

SmartMoves Corridors

Corridors of Regional Significance

US Route 422

Master Planning Framework
Ohio State Line to Cambria County Line



Winter 2024

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Italiano

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Nepali

यो फाराम अनुरोध गरिएमा वैकल्पिक ढाँचाहरूमा उपलब्ध छन्।
अनुरोध गरेमा बिना शुल्क SPC ले अनुवादन र दोभाषे सेवा उपलब्ध गराउँछ।
थप जानकारीको लागि SPC (412) 391-5590 मा फोन गर्नुहोस्।

Gujarati

આ દસ્તાવેજ વિનંતી પર વૈકલ્પિક ફોર્મેટમાં ઉપલબ્ધ હોય છે.
SPC કોઈપણ શુલ્ક લીધા વિના વિનંતી પર અનુવાદ અને અર્થઘટન સેવાઓ પૂરી પાડશે. વધુ માહિતી માટે કૃપા કરી (412) 391-5590 પર SPCને કોલ કરો.

Oriya

ଏହି ଡକ୍ୟୁମେଣ୍ଟର ଅନୁରୋଧରେ ବୈକଳ୍ପିକ ଫର୍ମାଟରେ ଉପଲବ୍ଧ। କୌଣସି ଚାର୍ଜ୍ ଛଡ଼ା ଏସପିସି ଅନୁବାଦ ଏବଂ ବ୍ୟାଖ୍ୟା ସେବା ପ୍ରଦାନ କରିବ।

Punjabi:

ਇਹ ਦਸਤਾਵੇਜ਼ ਬੇਨਤੀ ਕਰਨ 'ਤੇ ਵਿਕਲਪਕ ਰੂਪਾਂ ਵਿੱਚ ਉਪਲਬਧ ਹੈ।
SPC ਬਿਨਾਂ ਕਿਸੇ ਖਰਚ 'ਤੇ ਬੇਨਤੀ 'ਤੇ ਅਨੁਵਾਦ ਅਤੇ ਦੁਬਾਸ਼ੀਆ ਸੇਵਾਵਾਂ ਪ੍ਰਦਾਨ ਕਰੇਗਾ।

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Sinhalese

ඉල්ලීම මත මෙම ලේඛනය විකල්ප ආකෘතිවලින් ලබාගත හැකිය.
SPC විසින් කිසිදු ගාස්තුවක් අය කිරීමකින් තොරව භාෂා පරිවර්තන හා භාෂණ පරිවර්තන සේවාවන් සපයනු ඇත.
කරුණාකර වැඩි දුර විස්තර සඳහා (412) 391-5590 ඔස්සේ SPC අමතන්න.

Marathi

हा दस्तऐवज विनंतीनुसार पर्यायी स्वरूपांमध्ये उपलब्ध आहे.
विनंतीनुसार SPC भाषांतर आणि अर्थविवरण सेवा विनामूल्य प्रदान करेल. अधिक माहितीसाठी कृपया SPC ला (412) 391-5590 येथे कॉल करा.

Bengali

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Hindi

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Sindhi

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SmartMoves Corridors

Corridors of Regional Significance

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SECTION I: INTRODUCTION

Corridors of Regional Significance connect activity centers across multiple counties within and through Southwestern Pennsylvania. The corridors promote the multimodal movement of people and goods, critical to the quality of life and economic vitality of Southwestern Pennsylvania.



PURPOSE

The goal of examining these corridors is to better inform project planning and coordination among agencies and municipalities, before transportation projects are programmed to receive funding through the region's Transportation Improvement Program (TIP).

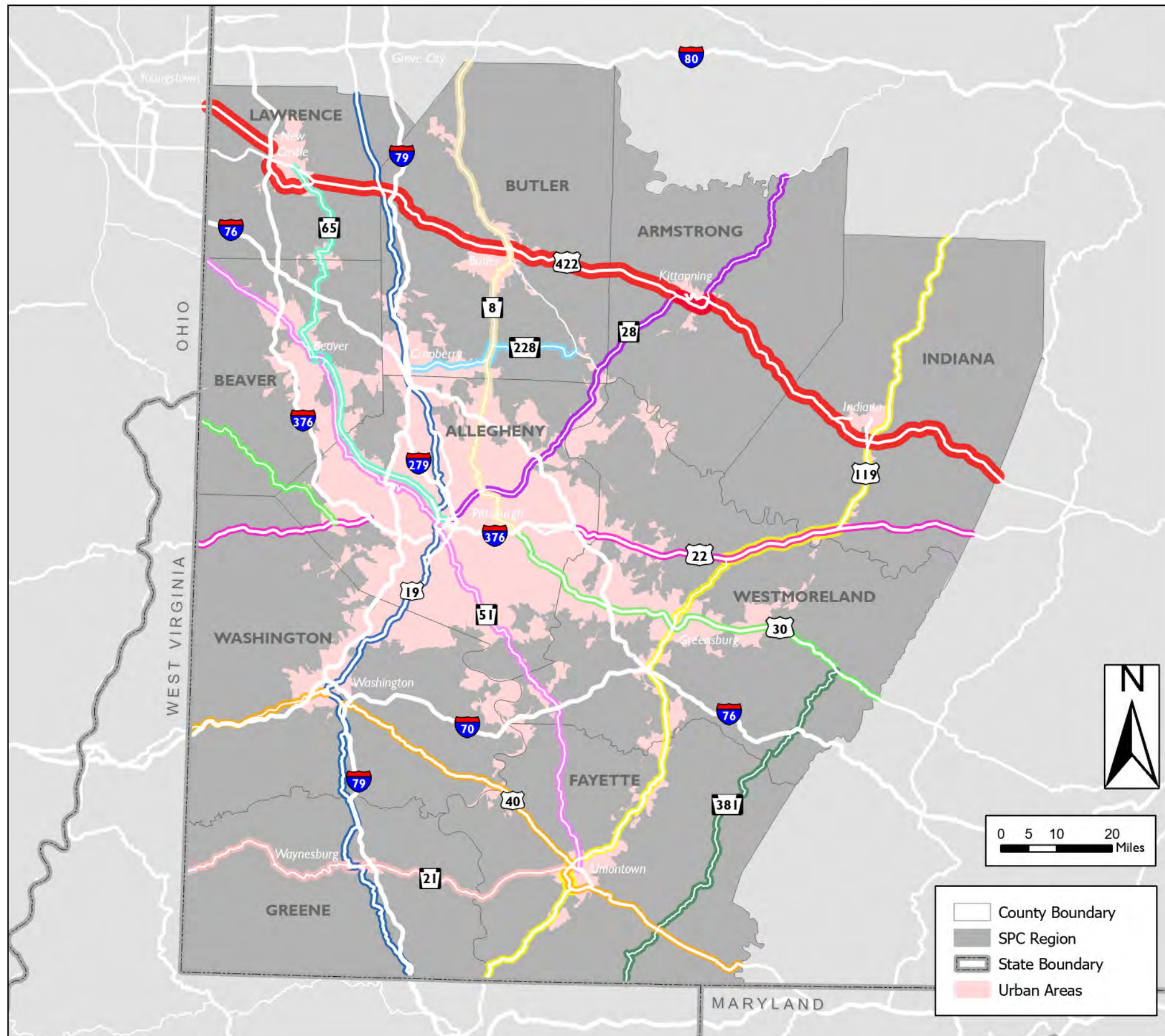
Historically, improvements made to these corridors were aimed at solving specific issues such as safety or operational deficiencies, reoccurring congestion or capital maintenance asset management needs. In order for the region to achieve the best use of these facilities and to strengthen communities and the economy, they must be examined as holistically, rather than location by location.

The corridors are broadly drawn and include parallel facilities other than roadways and bridges. They include transit service, active transportation infrastructure, rail and port facilities, and airports.

The framework will identify considerations that should be taken into account when planning for new projects within the corridors with the ultimate goal of providing consistency across all future transportation improvements and ensuring the context of the corridor, communities and the facility users are considered.

Corridors of Regional Significance

- State Route 8
- US Route 19
- State Route 21
- US Route 22
- State Route 28
- US Route 30
- US Route 40
- State Route 51
- State Route 65
- US Route 119
- State Route 228
- State Route 381
- US Route 422**



SMARTMOVES CORRIDORS

GOALS

These regional corridors traverse multiple place types ranging from sparsely populated rural areas, to small towns and suburbs, to densely populated urban areas and urban core of the City of Pittsburgh. Each place type is accompanied by its own unique context as well as its own mobility, connectivity and accessibility needs.

When planning for transportation investments, the region must consider not just the transportation benefits, but also how well the improvements fit the context of the surrounding community it serves. The transportation system must be considered as a whole, rather than a series of separate networks. Involving the community in the early stages of the project development process will not only help to identify community needs and goals, but also assist in the delivery of projects by considering all factors before project design begins. This collaboration, along with strong partnerships between all parties involved, will assist in efficiently delivering projects, thereby enabling the region to capture as much state and federal funding as possible.

SmartMoves for a Changing Region, Southwestern Pennsylvania's Long Range Plan sets the vision, direction and context for this type of holistic corridor planning.



The Regional Vision is a world-class, safe and well maintained, integrated transportation system that provides mobility for all, enables resilient communities, and supports a globally competitive economy.

To support the Vision, the Plan sets three broad Goals for the region: Connected Mobility, Resilient Communities, and a Globally Competitive Economy. The Goals, supported by eight strategies each, work in concert to establish opportunities for collaboration across the region and to guide investments that make the region a better place for everyone.

SMARTMOVES GOALS



CONNECTED MOBILITY

A world-class, safe and well maintained, integrated transportation system that provides mobility for all.



RESILIENT COMMUNITIES

The revitalization of our communities will make us a magnet for new investment. Intensive investments in connectivity, walkable neighborhoods, and green infrastructure will attract business and residents to newer and older communities alike.



GLOBALLY COMPETITIVE ECONOMY

Strategic infrastructure investments and workforce training will make the region recognized as a global leader in technology and innovation.

This Master Planning Framework is directly supported by several of the *SmartMoves* Strategies:



PRIORITIZE AND STREAMLINE STRATEGY

Employ holistic planning for mobility and accessibility when developing and prioritizing projects. Make transportation improvements fit community context and enhance local quality of life and encourage strong, implementable complete streets policies.



PROMOTE INVESTMENT STRATEGY

Promote strategic infrastructure investment in communities that reduces physical exposure and vulnerability from natural hazards, including flooding and landslides.



INNOVATIVE IDEAS STRATEGY

Embrace emerging infrastructure innovations and technologies including planning, design, materials, and construction processes for an adaptable and resilient built environment.



CLEAN AIR STRATEGY

Support and encourage transportation projects and programs that will contribute to attainment or maintenance of the national ambient air quality standards (NAAQS) for ozone, carbon monoxide (CO), and particulate matter (PM).



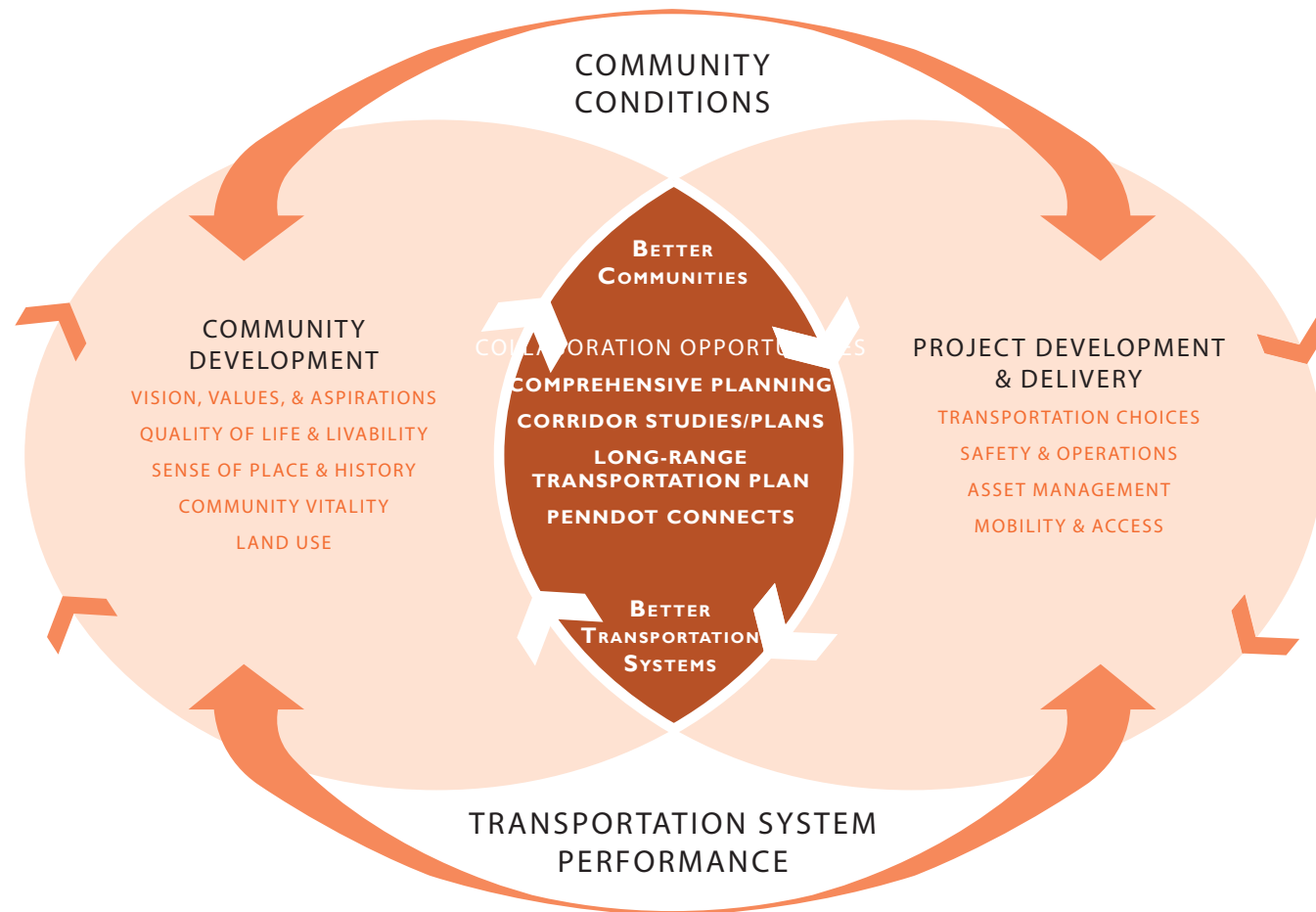
CONTEXT

Anchored by the region's Long Range Plan, effective planning for a region of this size and diversity requires the cooperation and coordination of many planning partners and multiple, interconnected planning processes that work together toward achieving the regional vision.

The region's transportation network must function as an integrated system rather than a series of unrelated networks. It is imperative that the transportation agencies responsible for planning, implementing, and maintaining different components of the transportation system work in concert to give the region the opportunity to make better informed mobility choices.

If walking, cycling, and using public transportation are more attractive and convenient, it will help the region be more economically competitive by enhancing quality of life and the environment.

Not only do we need to continue to prioritize investment based on performance criteria at the corridor level, we also need to consider the context of each community in order to create genuine, livable places, emphasizing complete streets with a variety of mobility options. It is crucial to work toward the same shared goals of this plan, realizing that solutions to mobility are not one-size-fits-all and will look different across the urban, suburban, and rural areas of the region. Partnerships between transportation agencies, local governments, and the private sector are essential to this effort.



Southwestern Pennsylvania Commission Planning Efforts

Plan/Program

[SmartMoves Long Range Transportation Plan \(2023\)](#)

[SmartMoves Connections Regional Transit Study \(2021\)](#)

[Congestion Management Program](#)

[Water Resource Center](#)

[*Active Transportation Plan \(2019\)](#)

[Regional Transportation Demand Management Strategic Action Plan \(2023\)](#)

[*Human Services Coordinated Transportation Plan \(2019\)](#)

[Transportation Improvement Program \(2025-2028\)](#)

[Regional Transportation Safety Action Plan \(2020\)](#)

[Regional Freight Plan \(2016\)](#)

[Regional Operations Plan \(2023\)](#)

[Regional Roundabout Study \(2022\)](#)

*Plans are currently being updated during the development of this CORS MPF. See www.spcregion.org for updated plans.



SECTION II: CORRIDOR OVERVIEW

CORRIDOR DESCRIPTION

DEMOGRAPHIC AND EMPLOYMENT TRENDS

ENVIRONMENTAL JUSTICE

LAND USE CONTEXT

TRANSPORTATION SYSTEMS

FREIGHT NETWORK

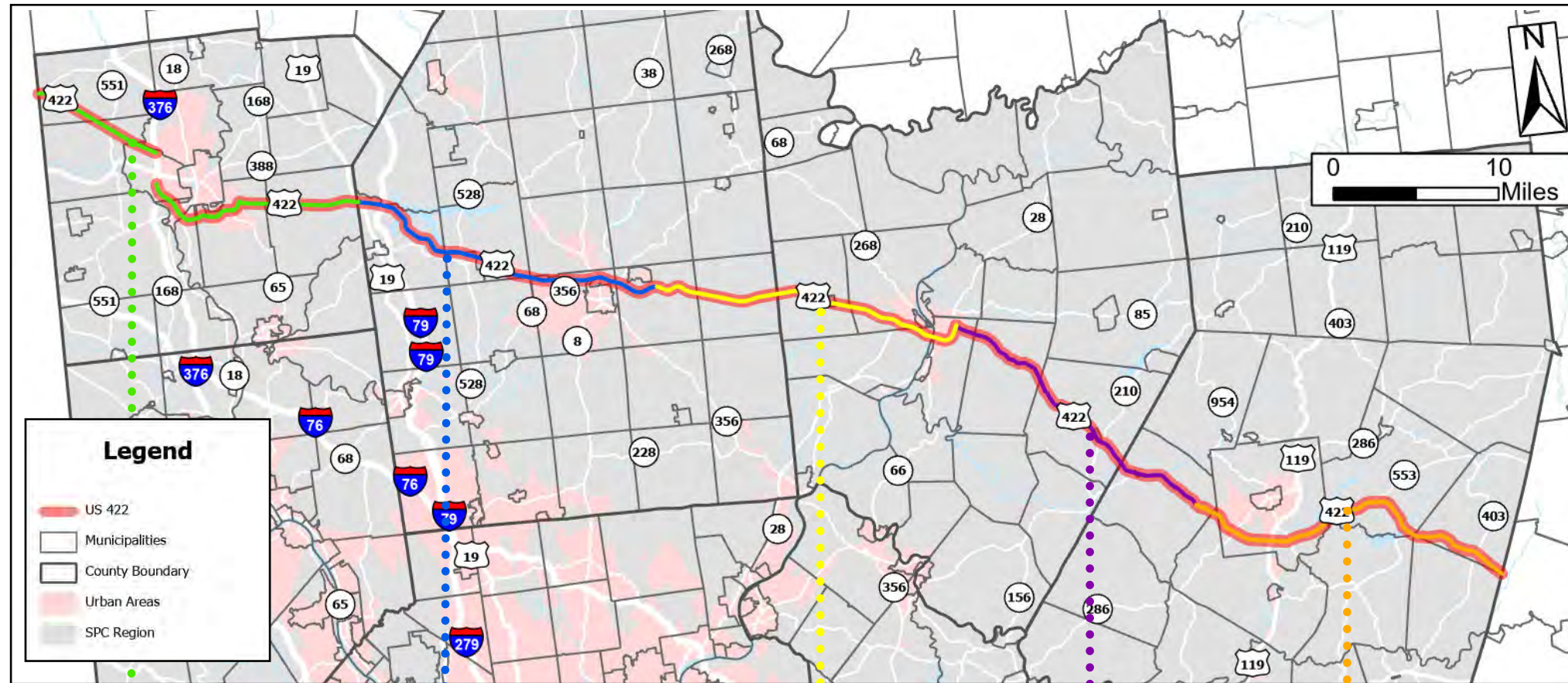
FREIGHT ACTIVITY

CORRIDOR TRAVEL PATTERNS

TRAFFIC GROWTH RATE

NON-SOV OCCUPANT VEHICLE TRAVEL

CORRIDOR DESCRIPTION



US 422 in the northern portion of the SPC region is a major east to west corridor. Traversing approximately 105 miles, US 422 travels through four counties (Armstrong, Butler, Indiana, and Lawrence) and 29 municipalities in the SPC region. US 422 provides connections to other major routes such as I-79, I-376, US 19, US 119, SR 8, SR 28, SR 65 and SR 68. These routes provide vital connections between US 422 and population centers in these four counties and beyond.

To achieve the best analysis of the US 422 corridor, the corridor will be examined in five segments in this Master Planning Framework.

- Segment A: Ohio State Line to US 19 in Muddy Creek Township
- Segment B: US 19 in Muddy Creek Township to Bonniebrook Road in Summit Township
- Segment C: Bonniebrook Road in Summit Township to SR 28 in Manor Township
- Segment D: SR 28 in Manor Township to Parkwood Road in Armstrong Township
- Segment E: Parkwood Road in Armstrong Township to the Cambria County Line

JURISDICTIONS

Armstrong County:

East Franklin
Elderton
Kittanning Township
Manor
North Buffalo
Plumcreek
West Franklin
Worthington

Butler County:

Butler Township
Clearfield
Connoquenessing Township
Franklin
Muddy Creek
Prospect
Summit

Indiana County:

Armstrong
Center
Cherryhill
Pine
Shelocta
White

Lawrence County:

Mahoning
New Castle
Pulaski
Shenango
Slippery Rock Township
South New Castle
Taylor
Union

SEGMENT A



SEGMENT B



SEGMENT C



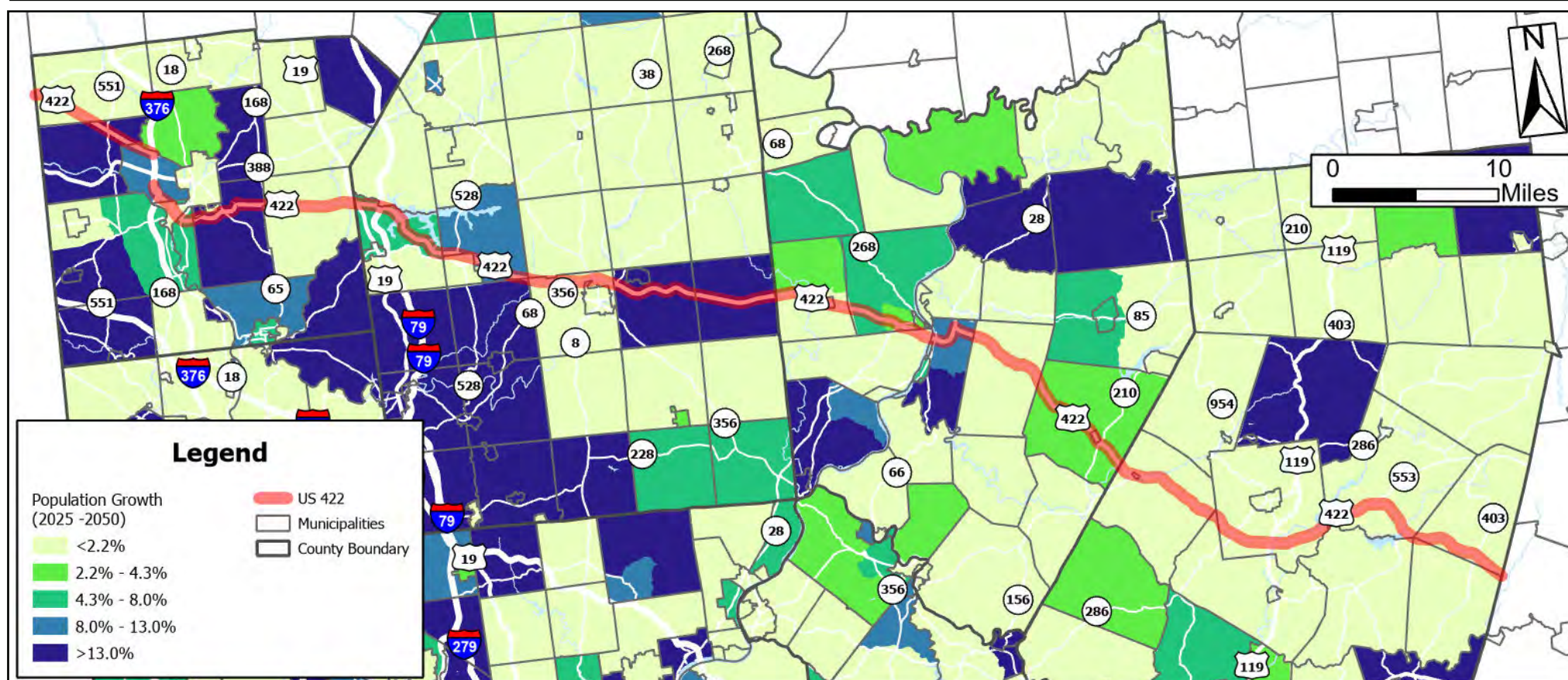
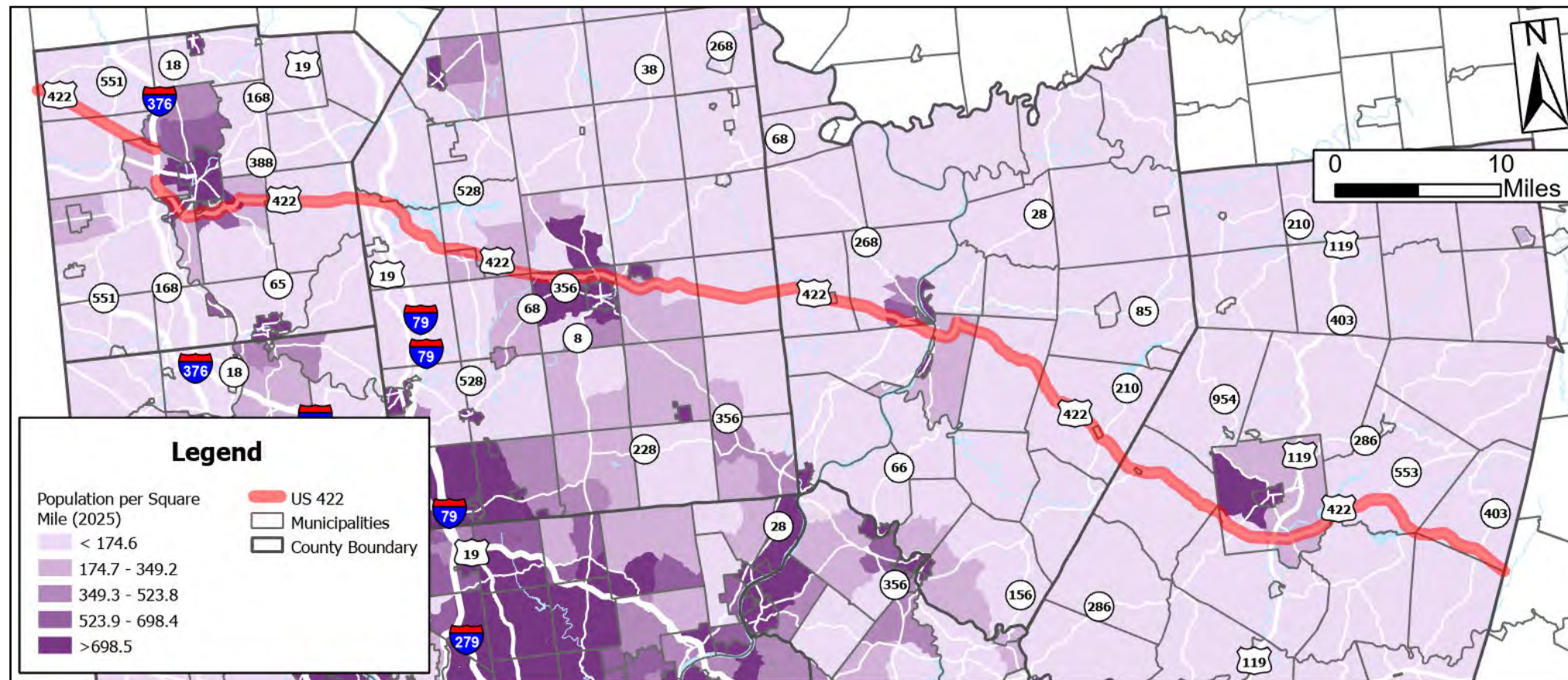
SEGMENT D



SEGMENT E



DEMOGRAPHIC AND EMPLOYMENT TRENDS

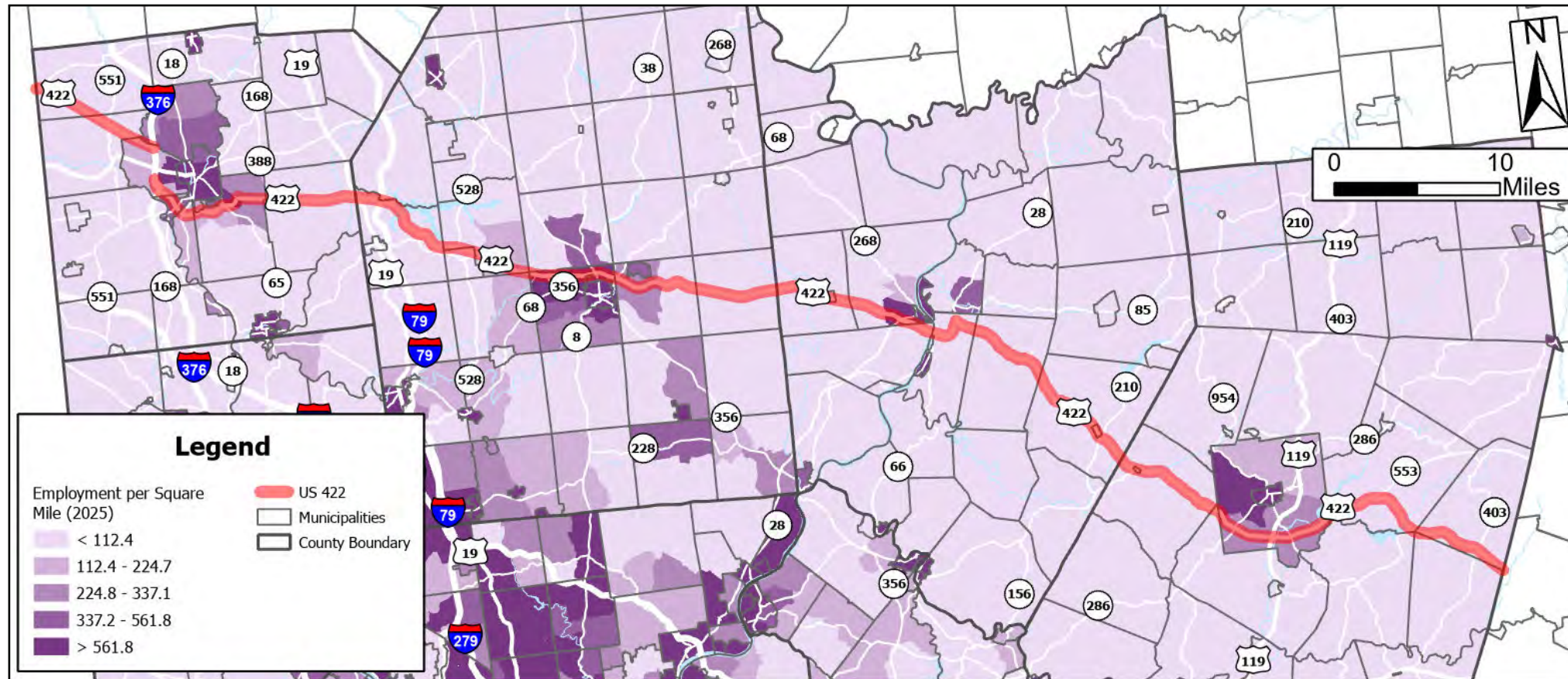


Current population and employment densities, as well as projected growth in population and employment between 2025 and 2050, were derived from SPC's Cycle 12 forecasts. SPC's Cycle 12 forecasts of population, households and employment were prepared in April 2023 to support development of SPC's Long Range Plan update. SmartMoves for a Changing Region, including the Cycle 12 forecasts, was adopted by SPC in June 2023. Information on businesses within a one-mile and three-mile buffer area along the US 422 corridor was derived from SPC's 2024 Mergent Intellect database.

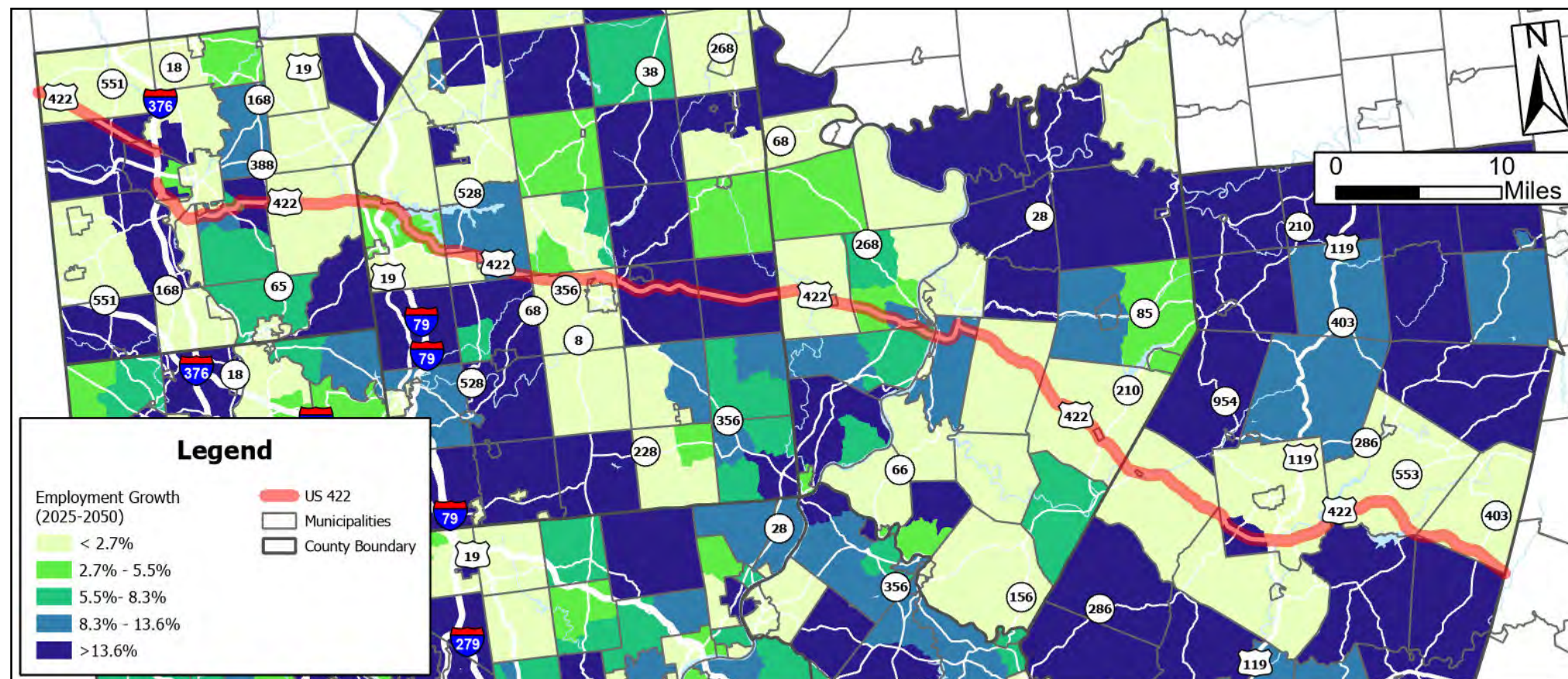
The US 422 corridor contains mostly rural population while bypassing population centers at multiple points along the corridor and beyond. The regional average population density is 349.21 people per square mile. The majority of areas that have a population density greater than the regional average population along the US 422 corridor are the county seats in the four counties (City of New Castle, City of Butler, Kittanning Borough, and Indiana Borough) and the areas bordering the county seats. These areas include Neshannock Township, Union Township, South New Castle Borough, and Shenango Township in Lawrence County; Center Township, Butler Township, and East Butler Borough in Butler County; East Franklin Township, West Kittanning Borough, Applewold Borough, Ford City Borough, and Ford Cliff Borough in Armstrong County; and White Township in Indiana County. Other townships and boroughs along the US 422 corridor have a population density that is below the regional average population density.

Some of the areas that have the greatest population densities are projected to have low population growth while areas surrounding these areas are projected to have high population growth by 2050. The regional average population growth between 2025 and 2050 is estimated at 4.25%. Projections are showing that the four county seats (City of New Castle, City of Butler, Kittanning Borough and Indiana Borough) are showing areas that are growing at a slower rate than the regional average population growth. Generally, townships and boroughs on the periphery of these county seats are showing population increases greater than the regional average population growth. These areas include Union Township, Mahoning Township, North Beaver Township, Taylor Township, South New Castle Borough, and Shenango Township in Lawrence County; Muddy Creek Township, Franklin Township, Portersville Borough, Connoquenessing Township, East Butler Borough, Summit Township, and Clearfield Township in Butler County; and East Franklin Township, Manor Township, Manorville Borough, Ford City Borough, Ford Cliff Borough, and Cowanshannock Township in Armstrong County. In Indiana County, projections show that areas with population growth are located away from the US 422 corridor.

DEMOGRAPHIC AND EMPLOYMENT TRENDS

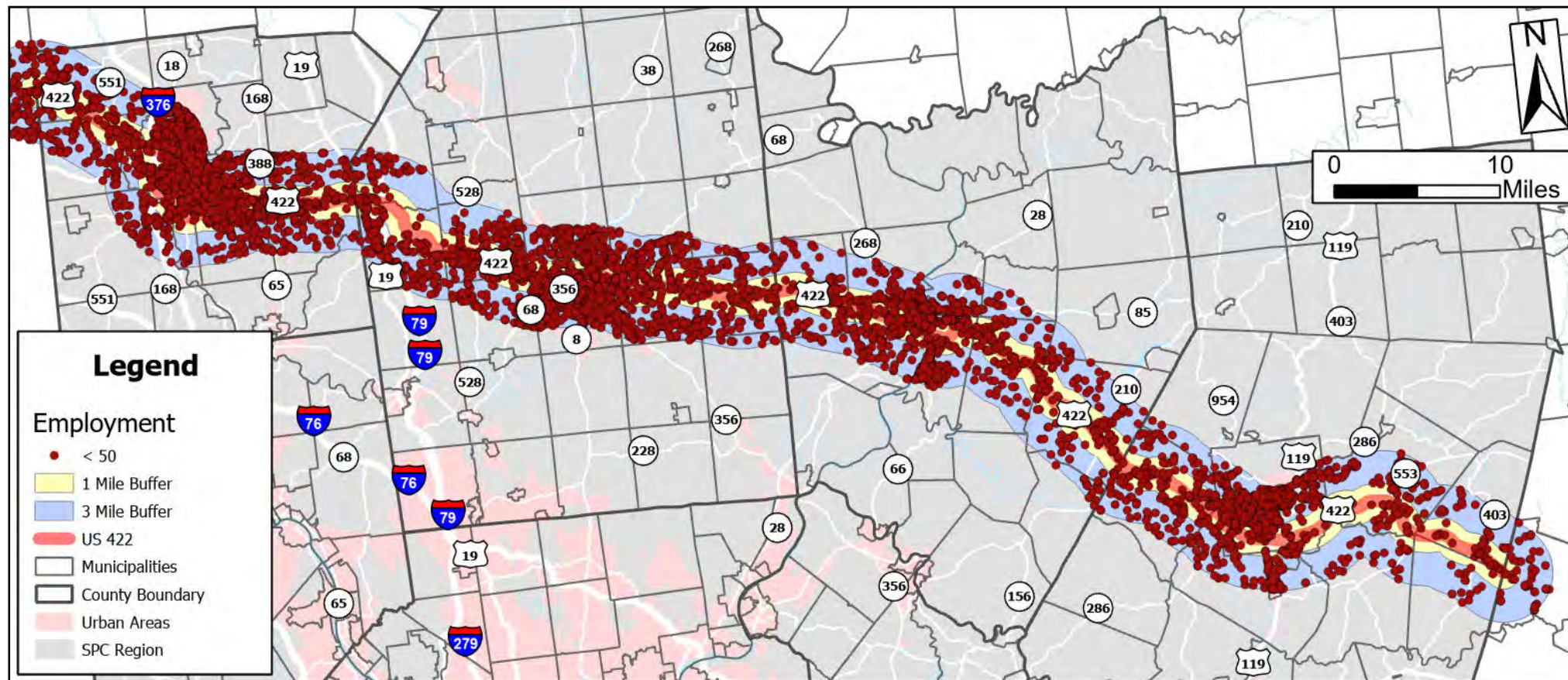


Many areas with population densities greater than the regional average also have employment densities greater than the regional average. The regional average employment density is estimated at 224.71 workers per square mile. The majority of areas that have employment density greater than the regional average population along the US 422 corridor are the county seats in the four counties (City of New Castle, City of Butler, Kittanning Borough, and Indiana Borough) and the areas bordering the county seats. These areas include Neshannock Township, Union Township, and Shenango Township in Lawrence County; Center Township, Butler Township, East Butler Borough, and Summit Township in Butler County; East Franklin Township, West Kittanning Borough, Applewold Borough, Ford City Borough, Ford Cliff Borough, and Rayburn Township in Armstrong County; and White Township in Indiana County.



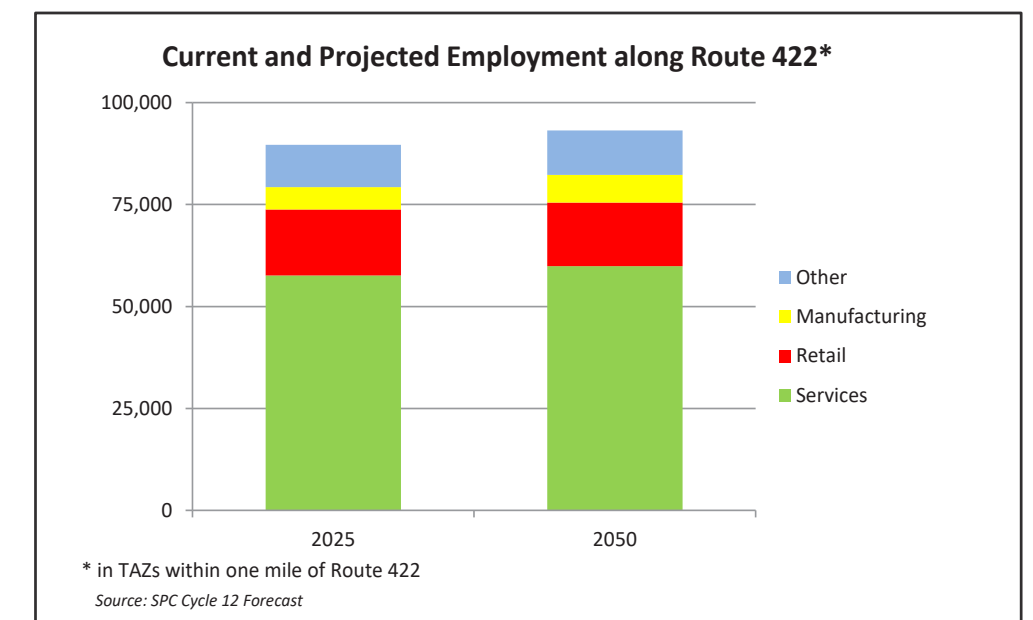
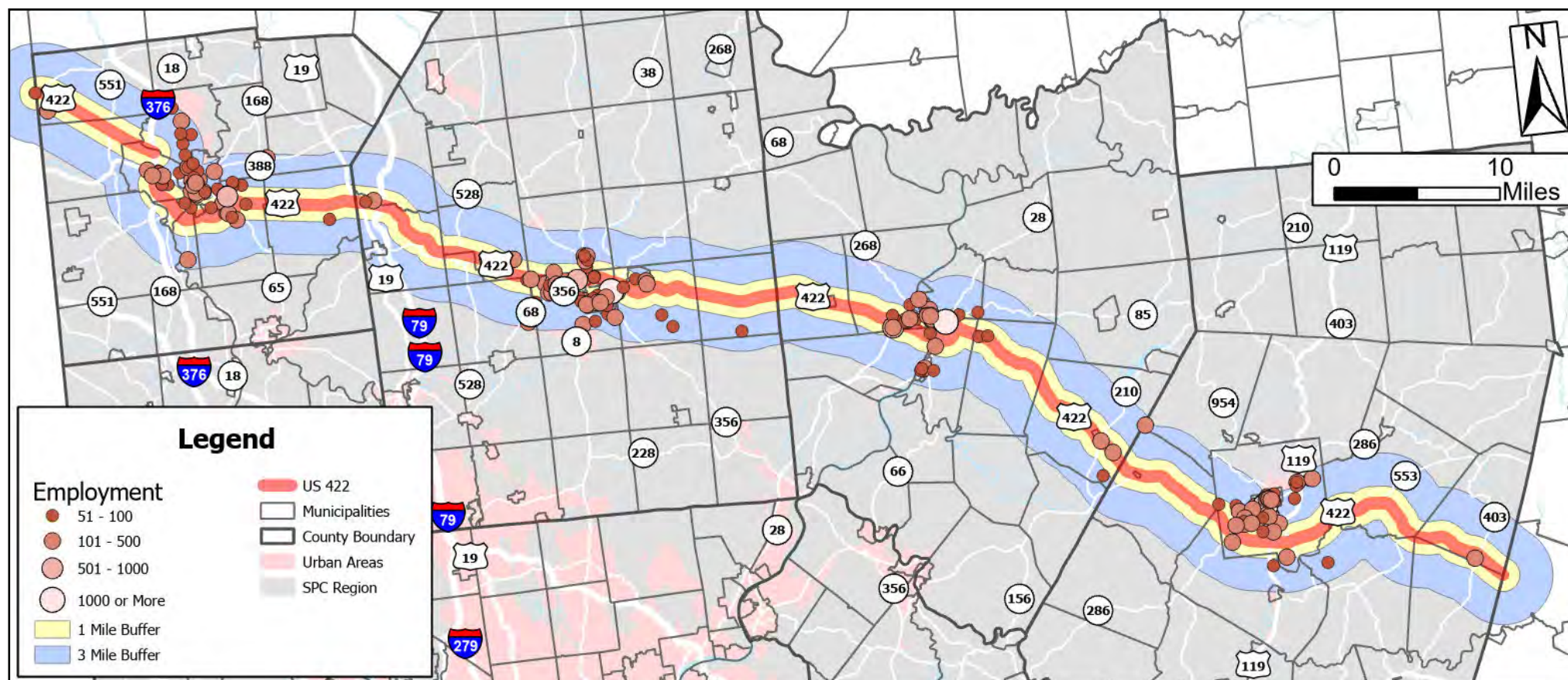
Many areas that have the greatest population growth are also projected to have the greatest employment growth by 2050, while the areas with low population growth are projected to see low employment growth. The regional average employment growth between 2025 and 2050 is estimated at 5.49%. Projections are showing that the four county seats (City of New Castle, City of Butler, Kittanning Borough and Indiana Borough) are showing areas that are growing at a slower rate than the regional average employment growth. Generally, townships and boroughs on the periphery of these county seats are showing employment increases greater than the regional average employment growth. These areas include Mahoning Township, Neshannock Township, Union Township, North Beaver Township, and Shenango Township in Lawrence County; Franklin Township, Center Township, Connoquenessing Township, Oakland Township, East Butler Borough, Summit Township, and Clearfield Township in Butler County; North Buffalo Township, East Franklin Township, West Kittanning Borough, Applewold Borough, Valley Township, Cowanshannock Township and South Bend Township in Armstrong County; and White Township, Brush Valley Township and Buffington Township in Indiana County. It should also be noted that vast employment growth can be found in both northern and southern Indiana County.

DEMOGRAPHIC AND EMPLOYMENT TRENDS



Service employment is by far the most prevalent employment sector in the US 422 corridor. Examples of key service employers include major educational entities such as Indiana University of Pennsylvania, Shenango Area School District, Laurel School District, New Castle Area School District, and the Diocese of Pittsburgh; major medical facilities such as Butler Health System, Indiana Regional Medical Center, Armstrong County Memorial Hospital and VA Butler Medical Center; and major retailers such as Walmart, Butler Supermarkets, Giant Eagle, Lowes, and Home Depot.

Service employment will continue to be the most prevalent sector in the US 422 corridor, as it is projected to be the sector with the highest employment by 2050. Retail, manufacturing and other employment appears to be remain the same with little to no changes by 2050.

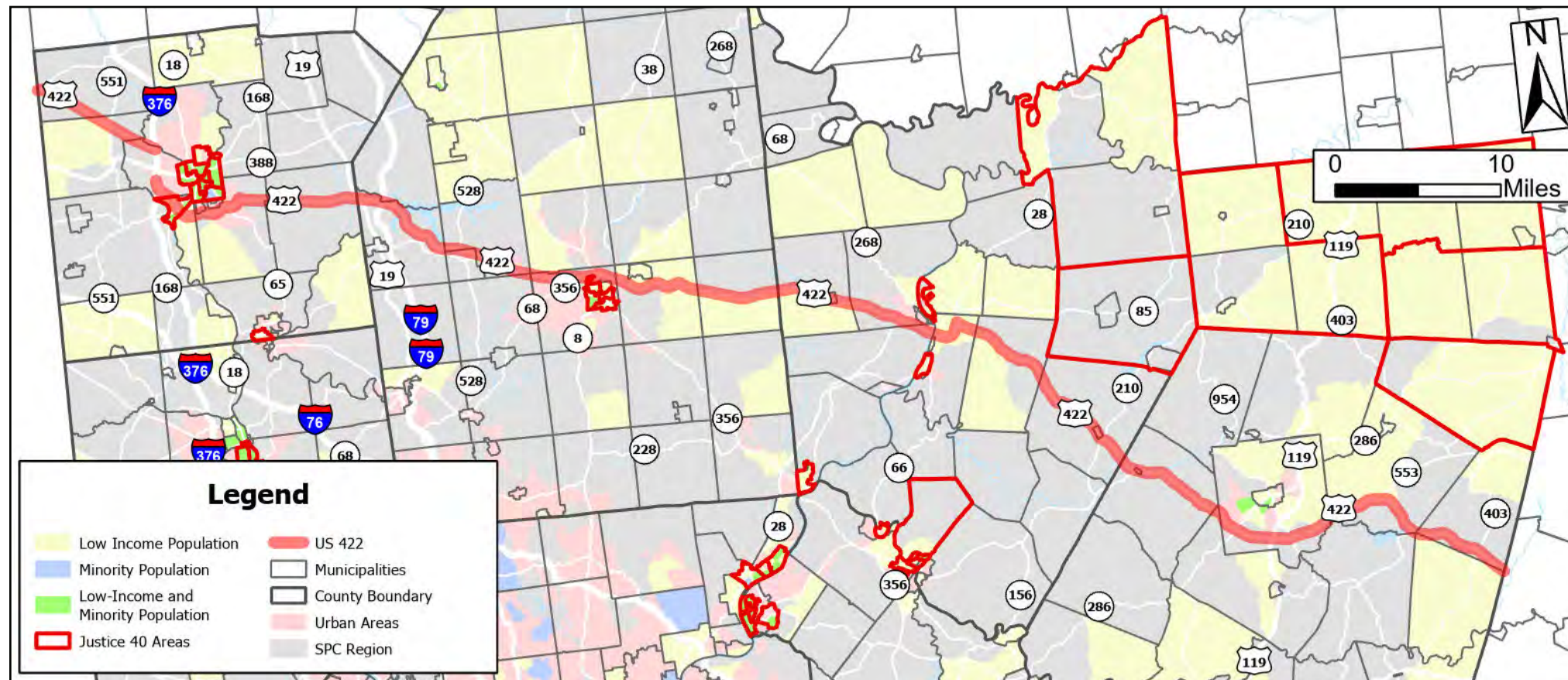


Businesses Located Along US 422 (2024) **

	1 Mile	3 Miles
Total Businesses	5,735	17,556
Total Employees	47,346	129,398
Total Sales	\$4 Billion	\$12 Billion

** This data includes companies with centralized reporting; not all employees may be located at the central location.

ENVIRONMENTAL JUSTICE



SPC has defined Environmental Justice areas as follows:

- Low-Income Population - Where the percentage of households below the poverty level exceeds the regional average of 11.42%
- Minority Population - Where the minority population exceeds the regional average of 15.05%
- Low-Income and Minority Population - Where the percentage of households below the poverty level exceeds the regional average of 11.42% and where the minority population exceeds the regional average of 15.05%

In 2021, the Justice40 Initiative was created to confront and address infrastructure in disadvantaged communities most impacted by climate change, pollution and environmental hazards. Justice40 is an opportunity to bridge the gaps in transportation infrastructure in these designated communities by investing in infrastructure that benefits these communities. The Justice40 Initiative works towards the goal where at least 40% of the benefits from grants, programs, and initiatives flow into these designated communities.

When developing transportation projects, it is vital to take into consideration how projects can affect the people that live within the project's vicinity. In determining potential burdens and/or benefits of projects, SPC conducts an analysis of transportation projects and their potential effects on Environmental Justice Communities of Concern. The US Environmental Protection Agency's Office of Environmental Justice defines Environmental Justice (EJ) as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies".

