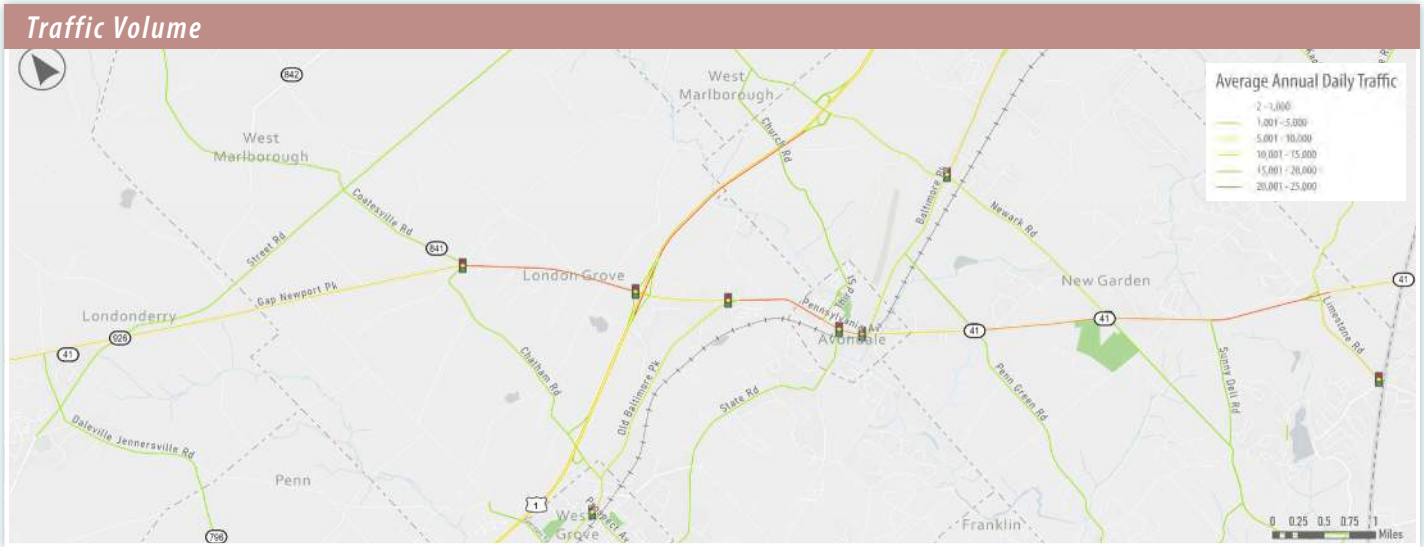
Traffic Volume

Route 41 through the study area carries between 10,000 and 23,000 vehicles per day, depending on the segment (see Traffic Volume map). Because Route 41, in combination with US Route 30, is the most direct route from the Port of Wilmington to Lancaster and Harrisburg, it serves as a key connection to major freight generators across the state of Pennsylvania. In addition, there are a number of freight-intensive uses situated on and around the Route 41 corridor, perhaps most prominently among them are facilities related to the local mushroom industry. This concentration of freight-intensive uses results in substantial truck traffic moving through the corridor. In fact, truck trips make up between 13% and 20% of all vehicle trips on the corridor through the study area.

Roadway Network – Functional Class



Traffic Volume

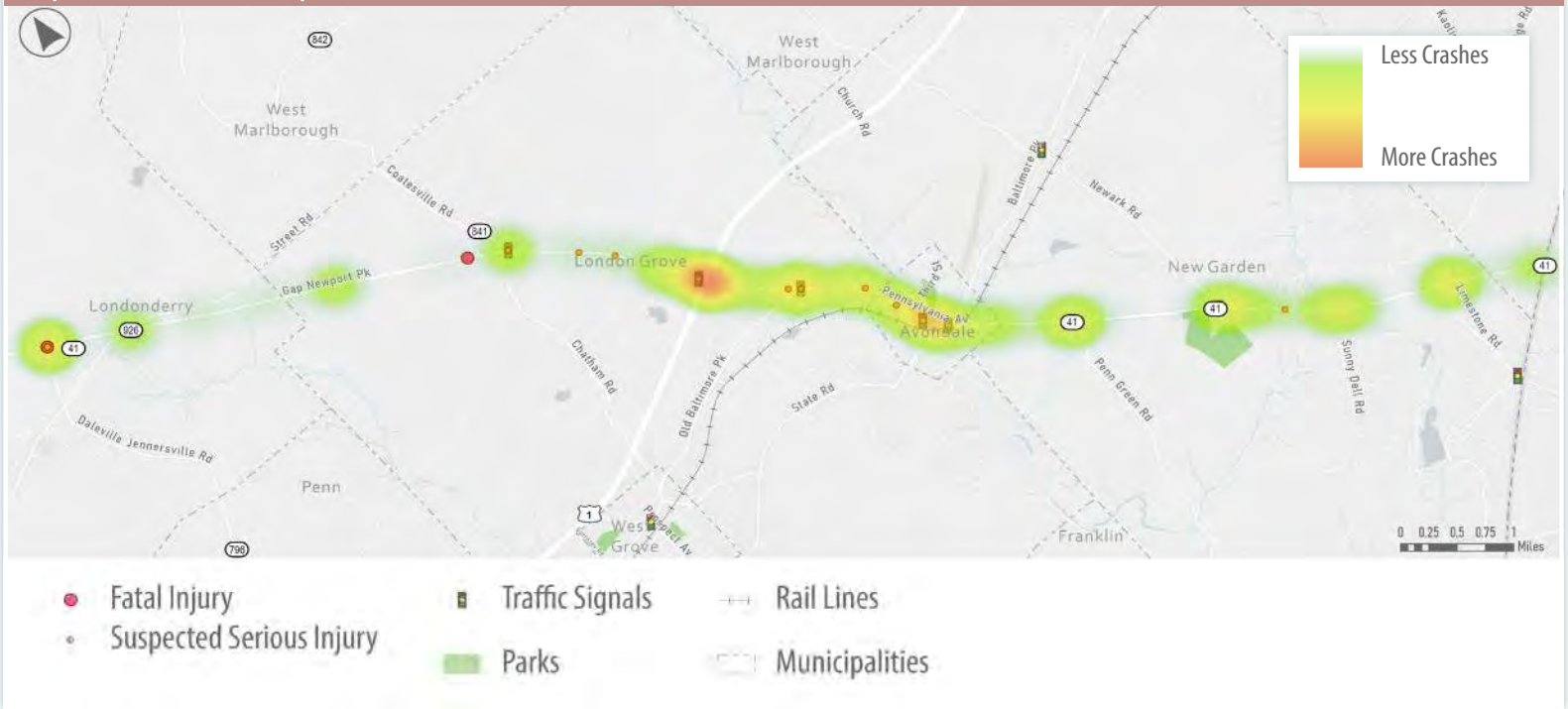


TRANSPORTATION SYSTEM

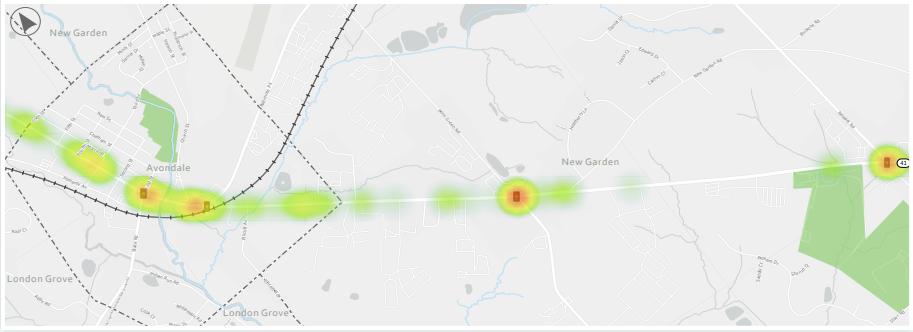
Reportable Crashes

This study reviewed reportable crashes on or immediately around the Route 41 corridor through the study area using PennDOT's Pennsylvania Crash Information Tool for the five-year period from 2018 through 2022. A reportable crash is one in which there is injury to anyone involved and/or a vehicle must be towed from the scene and cannot be driven. The map below illustrates where multiple reportable crashes occurred in close proximity over this five-year period.

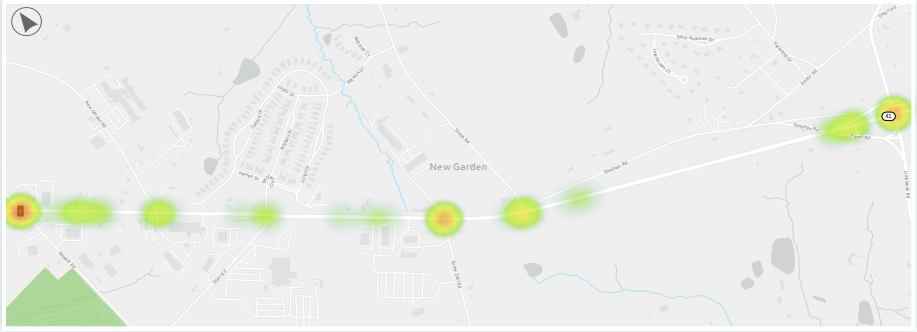
Reportable Crashes Map (2018-2022)



Avondale Borough Line to Newark Road

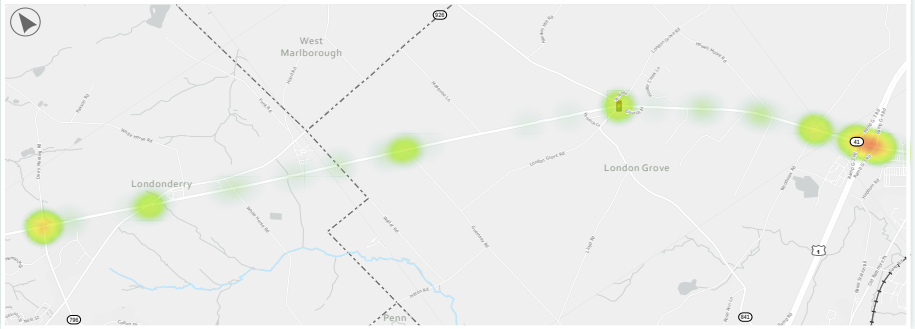


Newark Road to Route 7 Interchange



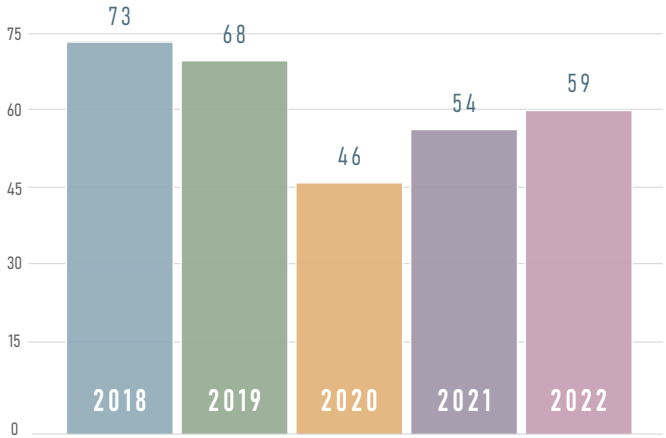
TRANSPORTATION SYSTEM

PA 796 to US Route 1

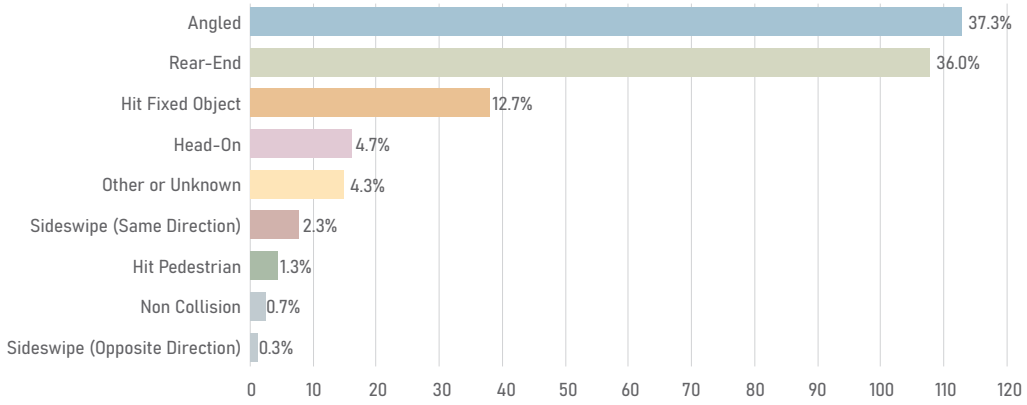


US Route 1 to Avondale Borough Line

TOTAL CRASHES BY YEAR (2018-2022)



TOTAL CRASHES BY TYPE (2018-2022)



TRANSPORTATION SYSTEM

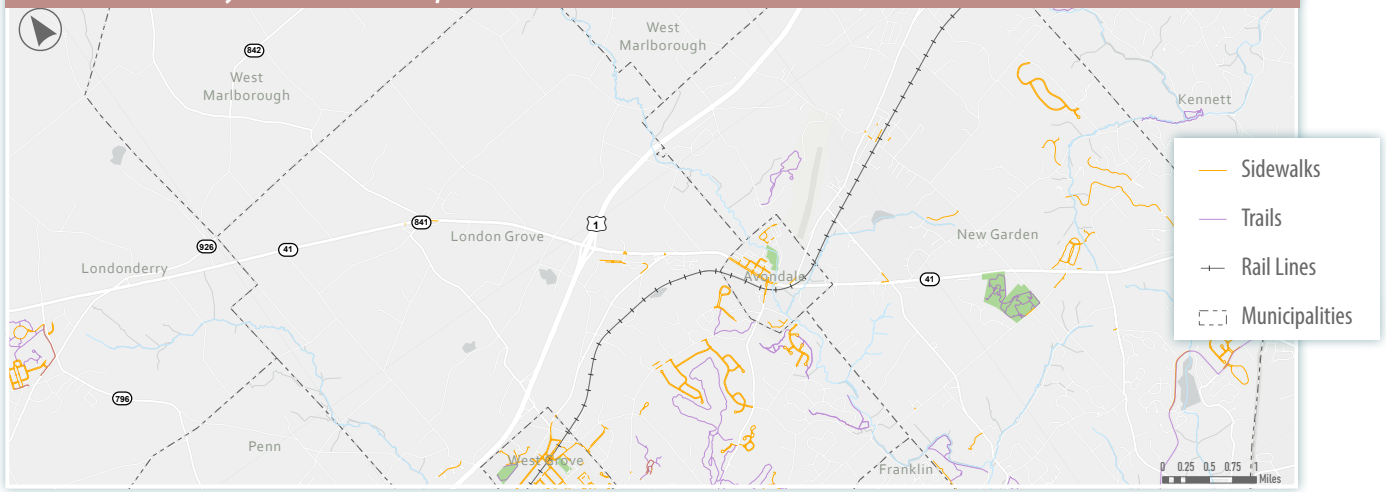
Pedestrian Infrastructure

Pedestrian and bicycle facilities on or around the study area corridor are limited. In Avondale Borough, there is a well-developed sidewalk network on Route 41 (referred to as Pennsylvania Avenue within the borough) and its cross streets. Aside from this, there are small and scattered segments of sidewalk in various locations, including in the Village of Chatham.

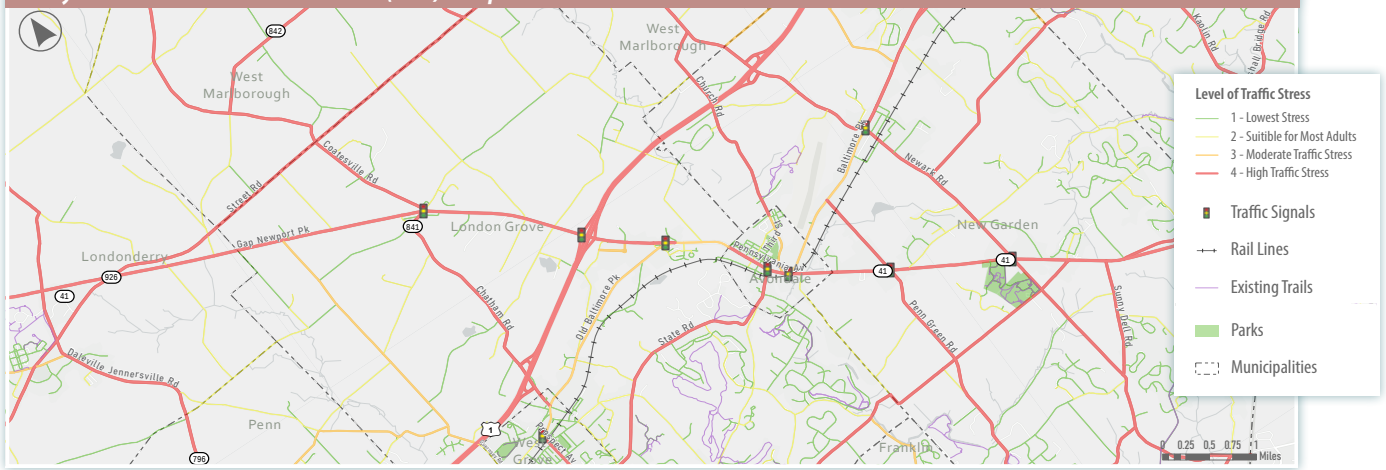
Bicycle Infrastructure

As for bicycle facilities, there are bicycle lanes on both sides of Route 41 for a short segment in London Grove Township just north of Avondale Borough. Bicycling on-road along the Route 41 corridor is generally not hospitable. The Level of Traffic Stress (LTS) map provided designates roadway segments according to how comfortable cyclists of varying experience and confidence levels would be riding on it, with an LTS of 1 being comfortable for most people and an LTS of 4 being comfortable only for very experienced and "fearless" riders. These classifications are based on the number of travel lanes on the roadway, the effective vehicle speed, and the presence or absence of any type of bicycle facility on the road. Despite having limited on-road bicycle facilities and generally uncomfortable conditions, experienced cyclists can often be seen riding on parts of Route 41 and other more rural roadways in southern Chester County. There are no off-road or protected bicycle facilities along the corridor or in its immediate vicinity.

Pedestrian & Bicycle Facilities Map



Bicycle Level of Traffic Stress (LTS) Map



TRANSPORTATION SYSTEM

Freight Rail

In Avondale Borough, Route 41 crosses the Octoraro Branch rail line, which is owned and operated by East Penn Railroad. Because the crossing is at-grade, there can be periods of delay on Route 41 when a train is making the crossing. The Octoraro Branch line runs from Sylmar, Pennsylvania, east to Chadds Ford where it connects to the Wilmington and Northern line, which in turn provides connections to both Norfolk Southern and CSX lines. It serves several key industries and businesses in southern Chester County, including Herr's, Tasty Baking Company, and Manfredi Cold Storage. In addition, the Avondale Transload Center, also in the borough, allows for the transfer of freight from rail to truck and vice versa. Accordingly, this facility is a common origin and destination for truck trips on the corridor.

Public Transportation

The SCCOOT bus route, operated by the Transportation Management Association of Chester County (TMACC), provides service to parts of the study area. It serves communities between Oxford and West Chester, generally travelling along Baltimore Pike through southern Chester County. From west to east, the route enters the study area in London Grove via Baltimore Pike, then travels south on Route 41 through Avondale Borough before heading east on Baltimore Pike.

Aviation

New Garden Airport is in New Garden Township just east of Avondale Borough and Route 41. It generally serves recreational and corporate aviators.

KEY ISSUES & CONSIDERATIONS

Corridor Safety

As seen on the Reportable Crash Map, there have been a significant number of crashes on the study corridor in the past five years, including some that have resulted in fatalities or serious injuries. Safety has long been a concern on Route 41. There are many contributing factors. One is roadway geometry, as the Route 41 corridor is positioned as a diagonal corridor while most of its major cross streets have north-south alignments. This results in intersections with offset alignments and sight distance limitations. High vehicle speeds and volumes further contribute to making this corridor less safe relative to others in the county and state.

As discussed, these concerns have driven the development and upcoming implementation of roundabout projects at Route 41's intersections with Route 926, Route 841, and US Route 1. These roundabouts are intended to both slow traffic going into the intersections and to resolve their confusing configurations. While these intersections continue to have higher concentrations of crashes, other intersections and locations on the corridor have also been impacted by concentrations of crashes, including Route 796, Guernsey Road, Woodview Road, Baltimore Pike, Penn Green Road, and Sunny Dell Road, among others. This study builds off of the planned improvements by identifying interventions that will further enhance safety on the corridor at these and other locations.

Congestion

Traffic congestion on Route 41 has negative impacts on the travelling public as well as on the movement of goods. Parts of the corridor carry nearly 25,000 vehicles per day while mostly providing just one lane in each direction. Traffic using the corridor to reach the Delaware beaches in the summer months put an additional strain on the network. In addition, according to the DVRPC Congestion Management Process (CMP), the corridor's volume-to-capacity (v/c) ratio is anticipated to grow substantially in the coming years relative to other corridors in the region. While there are no plans to significantly increase roadway capacity in terms of significant corridor-wide roadway expansion, this plan and its predecessors explore strategic interventions that can improve the roadway's functionality within its existing footprint. Capacity improvements at specific intersections or along limited stretches of the corridor are proposed. Broadly, these capacity improvements include turning lanes or through lanes at signalized intersections or installation of roundabouts.

Truck Movements

As noted above, Route 41 serves as a major regional trucking route, including both through trips and those with a local origin or destination on/near the corridor. While truck movements are needed to serve the businesses that are an essential part of the regional and local economies, their volumes pose challenges to those living on or near the Route 41 corridor. Residents have long expressed concerns about truck speeds, safety, and noise. Balancing these needs is a focus of this plan.