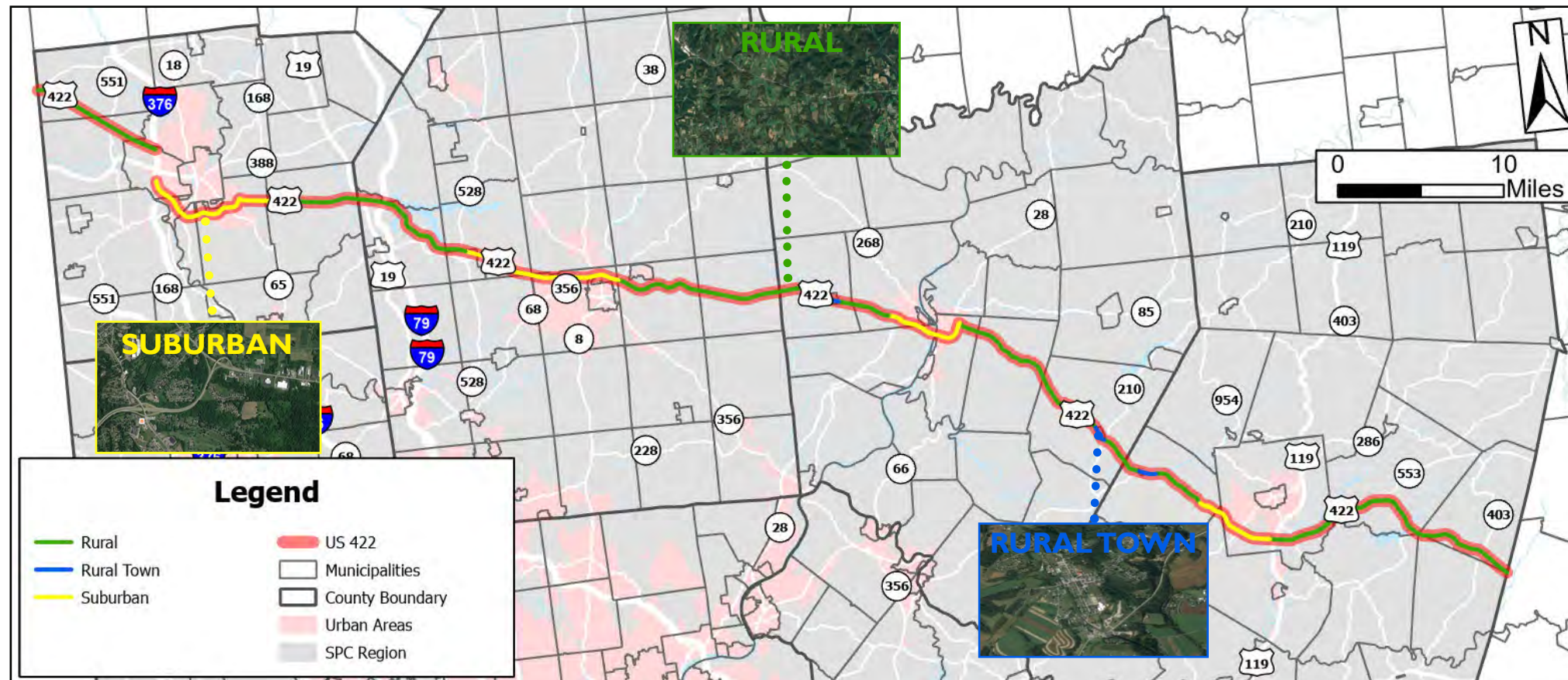
In the context of transportation, effective and equitable decision-making depends on understanding and properly addressing the unique needs of different socioeconomic groups. US Department of Transportation (USDOT) Order 5610.2(a), Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, identifies three fundamental principles of EJ that guide USDOT actions:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process;
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

There are several areas along the US 422 corridor that are classified as Environmental Justice areas. In Lawrence County, there are areas of low-income population in Mahoning, Taylor, and Shenango Townships and in the City of New Castle. Within the City of New Castle, there are also areas with high minority population and areas where both conditions (low-income and minority) are present. Heading east into Butler County, there are areas of low-income population in Center, Summit, and Clearfield Townships, East Butler Borough, and within the City of Butler. There are also a few areas within the City of Butler where both low-income and minority populations are present. In Armstrong County, there are areas of low-income population in West Franklin, East Franklin, Manor, Kittanning, Valley, and Rayburn Townships and within Kittanning Borough. Heading further east into Indiana County, there are areas of low-income and areas where both conditions apply in White, Center, Cherryhill, and Buffington Townships and Indiana Borough.

US 422 does directly go through a Justice40 designated area within the City of New Castle. Within the broader US 422 corridor, there are additional designated Justice40 communities. There are Justice40 designated areas in the City of New Castle, City of Butler, Kittanning Borough, Ford City, and Cowanshannock Township. For more information on the Justice40 Initiative, please click [here](#).

LAND USE CONTEXT



In the SPC region, US 422 typically traverses through rural areas with few areas going through suburban areas and rural towns. Starting at the Ohio State Line and moving east, US 422 travels through rural areas, where there are low dense commercial and residential areas adjacent to the highway. US 422 goes from a rural highway to more of a suburban highway as it bypasses the City of New Castle to the south. Several intersecting roadways such as SR 168, SR 65, and Business Route 422 are surrounded by suburban-like communities where there are low to medium dense commercial and residential land use present. East of the City of New Castle, US 422 still follows somewhat of a suburban land use through Shenango Township. US 422 enters rural land as it continues east through Lawrence County and into Butler County. As US 422 travels through Butler County, it starts to enter more suburban areas in Franklin, Center, and Butler Townships. As US 422 enters Summit and Clearfield Townships, the land use becomes rural. This rural landscape continues into Armstrong County. While this community is located within a rural area, Worthington Borough does have low to medium dense commercial and residential areas along US 422 which has the characteristics of a rural town.

East of Worthington Borough, US 422 continues through rural areas until it enters the Kittanning Bypass. The area around the Kittanning Bypass is more suburban with low to medium dense residential and commercial areas located along nearby roadways such as SR 268 and SR 66. As US 422 exits the bypass, the highway travels through rural land in Manor, Kittanning, and Plumcreek Townships and the rural towns of Elderton and Shelocta. This rural landscape continues into Indiana County until the Indiana Bypass. The area around the Indiana Bypass has more of a suburban-like land use with low to medium dense commercial and residential areas along corridors such as SR 286 and US 119. Once east of US 119, US 422 enters more rural land use through the remainder of Indiana County.

Context Categories and Primary Factors

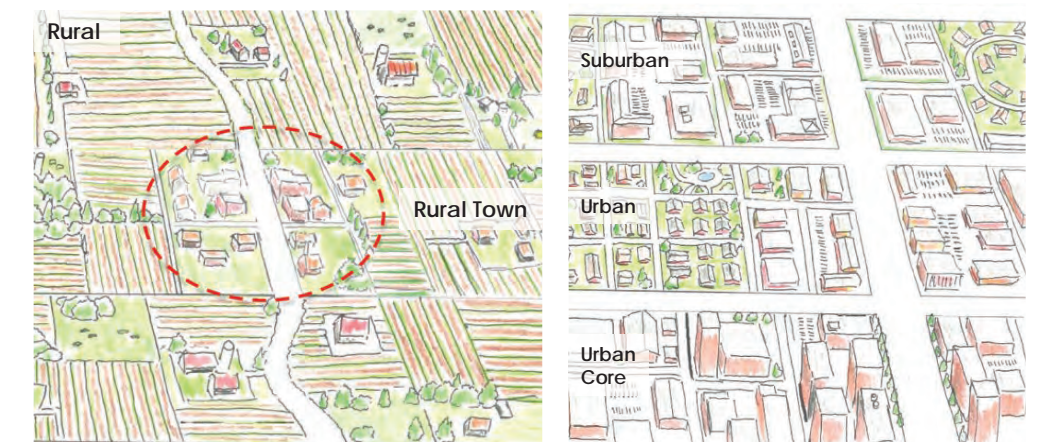
Category	Density	Land Use	Setback
Rural	Lowest (few houses or other structures)	Agricultural, natural resource preservation, and outdoor recreation uses with some isolated residential and commercial	Usually large setbacks
Rural Town	Low to medium (single-family houses and other single-purpose structures)	Primarily commercial uses along a main street (some adjacent single-family residential)	On-street parking and sidewalks with predominately small setbacks
Suburban	Low to medium (single- and multifamily structures and multistory commercial)	Mixed residential neighborhood and commercial clusters (includes town centers, commercial corridors, big box commercial and light industrial)	Varied setbacks with some sidewalks and mostly off-street parking
Urban	High (multistory, low-rise structures with designated off-street parking)	Mixed residential and commercial uses, with some institutional and industrial and prominent destinations	On-street parking and sidewalks with mixed setbacks
Urban Core	Highest (multistory and high-rise structures)	Mixed commercial, residential and institutional uses within and among predominately high-rise structures	Small setbacks with sidewalks and pedestrian plazas

Typical User Priorities

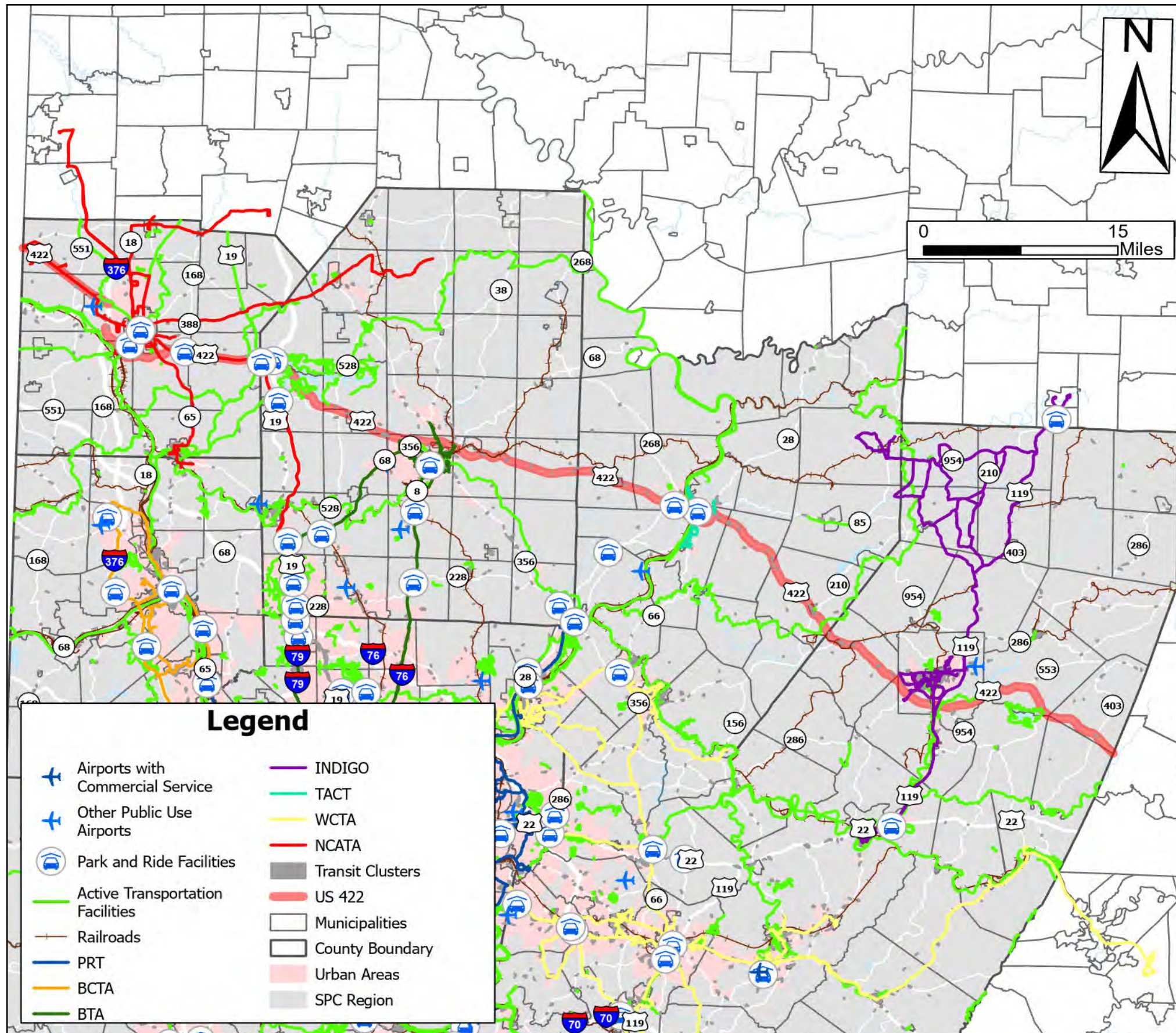
Context \ Roadway	Rural	Rural Town	Suburban	Urban	Urban Core
Principal Arterial					
Minor Arterial					
Collector					
Local					

Legend:
 - Pedestrian: Low (small), Medium (medium), High (large)
 - Bicycle: Low (small), Medium (medium), High (large)
 - Car: Low (small), Medium (medium), High (large)

Context Categories



TRANSPORTATION SYSTEM



US 422 importance to the SPC region is defined by its designation as a principal arterial roadway that is also on the National Highway System. Spanning approximately 105 miles in the SPC region, US 422 connects to the Interstate network via I-376 in Union Township and I-79 in Muddy Creek Township. Although US 422 does not intersect this highway, I-76 (Pennsylvania Turnpike) is located approximately 10 miles south of the US 422 and I-376 interchange. In addition, Interstate 80 is located less than 20 miles north of the I-79/US 422 interchange. US 422 also provides connections to other major non-Interstate routes such as US 19, US 119, SR 8, SR 28, and SR 65. A full list of nearby highway facilities can be found on the next page of this report.

As a wider transportation corridor, the area includes railroad lines, pedestrian and bicycle facilities and transit services. There are multiple freight rail lines that are within the broader transportation corridor of US 422. The Buffalo and Pittsburgh Railroad (BPRR) operates a series of rail lines that connects portions of Western Pennsylvania to parts of Northwestern Pennsylvania and Western New York State. BPRR enters the SPC region in both Indiana and Armstrong Counties and branches off to provide rail connections to Butler and Lawrence Counties towards the west and south towards Pittsburgh. BPRR intersects US 422 at the SR 68 interchange in Butler County, the Judge J. Frank Graff Bridge in Armstrong County, and near the US 119 interchange in Indiana County. Canadian National Bessemer and Lake Erie Railroad (CN&BLE) operates a rail line that connects Southwestern Pennsylvania to Northeastern Ohio. This rail line enters through Butler County in Mercer Township and follows a general southeastern trajectory to where it eventually crosses underneath US 422 near the SR 68 interchange in Butler Township. Norfolk Southern (NS) operates a line within Indiana County, where it intersects US 422, east of Shelocta Borough. Additional railroads include Kasgro Rail Corporation (KRL) and New Castle Industrial Railroad (NCIR) which operate rail lines in Lawrence County near the SR 168 and SR 18 overpass. Regarding passenger rail, there is no passenger rail service near the US 422 corridor. Further details on freight movement are provided in Section III: Segment Profiles of this report.

Regarding active transportation, many bicycle and pedestrian facilities are located away from the US 422 corridor. Much of the corridor is a four-lane divided highway making bicycle and pedestrian usage unfeasible. Within the broader US 422 corridor, there are sidewalk networks within the communities that are near the US 422 corridor. There are also regional trails near the US 422 corridor such as the Butler-Freeport Community Trail, Armstrong Trail, and Hoodlebug Trail. More information on active transportation can be found in Section III: Segment Profiles of this report.

CORRIDOR COMPONENTS

Primary Highway	<ul style="list-style-type: none"> US 422 (105 miles)
Nearby Highway Facilities	<ul style="list-style-type: none"> I-79 I-376 US 19 US 119 SR 8 SR 18 SR 28 SR 56 SR 65 SR 66 SR 68 SR 168 SR 208 SR 210 SR 259 SR 286 SR 356 SR 388 SR 403 SR 528 SR 551
Transit Services	<ul style="list-style-type: none"> Butler Transit Authority Indiana County Transit Authority New Castle Area Transit Authority Town & Country Transit
Rail Facilities	<ul style="list-style-type: none"> Norfolk Southern (Class I) Canadian National (Class I) Buffalo and Pittsburgh Railroad (Class II)
Water Facilities	<ul style="list-style-type: none"> Allegheny River
Airport Facilities (Less than 10 Miles)	<ul style="list-style-type: none"> Beaver County Airport Pittsburgh/Butler Regional Airport Indiana County - Jimmy Stewart Airport New Castle Municipal Airport Zelienople Municipal Airport
Active Transportation	<ul style="list-style-type: none"> Hoodlebug Trail Armstrong Trail Baker Trail North Country Trail Butler Freeport Community Trail

TRANSIT SERVICES

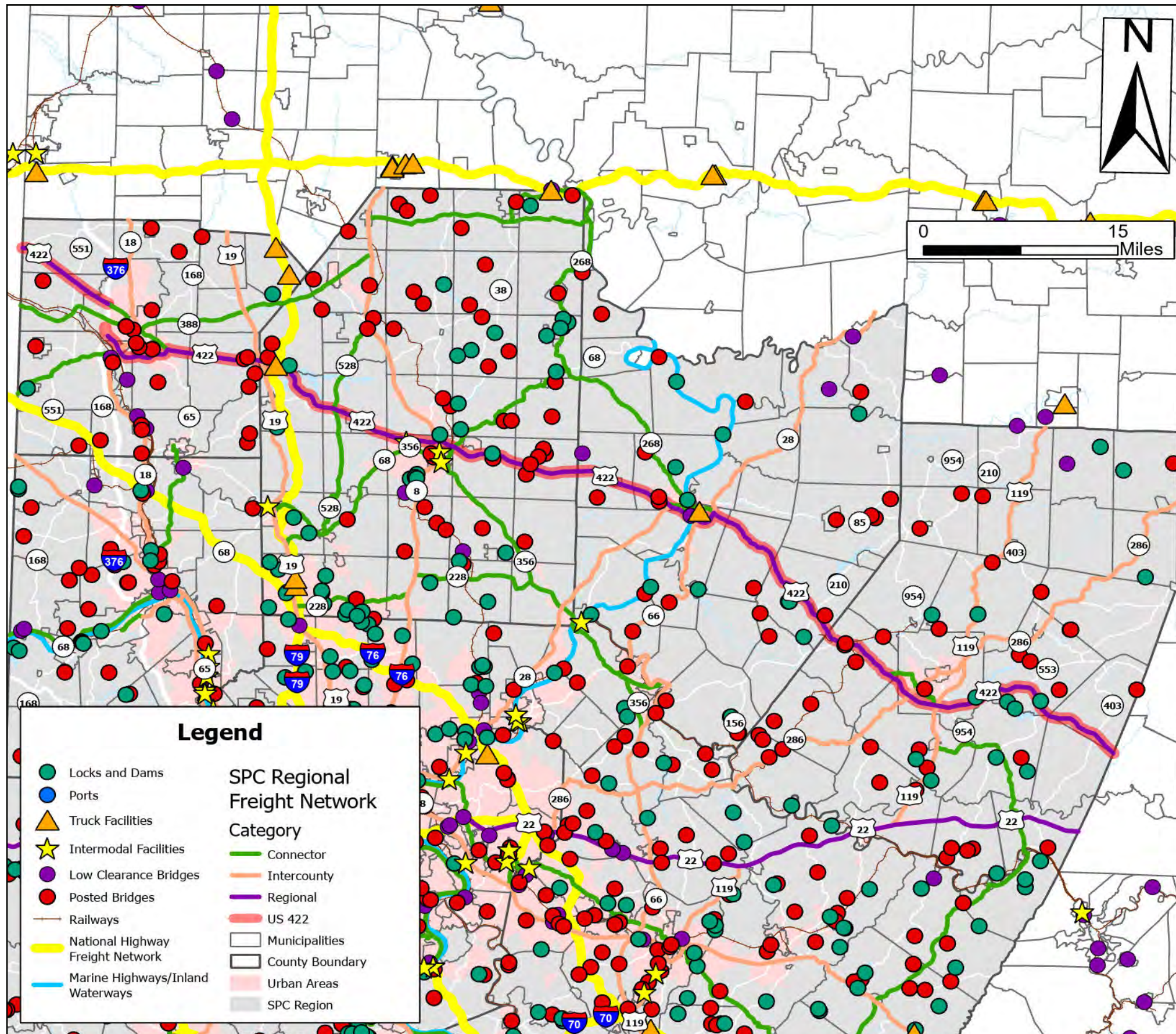
Transit service in the broader US 422 corridor is provided by New Castle Area Transit Authority (NCATA), Butler Transit Authority (BTA), Town & Country Transit (TACT), and Indiana County Transit Authority (INDIGO). While there are four transit agencies operating transit service near US 422, NCATA routes NC71 and NC91 utilize US 422 in Lawrence County. The table to the right shows transit routes within one mile of US 422. In addition to transit routes, there are also multiple park-and-ride facilities that are located near the US 422 corridor. The table below shows park-and-ride facilities within one mile of the US 422 corridor. More information on transit routes and services can be found in Section III:Segment Profiles.

Location	Municipality	County	Capacity	Transit Service
NCATA - Mahoning Ave	New Castle	Lawrence	25	Yes
NCATA - E. Washington St at Croton Ave	New Castle	Lawrence	250	Yes
Rt 422 West of Rt 388	Shenango	Lawrence	188	Yes
Currie Rd off Rt 422	Muddy Creek	Butler	25	No
McConnells Mill - Rt 19 at Rt 422	Muddy Creek	Butler	41	No
Pullman Square - CDC Drive at S. 6th Ave	Butler	Butler	50	Yes
Hill St. at Indiana Rd	Manor	Armstrong	40	No
Franklin Village - Rt 268 at Westgate Dr	East Franklin	Armstrong	64	No

The [SmartMoves Connections \(SMC\) Regional Transit Study](#) is a comprehensive regional vision for public transit to drive cooperation and linkages across the region. This study identifies methodology for future investments in Multimodal Hubs connected by Multimodal Corridors, to identify the best coordination strategies for operating these assets, and to ensure that the next generation of planning for multimodal investment is based on the needs of transit riders and communities. These assessments aim to identify hubs of low, medium, and high intensity in order to explore options that will align transit corridors in a way that optimizes inter-hub connections throughout the region. This CORS Master Planning Framework outlines further information on the SMC Transit Study and its relationship to the US 422 corridor.

Route	Route Name	Provider
NC1	Route 1 - Highland Ave Shenley Square	NCATA
NC2	Route 2 -North City/Neshannock Township	NCATA
NC3	Route 3 - Wal-Mart/Union Township	NCATA
NC4	Route 4 Westside Mahoningtown	NCATA
NC5	Route 5 - Southside/Moravia Street	NCATA
NC6	Route 6 - Cascade Park/ Lawrence Village Plaza	NCATA
NC7	Route 7 - Croton Ave/Lower Eastside	NCATA
NC8	Route 8 - Gastown Park/Upper Eastside	NCATA
NC11	Route 11 - Jefferson Street	NCATA
NC71	Route 71 - Pittsburgh	NCATA
NC75	Route 75 - New Wilmington/Volant	NCATA
NC76	Route 76 - Ellwood City	NCATA
NC81	Route 81 - Boyer/Iron Mountain	NCATA
NC82	Route 82 - Hermitage/Kennedy	NCATA
NC91	Route 91 - Walmart/Villa Maria/Ohio Line	NCATA
L1	Route 1 - Red	BTA
L3	Route 3 - Yellow	BTA
L5	Route 5 - Orange	BTA
C3C4	Commuter Routes 3 & 4	BTA
Yellow	Yellow Line	TACT
Green	Green Line	TACT
Blue	Blue Line	TACT
IN1	Route 1 - Green	INDIGO
1N2	Route 2 - Blue	INDIGO
IN5	Route 5 - Orange	INDIGO
IN6	Route 6 - Tan	INDIGO
IN7B	Route 7 - Lavender	INDIGO
IN9	Route 9 (Late Night) - Grey - Hotel Loop	INDIGO
IN12	Route 12 - Teal	INDIGO
IN16	Route 16 - Yellow	INDIGO
IN23	Route 23 - Punxsutawney	INDIGO

FREIGHT NETWORK



Through the assessment of freight movement on US 422 in the project area of Lawrence, Butler, Armstrong, and Indiana Counties, it is important to recognize that there are local delivery trucks, retail supply trucks, bulk materials haulers and even large tractor trailers on virtually every highway in Pennsylvania. Their presence should be noted, but the value or importance of a given roadway or multimodal corridor to regional freight movement is not measured in solely in terms of truck volume or density. Rather, it is the contribution that roadway makes to the comprehensive freight distribution network that defines the value of a single corridor to freight operations.

This is clearly evident on US 422 which serves rural commuter needs, regional services, and the specialized activity patterns of the agricultural and industrial sectors as well. It's functionality as a local and regional freight network is reflected on the Regional Highway Freight Network.

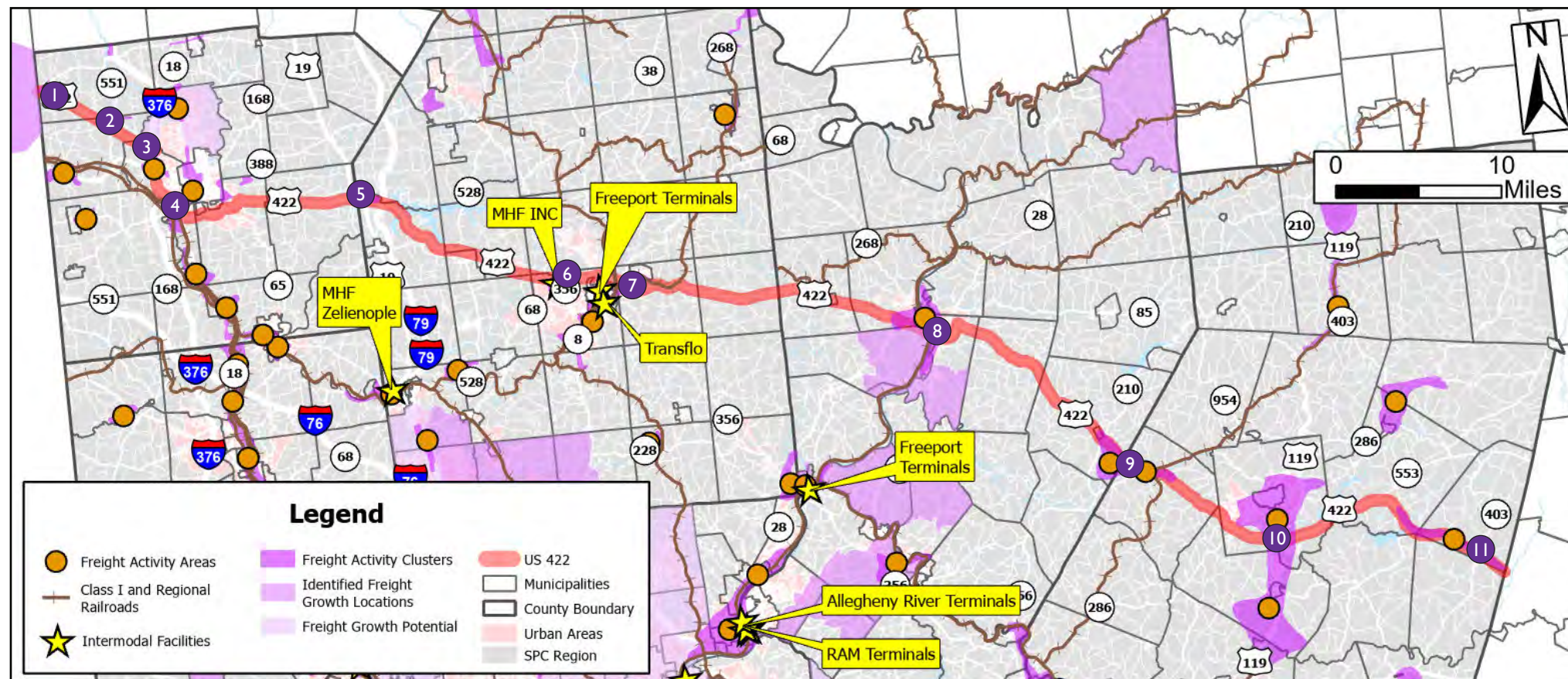
The **National Highway Freight Network (NHFN)** was established to strategically direct federal resources and policies toward improved performance of highway portions of the U.S. freight transportation system.

The **National Multimodal Freight Network (NMFN)** looks beyond highway freight transportation to help assess and support federal investments to achieve national multimodal freight policy goals. The NMFN includes the following transportation subsystems: Interstate Highways; Strategic Highway Network; roadways with AADTT greater than 4,000; roadways with AADTT between 1,200 and 1,700 that meet certain performance criteria; Critical Urban Freight Corridors; and Critical Rural Freight Corridors.

The **Regional Highway Freight Network** would supplement federal or state-designated highway freight networks to provide a more complete inventory of the key corridors and connections that serve the region's freight movement needs.

- *NHFN Routes* – as designated on the federal NHFN.
- *Regional Routes* – not on the NHFN, but typically include major corridors that carry freight through the 10-county region and/or provide important linkages to its surrounding areas.
- *Intercounty Routes* – not on the NHFN, but typically include important corridors that link freight flows between counties inside the SPC region, though not necessarily from a through-route perspective as per the Regional Routes.
- *Connector Routes* – not on the NHFN, but typically include important corridors that link the Regional or Intercounty Routes with other parts of the highway system, and/or that serve freight travel to/from larger freight activity sites or clusters.

FREIGHT ACTIVITY



US 422 is included in the National Highway System, or NHS, which the Federal Highway Administration (FHWA) defines as including the 160,000 miles of roads important to the United States' economy, defense, and mobility. Within that NHS structure, US 422 is classified as a Principal Arterial, a term used to identify highways in rural and urban areas that provide access between a higher classification roadway (such as an Interstate Highway) and a major port, airport, public transportation facility, or other intermodal transportation facility. In total, the NHS includes only 4% of the nation's roads, but carries more than 40% of all highway traffic, 75% of heavy truck traffic, and 90% of tourism traffic. Clearly inclusion in the National Highway System is an indication of US 422's importance in the regional freight transportation network.

In many cases, US 422 is an important regional freight corridor. First, it could be argued that US 422 can accommodate large volumes of truck traffic. Throughout the corridor, efforts have been made to upgrade many portions of US 422 to a four-lane, divided highway, with bypass routes preventing truck traffic from utilizing local streets not designed to handle heavy truck traffic. Second, land uses along the corridor remain fairly consistent as the corridor flows through primarily rural and suburban land use along the corridor. There are areas of agricultural and industrial land uses along the corridor and commercial areas along arterial routes that intersect the US 422 corridor.

Additionally, there are multiple segments of US 422 that provide important connections to other freight corridors. These locations include the junction with I-376 in Lawrence County, US 19 and I-79 in western Butler County, SR 28 in Armstrong County, and US 119 in Indiana County. It should also be noted that I-79 is also located on the National Highway Freight Network. The National Highway Freight Network is a network of highways identified as the most critical highway portions of the US freight transportation system.

Although US 422 does not directly connect to these routes, I-80 and I-76 (Pennsylvania Turnpike) are within the vicinity of US 422. By virtue of US 422's location almost midway between these two significant freight corridors, it is, almost by default, a critical connection between local businesses and the national and international economy. Moreover, SPC completed surveys of truck activity in the eastern portion of the corridor completed as part of an earlier 422 study clearly identified US 422 as a preferred alternative to the Pennsylvania Turnpike as well as a preferred access route to US 219 for access to I-80 and the northeastern US markets.

Further information on freight movements along US 422 can be found in Section III: Segment Profiles.

US 422 Freight Analysis Framework (FAF-4) Data

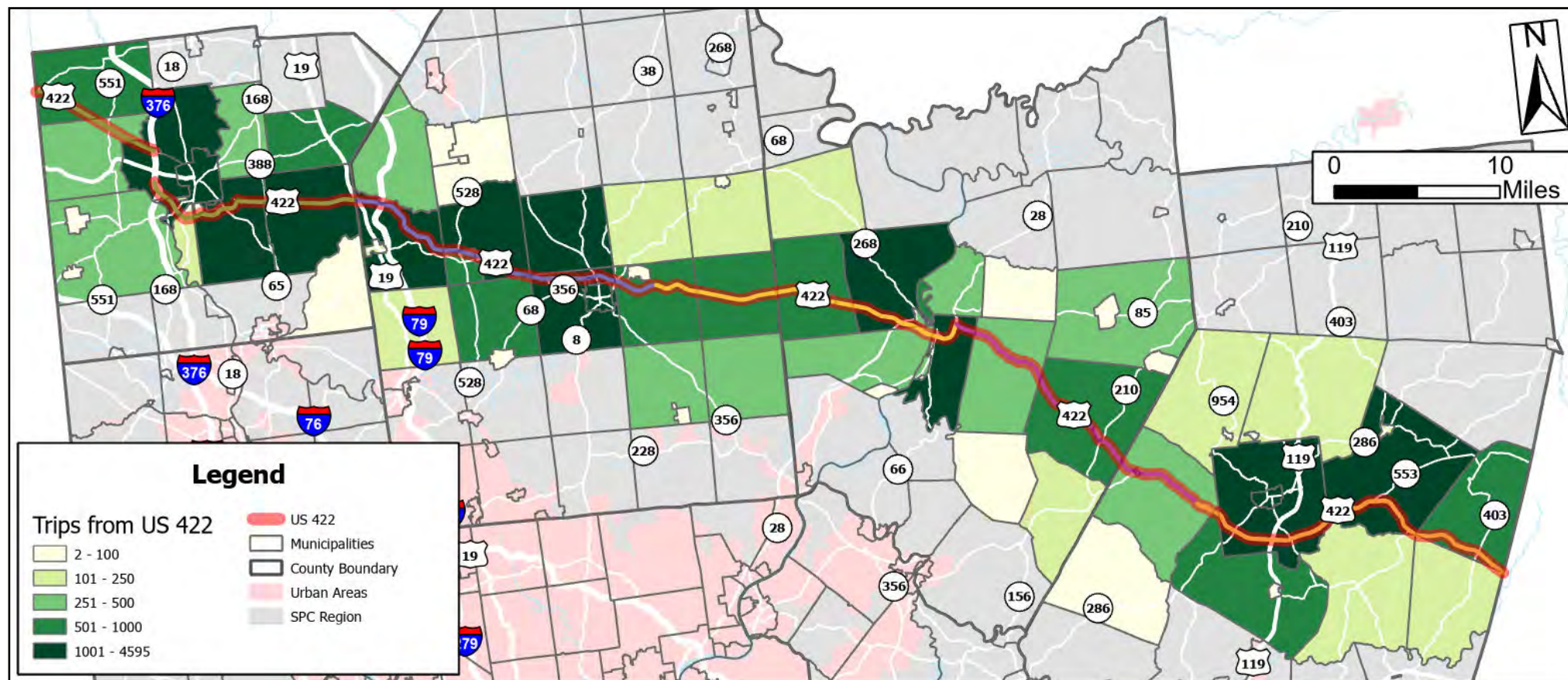
2012 FAF Long distance truck volume	93 - 1056
Projected growth 2012 - 2045	49% - 91%
2012 FAF Tonnage per year (kton)	637 - 7606
Projected growth 2012 - 2045	47% - 97%

The **Freight Analysis Framework (FAF)** network assignment estimates commodity movements by truck over specific highways. Models are used to disaggregate interregional flows from the Origin-Destination Database into flows between localities and to assign these flows to individual highways using average payloads per truck, and truck counts on individual highway segments.

US 422 Freight Activity Clusters

- 1 New Bedford
- 2 PA 551 Corridor
- 3 New Castle West
- 4 New Castle
- 5 US 422 at US 19 and I-79
- 6 Butler West
- 7 Butler East
- 8 Kittanning
- 9 Elderton
- 10 US 119 Indiana
- 11 US 422 Eastern Indiana County

CORRIDOR TRAVEL PATTERNS

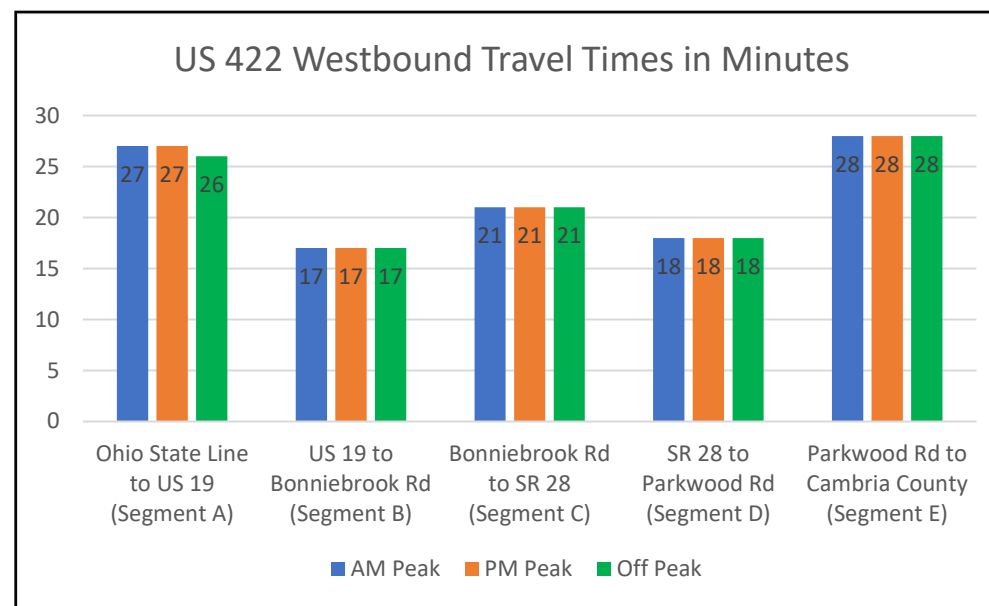
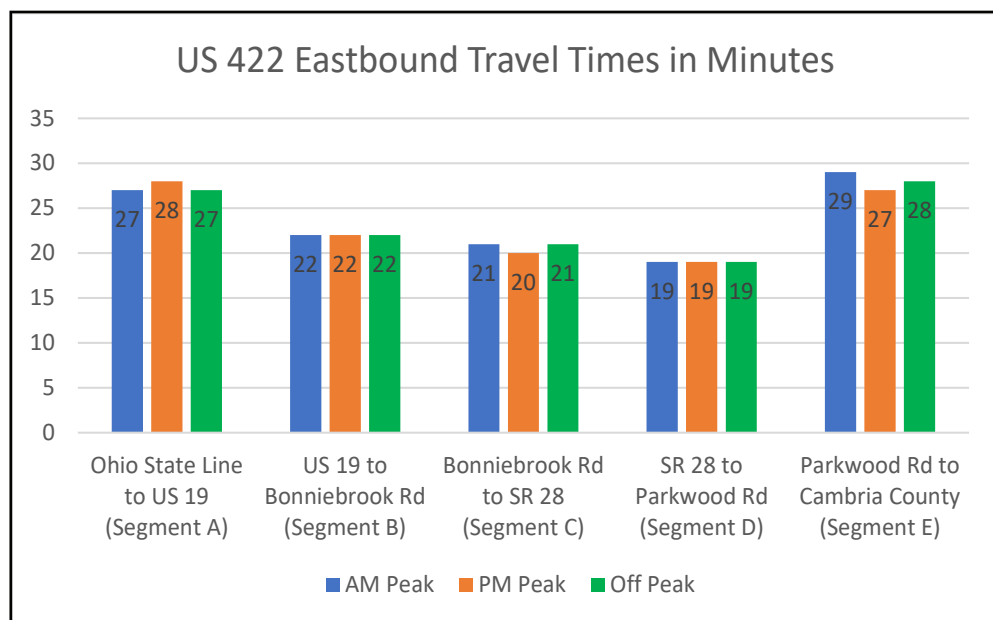


The charts and tables in this section represent corridor travel patterns for US 422. The bar graphs represent travel time for both the eastbound and westbound US 422 corridor, during the AM, PM and off-peak hours. The charts below show corridor length, posted speed limit, and travel time at posted speed limits for the five segments.

Overall, more than 46,000 trips originate from US 422 to the municipalities near the US 422 corridor. Out of these 46,000 trips, approximately 53% of these trips originate in Segment A (estimated 13,500 trips) and Segment B (estimated 10,600 trips). Of the remaining trips, approximately 20% originate from Segment C, 13% originate from Segment D, and 14% originate from Segment E.

Regarding directional trips, 51% of trips are eastbound trips (23,563 eastbound trips) and 49% of trips originate from westbound trips (22,582 westbound trips). Trips by corridor segment and direction fluctuate across each segment. For Segment A, 32% of trips are eastbound trips and 27% of trips are westbound trips. 26% of trips are eastbound and 20% of trips are westbound in Segment B. For Segment C, 20% of trips are eastbound trips and 20% of trips are westbound trips. 14% of trips are eastbound trips and 13% of trips are westbound trips in Segment D. For Segment E, 8% of trips are eastbound trips and 21% of trips are westbound trips.

Regarding trips by time of day, approximately 31% of trips occur mid-day (10 a.m. - 3 p.m.) and 33% of trips occur during the peak PM (3 p.m. - 7 p.m.). Approximately 4% of trips occur in the early AM (12 a.m. - 6 a.m.), 17% occur in the peak AM (6 a.m. - 10 a.m.), and 16% occur in the late PM (7 p.m. - 12 a.m.). Trips by time of day along each individual segment varies slightly from time of day for the entire US 422 corridor. Factoring in direction to time of day of individual segments, trip percentages again varies slightly from time of day for the entire US 422.



Segment	Corridor Length (Miles)	Posted Speed Limit (MPH)	Travel Time at Posted Speed Limit (Minutes)
A	24	45-65	25.4-28.4
B	20	45-55	16.2-21.9
C	20	45-55	20.2-21.6
D	20	45-55	17.2-19.2
E	22	45-65	26.1-29.4

TRAFFIC GROWTH RATES

Traffic Volumes & Linear Traffic Growth Rates (US 422 Eastbound)									
Corridor Segment	Segment Samples	County	Road Segment & Location	Node	Node	2025 Base Volume	2050 Build Volume	% Change Base-Build	%/Year Base-Build
A	1	Lawrence	West of New Castle City	11578	11613	3,700	3,900	5%	0.22%
A	2	Lawrence	South New Castle	11836	11831	7,300	7,200	-1%	-0.05%
A	3	Lawrence	East of New Castle City	11816	11832	5,700	6,100	7%	0.28%
B	1	Butler	West of Butler City	4854	4730	7,700	8,100	5%	0.21%
B	2	Butler	Northern Butler Township	4751	4813	5,900	6,800	15%	0.61%
C	1	Butler	East of Butler City	4808	4821	5,000	5,800	16%	0.64%
C	2	Armstrong	West of Kittanning Borough	5185	5175	3,800	3,800	0%	0%
C	3	Armstrong	SR 28 to SR 66	5164	5136	5,300	5,500	4%	0.15%
D	1	Armstrong	East of Kittanning Borough/SR 28	5096	5103	2,600	2,700	4%	0.15%
D	2	Indiana	West of Indiana Borough	5104	11097	3,700	3,700	0%	0%
E	1	Indiana	West of Indiana Borough	11099	11127	5,100	5,400	6%	0.24%
E	2	Indiana	White Township - SR 286 to US 119	11275	11143	5,300	5,600	6%	0.23%
E	3	Indiana	East of Indiana Borough	11133	11147	2,500	2,700	8%	0.32%

Traffic volumes & linear traffic growth rates were derived from the latest CUBE model run data (Cycle 12). The charts on the left shows traffic volume and linear traffic growth rates on certain segments for both the eastbound and westbound lanes of US 422. These traffic growth rates were calculated from SPC model runs for scenarios 2025 (CBD1) and the 2050 Long Range Plan Build (CBD5). The table below shows traffic volumes and linear traffic growth rates for the entire US 422 corridor.

Overall, the traffic volumes and linear traffic growth rates fluctuate along individual roadway segments and locations. For the eastbound direction, 2050 base-build volume ranges from 2,700 to 8,100 resulting in a -1% to 16% base-build change. High percent growth rates are the Northern Butler Township and East of Butler City road segments, where the percent change of the base-build is 15% and 16% respectively or a base-build of 0.61% and 0.64% increase per year out to 2050.

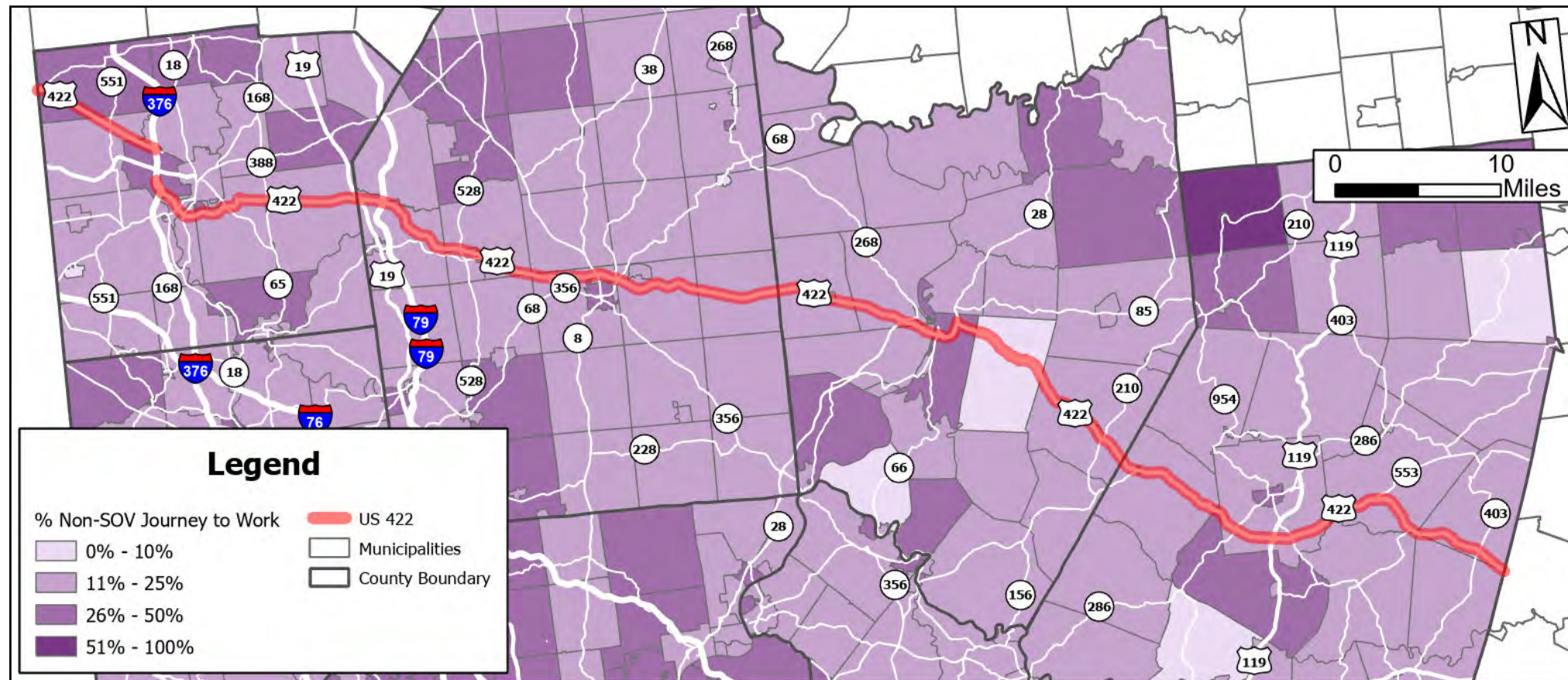
For the westbound direction, the 2050 base-build volume ranges from 2,700 to 8,100 resulting in a 0% to 25% base-build change. High percent growth rates are the West of New Castle City, Northern Butler Township, and East of Butler City road segments where the percent change of the base-build is 10%, 17%, and 25% respectively or a base-build of 0.39%, 0.67%. and 1.02% increase per year out to 2050.

The chart below shows traffic volumes and linear traffic growth rates for the entire corridor. The data shows that the 2050 build volume is 67,300 for the eastbound direction and 65,500 for the westbound direction. This equates to 132,800 for the entire US 422 corridor. This change results in a 6% base-build for the eastbound direction, 7% for the westbound direction, and 6% for both directions. The percent increase per year of the base-build is 0.23% for the eastbound direction, 0.27% for the westbound direction, and 0.25% for both directions.

Traffic Volumes & Linear Traffic Growth Rates (US 422 Westbound)									
Corridor Segment	Segment Samples	County	Road Segment & Location	Node	Node	2025 Base Volume	2050 Build Volume	% Change Base-Build	%/Year Base-Build
E	3	Indiana	East of Indiana Borough	11147	11133	2,500	2,700	8%	0.32%
E	2	Indiana	White Township - SR 286 to US 119	11144	11274	4,600	4,900	7%	0.26%
E	1	Indiana	West of Indiana Borough	11127	11099	5,000	5,200	4%	0.16%
D	2	Indiana	West of Indiana Borough	11097	5104	3,700	3,700	0%	0.00%
D	1	Armstrong	East of Kittanning Borough	5103	5096	2,600	2,700	4%	0.15%
C	3	Armstrong	SR 66 to SR 28	5137	5165	5,200	5,300	2%	0.08%
C	2	Armstrong	West of Kittanning Borough	5176	5187	3,900	3,900	0%	0.00%
C	1	Butler	East of Butler City	4820	4809	5,500	6,900	25%	1.02%
B	2	Butler	Northern Butler Township	4812	4752	6,000	7,000	17%	0.67%
B	1	Butler	West of Butler City	4730	4854	7,800	8,100	4%	0.15%
A	3	Lawrence	East of New Castle City	11832	11816	5,500	5,800	5%	0.22%
A	2	Lawrence	South New Castle	11981	11982	5,900	5,900	0%	0%
A	1	Lawrence	West of New Castle City	11613	11578	3,100	3,400	10%	0.39%

Traffic Volumes & Linear Traffic Growth Rates (US 422 Corridor)				
	2025 Base Volume	2050 Build Volume	% Change Base-Build	%/Year Base-Build
Eastbound	63,600	67,300	6%	0.23%
Westbound	61,300	65,500	7%	0.27%
Total	124,900	132,800	6%	0.25%

PERCENT NON-SINGLE OCCUPANT VEHICLE TRAVEL



Data from the US Census American Community Survey (ACS) provides information about the means of travel to work. Every month, the Census Bureau collects data on a wide range of demographic characteristics. And, every year the Census Bureau reports data from the past five years. The annual sample size nationally is approximately 2.5% of all housing units. The five-year reports provide data summaries based on approximately 12.5% of the nation.

Driving alone to work (single occupant vehicle – SOV travel), is the predominant travel mode to work in the US and the SPC region. Non-SOV travel is travel to work by modes other than driving alone including carpool, vanpool, public transportation, taxi, bicycling, walking, and work at home, among others. The 2018-2022 ACS data tables for means of travel to work estimate that SOV travel accounted for 71.7% of travel to work in the US, 77.3% in the SPC region; and 78.3% in the Pittsburgh Urbanized Area or a Non-SOV share of 28.3% nationally, 22.7% regionally, and 21.7% in the Urbanized Area. Currently, there is no reliable estimate available from any known source for travel by mode for non-work trips.

Percent Non-Single Occupant Vehicle travel (Non-SOV) for the Pittsburgh Urbanized Area is included in the set of transportation system performance measures established by the USDOT to implement provisions of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation Act (FAST) to ensure effective use of federal transportation funds. This approach continues with the Infrastructure Investment and Jobs Act (IIJA) enacted in November 2021. Baseline and target levels are set by states and MPOs in accordance with USDOT guidance. SPC has adopted a Non-SOV target for the Pittsburgh Urbanized Area of 27.0% for 2025.

Percent Non-Single Occupant Vehicle (SOV) Travel is included in the set of federal Transportation Performance Measures (known as PM-3) created by the Moving Ahead for Progress in the 21st Century Act (MAP-21) and Fixing America's Surface Transportation (FAST) Act to ensure effective use of federal transportation funds. The measures are implemented by the Federal Highway Administration and PennDOT, with baseline and target levels for each state DOT and applicable MPOs.



Currie Road Park and Ride Facility near US 422 in Muddy Creek Township

In and near the US 422 corridor, the 2018-2022 ACS data shows that the percent of Non-SOV travel to work remains fairly consistent throughout the corridor. A majority of the US 422 corridor falls in municipalities where the Non-SOV travel is in the 11% to 25% range. This is due to that fact that the majority of the area around US 422 is located in low density, rural areas. Lower levels (less than 10%) of Non-SOV travel can be found in Kittanning Township in Armstrong County. Higher levels (26% to 50%) can be found in Pulaski Township, Union Township, and South New Castle Borough in Lawrence County; City of Butler; Manor Township, Ford City Borough and Kittanning Borough in Armstrong County; and in Center Township and Indiana Borough in Indiana County. The highest levels (over 50% Non-SOV travel to work) are found in communities that are located away from the US 422 corridor.