Flooding

Portions of the study area have experienced significant flooding and are located within FEMA Flood Hazard Zones. These include parts of Avondale Borough, New Garden Township, and London Grove Township. The flooding within Avondale has been the most impactful in terms of the level of loss. The borough is engaged in planning efforts to explore ways to mitigate flood risk. Impacts from climate change may increase the severity and frequency of flooding on the corridor. In addition to the potential property loss from such events, the impacts to the transportation network in the form of effects like closed roads or damaged infrastructure can also be significantly harmful.

Accommodating Pedestrians & Bicyclists

Pedestrian and bicycle access is very limited on and around the corridor. In addition, the volume of traffic, and truck traffic in particular, poses challenges for implementing pedestrian and bicycle improvements that would provide a safe and comfortable experience. As discussed, land use along the corridor varies widely. Accordingly, this plan proposes targeted pedestrian and bicycle interventions that are appropriate to their current and future contexts.

KEY ISSUES & CONSIDERATIONS

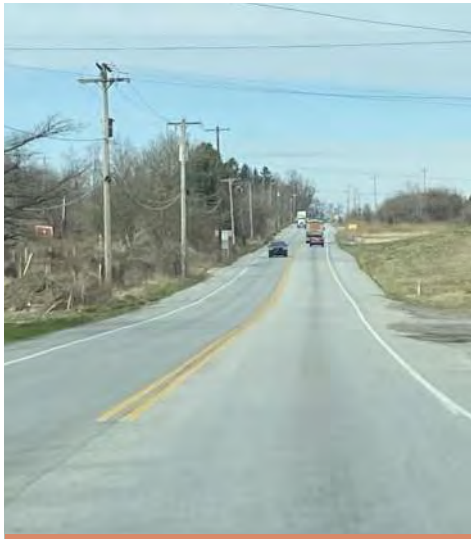
CORRIDOR SAFETY

Summary

The Route 41 corridor is an important corridor that experiences high volumes of traffic on a daily basis. These volumes are made up of a variety of users including local day trips, commuting, truck traffic, and some pedestrian and bicycle activity. Ensuring that the corridor provides a safe means of transportation for users of all kinds is a chief concern of Route 41 Corridor Study.

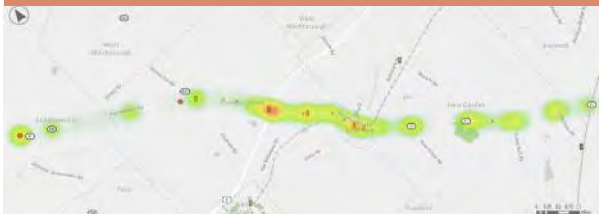
Existing Conditions

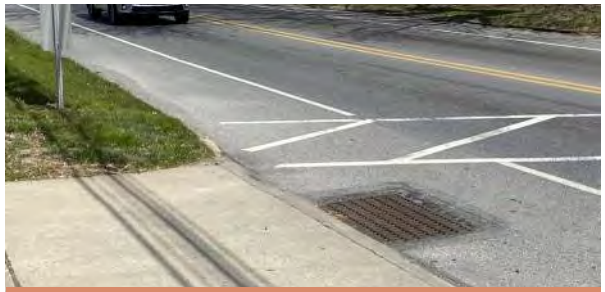
In addition to different user types, the Route 41 corridor is also home to a variety of different land uses. They range from rural/agricultural areas along the western portion of the corridor to more urban context in and around the Borough of Avondale to suburban areas along the eastern portion. The changing land use also leads to changes in the roadway configuration and traffic conditions that play a big role in safety for all users along the corridor.



Long stretches of straightaway roadway lead to excessive speeds

Reportable Crashes Map (2018-2022)





Lack of ADA curb ramps at pedestrian crossing

Potential Considerations

- High speeds along straightaway sections
- Mix of land uses
- Visibility concerns in urban areas
- Congestion
- High crash concentrations areas
- Lack of high visibility pedestrian crossings
- Sidewalk consistency / ADA compliancy

Key Questions

Are there any locations on the corridor where you feel particularly unsafe, whether that be as a driver, pedestrian, or bicyclist?

Public Feedback Concerns

- The most frequently cited safety concerns included traffic congestion, the volume and behavior of truck traffic, and a lack of turning lanes.
- The intersection of Route 41, Route 841, and London Grove Road in Chatham was the most frequently cited location of concern. Participants reporting feeling unsafe at this location whether driving, walking, or biking.
- Some participants identified a need to wider shoulders for the corridor for farm equipment and Amish buggies to utilize.
- Many participants expressed a desire to see improved roadway and roadside maintenance, identifying pavement condition issues (such as potholes) as well as concerns about overgrown roadside vegetation, which can obscure sight lines at certain intersections.

KEY ISSUES & CONSIDERATIONS

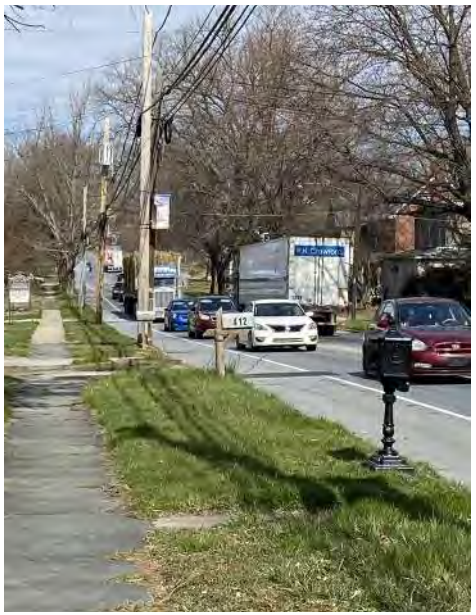
CONGESTION

Summary

Congestion is one of the primary concerns along Route 41. It can be attributed to a variety of factors including high traffic volumes, turning movements onto and off of the corridor, and signal delay. Congestion not only causes delay for travelers, but can also lead to safety issues. This is particularly true for more vulnerable road users such as pedestrians and people on bicycles.

Existing Conditions

Congestion is especially prevalent in more populated areas (such as Avondale), near major intersections (such as the US Route 1 interchange) and near commercial developments. Due to its use as a major commuting corridor, Route 41 sees increased congestion during morning and afternoon peak hours.



Congestion near commercial area

Potential Considerations

- Traffic volumes
- Truck movements
- Land use context (i.e., roadside character)
- Turning movements
- Commercial area access
- Pedestrian crossings

Key Questions

At which locations do you experience the most congestion? Please include any information regarding time of day or season if it is dependent on these or any other factors.

Public Feedback Concerns

- Participants identified many locations along the corridor at which they experience substantial traffic congestion. These include several locations within Avondale Borough as well as at and near the intersections with Sunny Dell Road, Newark Road, Sharp Road/Sheehan Road, and Starr Road/Brittany Drive.
- It was noted by several participants that southbound traffic on Route 41 is particularly congested, likely because of drivers heading to the Delaware beaches.

KEY ISSUES & CONSIDERATIONS

TRUCK MOVEMENTS

Summary

The PA Route 41 corridor features high volumes of truck traffic due to its status as important freight route. Truck movements along the corridor contribute to vehicle conflicts, limited visibility, and environmental concerns such as decreased air quality. Truck traffic also leads to uncomfortable environments for walking and biking, especially in constrained areas.

Existing Conditions

US Route 1 (classified as a primary freight route by DVRPC) intersects with PA Route 41 around the midpoint of the project area. The proximity to this major freight route results in a large amount of truck traffic along PA Route 41 in both directions. PA Route 41 also provides important logistical connections to the east (Port of Wilmington, etc.) and west that contributes to increased truck traffic.

Multiple truck movements at Route 41 intersection

Potential Considerations

- Visibility concerns
- Tight turning areas
- Air quality
- Water Quality
- Noise pollution
- Uncomfortable biking and walking conditions
- Truck restrictions

Key Questions

Which truck movements create safety or operating concerns?

Public Feedback Concerns

- Many participants registered complaints about so-called "Jake brakes" (i.e., loud engine braking) and the heavy truck noise made along the corridor.
- While there were numerous additional complaints about truck movements and behaviors, other participants expressed support for the industries that they serve and noted their importance to the local economy.

KEY ISSUES & CONSIDERATIONS

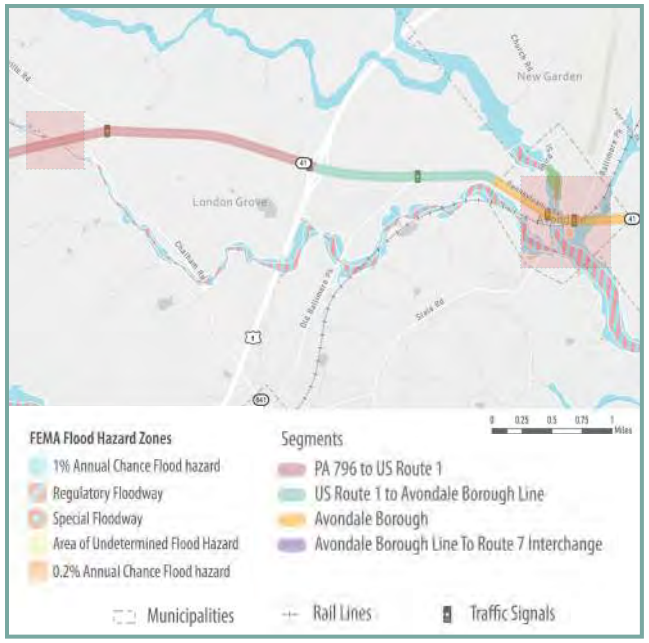
FLOODING

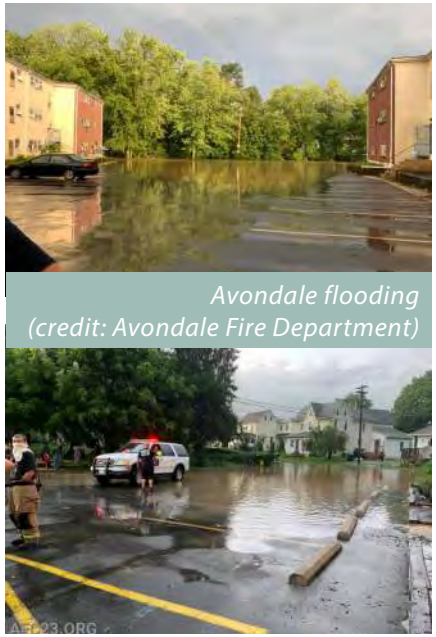
Summary

Flooding along the PA Route 41 corridor is a major concern that may worsen as heavy rainfall events increase in coming years. Flooding not only impacts roadway operations but also leads to property damage and potential safety hazards, especially in cases of flash flooding.

Existing Conditions

Areas with increased risk of flooding are primarily concentrated in more urbanized areas of Avondale to the east of the project area. These locations have endured major flooding events in recent years that have resulted in major property damage, resident displacement, and emergency evacuations. Stream crossings in the western portion of the project area are also subject to flooding that can result in major travel issues along the PA Route 41 corridor.





Avondale flooding (credit: Avondale Fire Department)

Potential Considerations

- Flood hazard areas
- Increasing heavy rainfall/flooding events
- Emergency response and access
- Impervious surfaces and continued development
- Stormwater management
- Environmental justice (i.e., impact on disadvantaged populations)

Key Questions

Has flooding along the corridor impacted your travel, and if so, how often and where specifically?

Public Feedback Concerns

- Some participants noted that flooding occurs in Avondale Borough, while others said that flooding had not impacted their travel on Route 41 often or at all.

KEY ISSUES & CONSIDERATIONS

ACCOMMODATING PEDESTRIANS & BICYCLISTS

Summary

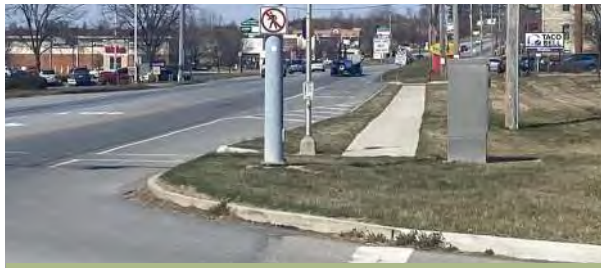
Although the PA Route 41 corridor primarily caters to automobile travel, it is important to recognize the need to accommodate pedestrians and bicyclist travel. This is especially true in more urban and commercial areas where people walk and bike both for recreation and for daily trips.

Existing Conditions

The PA Route 41 Corridors features limited pedestrian and bicycle infrastructure that is mostly concentrated in more urban areas such as Avondale, or within commercial areas along the corridor. There are many gaps in the existing network including missing sidewalks and crossings that result in a disconnected network that make many locations along the corridor only accessible via automobile. In areas with sidewalks and crossings, many are in poor condition.

Worn pedestrian crossing in Avondale


Incomplete sidewalk network at Route 41 interchange


Lack of crossing on street perpendicular to Route 41

Potential Considerations

- User comfort
- Planning for all ages and abilities
- Prioritizing connections
- Off road facilities
- Parallel roadways
- Coordinate with future/ongoing projects and land developments
- Sidewalk consistency / ADA compliancy

Key Questions

Are there locations on the corridor where you would like to be able to walk or bike but you do not feel safe or comfortable doing so?

Public Feedback Concerns

- Many participants felt that the corridor's existing pedestrian and bicycle facilities are adequate, while a smaller group expressed support for new pedestrian and bicycle amenities, and a notable percentage indicated that they were not sure.
- Among participants that would like to see more pedestrian and bicycle facilities on the corridor, Avondale Borough and the Village of Chatham were most frequently identified as being appropriate locations.
- Participants overwhelmingly expressed that they would need a high degree of separation from vehicle traffic in order to feel comfortable biking along Route 41. They would generally feel uncomfortable using on-road bicycle facilities (bike lanes, paved shoulders, sharrows) on Route 41.

CHAPTER 3: CORRIDOR VISION

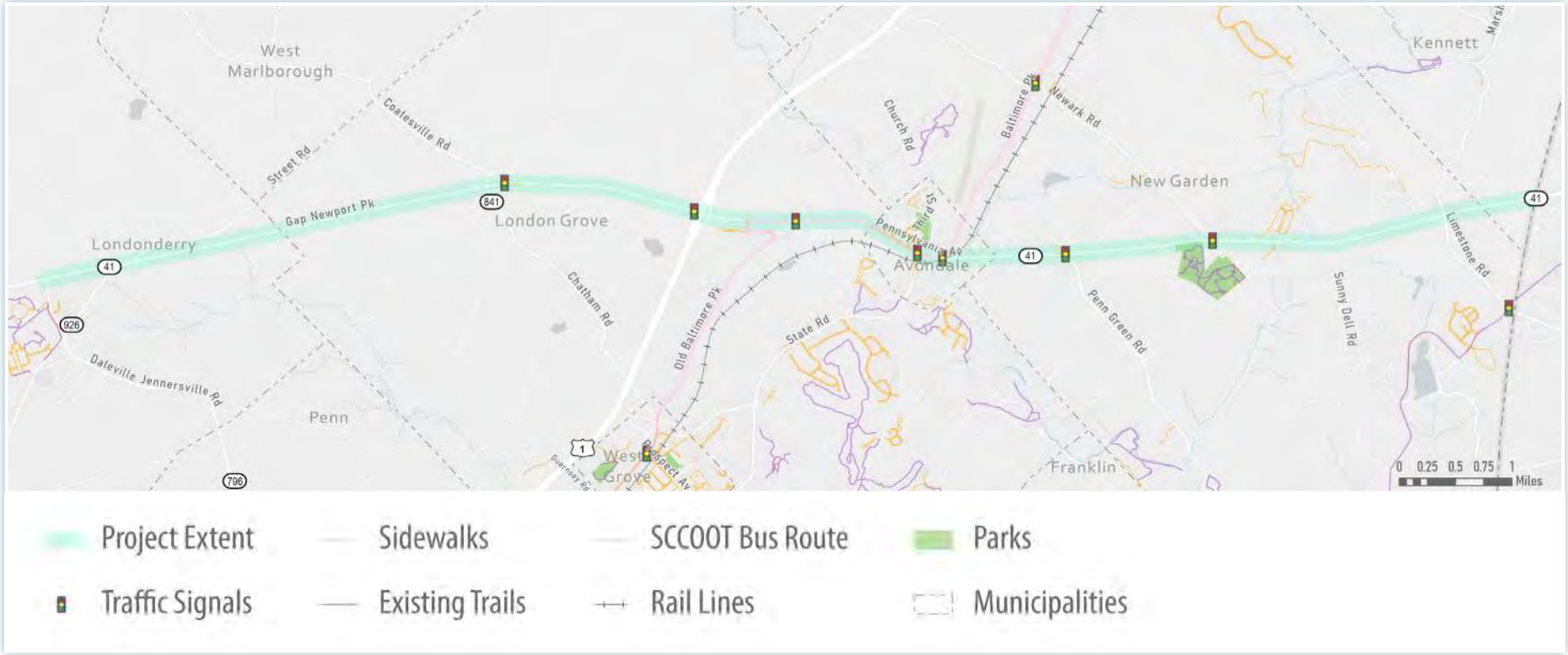
INTRODUCTION

The study Task Force, the sponsor municipalities, and members of the public were engaged to develop a preferred future vision for the Route 41 corridor. This chapter also presents a toolbox for the study area municipalities and PennDOT. These types of interventions can be deployed on the corridor to help bring about the overall corridor vision.

VISION STATEMENT

A vision statement provides a succinct, overarching purpose for the project that helps set expectations and guides efforts and outcomes. Vision statements should be broad and flexible while also providing clear direction towards achieving the project goals. The vision statement below was developed through the input received during the stakeholder and public engagement process.

"The Route 41 corridor in southern Chester County will be safe, convenient, and accessible for all users while supporting key local industries and businesses, and reflecting the character of the diverse communities that it serves."



TRANSPORTATION TOOLBOX

THE TRANSPORTATION TOOLBOX

There are a variety of infrastructure features that form the building blocks for a safe, comfortable, and efficient transportation network. The Transportation Toolbox presents facilities that may be appropriate along the Route 41 Corridor to serve the broad transportation needs of the community. The toolbox also helps to define terminology used in the plan and presents a brief description and illustrative photo for each facility. For some facilities, additional information is provided regarding design guidelines.

The following design guidelines and publications were used as references for development of the toolbox and can be helpful resources for the planning and design of transportation infrastructure.

- *A Policy on Geometric Design of Highways and Streets (Green Book), Sixth Edition (2011), American Association of State Highway and Transportation Officials (AASHTO).*
- *Design Manual, Part 2 (DM-2): Contextual Roadway Design, Publication 13 (January 2023, Change No. 2), PennDOT.*
- *Design Manual, Part 2 (DM-2): Highway Design, Publication 13M (February 2023, Change 9), PennDOT.*
- *Traffic Engineering Manual, Publication 46 (August 2009, Change 1 - March 2014), PennDOT.*
- *Pennsylvania's Traffic Calming Handbook, Publication 383 (July 2012), PennDOT.*
- *Access Management: Model Ordinances for Pennsylvania Municipalities Handbook, Publication 574 (April 2005, Updated February 2006), PennDOT.*
- *Making Our Roads Safer | One Countermeasure at a Time (2021), Federal Highway Administration (FHWA)*
- *Roadside Design Guide, Fourth Edition (2011), American Association of State Highway and Transportation Officials (AASHTO).*
- *Guide for the Development of Bicycle Facilities, Fourth Edition (2012), American Association of State Highway and Transportation Officials (AASHTO).*
- *Guide for the Planning, Design and Operation of Pedestrian Facilities, Second Edition (2021), American Association of State Highway and Transportation Officials (AASHTO).*
- *Manual of Uniform Traffic Control Devices (MUTCD) (2009), Federal Highway Administration (FHWA).*
- *Bikeway Selection Guide (2019), Federal Highway Administration (FHWA).*
- *Small Town and Rural Multimodal Networks (2016), Federal Highway Administration (FHWA).*
- *Urban Bikeway Design (2011), National Association of City Transportation Officials (NACTO).*
- *Building Better Bus Stops Resource Guide*

TRANSPORTATION TOOLBOX

Traffic Calming

Traffic calming measures include physical changes to a roadway to reduce speeds and cut-through traffic. They are typically used on neighborhood roadways. Traffic calming measures can be implemented in conjunction with bicycle and pedestrian infrastructure to slow traffic and create a safer and more comfortable environment for walking and biking. The Traffic Calming Toolbox includes several common measures. Additionally, *PennDOT's Traffic Calming Handbook* (Publication 383) provides details regarding the appropriate placement and design of these and other traffic calming measures.

1. Pavement Markings / Reduced Lane Widths

Reducing excessive lane widths can help to slow traffic by providing a defined area for travel. Also, a reduction in lane widths or right-sizing of lanes based on local context can provide additional space for bicyclists and pedestrians. Lane widths can be defined by edge line striping, curbing, or other physical roadside treatments.

2. On-Street Parking*

Provision of on-street parking on one or both sides that reduces roadway width. Parked vehicles also provide a buffer between traffic and pedestrians on the sidewalk.

3. Speed Hump or Speed Table*

Raised humps in the roadway, typically 3-4 inches high, intended for low volume and low speed roadways. Speed humps are most effective when placed in a series. They are the most popular traffic calming measure due to their effectiveness at reducing speeds, ease of implementation, and relatively low cost. Speed tables are speed humps with a longer, flat top that can be easier to construct and are generally more acceptable to the traveling public.

Option: Speed humps or tables placed at a crosswalk create raised pedestrian crossings, which provide better visibility for pedestrians.

4. Gateway Treatments

A combination of special treatments used at the entrance to an area or neighborhood that alerts drivers to slow down due to a change in environment. Gateway treatments can include signage to identify the area or neighborhood. Other potential gateway treatments include landscaped medians or landscaped areas on the roadside.