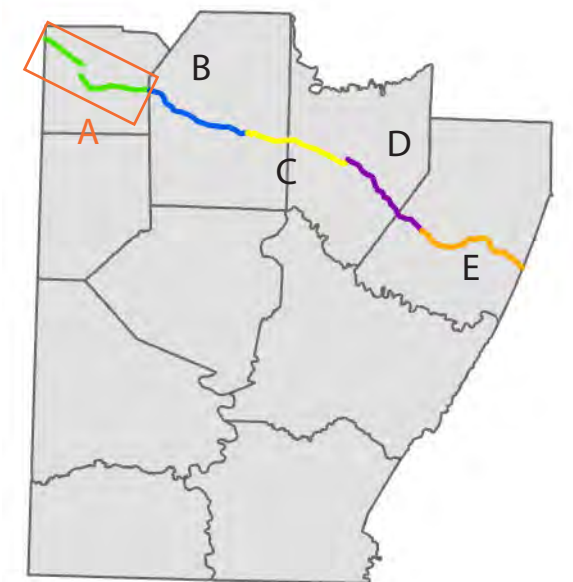
Generally, the areas with higher levels of Non-SOV travel to work correlate with areas of high population and employment density (see maps – pages 11 and 12) and areas well-served by transit (see map – page 16).



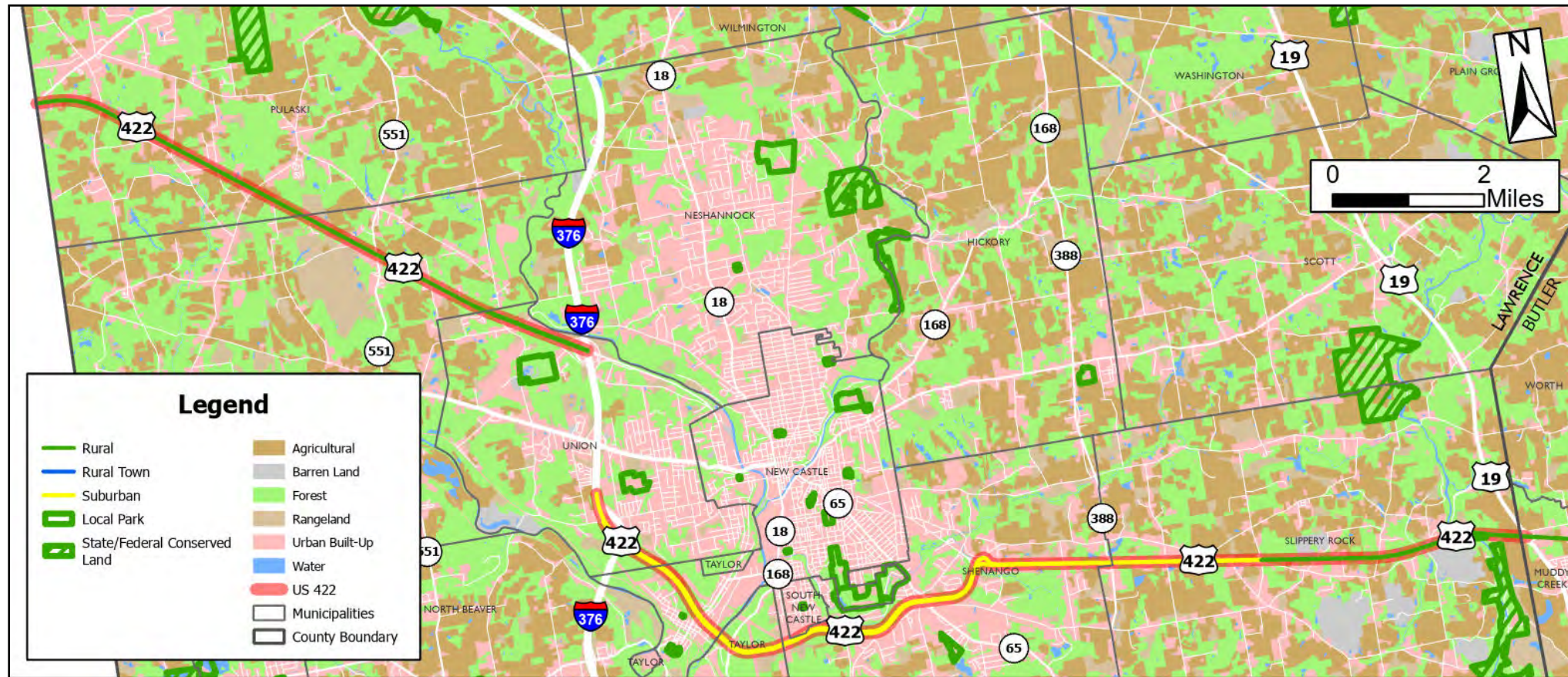
SECTION III: SEGMENT PROFILES

SEGMENT A

- SEGMENT OVERVIEW
- FUTURE HIGHWAY & BRIDGE PROJECTS
- REGIONAL, COUNTY, AND LOCAL PLANS AND USER PERSPECTIVES
- FREIGHT
- TRANSIT
- ACTIVE TRANSPORTATION
- ENVIRONMENTAL FEATURES
- CONDITION OF ASSETS
- SEGMENT TRAVEL PATTERNS
- CONGESTION & RELIABILITY
- SAFETY
- FOCUS AREAS

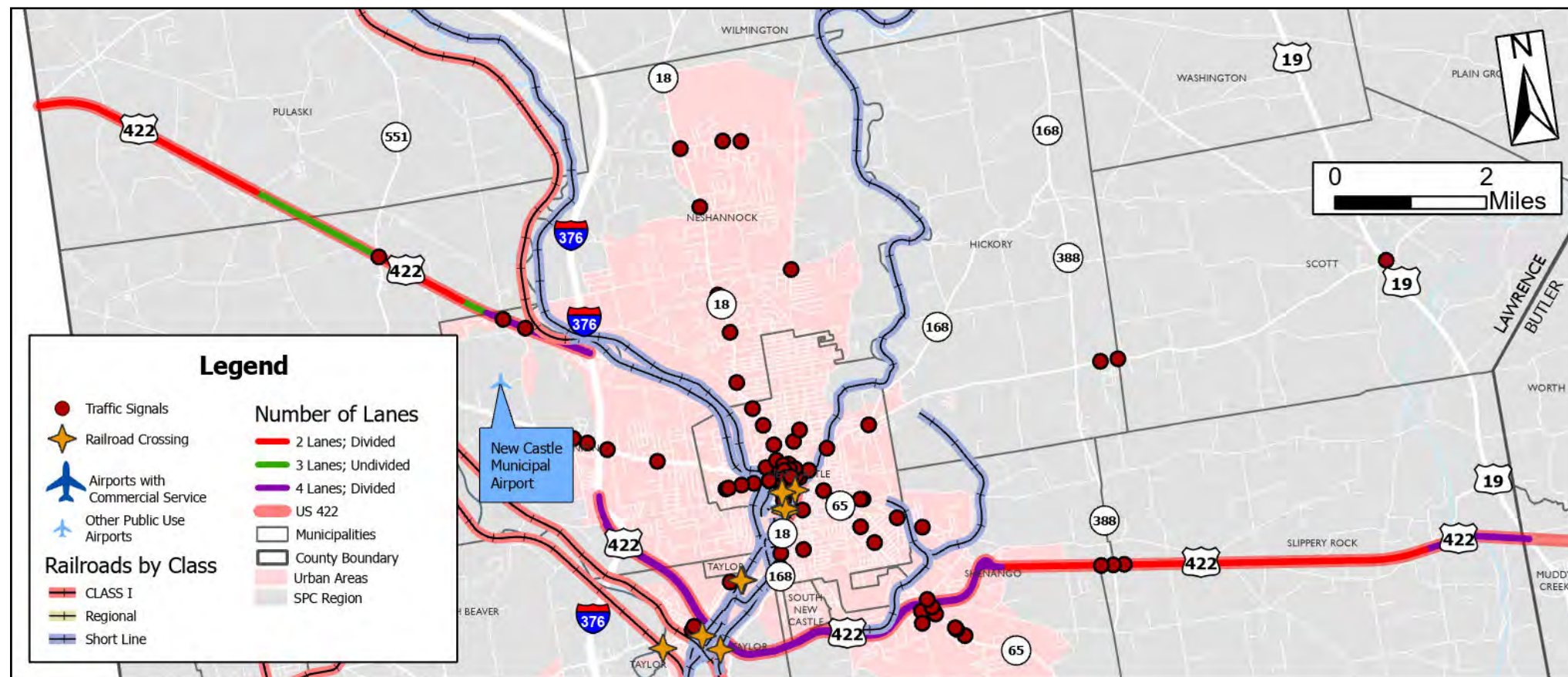


SEGMENT A: OVERVIEW



Segment A from the Ohio State Line to US 19 in Muddy Creek Township goes through multiple lane configurations. Starting at the Ohio State Line and heading east, US 422 starts off as a two-lane, divided roadway as it travels through Pulaski Township until US 422 approaches Hillsville Road. At Hillsville Road, US 422 turns into a three-lane, undivided roadway as it moves east into Mahoning Township. This lane configuration continues to SR 551, where it goes back down to a two-lane, divided roadway from SR 551 to Janet Lane. At Janet Lane, US 422 goes back to a three-lane, undivided roadway. This lane configuration continues until the Union Township Line where US 422 becomes a four-lane, divided roadway. This lane configuration continues to the I-376 interchange.

US 422 picks back up east of the I-376 interchange and becomes a four-lane, divided bypass route. This bypass route provides a high-speed, alternative route bypassing the City of New Castle to the south, traveling through Taylor and Shenango Townships, and eventually ending near the Hoover Road intersection. At the Hoover Road intersection, US 422 becomes a two-lane, divided roadway as it travels east through Shenango and Slippery Rock Townships until the intersection with Old Route 422 and Mt Hope Furnace Road. East of this intersection, US 422 becomes a four-lane, divided highway as it moves east into Butler County to the US 19 interchange.

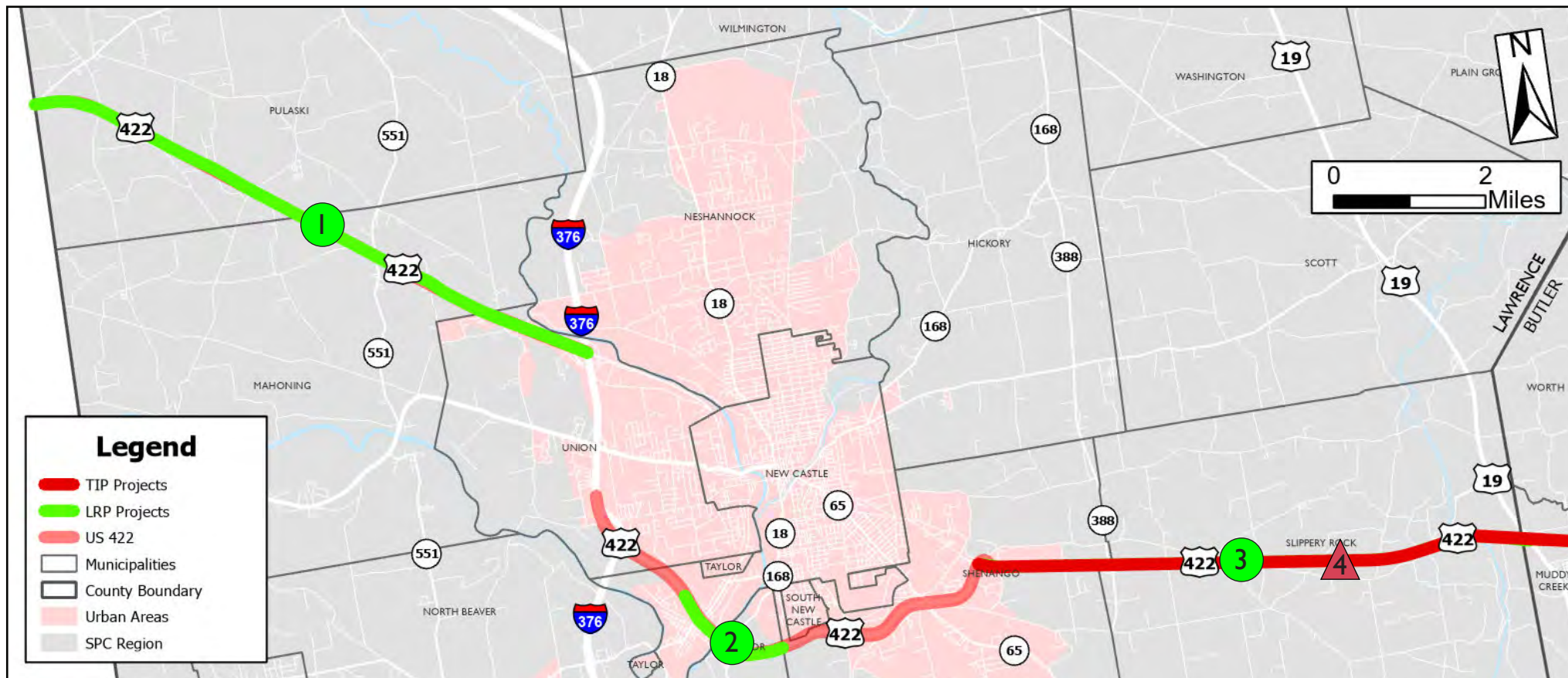


Along this segment of US 422, there are major routes that US 422 connects to. These major routes include I-376, US 19, SR 65, SR 168, SR 208, SR 388, and SR 551. Many intersections along this segment of US 422 are unsignalized, at-grade intersections however; there are some signalized and/or grade-separated intersections present. Flashing beacons can be found at the SR 551 and Mathews Road intersections, while traffic signals can be found at the Harbor Edinburg/Pulaski Road intersection and the SR 388 intersection. There are grade-separated interchanges at I-376, SR 168, SR 65, Business 422 and US 19.



US 422 at Business 422 Interchange in Shenango Township

FUTURE HIGHWAY & BRIDGE PROJECTS



- 1** Roadway Reconstruction | MPMS 92281
 Fiscally Constrained List | SR 422, Benjamin Franklin Hwy, Ohio State Line to I-376
 Reconstruction on SR 422 from the Ohio State Line to I-376 in Union, Pulaski, and Mahoning Townships, Lawrence County.
 Estimated Cost: \$38 Million
- 2** Bridge Rehab/Reconstruction | MPMS 118853
 Fiscally Constrained List | SR 422 over Shenango River and SR 18 Super Replacements
 Bridge rehabilitation located on US 422 (Benjamin Franklin Hwy) in Taylor Township, Union Township, Mahoning Township, and the City of New Castle, Lawrence County.
 Estimated Cost: \$106 Million
- 3** Roadway Preservation | MPMS 116560
 Fiscally Constrained List | SR 422, Benjamin Franklin Hwy Mill and overlay on US 422 from New Butler Road intersection to US 19 intersection in Shenango, Union, and Slippery Rock Townships, Lawrence County.
 Estimated Cost: \$10.5 Million
- 4** Roadway Preservation | MPMS 116560
 2025-2028 TIP | SR 422, Benjamin Franklin Hwy Mill and overlay on US 422 from New Butler Road intersection to the US 19 intersection in Shenango, Union, and Slippery Rock Townships, Lawrence County.
 Programmed Amount: \$7.5 Million



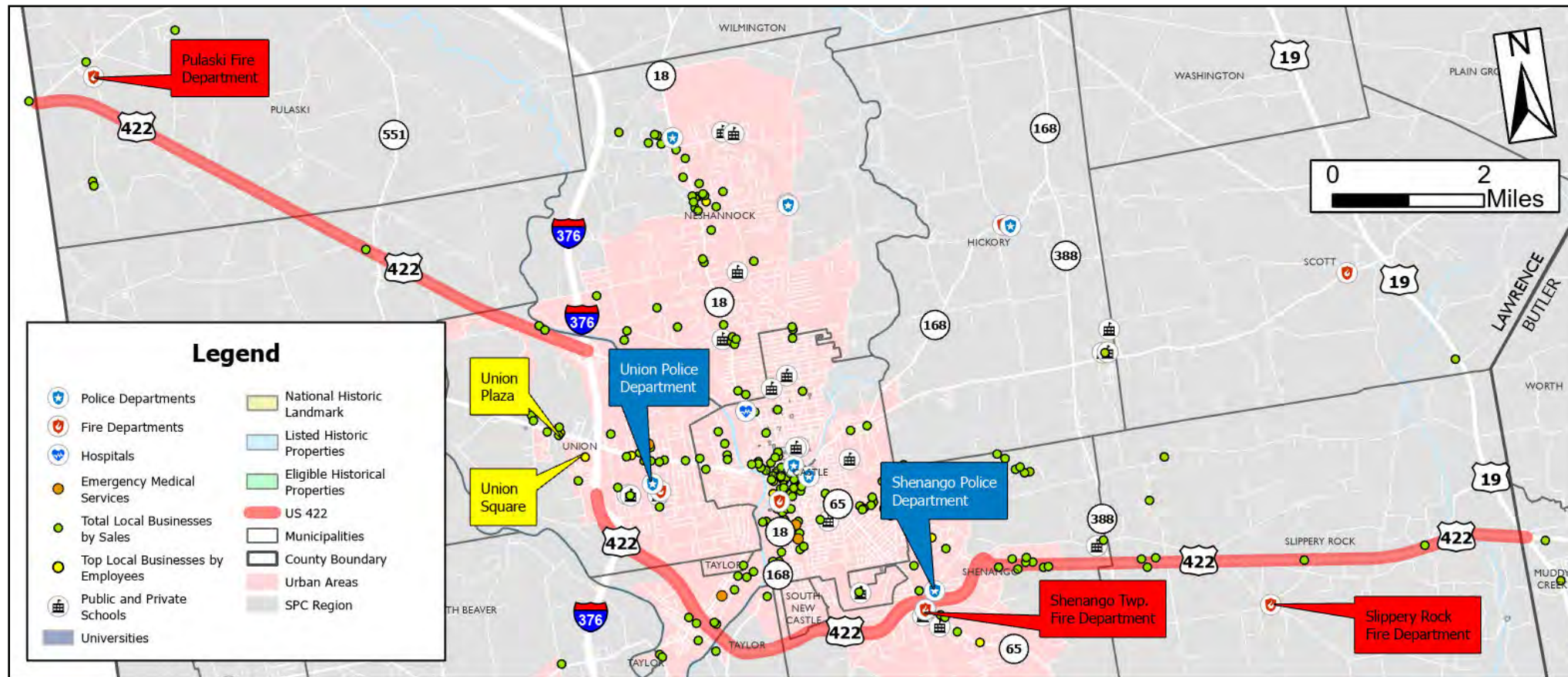
US 422 over the Shenango River and SR 18 in Taylor, Union, Mahoning Townships and the City of New Castle



US 422 looking west towards New Butler Road Intersection in Shenango Township

For up to date information on LRP and TIP projects, please click [here](#).

REGIONAL, COUNTY, AND LOCAL PLANS AND USER PERSPECTIVES



Along this segment of US 422, most community features can be found within the City of New Castle, away from the US 422 corridor, however, there are some community features that are near the US 422 corridor. Near the US 422/SR 65 interchange, there are multiple community features present. These include Shenango Elementary School, Shenango High School, Shenango Township Police Department, and Shenango Township Volunteer Fire Department. While not directly located on the US 422 corridor, there are major commercial areas in Union Township along the US 224 (West State Street) corridor near the I-376 interchange. These include Union Plaza, Union Square, and Westgate Plaza. It should also be noted that Union Area Elementary, Middle, and High Schools are located near the US 422/I-376 Interchange in Union Township.

A review of existing plans at the regional, county, and local level can provide valuable information on planned projects, existing transportation issues and community priorities that can inform project development. The Lawrence County Comprehensive Plan, Focus Lawrence County, mentions the US 422 corridor for transportation and land use needs. For transportation, there is an opportunity to utilize the US 422 route to connect transit users to the Western Reserve Transit Authority, the transit authority in Youngstown, Ohio. The plan also identifies future growth land use areas within Lawrence County. The plan identifies the US 422 corridor from the City of New Castle to the Ohio State Line and US 422 from Shenango Township to Butler County as future growth land use areas.

Relevant Local, County and Regional Plans

[Lawrence County Comprehensive Plan](#)

[Shenango Township Comprehensive Plan](#)



Commercial Areas along US 224 (West State Street) in Union Township

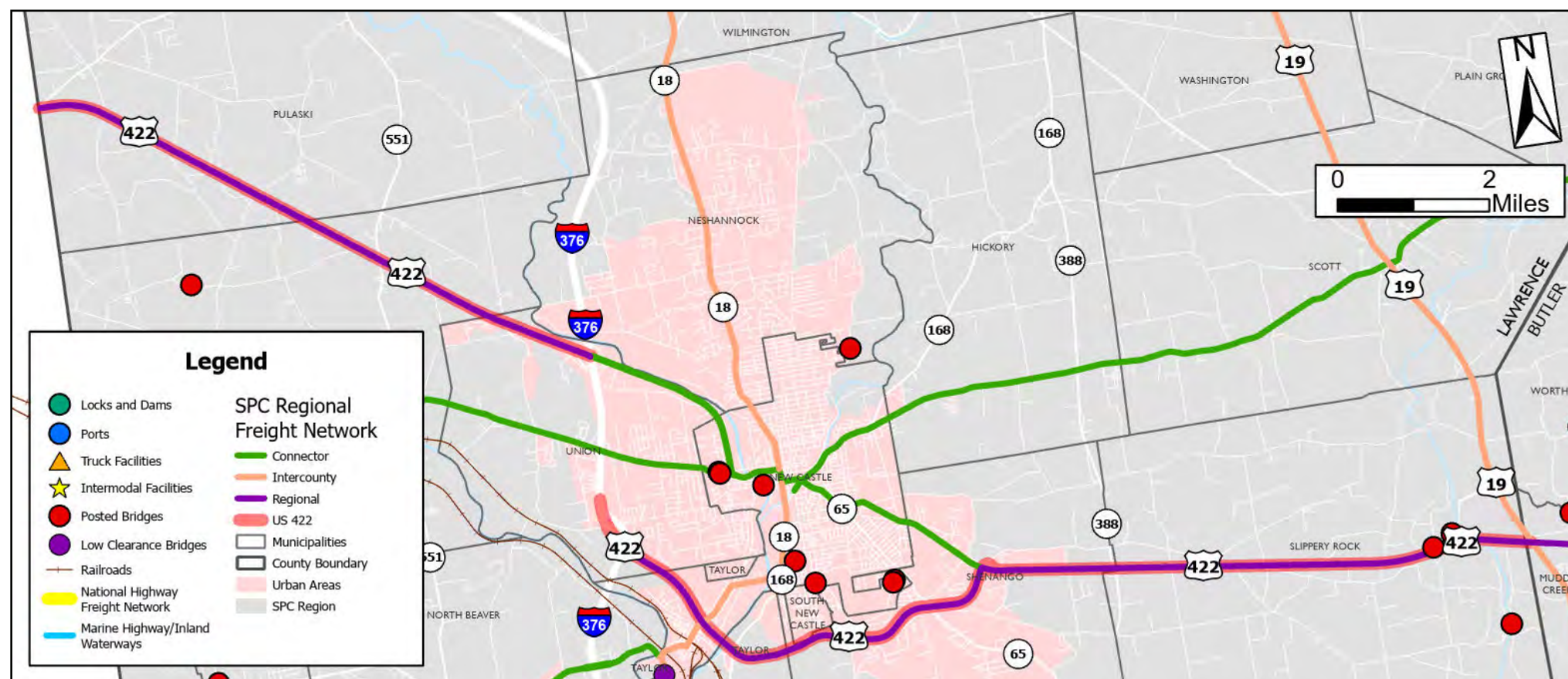


Shenango Area High School in Shenango Township

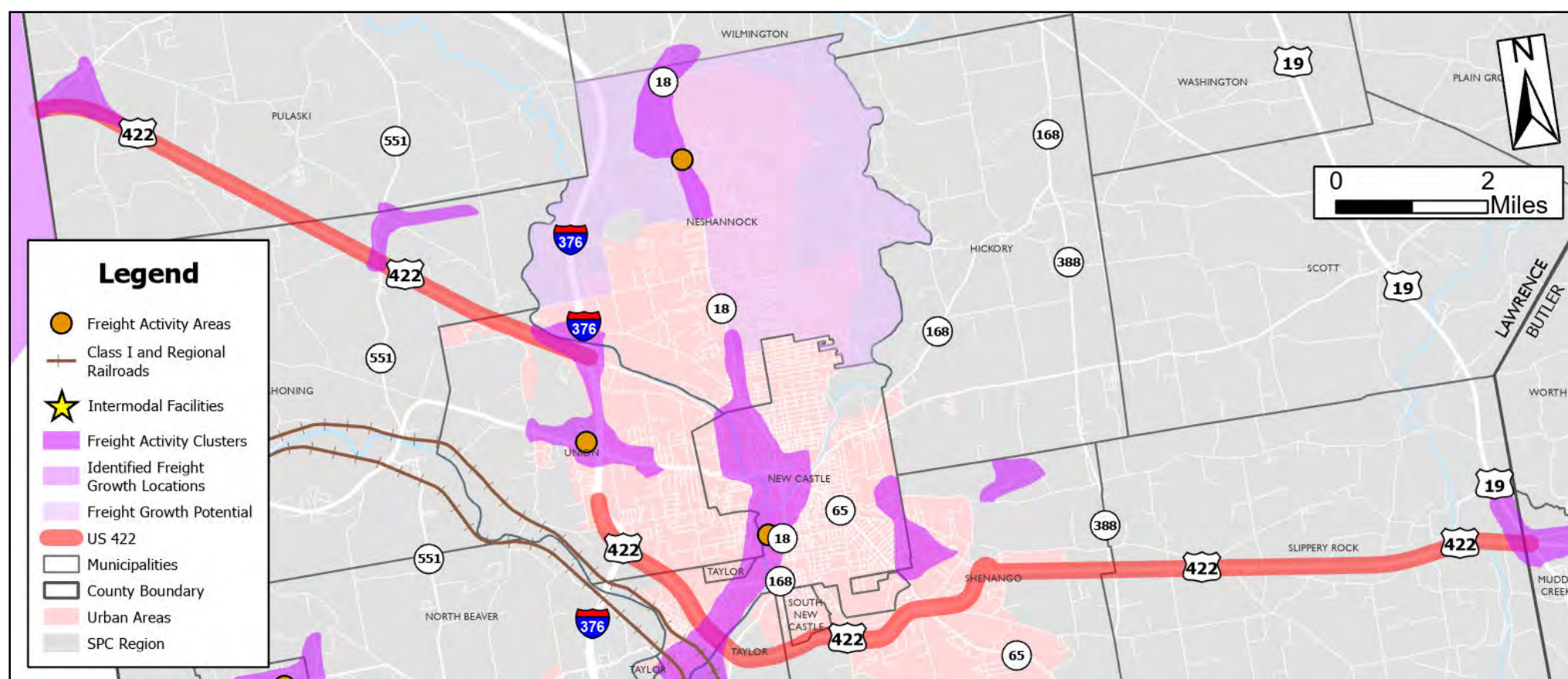


McConnells Mills State Park

FREIGHT



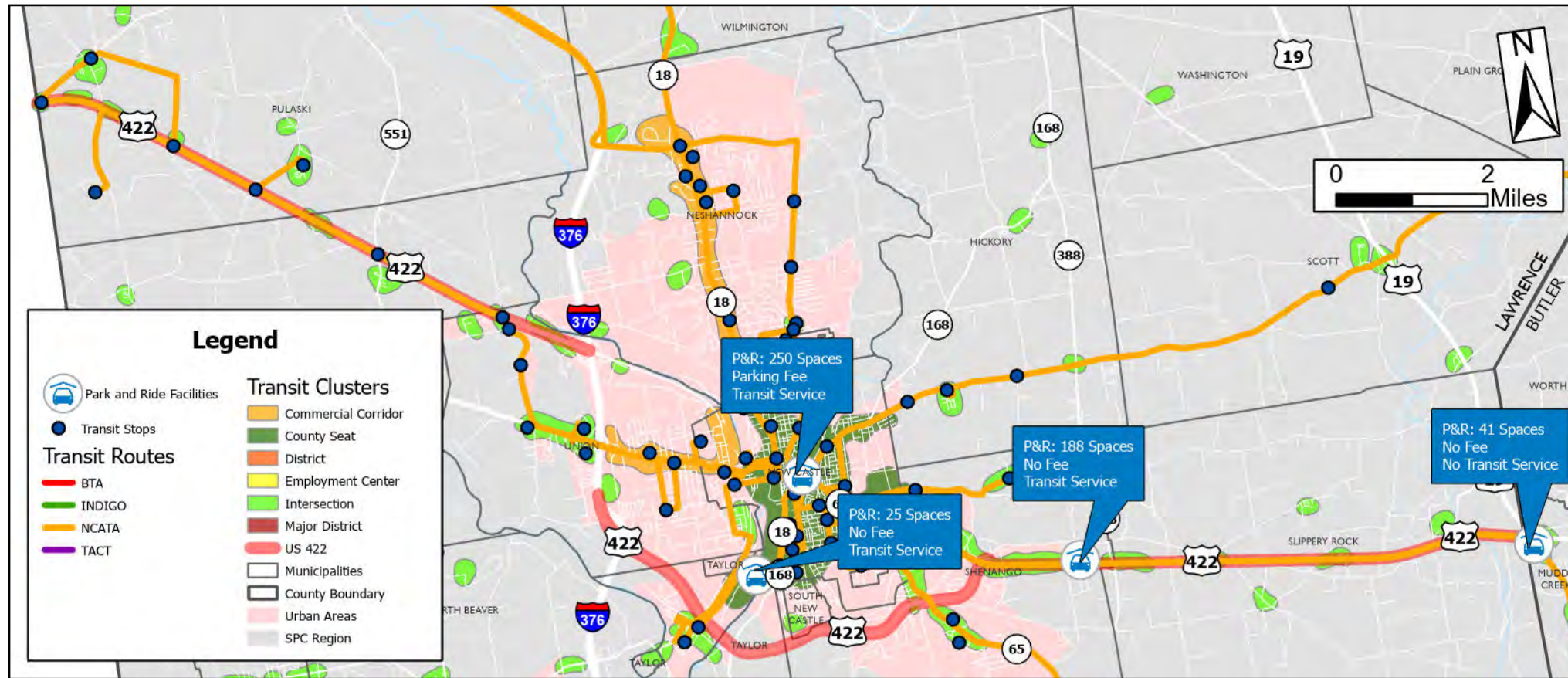
SPC’s Regional Freight Network provides a more complete inventory of the key corridors and connections that service the region’s freight movement needs. The Regional Freight Network is divided into three different classifications, Regional Routes; Intercounty Routes; and Connector Routes. US 422 is a designated regional route on SPC’s Regional Freight Network that provides connections to other routes that are on the Freight Network such as US 19, SR 168, and Business 422 which are classified as Intercounty or Connector Routes. There is no truck or intermodal facility located near this segment of US 422. SPC Regional Freight Plan also identifies areas of Freight Activity Clusters, Identified Freight Growth Locations and Freight Growth Potential. Freight Activity Clusters are present along the US 422 corridor near the Ohio State Line, SR 551 corridor, I-376 interchange, SR 18, and at the US 19 interchange. Potential freight growth areas can be found north of the US 422 corridor in Neshannock Township and directly across the state border in Ohio.



Recently, the USDOT released the draft National Multimodal Freight Network (NMFN). The draft National Multimodal Freight Network (NMFN) assess and support federal investments to achieve national multimodal freight policy goals for highways, rail, marine ports and waterways. The rail component of the NMFN includes all intermodal rail routes, all Strategic Rail Corridor Network (STRACNET) routes, rail routes that top two-thirds volume of freight carries using the Surface Transportation Board (STB) Waybill data, segments that carry the top 102% of freight commodity groups, and rail segments that carry five trains or more per day. In Segment A, the Norfolk Southern and CSXT Railroads near New Castle in Lawrence County are on the draft NMFN.

Truck counts are highest along US 422 from I-376 in Union Township to SR 168 in Taylor Township, Hoover Road in Shenango Township to Old Route 422 in Slippy Rock Township and near the US 19 interchange in Muddy Creek Township. Data collected by PennDOT Roadway Management System (RMS) indicates that Average Daily Truck Traffic (ADTT) is greater than 1,000 on these individual roadway segments. Other areas with notable ADTT includes US 422 between SR 168 in Taylor Township and Hoover Road in Shenango Township and between Old Route 422 and the Butler County Line where ADTT measure between 600 and 1,000 trucks per day. In Pulaski and Mahoning Townships, an estimated 550 – 750 trucks travel per day along the corridor, carrying supplies for local stores and businesses. Much of US 422 in Union Township exhibits a similar pattern of use; however, ADTT is lower with an estimated 200-400 trucks per day in this corridor. It should be noted that a new global warehouse and distributed center for Steelite Industries broke ground at at Millenium Park at US 422 at Pulaski Road. When completed, this new facility will generate an estimated 100 additional trucks per day on US 422.

TRANSIT



There are several bus routes, bus stops, and park-and-ride facilities located within this segment of US 422. New Castle Area Transit Authority (NCATA), the transit agency serving Lawrence County, has several routes that either utilize US 422 or are within the broader US 422 corridor. Route NC91 – Walmart/Villa Maria/Ohio Line utilizes US 422 to carry transit users from Pulaski and Mahoning Townships to the commercial areas along US 224 (West State Street) and downtown New Castle. Route NC71—Pittsburgh, provides express transit service between New Castle and the City of Pittsburgh utilizing US 422 through Shenango and Slippery Rock Townships. Other transit routes within the broader US 422 corridor includes Route NC76—Ellwood City and Route NC4—Westside Mahoningtown. There are also two park-and-ride facilities that are near the US 422 corridor. These are Route 422 West of Route 388 in Shenango Township and McConnells Mill – Route 19 at Route 422 in Muddy Creek Township. The [SmartMoves Connections Regional Transit Study](#) identifies clusters for multimodal hubs. The SMC clusters identify where unique transit supportive activities exist throughout the region based on demographic data, employment data, land use and other factors.

Pulaski Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine; Security Cameras; Wayfinding; Real-Time Arrival Information

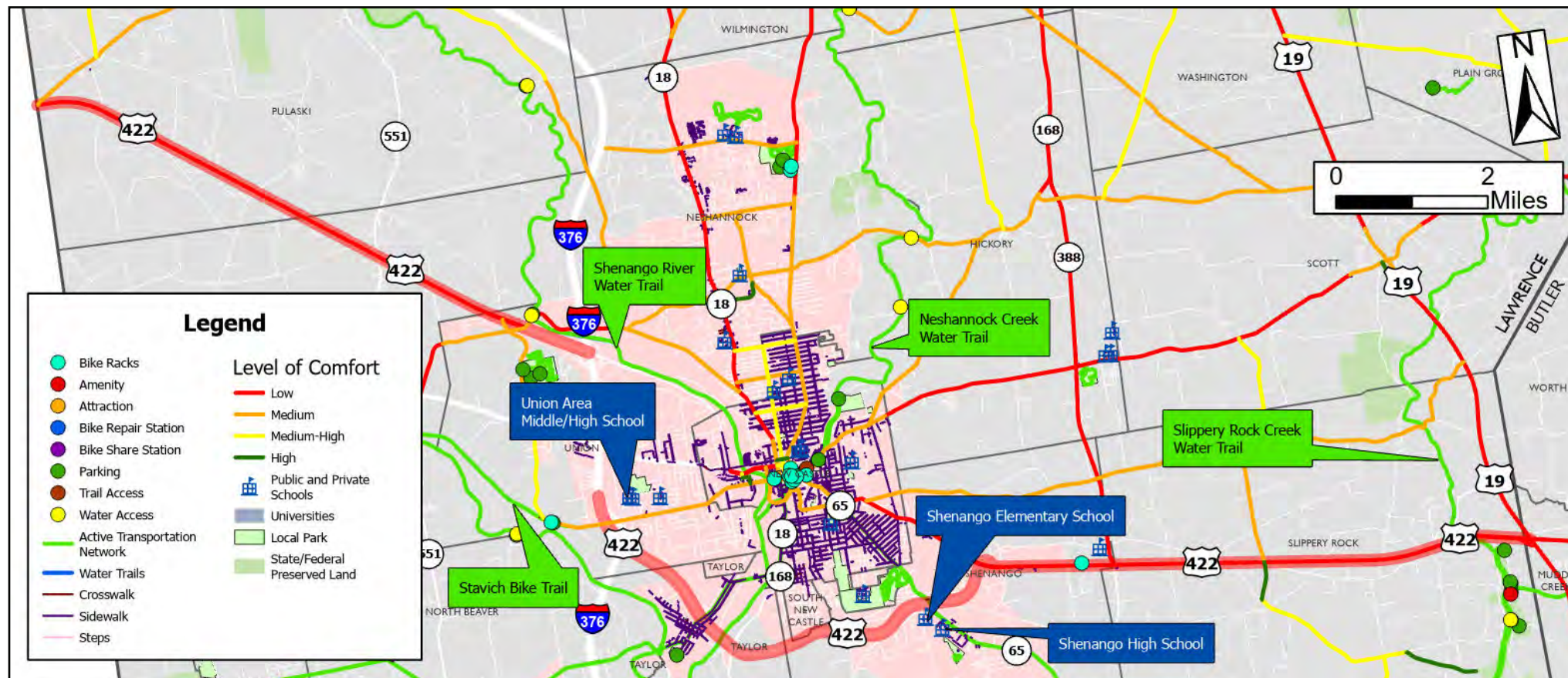
Mahoning Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

Slippery Rock Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

Union Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

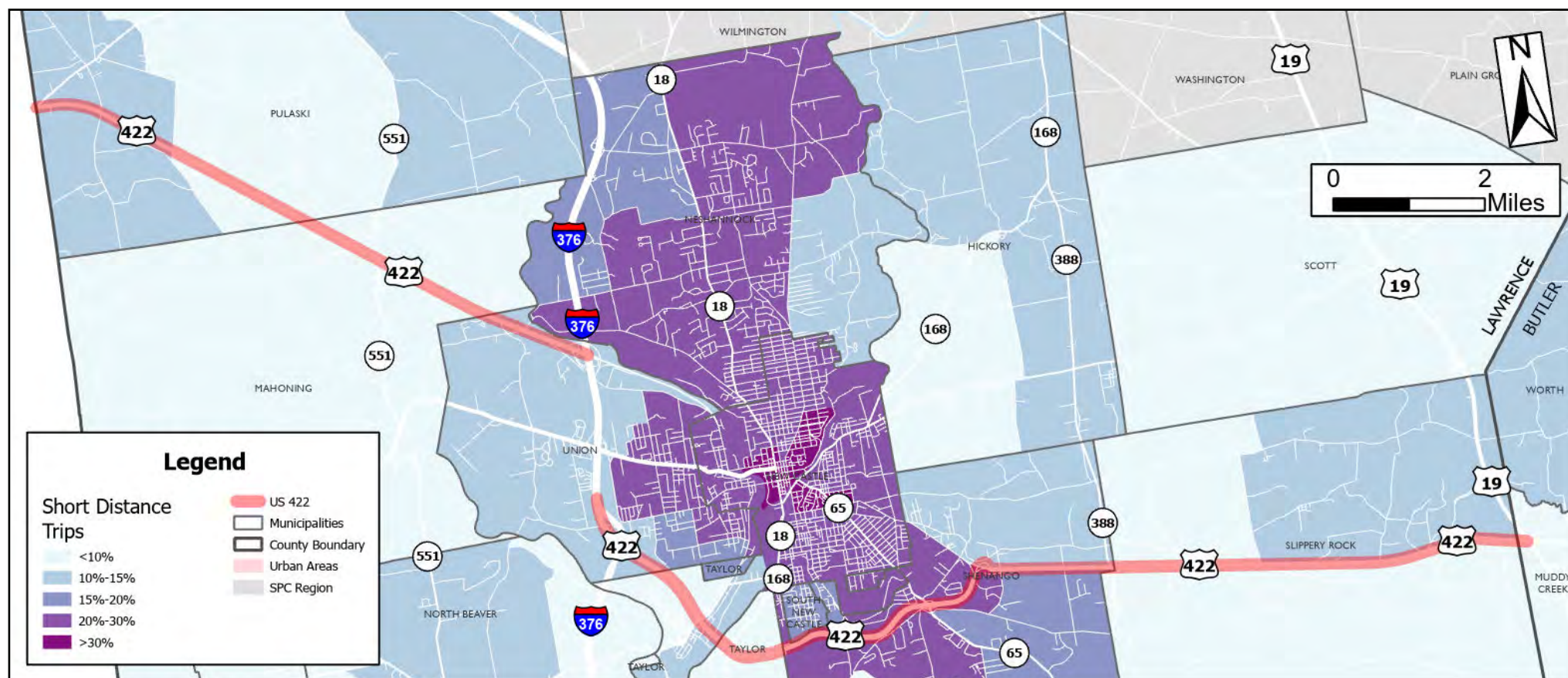
Shenango Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

ACTIVE TRANSPORTATION



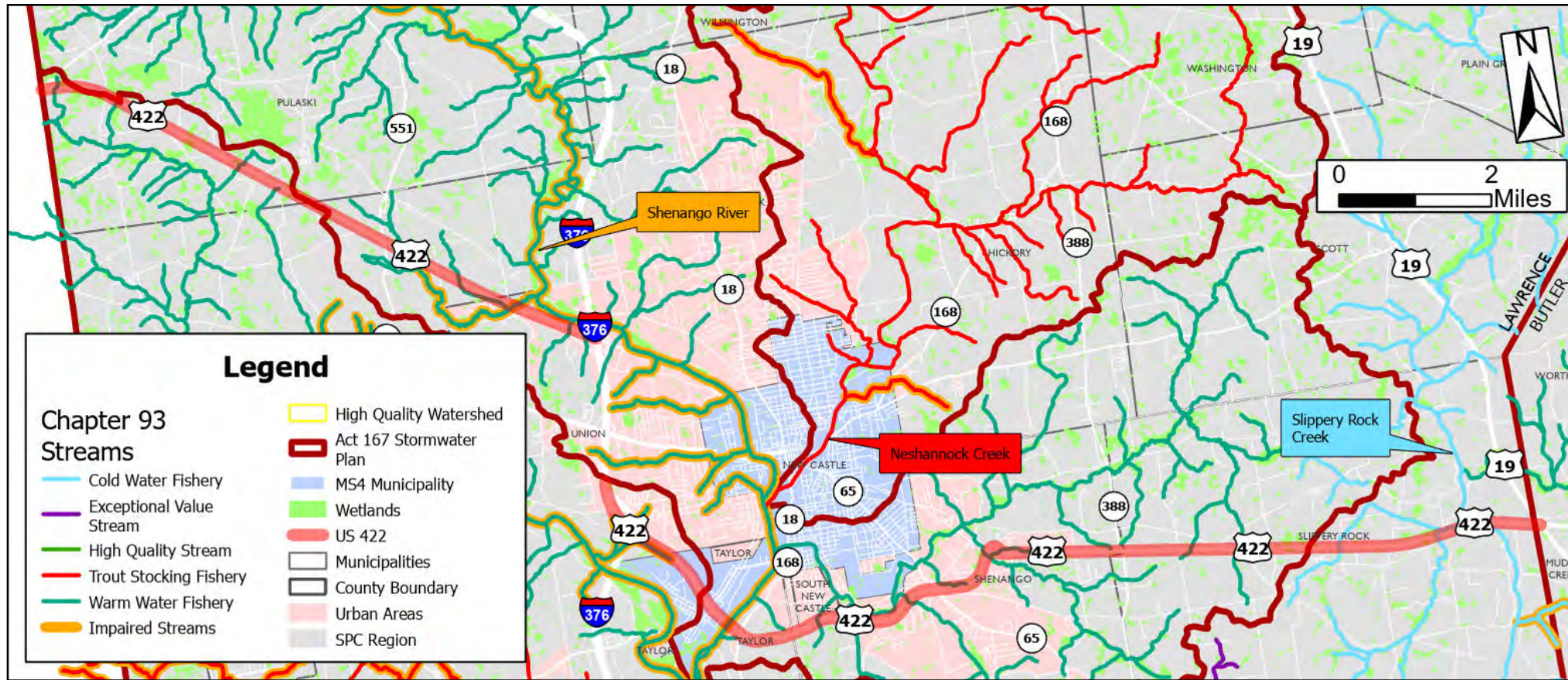
This segment of US 422 has very limited bicycle and pedestrian facilities with many bicycle and pedestrian facilities located away from the US 422 corridor. This is due to the fact that most of the corridor is in rural areas with a good portion of this route being a four-lane, divided highway bypassing the City of New Castle. Bicyclists and pedestrians are prohibited on the US 422 bypass. Within the broader US 422 corridor, there are bicycle and pedestrian facilities present. The City of New Castle has multiple neighborhoods with bicycle and pedestrian infrastructure present. It should also be noted that the Stavich Bicycle Trail is located near the US 422 corridor. The Stavich Bicycle Trail is a 12 mile long trail connecting the City of New Castle to Ohio. Additional bicycle/pedestrian facilities include sidewalks along SR 18 in Taylor Township and SR 65 designation as an on-street bike route in Shenango Township. US 422 does connect to US 19 which is designated as Bicycle Route A.

This corridor segment includes a combination of low, medium, and high dense areas within Lawrence County. In many rural areas of Lawrence County, short distance trips (less than two miles long) in this corridor segment are less than 15%. The short distance trip share increases as density increases. In medium dense areas of Union and Shenango Townships, short distance trips are between 15% to 20%. In high dense areas of Neshannock, Shenango and the City of New Castle, which includes numerous sidewalks, short distance trips are greater than 20% with areas in downtown New Castle greater than 30%.



Stavich Bicycle Trail

ENVIRONMENTAL FEATURES



US 422 has numerous crossings of surface water resources in Segment A. There are several cold water and warm water fisheries such as Slippery Rock Creek (Cold Water Fishery) and the Shenango River (Warm Water Fishery) and several other small creeks and tributaries. It should also be noted that the Shenango River and its tributaries are also impaired. Wetlands can be found on both sides of US 422 throughout the corridor. There are no High Quality Watersheds located near this segment of US 422.

Areas on this segment with Stormwater I 67 Plans:

- Beaver/Mahoning Creek
- Shenango River
- Slippery Rock Creek

Areas on this segment with MS4 Permits:

- New Castle (Permit PAG138331)

Water Quality Standards

All commonwealth waters are protected for a designated aquatic life use as well as a number of water supply and recreational uses. The **use designation** shown in the water quality standards is the aquatic life use. These uses are Warm Water Fishes (WWF), Trout Stocking (TSF), Cold Water Fishes (CWF) and Migratory Fishes (MF). A body of water is considered **“impaired”** if it fails to meet one or more water quality standards.

The water quality in a High Quality stream can be lowered only if a discharge is the result of necessary social or economic development, the water quality criteria are met, and all existing uses of the stream are protected. Exceptional Value waters are to be protected at their existing quality; water quality shall not be lowered.

Some water resources are also part of the **Total Maximum Daily Load (TMDL)** program, which identifies sources of pollution and allocates pollutant loads in places where water quality goals are not being achieved.

Stormwater Management

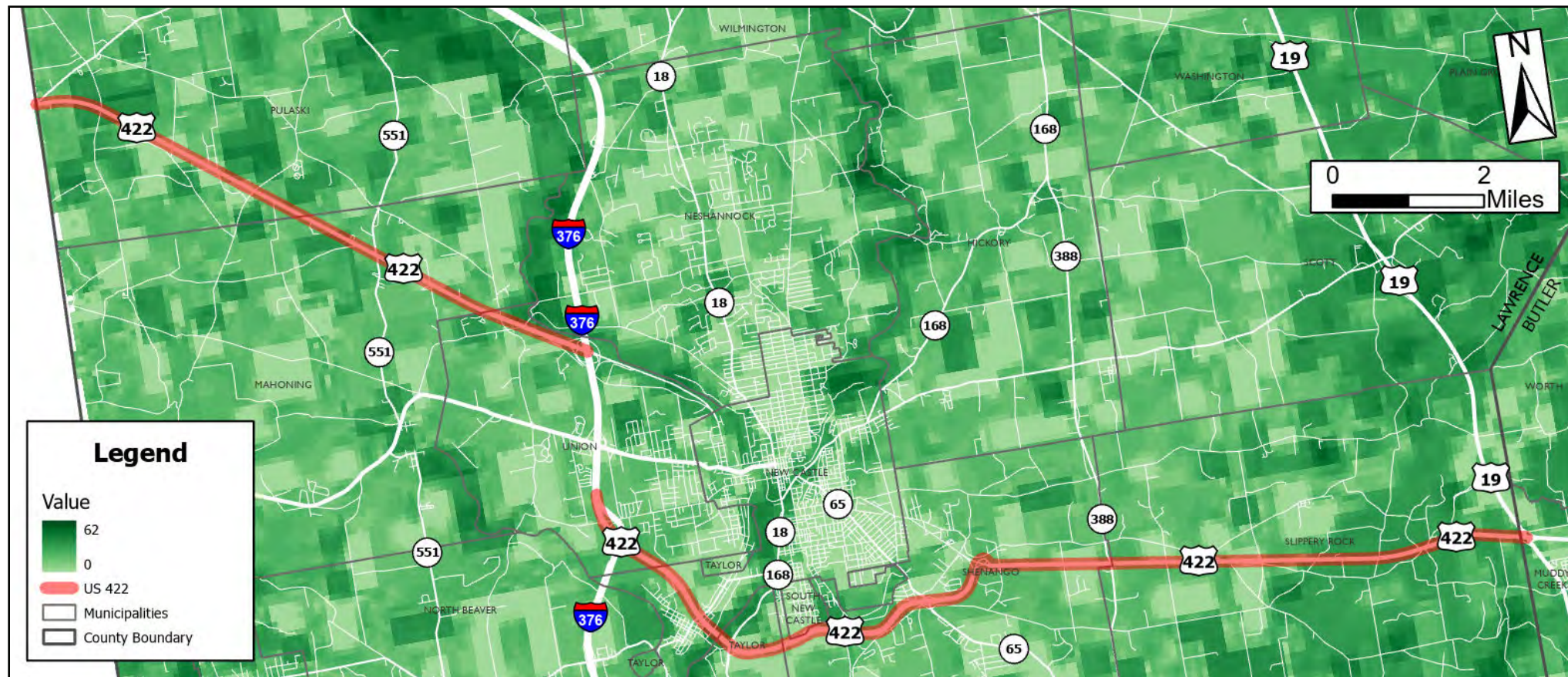
The **Storm Water Management Act (No. 167)** authorized a program of comprehensive watershed stormwater management that retains local implementation and enforcement of stormwater ordinances similar to local responsibility of administration of subdivision and land development regulations. Act 167 plans are required on a county-wide basis; however, the practice to this point has been to only develop plans for specific sensitive waters/watersheds.

A **Municipal Separate Storm Sewer System (MS4)** is owned or operated by a public agency, such as a city, town, county, flood control district, state, or federal agency that does not connect to the sanitary sewer system and does not lead to a wastewater treatment plant.



US 422 over Slippery Rock Creek in Slippery Rock Township

ENVIRONMENTAL FEATURES

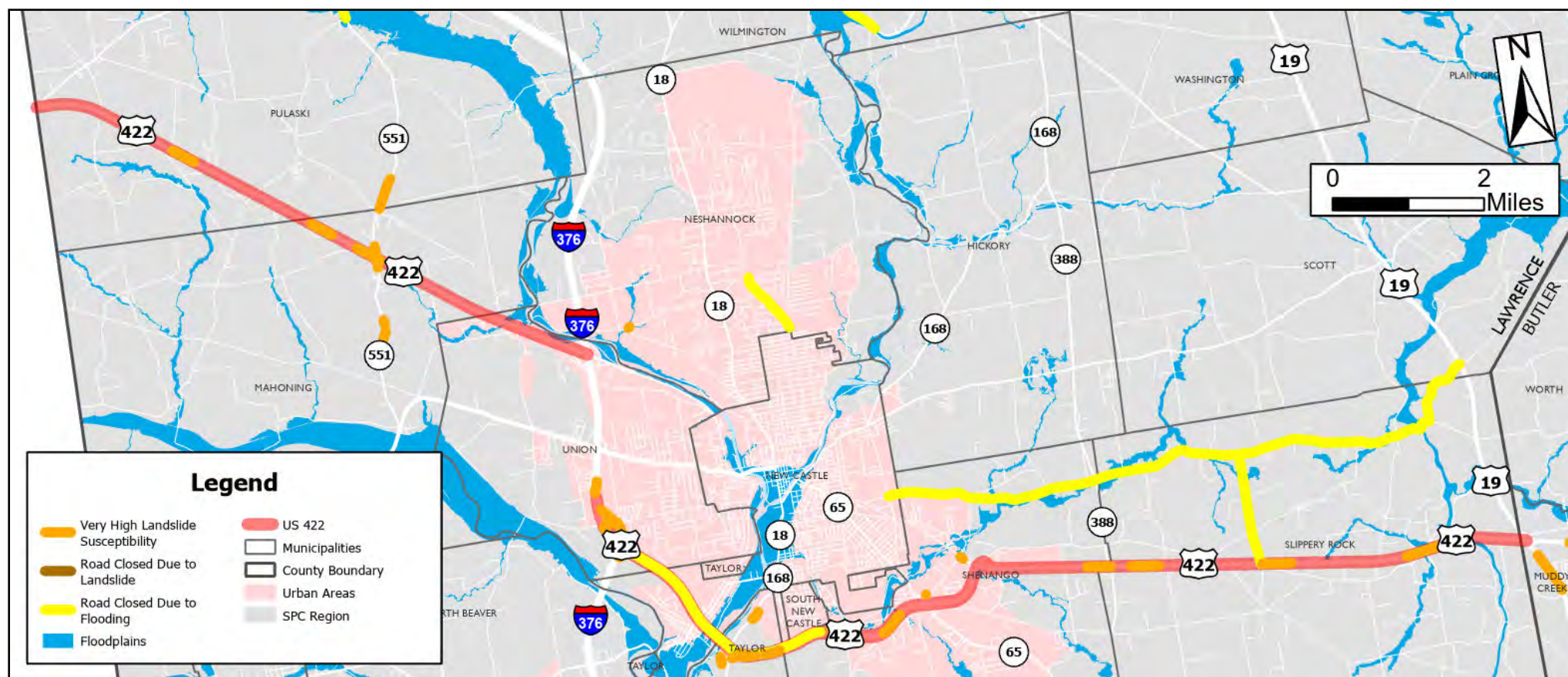


The **Regional Ecosystem Framework (REF)** integrates environmental inventory data, conservation priorities, maps, and plans, with input from and adoption by conservation and natural resource stakeholders identified that addresses species, habitats, and relevant environmental issues and regulatory requirements agreed upon by the stakeholders. SPC has identified available GIS data layers that when analyzed will spatially model ecological significance on a regional scale. The datasets that make up the prototype REF are included in the Appendix.