5. Roundabout

An intersection design treatment that reduces conflict points and slows traffic. Traffic approaching the intersection yields to traffic circulating around the roundabout. Splitter islands at the entries help to slow and direct traffic and serve as pedestrian refuge areas. In some situations, roundabouts can provide increased capacity and reduced delay when compared with traffic signals.

Roundabout Variation: Mini-Roundabout: A roundabout with a small diameter and traversable central island. Mini-roundabouts offer benefits similar to roundabouts, but with a smaller footprint and less cost. Mini-roundabouts are typically used in urban or small town settings on roadways with low speeds.

** Traffic calming measures most appropriate for local roads along the corridor and typically not within PennDOT right-of-way.*

TRANSPORTATION TOOLBOX

Safety Countermeasures

The Federal Highway Administration (FHWA) has studied numerous safety countermeasures to address known conditions that lead to increased collisions. A few of the 28 recommendations and known safety countermeasures, as contained in FHWA's *Making Our Roads Safer | One Countermeasure at a Time*, are summarized below.

1. Speed Management Practices

When determining speed limits, agencies and municipalities should consider a range of factors beyond prevailing speeds of motorists (i.e., the 85th percentile speed). These factors should account for the most Vulnerable Road Users (VRUs) present, crash history, land use context and roadside conditions, geometric conditions, and roadway classification, including traffic volumes and observed speeds. To achieve desired speeds, modified roadway design, traffic calming measures, and enforcement may be necessary. In some cases, speed safety cameras may be an appropriate installation to self-enforce desired speeds. Also, speed management practices such as variable speed limits use real-time prevailing data and conditions to determine appropriate speeds and display them to the drivers.

2. Edge Line Treatments

To reduce roadway departures and shoulder encroachments, several measures can be installed along the outside (white) edge line or along the roadway edge. Wider edge lines and rumble strips (with painted stripes and reflectors), and SafetyEdgeSM can be reduce departure risks by providing a visual and sensory queue to drivers. Along horizontal curves, enhanced delineation and signage can be provided to further supplement standard roadway signage and pavement markings.

3. Pavement Friction Management

High friction surface treatments can restore or enhance roadway friction and skid resistance and can be applied to horizontal curves, interchange ramps and intersection approaches, steep downward grades, crosswalk approaches, and locations with a history of rear-end, failure to yield, wet weather, and red-light running crashes.

4. Street Lighting

Adequate lighting provides safety to all roadway users and can reduce the severity of crashes. Lighting can be targeted at intersections, pedestrian crossings, transit stops, and also be provided along corridors.

5. Additional Measures

Some of the additional safety countermeasures that are identified by FHWA are described elsewhere in the toolbox and include: 1) medians, 2) corridor access management, 3) dedicated turn lanes at intersections and driveways, 4) reduced left-turn conflicts, 5) roundabouts, 6) crosswalk visibility enhancements, 7) bicycle lanes (separate facilities), 8) Rectangular Rapid Flashing Beacons (RRFBs), 9) traffic signal phasing and equipment modifications, and 10) separated pedestrian walkways.

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Image Credit: FHWA


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Image Credit: Maricopa County, AZ

TRANSPORTATION TOOLBOX

Bike & Pedestrian Crossing

1. Marked Crossing

Pavement markings designating a location for pedestrians to cross a road, often connecting sidewalks, paths, or multi-use trails. Crosswalks must be a minimum of 6 feet wide. High visibility crosswalks, also known as continental design, are most visible to motorists.

Marked Crossing Variation: Mid-Block Crossing: A crosswalk that is not located at an intersection. Additional warning devices are required to increase pedestrian safety compared to typical crosswalks at intersections. A mid-block crosswalk can include advance signage and pavement markings. Other design treatments could include a pedestrian refuge island or raised crosswalk.

2. Traffic Signal

Traffic signal equipment for pedestrians can include pedestrian pushbuttons, accessible pedestrian signals, passive detection for bicyclists or pedestrians, pedestrian signal heads, and pedestrian countdown signal heads. Accessible Pedestrian Signals (APS) communicate information about the WALK and DON'T WALK intervals for pedestrians who are blind or have low vision. Countdown pedestrian signal heads show how much time remains before the traffic signal changes.

3. Flashing Warning Device

A flashing warning device can be used in combination with pedestrian crossing signs and a marked crosswalk at uncontrolled crossing locations. Signs and flashing warning devices can be side-mounted or overhead. Additionally, flashing warning devices can be user-activated. Rectangular Rapid Flashing Beacons (RRFBs) are one example of a flashing warning device.

4. Curb Extension / Bulb-out

Areas of expanded curbing that extend across a parking lane and may narrow a travel lane. Curb extensions create shorter crossing distances and improve visibility for pedestrians while increasing available space for street furniture and plantings. Curb extensions can also serve as a traffic calming measure.

5. Trail Crossing

Trail crossings are locations where a multi-use trail crosses a roadway. Trail crossings may be within the area of an intersection, mid-block, or grade separated. Based on AASHTO guidelines, mid-block trail crossings can be considered a four-leg intersection. Mid-block trail crossings often involve mutual yielding, such that motorists must yield to pedestrians in the crosswalk and bicyclists/pedestrians must stop/yield to motorists if they cannot stop in time. Roadway trail crossings typically include marked crosswalks and ADA curb ramps corresponding to the width of the trail, along with warning signs. Flashing warning devices or signals may be considered for some trail crossings.

6. Median / Refuge Island

Medians or raised islands between travel lanes can be designed with landscaping, hardscaping, welcome signs, or provide a mid-point refuge for pedestrian crossings. Medians help to slow traffic by defining travel lanes and can be used to reduce conflicts by physically preventing left turns and restricting turning movements to specific locations.

7. Pedestrian or Trail Bridge

Bridge specifically for use by pedestrians and bicyclists to cross a stream, water body, steep grade, or other existing feature. The design of the bridge should be based on anticipated users, including maintenance or emergency vehicles. Steel, fiberglass, and wood are materials typically used for pedestrian or trail bridges.

1. Marked Crossing

1. Mid-Block Crossing

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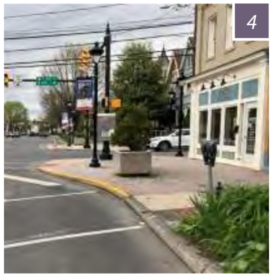

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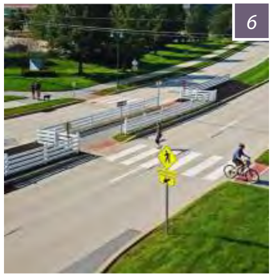

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TRANSPORTATION TOOLBOX

Access Management

Access management refers to means of controlling the ways that vehicles can access major roadways, using measures such as limiting the number of driveways and intersections with local roads. Properly managed access is vital to the safety and efficiency of a community's roadway network. This toolbox includes a few common access management measures. In addition, PennDOT's *Access Management: Model Ordinances for Pennsylvania Municipalities Handbook* provides additional resources for access management strategies.

1. Driveway Spacing

Adequate spacing and aligning of driveways to reduce conflicts points and create a safer environment for walking and biking. Driveway spacing from nearby intersections (both signalized and unsignalized) should be considered and spacing distances should consider roadway classification and vehicular queuing conditions.

2. Joint and Cross Access

Providing joint or cross access between adjacent properties allows circulation between the properties and reduces the number of driveways and conflict areas along a roadway. Joint and cross access can be used in combination with shared parking.

3. Turning Lanes

Providing turning lanes (both left-turn and right-turn) separates traffic movements from the traffic stream and reduces traffic conflicts at access points. PennDOT provides warrant criteria for both left-turn and right-turn auxiliary lanes. In some cases, a continuous left-turn lane may be appropriate.

4. Medians and Left-Turn Restrictions

Medians and other design measures can effectively prohibit turn-turn movements at driveways and reduce turning conflicts.

5. Frontage Roads or Reverse Frontage Roads

Frontage (or service roads) can provide access to multiple parcels and reduce the number of driveway breaks along a corridor by eliminating the need for multiple driveways to access multiple parcels abutting a highway. Reverse frontage roads operate similarly but provide access in the rear of highway abutting developments.

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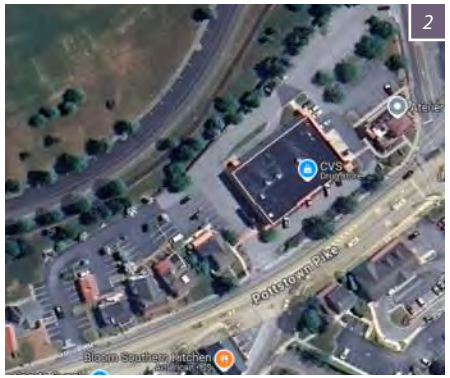

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TRANSPORTATION TOOLBOX

Off-Road Pedestrian & Bicycle Facilities


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1. Shared Use Path

A combined bikeway and walkway that is designed for shared use by bicyclists and pedestrians of all abilities, as well as other non-motorized modes of transportation. Shared use paths along or adjacent to a roadway are physically separated from vehicular traffic by a verge, fencing, or other barrier.

Target Users: Bicyclists; Pedestrians; Other non-motorized users

Dimensions: 10-12 feet wide (8 feet is permissible where there are constraints). When a shared use path is adjacent to a roadway, a 5 foot wide verge is recommended between the edge of the shoulder and the path. If this width is not feasible, a suitable physical barrier is recommended.

Surface Materials: Asphalt; Compacted Stone; Concrete

2. Pedestrian Path

Walkway for use by pedestrians of all abilities. Walking paths may be adjacent to roadways and serve as an alternative design treatment to sidewalks. Walking paths are also prevalent in parks or within other developed sites to provide pedestrian connections and support active recreation.

Target Users: Pedestrians

Dimensions: < 8 feet wide (6 feet typical)

Surface Materials: Asphalt; Compacted Stone

3. Sidewalk

Walkway parallel to the road that is intended for use by pedestrians, often with numerous access points to adjacent land uses. The walkway is typically physically separated from the roadway with a curb and/or verge. The verge may contain grass, vegetation, pavers, and sometimes street trees. Sidewalks are typically concrete, but can be constructed with asphalt, bricks, or pavers.

Target Users: Pedestrians

Dimensions: 5 feet wide (minimum). The verge, when provided, may range in width though 4 feet is a typical minimum.

Surface Materials: Concrete (typically); Brick; Pavers; Asphalt

4. Footpath

Walkway for use by pedestrians, typically for recreation purposes. Natural paths are often through or adjacent to undeveloped land. Sometimes foot paths follow the natural landscape or include steep slopes, steps, and stairs that are not fully accessible

Target Users: Pedestrians

Dimensions: Varies

Surface Materials: Grass; Dirt; Other natural surfaces; Steps and stairs

5. Boardwalk

Elevated walkway that is constructed as a series of low-height bridges through sensitive areas with seasonably variable water depths or low strength soils, such as wetlands. Boardwalks typically include a curb or handrail along at least one, and often both, edges.

Target Users: Pedestrians; Bicyclists (optional and dependent upon the design)

Dimensions: 6-10 feet wide (typical)

Surface Materials: Wood; Wood Composite; Plastic Composite; Concrete (for decking)

TRANSPORTATION TOOLBOX

On-Road Bicycle Facilities & Features


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1. Visually Separated / Buffered Bike Lane

A bicycle lane with a striped buffer area that separates the vehicular travel lane and the shoulder used for the bicycle lane.

Benefits:

- Provides additional buffer between the bike lane and vehicular traffic
- Offers added comfort for less experienced riders
- Increases visibility and awareness of cyclists within dedicated space

Dimensions: 2-3 feet wide buffer (2 feet minimum) plus 5-7 feet wide bike lane (4 feet minimum, exclusive of gutter). Flexposts may be provided in some instances.

2. Bike Lane

A portion of the roadway that has been designated by striping, signage, and pavement markings for the preferential or exclusive public use by bicyclists. Bicycle lanes are located directly adjacent to motor vehicle travel lanes and operate in the same direction as motor vehicle traffic.

Benefits:

- Provides separate space dedicated for cyclists, which can offer added comfort for less experienced riders
- Allows bicycles to operate on a roadway without impeding motor vehicle traffic
- Encourages predictable positioning by bicyclists at intersections

Dimensions: 5 - 7 feet wide (4 feet minimum)

3. Shared Roadway / Bicycle Boulevard

A roadway with signage and pavement markings to indicate the use of a travel lane by both bicycles and motor vehicles. Pavement markings may include a "sharrow," which is a bicycle symbol with two chevron arrows denoting the direction of travel.

Benefits:

- Alert motorists to the potential presence of bicyclists that may occupy the travel lane
- Recommend proper lateral position for bicyclists
- Encourage safe passing of bicyclists by motorists
- Reduce the incidence of wrong-way bicycling
- Provide wayfinding

Dimensions:

- Shared lane pavement marking or "sharrow" placed in accordance with MUTCD, Section 9C.07
- Bicycle May Use Full Lane Sign (R4-11) placed in accordance with MUTCD, Section 9B.06
- Should be limited to roadways with proper speed and traffic volumes to safely accommodate bicyclists

4. Paved Shoulder

A portion of the roadway adjacent to the travel lane that can be enhanced with signage, striping, or coloring to serve as functional space for bicyclists and pedestrians to travel, particularly when other dedicated facilities are not feasible.

Dimensions: 4 feet wide (minimum); provide greater width based on feasibility and traffic.

TRANSPORTATION TOOLBOX

Enhancing Users' Experience

1. Landscaping & Green Infrastructure

Landscaping and green infrastructure can provide shade for pedestrians, integrated stormwater management, and help to create a sense of place. Trees and vegetation can also have a calming effect on traffic with the increased sense of enclosure. The type and location of landscaping should be chosen based on site conditions. A diverse native plant palette can be used in the design of the landscape zones, including trees, shrubs, and groundcover where appropriate. A mix of flowering species can offer seasonal appeal while providing habitat for birds and other native wildlife. Landscaping and green infrastructure can be placed between a road edge and sidewalk or path.

2. Streetscape Amenities

Benches, trash receptacles, and bicycle racks create a more comfortable and convenient environment for walking, biking, and enjoying the street. The design of the streetscape furniture or amenities should be consistent to convey the unique character of the community. Amenities should be placed so they do not obstruct pedestrian walkways, building entrances, fire hydrants, or bus stop landing areas/clear zones on the SCCOOT route.

3. Seating (Overlooks, Benches, View Areas)

Seating areas can be provided along sidewalk, paths, or trails in downtown settings, park areas, or at scenic vistas. Seating can include benches or seat walls and can incorporate public art or other creative design elements to create a sense of place. Seating can be created with natural materials reflecting the native geology or ecology of the region like boulders and/or logs.

4. Pedestrian-Scale Lighting

Pedestrian-scale street lights, 10-12 feet in height, help provide security along sidewalks, as well as help to provide aesthetic appeal to the streetscape. Lighting adjacent to natural areas should adhere to dark sky lighting recommendations to avoid impacting native habitat.

5. Bike Rack

A frame that is permanently anchored to the ground and is used to secure bikes when not in use. Bicycle racks should be located in visible areas and near major destinations such as employment centers, business and retail districts, parks, and transit.

Placement of bicycle racks should consider dimensions when occupied and must maintain clear walkways, particularly when placed along sidewalks. Bicycle racks should be setback 2-3 feet from the curb when installed along a street. Bicycle racks can be located under shelters or building overhangs.


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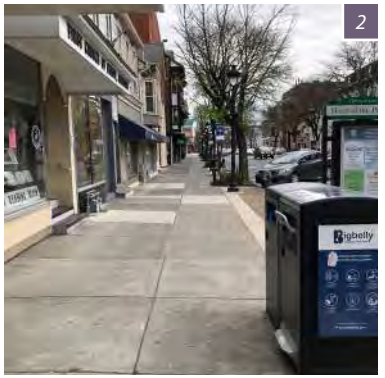
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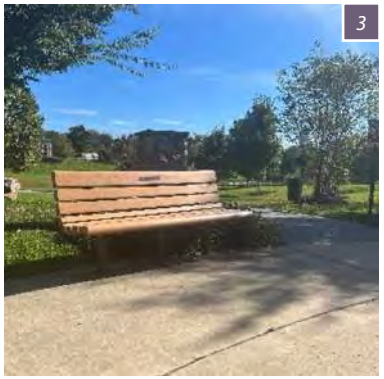
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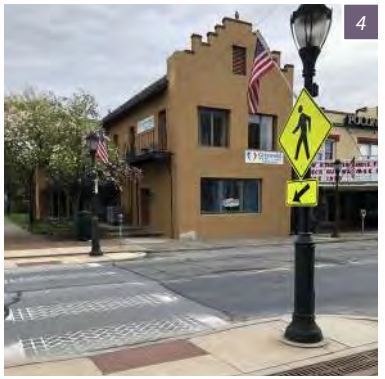
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TRANSPORTATION TOOLBOX

6. Bike Repair Station

A piece of equipment consisting of a simple bicycle stand and tools necessary to perform minor repairs and adjustments. The tools are typically securely attached to the stand, which can be used to hang the bike and allow the pedals and wheels to spin while making adjustments. Repair stations should be located in visible areas, particularly along bicycle routes or near recreational resources.

7. Public Art

Public art may be incorporated into streetscapes through elements such as planters and/or benches embellished by local artists, unique bike racks, or other art installations. Public art helps to provide character to streetscapes.

8. Banners

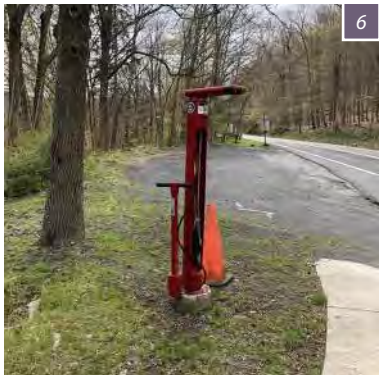
Banners help to announce and publicize special events, as well as to create an identity and sense of place. Vertical banners may be attached to street light poles or may be freestanding.

9. Wayfinding & Interpretative Signs

A range of signs, pavement markings, kiosks, or interpretative signs that are used to identify a facility and provide basic information, such as directional arrows, mileage, map, or narrative. Signage can be utilized to interpret local cultural, historical, and ecological themes.

10. Enhanced Bus Stop

To meet federal guidelines, new or altered bus stops must include a level loading area where passengers can get on and off the bus. For an enhanced bus stop, the loading pad must be a minimum of 5 feet wide along the curb and 8 feet deep to allow for the deployment of a front door ramp on the bus for persons with mobility devices. The loading pad will be a firm and slip-resistant surface and free of conflicts. Benches, shelters, lighting, bike parking, and trash receptacles can also be provided at bus stops to enhance the safety and comfort for transit riders. Additional details are provided in the *Building Better Bus Stops Resource Guide*.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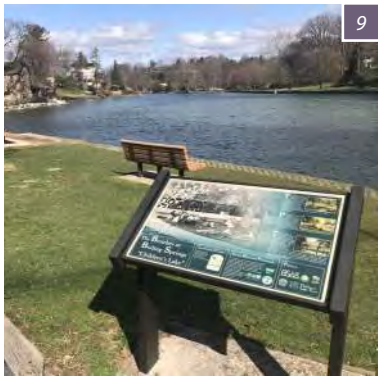
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TRANSPORTATION TOOLBOX

Green Infrastructure

Runoff from stormwater is a major contributor to flooding and water pollution. Green Infrastructure measures are used to filter and absorb stormwater where it falls and is generally scalable within a community. Some examples of green infrastructure that the Environmental Protection Agency (EPA) cites, include downspout disconnection, rainwater harvesting, rain gardens, bioswales, permeable pavements, greet streets and alleys, green parking, green roofs, urban tree canopy and land conservation. The measures most connected to the transportation network include:

1. Green Streets and Alleys

Green streets and alleys are created by integrating green infrastructure elements into their design to store and filter stormwater. Permeable pavement, bioswales, planter boxes, and trees are among the elements that can be woven into street or alley design.

2. Green Parking

Many green infrastructure elements can be seamlessly integrated into parking lot designs. Permeable pavements can be installed in sections of a lot and rain gardens and bioswales can be included in medians and along the parking lot perimeter. When built into a parking lot, these elements also reduce the heat island effect and improve walkability in the area.

3. Urban Street Canopy

Trees absorb stormwater in their leaves and branches. Many municipalities have set tree canopy goals to restore the benefits of trees lost when the areas were developed. Homeowners, businesses, and community groups can participate in planting and maintaining trees throughout the urban environment.

4. Rain Gardens and Planter Boxes

Rain gardens are small, shallow, sunken areas of plantings that collect stormwater runoff from roofs, streets, and sidewalks. Also known as bioretention cells, they are designed to mimic the natural ways water flows over and absorbs into land to reduce stormwater pollution. Planter boxes are urban rain gardens with vertical walls and either open or closed bottoms. Usually found in downtown areas, they collect and absorb runoff from streets, sidewalks, and parking lots. Ideal for areas with limited space, planter boxes can be a useful way to beautify streets.

5. Bioswales

Bioswales, often found along curbs and in parking lots, use vegetation or mulch to slow and filter stormwater flows.

6. Permeable pavements

Permeable pavements infiltrate, treat, and/or store rainwater where it falls. They can be made of pervious concrete, porous asphalt, or permeable interlocking pavers. This practice could be particularly cost effective where land values are high and flooding or icing is a problem.