SPC staff assigned a score to the relevant attribute of each environmental data layer. The score reflects the relative importance of the occurrence of any certain resource found in a dataset relative to other resources used in the analysis.

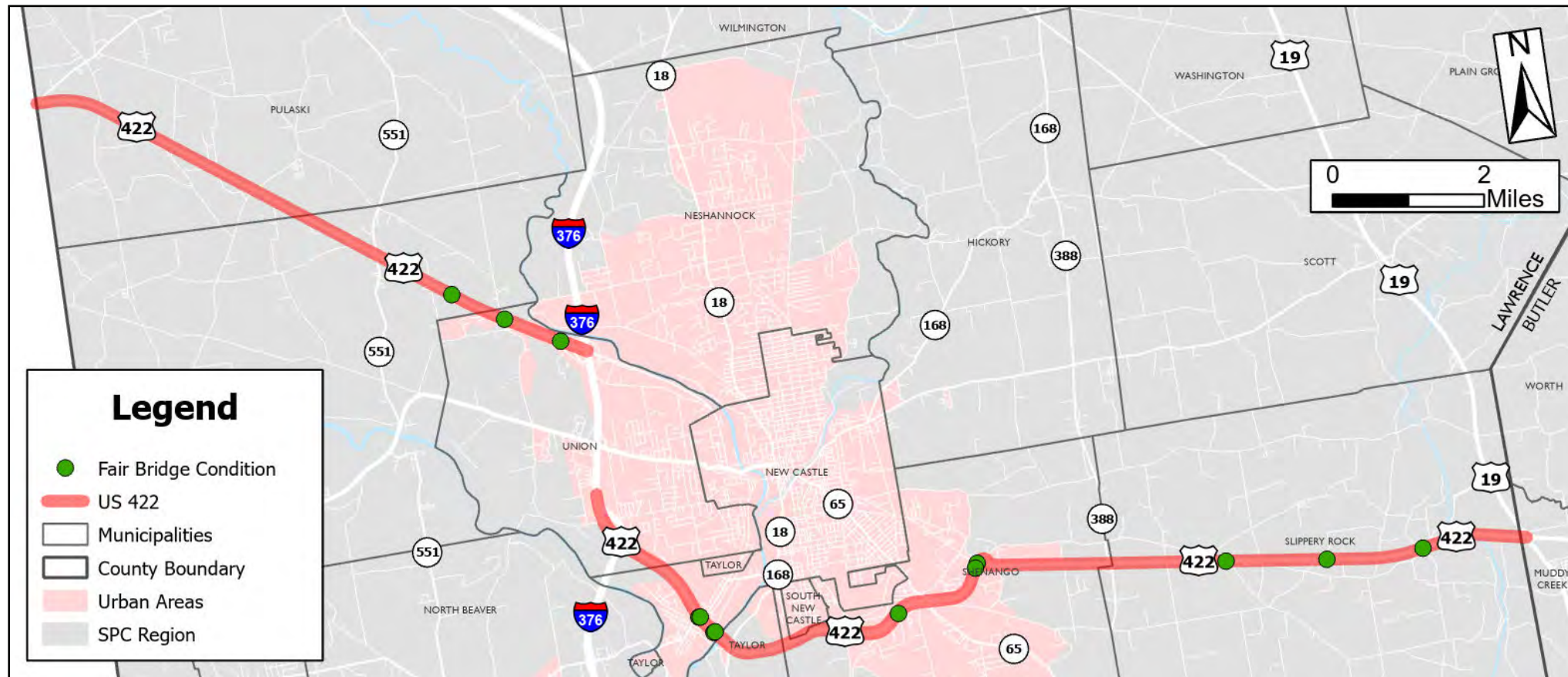
Greater values in the REF indicate greater environmental significance.

Within Segment A, the REF is showing a higher relative environmental value attributed to the Shenango River and Slippery Rock Creek. Higher values at the Shenango River are due to the river being a mussel management area, with nearby forests, wetlands, and park areas. The CS&M Mine, which is classified as an Important Mammal Area and Natural Heritage Area Core Area, also contribute to the high relative environmental value of the Shenango River. Higher values at Slippery Rock Creek is due to nearby McConnells Mill which is a protected area and an Important Bird Area. Slippery Rock Creek is also a trout stocking stream with nearby wetlands. With this level of environmental quality, future projects on US 422 in this watershed can anticipate additional restrictions or measures related to waterway permitting and may have an increased chance of encountering threatened and endangered species.



US 422 in Segment A include some locations with very high vulnerability to landslides. These locations are based on regionwide landslide modeling done by SPC and isolated to the area within a mile of US 422 in this segment. Most significant of these areas is the section of US 422 between I-376 in Union Township and SR 65 in Shenango Township. Slopes above and/or below US 422 in this area are vulnerable to landslides. Other areas of very high landslide susceptibility include Cheriwood Road, SR 551, SR 388, Mount Herman Church Road, and Mount Hope Furnace Road. According to PennDOT Road Closure Recording System (RCRS) data, a portion of US 422 between I-376 and SR 168 was closed due to flooding. No other portion of US 422 experienced road closures due to flooding or landslides.

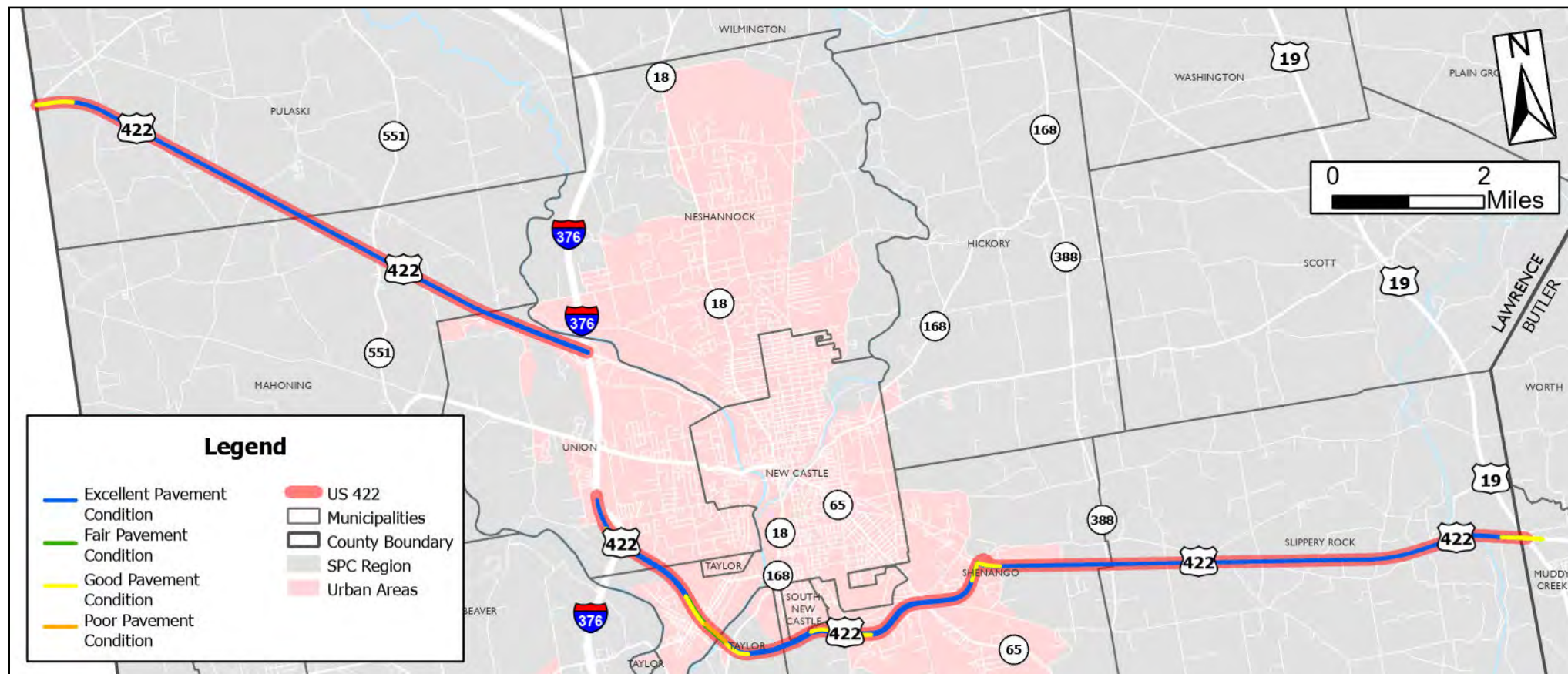
CONDITION OF ASSETS



In Segment A, 100% of bridges on US 422 are rated in fair condition. In Segment A, 94% of US 422 have a pavement condition rating of good or excellent and 4% of pavement have a condition rating of fair. Only 4% (0.6 miles) of roadway pavement is in poor condition. These segments are westbound US 422 between the SR 168/Moravia Street interchange and the SR 18 overpass in Taylor Township and eastbound US 422 near Old Route 422 in Slippery Rock Township. It should be noted that there is a TIP and LRP project to address pavement condition on US 422. Project #116560, SR 422 Benjamin Franklin Highway, includes the mill and overlay on US 422 from the New Butler Road intersection to the US 19 intersection in Shenango and Slippery Rock Townships. This project addresses the poor pavement near the Old Route 422 intersection.

Segment A Bridge Condition

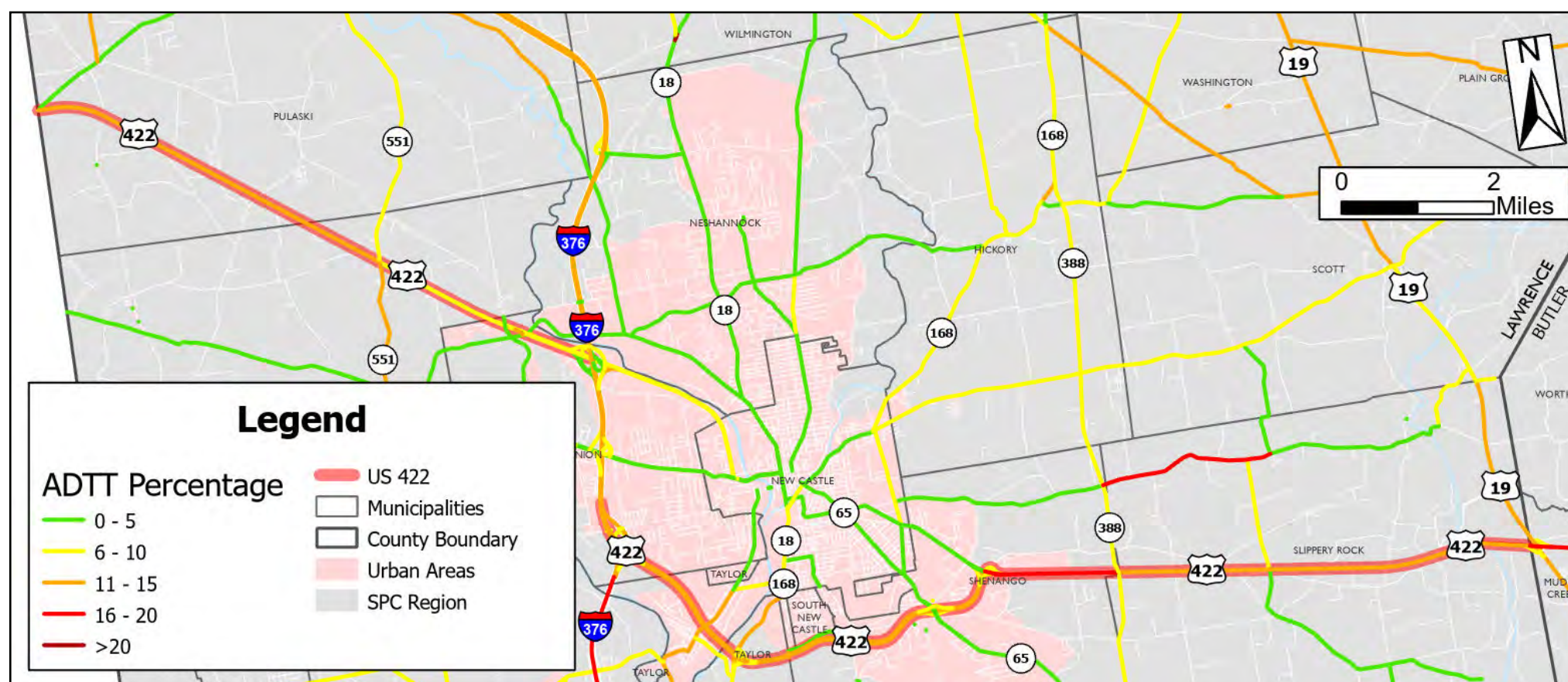
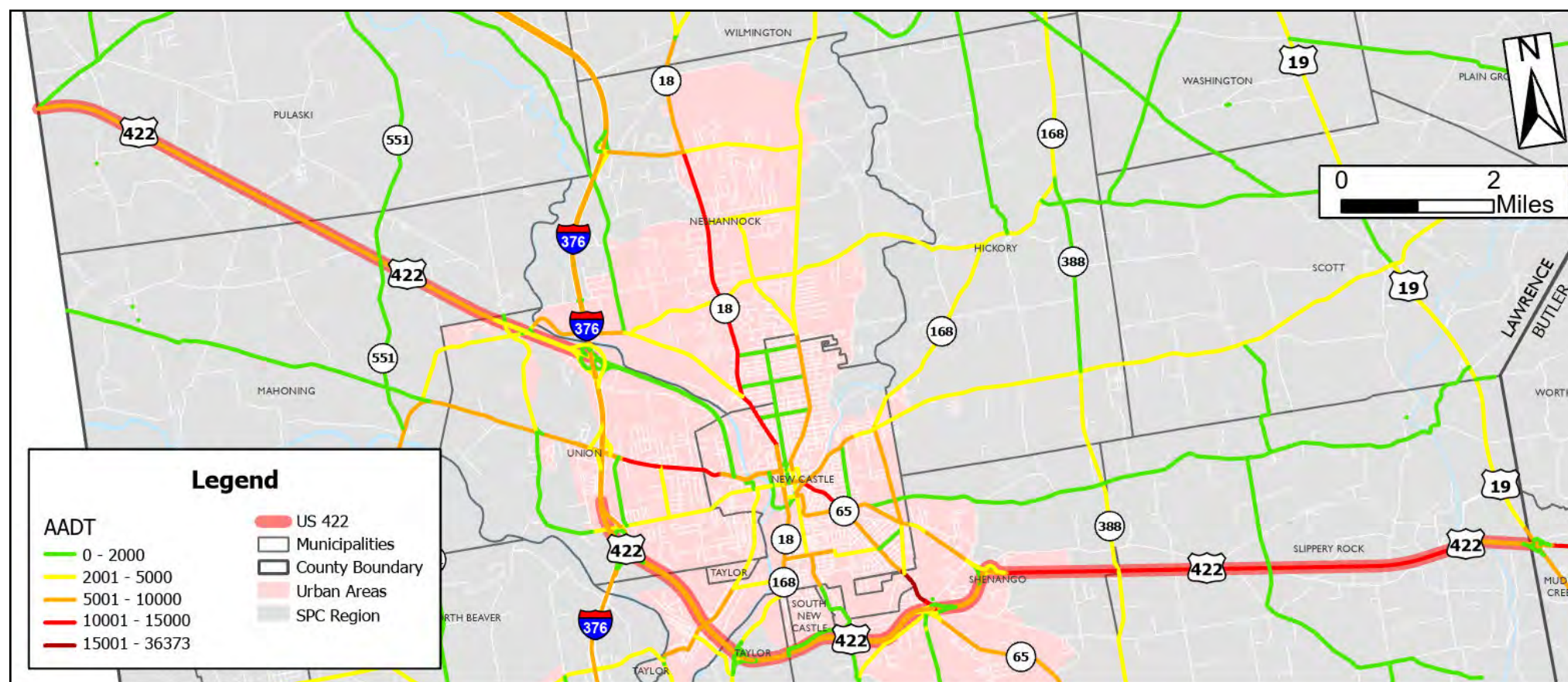
Bridge Condition	Count	Deck Area (SQ Ft)	By %
Good	0	0	0
Fair	19	298,917.6	100%
Poor	0	0	0



Segment A Pavement Conditions

Road Condition	Count (RMS Segments)	Miles	By %
Good/Excellent	70	29.3	94%
Fair	4	1.2	4%
Poor	2	0.6	2%

SEGMENT TRAVEL PATTERNS



Annual Average Daily Traffic (AADT) is the typical daily traffic on a roadway segment for all the days in a week over a one-year period. Truck percentage is the percent of the AADT that is comprised of truck traffic, excluding pickups, panels, and light trucks. The current AADT and truck percent figures included in this section were derived from the Pennsylvania Department of Transportation (PennDOT) Roadway Management System (RMS).

Traffic volumes for individual roadway segments on this portion of the US 422 corridor falls between 2,500 and 12,500 vehicles per day. The AADT for this section of the US 422 corridor is highest between the Hoover Road intersection in Shenango Township and Old Route 422 in Slippery Rock Township. Roadway segments on this stretch of the US 422 corridor have an AADT greater than 10,000 with US 422 from Hoover Road to SR 388 in Shenango Township having the highest AADT. This roadway segment has an AADT of 12,282. Other roadways with significant traffic volumes include US 422 from the Ohio State Line to Harbor Village Drive in Union Township, I-376 in Union Township to Hoover Road in Shenango Township, and Old Route 422 in Slippery Rock Township to US 19 in Muddy Creek Township. AADT on these segments is 5,000 to 10,000.

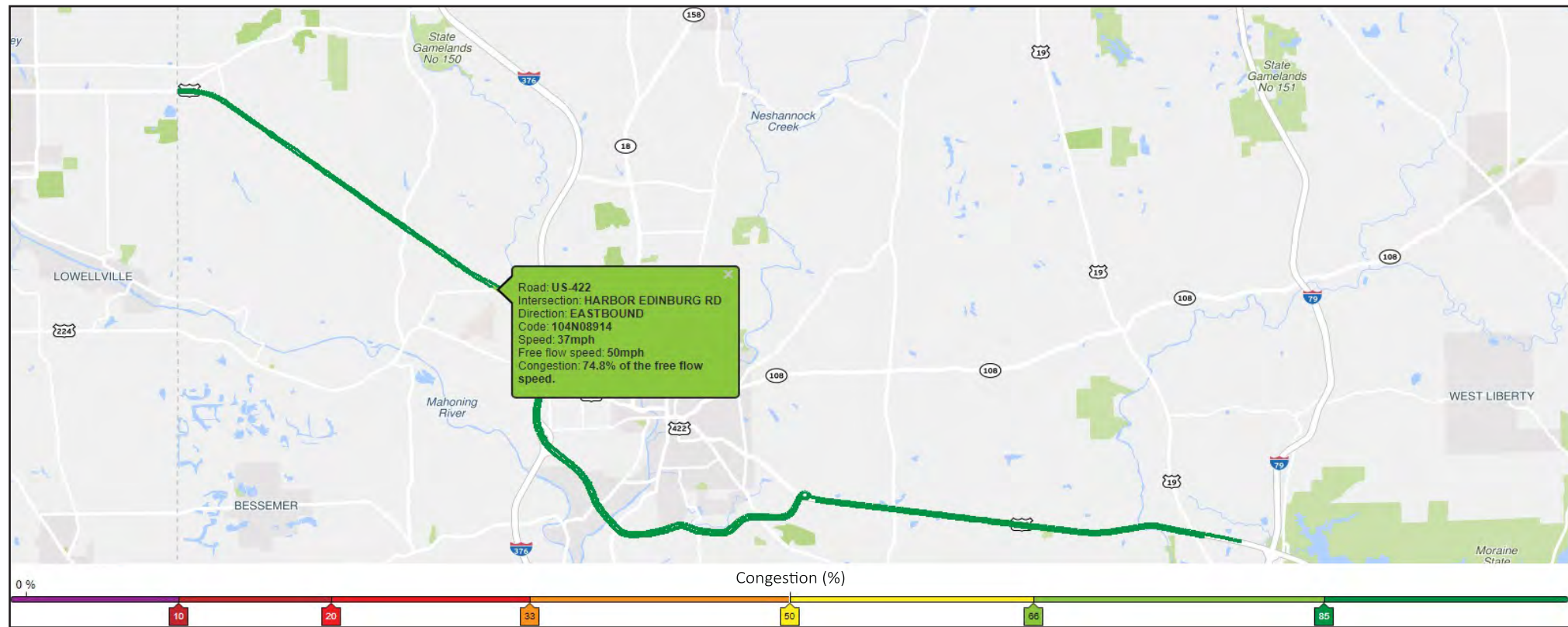
Truck percentages on individual roadway segments on this portion of the US 422 corridor falls between 7% and 17%. Truck percentage is highest on the westbound lanes of US 422 between US 19 in Muddy Creek Township and west of the Old US 422 intersection in Slippery Rock Township. Roadway segments on this stretch of the US 422 corridor have a truck percentage of 17%. Truck percentages are also high between Business 422 and SR 388 in Shenango Township. This roadway segment has a truck percentage of 16%.



Looking West, US 422 at SR 388 in Shenango Township

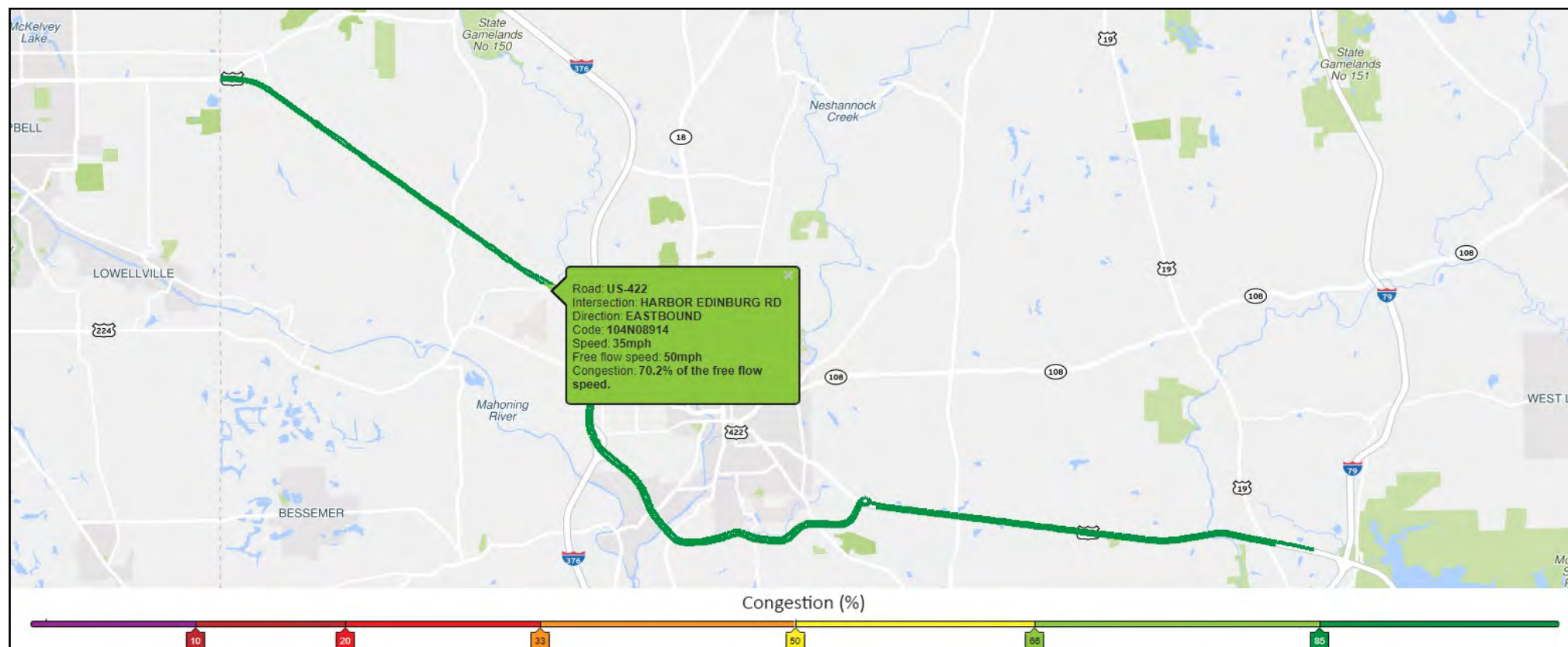
CONGESTION & RELIABILITY

US 422 Segment A Congestion Trend Map for AM Peak for January 01, 2023 through December 31, 2023 (Every weekday)



- AM and PM peak period congestion trend mapping is shown for Segment A. Congestion percentage is shown as the percent of free flow speed achieved on the segment. Higher percentages indicate less congestion (greener colors), and lower percentages indicate more congestion (redder colors).
- In the AM peak period, travelers on Segment A achieve roughly 75% or higher of free flow speed.
- In the PM peak period, travelers on Segment A achieve roughly 70% or higher of free flow speed.
- Travelers on Segment A generally experience negligible to light congestion in the peak periods.

US 422 Segment A Congestion Trend Map for PM Peak for January 01, 2023 through December 31, 2023 (Every weekday)



US 422 at Harbor Edinburg Rd in Union Township

Travel Time in Minutes				
Eastbound				
NPMRDS from INRIX (Trucks and Passenger Vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				25.41
Monday	27.83	27.13	28.41	
Tuesday	28.35	27.78	28.37	
Wednesday	28.22	27.74	28.46	
Thursday	28.55	27.69	28.81	
Friday	27.17	27.08	26.93	
Saturday				26.09

Planning Time Index				
Eastbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				1.42
Monday	1.84	1.61	2.03	
Tuesday	2.03	1.81	1.94	
Wednesday	1.9	1.71	1.98	
Thursday	2.07	1.74	2.32	
Friday	1.65	1.59	1.66	
Saturday				1.49

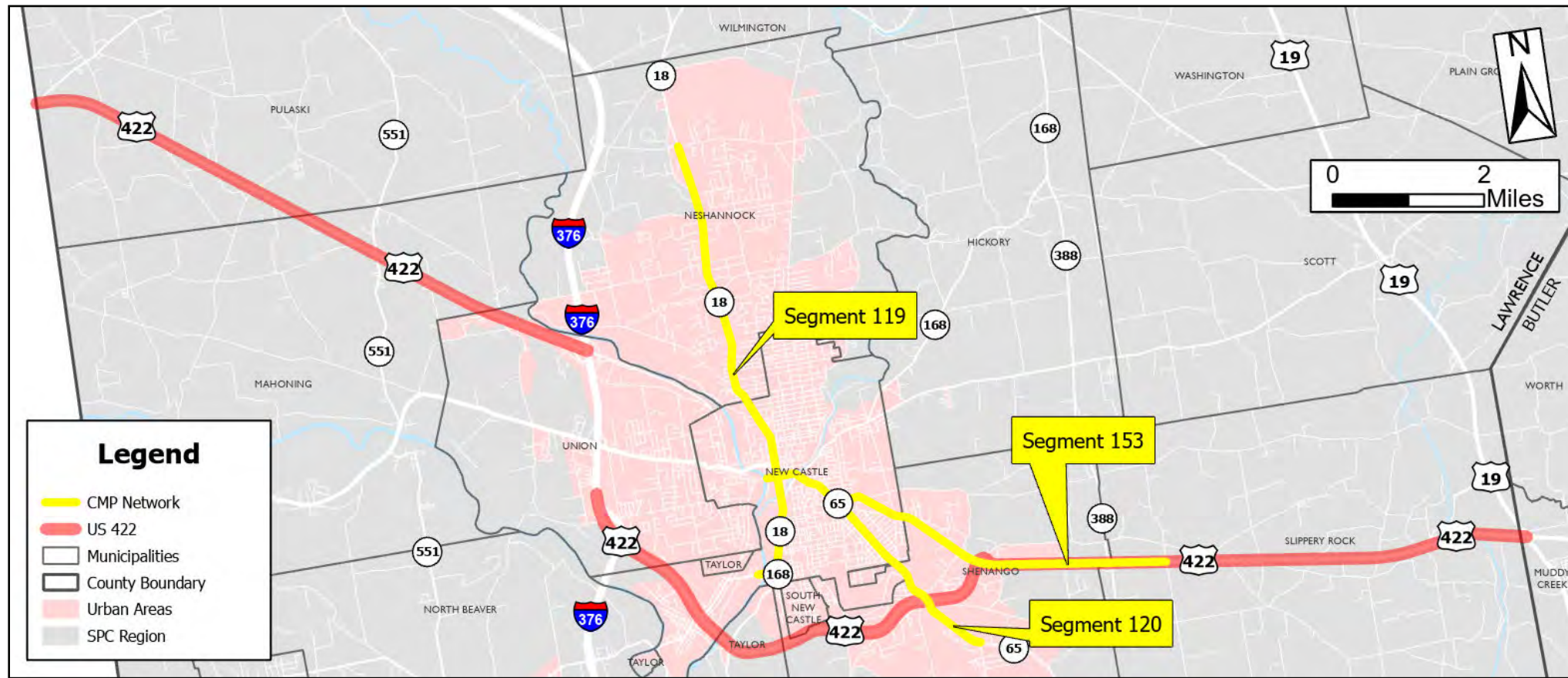
Travel Time in Minutes				
Westbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				24.53
Monday	26.39	26.25	26.78	
Tuesday	27.66	27.48	27.69	
Wednesday	27.21	26.87	27.39	
Thursday	27.35	27.59	27.7	
Friday	26.22	26.46	26.24	
Saturday				25.25

Planning Time Index				
Westbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				1.47
Monday	1.74	1.64	1.93	
Tuesday	2.11	1.98	2.3	
Wednesday	1.98	1.75	2.13	
Thursday	2.01	2.1	2.05	
Friday	1.71	1.77	1.83	
Saturday				1.56

Planning Time Index (PTI) is the extra time required to arrive at a destination on time, 95% of the time. It is calculated as the ratio of the 95th-percentile highest vehicle-hours traveled divided by the vehicle hours traveled if the same trips could have been completed at free flow speed. For example, a PTI of 1.5 means that a traveler should plan on 50% more time for their trip compared to light traffic conditions for a 95% probability of arriving on time (meaning that 15 minutes should be planned for what would be a 10 minute trip in light traffic conditions). SPC reports PTI for arterial CMP corridors in the region by direction for peak and off-peak times.

- PTI for Segment A in the eastbound direction ranges from 1.42 to 2.32
- PTI for Segment A in the westbound direction ranges from 1.47 to 2.13

CONGESTION MANAGEMENT PROCESS



Segment A is monitored as part of SPC’s Congestion Management Process network. CMP Corridor 153 includes a portion of Segment A. Segment A takes on the characteristic of a rural and suburban signalized arterial roadway and a grade separated highway facility. Improvements related to access management, traffic signals, intersection/geometric improvements, growth management, and incident management systems continue to be high priority congestion management strategies for this segment.

Detour routes for this segment include:

- US 224
- SR 65
- SR 168
- Business Route 422
- Willowbrook Rd



Looking East, US 422 at Business 422/New Butler Rd

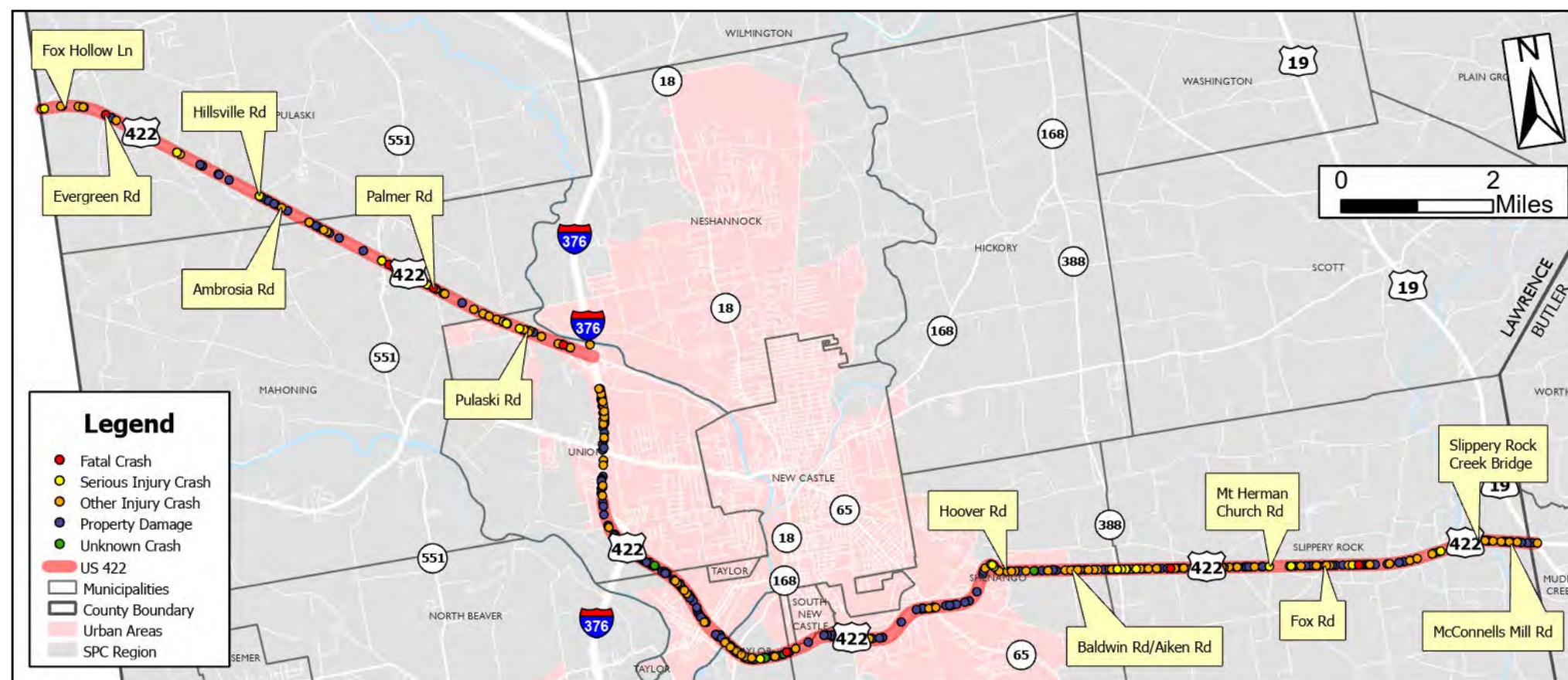
CONGESTION MANAGEMENT STRATEGIES:

Corridor 153

Category	Strategy	Baseline Prioritization*
OPS	Access Management	High
OPS	Traffic Signal Improvements	
OPS	Intersection / Geometric Improvements	
DM	Growth Management	Medium
OPS	Incident Management Systems	
MOD	Park-n-ride & Other Intermodal Facilities	Low
MOD	Rideshare Programs	
MOD	Improved Transit Service	
MOD	Bicycle Facilities & Information	
MOD	Transit Capital Improvements	
DM	Transit-Oriented Development Policies	
DM	P.R. & Education for TSD	
DM	P.R. & Education for TDM	
DM	Employer-Based Programs	
OPS	Intelligent Transportation Systems	
MOD	Pedestrian Facilities & Information	Not Applicable
OPS	One-way Streets	
DM	Parking Management	
DM	Congestion Pricing	
CAP	New SOV Facilities	
CAP	Lane Additions	
OPS	Elimination of Bottlenecks	
MOD	HOV & HOT lanes	
OPS	Ramp Metering	
OPS	Reversible Lanes	

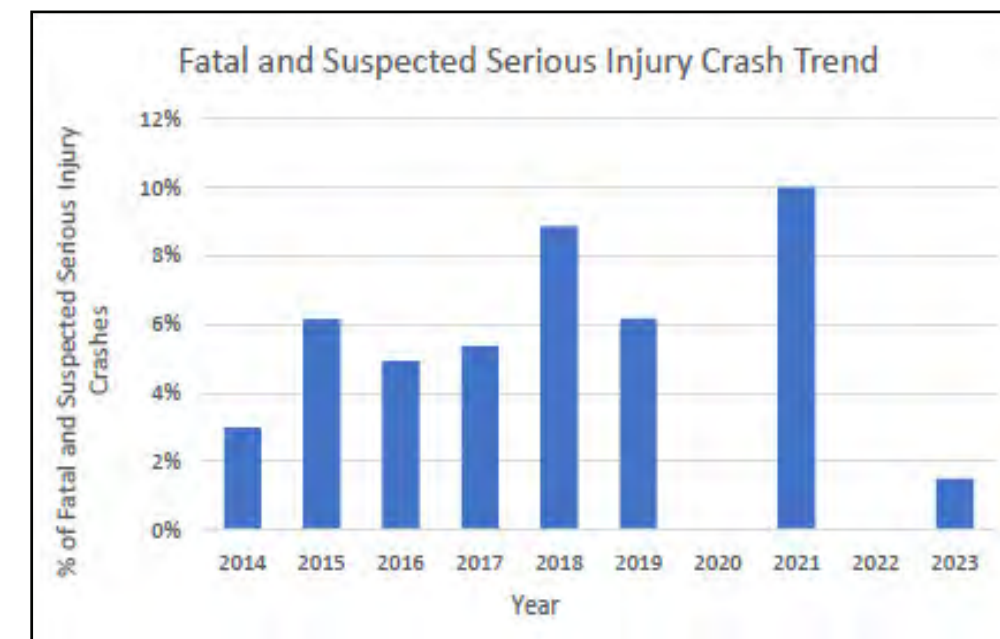
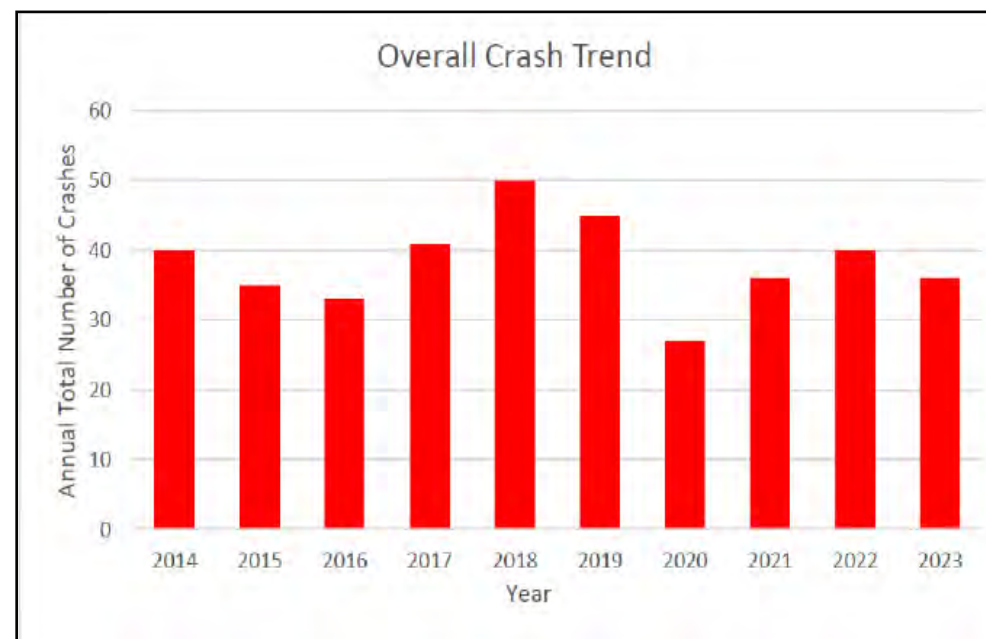
*Strategies are simply listed alphabetically within the High, Medium, Low, and N/A groupings. They are not individually prioritized within those groupings.

SAFETY

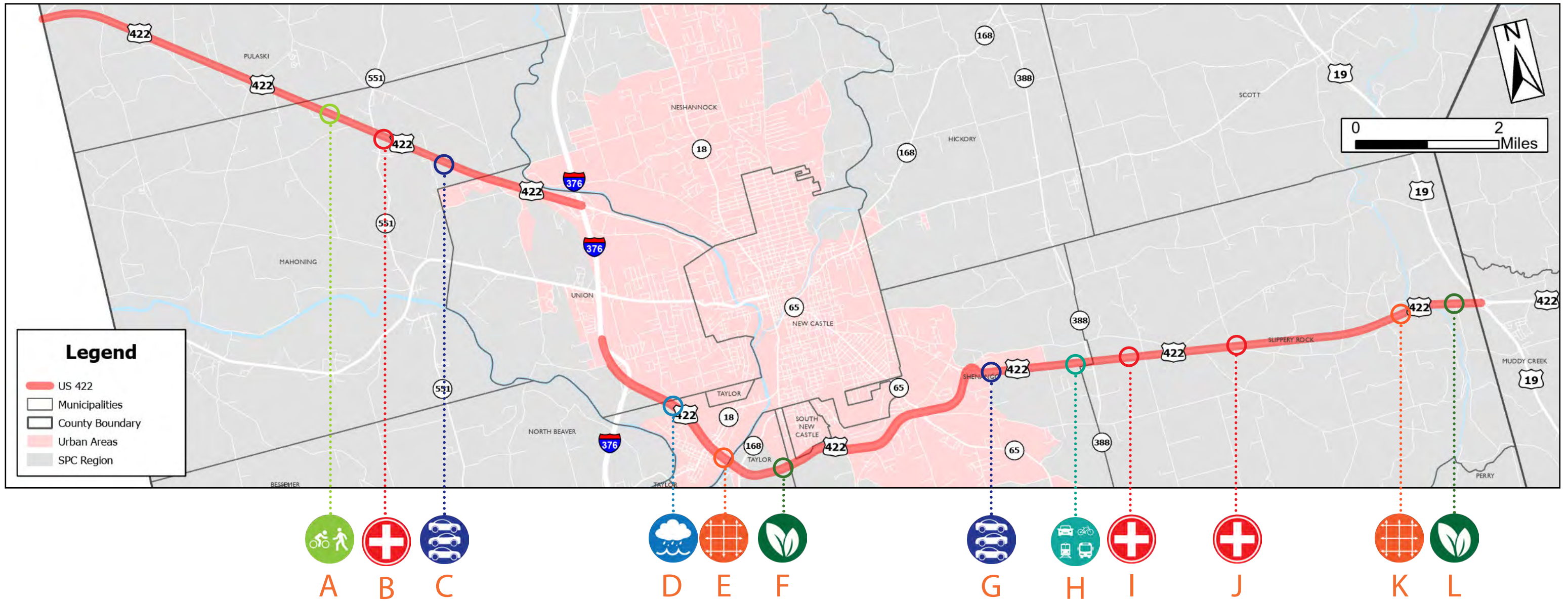


- For Segment A, the overall number of crashes appear to be flat over the 10-year period (2014-2023) The fatal injuries appear to have a slightly upward trend before decreasing dramatically over the same time period.
- Segment A's 2023 crash rate (1.10 crashes per MVMT) is lower than the average 2023 crash rate for similar roadways in Lawrence County (1.16 crashes per MVMT) and lower than the average 2023 crash rate for similar roadways in the SPC region (1.16 per MVMT).
- According to the PennDOT Highway Safety Network Screening (HSNS) Analysis, the following areas of Segment A are underperforming from a safety perspective:
 - East of SR 208 to East of Fox Hollow Lane
 - Evergreen Road Interstecion
 - Hillsville Road to Ambrosia Road
 - SR 551 Intersection
 - West of Palmer Road to Harbor Edinburg/Pulaski Roads
 - Hoover Road Intersection
 - West of Baldwin Road/Aiken Road to Mt Herman Church Road
 - Fox Road to Slippy Rock Creek Bridge
 - McConnells Mill Road Intersection

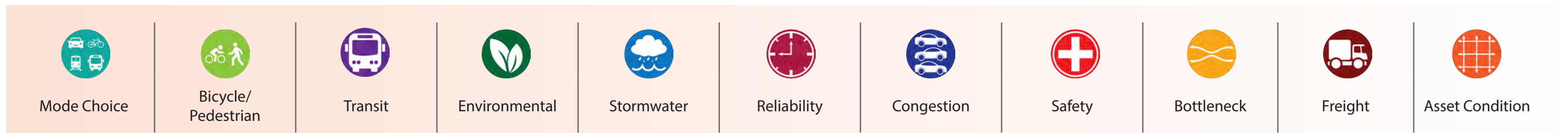
US 422 Segment A Crash Statistics	
Timeframe	2014-2023
All Crashes	650 (~1.25 crashes per week)
Fatal Crashes	8 (~1% of all crashes)
Crashes Involving Serious Injuries	22 (~3% of all crashes)
Crashes Involving Other Injuries	209 (~32% of all crashes)
Crashes Involving Property Damage	405 (~62% of all crashes)
Unknown	6 (<1% of all crashes)















SEGMENT A: FOCUS AREAS



FOCUS AREA CATEGORIES



SEGMENT A: FOCUS AREAS

A		US 422 is an expressway through a predominantly rural area which is prohibited to additional pedestrian or bicycle specific facilities. Many existing facilities such as the Stavich Trail, which connects New Castle to Ohio, are located within the broader the US 422 corridor and provides an alternate bicycle and pedestrian mode to US 422.	G		US 422 from Business Route 422 in Shenango Township to Copper Road in Slippery Rock Township is monitored on SPC's Congestion Management Process (Segment 153). Strategies to address congestion include access management, traffic signal improvements, intersection/geometric improvements, growth management and incident management systems.
B		From 2014 to 2023, there were three fatal accidents involving pedestrians on US 422 between SR 551 and I-376 in Mahoning and Union Townships.	H		There is a park-and-ride facility located on US 422 west of SR 388 in Shenango Township. This park-and-ride facility can accommodate 188 cars and also provides commuters with an opportunity to connect to commuter transit service through NCATA. There is also a Greyhound bus station located at this park-and-ride.
C		Linear traffic growth rates are showing that the westbound US 422 traffic is showing a 10% base-build change out to 2050.	I		Since 2018, there have been four rear-end and one head-on accidents resulting in serious injuries near the SR 388 intersection
D		Slopes above and/or below US 422 between I-376 in Union Township and SR 65 in Shenango Township are vulnerable to landslides. According to PennDOT RCRS data, a portion of US 422 between I-376 and SR 168 was closed due to flooding.	J		There was one pedestrian accident resulting in a serious injury at the intersection of US 422 and Mt. Herman Church Road.
E		The roadway pavement on the westbound side of US 422 between the SR 168/Moravia Street interchange and the SR 18 overpass in Taylor Township is rated in poor condition. LRP project, #118853, SR 422 over the Shenango River and SR 18 Super Replacements, will rehab the bridges within this area. It should be noted that both the eastbound and westbound US 422 bridges over the Shenango River are the largest bridges in Segment A by deck area. The continue preserrvation and maintenance of these bridges are essential.	K		The roadway pavement on the eastbound side of US 422 near Old Route 422 in Slippery Rock Township is rated in poor condition. LRP and TIP project, #116560, SR 422 Benjamin Franklin Hwy preserves the roadway pavement near Old Route 422.
F		Higher values at the Shenango River is due to the river being a mussel management area, nearby forests, wetlands, and park areas, the CS & M Mine which is classified as a Important Mammal Area and nearby Natural Heritage Area Core Areas. Future projects on US 422 can anticipate additional restrictions or measures related to waterway permitting and may have an increased chance of encountering threatened and endangered species.	L		Higher values at Slippery Rock Creek is due to nearby McConnells Mill which is a protected area and an Important Bird Area. The Slippery Rock Creek is also a trout stocking stream with nearby wetlands. Future projects on US 422 can anticipate additional restrictions or measures related to waterway permitting and may have an increased chance of encountering threatened and endangered species.



US 422 at SR 551 in Mahoning Township



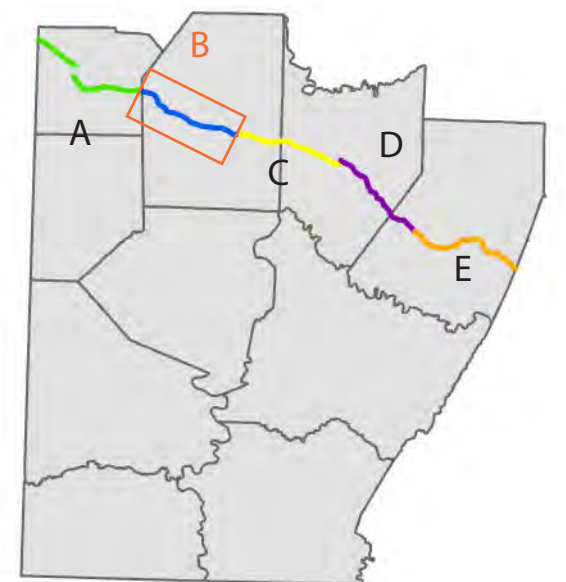
US 422 Park and Ride in Shenango Township



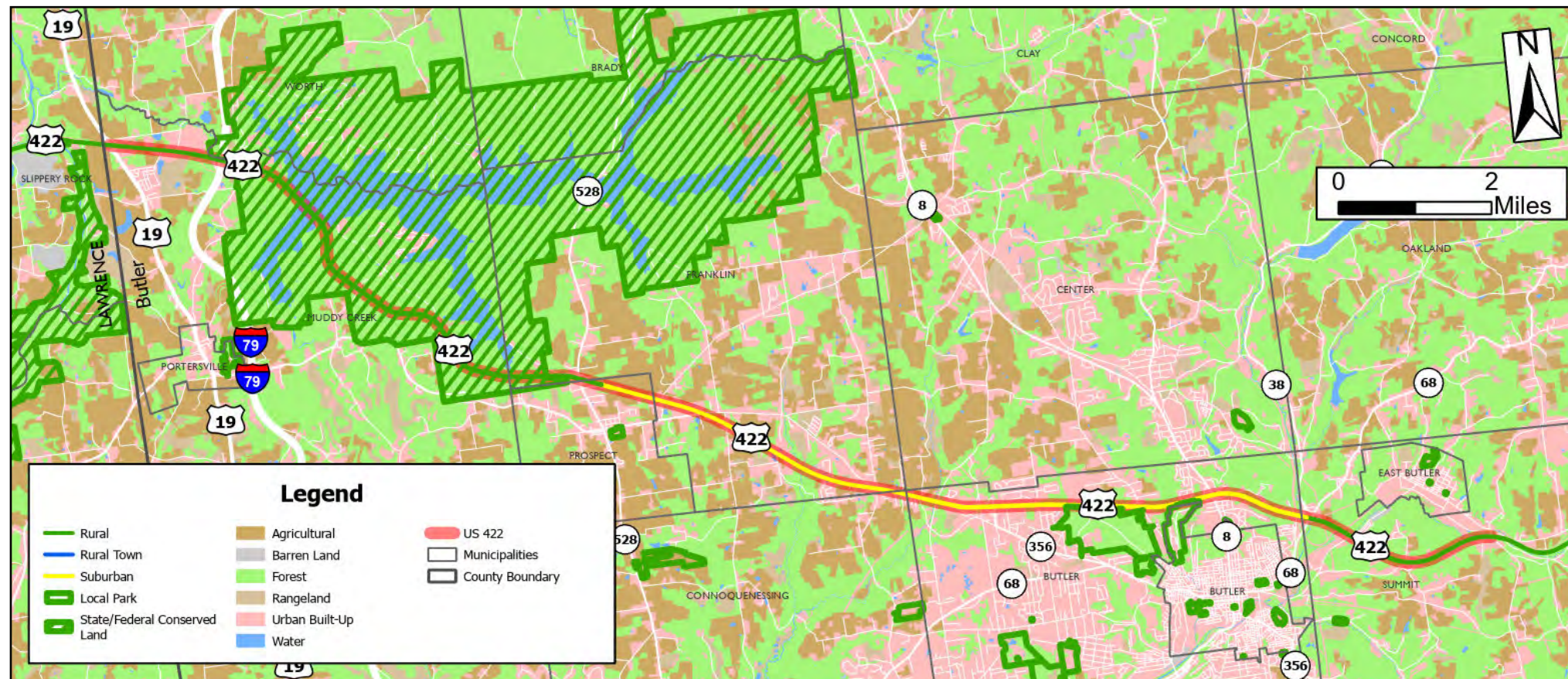
SECTION III: SEGMENT PROFILES

SEGMENT B

- SEGMENT OVERVIEW
- FUTURE HIGHWAY & BRIDGE PROJECTS
- REGIONAL, COUNTY, AND LOCAL PLANS AND USER PERSPECTIVES
- FREIGHT
- TRANSIT
- ACTIVE TRANSPORTATION
- ENVIRONMENTAL FEATURES
- CONDITION OF ASSETS
- SEGMENT TRAVEL PATTERNS
- CONGESTION & RELIABILITY
- SAFETY
- FOCUS AREAS

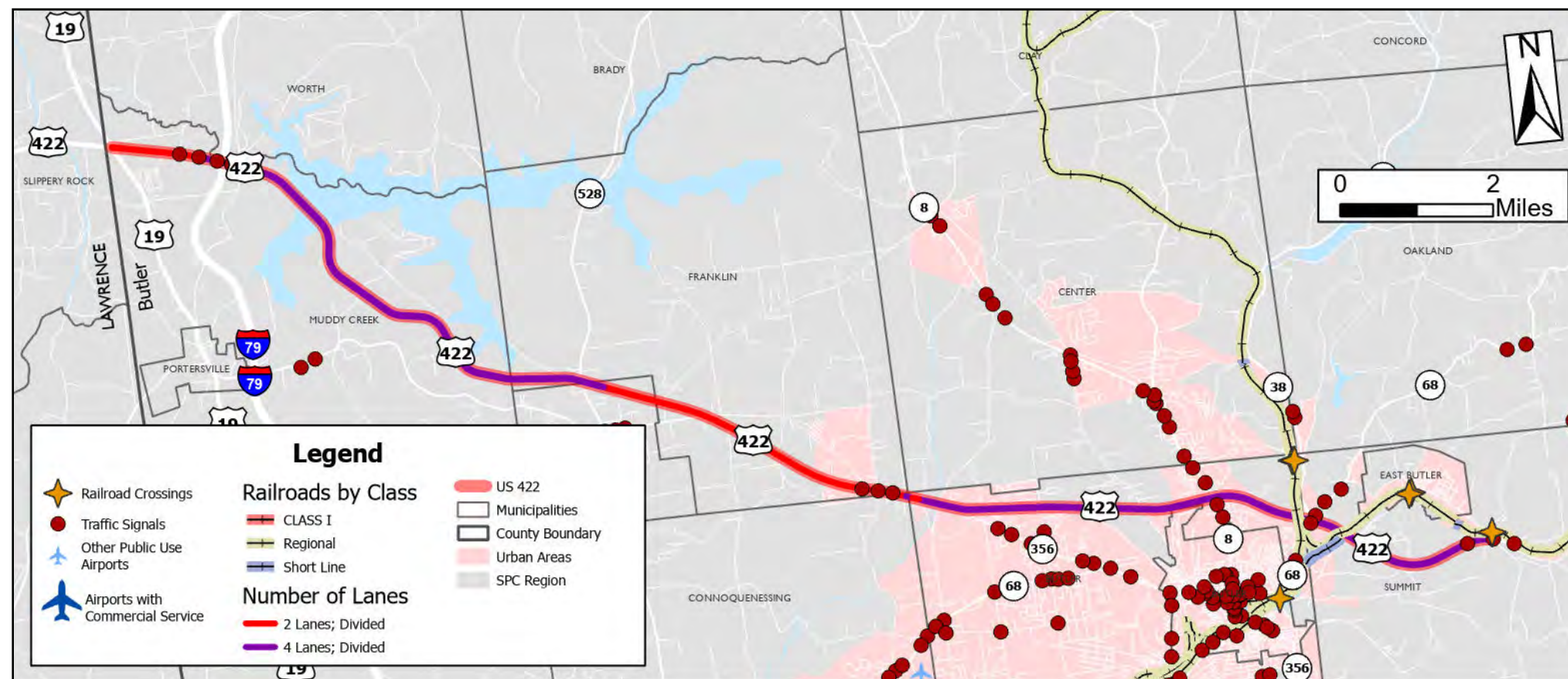


SEGMENT B: OVERVIEW



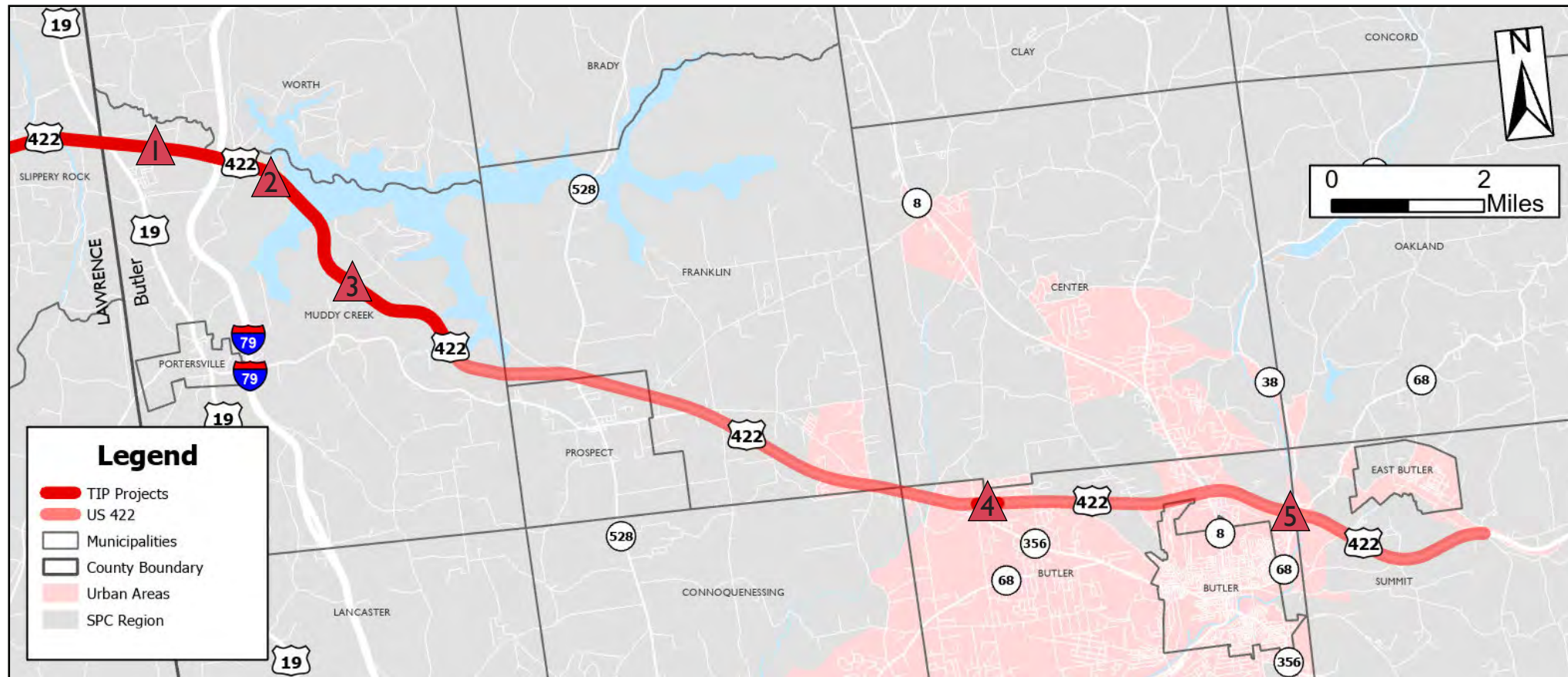
US 422 from US 19 in Muddy Creek Township to Bonniebrook Road in Summit Township follows a fairly consistent lane configuration with sections of two-lane and four-lane, divided roadways. Starting at US 19, US 422 is a two-lane, divided roadway until US 422 approaches the I-79 interchange, where US 422 becomes a four-lane, divided roadway. This lane configuration continues east as it passes Moraine State Park and into Franklin Township to the SR 528 intersection. East of the SR 528 intersection, US 422 goes down to a two-lane, divided roadway until the Greenwood Road intersection in Butler Township. East of the Greenwood Road intersection, US 422 becomes the Butler Bypass. This four-lane, divided roadway configuration continues to the Bonniebrook Road intersection.

Segment B of US 422 connects to major routes in Butler County. These include I-79, US 19, SR 8, SR 38, SR 68, SR 356, SR 488 and SR 528. Many intersections through this segment of the US 422 corridor are non-signalized, at-grade intersections however; there are some signalized and/or grade-separated interchanges. There are traffic signals located at the intersections of US 422 at Currie Road, US 422 at the Pilot Travel Center, US 422 at I-79 ramps, US 422 at Eagle Mill/North Roads, and US 422 at Bonniebrook Road. Grade-separated interchanges are found at US 19, I-79, West Park Road, Pleasant Valley Road/Moraine State Park, SR 528, SR 356, SR 8, SR 68, and Mitchell Hill Road.



Looking East, US 422 at SR 8 in Butler Township

FUTURE HIGHWAY & BRIDGE PROJECTS



- 1** Bridge Rehab/Replacement | MPMS 83611
 2025-2028 TIP | US 422 Shawood Pipe
 Rehab/replacement of the existing culvert carrying a tributary to Muddy Creek beneath US Route 422 in Muddy Creek Township, Butler County
 Programmed Amount: \$1 Million
- 2** Roadway Preservation | MPMS 115104
 2025-2028 TIP | US 422 Lawrence County Line East PM
 Resurfacing to include milling of existing bituminous material, minor drainage, transverse and longitudinal joint repair and paving of bituminous leveling and wearing courses from the Butler County Line to 1.4 miles east of the SR 4005 interchange in Muddy Creek Township, Butler County
 Programmed Amount: \$2.5 Million
- 3** Bridge Rehab/Replacement | MPMS 24690
 2025-2028 TIP | SR 422 over SR 4005
 Replacement of the existing structure carrying SR 422 over SR 4005 (Pleasant Valley Road) in Muddy Creek Township, Butler County.
 Programmed Amount: \$7.3 Million
- 4** Bridge Rehab/Replacement | MPMS 24663
 2025-2028 TIP | US 422 over PA 356
 Replacement of the existing structure carrying US 422 over PA 356 in Butler Township, Butler County.
 Programmed Amount: \$6.8 Million
- 5** Bridge Preservation | MPMS 98028
 2025-2028 TIP | Shearer Bridge Preservation
 Preservation of the existing structure carrying US 422 over Connoquenessing Creek, Shearer Road, and the B&LE Railroad in Butler Township, Butler County.
 Programmed Amount: \$4.5 Million



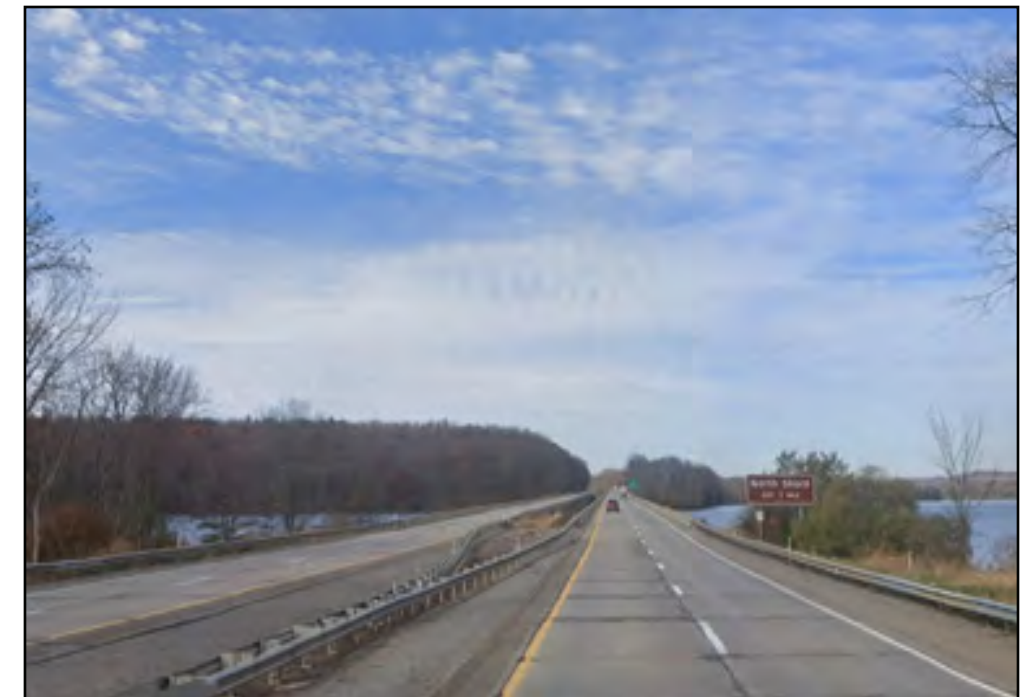
US 422 Bridges over SR 4005 (Pleasant Valley Road) in Muddy Creek Township



US 422 Bridge over SR 356 in Butler Township

For up to date information on TIP projects, please click [here](#).

FUTURE HIGHWAY & BRIDGE PROJECTS



US 422 over Lake Arthur in Muddy Creek Township

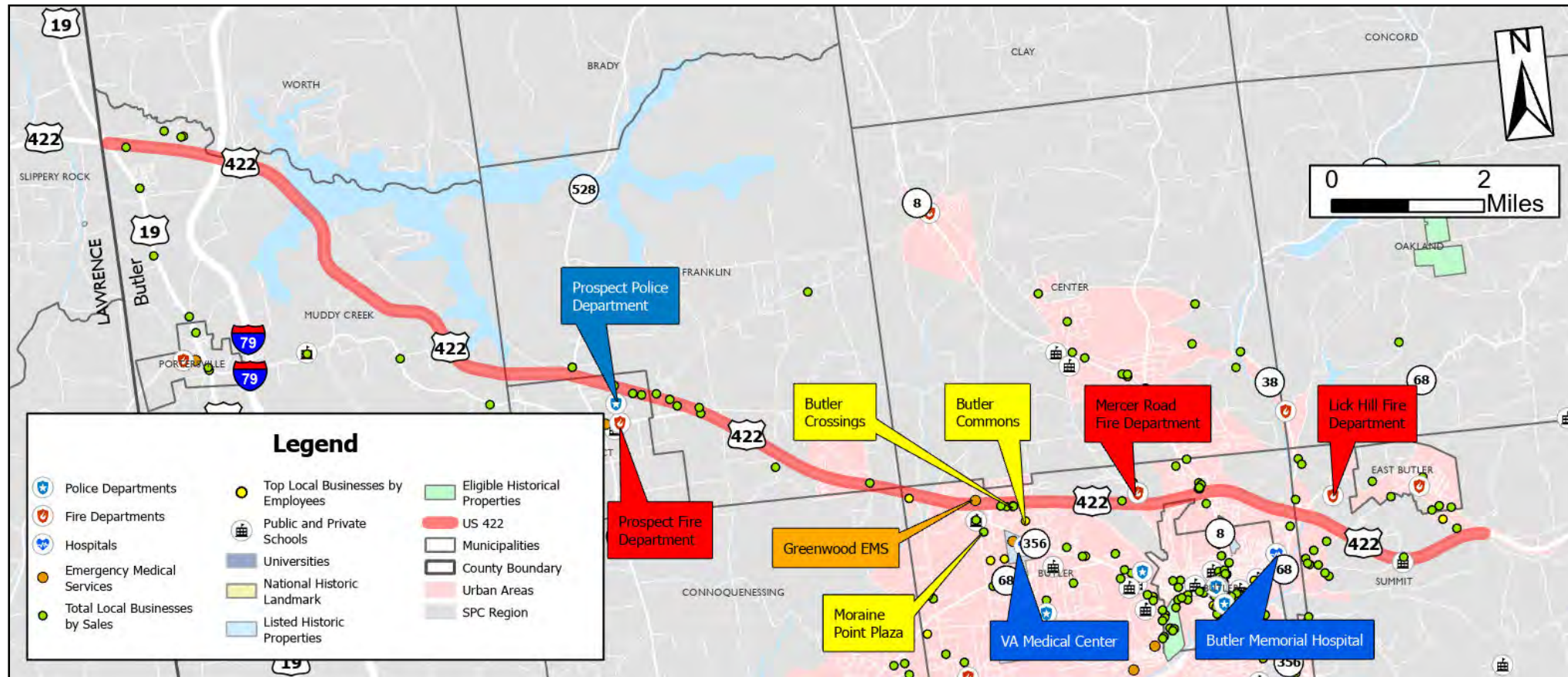
- 1** Bridge Rehab/Replacement | MPMS 83611
 Fiscally Constrained List | US 422 Shawood Pipe
 Rehab/replacement of the existing culvert carrying a tributary to Muddy Creek beneath US 422 in Muddy Creek Township, Butler County
 Estimated Cost: \$10.2 Million
- 2** Bridge Rehab/Reconstruction | MPMS 121128
 Fiscally Constrained List | SR 422 Moraine EB & WB Bridges
 Rehabilitation of the eastbound and westbound structures over Lake Arthur in Muddy Creek Township, Butler County.
 Estimated Cost: \$21.2 Million
- 3** Bridge Rehab/Reconstruction | MPMS 24690
 Fiscally Constrained List | SR 422 over SR 4005 Projects
 Bridge replacement of the existing structure carrying SR 422 over SR 4005 (Pleasant Valley Road) in Muddy Creek Township, Butler County.
 Estimated Cost: \$7.8 Million

- 4** Roadway Preservation | MPMS 115104
 Fiscally Constrained List | US 422 County Line East
 Resurfacing to include milling of existing bituminous material, minor drainage, transverse and longitudinal joint repair and paving of bituminous leveling and wearing courses along US 422 from the Butler County Line East to Wallace Road in Muddy Creek Township, Butler County.
 Estimated Cost: \$4.4 Million
- 5** Roadway Preservation | MPMS 115108
 Fiscally Constrained List | US 422 Prospect PM
 Resurfacing to include milling of existing bituminous material, minor drainage, transverse and longitudinal joint repair and paving of bituminous leveling and wearing courses along US 422 from Wallace Road to Greenwood Drive.
 Estimated Cost: \$6.5 Million
- 6** Efficiency & Operations | MPMS 121126
 Fiscally Constrained List | US 422 at Greenwood Dr. Intersection
 intersection improvements to include congestion reduction at the US 422 and Greenwood Drive intersection in Butler Township, Butler County.
 Estimated Cost: \$5.3 Million

- 7** Bridge Rehab/Replacement | MPMS 24663
 Fiscally Constrained List | US 422 over PA 356
 Replacement of the existing structure carrying US 422 over PA 356 in Butler Township, Butler County
 Estimated Cost: \$16.1 Million
- 8** Roadway Preservation | MPMS 112434
 Fiscally Constrained List | SR 422 Butler Bypass PM
 Preventative maintenance along SR 422 from the SR 356 interchange east to 0.5 miles west of Bonniebrook Road interchange in Butler, Summit, Connoquenessing, and Franklin Townships, Butler County.
 Estimated Cost: \$30 Million

For up to date information on LRP projects, please click [here](#).

REGIONAL, COUNTY, AND LOCAL PLANS AND USER PERSPECTIVES



A review of existing plans at the regional, county, and local level can provide valuable information on planned projects, existing transportation issues and community priorities that can inform project development. Butler County Comprehensive Plan outlines regional priorities for US 422 in Butler County. The following list identifies priorities pertaining to US 422.

- Prioritize business park development in areas where access and infrastructure are present to support tax base and economic diversification, especially in the I-79 and US 422 corridors.
- With growing commuters in this area, prioritize park and ride facilities along I-79/US 422 and improve transit.

The Butler Area Multi-Municipal (BAMM) plan outlines additional information on growth and development near this corridor. The BAMM plan covers the City of Butler, Butler Township, Penn Township, Summit Township, and East Butler Borough. Below are excerpts from the BAMM plan regarding development along US 422.

- In Summit Township, the area south of US 422 along Protzman Road, Valley View Drive, and Portman Road has been identified for additional new residential development.
- The area near US 422/East Butler Road/Mitchell Hill Road in Summit Township has been identified for strictly future industrial development or ready for industrial development. Commercial uses may also be an acceptable venue for this area.
- The plan identifies areas where Access Management Areas (AMA) should be adopted for identified in roadways in order to facilitate effective, safe, and sustainable future land uses. US 422 in Butler Township has been identified as an area identified as potential AMAs. The plan states that future land uses along most (but not all) of this portion of US 422 are controlled because US 422 is a limited access highway. However, there are still numerous issues along 422 at its primary intersections that, if not address properly, will degrade the quality of the roadway and create safety concerns. Specific recommendations for an AMA for the US 422 corridor through Butler Township, should address the areas identified below with limited access from the highway, signage, lighting, land uses, zoning changes, parallel access roads, and desired traffic improvements
 - The northwest quadrant of the US 422 and SR 356, north of Pointe Plaza.
 - Intersection of US 422 with Greenwood and Heinz Roads.
 - US 422 at Duffy Road.

Relevant Local, County and Regional Plans

[Butler County Comprehensive Plan](#)

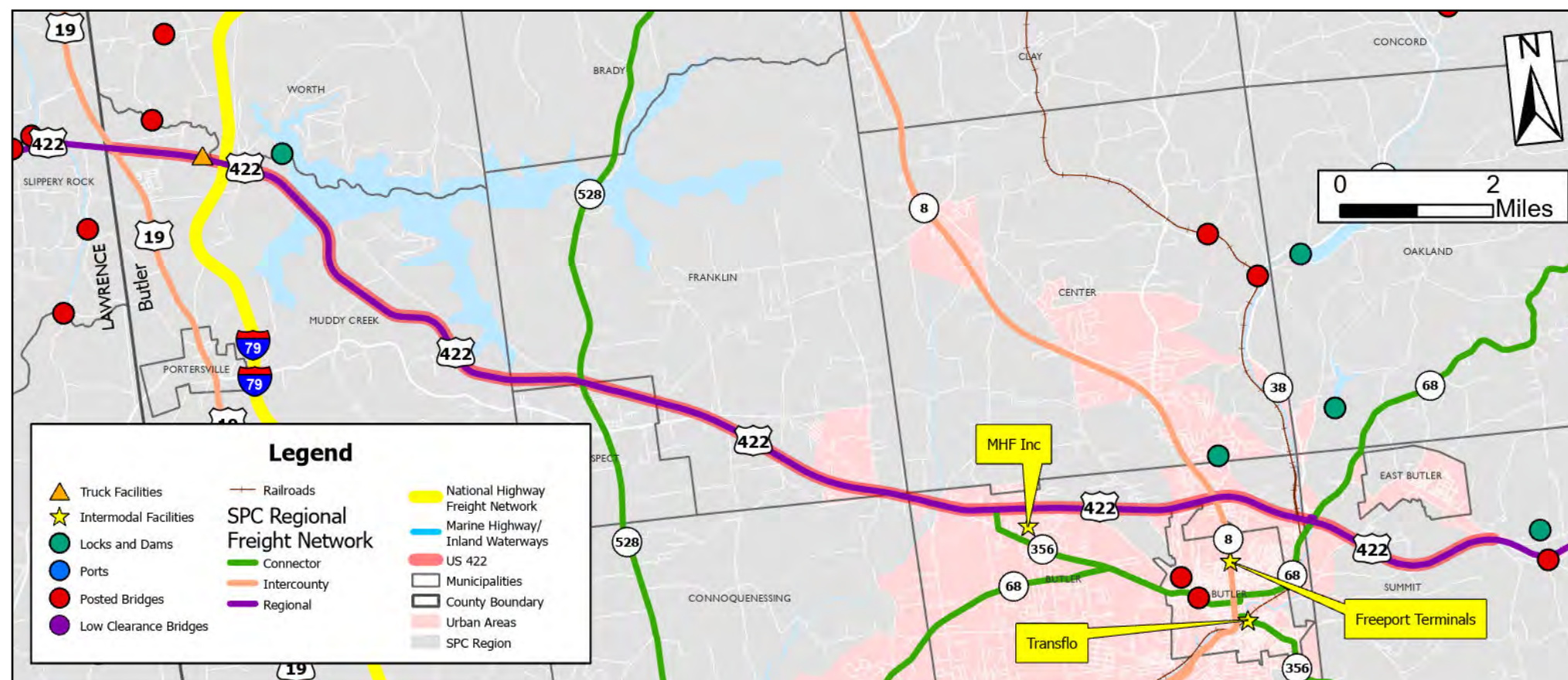
[Butler Area Multi-Municipal Comprehensive Plan](#)

Along this segment of US 422, many community features can be found within the City of Butler and Butler Township. There are multiple healthcare facilities, emergency services and commercial areas within the City of Butler and Butler Township. Healthcare facilities include the VA Medical Center and Butler Memorial Hospital and emergency services such as Greenwood EMS, and Mercer Road Fire Department. Other emergency services include the Lick Hill Fire Department in Summit Township and Prospect Police and Fire Departments in Prospect Borough. Many commercial corridors can be found on arterial routes near US 422. In Butler Township, there are many commercial areas found along SR 356 such as Butler Crossings, Butler Commons, and Moraine Point Plaza.

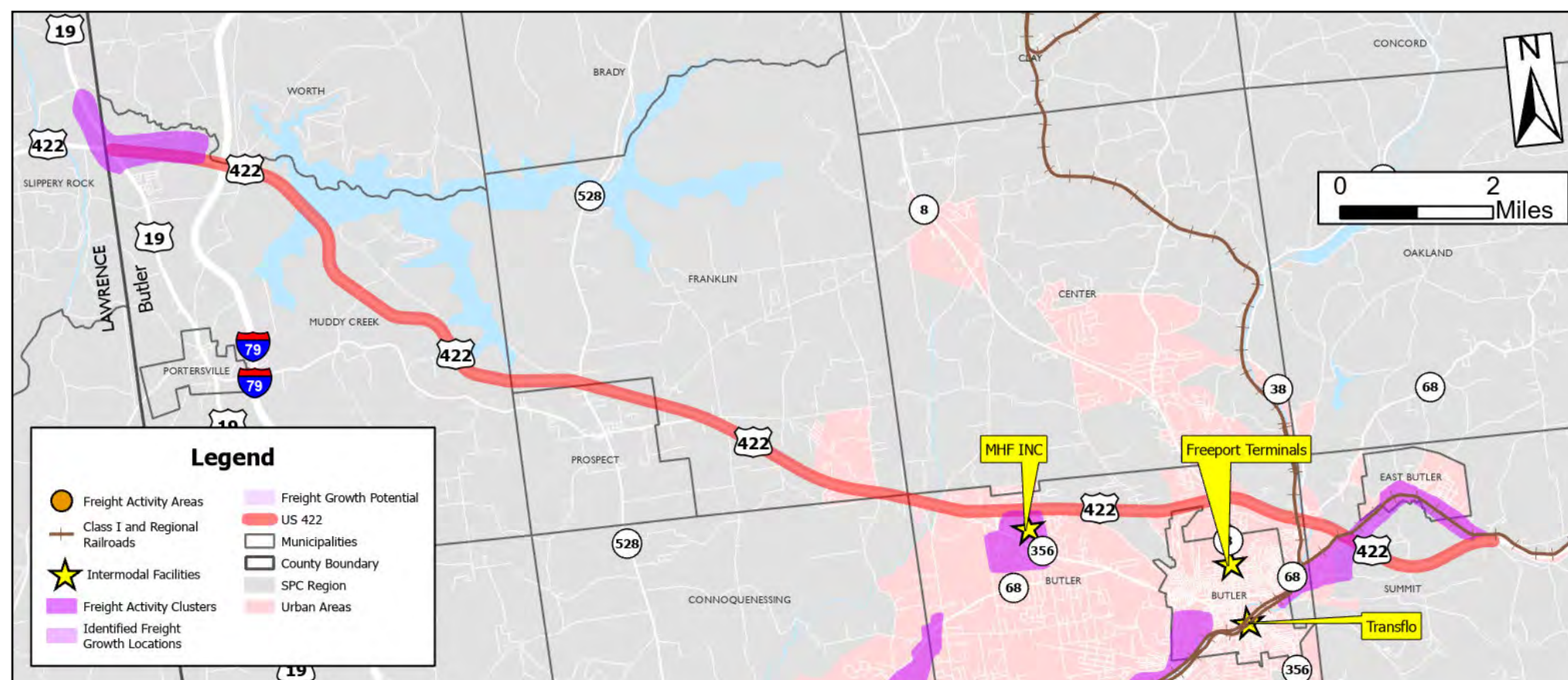


VA Medical Center in Butler Township
44

FREIGHT



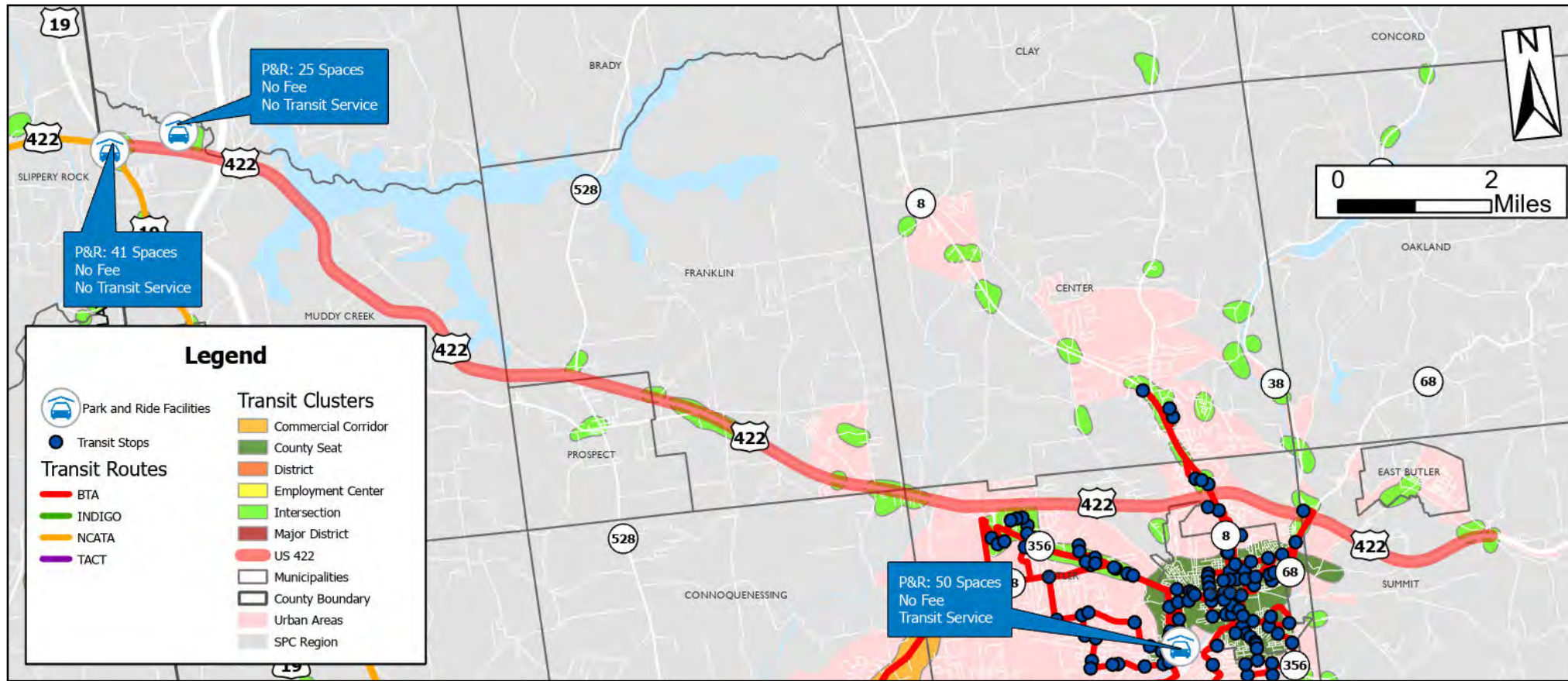
SPC’s Regional Freight Network provides a more complete inventory of the key corridors and connections that service the region’s freight movement needs. The Regional Freight Network is divided into three different classifications, Regional Routes; Intercounty Routes; and Connector Routes. US 422 is a designated Regional Route on SPC’s Regional Freight Network that provides connections to other routes that are on the Freight Network such as US 19, SR 528, SR 356, SR 8 and SR 68 which are classified as Intercounty or Connector Routes. US 422 connects to I-79 which is on the National Highway Freight Network. Along this route, there are some truck and intermodal facilities located within the broader US 422 corridor. There is one truck facility that is located on this segment of US 422. This truck facility is the Pilot Travel Center located near the I-79/US 422 intersection in Muddy Creek Township. While not directly connected to US 422, there are three intermodal facilities south of the US 422 corridor within Butler Township and the City of Butler. It should also be noted that the Buffalo & Pittsburgh Railroad Yard is near the US 422 and SR 68 interchange. SPC Regional Freight Plan identifies areas of Freight Activity Clusters, Identified Freight Growth Locations and Potential Freight Growth Areas. Freight Activity Clusters are present along the US 422 near the US19/I-79 interchanges, SR 356, and parts of East Butler Borough and Summit Township.



Recently, the USDOT released the draft National Multimodal Freight Network (NMFN). The draft National Multimodal Freight Network (NMFN) assess and support federal investments to achieve national multimodal freight policy goals for highways, rail, marine ports and waterways. Near Segment B, there are two railroads, the Buffalo and Pittsburgh Railroad (BPRR) Northern Sub and the Bessemer and Lake Erie (BLE) Railroad that are on the draft NMFN. The BPRR is located south of US 422 near Zelenople Borough, and parallels US 422, until it crosses US 422 in Butler Township. Once it crosses US 422, BPRR parallels US 422 on the northern side towards Kittanning. BLE Railroad crosses US 422 west of the SR 68 interchange.

Truck counts are the highest from the US 19 interchange to the I-79 interchange in Muddy Creek Township and SR 528 interchange to SR 488 in Franklin Township. Data collected by PennDOT Roadway Management System (RMS) indicates that Average Daily Truck Traffic (ADTT) is between 1,800 and 2,800. Other areas with notable ADTT includes US 422 between I-79 and SR 528, SR 488 and Greenwood Drive in Butler Township and near Bonniebrook Road in Summit Township where ADTT measures between 1,000 and 1,700 trucks per day. As a regional freight corridor, traffic counts tend to be higher between US 19 and I-79 due to the Pilot Travel Center located nearby. Generally, ADTT is fairly high compared to other segments along the US 422 corridor.

TRANSIT



Segment B of the US 422 corridor has very limited transit routes that utilize US 422. Butler Transit Authority (BTA), the transit agency covering Butler County, has many routes located within the City of Butler and points further south, away from the US 422 corridor. There are no transit routes that provides connections between the City of Butler and Kittanning Borough to the east and the City of New Castle to the west. There are few transit routes that are near the US 422 corridor. These include Route L3—Yellow which utilizes both SR 8 and SR 68 and the L1—Red and L5—Orange which utilizes SR 356. Other than the US 19/US 422 park-and-ride facility previous mentioned in the Segment A Transit section, there is one additional park-and-ride facility that is within the broader US 422 corridor. This park-and-ride is located on Currie Road north of US 422 in Muddy Creek Township.

The [SmartMoves Connections Regional Transit Study](#) identifies clusters for multimodal hubs. The SMC clusters identify where unique transit supportive activities exist throughout the region based on demographic data, employment data, land use and other factors. These clusters are listed in the tables on this page.

Muddy Creek Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine; Security Cameras; Wayfinding; Real-Time Arrival Information

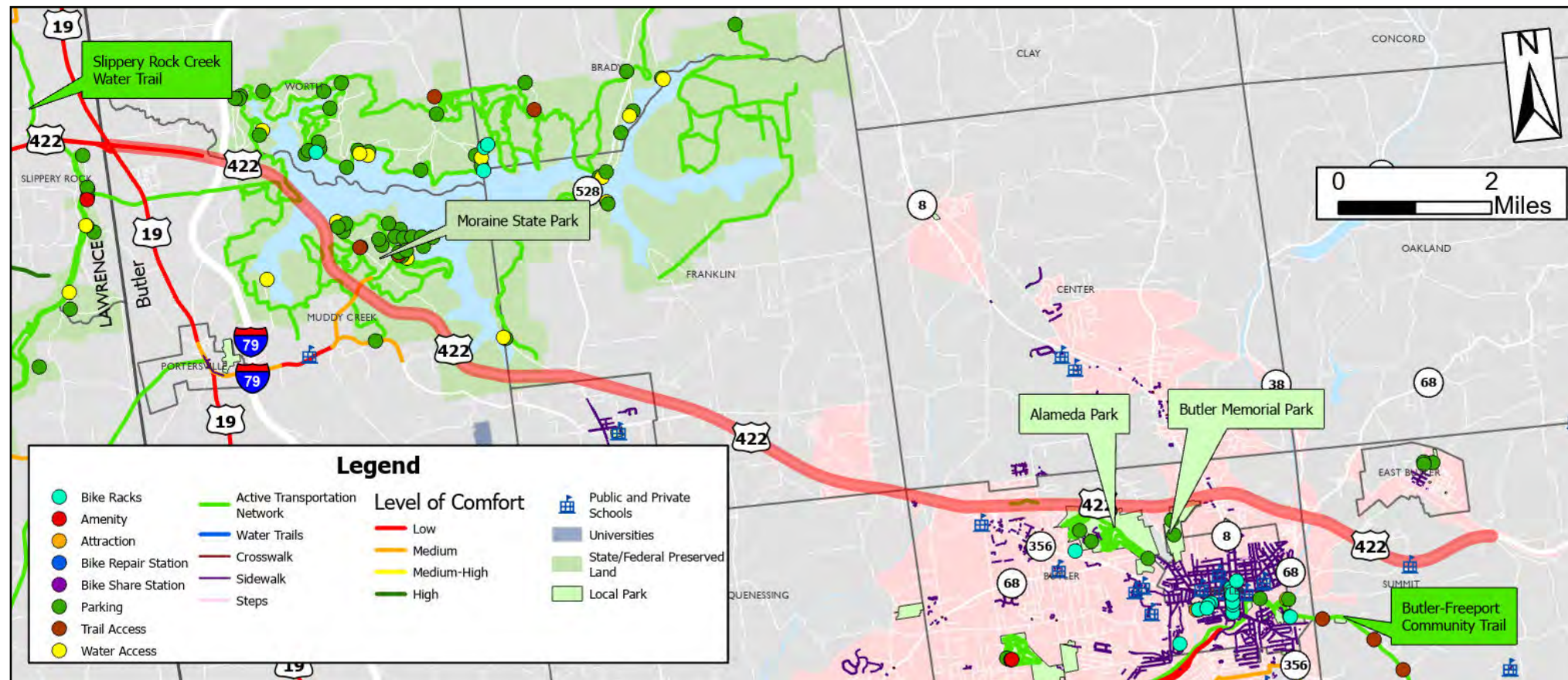
Franklin Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

Connoquenessing Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

Butler Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

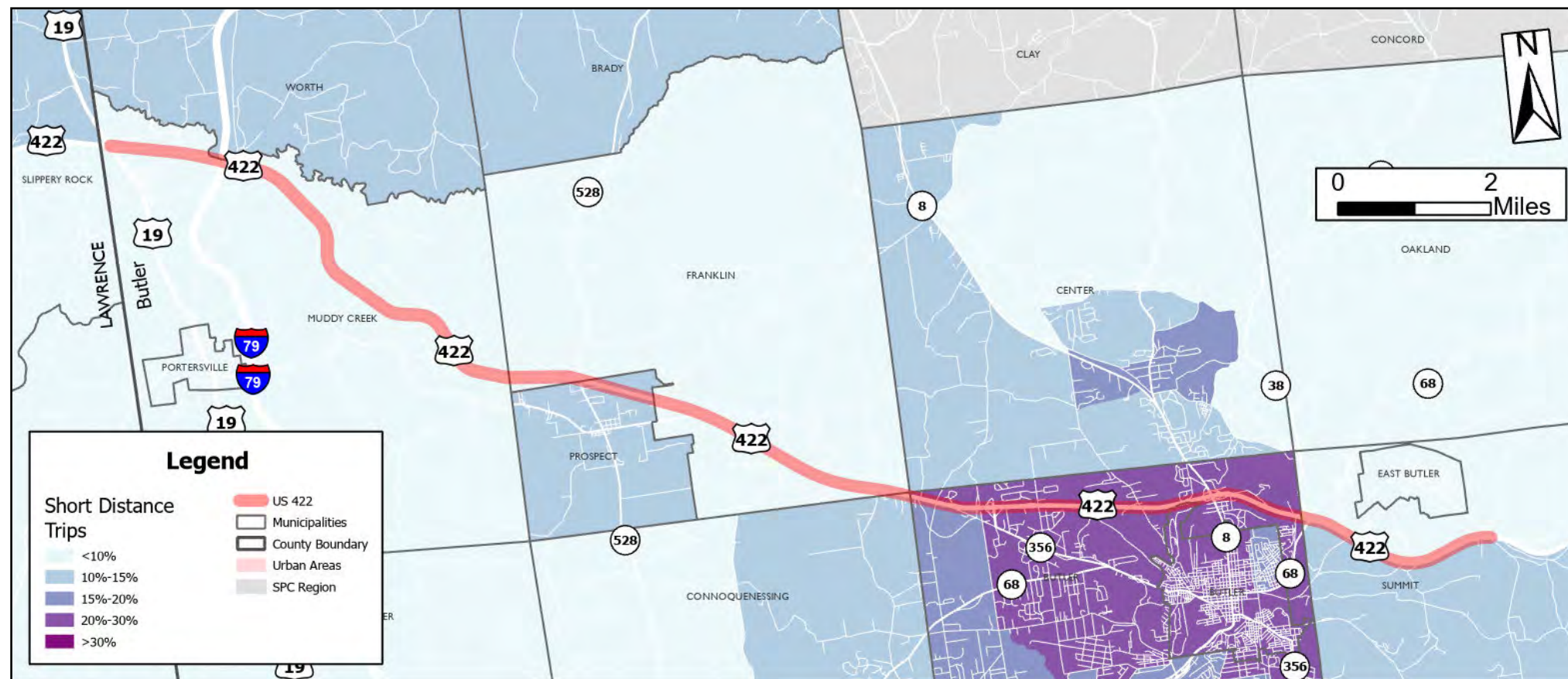
Summit Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

ACTIVE TRANSPORTATION



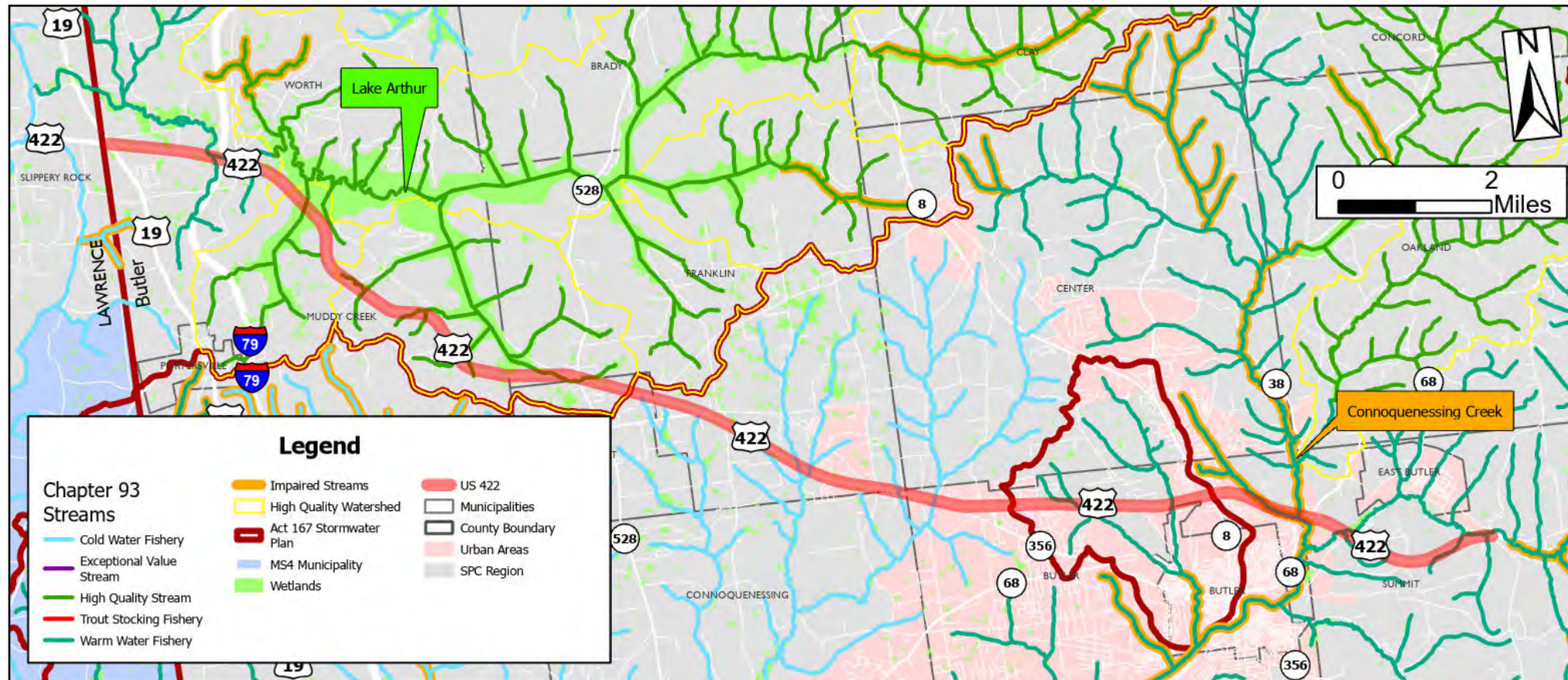
This segment of US 422 has very limited bicycle and pedestrian facilities with many sidewalks and trails located away from US 422. This is due to the fact that most of the corridor is in rural areas with a good portion of this route being the Butler Bypass. Bicyclists and pedestrians are prohibited on the Butler Bypass. Bicyclists and pedestrians are also prohibited on US 422 from SR 528 to near the I-79/US 19 interchange area. Within the broader US 422 corridor, trail facilities can be found inside Moraine State Park and in the City of Butler and Butler and Summit Townships via the Butler-Freeport Community Trail. The Butler-Freeport Community Trail is a 21-mile-long trail that connects the City of Butler to the Allegheny River in Freeport, Armstrong County. Sidewalks can also be found within the City of Butler. Overall, there is very limited bicycle and pedestrian facilities throughout this entire segment of the corridor.

This corridor segment includes a combination of low and medium dense areas within Butler County. On the western half of this segment, short distance trips (less than two miles long) in this corridor segment are less than 10%, except for areas within Prospect Borough, where short distance trips are between 10%-15%. The short distance trip share increases as density increases. In median dense areas of Connoquenessing, Center and Summit Townships, short distance trips are between 10% to 15%. In areas of Butler Township and the City of Butler, short distance trips increase to 15%-20% and 20%-25% depending on the area.



Butler Freeport Community Trail

ENVIRONMENTAL FEATURES



US 422 has numerous crossings of surface water resources in Segment B. There are several cold water fisheries, high quality streams, and warm water fisheries that crosses this segment of US 422. These include Little Connoquenessing Creek (Cold Water Fishery), Connoquenessing Creek (Warm Water Fishery), Bonnie Brook (Warm Water Fishery), Muddy Creek (High Quality Stream), Mulligan Run (Cold Water Fishery), Sullivan Run (Warm Water Fishery), and Big Run (High Quality Stream). It should also be noted that the Connoquenessing Creek is considered an impaired stream. High Quality Watersheds include Muddy Creek, Bear Run, and Big Run.

Areas on this segment with Stormwater 167 plans:

- Slippery Rock Creek
- Connoquenessing Creek
- Sullivan Run

Areas on this segment with MS4 Permits:

- There are no MS4 Permits in Segment B

Water Quality Standards

All commonwealth waters are protected for a designated aquatic life use as well as a number of water supply and recreational uses. The **use designation** shown in the water quality standards is the aquatic life use. These uses are Warm Water Fishes (WWF), Trout Stocking (TSF), Cold Water Fishes (CWF) and Migratory Fishes (MF). A body of water is considered **“impaired”** if it fails to meet one or more water quality standards.

The water quality in a High Quality stream can be lowered only if a discharge is the result of necessary social or economic development, the water quality criteria are met, and all existing uses of the stream are protected. Exceptional Value waters are to be protected at their existing quality; water quality shall not be lowered.

Some water resources are also part of the **Total Maximum Daily Load (TMDL)** program, which identifies sources of pollution and allocates pollutant loads in places where water quality goals are not being achieved.

Stormwater Management

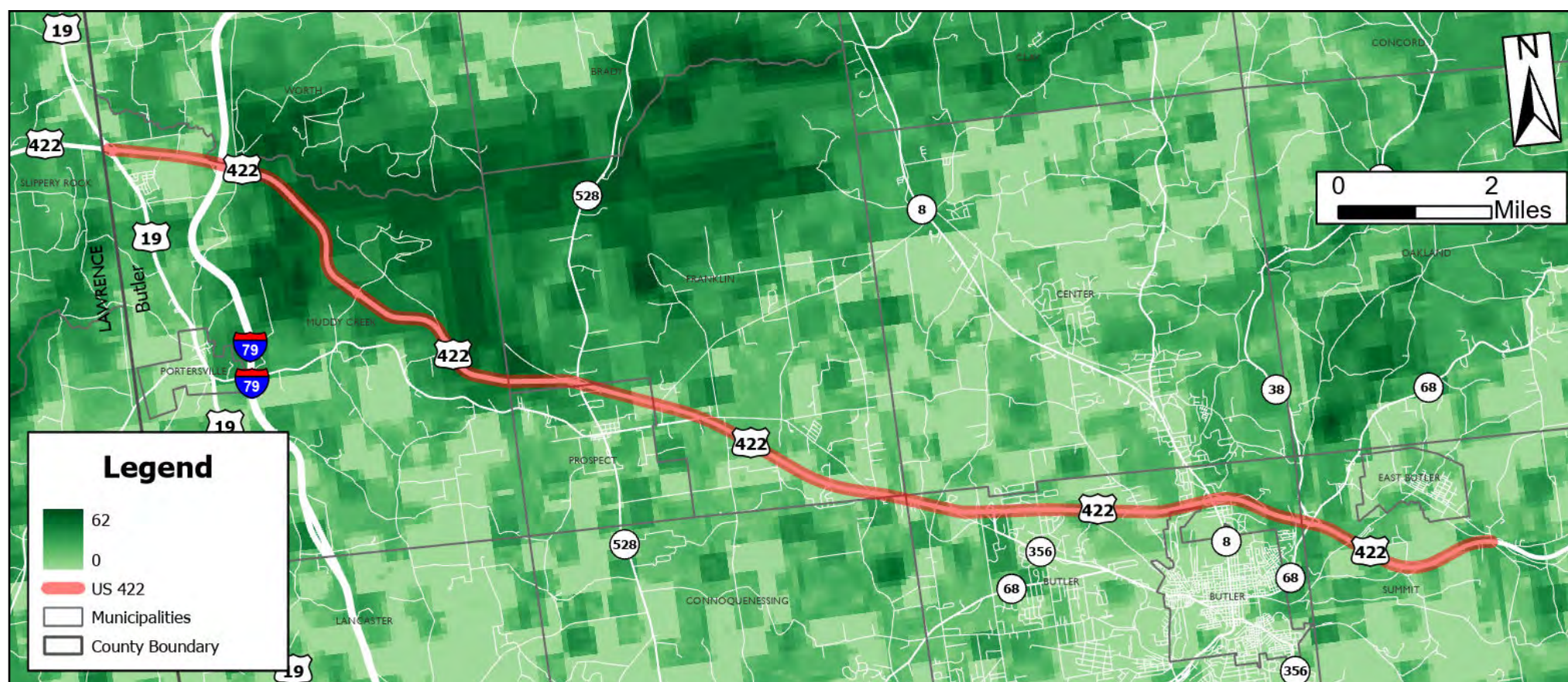
The **Stormwater Management Act (No. 167)** authorized a program of comprehensive watershed stormwater management that retains local implementation and enforcement of stormwater ordinances similar to local responsibility of administration of subdivision and land development regulations. Act 167 plans are required on a county-wide basis; however, the practice to this point has been to only develop plans for specific sensitive waters/watersheds.

A **Municipal Separate Storm Sewer System (MS4)** is owned or operated by a public agency, such as a city, town, county, flood control district, state, or federal agency that does not connect to the sanitary sewer system and does not lead to a wastewater treatment plant.