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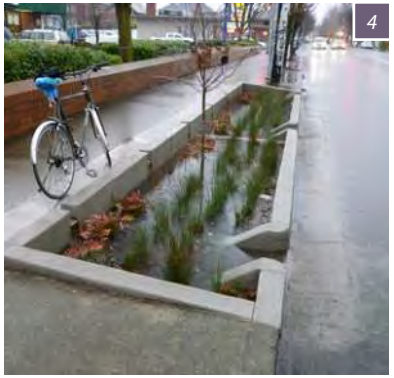
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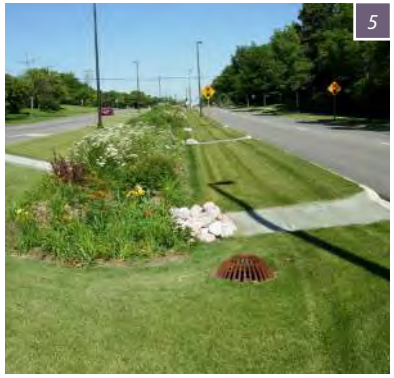
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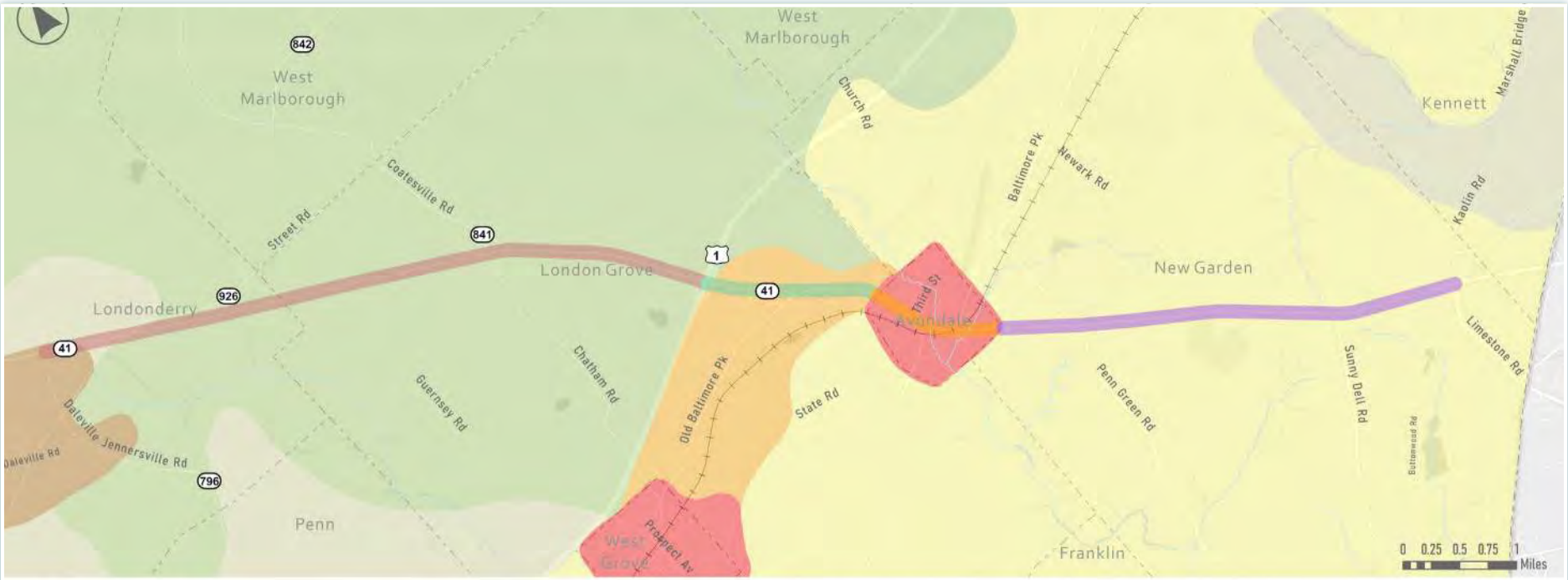
CHAPTER 4: CORRIDOR IMPROVEMENTS

INTRODUCTION

To best address the diverse conditions, needs, and future visions on Route 41, the study area has been divided into four segments for closer analysis. The segment boundaries were chosen such that each segment reflects common and consistent elements within it, such as land use patterns, roadway characteristics, and growth potential. The map on this page shows the limits of each segment layered on top of Chester County's Landscapes3 areas. For each segment, this study presents a profile that includes existing conditions, a future vision, planned improvements, and future recommendations.



SEGMENT 1: PA 796 TO ROUTE 1

Overview of Existing Conditions

Primarily two-lane roadway with occasional turning lanes, wide shoulders, and wide spacing between intersections. Rural land use with some housing and agricultural businesses spread along the corridor and experiences less annual daily traffic than the corridor average. There were 91 reportable crashes (2018-2022) with most crashes being either "Angled" (40.7%) or "Rear-End" (31.9%) and there were more Fatal and Injury crashes that the corridor average.

Municipalities:

- Londonderry Township
- London Grove Township

Length: 4.6 miles

Speed Limit: 45 mph

AADT: 20,531 *(+4,170*)*

Truck AADT: 2,793 *(+437*)*

** Difference from corridor average*

Chesco Landscapes:

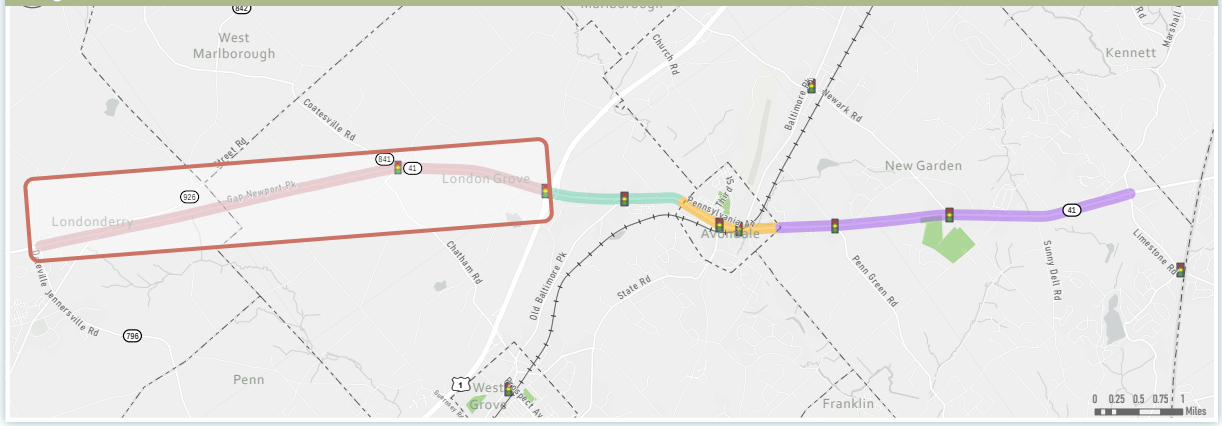
- Rural Center
- Rural
- Agricultural

Roadway Classifications:

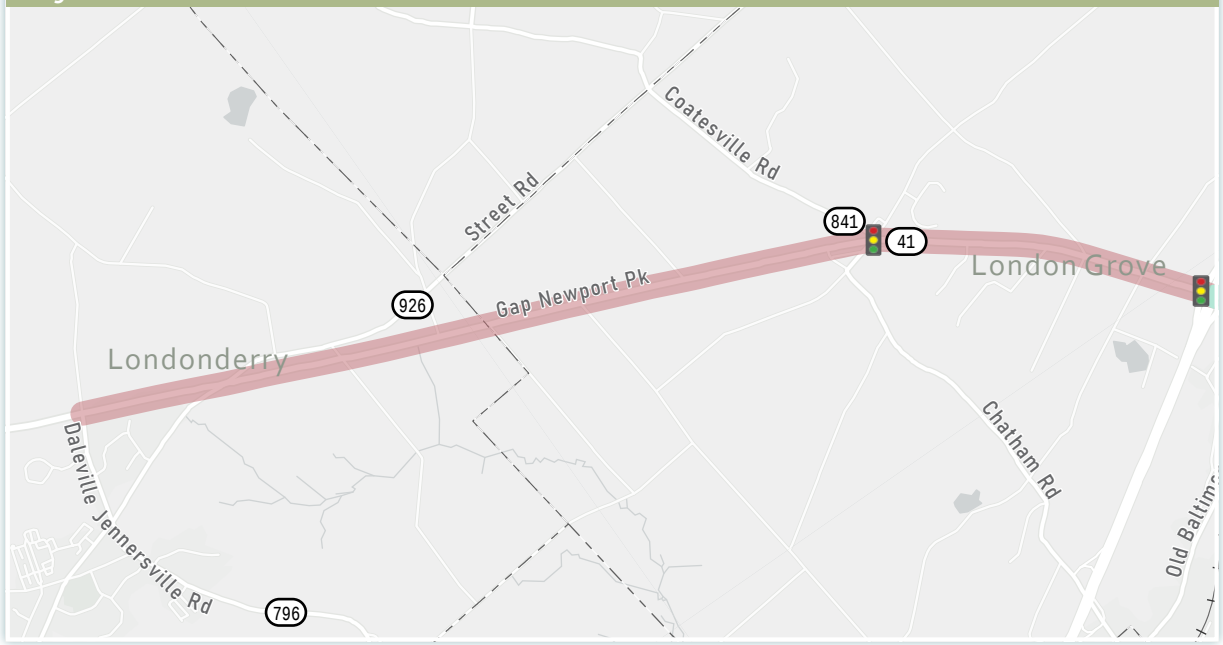
- Rural Places / Regional Arterial

AADT = Annual Average Daily Traffic

Segment 1: PA 796 to Route 1



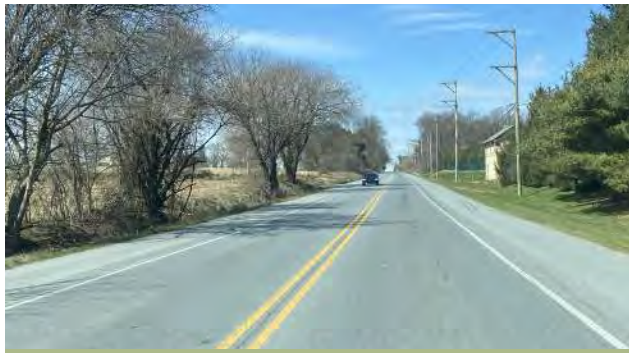
Segment 1: PA 796 to Route 1 - Focused



SEGMENT 1: PA 796 TO ROUTE 1

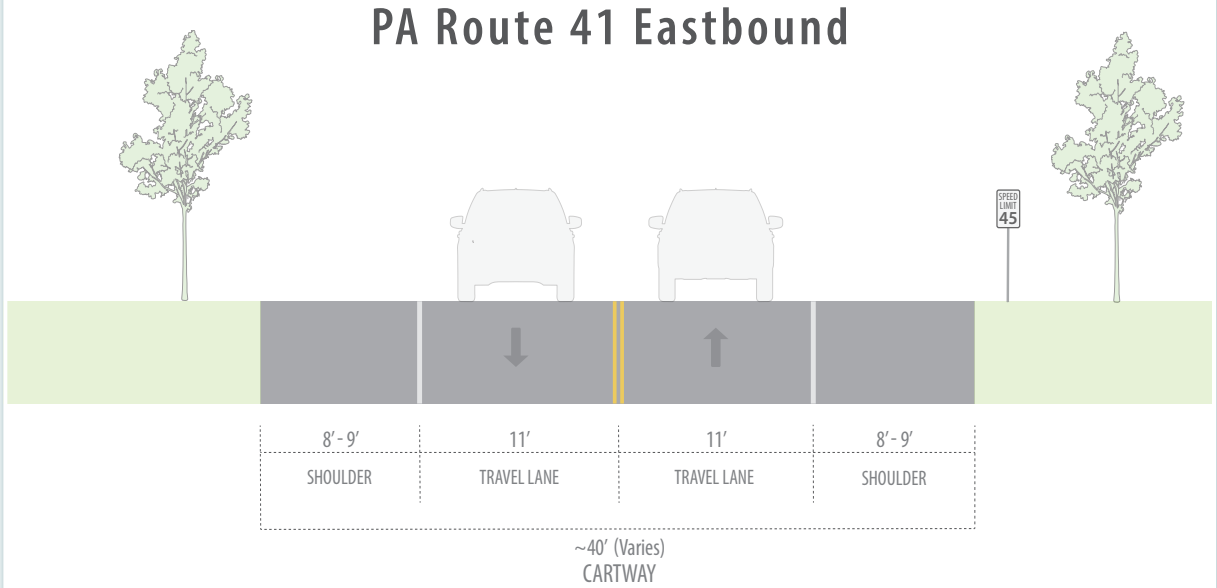
Existing Conditions, Illustrated Examples

Truck Traffic and Median Island Along Route 41 Eastbound



Straight Travel Lanes with Wide Shoulders

Typical Cross Section, PA 796 to Route 1



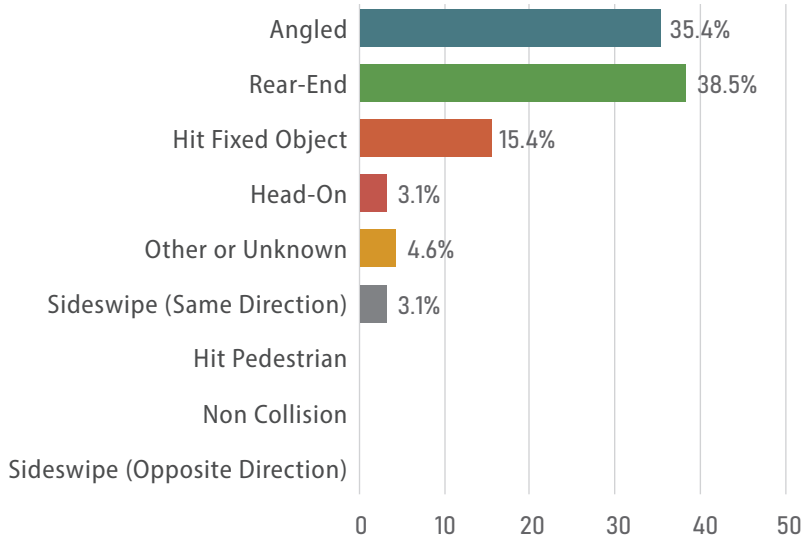
SEGMENT 1: PA 796 TO ROUTE 1

Existing Conditions, Crash History

CRASHES BY INJURY SEVERITY (2018-2022)

SEVERITY	TOTAL	%	Corridor %	Diff.
Fatal Injury	2	2.2%	0.7%	+1.5%
Suspected Serious Injury	4	4.4%	3.3%	+1.1%
Suspected Minor Injury	26	28.6%	26.3%	+2.3%
Injury/Unknown Severity	7	7.7%	9.3%	-1.6%
Possible Injury	3	3.3%	3.7%	-0.4%
Not injured	47	51.6%	54.0%	-2.4%
Unknown	2	2.2%	2.7%	-0.5%
GRAND TOTAL	91	100%	100%	

TOTAL CRASHES BY TYPE (2018-2022)



SEGMENT 1: PA 796 TO ROUTE 1

Planned Improvements / Recommended Projects

Roundabout

Roundabout at intersection of PA 41 (Route 41)/PA 926 to improve safety and accommodate future demand.

Transportation Improvement Plan; PennDOT

Turn Lane Improvement

Consider installing left-turn lanes along Route 41 at intersections and major driveways, or alternatively, restricting left-turns due to roundabouts at nearby intersections.

Roundabout

Roundabout at intersection of PA 41 (Route 41)/PA 841 to remedy existing confusing layout, improve safety, and enhance pedestrian accommodations.

Transportation Improvement Plan; PennDOT

Gateway Treatment (Complete)

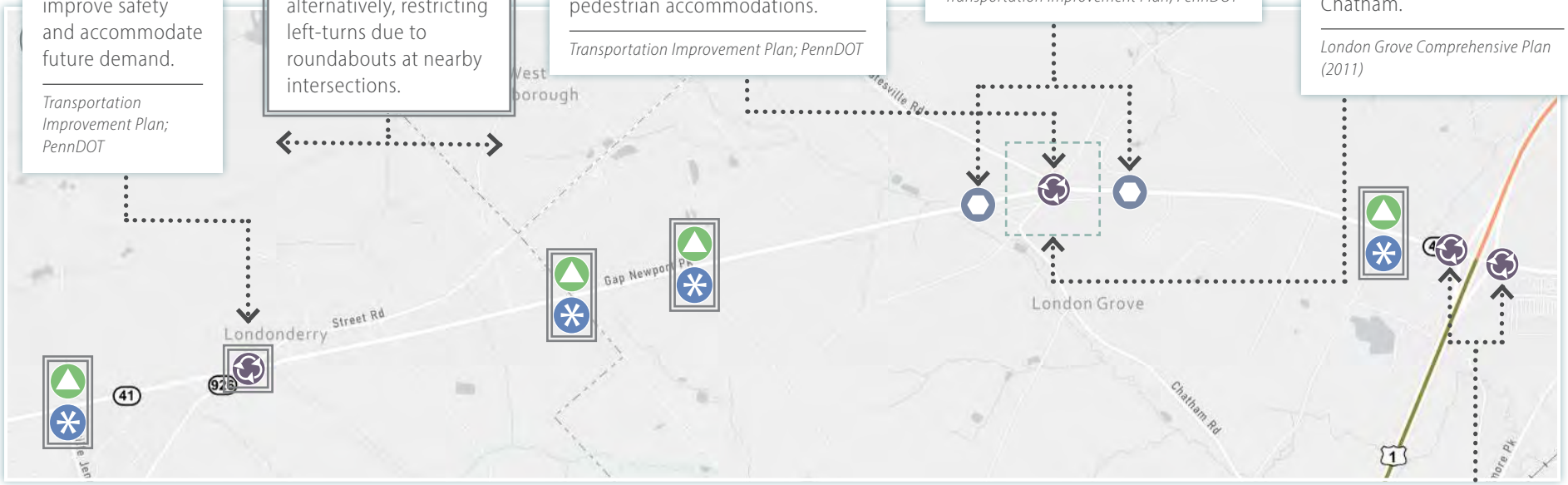
Addition of gateway treatments at both ends of the Village of Chatham.

Transportation Improvement Plan; PennDOT

Gateway Treatment
Sidewalk
Crossing Enhancement

Recommendations for traffic calming, gateway features, sidewalks and crossing enhancements to improve safety within the Village of Chatham.

London Grove Comprehensive Plan (2011)



Legend

Planned Improvements / Recommended Improvements

- Intersection Improvement
- Gateway Treatment
- Roundabout
- Sidewalk/Sidepath
- Bicycle Improvement
- Turn Lane Improvement
- Crossing Enhancement
- Streetcape Improvement
- Low Cost Safety Improvements (Unsignalized)
- Monitor for Capacity Improvements and Traffic Control

Roundabout

Roundabouts at east and westbound approaches to US 1 overpass bridge as part of a series of projects within the Kennett-Oxford Bypass effort.

Transportation Improvement Plan; PennDOT

SEGMENT 1: PA 796 TO ROUTE 1

Future Vision

The future vision for this segment is to maintain its rural and agricultural character, generally providing two-lane cross-section with safety and capacity improvements focused at intersections and major driveways. There are two major PennDOT projects west of the US Route 1 Interchange that will improve the Route 926 and Route 841 intersections with roundabouts and other features. When constructed, these roundabout projects have the potential to shift some traffic patterns for vehicle traffic accessing Route 41. It is noted that the Route 41/Route 926 roundabout project was completed just prior to completion of this study.

Corridor Safety

Intersection improvements at key unsignalized intersections will enhance safety for vehicles turning to and from side streets. Two roundabout projects west of US Route 1 are planned that will provide safety upgrades. The addition of left-turn lanes and access management techniques along Route 41 are recommended at some unsignalized intersections to improve safety. Additional low-cost safety measures are identified for consideration. Installed gateway treatments have recently been provided.

Congestion

Generally, this segment of Route 41 study corridor experiences less congestion than the others in the study area. The two planned roundabout projects will provide two locations (at Route 926 and at Route 841) for motorists to access Route 41. Other major intersections should continue to be monitored for improvements after the roundabout projects are completed.

Accommodating Pedestrians & Bicyclists

Given its rural and agricultural context, providing, maintaining, and maximizing wide roadway shoulders will be the most effective strategy for accommodating buggies and advanced bicyclists. In addition, providing key bike connections from intersecting roadways and destinations along or nearby the Route 41 corridor should be explored in more detail. In some location, it may be appropriate to provide separate bike lanes or side paths at key areas/destinations. Pedestrian accommodations will be focused around the Village of Chatham in order to advance the long-term walkability vision. The planned PennDOT roundabout is being developed in coordination with local officials to address these goals.

Truck Movements

Completion of the roundabout project at the PA 926 intersection, currently in construction, will significantly reduce the incidence of truck speeding through Londonderry. The planned roundabout at PA 841, which is in the project development phase, will have similar benefits relative to Chatham. Additional intersection safety and capacity improvements are recommended to reduce speeding and collisions.

A future update of Chester County's Landscapes3 should consider designating the Village of Chatham as a Rural Center.

SEGMENT 1: PA 796 TO ROUTE 1

Priority Projects

Priority Projects for Segment 1: PA 796 to Route 1			
Project	**Municipality**	**Description**	**Time Frame**
Corridor	Londonderry, London Grove	• Monitor conditions for auxiliary turn lanes at intersections with periodic studies • Maintain clear sight lines at intersections with continued maintenance of vegetation overgrowth	Ongoing
Route 796 Intersection Improvements	Londonderry	• Monitor conditions post-construction of Route 926 roundabout • Maintain vegetation to maintain adequate sight distance • Evaluate left turn lane on northbound Route 41 or right-in, right-out restriction for side streets	Short-Term (1-3 years)
N. Guernsey Road Intersection Improvements	London Grove	• Monitor conditions post-construction of Route 926 roundabout • Evaluate need to reprofile adjacent parcels on both sides of N. Guernsey Road • Evaluate left turn lanes on Route 41 and traffic signalization after PennDOT roundabouts open	Medium-Term (4-6 years)
Woodview Road Intersection Improvements	London Grove	• Monitor traffic conditions at the intersection after the re-opening of the bridge (April 2025) to the west of the Route 41 intersection • Evaluate left turn lanes on Route 41 and traffic signalization after Woodview Road bridge reopens	Medium-Term (4-6 years)

Other Considerations

In addition to the priority projects (as noted above) and planned PennDOT projects, the following considerations are also recommended for the segment area:

- **Safety** – corridor-wide measures may include an improved maintenance program to clear sight lines for traffic turning onto Route 41 at intersections; consider enhanced "Intersection Ahead" with street name placards approaching intersections; overhead street lighting at intersections; adopting an access management policy for future driveways along Route 41.
- **Pedestrian/Bicycle** – explore and improve adjacent/parallel lower-stress roadways to accommodate bicycle travel as an alternative to Route 41.
- **Flooding** – incorporate green infrastructure improvements as appropriate in future projects to improve regional stormwater management; consider adopting policies and practices to improve local/regional conditions.

SEGMENT 2: US ROUTE 1 TO AVONDALE BOROUGH

Overview of Existing Conditions

Two-lane roadway with turning lanes and channelized lanes throughout the corridor and wide shoulders. Land use transitions to more commercial/retail with big box retailers and large parking areas. Higher than average AADT and truck AADT compared to the corridor as a whole.

Municipalities:

- London Grove Township

Length: 1.2 miles

Speed Limit: 45 mph

AADT: 20,422 *(+4,601*)*

Truck AADT: 3,427 *(+1,071*)*

** Difference from corridor average*

Chesco Landscapes:

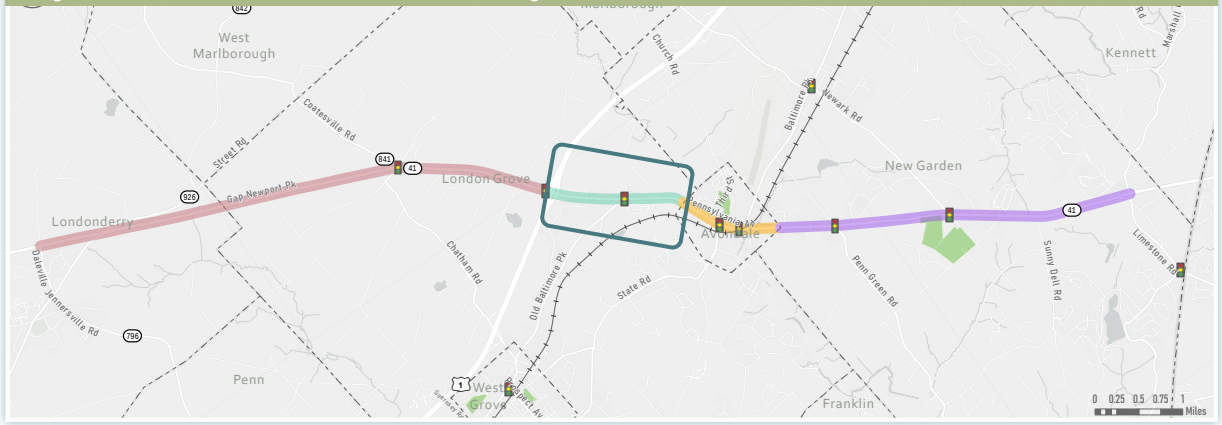
- Suburban Center

Roadway Classifications:

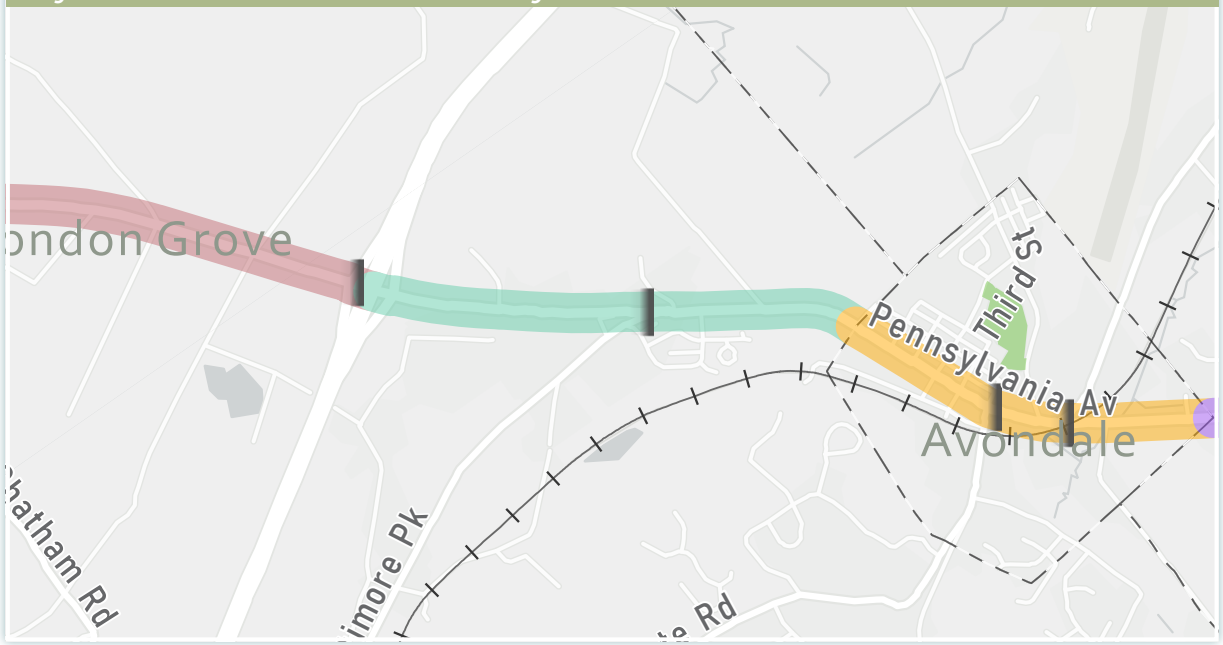
- Suburban Corridor / Community Arterial

AADT = Annual Average Daily Traffic

Segment 2: US Route 1 to Avondale Borough



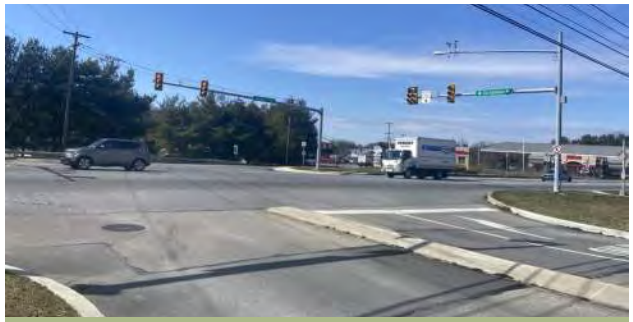
Segment 2: US Route 1 to Avondale Borough - Focused



SEGMENT 2: US ROUTE 1 TO AVONDALE BOROUGH

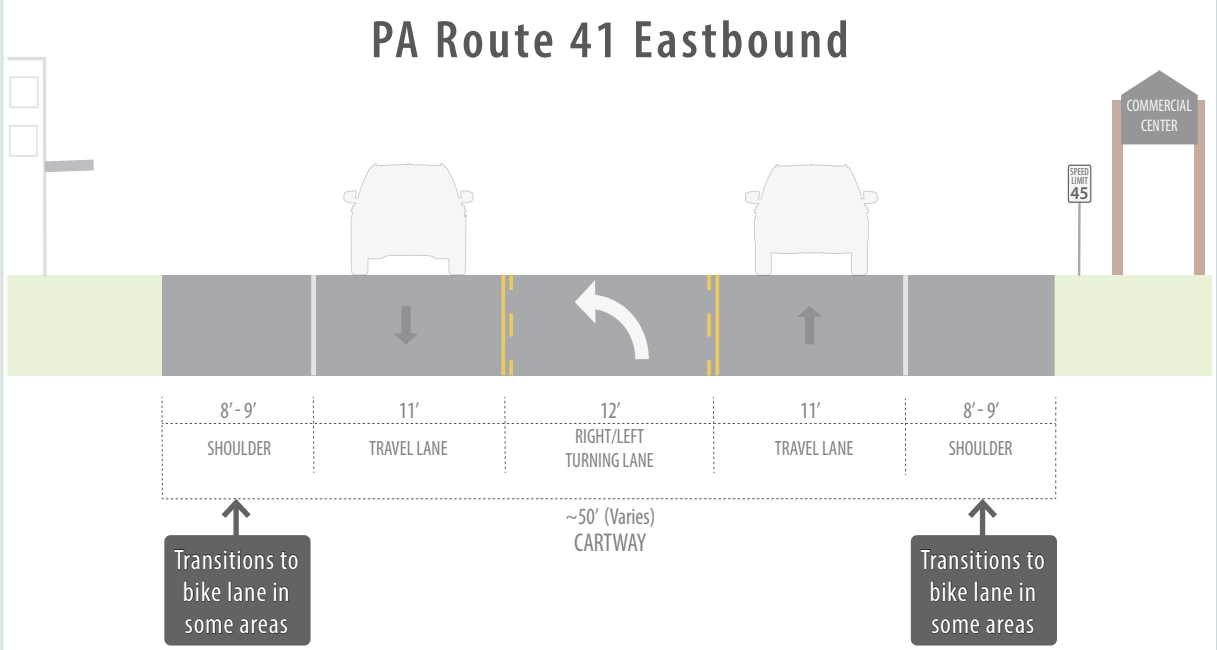
Existing Conditions, Illustrated Examples

Disconnected Sidewalk Network Near Retail / Commercial Area



Wide Crossings with No Crosswalks or Pedestrian Facilities

Typical Cross Section, US Route 1 to Avondale Borough



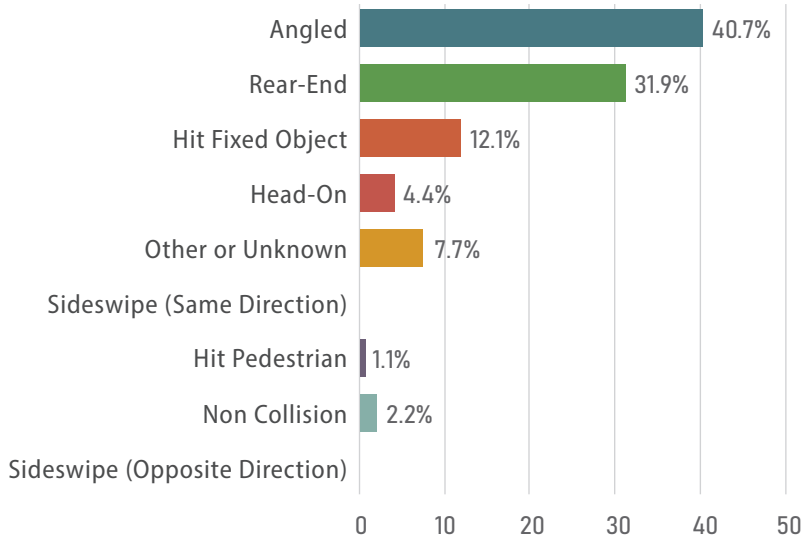
SEGMENT 2: US ROUTE 1 TO AVONDALE BOROUGH

Existing Conditions, Crash History

CRASHES BY INJURY SEVERITY (2018-2022)

SEVERITY	TOTAL	%	Corridor %	Diff.
Fatal Injury	0	0.0%	0.7%	-0.7%
Suspected Serious Injury	3	4.6%	3.3%	+1.3%
Suspected Minor Injury	18	27.7%	26.3%	+1.4%
Injury/Unknown Severity	3	4.6%	9.3%	-4.7%
Possible Injury	0	0.0%	3.7%	-3.7%
Not injured	39	60.0%	54.0%	+6.0%
Unknown	2	3.1%	2.7%	+0.4%
GRAND TOTAL	65	100%	100%	

TOTAL CRASHES BY TYPE (2018-2022)



SEGMENT 2: US ROUTE 1 TO AVONDALE BOROUGH

Planned Improvements / Recommended Projects

Monitor for Capacity Improvments and Traffic Control

Monitor for additional capacity between US 1 Interchange and Old Baltimore Pike. Require/ acquire additional right-of-way.

Intersection Improvement
Crossing Enhancement

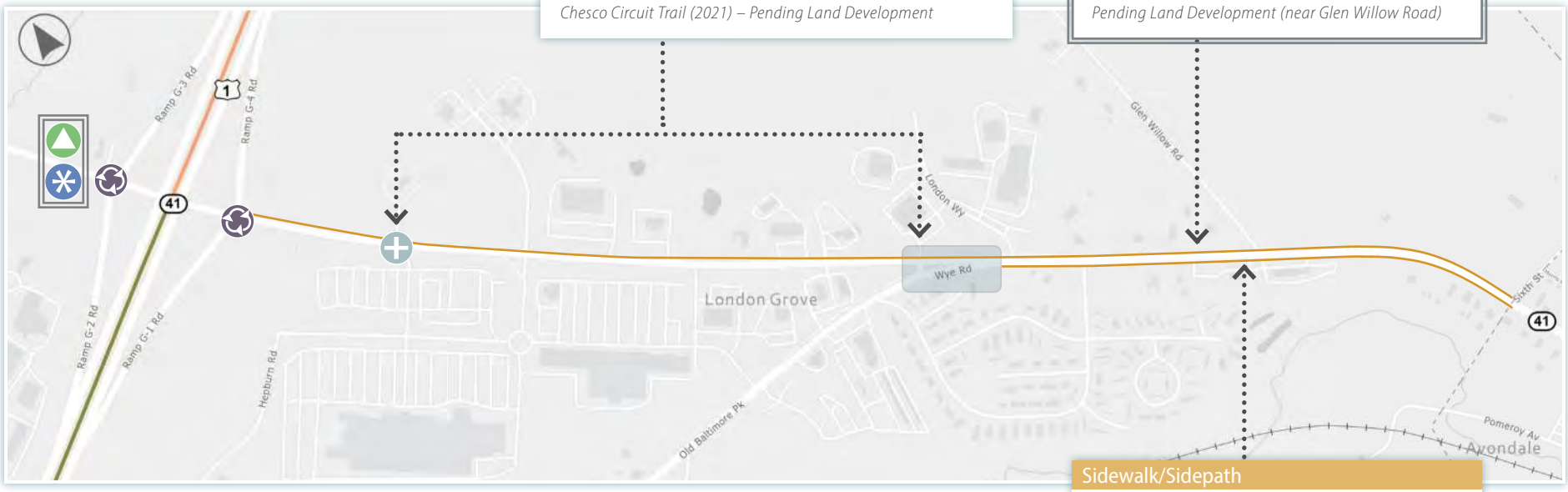
- Bike-pedestrian intersection improvements at 41/Moxley and 41/Baltimore Pike intersections.
- Sidewalk extensions north of borough line.
- Buffered bike lane on west side of 41 and multi-use trail/split mode combination for east side.

Chesco Circuit Trail (2021) – Pending Land Development

Low Cost Safety Improvements (Unsignalized)

Install center left turn lane and access management.

Pending Land Development (near Glen Willow Road)



Sidewalk/Sidepath

Sidewalks on both sides of Route 41, south of Old Baltimore Pike.

London Grove Comprehensive Plan (2011)

ALTERNATIVE: Install sidepaths or multi-use trail in lieu of sidewalk.

Legend

Planned Improvements / Recommended Improvements

- Intersection Improvement
- Gateway Treatment
- Roundabout
- Sidewalk/Sidepath
- Bicycle Improvement
- Turn Lane Improvement
- Crossing Enhancement
- Streetcape Improvement
- Low Cost Safety Improvements (Unsignalized)
- Monitor for Capacity Improvements and Traffic Control

SEGMENT 2: US ROUTE 1 TO AVONDALE BOROUGH

Future Vision

The future vision for this segment is to successfully integrate and manage residential and commercial growth. Near the US Route 1 interchange, large proposed residential developments would join established retail centers to create a greater mix of uses and higher density. Roadway, intersection, and pedestrian and bicycle improvements will allow the areas along this segment to grow while maintaining or improving upon the current transportation experience. As noted elsewhere in the report, PennDOT is planning to reconstruct US Route 1, which will include a reconfiguration of the Route 41 interchange with roundabouts at both the northbound and southbound ramps.

Corridor Safety

Intersection improvements at key unsignalized intersections will enhance safety for vehicles turning to and from side streets. As part of the larger US Route 1 reconstruction project, roundabouts will be installed on Route 41 in the interchange area, which will enhance safety by reducing vehicle speeds. The addition of left-turn lanes and access management techniques along Route 41 is recommended at certain unsignalized intersections to improve safety. In particular, it is recommended to provide safety improvements and monitor the future need for added capacity (two lanes per direction) near the interchange. Additional low-cost safety measures are identified for consideration.

Congestion

This segment of Route 41 study corridor often experiences congestion as a result of intersections within Avondale Borough (Segment 3). The planned roundabout project at the US Route 1 interchange will provide relief at the northern portion of this segment. Access management improvements and the addition of a center left-turn lane are recommended south of E. Baltimore Pike.

Accommodating Pedestrians & Bicyclists

Pedestrian facilities are currently present at some locations along Route 41 in this segment as well as within certain developments. However, there is a meaningful gap between the boundary to Avondale Borough and the area that includes the London Grove Village shopping center. Providing a sidewalk, sidepath, or shared use path on one or both sides of Route 41 to fill this gap would be highly impactful for multimodal connectivity. In addition, the overall sidewalk network in the shopping center area should continue to be improved through land development, including the proposed residential developments. Future pedestrian facilities will need to consider current and future transit opportunities in order to provide transit stops with adequate accessibility.

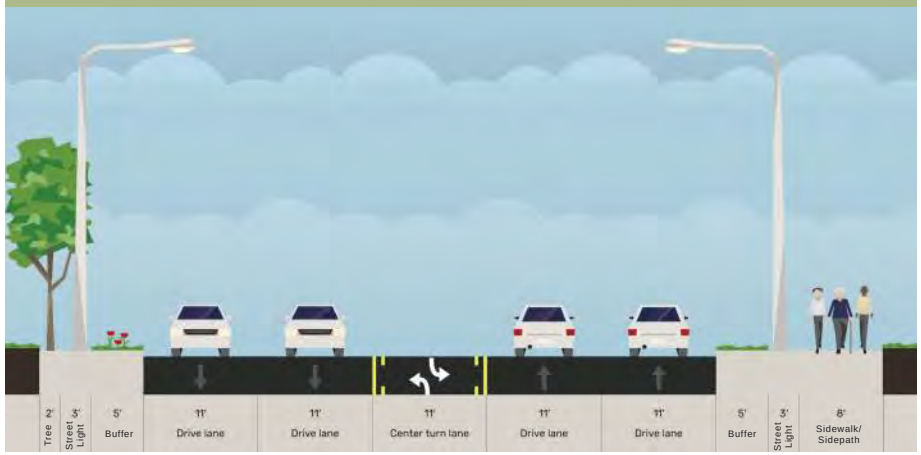
Truck Movements

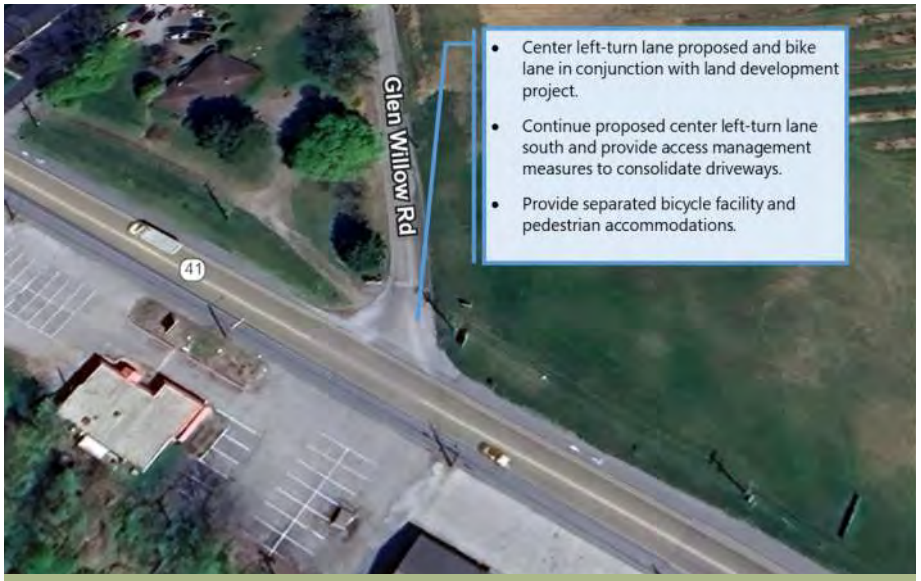
Implementation of intersection safety and capacity improvements will reduce high speeds and collisions.