US 422 Bridge over Lake Arthur

ENVIRONMENTAL FEATURES

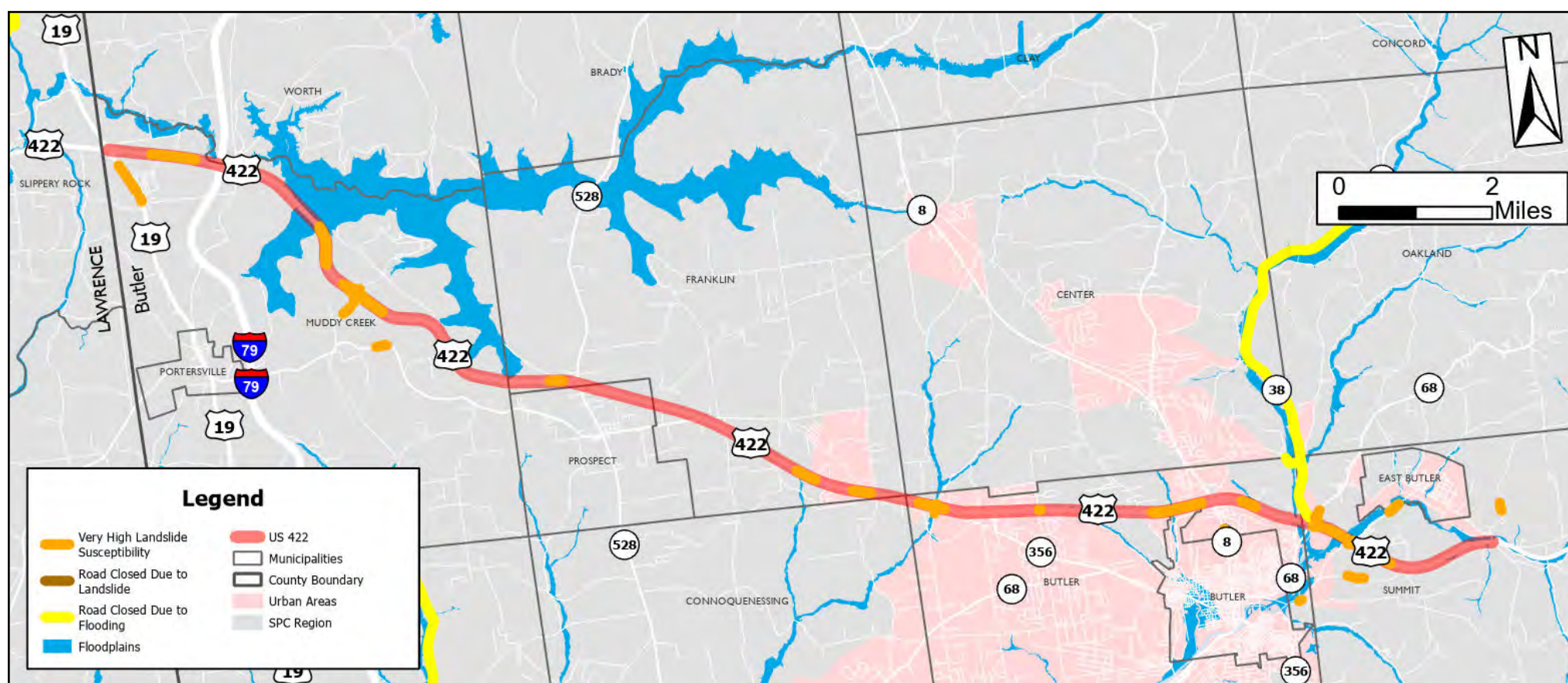


The **Regional Ecosystem Framework (REF)** integrates environmental inventory data, conservation priorities, maps, and plans, with input from and adoption by conservation and natural resource stakeholders identified that addresses species, habitats, and relevant environmental issues and regulatory requirements agreed upon by the stakeholders. SPC has identified available GIS data layers that when analyzed will spatially model ecological significance on a regional scale. The datasets that make up the prototype REF are included in the appendix.

SPC staff assigned a score to the relevant attribute of each environmental data layer; the score reflects the relative importance of the occurrence of any certain resource found in a dataset relative to other resources used in the analysis.

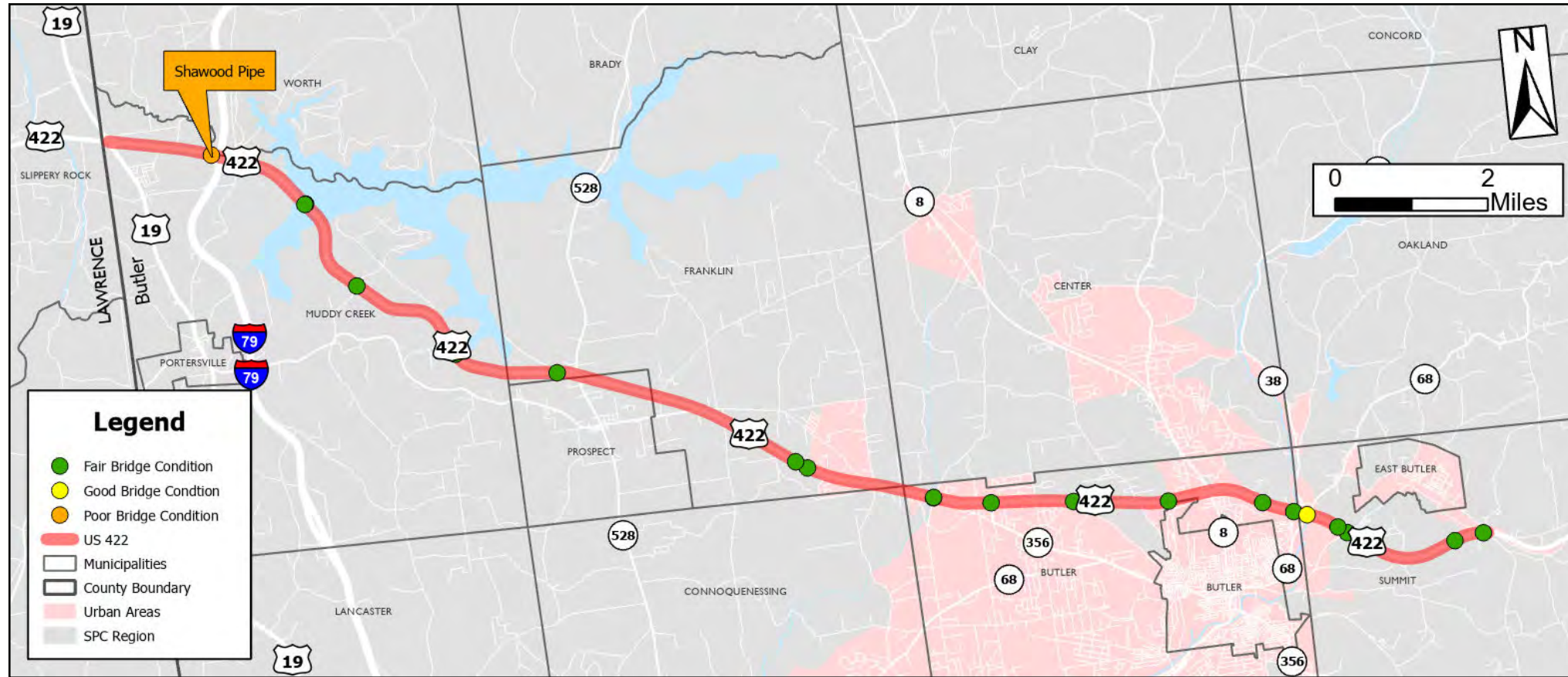
Greater values in the REF indicate greater environmental significance.

Within Segment B, the REF is showing a higher relative environmental value attributed to Lake Arthur. Higher values at Lake Arthur are due to the lake being an Important Bird Area, Natural Heritage Core Area, and Moraine State Park located on the southwest side of the lake. There is also an abundance of forested and wetland areas nearby and conservation easements and high quality watersheds are also located within the vicinity of Lake Arthur. With this level of environmental quality, future projects on US 422 in this watershed can anticipate additional restrictions or measures related to waterway permitting and may have an increased chance of encountering threatened and endangered species.



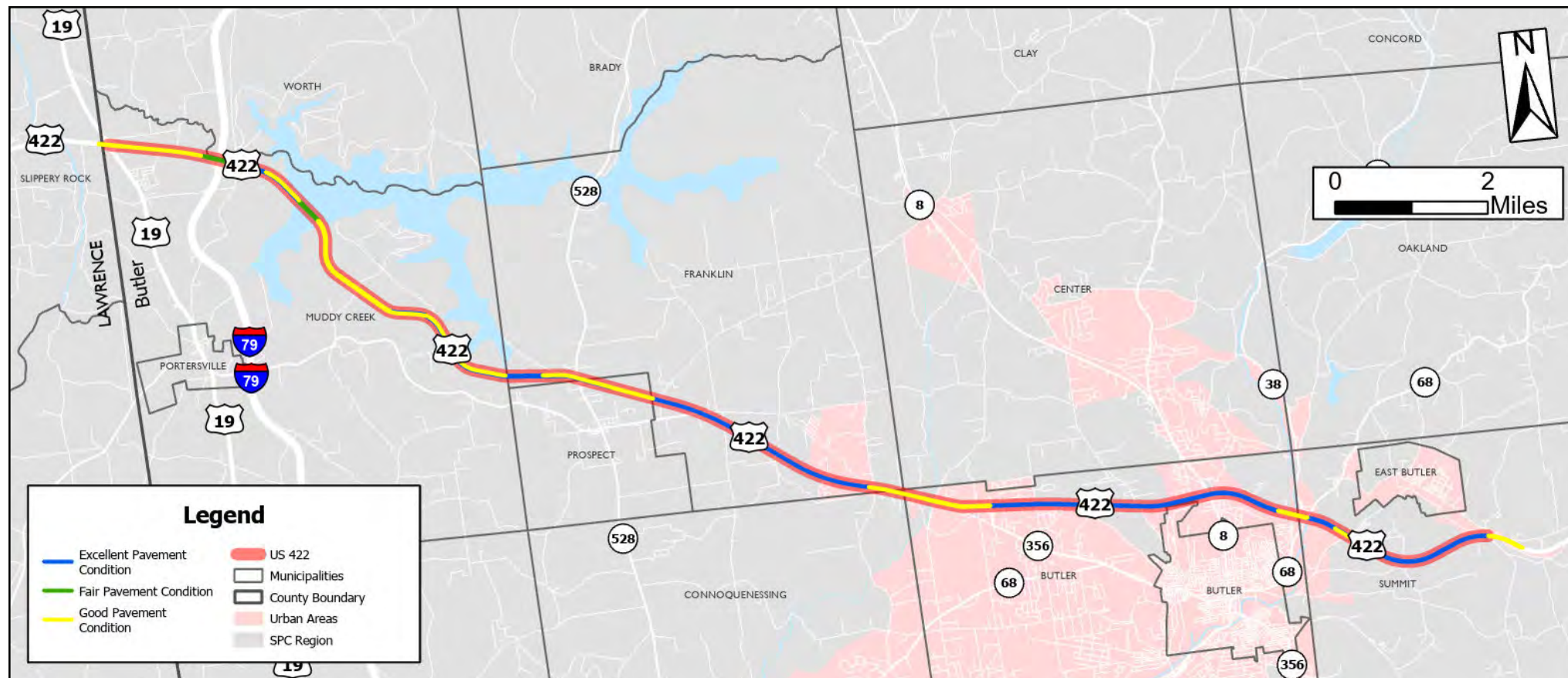
US 422 in Segment B includes some locations with very high vulnerability to landslides. These locations are based on regionwide landslide modeling done by SPC and isolated to the area within a mile of US 422 in this segment. There are areas of very high landslide susceptibility between US 19 and I-79, near Moraine State Park, Eagle Mill/North Road intersection, Benbrook Road intersection and along the Butler Bypass. Slopes and/or below US 422 in these areas are vulnerable to landslides. According to PennDOT RCRS data, no sections of US 422 along Segment B were closed due to landslides or flooding.

CONDITION OF ASSETS



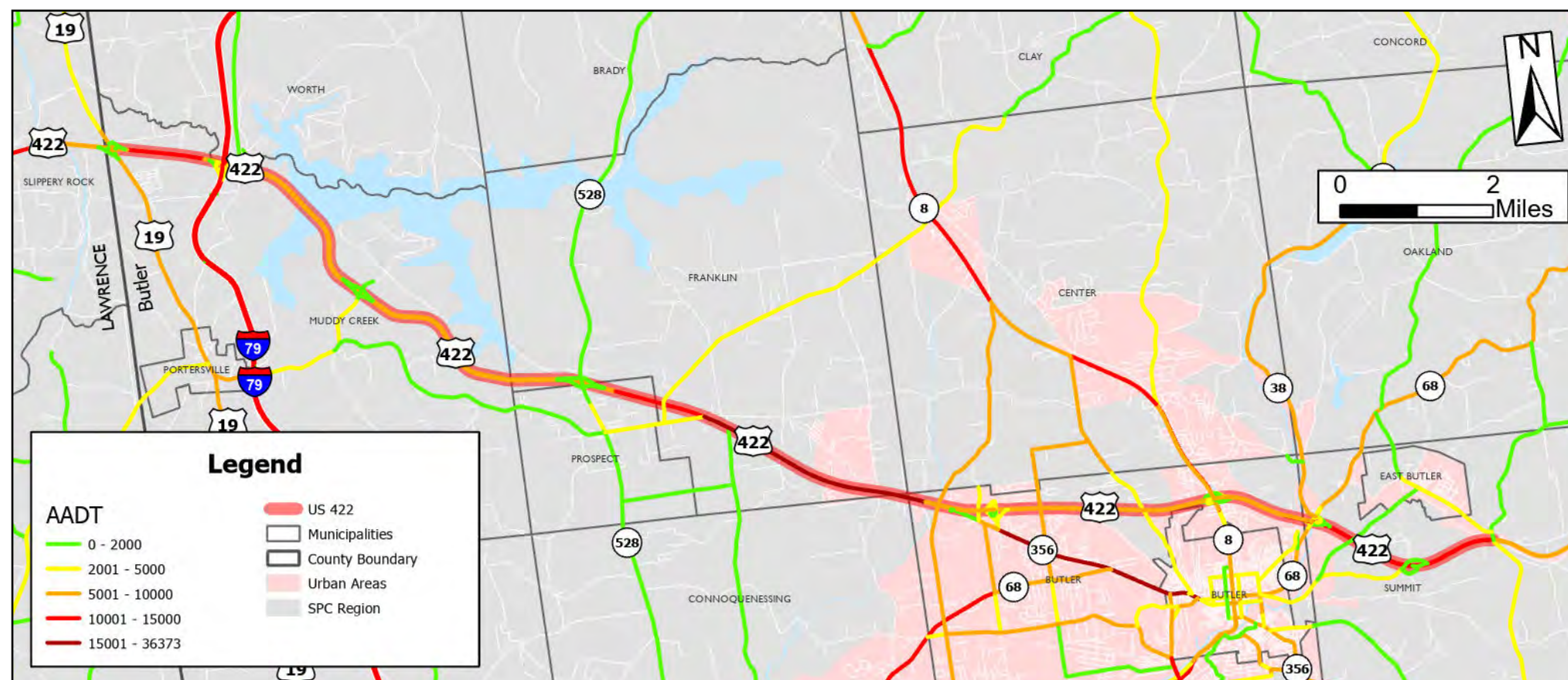
In Segment B, 90% of bridges on US 422 are rated in fair condition and 5% of bridges are rated in good condition. Only one bridge is in poor condition. This is the Shawood Pipe bridge which carries US 422 over a tributary to Muddy Creek in Muddy Creek Township. It should be noted that TIP project #83611 – US 422 Shawood Pipe is currently programmed on the 2025-2028 TIP to address this bridge’s poor condition rating. This project replaces/repairs the existing culvert carrying US 422 over a tributary to Muddy Creek in Muddy Creek Township. 95% of US 422 have a pavement condition rating of good or excellent and 5% of pavement have a condition rating of fair. There is no pavement located on Segment B that is in poor condition.

Bridge Condition	Count	Deck Area (SQ Ft)	By %
Good	1	7,237.8	5%
Fair	18	229,988.8	90%
Poor	1	1113	5%



Road Condition	Count (RMS Segments)	Miles	By %
Good/Excellent	74	33.9	95%
Fair	5	1.8	5%
Poor	0	0	0%

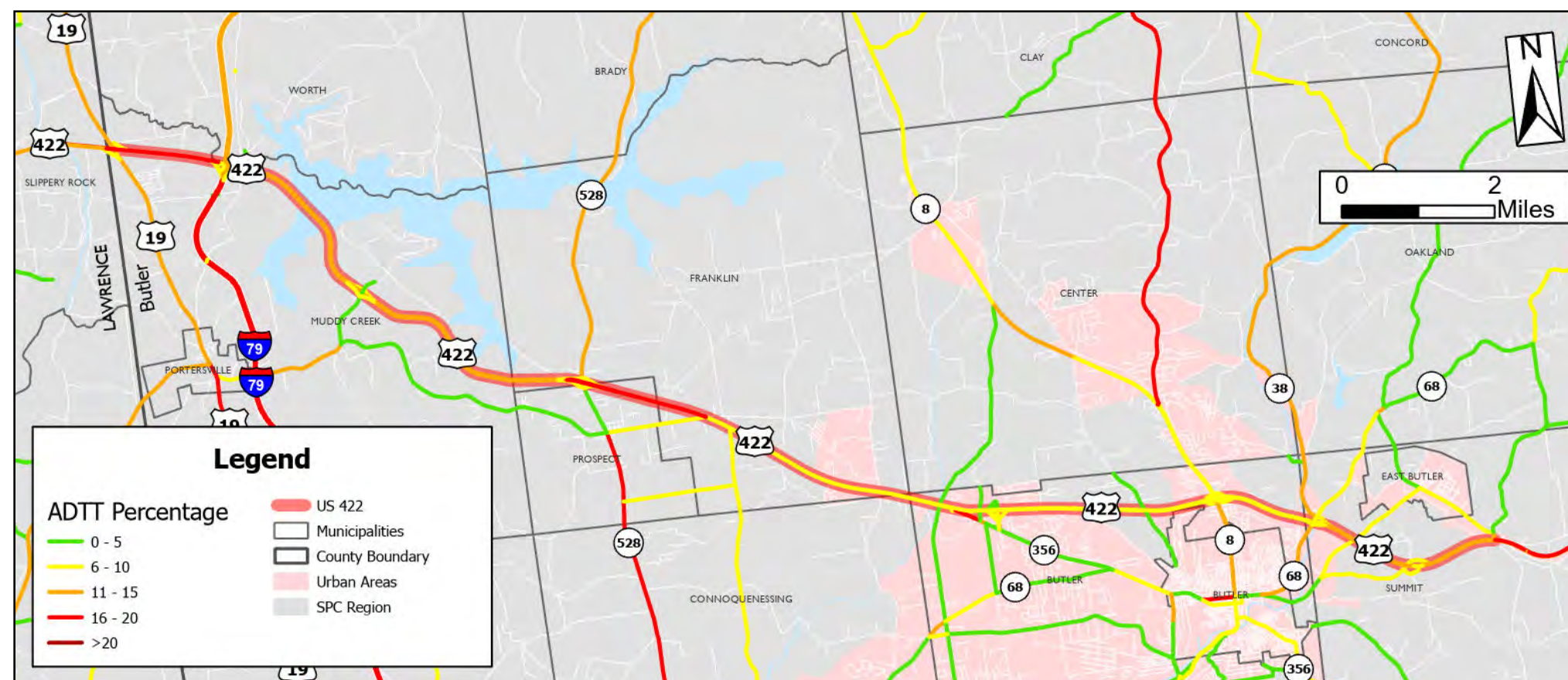
SEGMENT TRAVEL PATTERNS



Annual Average Daily Traffic (AADT) is the typical daily traffic on a roadway segment for all the days in a week over a one-year period. Truck percentage is the percent of the AADT that is comprised of truck traffic, excluding pickups, panels, and light trucks. The current AADT and truck percent figures included in this section were derived from the Pennsylvania Department of Transportation (PennDOT) Roadway Management System (RMS).

Traffic volumes for individual roadway segments on this portion of the corridor falls between 5,000 and 18,000 vehicles per day. The AADT for this segment of the US 422 corridor is highest between the SR 488 in Franklin Township and Greenwood Drive in Butler Township. Roadway segments on this stretch of the US 422 corridor have an AADT of 17,641. Roadway segments with high AADT can also be located in between US 19 and I-79 in Muddy Creek Township, east of SR 528 in Prospect Borough and SR 488 in Franklin Township, and SR 68 and Bonniebrook Road in Summit Township. Traffic volumes for these segments are between 10,000 to 15,000.

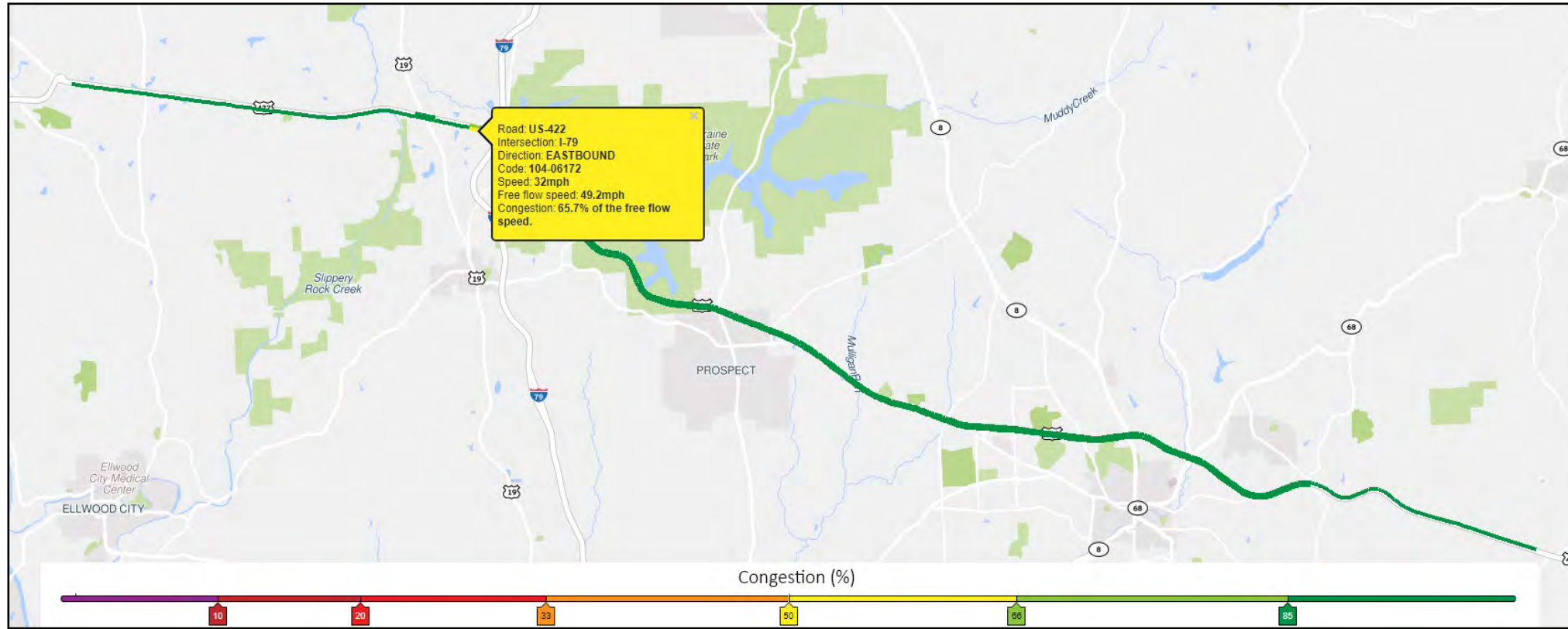
Truck percentages on individual roadway segments on this portion of the US 422 corridor fall between 9% and 20%. Truck percentage for this section of the US 422 corridor is highest on US 422 between SR 528 and SR 488 in Franklin Township. Roadway segments on this stretch of the US 422 corridor have a truck percentage of 20%. Truck percentages are also high in between the US 19 interchange and the I-79 interchange in Muddy Creek Township. Roadway segments here have a truck percentage of 16%-17%.



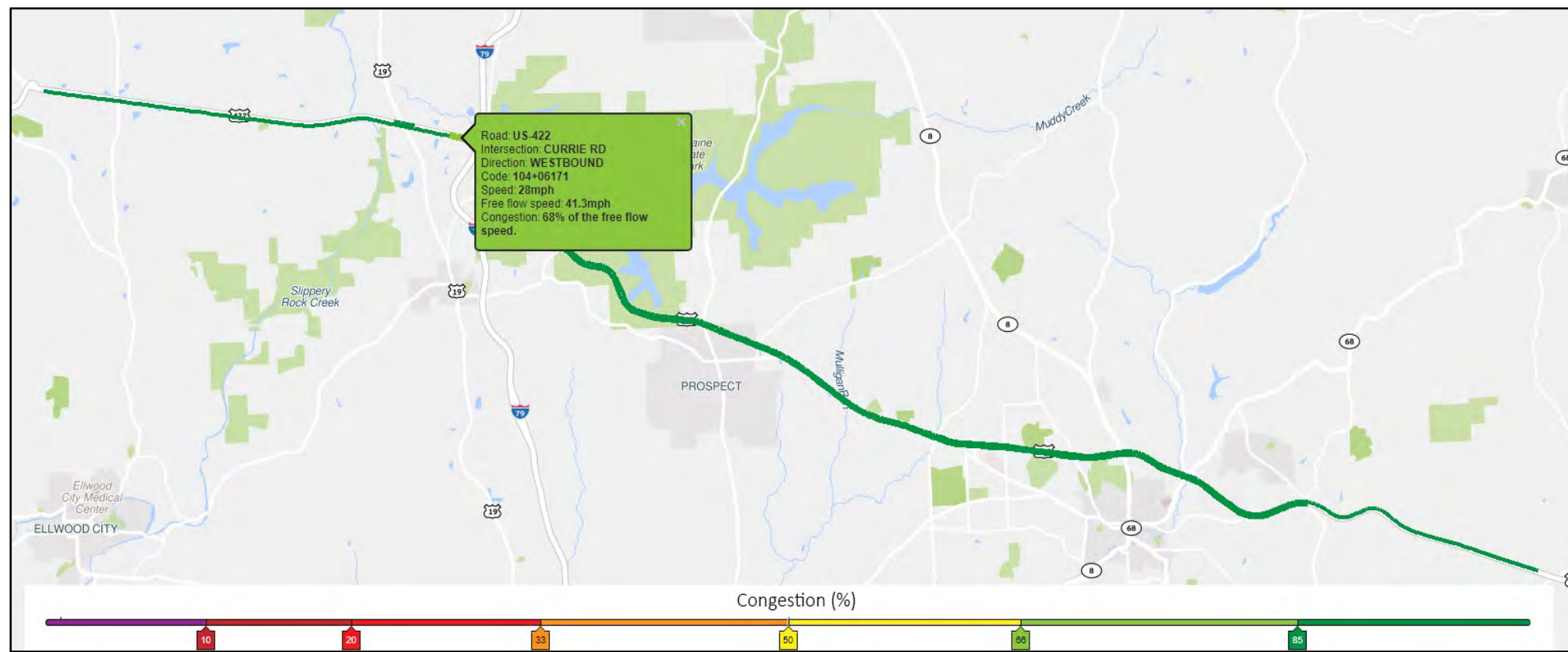
Looking East, US 422 at SR 488 in Franklin Township

CONGESTION & RELIABILITY

US 422 Segment B Congestion Trend Map for AM Peak for January 01, 2023 through December 31, 2023 (Every weekday)



US 422 Segment B Congestion Trend Map for PM Peak for January 01, 2023 through December 31, 2023 (Every weekday)



- AM and PM peak period congestion trend mapping is shown for Segment B. Congestion percentage is shown as the percent of free flow speed achieved on the segment. Higher percentages indicate less congestion (greener colors), and lower percentages indicate more congestion (redder colors).
- In the AM peak period, travelers on Segment B approximately achieve 65% or higher of free flow speed.
- In the PM peak period, travelers on Segment B approximately achieve roughly 68% or higher of free flow speed.
- Travelers on Segment B generally experience negligible to light congestion in the peak periods.



Looking East, US 422 at I-79



Looking West, US 422 at Currie Road in Muddy Creek Township

Travel Time in Minutes				
Eastbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				21.2
Monday	21.87	21.95	21.82	
Tuesday	21.89	22.03	21.84	
Wednesday	21.88	22.09	21.68	
Thursday	21.89	22.03	21.74	
Friday	21.92	21.89	22.01	
Saturday				21.49

Planning Time Index				
Eastbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				1.44
Monday	1.45	1.46	1.47	
Tuesday	1.45	1.47	1.45	
Wednesday	1.47	1.49	1.45	
Thursday	1.45	1.45	1.46	
Friday	1.47	1.45	1.48	
Saturday				1.44

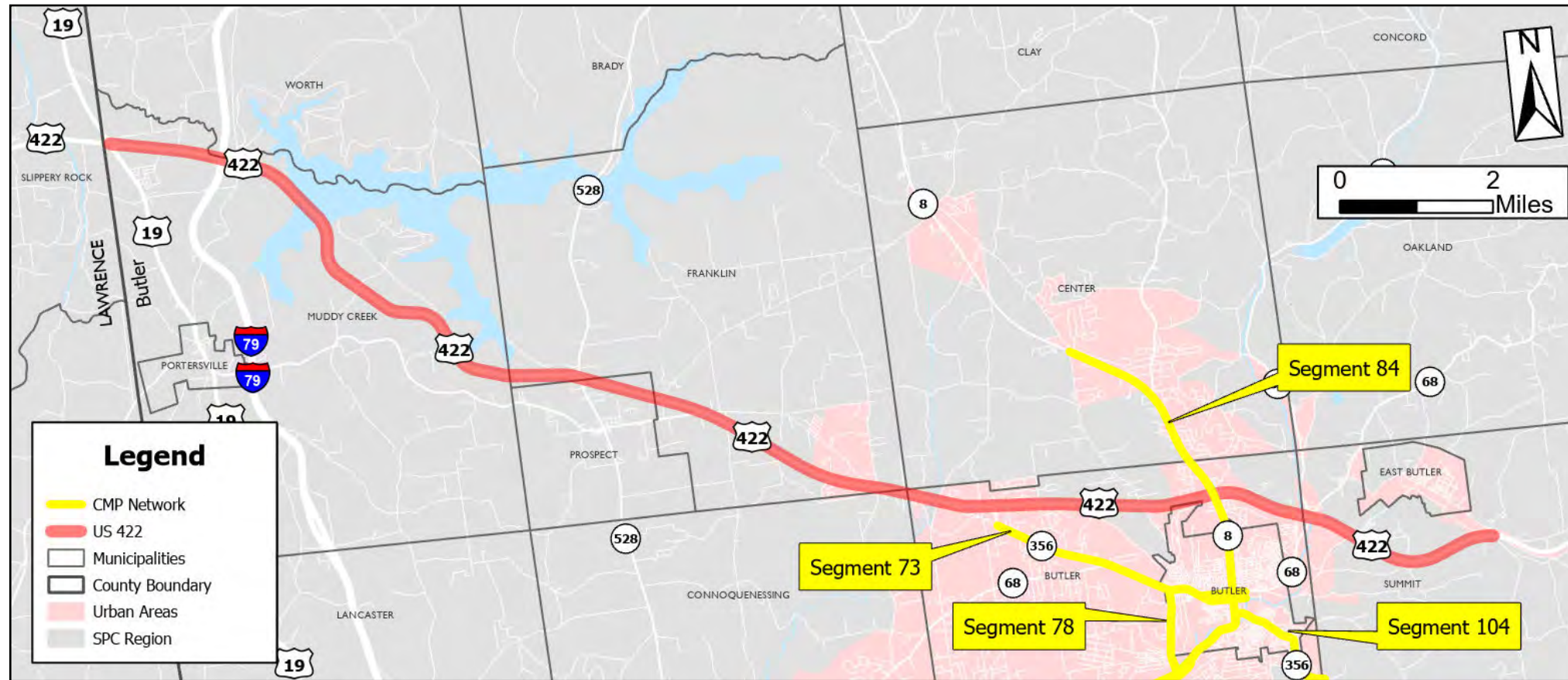
Travel Time in Minutes				
Westbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				16.18
Monday	16.58	16.63	16.51	
Tuesday	16.59	16.6	16.45	
Wednesday	16.64	16.69	16.49	
Thursday	16.61	16.64	16.6	
Friday	16.63	16.56	16.69	
Saturday				16.38

Planning Time Index				
Westbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				1.44
Monday	1.45	1.43	1.45	
Tuesday	1.45	1.43	1.45	
Wednesday	1.47	1.47	1.45	
Thursday	1.46	1.44	1.46	
Friday	1.46	1.44	1.5	
Saturday				1.45

Planning Time Index (PTI) is the extra time required to arrive at a destination on time, 95% of the time. It is calculated as the ratio of the 95th-percentile highest vehicle-hours traveled divided by the vehicle hours traveled if the same trips could have been completed at free flow speed. For example, a PTI of 1.5 means that a traveler should plan on 50% more time for their trip compared to light traffic conditions for a 95% probability of arriving on time (meaning that 15 minutes should be planned for what would be a 10 minute trip in light traffic conditions). SPC reports PTI for arterial CMP corridors in the region by direction for peak and off-peak times.

- PTI for Segment B in the eastbound direction ranges from 1.44 to 1.49
- PTI for Segment B in the westbound direction ranges from 1.43 to 1.5

CONGESTION MANAGEMENT PROCESS



- Segment B is not monitored as part of SPC’s Congestion Management Process Network.
- Most of Segment B takes on the characteristics of a principal arterial with many sections containing grade separated interchanges. There are no adaptive traffic signals located on this segment of US 422; however the traffic signals located at the Pilot Travel Center, I-79 ramps, and Bonniebrook Road have emergency preemption.
- Detour routes for this segment include:
 - I-79
 - US 19
 - SR 8
 - SR 68
 - SR 356



IUS 422 at the Pilot Travel Center in Muddy Creek Township

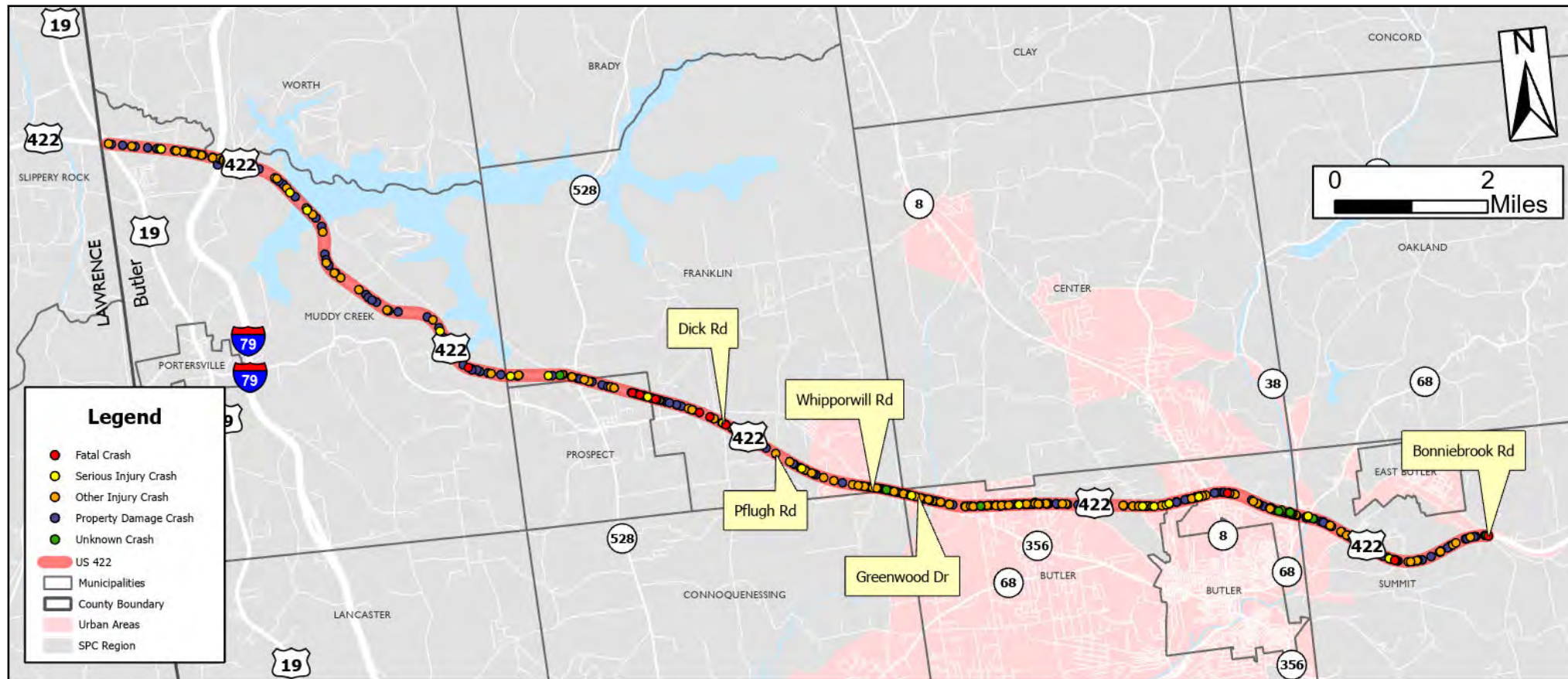


US 422 at Northbound I-79 Ramps in Muddy Creek Township



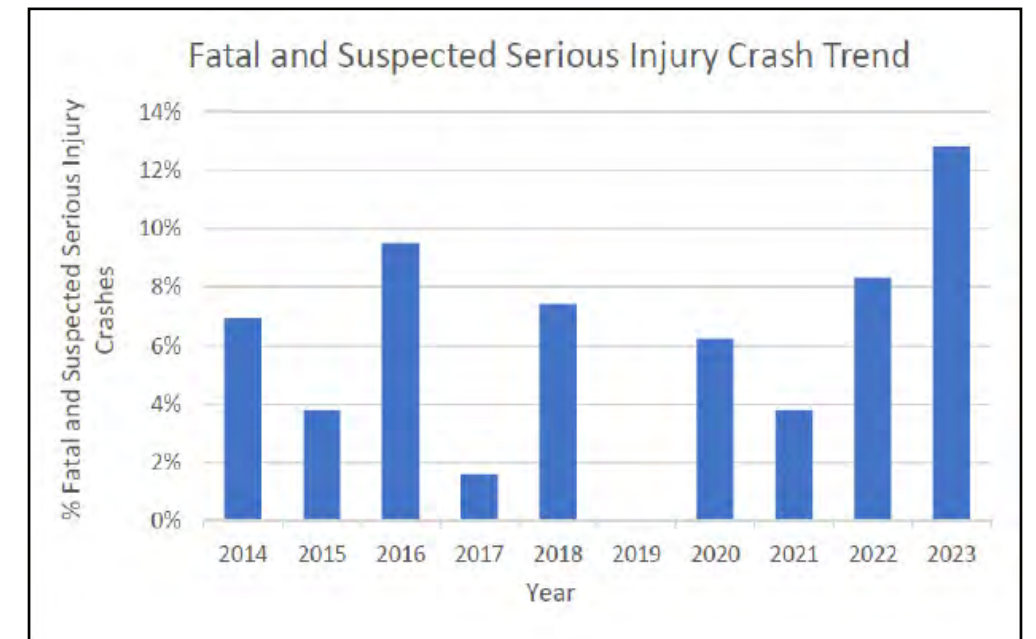
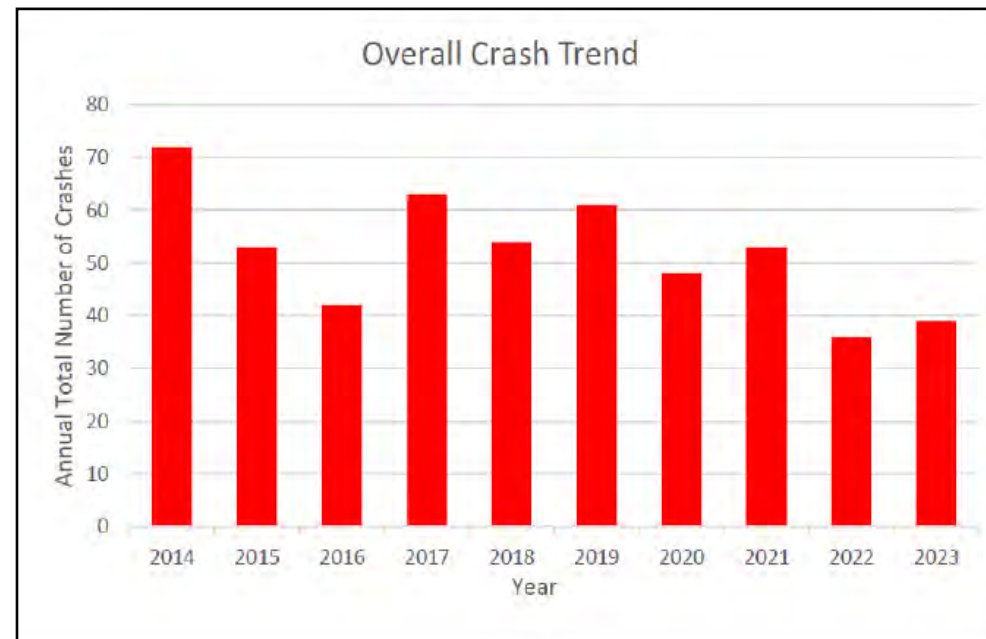
US 422 at Bonniebrook Road in Summit Township

SAFETY

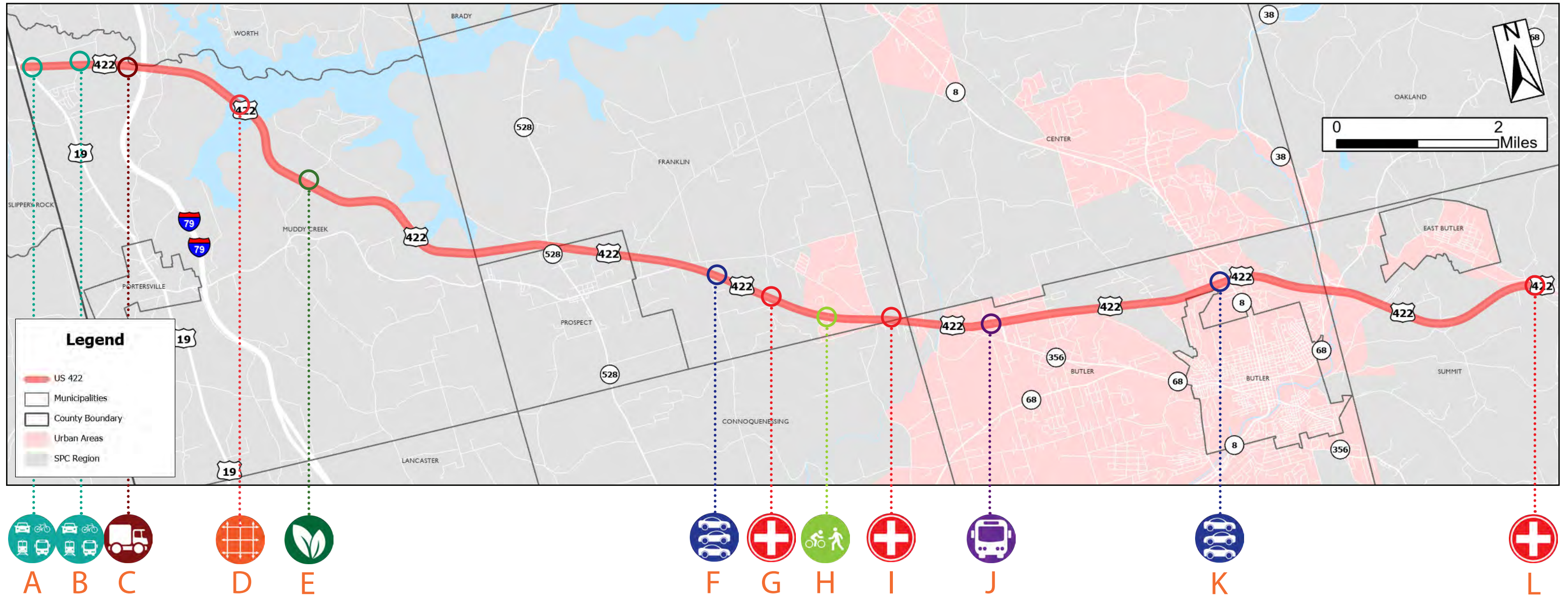


- For Segment B, the overall number of crashes appear to be trending downward over the 10-year period (2014-2023). The fatal and serious injuries appear to be trending in an upward trajectory over the same time period.
- Segment B's 2023 crash rate (1.01 crashes per MVMT) is lower than the average 2023 crash rate for similar roadways in Butler County (1.05 crashes per MVMT) and lower than the average 2023 crash rate for similar roadways in the SPC region (1.16 per MVMT).
- According to the PennDOT Highway Safety Network Screening (HSNS) Analysis, the following areas of Segment B are underperforming from a safety perspective:
 - Dick Road to Pflugh Road
 - West of Whipporwill Road to Greenwood Drive
 - Bonniebrook Road Intersection

US 422 Segment B Crash Statistics	
Timeframe	2014-2023
All Crashes	686 (~1.3 crashes per week)
Fatal Crashes	12 (~2% of all crashes)
Crashes Involving Serious Injuries	23 (~3% of all crashes)
Crashes Involving Other Injuries	260 (~38% of all crashes)
Crashes Involving Property Damage	381 (~56% of all crashes)
Unknown	10 (~1% of all crashes)















SEGMENT B: FOCUS AREAS



FOCUS AREA CATEGORIES

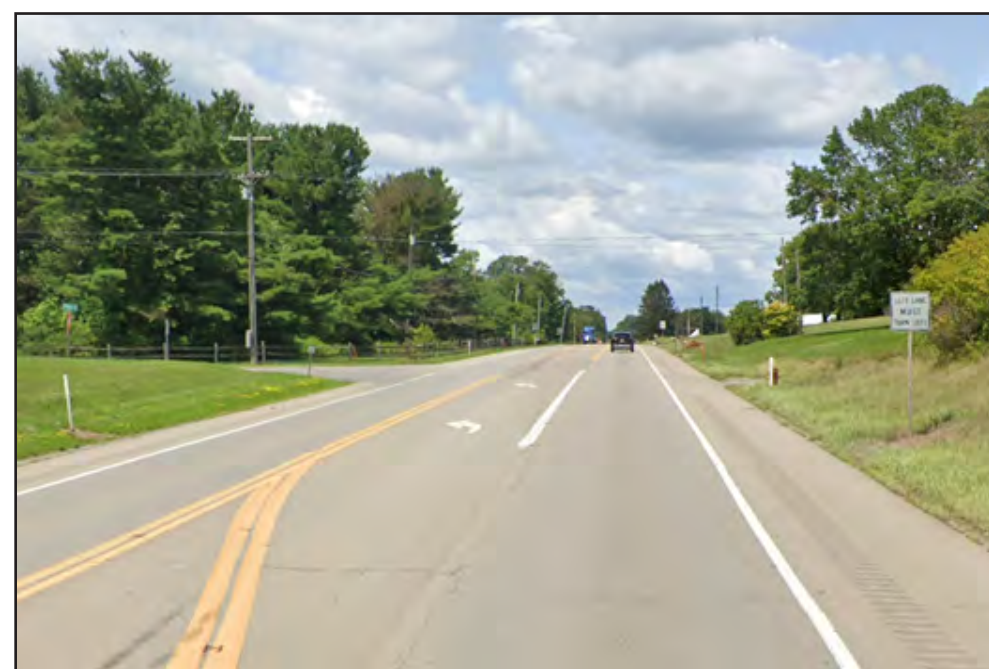


SEGMENT B: FOCUS AREAS

A		There is a free 41 lot park-and-ride facility located at the intersection of US 19 and US 422 in Muddy Creek Township. There is no transit services that services commuters at the park-and-ride.	G		Between 2014-2023, there have been seven fatal accidents and four serious injury crashes between SR 528 and Pflugh Rd in Franklin Township and Prospect Borough. Parts of this section is also underperforming from a safety perspective according to the PennDOT Highway Safety Network Screening (HSNS) 2023 Analysis.
B		There is a free 25 lot park-and-ride facility located on Currie Rd, just north of US 422 in Muddy Creek Township. There is no transit service that serves commuters at this park-and-ride.	H		US 422 is an expressway through a predominantly rural area which is prohibited to additional pedestrian or bicycle specific facilities. Many existing facilities such as the Butler Freeport Community Trail, which connects Butler to Freeport, are located within the broader the US 422 corridor and provides an alternate bicycle and pedestrian mode to US 422.
C		US 422 between US 19 and I-79 experiences heavy freight traffic due to nearby connections to other freight routes and freight amenities. The average daily truck traffic (ADTT) in this roadway segment is around 1,100.	I		The area of US 422 between Whipporwill Rd to Greenwood Dr is underperforming from a safety perspective according to the PennDOT Highway Safety Network Screening (HSNS) 2023 Analysis. There have been 77 crashes along this segment of roadway from 2014 to 2023.
D		The US 422 bridges over Lake Arthur in Muddy Creek Township is a key asset for US 422 corridor. The bridge is the longest bridge on US 422 in Segment B. The continued preservation and maintenance of the Graff Bridge is essential.	J		There are no transit routes or stops along this segment of US 422. There is no transit option to provide commuters to travel from Butler County into Lawrence County via US 422.
E		Higher values at Lake Arthur is due to the lake being an Important Bird Area, Natural Heritage Core Area, Moraine State Park. There is also an abundance of forested and wetland areas nearby and conservation easements and high quality watersheds are also located within the vicinity of Lake Arthur. Future projects on US 422 can anticipate additional restrictions or measures related to waterway permitting and may have an increased chance of encountering threatened and endangered species.	K		Linear traffic growth rates are showing that the eastbound and westbound US 422 traffic is showing a 15% and 17% base-build change respectively out to 2050.
F		US 422 between SR 488 in Franklin Township and Greenwood Dr in Butler Township has the highest Average Annual Daily Traffic (AADT) along this segment of US 422. The AADT for this section is 17,641.	L		The intersection of US 422 and Bonniebrook Rd is underperforming from a safety perspective according to the PennDOT Highway Safety Network Screening (HSNS) analysis. There have been 18 crashes at this intersection from 2014 to 2023.