SEGMENT 2: US ROUTE 1 TO AVONDALE BOROUGH

Future Vision, Continued

Future Vision for Route 41 from Route 1 to E. Baltimore Pike





Future Vision for Route 41 from E. Baltimore Pike to Avondale Borough

SEGMENT 2: US ROUTE 1 TO AVONDALE BOROUGH

Priority Projects

Priority Projects for Segment 2: US Route 1 to Avondale Borough			
Project	**Municipality**	**Description**	**Time Frame**
Hepburn Road Intersection Improvements	London Grove	• Provide northbound right turn lane on Route 41 • Improve pedestrian crossing and adjacent facilities	Short-Term (1-3 years)
Glen Willow Road Intersection Improvements	London Grove	• A center left-turn lane and bike lane are proposed in conjunction with a nearby land development	Short-Term (1-3 years)
New London Grove Sidepath/Sidewalk and Streetscape Enhancements	London Grove	• Provide new sidepath or sidewalk between London Grove Village shopping center and Avondale Borough • Develop pedestrian-scaled streetscape enhancements (see p. 35-36) to support walking and biking	Medium-Term (4-6 years)
E. Baltimore Pike Intersection Improvements	London Grove	• Evaluate the need to re-align intersection to 90-degree angle • Enhance pedestrian crossings	Long-Term (7-10 years)
Corridor	London Grove	• Provide center left-turn lane and access management improvements south of E. Baltimore Pike • Evaluate additional capacity between US Route 1 and E. Baltimore Pike • Potential additional corridor capacity improvements due to anticipated and future land developments	Long-Term (7-10 years)
Off Corridor	London Grove	• Coordinate with Chester County and Avondale Borough to advance the county's Baltimore Pike for Everyone plan (see page 6)	Long-Term (7-10 years)

Other Considerations

In addition to the priority projects (as noted above) and planned PennDOT projects, the following considerations are also recommended for the segment area:

- **Safety** – corridor-wide measures may include streetscape and traffic calming measures; overhead street lighting at intersections; adopting an access management policy for future driveways along Route 41.
- **Pedestrian/Bicycle** – explore and improve adjacent lower-stress roadways to accommodate bicycle travel as an alternative to Route 41.
- **Flooding** – incorporate green infrastructure improvements as appropriate in future projects to improve regional stormwater management; consider adopting policies and practices to improve local/regional conditions.
- **Traffic Congestion** - plan and improve the corridor such that future transit can be readily accommodated and is accessible to pedestrians.

SEGMENT 3: AVONDALE BOROUGH

Overview of Existing Conditions

Segment #3 through the Borough of Avondale differs compared to other segments thanks to a more urban context with an existing sidewalk network, street trees, and detached single family housing. Roadway features spacing between intersections with crosswalks and "Yield to Pedestrian" signage but no stop controls. Narrow (5'- 6' shoulders) transition to bike lanes west of the borough line.

Municipalities:

- Avondale Borough

Length: 1.0 miles

Speed Limit: 35 mph

AADT: 20,422 *(+4,601*)*

Truck AADT: 3,427 *(+1,071*)*

** Difference from corridor average*

Chesco Landscapes:

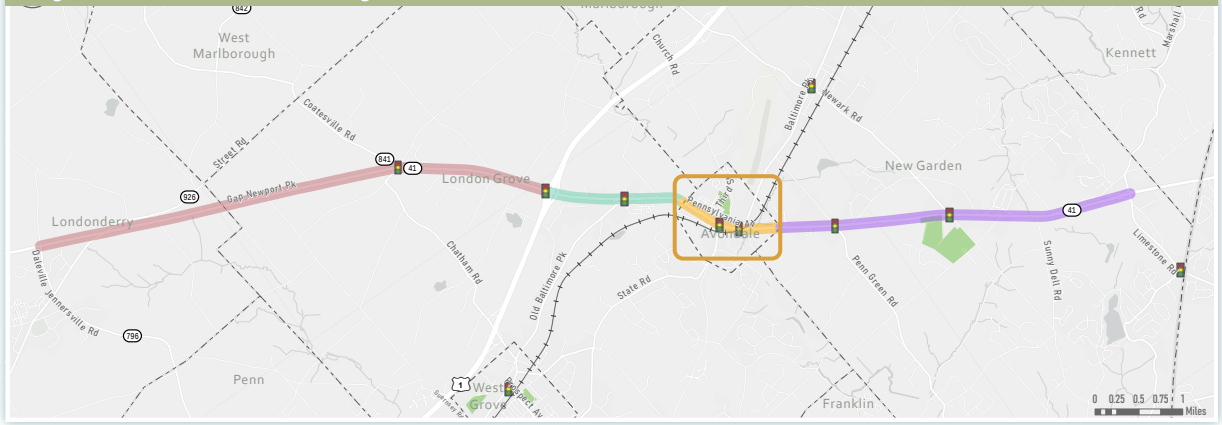
- Urban

Roadway Classifications:

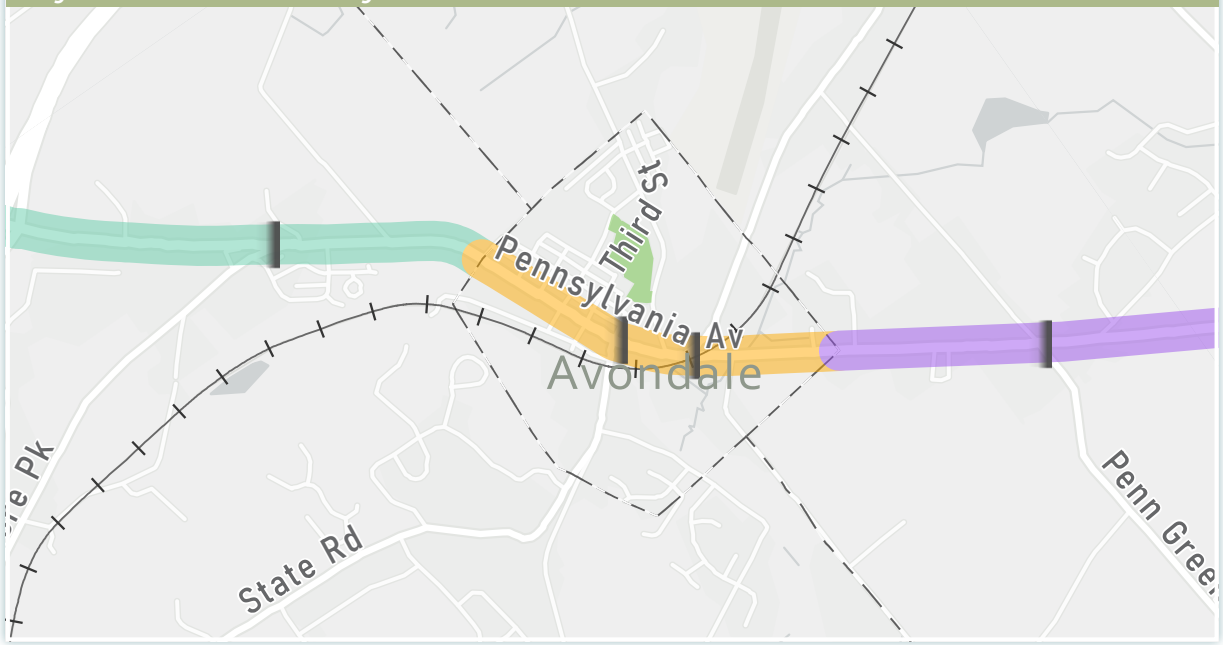
- Town Center / Regional Arterial

AADT = Annual Average Daily Traffic

Segment 3: Avondale Borough



Segment 3: Avondale Borough - Focused



SEGMENT 3: AVONDALE BOROUGH

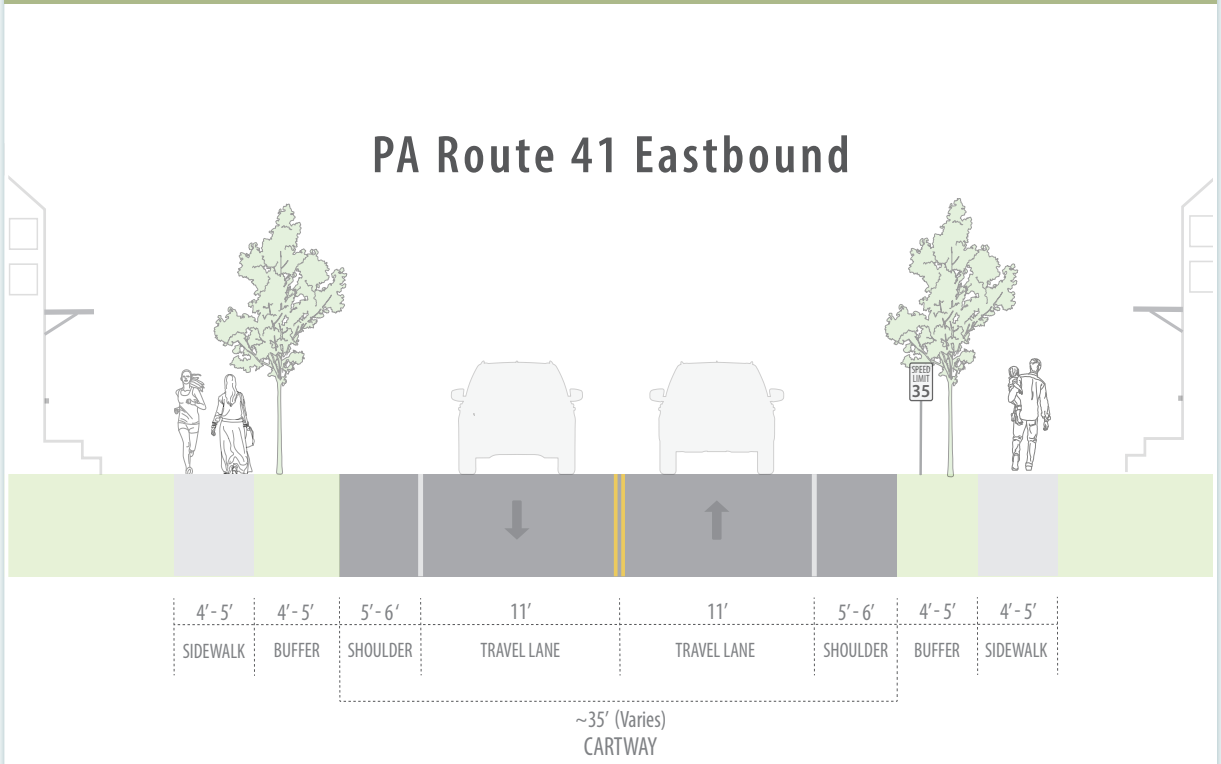
Existing Conditions, Illustrated Examples

Narrow Shoulder / Truck Traffic

Railroad Crossing

Existing Sidewalk Network in Avondale Borough

Typical Cross Section, Avondale Borough



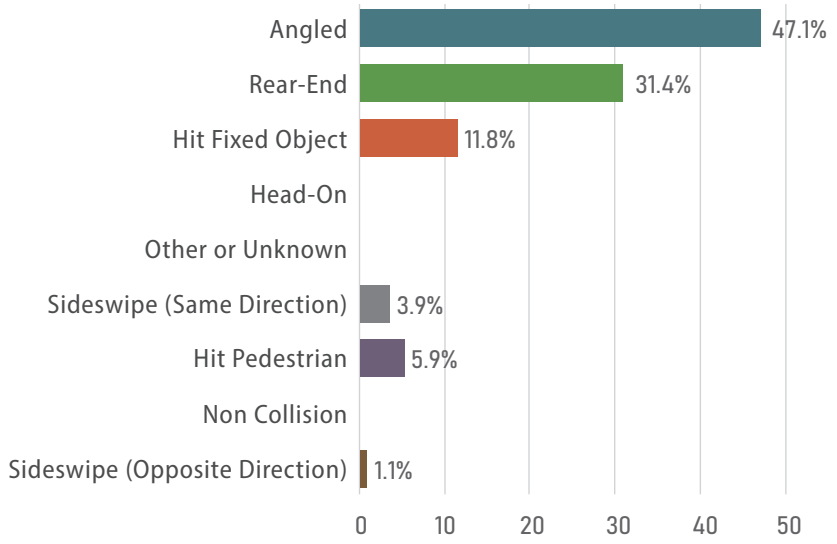
SEGMENT 3: AVONDALE BOROUGH

Existing Conditions, Crash History

CRASHES BY INJURY SEVERITY (2018-2022)

SEVERITY	TOTAL	%	Corridor %	Diff.
Fatal Injury	0	0.0%	0.7%	-0.7%
Suspected Serious Injury	1	2.0%	3.3%	-1.3%
Suspected Minor Injury	17	33.3%	26.3%	+7.0%
Injury/Unknown Severity	5	9.8%	9.3%	+0.5%
Possible Injury	1	2.0%	3.7%	-1.7%
Not injured	26	51.0%	54.0%	-3.0%
Unknown	1	2.0%	2.7%	-0.7%
GRAND TOTAL	51	100%	100%	

TOTAL CRASHES BY TYPE (2018-2022)



SEGMENT 3: AVONDALE BOROUGH

Planned Improvements / Recommended Projects

Intersection Improvement
Gateway Treatment

Median gateway treatments on Route 41 at both entrances to borough.

Kennett Area Freight Study (2019)

Bicycle Improvement

Buffered bike lanes on Route 41 through borough to First Avenue, then multi-use trail diverting onto Baltimore Pike.

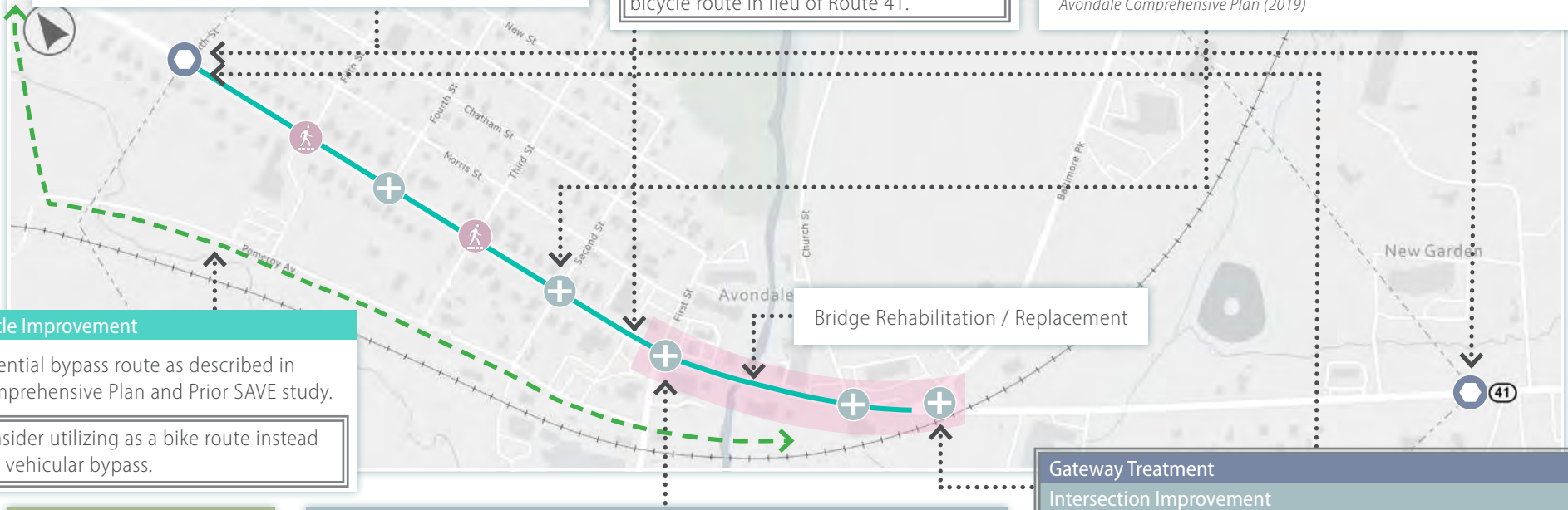
Chesco Circuit Trail (2021)

ALTERNATIVE: Utilize parallel streets for bicycle route in lieu of Route 41.

Intersection Improvement
Turn Lane Improvement
Bicycle Improvement

- Traffic calming and speed enforcement.
- Pedestrian improvements at several intersections.
- Addition of turning lane for southbound traffic at one of a few potential intersections.
- Shared roadway treatment on Route 41 through the borough downtown, then bike lane further south.

Avondale Comprehensive Plan (2019)



Bicycle Improvement

Potential bypass route as described in Comprehensive Plan and Prior SAVE study.

Consider utilizing as a bike route instead of a vehicular bypass.

Intersection Improvement
Turn Lane Improvement
Crossing Enhancement

Realign intersection, improve turning lanes, incorporate ITS, improve sidewalk and pedestrian access, accommodate heavy vehicle traffic.

Transportation Improvement Plan; PennDOT

Consider addition through lane (SB) between State St. and E Baltimore Pike.

Gateway Treatment
Intersection Improvement
Sidewalk
Bicycle Improvement

- Bike-pedestrian improvements at Route 41-Baltimore Pike intersection (Avondale).
- Extension of sidewalks on Route 41 north of Avondale Borough (in London Grove).
- Traffic calming measures and borough gateway treatment at entrances to borough.

Legend

Please reference pages 42, 47, or 57 for legend information.

PennDOT Studies of corridor improvements for this section are underway.

SEGMENT 3: AVONDALE BOROUGH

Future Vision

The vision for this segment is to preserve its Urban Center character and provide accommodations for all user types. Borough residents currently have an uncomfortable experience walking along or crossing Route 41 (known as Pennsylvania Avenue within Avondale) due to heavy traffic volumes and high speeds. Proposed improvements from this plan and previous planning efforts focus on calming traffic and easing congestion. While understanding the need to address congestion issues, the Borough has expressed opposition to the use of roundabouts within the municipality. The use of parallel roads for vehicular and/or non-vehicular travel, including but not limited to Pomeroy Avenue, should be further investigated as identified in previous planning efforts. Based on more recent development, usage of Pomeroy Avenue as a non-vehicular bypass route may be more viable. Avondale also continues to experience flooding during and after significant rain events.

Corridor Safety

The plan proposes several measures with the goal of calming traffic in Avondale. These include gateway treatments at each of the borders on Route 41 entering and exiting the Borough and enhanced crosswalks at specific intersections. Additional low-cost safety measures are identified for consideration.

Congestion

Limited right-of-way and close set backs limit traditional capacity improvements as well as roundabouts within the Borough. Other constraints such as the railroad crossing near the southern Baltimore Pike intersection impede traffic flow at times and limit improvements. As noted elsewhere in the report, PennDOT is developing two related projects in Avondale that address congestion, one involving improvements to the intersection of Route 41 and State Street and the other being the rehabilitation or replacement of the Route 41 bridge over White Clay Creek. In lieu of a roundabout, an additional southbound travel lane on Route 41 could be incorporated as part of the intersection and bridge projects.

Accommodating Pedestrians & Bicyclists

The experience of walking and biking in Avondale would be substantially improved through the implementation of gateway treatments, which would calm traffic and inform drivers making regional trips that they are entering a more densely populated, village-type environment. Additionally, the plan recommends the implementation of enhanced crossings at select intersections, including the use of rectangular rapid flashing beacons (RRFBs). These treatments include signage and flashing lights to enhance the visibility of the crosswalk and they have been demonstrated to greatly increase the rates at which motorists yield to pedestrians. In addition, local leaders and officials should investigate the feasibility of using parallel roads, including potentially Pomeroy Avenue, as alternative bike route(s).

Truck Movements

While truck traffic in Avondale has been a persistent concern over many years, the number of trucks moving through the Borough has likely been temporarily reduced due to a weight restriction on Route 41's bridge over White Clay Creek, which was announced by PennDOT in the fall of 2023. Vehicles weighing over 27 tons must use a detour. The rehabilitation or replacement of the bridge will ultimately remove this restriction. Because the Avondale section of Route 41 is so essential to the regional freight network, due in part to facilities within Avondale that are able to transfer freight between modes, it is not likely that truck traffic can be directed away from Avondale. However, through the measures cited above, there is the potential to calm truck traffic and enhance the safety and comfort of bicyclists and pedestrians.

Flooding

Borough residents continue to experience flooding from the confluence of the East Branch of the White Clay Creek, Trout Run, and Chatham Run. Avondale Borough worked with the White Clay Watershed Association (WCWA) to develop a community green infrastructure plan with the goal of mitigating future flooding. Avondale should continue to advance the projects recommended through this plan and to assess their impacts as well as other future needs. Green infrastructure improvements can be incorporated into transportation projects when practical.

SEGMENT 3: AVONDALE BOROUGH

Priority Projects

Priority Projects for Segment 3: Avondale Borough			
Project	**Municipality**	**Description**	**Time Frame**
Enhanced Crosswalks	Avondale	• Install rectangular rapid flashing beacons (RRFBs) at the 2nd Street and 5th Street crossings • Refresh crosswalk paint at these locations	Short-Term (1-3 years)
Avondale Gateway Treatments	Avondale	• Implement gateway treatments at both entrances to Avondale Borough on Route 41 • Treatments could include a combination of landscaped medians or roadside elements as well as new signage	Medium-Term (4-6 years)
State Street to E. Baltimore Pike	Avondale	• Implement new southbound through lane between State Street and E. Baltimore Pike as part of PennDOT's intersection improvement and bridge rehabilitation/replacement project *	Medium-Term (4-6 years)
Pomeroy Avenue Bike Route	Avondale	• Explore the feasibility of shared roadway / bicycle boulevard treatments on Pomeroy Avenue (or alternate off-corridor routes)	Medium-Term (4-6 years)
Green Infrastructure	Avondale	• Continue to advance the recommendations of the Avondale Community Greening Plan to mitigate flooding	Long-Term (7-10 years)

** = PennDOT and Avondale Borough are currently studying improvements to this section of the corridor and these intersections.*

Other Considerations

In addition to the priority projects (as noted above) and planned PennDOT projects, the following considerations are also recommended for the segment area:

- **Safety** – corridor-wide measures may include additional streetscape and traffic calming measures; improve existing overhead street lighting.
- **Traffic Congestion** – plan and improve the corridor such that future transit can be readily accommodated and is accessible to pedestrians.

SEGMENT 4: AVONDALE BOROUGH TO ROUTE 7 INTERCHANGE

Overview of Existing Conditions

Primarily two-lane roadway with occasional turning lanes, narrow shoulder widths, and wide spacing between intersections. Rural land use with some housing, commercial businesses, and community resources including places of worship and New Garden Township Park spread along the corridor. This segment experiences higher AADT compared to corridor average.

Municipalities:

- New Garden Township

Length: 3.1 miles

Speed Limit: 45 mph

AADT: 20,209 *(+4,388*)*

Truck AADT: 2,971 *(+615*)*

** Difference from corridor average*

Chesco Landscapes:

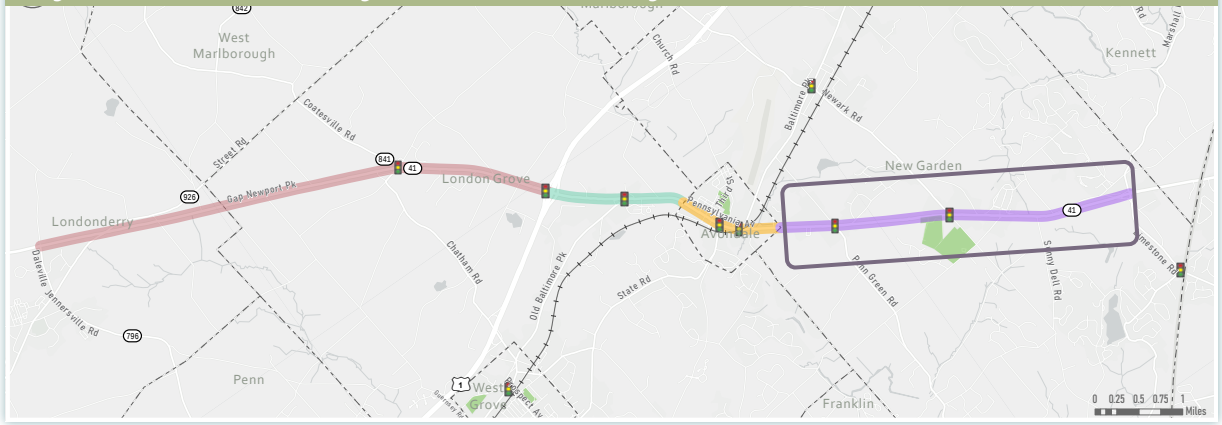
- Suburban

Roadway Classifications:

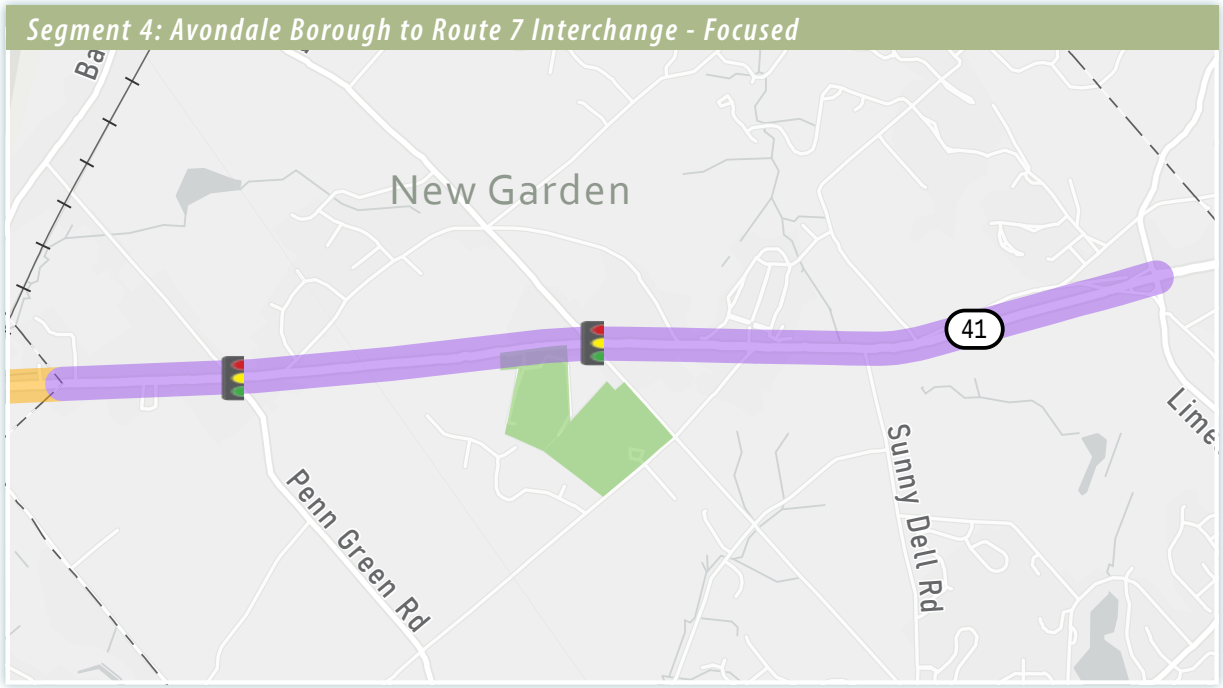
- Suburban Corridor / Community Arterial

AADT = Annual Average Daily Traffic

Segment 4: Avondale Borough to Route 7 Interchange



Segment 4: Avondale Borough to Route 7 Interchange - Focused



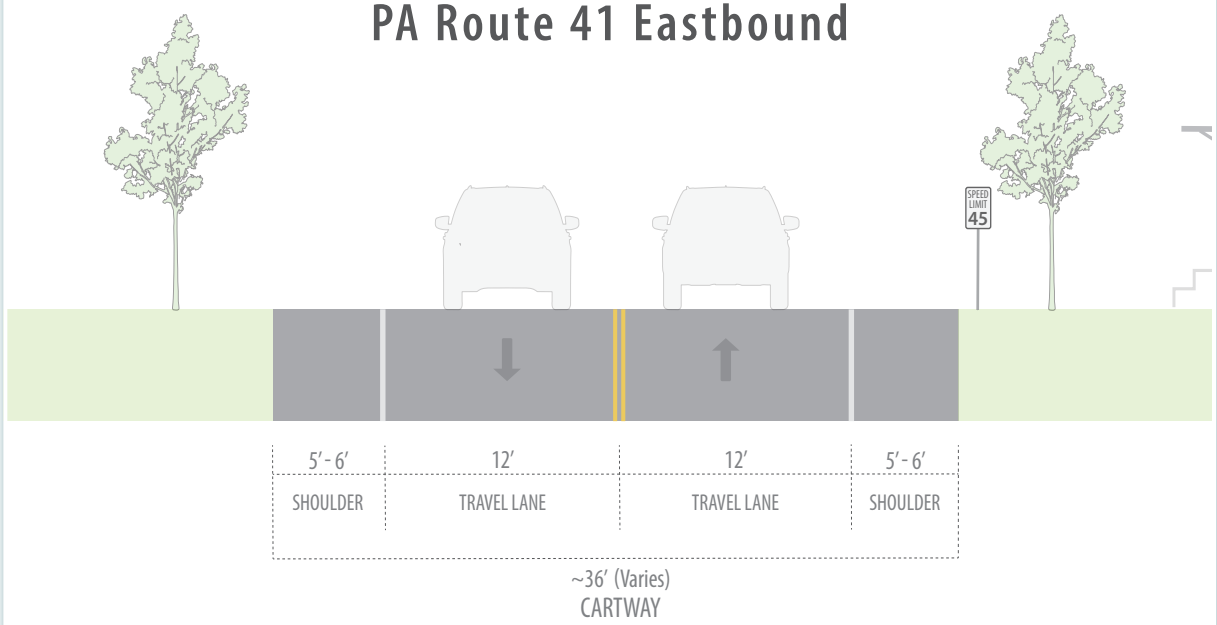
SEGMENT 4: AVONDALE BOROUGH TO ROUTE 7 INTERCHANGE

Existing Conditions, Illustrated Examples

Limited Shoulder and Center Turn Lane Approaching Newark Road

Existing Traffic Spacing Markings

Typical Cross Section, Avondale Borough to Route 7 Interchange



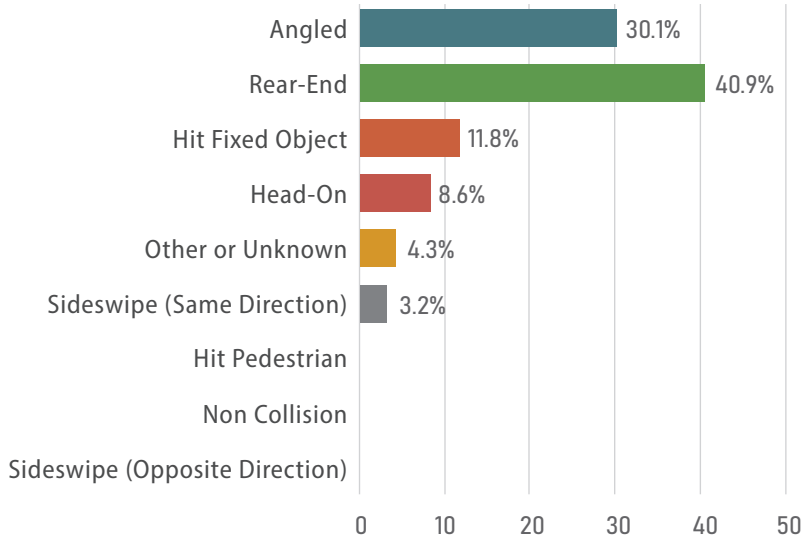
SEGMENT 4: AVONDALE BOROUGH TO ROUTE 7 INTERCHANGE

Existing Conditions, Crash History

CRASHES BY INJURY SEVERITY (2018-2022)

SEVERITY	TOTAL	%	Corridor %	Diff.
Fatal Injury	0	0.0%	0.7%	-0.7%
Suspected Serious Injury	2	2.2%	3.3%	-1.1%
Suspected Minor Injury	18	19.4%	26.3%	-6.9%
Injury/Unknown Severity	13	14.0%	9.3%	+4.7%
Possible Injury	7	7.5%	3.7%	+3.8%
Not injured	50	53.8%	54.0%	-0.2%
Unknown	3	3.2%	2.7%	+0.5%
GRAND TOTAL	93	100%	100%	

TOTAL CRASHES BY TYPE (2018-2022)



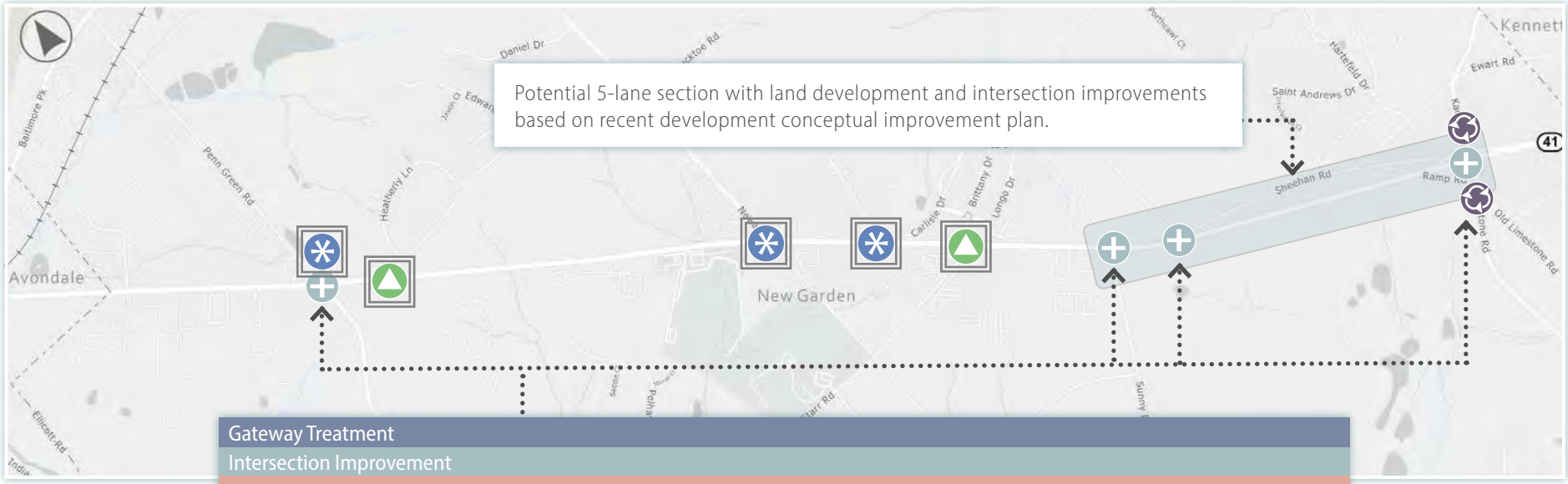
SEGMENT 4: AVONDALE BOROUGH TO ROUTE 7 INTERCHANGE

Planned Improvements / Recommended Projects

Legend

Planned Improvements / Recommended Improvements

- Intersection Improvement
- Gateway Treatment
- Roundabout
- Sidewalk/Sidepath
- Bicycle Improvement
- Turn Lane Improvement
- Crossing Enhancement
- Streetcape Improvement
- Low Cost Safety Improvements (Unsignalized)
- Monitor for Capacity Improvements and Traffic Control



Gateway Treatment
Intersection Improvement
Turn Lane Improvement
Streetscape Improvement

- Consistent three-lane cross section with a center turn lane throughout the corridor in the Township, but provide five-lane cross-section south of Sunny Dell Road to accommodate the anticipated higher density future development.
- General goals and objectives to improve the "appearance, function, and safety" of the corridor.
- Township gateways and consistent streetscapes for different areas of the corridor.

New Garden Comprehensive Plan (2018)

SEGMENT 4: AVONDALE BOROUGH TO ROUTE 7 INTERCHANGE

Future Vision

As development continues, New Garden Township has expressed a desire to focus higher density and commercial development along the Route 41 corridor and other areas of the Township in which there is existing infrastructure to accommodate new development. Previous land development plans indicate the need for roadway improvements. In New Garden, it is anticipated that Route 41 will function more as a suburban corridor as compared to other sections of the route in the study area. This will include greater pedestrian accommodation as part of new development as well as improvements to intersections that present congestion issues. New Garden Township is undertaking an Act 209 Study that will more specifically identify future capacity and safety improvements.

Corridor Safety

Future safety improvements will focus on intersections with relatively higher incidents of crashes, which include Penn Green Road, Newark Road, Sunny Dell Road, and the Route 7 interchange. Potential improvements include traffic control (traffic signals and/or roundabouts) and left-turn lanes at key intersections and major driveways. The Township will also investigate low-cost safety improvements at other unsignalized intersections.

Congestion

With continued development anticipated, the plan recommends the provision of an additional through lane in each direction on Route 41 between Sharp Road and the Route 7 ramps. The Township is also encouraged to investigate a reconfiguration of the Route 7 interchange, including possible roundabouts. The forthcoming Act 209 Study will be excellent opportunity to gather detailed data and develop improvements for this and other key locations on the corridor.

Accommodating Pedestrians and Bicyclists

The Township will seek to create new multimodal facilities in and around incoming development projects. In addition, the plans recommends prioritizing new pedestrian and bicycle connections to access key destinations along or near Route 41 including parks (New Garden Township Park and New Garden Hills) and commercial areas.

Truck Movements

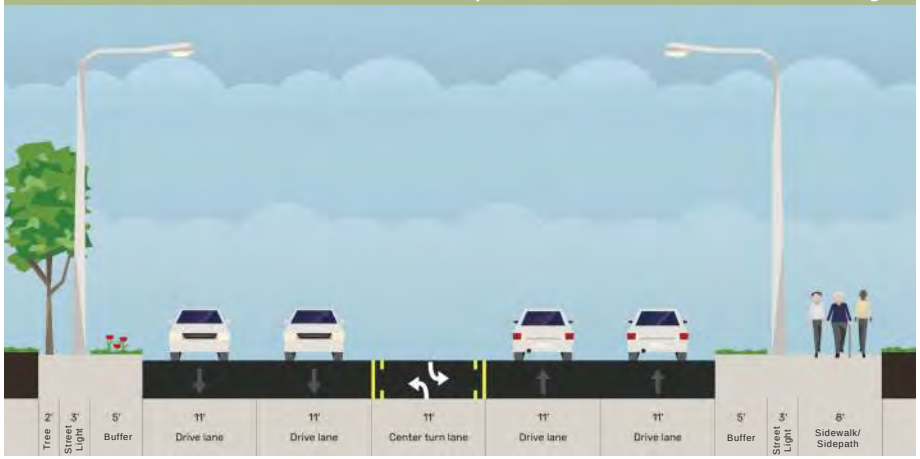
Implementation of intersection safety and capacity improvements will reduce high speeds and collisions.

SEGMENT 4: AVONDALE BOROUGH TO ROUTE 7 INTERCHANGE

Future Vision, Continued

Future Vision for Route 41 from Avondale Borough to Sunny Dell Road and south of Route 7

Future Vision for Route 41 from Sunny Dell Road to Route 7 Interchange



SEGMENT 4: AVONDALE BOROUGH TO ROUTE 7 INTERCHANGE

Priority Projects

Priority Projects for Segment 4: Avondale Borough to Route 7 Interchange			
Project	**Municipality**	**Description**	**Time Frame**
Corridor	New Garden	• Complete Township-wide Act 209 process and leverage to develop and fund specific improvements on Route 41	Short-Term (1-3 years)
New Garden Road (North) Intersection Improvements	New Garden	• Provide clear sight lines for traffic exiting New Garden Road • Provide left turn lane from southbound Route 41 • Modify intersection angle	Short-Term (1-3 years) ***
Corridor	New Garden	• Implement five-lane cross-section from Sunny Dell Road to Route 7 interchange with center turn lane area	Medium-Term (4-6 years) ++
Corridor	New Garden and Kennett Township	• Implement three-lane cross-section north of Sunny Dell Road to Avondale Borough and south of Route 7 to Delaware State Line	Long-Term (7-10 years)
Penn Green Road Intersection Improvements	New Garden	• Explore left turn lanes on Penn Green Road onto Route 41 • Pursue signal retimings	***
New Garden Road (South) Intersection Improvements	New Garden	• Monitor for potential traffic signal and auxiliary turn lanes	***
Starr Road Intersection Improvements	New Garden	• Monitor for potential traffic signal	***
Sunny Dell Road Intersection Improvements	New Garden	• Monitor for potential traffic signal and auxiliary turn lanes	***
Sharp Road/Sheehan Road Intersection Improvements	New Garden	• Eliminate Sharp Road's intersection with Route 41 and relocate Sheehan Road away from Route 41	***
Route 7 Interchange Improvements	New Garden	• Investigate feasibility of roundabout treatments or other improvements at Route 7 intersections deriving from Act 209 study	***

*** = The New Garden Township Act 209 Study Transportation Capital Improvement Plan will identify specific improvements and project schedules.
++ = Recommended improvements due to anticipated land development.

Other Considerations

In addition to the priority projects (as noted above), the following considerations are also recommended for the segment area:

- **Safety** – corridor-wide measures may include improved maintenance program to clear sight lines for traffic turning onto Route 41 at intersections; consider enhanced "Intersection Ahead" with street name placards approaching intersections; overhead street lighting at intersections; adopting an access management policy for future driveways along Route 41.
- **Pedestrian/Bicycle** – explore and improve adjacent lower-stress roadways to accommodate bicycle travel as an alternative to Route 41.
- **Flooding** – incorporate green infrastructure improvements as appropriate in future projects to improve regional stormwater management; consider adopting policies and practices to improve local/regional conditions.

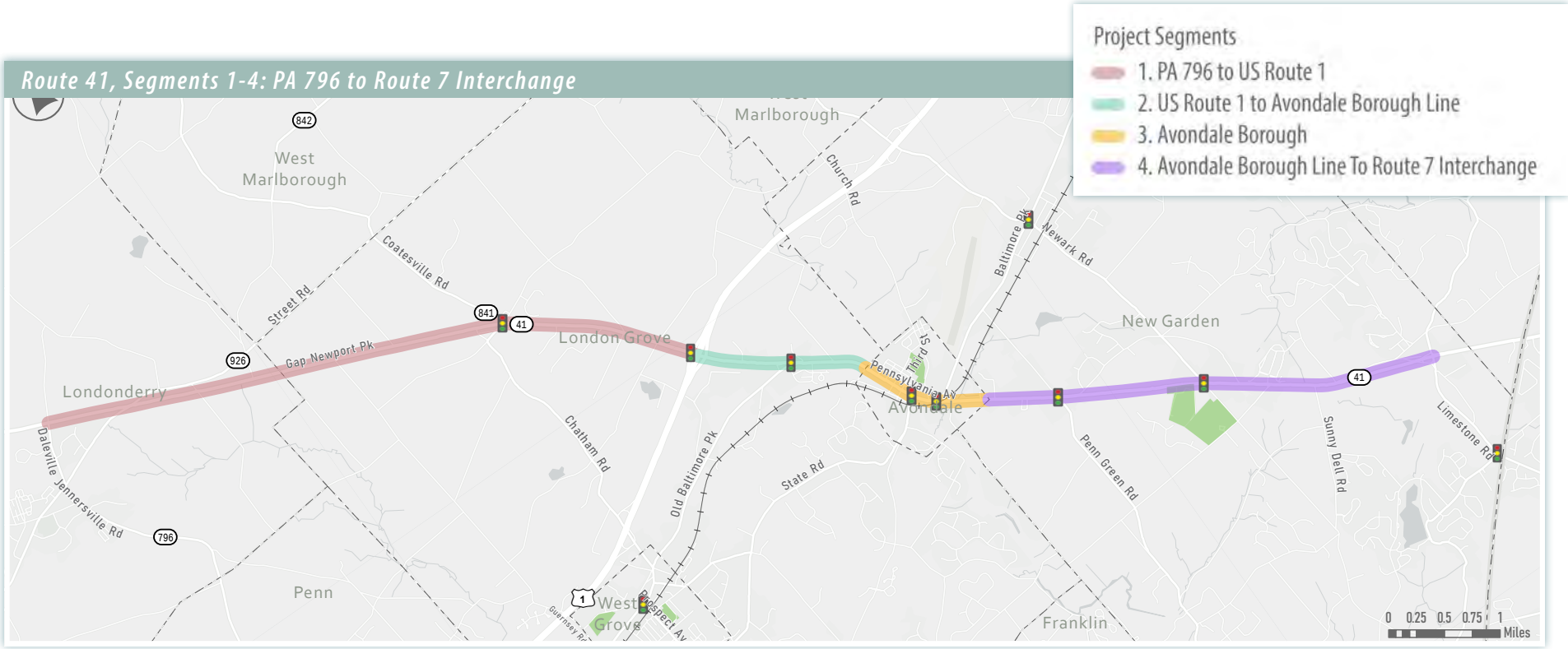
CHAPTER 5: IMPLEMENTATION PLAN

INTRODUCTION

Achieving the overall vision for the Route 41 corridor will require continued coordination and commitment by the sponsor municipalities and other project partners. This chapter presents a summary of priority action items that will advance the vision and goals of the plan. Further feasibility evaluation, detailed engineering, permitting, property owner coordination, and utility coordination will be required before improvements can be constructed. Additional opportunities for public input will vary by the type of project, the implementation mechanism (public project versus private land development), and the stage of the project (conceptual design phase, detailed engineering, etc.).