US 422 at US 19 Park and Ride in Muddy Creek Township



US 422 at Pflugh Road in Franklin Township



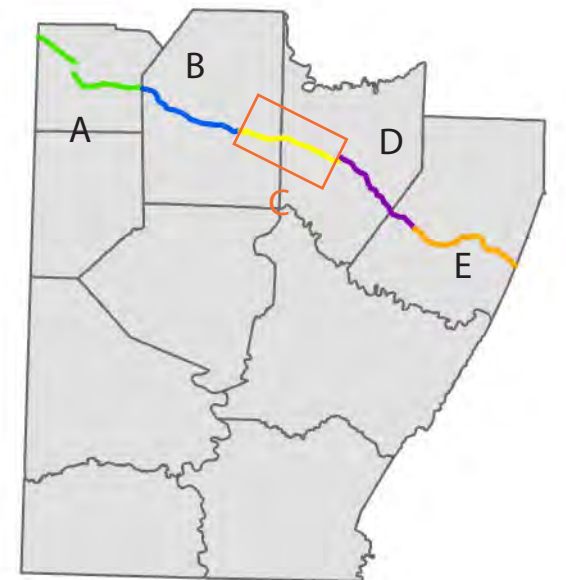
US 422 at Greenwood Road intersection



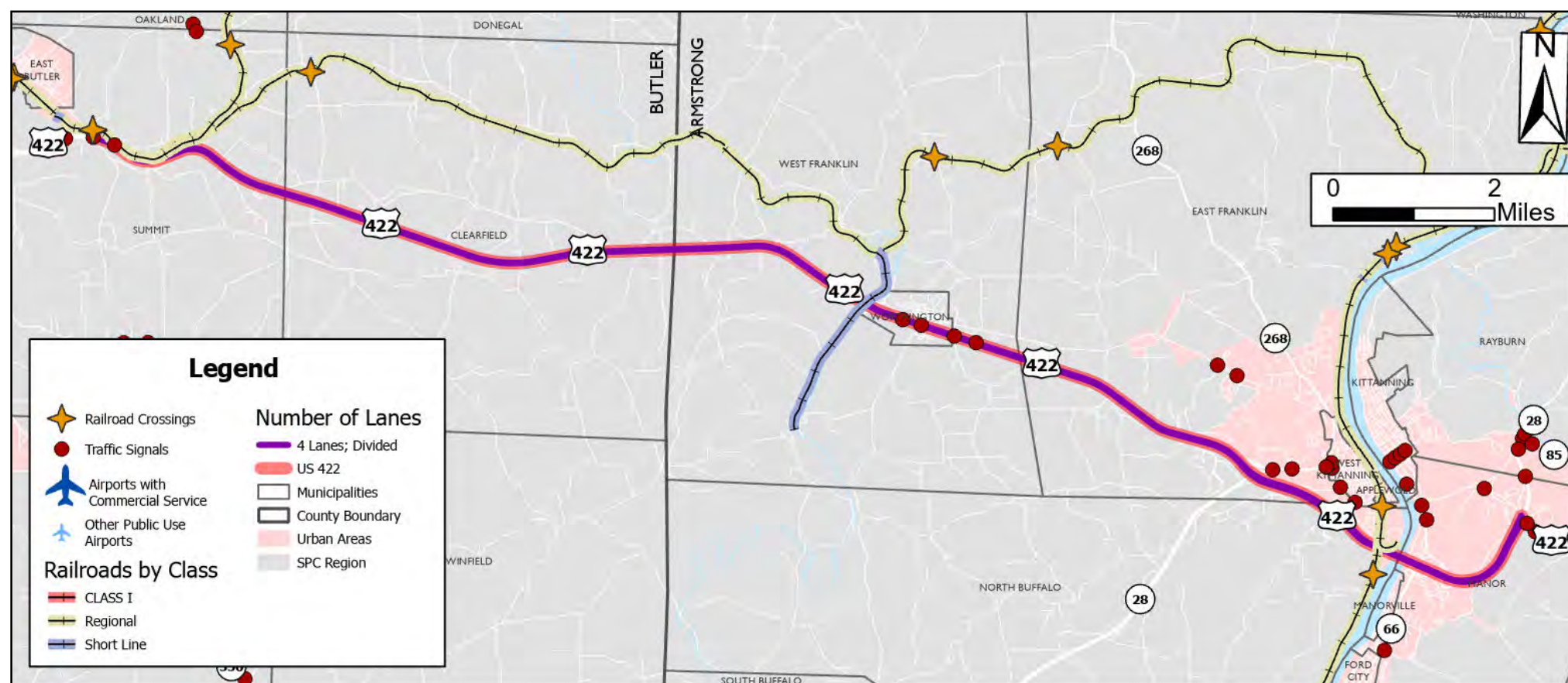
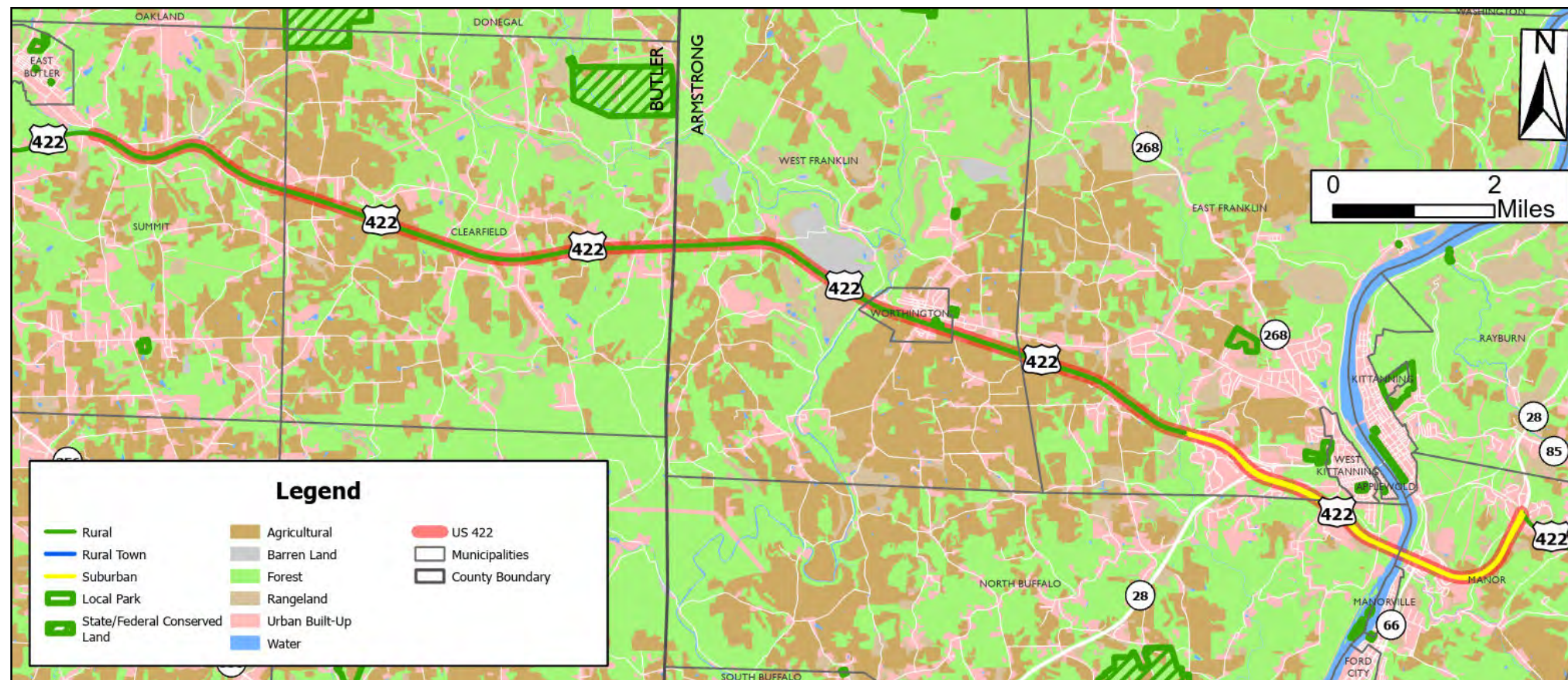
SECTION III: SEGMENT PROFILES

SEGMENT C

- SEGMENT OVERVIEW
- FUTURE HIGHWAY & BRIDGE PROJECTS
- REGIONAL, COUNTY, AND LOCAL PLANS AND USER PERSPECTIVES
- FREIGHT
- TRANSIT
- ACTIVE TRANSPORTATION
- ENVIRONMENTAL FEATURES
- CONDITION OF ASSETS
- SEGMENT TRAVEL PATTERNS
- CONGESTION & RELIABILITY
- SAFETY
- FOCUS AREAS



SEGMENT C: OVERVIEW



Segment C from Bonniebrook Road to SR 28 is a four-lane, divided roadway along this entire segment length. Along this segment of US 422, many intersections are unsignalized with very few signalized and/or grade-separated interchanges. Signalized intersections can be found at US 422 at Bonniebrook Road, US 422 at Worthington Slate Lick/Bear Roads and US 422 at Claypool Road. Grade-separated interchanges can be found along the routes that intersect the Kittanning Bypass. These routes include West Hill, Business 422/SR 268, and SR 28 in East Franklin Township, and SR 66 and SR 28 in Manor Township.

It should also be noted that SR 28 and US 422 are concurrent on the Kittanning Bypass. SR 28 provides connections from US 422 to the City of Pittsburgh to the south and I-80 to the north. In 2021, SPC completed a CORS Master Planning Framework for SR 28. This Master Planning Framework analyzed SR 28 from Downtown Pittsburgh to the Clarion County Line. To view the SR 28, please click [here](#).

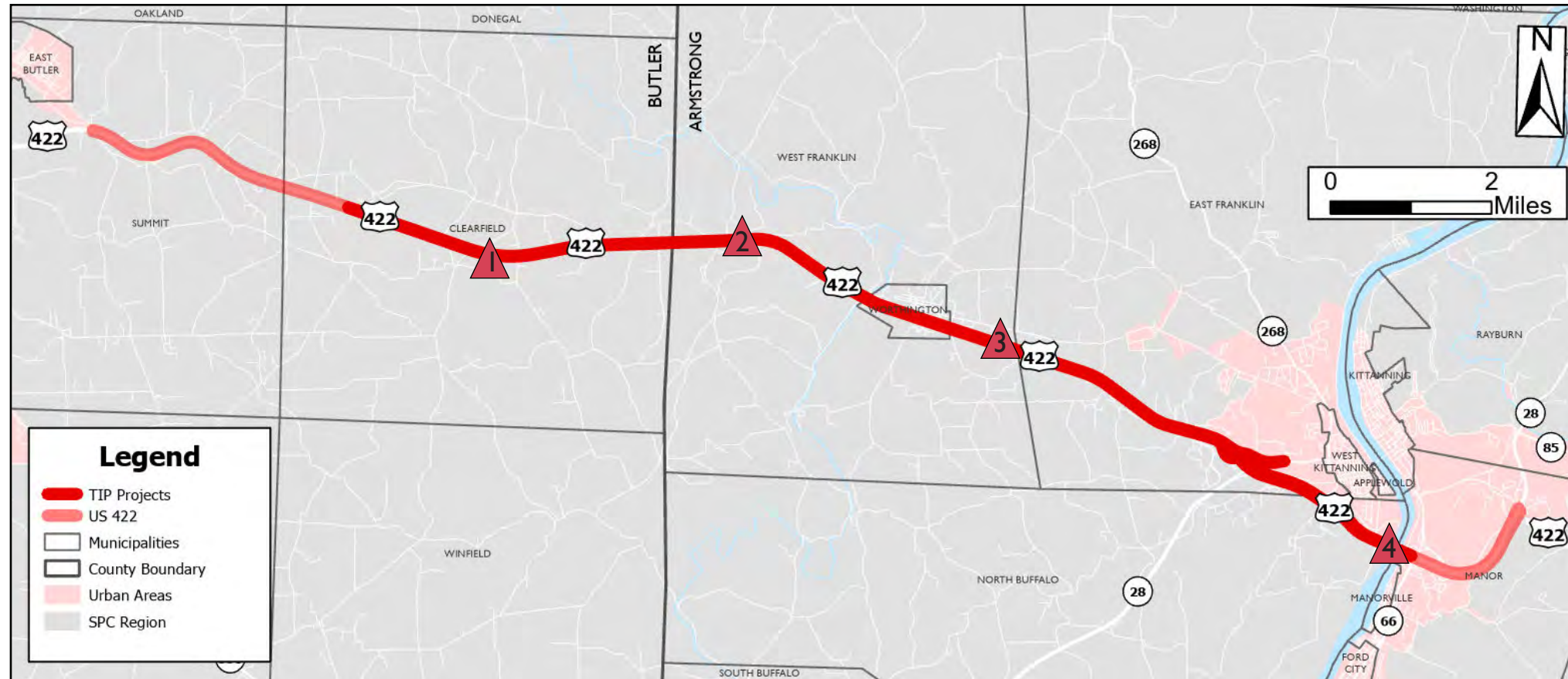


Looking west, US 422 approaching Worthington Slate Lick/Bear Roads intersection in Worthington Borough



Looking East, US 422 at the Business 422/SR 268 in East Franklin Township

FUTURE HIGHWAY & BRIDGE PROJECTS



1 Roadway Preservation | MPMS 117334
 2025-2028 TIP | US 422 County Line West PM
 Milling of existing bituminous material, minor drainage, transverse and longitudinal joint repair and paving of bituminous leveling and wearing courses along US 422 from near the intersection of SR 1015 (Game Reserve Road) to the Butler/Armstrong County Line (.3 miles east of Graham Road) in Clearfield Township, Butler County
 Programmed Amount: \$3 Million

2 Roadway Preservation | MPMS 114936
 2025-2028 TIP | US 422 County Line East PM
 Milling of existing bituminous material, minor drainage, transverse and longitudinal joint repair, and paving of bituminous leveling and wearing courses along US 422 from the Butler County Line east to 0.37 mile west of the East Franklin Township line in West and East Franklin Townships, and Worthington Borough in Armstrong County
 Programmed Amount: \$12.4 Million

3 Roadway Preservation | MPMS 114950
 2025-2028 TIP | US 422 Worthington East PM
 Milling of existing bituminous material, minor drainage, transverse, and longitudinal joint repair and paving of bituminous leveling and wearing courses along SR 422 from East of Worthington to the Judge Graff Bridge over the Allegheny River in East Franklin and North Buffalo Townships, Armstrong County
 Programmed Amount: \$6.7 Million

4 Bridge Preservation | MPMS 23987
 2025-2028 TIP | Graff Bridge Preservation
 Preservation of the existing structure carrying US 422 over the Allegheny River in North Buffalo and Manor Townships, Armstrong County
 Programmed Amount: \$10.2 Million



Judge J. Franklin Graff Bridge in North Buffalo and Manor Townships



Looking East, US 422 at the Butler/Armstrong County Line

For up to date information on TIP projects, please click [here](#).

FUTURE HIGHWAY & BRIDGE PROJECTS



- 1** Roadway Preservation | MPMS 115109
 Fiscally Constrained List | US 422 Bonniebrook East PM
 Resurfacing to include milling of existing bituminous material, minor drainage, transverse and longitudinal joint repair and paving of bituminous leveling and wearing courses along US 422 from east of Bonniebrook Rd to West Liberty Rd
 Estimated Cost: \$4.2 Million
- 2** Roadway Preservation | MPMS 117334
 Fiscally Constrained List | US 422 County Line West PM
 Milling of existing bituminous material, minor drainage, transverse and longitudinal joint repair, and paving of bituminous leveling and wearing courses along US 422 from the Butler County Line east to 0.37 mile west of the East Franklin Township line in West and East Franklin Townships, and Worthington Borough in Armstrong County
 Estimated Cost: \$6 Million
- 3** Bridge Preservation | MPMS 202326003
 Fiscally Constrained List | SR 422 Worthington No. 1
 Preservation of the existing structure carrying US 422 over Buffalo Creek in Worthington Borough, Armstrong County
 Estimated Cost: \$9 Million
- 4** Roadway Preservation | MPMS 119814
 Fiscally Constrained List | US 422 West Kittanning PM
 Resurfacing including pavement patching, minor drainage improvements and guiderail upgrades along US 422 in East Franklin Township
 Estimated Cost: 5 Million
- 5** Roadway Preservation | MPMS 112432
 Fiscally Constrained List | SR 422 Kittanning Bypass PM
 Preventative maintenance along SR 422 from 0.25 miles west of the SR 66 interchange, east to the SR 85 intersection in Manor and North Buffalo Townships, Armstrong County
 Estimated Cost: 19.7 Million



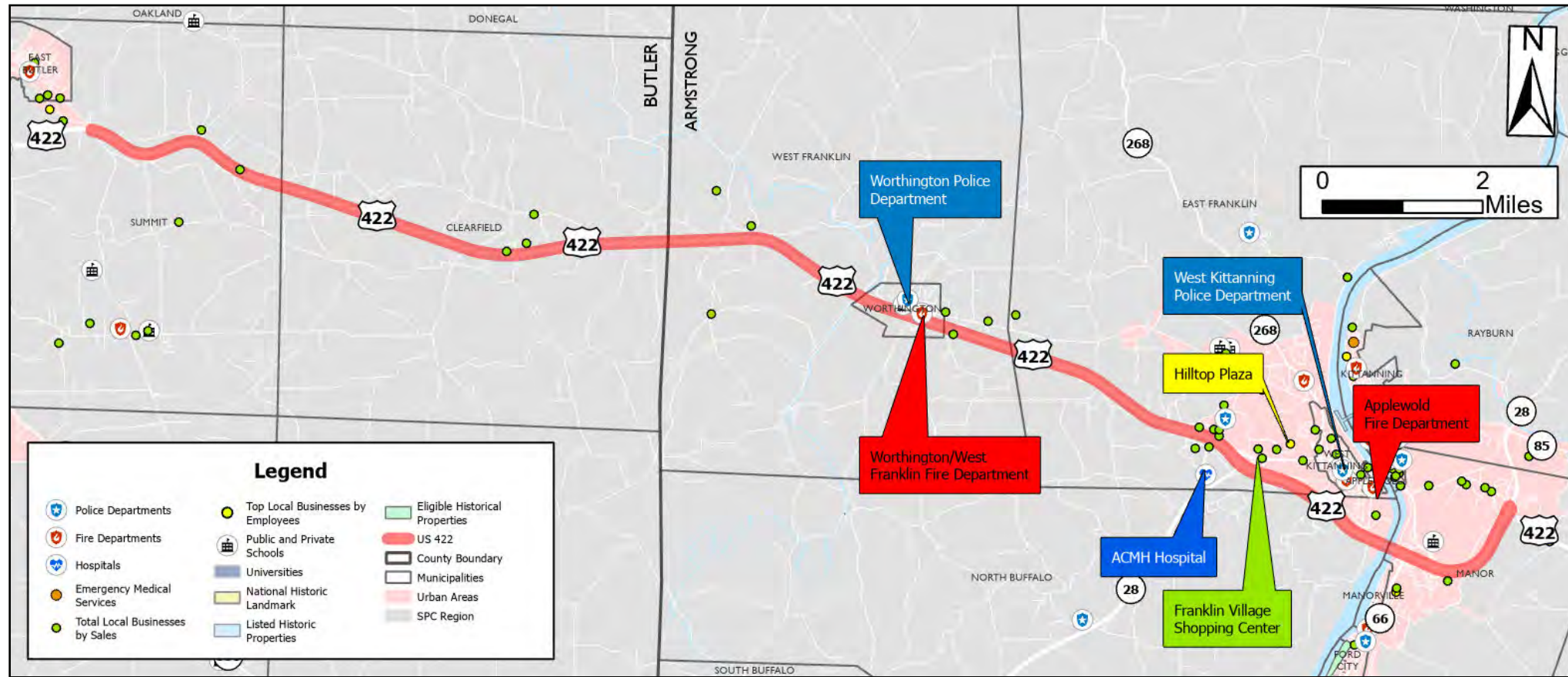
Looking East: Worthington No. 1 Bridge, US 422 over Buffalo Creek



Looking West: US 422, Kittanning Bypass in Manor Township

For up to date information on LRP projects, please click [here](#).

REGIONAL, COUNTY, AND LOCAL PLANS AND USER PERSPECTIVES



A review of existing plans at the regional, county, and local level can provide valuable information on planned projects, existing transportation issues and community priorities that can inform project development. The Butler Area Multi-Municipal (BAMM) plan outlines additional information on growth and development near this corridor. The BAMM plan covers the City of Butler, Butler Township, Penn Township, Summit Township, and East Butler Borough. Below are excerpts from the BAMM plan regarding development along US 422.

- Regarding land use, US 422 through Summit Township should be targeted for new mixed-use development in accordance with future Access Management Area regulations
 - There is potential for development north of the intersection of US 422 and Geibel Road along Keck Road.
- The plan identifies areas where Access Management Areas (AMA) should be adopted for identified in roadways in order to facilitate effective, safe, and sustainable future land uses. US 422 remains a major highway throughout Summit Township, although the volume of traffic is slightly less than in Butler Township. Since US 422 is no longer a limited access highway in most of Summit Township, there are more intersections with the potential for conflicts. Special areas of concern includes the following:
 - Mixed-use development should continue in a planned manner from Bonniebrook Road east to the Township line, within the AMA guidelines.
 - There are several small roads and numerous driveways that enter US 422 near Bonniebrook Road intersection.

Relevant Local, County and Regional Plans

[Butler County Comprehensive Plan](#)

[Butler Area Multi-Municipal Comprehensive Plan](#)

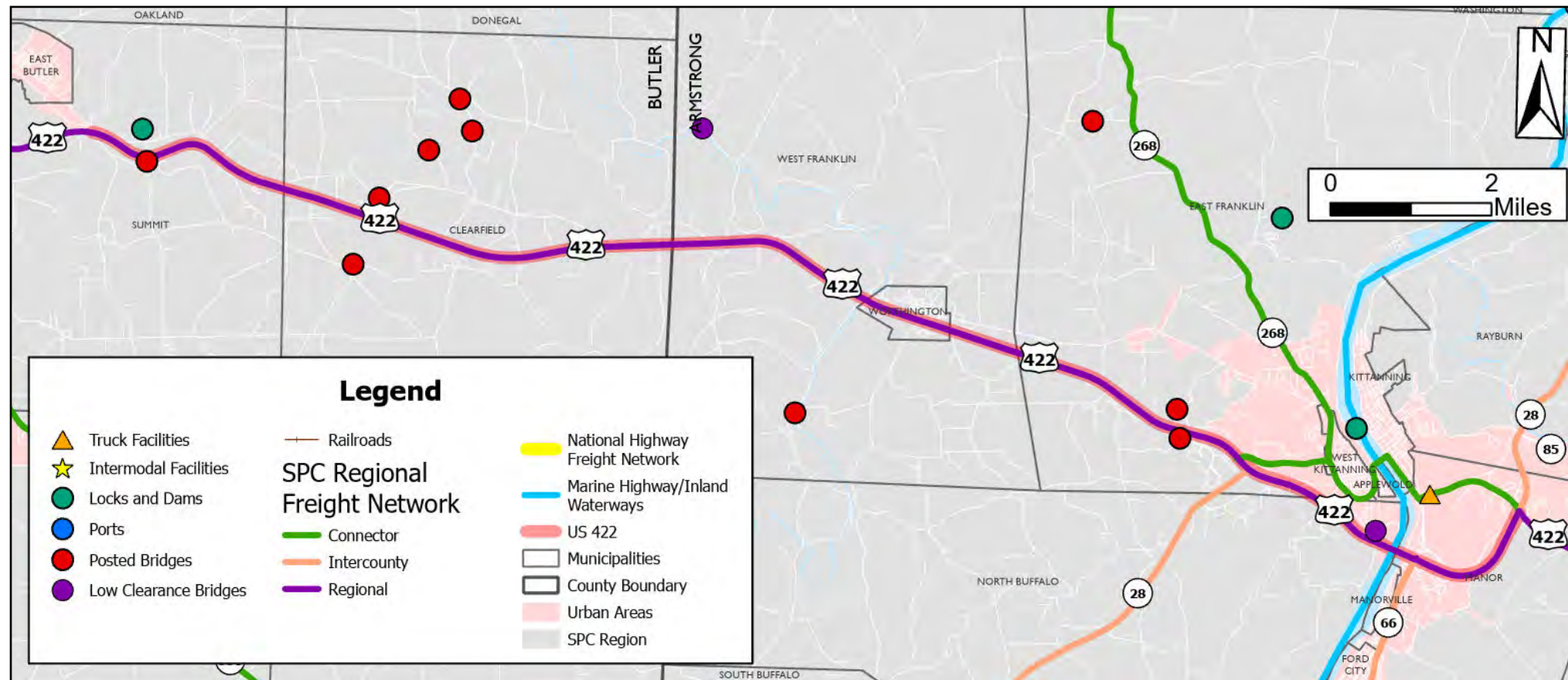
[Armstrong County Comprehensive Plan](#)

Along this segment of US 422, many community features can be found on the eastern portion of this segment within East Franklin Township and Kittanning Borough. In East Franklin Township, ACMH Hospital is accessible via US 422 at the West Hills interchange. Additional emergency services such as Applewold Fire Department and West Kittanning Police Department can be found near the eastern portion of US 422. Other emergency services include the Worthington Police Department and Worthington/West Franklin Fire Department in Worthington Borough. Within East Franklin Township, there are commercial areas located along SR 268/Business Route 422 such as Hilltop Plaza and Franklin Village Shopping Center. Also located within the broader US 422 corridor is Armstrong Junior/Senior High School which is located off of Business Route 422 near the SR 66/US 422 interchange.



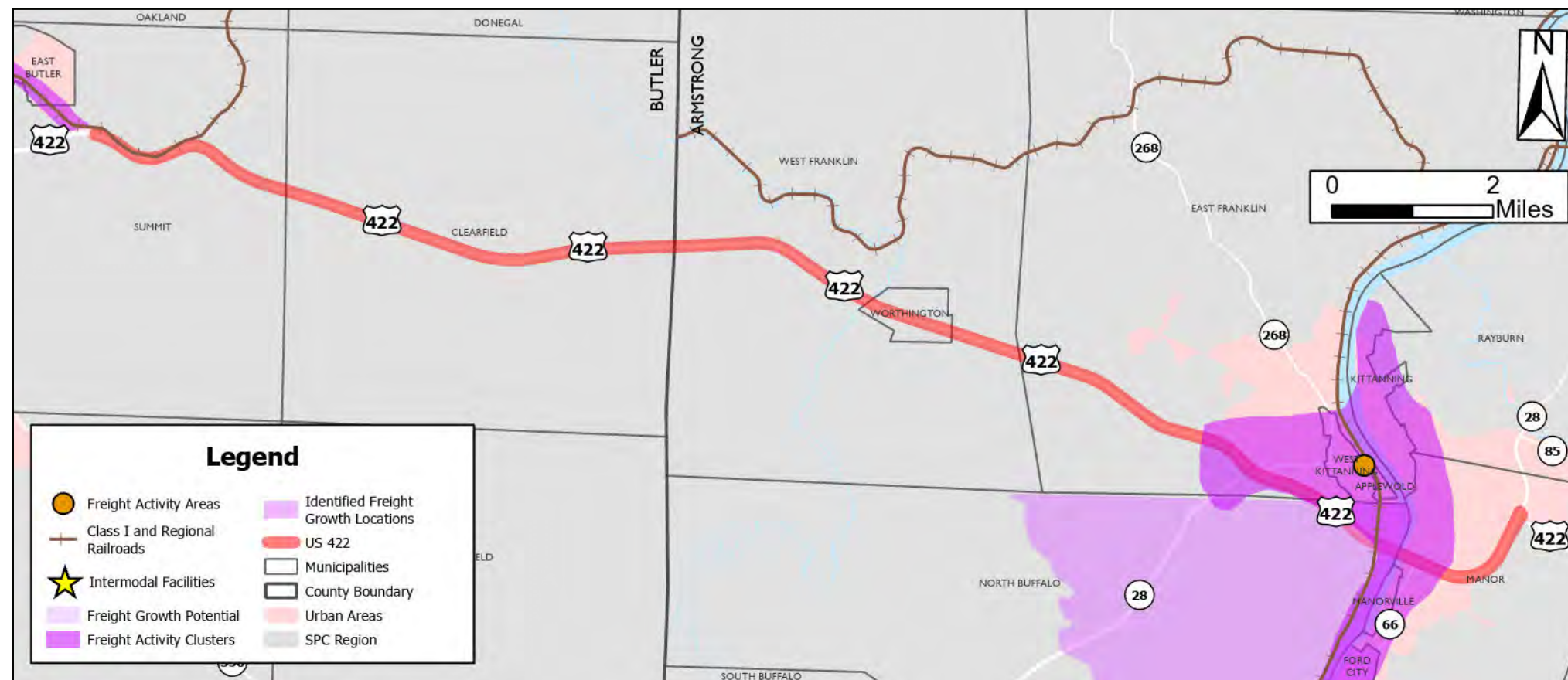
Commercial areas along SR 268/Business 422 in East Franklin Township

FREIGHT



SPC's Regional Freight Network provides a more complete inventory of the key corridors and connections that service the region's freight movement needs. The Regional Freight Network is divided into three different classifications, Regional Routes; Intercountry Routes; and Connector Routes. US 422 is a designated regional route on SPC's Regional Freight Network that provides connections to other routes that are on the Freight Network such as SR 28, SR 268, SR 66, and Business Route 422 which are classified as Intercountry or Connector Routes. There is one truck facility that is located near this segment of US 422. This truck facility is the runaway truck ramp located on Business Route 422 in Manor Township. There is available truck parking at the Pacific Pride located on US 422 just east of Bonniebrook Road. SPC Regional Freight Plan also identifies areas of Freight Activity Clusters, Identified Freight Growth Locations and Potential Freight Growth Areas. Freight Activity Clusters are present along the US 422 near the US19/I-79 interchanges, SR 356, and parts of East Butler Borough and Summit Township.

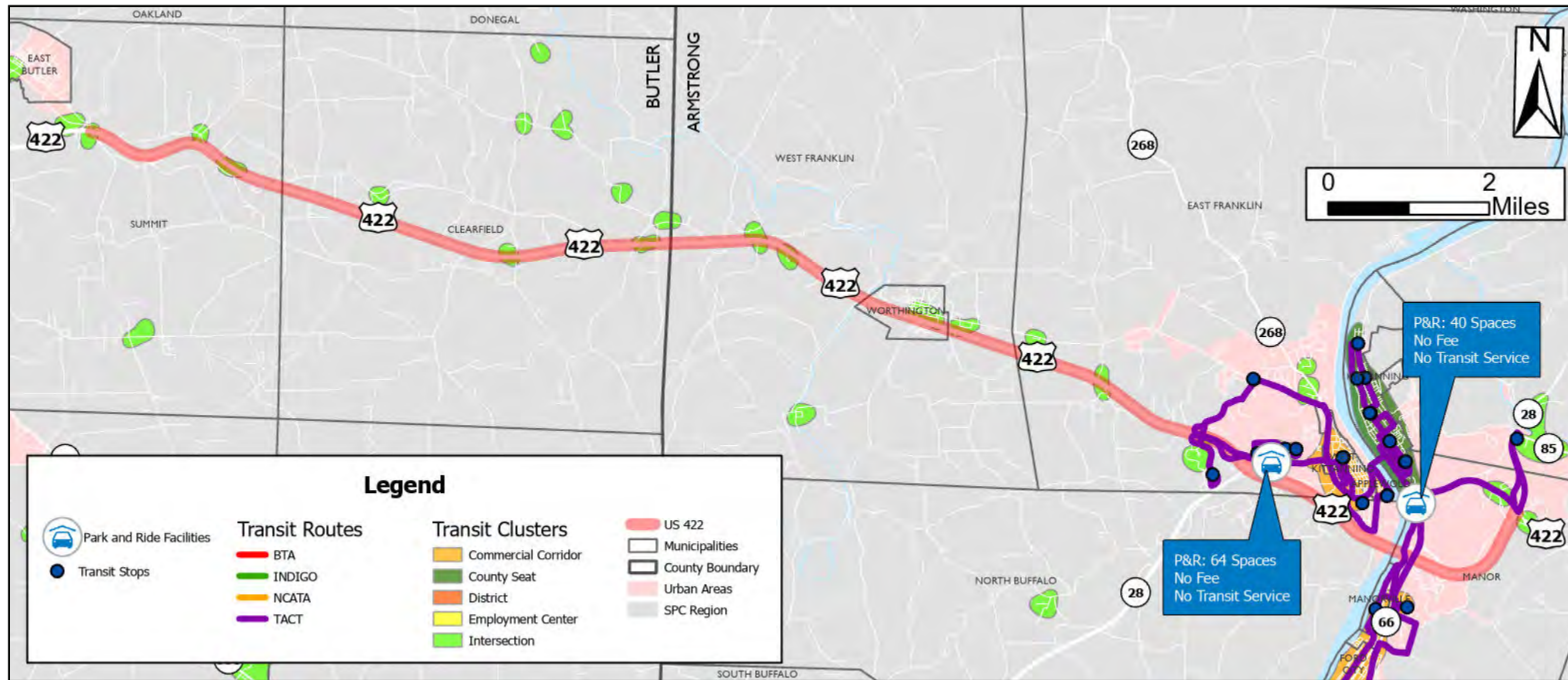
Truck counts are the highest from the SR 28 interchange in East Franklin Township to the SR 66 interchange in Manor Township. Data collected by PennDOT Roadway Management System (RMS) indicates that Average Daily Truck Traffic (ADTT) is between 1,900 and 2,200 in each direction on these roadway segments. Other areas with notable ADTT includes Bonniebrook Road in Summit Township to Nichola Road in West Franklin Township, Worthington-Slate Lick Road to Claypool Road in Worthington Borough, Glade Run Road to SR 28 in East Franklin Township and SR 66 to SR 28 in Manor Township. ADTT measures between 800 and 1,400 trucks per day.



Truck Signage on Westbound US 422 Kittanning Bypass



TRANSIT



Segment C of the US 422 corridor has very limited transit routes that utilize US 422. Town & Country Transit (TACT), the transit agency covering Armstrong County, has routes located off of US 422 in areas such as Kittanning, East Franklin, Manor Township and other surrounding communities. These include the Green and Blue routes which utilize SR 268, SR 66, Business 422, and SR 28. There are no transit routes that provides connections between Kittanning Borough and the City of Butler to the west and Indiana Borough to the east. Within the broader corridor, there are two park-and-ride facilities near US 422. These are Franklin Village—Route 268 at Westgate Drive and Hill Street at Indiana Road.

The [SmartMoves Connections Regional Transit Study](#) identifies clusters for multimodal hubs. The SMC clusters identify where unique transit supportive activities exist throughout the region based on demographic data, employment data, land use and other factors. These clusters are listed in the tables on this page.

Summit Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

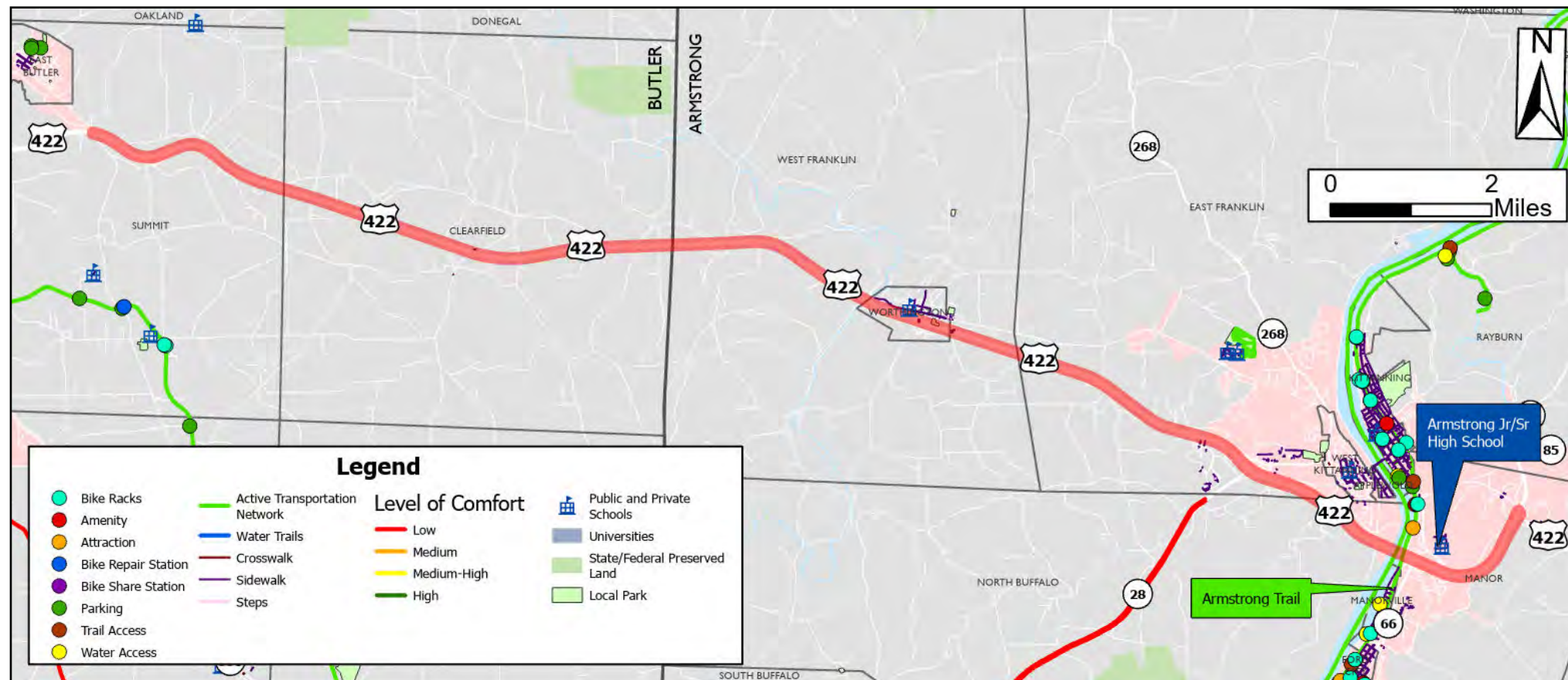
Clearfield Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

West Franklin Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

Worthington Borough	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

East Franklin Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

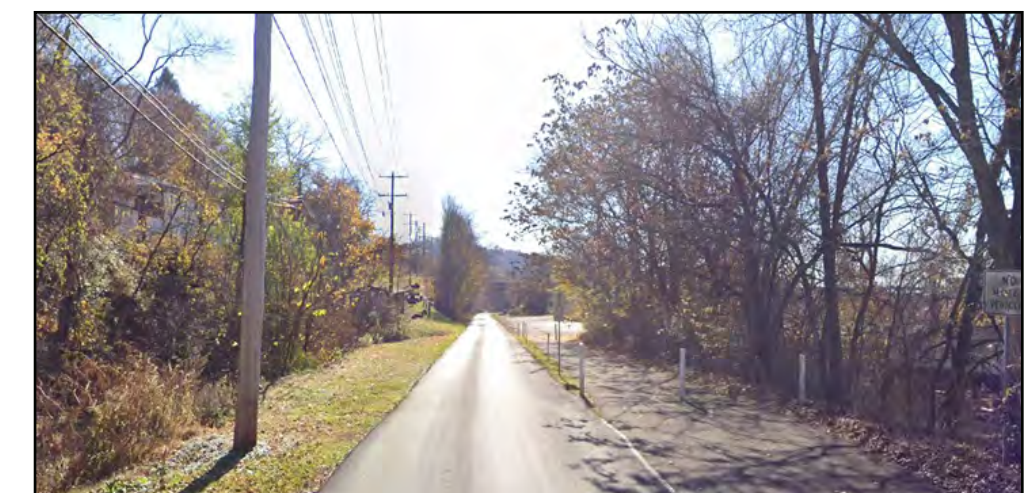
ACTIVE TRANSPORTATION



This segment of US 422 has very limited bicycle and pedestrian facilities with many sidewalks and trails located away from the US 422 corridor. This is due to the fact that most of the corridor is in rural areas with a good portion of this route being the Kittanning Bypass. Bicyclists and pedestrians are prohibited on the Kittanning Bypass. Very little to no bicycle and pedestrian facilities are present in Summit, Clearfield, and West Franklin Townships. There are some pedestrian facilities found within Worthington Borough north of US 422. Further east along the corridor, many bicycle and pedestrian facilities are found in the broader US 422 corridor in areas such as West Kittanning, Kittanning, Manor Township, Manorville, and Ford City. Although there is no direct connection from US 422, the Armstrong Trail goes underneath the Graff Bridge along the Allegheny River. The Armstrong Trail is a 52.5 mile trail on the Allegheny and Kiskiminetas Rivers, providing connections to Armstrong, Westmoreland, and Clarion Counties.

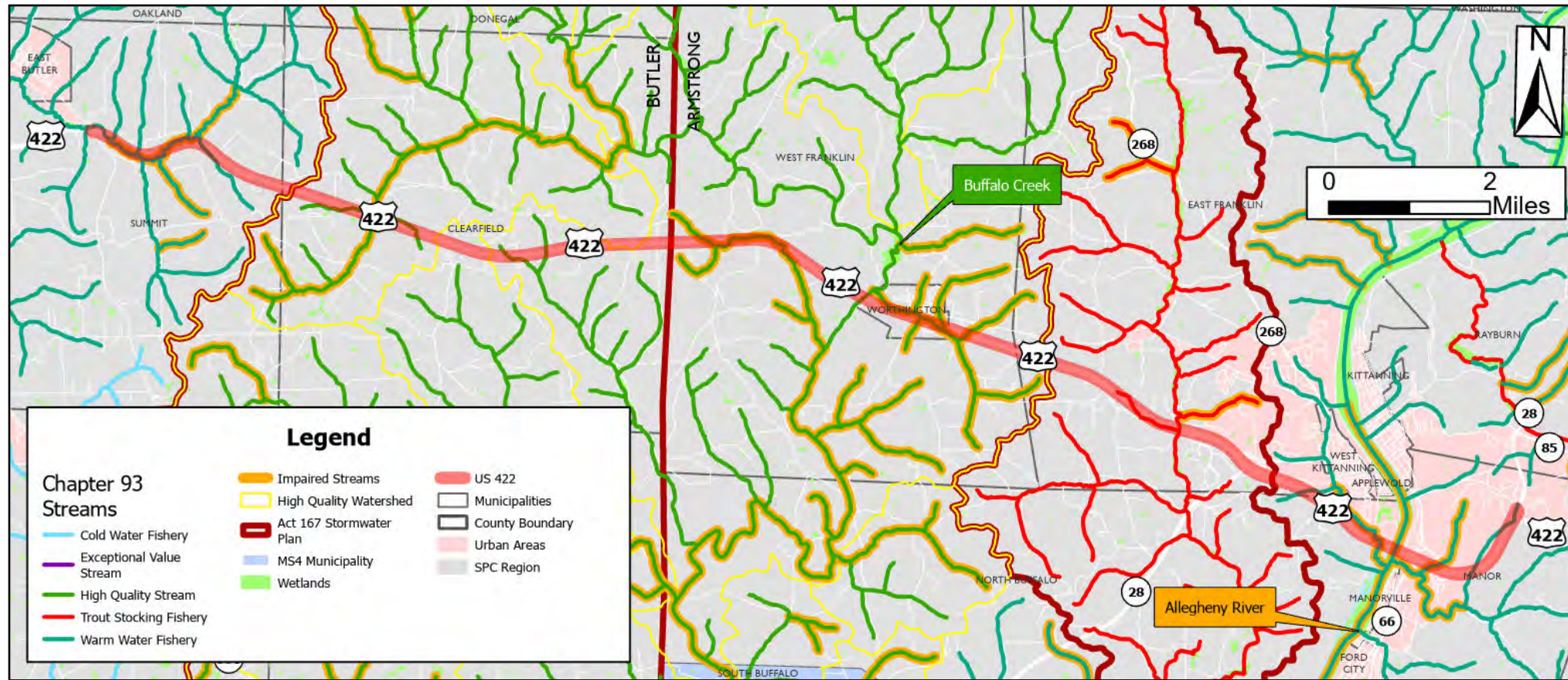


This corridor segment includes a combination of low and medium dense areas within Butler and Armstrong Counties. In Summit and Clearfield Townships in Butler County, short distance trips (less than two miles long) are less than 10%, with areas south of US 422 in Summit Township, short distance trips are between 10%-15%. Moving east into Armstrong County, short distance trips through West Franklin Township, Worthington Borough, East Franklin Township, North Buffalo Township and Manor Township are between 10%-15%. Higher short distance trips percentages can be found in parts of Kittanning and West Kittanning Boroughs where the sidewalk network is more prevalent. Short distance trips are 20-30% in Kittanning Borough and greater than 30% in West Kittanning Borough.



Armstrong Trail

ENVIRONMENTAL FEATURES



US 422 has numerous crossings of surface water resources in Segment C. There are several warm water fisheries, trout stocking fisheries, and high quality streams that cross this segment of US 422. These include the Allegheny River (Warm Water Fishery), Little Buffalo Run (High Quality Stream), Buffalo Creek (High Quality Stream), Glade Run (Trout Stocking Fishery), Bonnie Brook (Warm Water Fishery), and several smaller streams and tributaries. It should also be noted that Little Buffalo Run, Bonnie Brook, and Allegheny River are considered impaired streams. High Quality Watersheds include Buffalo Creek, Little Buffalo Run, and North Branch Rough Run.

Areas on this segment with Stormwater 167 Plans:

- Connoquenessing Creek
- Glade Run
- Buffalo Creek - Allegheny

Areas on this segment with MS4 Permits:

- There are no MS4 Permits in Segment C

Water Quality Standards

All commonwealth waters are protected for a designated aquatic life use as well as a number of water supply and recreational uses. The **use designation** shown in the water quality standards is the aquatic life use. These uses are Warm Water Fishes (WWF), Trout Stocking (TSF), Cold Water Fishes (CWF) and Migratory Fishes (MF). A body of water is considered **“impaired”** if it fails to meet one or more water quality standards.

The water quality in a High Quality stream can be lowered only if a discharge is the result of necessary social or economic development, the water quality criteria are met, and all existing uses of the stream are protected. Exceptional Value waters are to be protected at their existing quality; water quality shall not be lowered.

Some water resources are also part of the **Total Maximum Daily Load (TMDL)** program, which identifies sources of pollution and allocates pollutant loads in places where water quality goals are not being achieved.

Stormwater Management

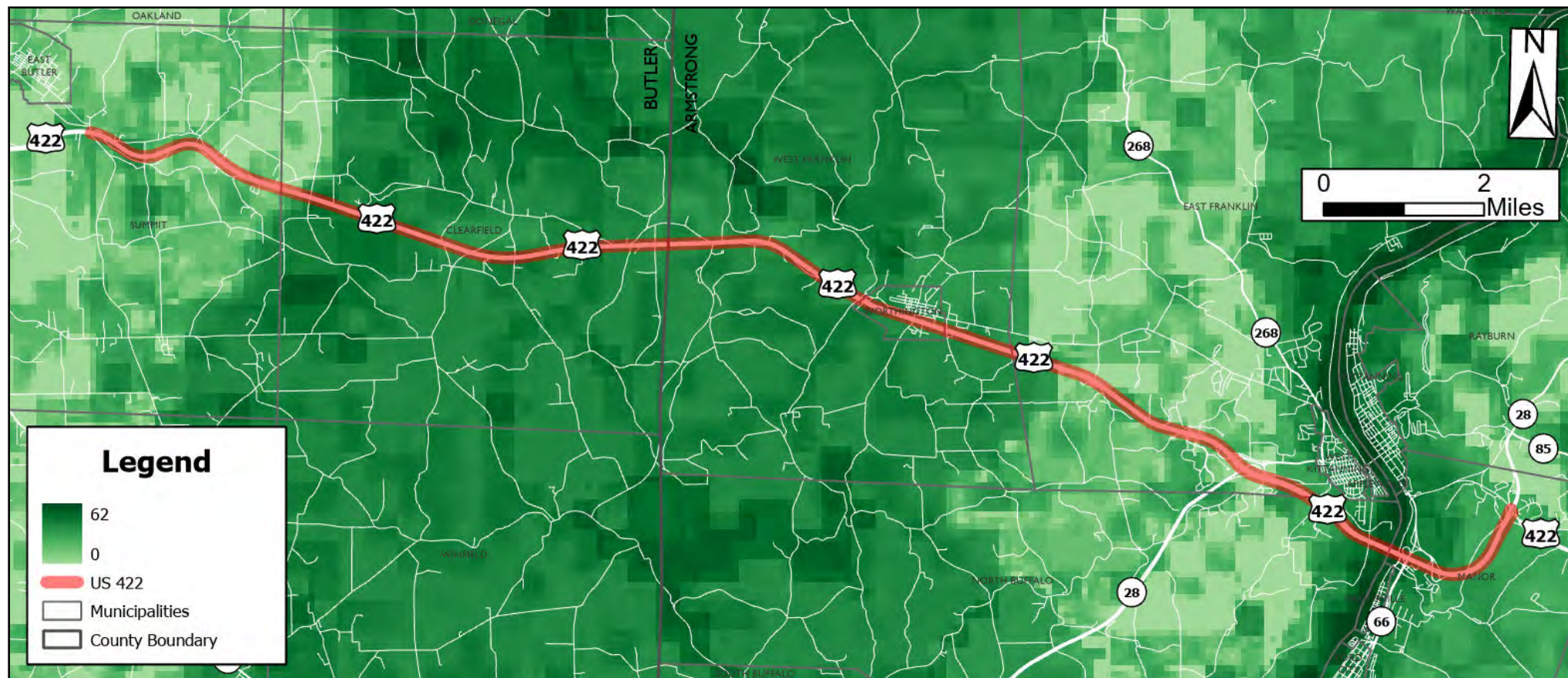
The **Storm Water Management Act (No. 167)** authorized a program of comprehensive watershed stormwater management that retains local implementation and enforcement of stormwater ordinances similar to local responsibility of administration of subdivision and land development regulations. Act 167 plans are required on a county-wide basis; however, the practice to this point has been to only develop plans for specific sensitive waters/watersheds.

A **Municipal Separate Storm Sewer System (MS4)** is owned or operated by a public agency, such as a city, town, county, flood control district, state, or federal agency that does not connect to the sanitary sewer system and does not lead to a wastewater treatment plant.



Looking towards Kittanning, Allegheny River near US 422

ENVIRONMENTAL FEATURES

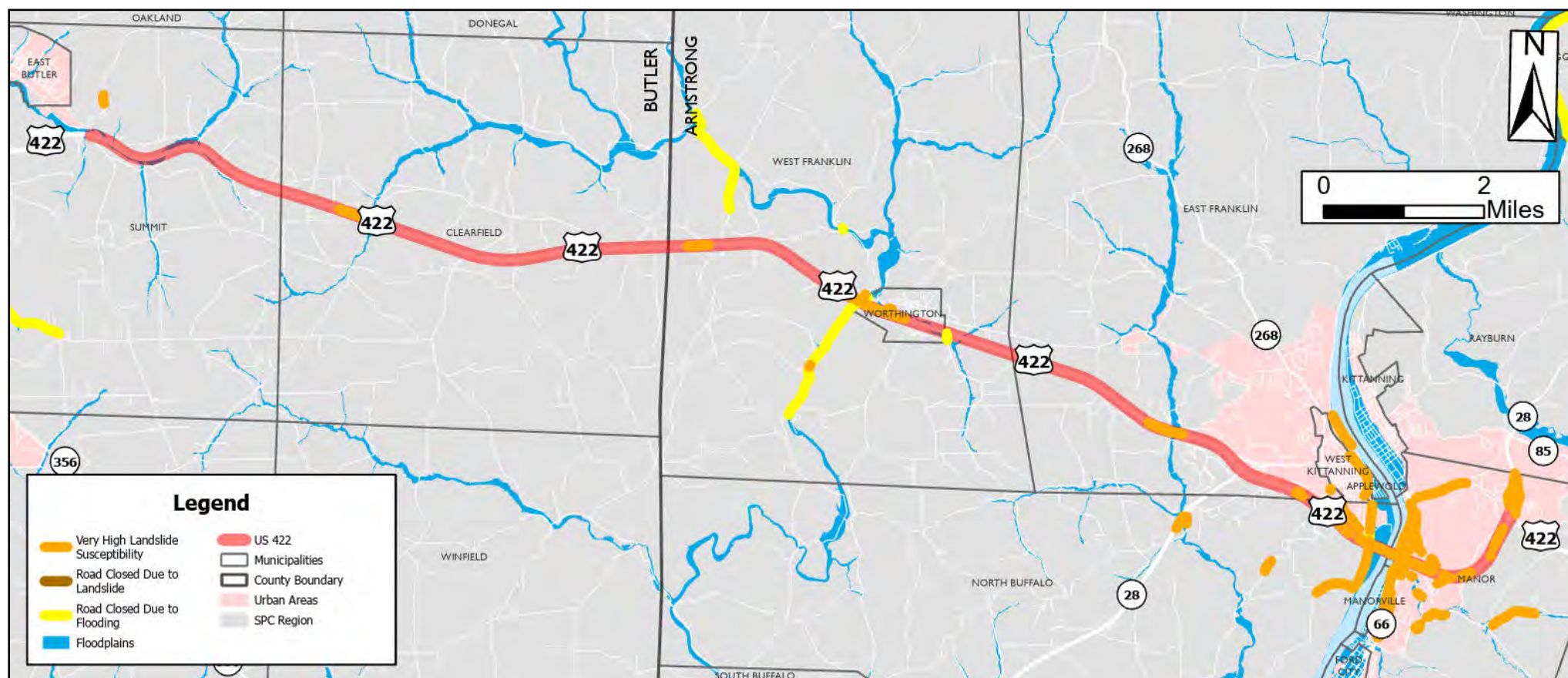


The **Regional Ecosystem Framework (REF)** integrates environmental inventory data, conservation priorities, maps, and plans, with input from and adoption by conservation and natural resource stakeholders identified that addresses species, habitats, and relevant environmental issues and regulatory requirements agreed upon by the stakeholders. SPC has identified available GIS data layers that when analyzed will spatially model ecological significance on a regional scale. The datasets that make up the prototype REF are included in the appendix.

SPC staff assigned a score to the relevant attribute of each environmental data layer, the score reflects the relative importance of the occurrence of any certain resource found in a dataset relative to other resources used in the analysis.

Greater values in the REF indicate greater environmental significance.

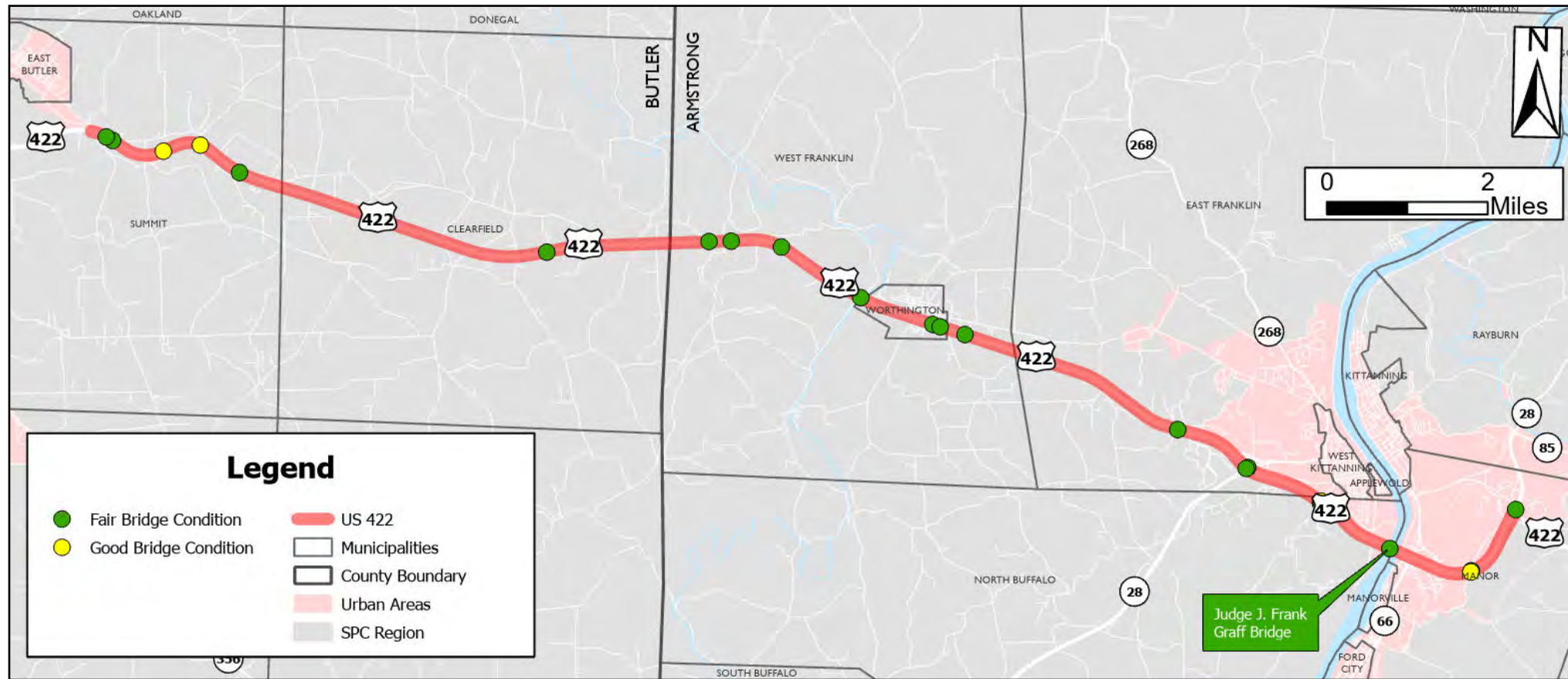
Within Segment C, the REF is showing a higher relative environmental value attributed to Buffalo Creek and the Allegheny River. Higher values at Buffalo Creek are due to Buffalo Creek being a high quality watershed with nearby Natural Heritage Core areas, conservation easements, forests, wetlands and Important Bird Areas. There are also Important Mammal Areas such as US Steel Mine and Long Run Mine. Long Mine Run is also a Natural Heritage Core Area. Higher values at the Allegheny River are due to the river being a mussel management area with nearby forests, protected lands, and wetlands. With this level of environmental quality, future projects on US 422 in this watershed can anticipate additional restrictions or measures related to waterway permitting and may have an increased chance of encountering threatened and endangered species.