The PennDOT website for the Route 41 corridor provides a summary of various projects being undertaken by the department. Information on schedules and project status can be found at **pa41.com**.

Route 41, Segments 1-4: PA 796 to Route 7 Interchange



PRIORITY PROJECTS BY MUNICIPALITY

Priority Projects, Londonderry

Action Plan, Londonderry				
Project	**Description**	**Project Partners** *(Lead:/Partner:)*	**Time Frame**	**Potential Funding Source** *(Reference # to Competitive Funding Table beginning on page 72)*
Corridor	• Monitor conditions for auxiliary turn lanes at intersections with periodic studies • Maintain clear sight lines at intersections with continued maintenance of vegetation overgrowth	• Lead: Londonderry Township • Partners: PennDOT	Ongoing	Township Funds PennDOT TIP Grants: 3,4,5,7
Route 796 Intersection Improvements	• Monitor conditions post-construction of Route 926 roundabout • Maintain vegetation to maintain adequate sight distance • Evaluate left turn lane on northbound Route 41 or right-in, right-out restriction for side streets	• Lead: Londonderry Township • Partners: PennDOT	Short-Term (1-3 years)	Township Funds Grants: 3,4,5,7

Key Next Steps

- Upon completion of the adjacent PennDOT Roundabout project at PA 41 (Route 41)/PA 926, Londonderry Township should review traffic volumes and crash history for the PA 796 intersection to determine the influence of the roundabout project. Based on the findings, the Township can determine the appropriate modifications to make to the PA 796 intersection, if any.
- The Township should continue to maintain vegetation to provide adequate sight lines at all intersections and driveways along the corridor.
- Prioritize and implement the "Other Considerations" noted in Chapter 4.

PRIORITY PROJECTS BY MUNICIPALITY

Priority Projects, London Grove

Action Plan, London Grove				
Project	**Description**	**Project Partners** *(Lead:/Partner:)*	**Time Frame**	**Potential Funding Source** *(Reference # to Competitive Funding Table beginning on page 72)*
Corridor	• Monitor conditions for auxiliary turn lanes at intersections with periodic studies • Maintain clear sight lines at intersections with continued maintenance of vegetation overgrowth	• Lead: London Grove • Partners: PennDOT	Ongoing	Township Funds PennDOT TIP Grants: 3,4,5,7
Hepburn Road Intersection Improvements	• Provide northbound right turn lane on Route 41 • Improve pedestrian crossing and adjacent facilities	• Lead: London Grove Township • Partners: PennDOT, Private Developer(s)	Short-Term (1-3 years)	Future Development Grants: 1,3,4,5,7
Glen Willow Road Intersection Improvements	• A center left-turn lane and bike lane are proposed in conjunction with a nearby land development	• Lead: London Grove Township • Partners: PennDOT, Private Developer(s)	Short-Term (1-3 years)	Future Development Grants: 3,4,5,7
N. Guernsey Road Intersection Improvements	• Monitor conditions post-construction of Route 926 roundabout • Evaluate need to reprofile adjacent parcels on both sides of N. Guernsey Road • Evaluate left turn lanes on Route 41 and traffic signalization after PennDOT roundabouts open	• Lead: London Grove Township • Partners: PennDOT	Medium-Term (4-6 years)	Township Funds Grants: 3,4,5,7
Woodview Road Intersection Improvements	• Monitor traffic conditions at the intersection after the re-opening of the bridge (April 2025) to the west of the Route 41 intersection • Evaluate left turn lanes on Route 41 and traffic signalization after Woodview Road bridge reopens	• Lead: London Grove Township • Partners: PennDOT	Medium-Term (4-6 years)	Township Funds Grants: 3,4,5,7
New London Grove Sidepath/ Sidewalk and Streetscape Enhancements	• Provide new sidepath or sidewalk between London Grove Village shopping center and Avondale Borough • Develop pedestrian-scaled streetscape enhancements (see p. 35-36) to support walking and biking	• Lead: London Grove Township • Partners: PennDOT, Private Developer(s)	Medium-Term (4-6 years)	Township Funds Future Development Grants: 4,5,7,8
E. Baltimore Pike Intersection Improvements	• Evaluate the need to re-align intersection to 90-degree angle • Enhance pedestrian crossings	• Lead: London Grove Township • Partners: PennDOT	Long-Term (7-10 years)	Township Funds Grants: 1,2,3,4,5,7
Corridor	• Provide center left-turn lane and access management improvements south of E. Baltimore Pike • Evaluate additional capacity between US Route 1 and E. Baltimore Pike • Potential additional corridor capacity improvements due to anticipated and future land developments	• Lead: London Grove Township • Partners: PennDOT	Long-Term (7-10 years)	Township Funds PennDOT TIP Grants: 2,3,4,5,7,9
Off Corridor	• Coordinate with Chester County and Avondale Borough to advance the county's Baltimore Pike for Everyone plan (see page 6)	• Lead: Chester County • Partners: London Grove Township, Avondale Borough	Long-Term (7-10 years)	Grants: 3,4,5,7

PRIORITY PROJECTS BY MUNICIPALITY

Key Next Steps

- Upon completion of the nearby PennDOT Roundabout projects, London Grove Township should review traffic volumes and crash history at noted intersections to determine the influence of the multiple roundabout projects. Based on the findings, the Township can determine the appropriate modifications to make to the corridor intersections, if any.
- The Township should require future development to provide the necessary transportation improvements along site frontages or critical intersections, including necessary right-of-way.
- The Township should continue to maintain vegetation to provide adequate sight lines at all intersections and driveways along the corridor.
- Prioritize and implement the "Other Considerations" noted in Chapter 4.

PRIORITY PROJECTS BY MUNICIPALITY

Priority Projects, Avondale

Action Plan, Avondale				
Project	**Description**	**Project Partners** *(Lead:/Partner:)*	**Time Frame**	**Potential Funding Source** *(Reference # to Competitive Funding Table beginning on page 72)*
Enhanced Crosswalks	• Install rectangular rapid flashing beacons (RRFBs) at the 2nd Street and 5th Street crossings • Refresh crosswalk paint at these locations	• Lead: Avondale Borough • Partners: PennDOT	Short-Term (1-3 years)	Borough Funds Grants: 3,4,5,7
Avondale Gateway Treatments	• Implement gateway treatments at both entrances to Avondale Borough on Route 41 • Treatments could include a combination of landscaped medians or roadside elements as well as new signage	• Lead: Avondale Borough • Partners: PennDOT	Medium-Term (4-6 years)	Borough Funds
State Street to E. Baltimore Pike	• Implement new southbound through lane between State Street and E. Baltimore Pike as part of PennDOT's intersection improvement and bridge rehabilitation/ replacement project	• Lead: PennDOT • Partners: Avondale Borough, Chester County	Medium-Term (4-6 years)	State / Federal Funds
Pomeroy Avenue Bike Route	• Explore the feasibility of shared roadway / bicycle boulevard treatments on Pomeroy Avenue (or alternate off-corridor routes)	• Lead: Avondale Borough	Medium-Term (4-6 years)	Township Funds Grants: 3,4,5,7,8,9
Green Infrastructure	• Continue to advance the recommendations of the Avondale Community Greening Plan to mitigate flooding	• Lead: Avondale Borough	Long-Term (7-10 years)	Township Funds Grant Funding

Key Next Steps

- The Borough should coordinate with PennDOT regarding future pedestrian signals. The Borough should consider grant funding opportunities for the construction of the signals, but it may require local funding for engineering, etc.
- The Borough should study the feasibility of alternative bike routes to Route 41 and collaborate with Chester County on implementation of the Baltimore Pike bike network.
- Prioritize and implement the "Other Considerations" noted in Chapter 4.

PRIORITY PROJECTS BY MUNICIPALITY

Priority Projects, New Garden

Action Plan, New Garden				
Project	**Description**	**Project Partners** *(Lead:/Partner:)*	**Time Frame**	**Potential Funding Source** *(Reference # to Competitive Funding Table beginning on page 72)*
Corridor	• Complete Township-wide Act 209 process and leverage to develop and fund specific improvements on Route 41	• Lead: New Garden Township • Partners: PennDOT	Short-Term (1-3 years)	Secured
New Garden Road (North) Intersection Improvements	• Provide clear sight lines for traffic exiting New Garden Road • Provide left turn lane from southbound Route 41 • Modify intersection angle	• Lead: New Garden Township • Partners: PennDOT	Short-Term (1-3 years)***	Transportation Impact Fees Grants: 3,4,5,7
Corridor	• Implement five-lane cross-section from Sunny Dell Road to Route 7 interchange with center turn lane area	• Lead: New Garden Township • Partners: PennDOT, Private Developer(s)	Medium-Term (4-6 years)	Future Development
Corridor	• Implement three-lane cross-section north of Sunny Dell Road to Avondale Borough and south of Route 7 to Delaware State Line	• Lead: New Garden Township, Kennet Township • Partners: PennDOT, Private Developer(s)	Long-Term (7-10 years)	Township Funds PennDOT TIP Grants: 4,5,7,9 Future Development
Penn Green Road Intersection Improvements	• Explore left turn lanes on Penn Green Road onto Route 41 • Pursue signal retimings	• Lead: New Garden Township • Partners: PennDOT	***	Transportation Impact Fees Grants: 3,4,5,7
New Garden Road (South) Intersection Improvements	• Monitor for potential traffic signal and auxiliary turn lanes	• Lead: New Garden Township • Partners: PennDOT	***	Transportation Impact Fees Grants: 3,4,5,7
Starr Road Intersection Improvements	• Monitor for potential traffic signal	• Lead: New Garden Township • Partners: PennDOT	***	Transportation Impact Fees Grants: 3,4,5,7
Sunny Dell Road Intersection Improvements	• Monitor for potential traffic signal and auxiliary turn lanes	• Lead: New Garden Township • Partners: PennDOT, Private Developer(s)	***	Transportation Impact Fees Future Development Grants: 3,4,5,7
Sharp Road/Sheehan Road Intersection Improvements	• Eliminate Sharp Road's intersection with Route 41 and relocate Sheehan Road away from Route 41	• Lead: New Garden Township • Partners: PennDOT, Private Developer(s)	***	Transportation Impact Fees Future Development Grants: 3,4,5,7
Route 7 Interchange Improvements	• Investigate feasibility of roundabout treatments or other improvements at Route 7 intersections deriving from Act 209 study	• Lead: New Garden Township • Partners: PennDOT	***	Transportation Impact Fees PennDOT TIP Grants: 3,4,5,7

*** = *The New Garden Township Act 209 Study Transportation Capital Improvement Plan will identify specific improvements and project schedules.*

It is recommended that, once adopted by the municipality, the New Garden Township Transportation Capital Improvement Plan (Act 209 Study) be considered an addendum to these recommended improvements noted herein.

PRIORITY PROJECTS BY MUNICIPALITY

Key Next Steps

- Upon completion of the New Garden Township Act 209 Study and Transportation Capital Improvement Plan, those corridor/intersection improvement recommendations should be incorporated into this plan.
- The Township should require future development to provide the necessary transportation improvements along site frontages or critical intersections, including necessary right-of-way.
- The Township should continue to maintain vegetation to provide adequate sight lines at all intersections and driveways along the corridor.
- Prioritize and implement the "Other Considerations" noted in Chapter 4.

COMPETITIVE FUNDING TABLE

Competitive Funding Table

Identifying funding is a critical next step to advance design or construction for any capital improvement. Some projects may be relatively low cost, implementable by staff or volunteers, or tied to another project. Others may require phasing and funding from multiple sources.

While the full responsibility of funding the projects identified in this plan will not fall solely on the respective municipality, all improvements will require some local investment, whether that be time, materials, or capital.

It is important for the municipalities to consider the improvement projects, policies, and programs in this plan when preparing future budgets. Investment from the municipalities can be used to leverage other funding sources, and it can be used for matching funds for competitive grant programs.

Information about potential funding options and opportunities is available as part of the PennDOT Connects initiative. There are a number of competitive grant funding programs that could be pursued, specifically for safety as well as bicycle and pedestrian improvements.

A summary of the current competitive grant programs is provided below. Each grant program has different eligibility for the type of project, use of funds, matching requirements, and timelines for implementation. Grant programs typically require the project sponsor to provide matching funds.

Summary of Current Competitive Grant Programs

	Program *Administering Agency*	Details	Eligible Project Phases				Anticipated Application Period
			Planning	*Design*	*ROW*	*Construction*	
1	**Green Light – GO** • Pennsylvania Department of Transportation (PennDOT)	• State funds (Act 101) • Grant funds improvements to existing traffic signals • 20% match	●	●	●	●	Annual: November – February
2	**Safe Streets and Roads For All** • U.S. Department of Transportation	• Federal transportation funds • 20% match requirement • Planning and Demonstration Grants: $100,000 - $10 million • Implementation Grants: $2.5 - $25 million; Projects must be identified in an Action Plan	●	●	●	●	Annual
3	**Automated Red Light Enforcement (ARLE)** • Pennsylvania Department of Transportation (PennDOT)	• Traffic signal upgrades and safety improvements • Funded by revenue from automated red light enforcement • No match required, no minimum or maximum request amounts	●	●	●	●	Annual: April – June

COMPETITIVE FUNDING TABLE

Competitive Funding Table, Continued

Summary of Current Competitive Grant Programs							
	Program *Administering Agency*	**Details**	**Eligible Project Phases**				**Anticipated Application Period**
			Planning	*Design*	*ROW*	*Construction*	
4	**CFA/DCED – Multimodal Transportation Fund (MTF)** • Commonwealth Financing Authority (CFA) with Department of Community and Economic Development (DCED)	• Annual competitive grant program for state funds (Act 89) • 30% match (recently waived for municipalities); $100,000 minimum, $3 million maximum • 2 – 3 year timeframe to complete the grant funded activities • Design and engineering cannot exceed 10% of the grant award		●	●	●	Annual: March – July
5	**PennDOT – Multimodal Transportation Fund (MTF)** • Pennsylvania Department of Transportation (PennDOT)	• Annual competitive grant program for state funds (Act 89) • 30% match (based on grant award); $100,000 min; $3 million max • 3 year timeframe to complete the grant funded activities • Design and engineering cannot exceed 10% of the grant award		●		●	Annual: September – November
6	**Transportation Alternatives Set Aside (TASA)** • Pennsylvania Department of Transportation (PennDOT) • Delaware Valley Regional Planning Commission (DVRPC)	• Federal transportation funds • Match requires funding all pre-construction activities • $50,000 minimum and $1 – $1.5 million maximum • 2 year timeframe to complete design, right-of-way, and utility clearance				●	Biennial (Typical)

COMPETITIVE FUNDING TABLE

Competitive Funding Table, Continued

Summary of Current Competitive Grant Programs							
	Program *Administering Agency*	**Details**	**Eligible Project Phases**				**Anticipated Application Period**
			Planning	*Design*	*ROW*	*Construction*	
7	**Regional Trails Program** • Delaware Valley Regional Planning Commission (DVRPC)	• Intended for multi-use trails that contribute to completion of Circuit Trails or trails that connect to or provide access to existing Circuit Trails • 20% match; $300,000 maximum	●	●	●	●	Undefined
8	**Local Share Account (LSA) – Statewide** • Commonwealth Financing Authority (CFA) with Department of Community and Economic Development (DCED)	• Competitive grant program for distribution of gaming revenues through the state • No match required; $25,000 minimum; $1 million maximum	●	●	●	●	Undefined
9	**Greenways, Trails, and Recreation Program (GTRP)** • Commonwealth Financing Authority (CFA) with Department of Community and Economic Development (DCED) & Department of Conservation of Natural Resources (DCNR)	• Annual competitive grant program for state funds (Act 13) • 15% match; $250,000 maximum • 2-3 year timeframe to complete the grant-funded activities • Design and engineering cannot exceed 10% of the grant award		●		●	Annual: February – May
10	**Transportation and Community Development Initiative (TCDI)** • Delaware Valley Regional Planning Commission (DVRPC)	• Competitive grant program • Federal funds • 20% match • $25,000 minimum • $100,000/$175,000 soft maximums	●	●			Undefined

GRANT PREPARATION RECOMMENDATIONS

Grant Preparation Recommendations

As seen in the Competitive Funding Table, different grant programs fund different project types and project phases. Ideally, the listed priority projects should be paired with their most suitable grant (or grants) during the preparation of municipal budgets in order to account for potential matching funds as well as any work needed to advance the project towards a more competitive application for the given program. This could include the preparation of cost estimates and concept plans as well as the securing of necessary right-of-way if funds are being sought for construction. If an improvement project already has an agreed-upon concept, the next step would be to pursue funding for preliminary engineering, while subsequent phases could include right-of-way clearance, utility coordination, final design, and construction. With this process, a municipality can decide at the start of the budget year which grants will be pursued for which transportation improvement projects.

ADDITIONAL FUNDING SOURCES

Additional Funding Sources

Transportation Improvement Program (TIP), Delaware Valley Regional Planning Commission

The TIP is the regionally agreed-upon list of priority transportation projects, as required by federal law (ISTEA, TEA-21, SAFETEA LU, MAP-21, the FAST Act, and the new Infrastructure Investment and Jobs Act/Bipartisan Infrastructure law (IIJA/BIL)).

The TIP document must list all projects that intend to use federal funds, along with all non-federally funded projects that are regionally significant. It also includes all other State funded capital projects. The projects are multi-modal; that is, they include bicycle, pedestrian, ITS, and freight related projects, as well as the more traditional highway and public transit projects.

Due to the importance of the Route 41 corridor and the significance of the recommended corridor improvements, it is recommended that the municipalities and Chester County advocate for inclusion of the corridor wide cross-section improvements to be added to future TIP updates. Other key intersection improvements may also warrant inclusion.

State Twelve Year Plan and State Transportation Improvement Plan (STIP), PennDOT

The State Transportation Improvement Plan (STIP) and the TIP are the first four years of the Twelve Year Program (TYP), which outline the multimodal transportation improvements spanning a four year period. The STIP covers the entire state and includes 23 individual TIPs representing the MPOs and RPOs. The TIPs feed into the statewide STIP. Federal law requires TIPs to be updated at least every three years. PennDOT's planning partners, both Metropolitan and Rural Planning Organizations (MPO/RPO), develop a TIP and solicit public involvement per each MPO/RPO Public Participation Plan.

The STIP addresses all modes of transportation, including highways and bridges, public transit, aviation, and rail freight projects that intend to use federal and/or state matching funds excluding specified maintenance funds. This plan provides the public with an active role in the development of transportation plans, programs, and projects beginning in the early stages of plan development and continuing throughout the planning process. As needs and priorities change, the TIP may be modified or amended. The State Transportation Commission (STC) reviews and approves the Twelve Year Program every two years and when finalized, the STC adopts the program.

Again, due to the significance of the Route 41 corridor and the scope of the corridor-wide improvements, it is recommended that the municipalities, Chester County, and DVRPC advocate for inclusion of DVRPC TIP projects in the PennDOT STIP and TYP.

OTHER TOOLS

Other Tools

Transportation Impact Fees

Pennsylvania Act 209 sets forth the ability for municipalities to enact impact fees to fund transportation improvements that are needed as a result of new land developments. Through a series of required studies as prescribed by the enabling legislation, a transportation capital improvement plan is ultimately enacted outlining the necessary improvements to the municipality's infrastructure. Based on the cost of the transportation improvements attributable to new development, a traffic impact fee is calculated, which is then assessed to each new development based on the anticipated number of trips generated by that project.

In many cases, a municipality will utilize collected transportation impact fees as their local match when seeking competitive grant funding. New Garden Township is currently in the process of enacting a transportation impact fee.

Official Map

An official map is a tool to identify and express interest in potential acquisition of properties or rights-of-way (ROW) for planned future public facilities including new roadway and trail connections.

Trail & Sidewalk Plans

Off-road trail and sidewalk plans provide a guide for future facility planning in the municipality. In some cases, these plans are included in a municipality's Open Space Plan, Recreation Plan, or Comprehensive Plan. Similarly, plans can be developed for on-road bike routes as well as off-road facilities. Such plans can show the overall networks of each municipality for non-vehicular travel and their networks in relationship to the Route 41 corridor.

Municipal Ordinance Updates

Municipal ordinances can also be used to promote expansion and connectivity of the pedestrian and bicycle network, to promote access management, to modify zoning, and to achieve other desired outcomes consistent with the recommendations for the PA Route 41 corridor.