US 422 in Segment C includes some locations with very high vulnerability to landslides. These locations are based on regionwide landslide modeling done by SPC and isolated to the area within a mile of US 422 in this segment. Most significant of these areas is the US 422 Kittanning Bypass. Slopes above and/or below the Kittanning Bypass are vulnerable to landslides. Other areas of very high landslide vulnerability include US 422 near Little Buffalo Run, US 422 near Mushroom Farm Road, and US 422 through Worthington Borough. According to PennDOT RCRS data, no sections of US 422 along Segment C were closed due to landslides or flooding.



CONDITION OF ASSETS



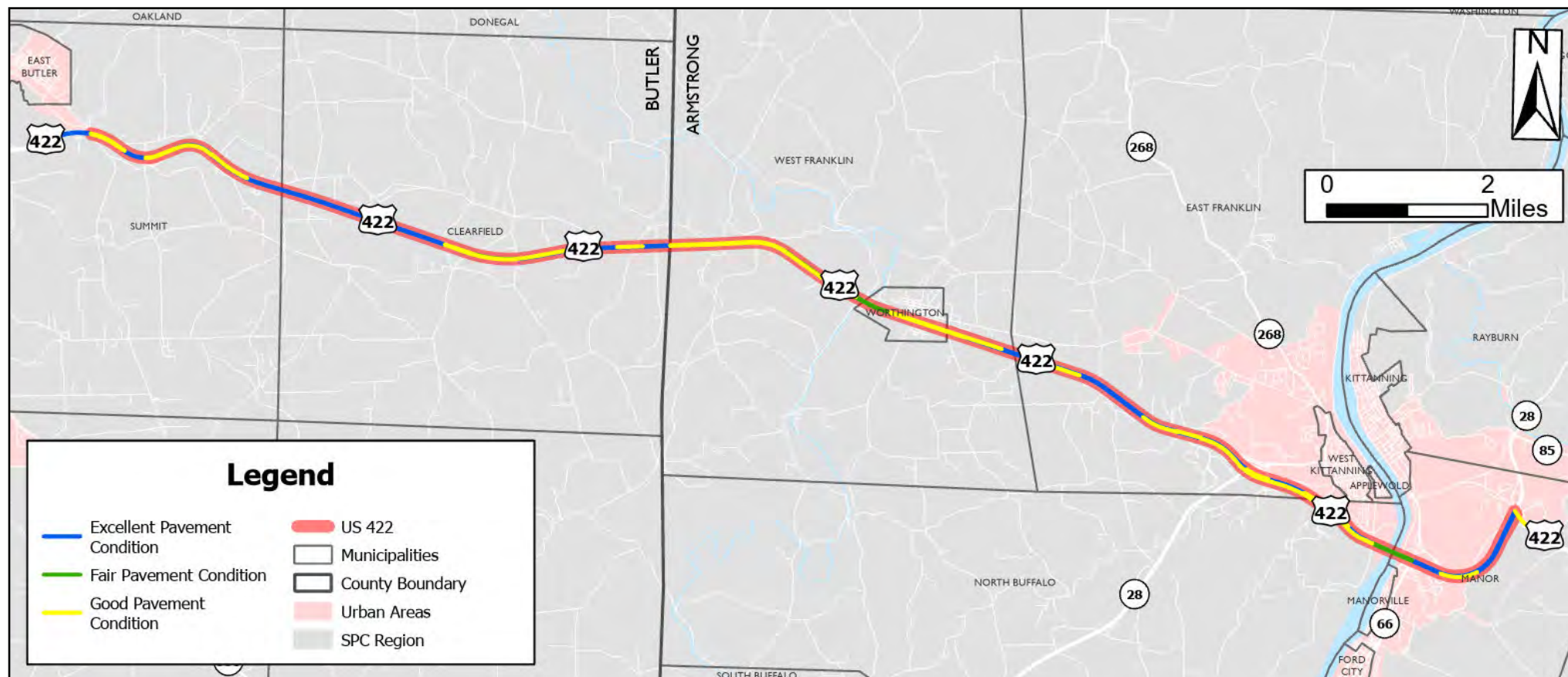
In Segment C, 78% of bridges on US 422 are rated in fair condition and 22% of bridges are rated in good condition. No bridges are rated in poor condition. 92% of US 422 has a pavement condition rating of good or excellent and 8% of pavement have a condition rating of fair. There is no pavement located on Segment C that is in poor condition.

Segment C Bridge Conditions

Bridge Condition	Count	Deck Area (SQ Ft)	By %
Good	5	50,446.3	22%
Fair	18	371,665.3	78%
Poor	0	0	0

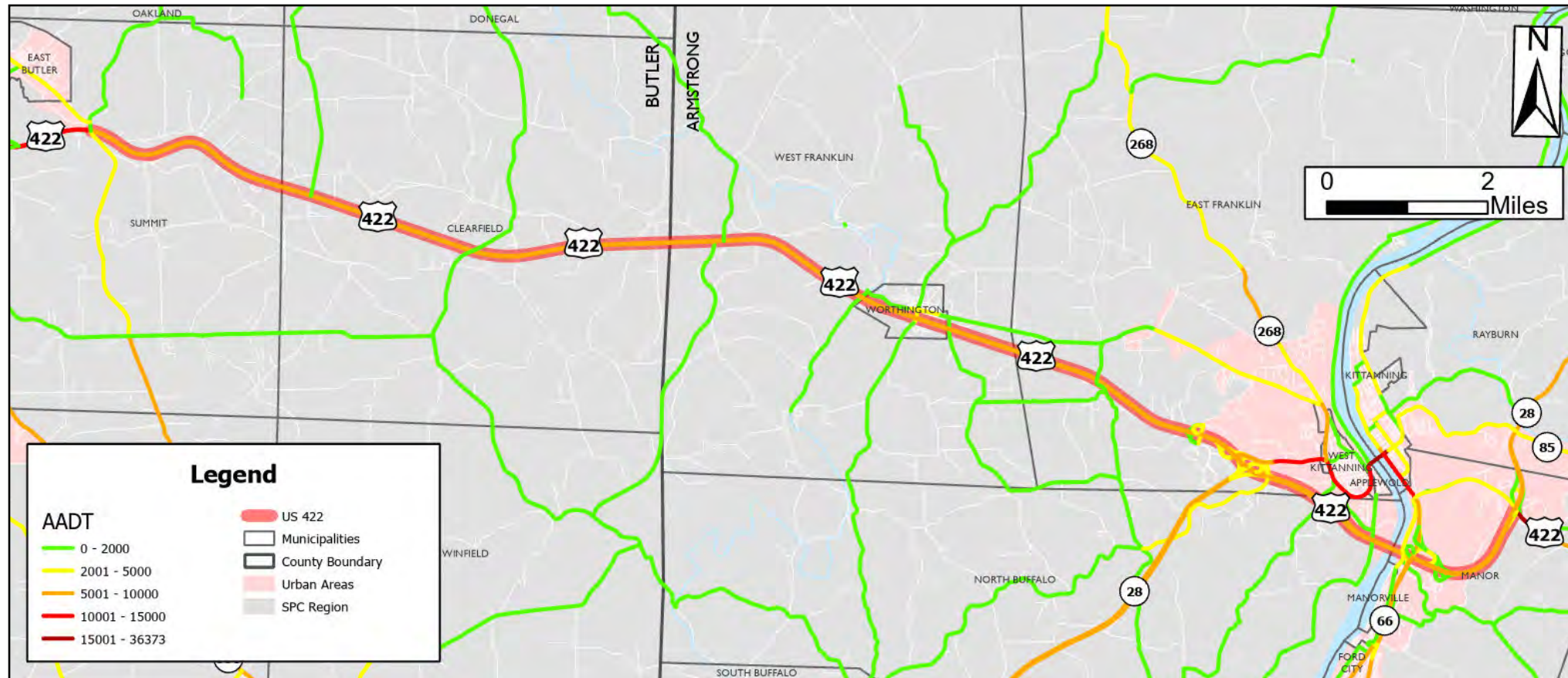
Segment C Pavement Conditions

Road Condition	Count (RMS Segments)	Miles	By %
Good/Excellent	83	37.2	92%
Fair	6	3.2	8%
Poor	0	0	0%



Looking East, Judge J. Frank Graff Bridge

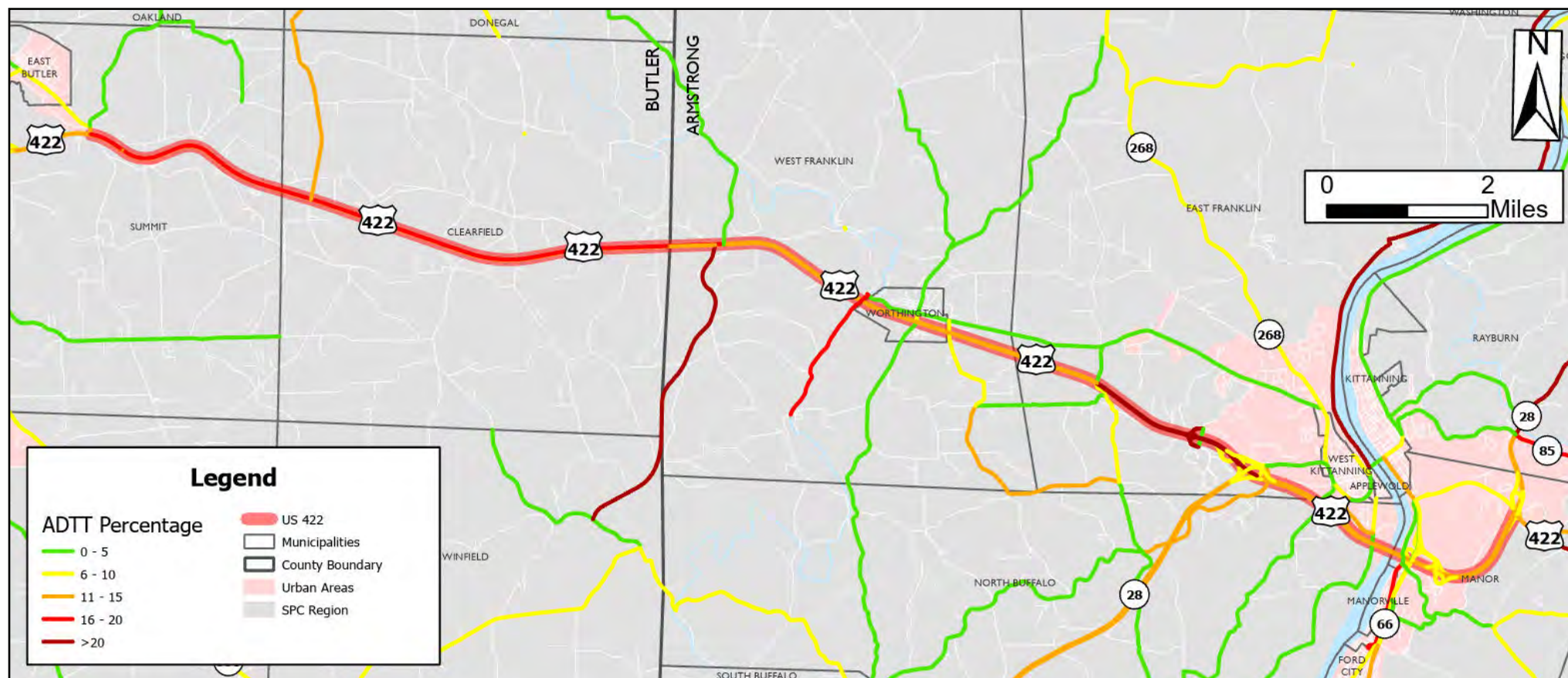
SEGMENT TRAVEL PATTERNS



Annual Average Daily Traffic (AADT) is the typical daily traffic on a roadway segment for all the days in a week over a one-year period. Truck percentage is the percent of the AADT that is comprised of truck traffic, excluding pickups, panels, and light trucks. The current AADT and truck percent figures included in this section were derived from the Pennsylvania Department of Transportation (PennDOT) Roadway Management System (RMS).

Traffic volumes for individual roadway segments on this portion of the corridor falls between 5,000 and 10,000 vehicles per day. The AADT for this section of the US 422 corridor is highest on the eastbound lanes of US 422 between SR 28 in East Franklin Township and SR 66 in Manor Township. Roadway segments on this stretch of the US 422 corridor have an AADT of 9,123. High AADT can also be located on the westbound lanes of US 422 between SR 66 in Manor Township and SR 28 in East Franklin Township. AADT on these roadway segments are 8,625.

Truck percentages on individual roadway segments on this portion of the US 422 corridor fall between 11% and 24%. Truck percentage for this section of the US 422 corridor is highest on the eastbound and westbound sides on US 422 between Glade Run Road and SR 28 in East Franklin Township. Roadway segments on this stretch of the US 422 corridor have a truck percentage of 24% and 23% respectively. Truck percentages are also high on the westbound lanes of US 422 from Nichola Road in West Franklin Township to Bonniebrook Road in Summit Township. This roadway segment has a truck percentage of 17%.

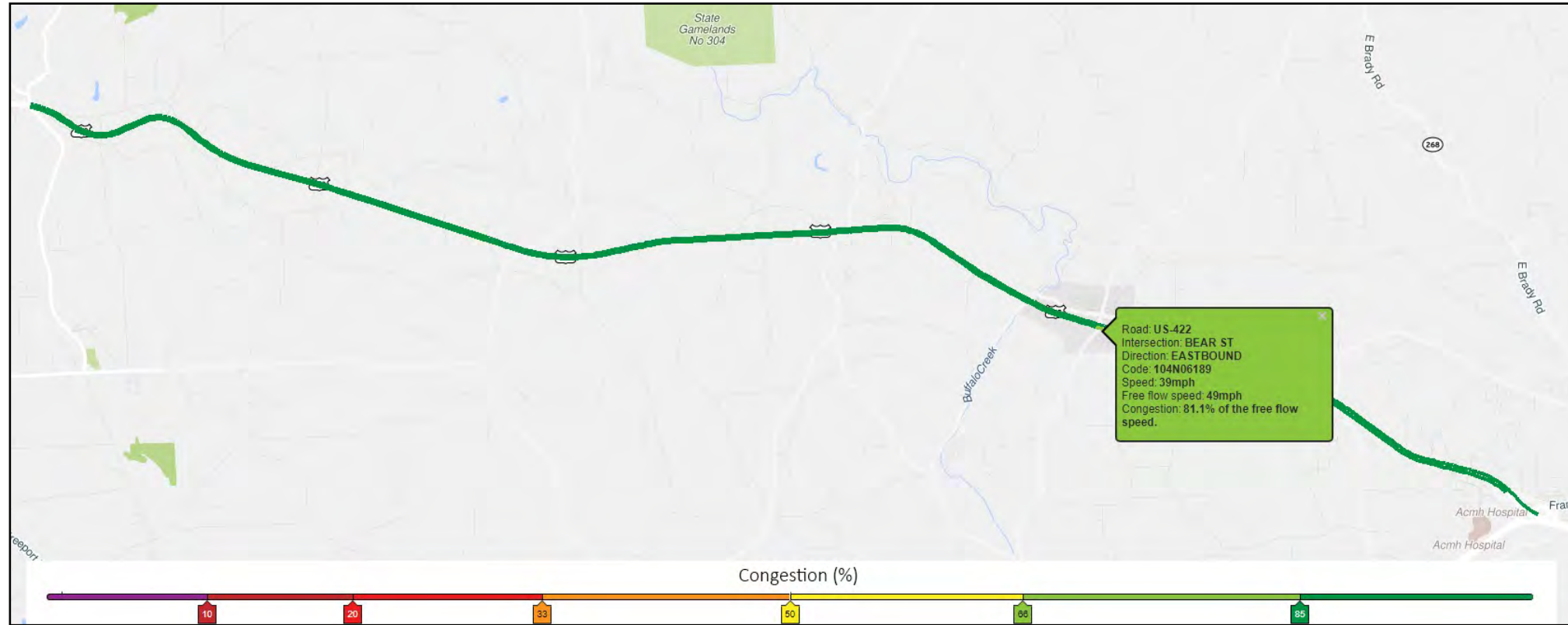


US 422 at Glade Run Road in East Franklin Township

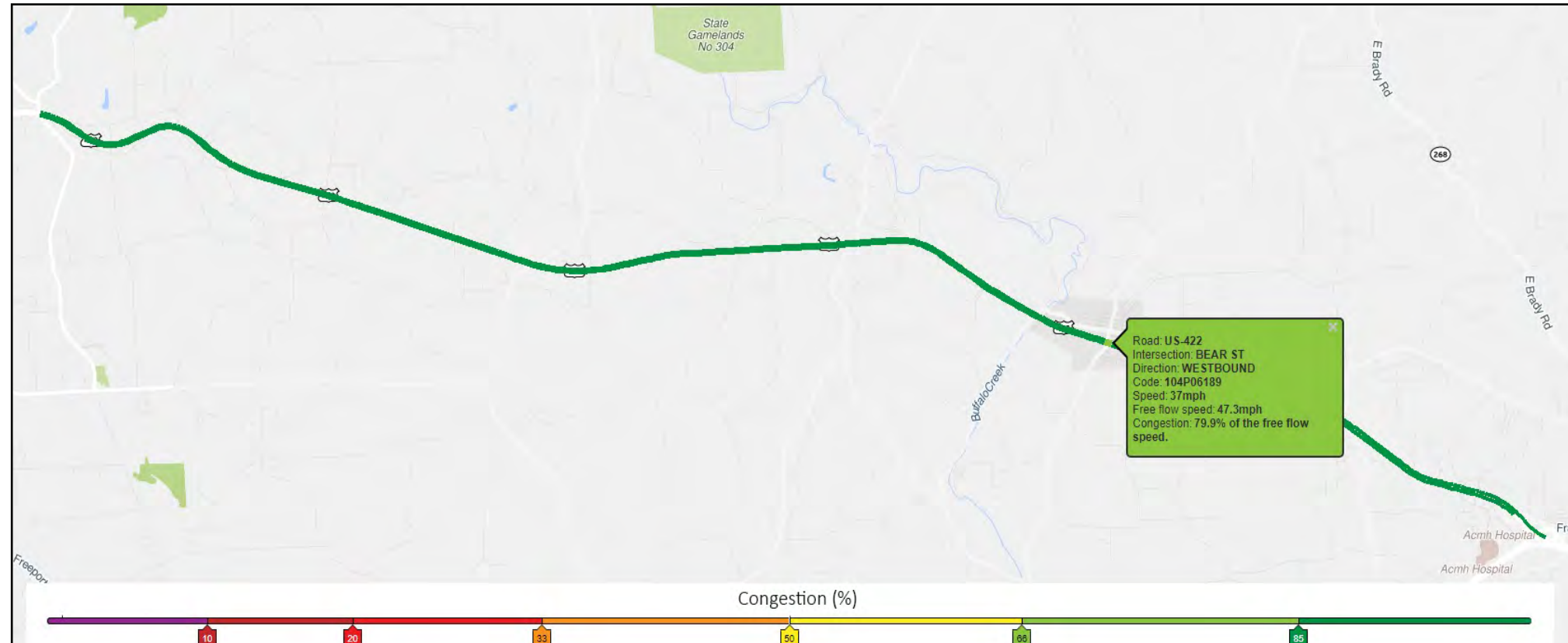


CONGESTION & RELIABILITY

US 422 Segment C Congestion Trend Map for AM Peak for January 01 2023 through December 31, 2023 (Every weekday)



US 422 Segment C Congestion Trend Map for PM Peak for January 01 2023 through December 31, 2023 (Every weekday)



- AM and PM peak period congestion trend mapping is shown for Segment C. Congestion percentage is shown as the percent of free flow speed achieved on the segment. Higher percentages indicate less congestion (greener colors), and lower percentages indicate more congestion (redder colors).
- In the AM peak period, travelers on Segment C approximately achieve 81% or higher of free flow speed.
- In the PM peak period, travelers on Segment C approximately achieve roughly 79% or higher of free flow speed.
- Travelers on Segment C generally experience negligible to light congestion in the peak periods.



Looking East, US 422 at Bear Rd in Worthington Borough

Travel Time in Minutes				
Eastbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				20.17
Monday	20.63	20.99	20.19	
Tuesday	20.62	20.98	20.19	
Wednesday	20.71	21.05	20.31	
Thursday	20.68	21.04	20.36	
Friday	20.71	20.89	20.75	
Saturday				20.41

Planning Time Index				
Eastbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				1.36
Monday	1.35	1.38	1.31	
Tuesday	1.35	1.39	1.31	
Wednesday	1.36	1.41	1.33	
Thursday	1.36	1.38	1.33	
Friday	1.36	1.39	1.48	
Saturday				1.36

Travel Time in Minutes				
Westbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				20.89
Monday	21.42	21.36	21.33	
Tuesday	21.6	21.51	21.64	
Wednesday	21.58	21.61	21.45	
Thursday	21.53	21.41	21.46	
Friday	21.55	21.48	21.59	
Saturday				21.23

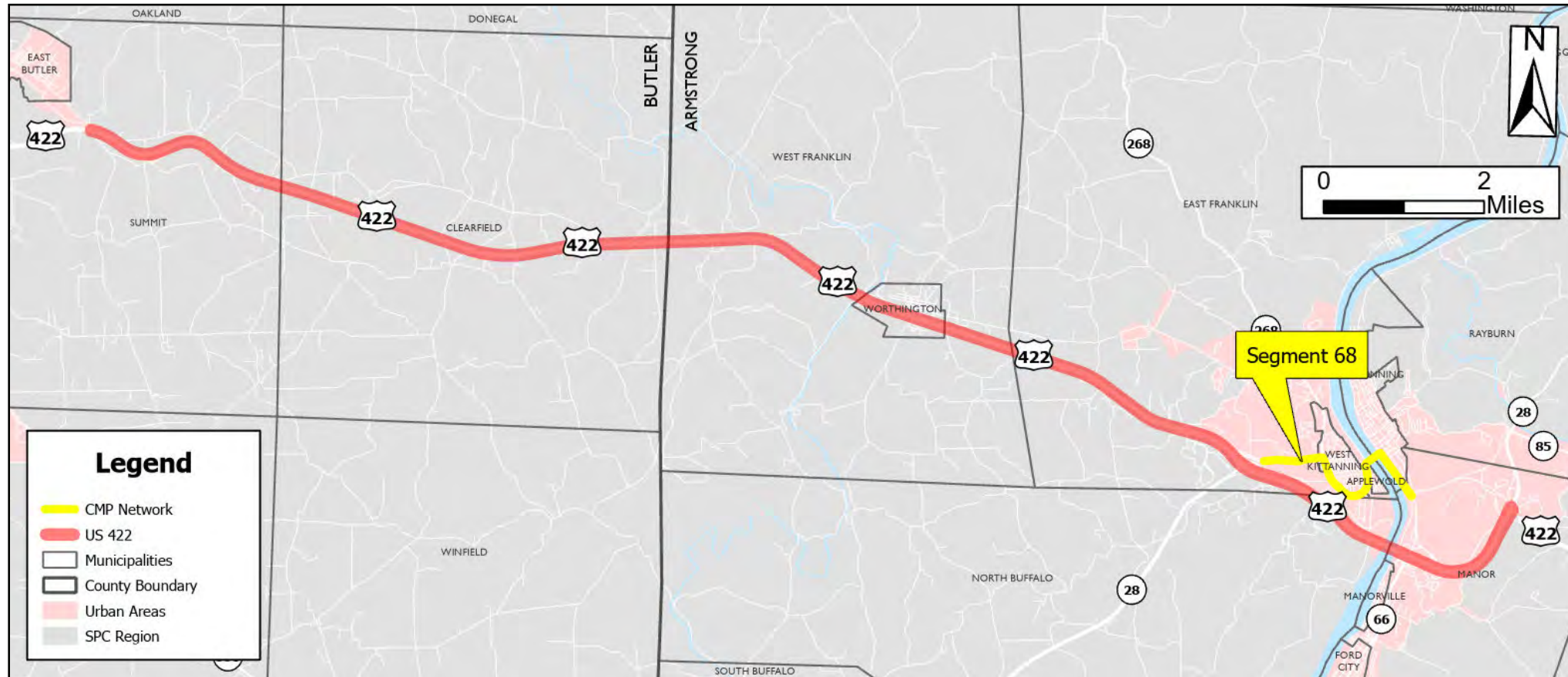
Planning Time Index				
Westbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				1.44
Monday	1.43	1.43	1.43	
Tuesday	1.45	1.41	1.47	
Wednesday	1.45	1.45	1.46	
Thursday	1.44	1.42	1.46	
Friday	1.46	1.43	1.47	
Saturday				1.46

Planning Time Index (PTI) is the extra time required to arrive at a destination on time, 95% of the time. It is calculated as the ratio of the 95th-percentile highest vehicle-hours traveled divided by the vehicle hours traveled if the same trips could have been completed at free flow speed. For example, a PTI of 1.5 means that a traveler should plan on 50% more time for their trip compared to light traffic conditions for a 95% probability of arriving on time (meaning that 15 minutes should be planned for what would be a 10 minute trip in light traffic conditions). SPC reports PTI for arterial CMP corridors in the region by direction for peak and off-peak times.

- PTI for Segment C in the eastbound direction ranges from 1.31 to 1.48
- PTI for Segment C in the westbound direction ranges from 1.41 to 1.47



CONGESTION MANAGEMENT PROCESS



- Segment C is not monitored as part of SPC's Congestion Management Process Network.
- Most of Segment C takes on the characteristics of a principal arterial with signalized intersections and the Kittanning Bypass. There are no adaptive traffic signals located on this segment of US 422; however the traffic signals located at Worthington Slate Lick/Bear Roads and Claypoole Road in Worthington Borough have emergency preemption.
- Detour routes for this segment include:
 - Business Route 422



US 422 at Clearfield Road in Clearfield Township

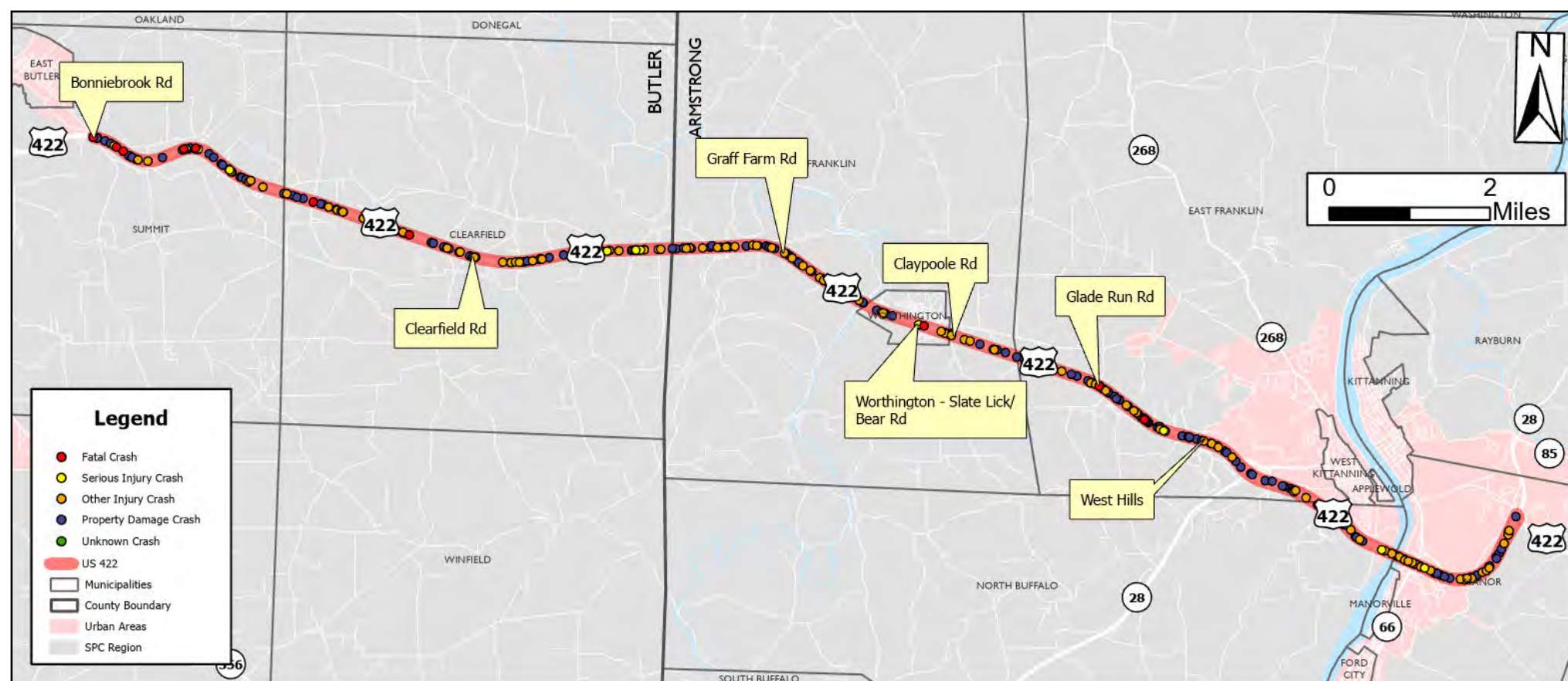


Looking West: US 422, Kittanning Bypass, between SR 28 and the Kittanning/SR 66 interchange in Manor Township



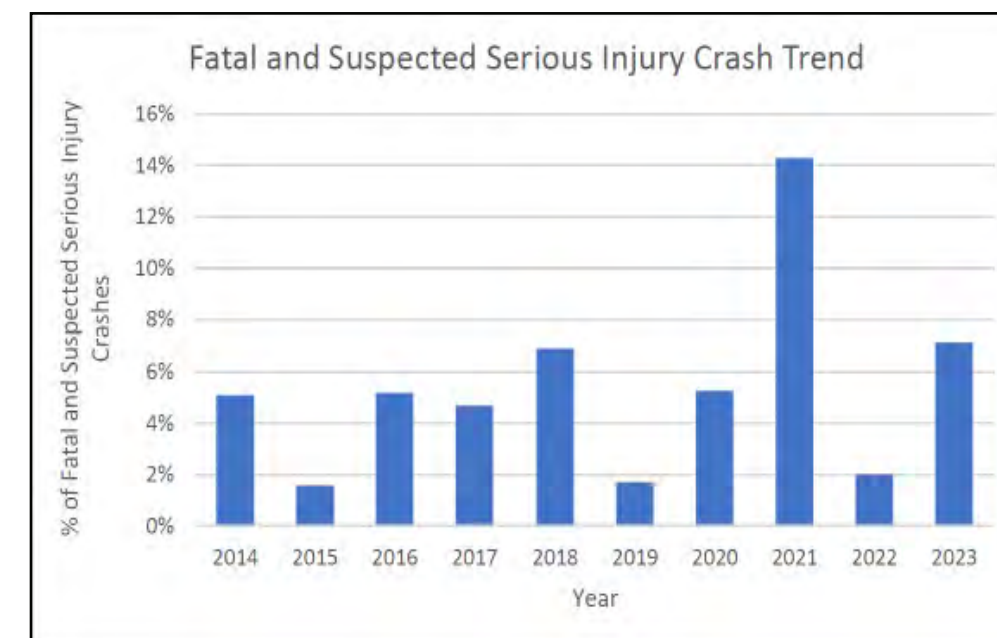
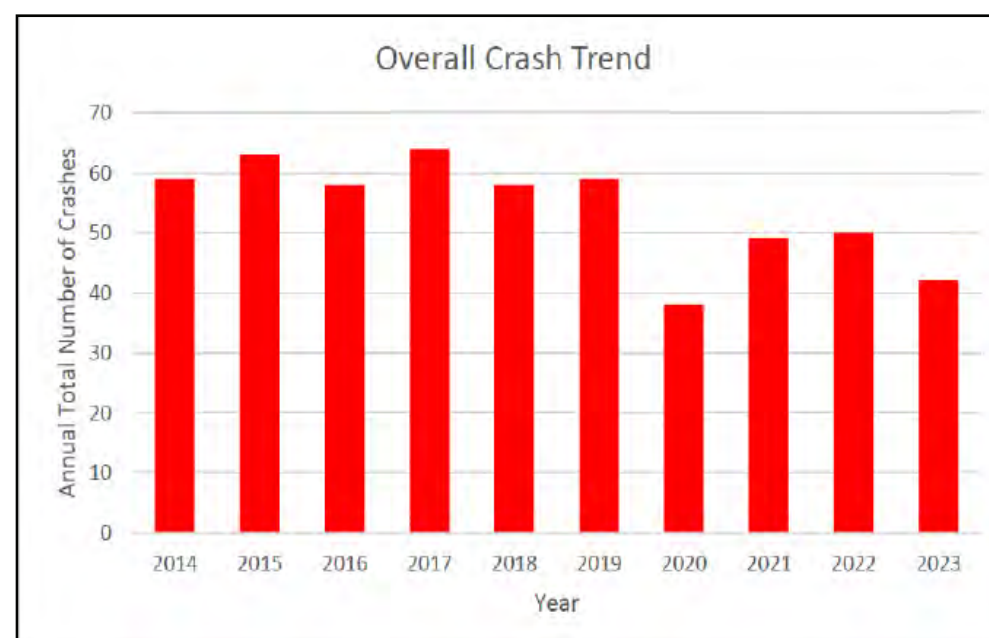
US 422 at Claypoole Road in Worthington Borough

SAFETY

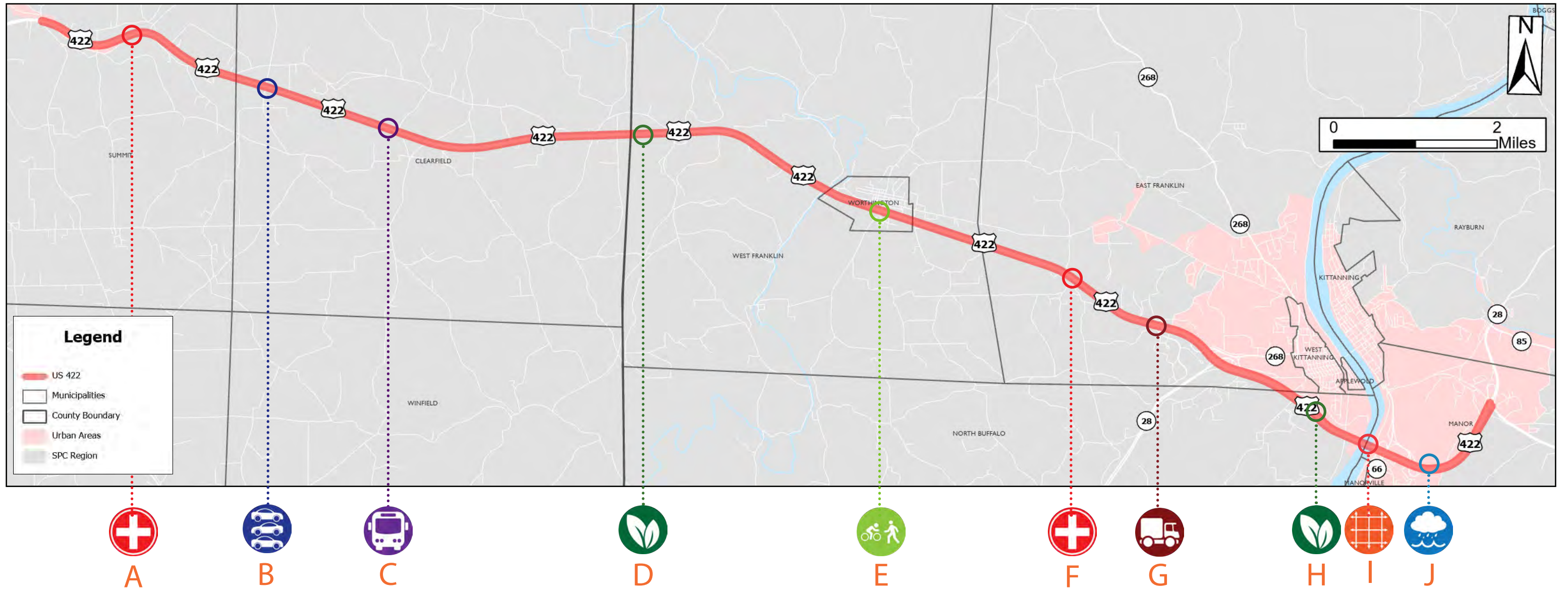


- For Segment C, the overall number of crashes appear to be trending downward over the 10-year period (2014-2023). The fatal and serious injuries appear to have a slightly upward trend over the same time period.
- Segment C's 2023 crash rate (0.93 crashes per MVMT) is lower than the average 2023 crash rate for similar roadways in both Butler County (1.05 crashes per MVMT) and Armstrong County (0.98 crashes per MVMT) and lower than the average 2023 crash rate for similar roadways in the SPC region (1.16 per MVMT).
- According to the PennDOT Highway Safety Network Screening (HSNS) Analysis, the following areas of Segment C are underperforming from a safety perspective:
 - Bonniebrook Road Intersection
 - Clearfield Road Intersection
 - Armstrong County Line to Graff Farm Road
 - Worthington Slate Lick Road/Bear Road Intersection
 - Claypoole Road Intersection
 - Glade Run Road to West Hills Interchange
- In 2022, SPC conducted a Road Safety Audit (RSA) at the US 422/Glade Run Road intersection. The RSA examines potential road safety issues and identifies opportunities for improvements in safety for all road users. Short-term improvements include updated pavement markings, signage, and lighting. Mid-term improvements include high friction surface treatments, rapid flashing beacons, intersection delineation, and lane use assignment. Long-term improvements include reconfiguring the intersection.

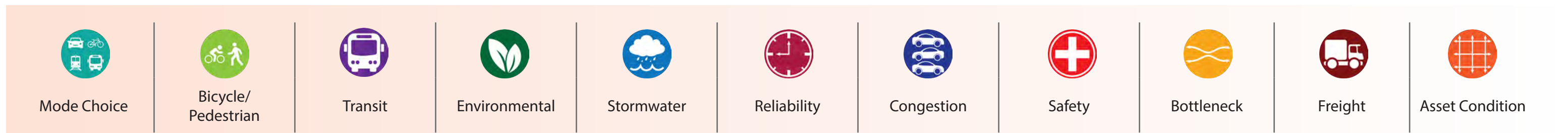
US 422 Segment C Crash Statistics	
Timeframe	2014-2023
All Crashes	457 (<1 crash per week)
Fatal Crashes	10 (~2% of all crashes)
Crashes Involving Serious Injuries	16 (~4% of all crashes)
Crashes Involving Other Injuries	158 (~35% of all crashes)
Crashes Involving Property Damage	268 (~59% of all crashes)
Unknown	5 (~1% of all crashes)








SEGMENT C: FOCUS AREAS








FOCUS AREA CATEGORIES



SEGMENT C: FOCUS AREAS

A		There have been five fatal crashes and six crashes resulting in nine serious injuries between Bonnebrook Road and the Karnes Road/Old Route 422 intersection in Summit Township. The 2023 PennDOT HSNS has indicated that the Bonnebrook Road intersection is underperforming from a safety perspective.
B		Linear traffic growth rates are showing that the eastbound and westbound US 422 traffic is showing a 16% and 25% base-build change respectively out to 2050.
C		There is a lack of transit services to connect potential transit users between Kittanning and the City of Butler and points in between.
D		Higher values at Buffalo Creek is due to Buffalo Creek being a high quality watershed with nearby Natural Heritage Core areas, conservation easements, forests, wetlands and Important Bird Areas. There are also nearby Important Mammal Areas such as US Steel Mine and Long Run Mine. Long Mine Run is also a Natural Heritage Core Area. Future projects on US 422 can anticipate additional restrictions or measures related to waterway permitting and may have an increased chance of encountering threatened and endangered species.
E		US 422 is an expressway through a predominantly rural area which is prohibited to additional pedestrian or bicycle specific facilities. Many existing facilities are located within the broader the US 422 corridor and provides an alternate bicycle and pedestrian mode to US 422.

F		The Road Safety Audit conducted by SPC at the US 422/Glade Run Road intersection identified opportunities for improvements in safety. These improvements include updated pavement markings, signage, and lighting, high friction surface treatments, rapid flashing beacons, intersection delineation, and lane use assignment. Long-term improvements include reconfiguring the intersection.
G		Roughly 25% of the traffic on both sides of the US 422 corridor between Glade Run Road and SR 28 in East Franklin Township are from heavy trucks only.
H		Higher values at the Allegheny River is due to the river being a mussel management area, nearby forests, protected lands, and wetlands. Future projects on US 422 can anticipate additional restrictions or measures related to waterway permitting and may have an increased chance of encountering threatened and endangered species.
I		The Judge J Frank Graff Bridge is a key asset for US 422 corridor. The bridge is the longest bridge on US 422 and it is also the largest non-interstate bridge in District 10. The continued preservation and maintenance of the Graff Bridge is essential.
J		Slopes above and/or below the Kittanning Bypass are vulnerable to landslides.



US 422 at Karnes Road in Summit Township



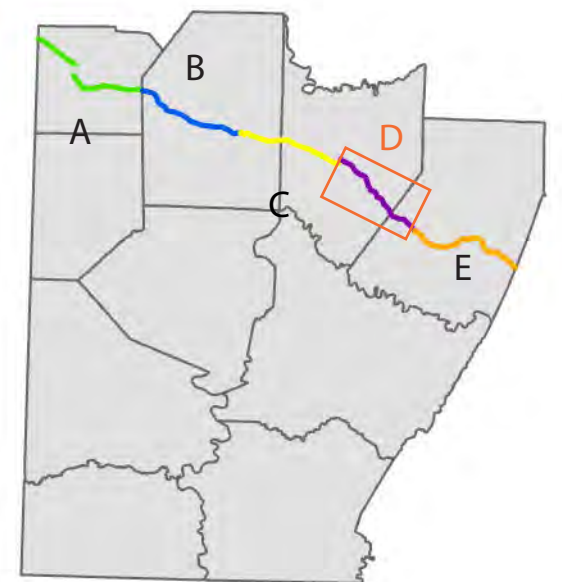
Looking East, US 422 Bypass near SR 28 in East Franklin Township



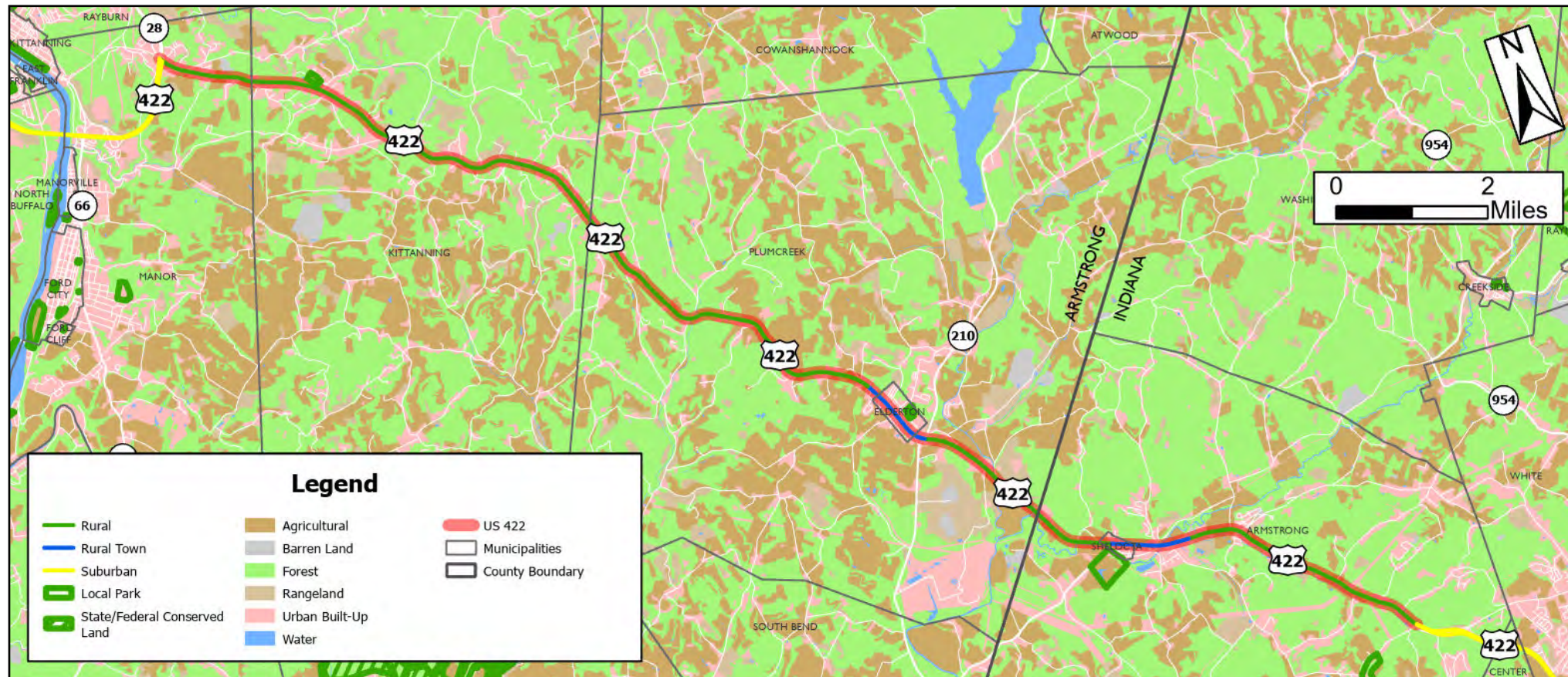
SECTION III: SEGMENT PROFILES

SEGMENT D

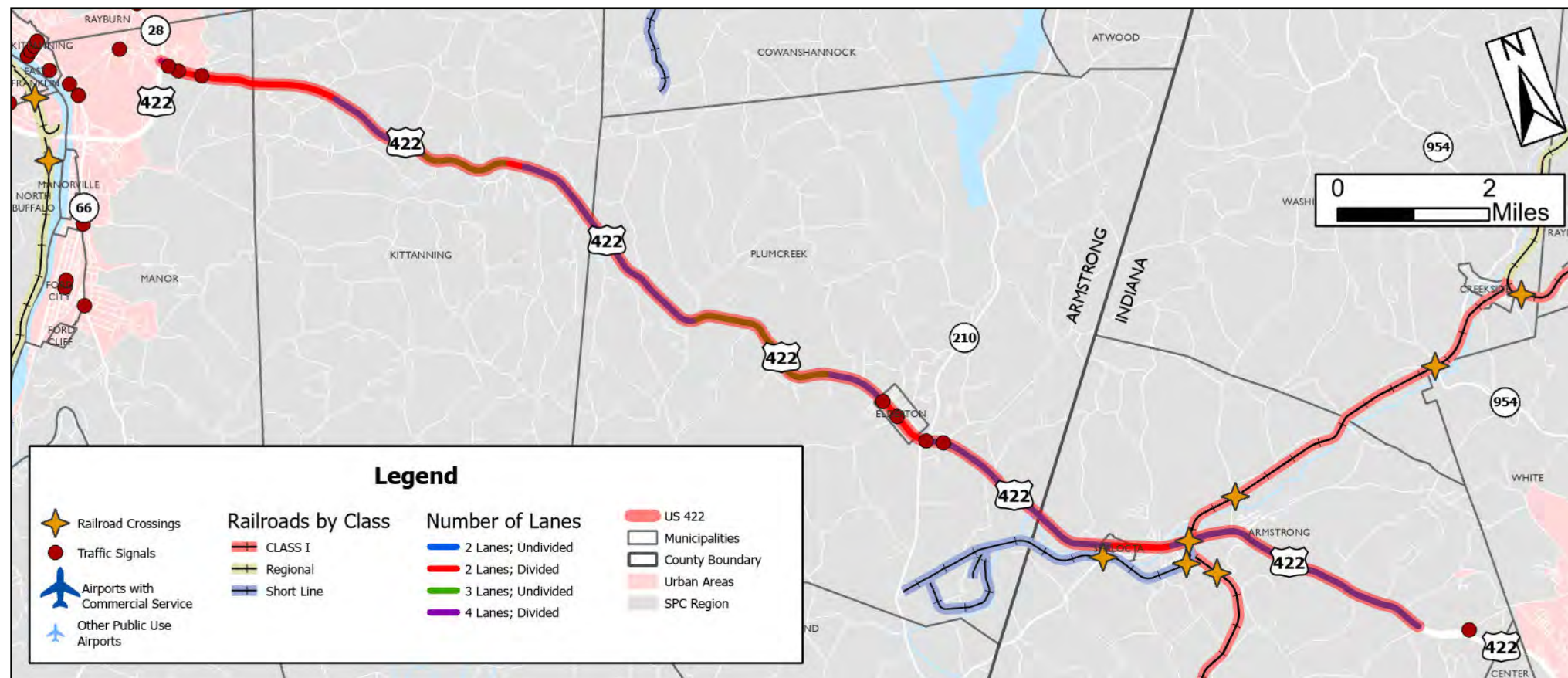
- SEGMENT OVERVIEW
- FUTURE HIGHWAY & BRIDGE PROJECTS
- REGIONAL, COUNTY, AND LOCAL PLANS AND USER PERSPECTIVES
- FREIGHT
- TRANSIT
- ACTIVE TRANSPORTATION
- ENVIRONMENTAL FEATURES
- CONDITION OF ASSETS
- SEGMENT TRAVEL PATTERNS
- CONGESTION & RELIABILITY
- SAFETY
- FOCUS AREAS



SEGMENT D: OVERVIEW



US 422 from the SR 28 interchange in Manor Township to Parkwood Road in Armstrong Township features multiple lane configurations. Coming off the Kittinging Bypass, US 422 is a two-lane, divided roadway until east of the Rupp Church Road/Lilac Lane intersection in Kittinging Township. Here, US 422 becomes a two-lane, undivided roadway until the Green Tree/Rinker Hollow Roads intersection where US 422 becomes a three-lane, undivided roadway until the Blanket Hill Road. Once east of this intersection, US 422 becomes a two-lane, undivided roadway until the Margaret Road intersection in Plumcreek Township. East of the Margaret Road intersection, US 422 becomes a three-lane, undivided roadway until the Run Around Road intersection, where US 422 goes back down to a two-lane, undivided roadway until the Elderton Borough line where US 422 enters Elderton as a two lane, divided roadway. At the US 422 and SR 210 intersection, US 422 becomes a two-lane, undivided roadway until Shelocta Borough. In Shelocta, US 422 becomes a two-lane, divided highway through the borough and then changes back to a two-lane, undivided roadway until Parkwood Road.



Major roadways that connect to this segment of US 422 includes SR 28, SR 56, and SR 210. Due to the rural nature of this roadway, many of the intersections are non-signalized, at-grade, with very few traffic signals. There are traffic signals located at US 422 at Scenic Drive in Manor Township, US 422 at Salt Work Street in Elderton Borough, and US 422 at SR 210 in Plumcreek Township. Although no grade-separated intersections exist along this segment of US 422, it should be noted that a future grade-separated intersection will be present at the US 422 at Margaret Road intersection when the Margaret Road project is completed. This project realigns US 422 to improve existing intersection, sight distance, and geometrics which will includes two new bridge structures over Margaret Road. Margaret Road will be accessed via US 422 with a new T-intersection.



US 422 at SR 56/SR 156 Intersection in Shelocta Borough

FUTURE HIGHWAY & BRIDGE PROJECTS



Margaret Road Intersection Project in Plumcreek Township

1 Roadway Preservation | MPMS 115094
Fiscally Constrained List | US 422 Kittanning East PM
Milling of existing bituminous material, minor drainage, transverse and longitudinal joint repair and paving of bituminous leveling and wearing courses along US 422 from Redmill Rd to just east of SR 2007 in Kittanning and Manor Townships, Armstrong County.
Estimated Cost: \$12.3 Million

2 New Capacity | MPMS 98689
2025-2028 TIP | SR 422 Dunbar Dip
Construct a three-lane section and realignment of several intersections and extensive geometry improvements along US 422 from SR 2012 (Silvis Hollow Rd) to Township Road #590 (Simpson Church Rd) in Kittanning Township, Armstrong County
Programmed Amount: \$250,000

3 New Capacity | MPMS 98689
Fiscally Constrained List | SR 422 Dunbar Dip
Construct a three-lane section and realignment of several intersections and extensive geometry improvements along US 422 from SR 2012 (Silvis Hollow Rd) to Township Rd #590 (Simpson Church Rd) in Kittanning Township, Armstrong County
Estimated Cost: \$43.7 Million

4 Safety | MPMS 85574
2025-2028 TIP | Margaret Rd Intersection
Realignment and reconstruction of US 422 in Plumcreek Township, Armstrong County
Programmed Amount: \$631,000

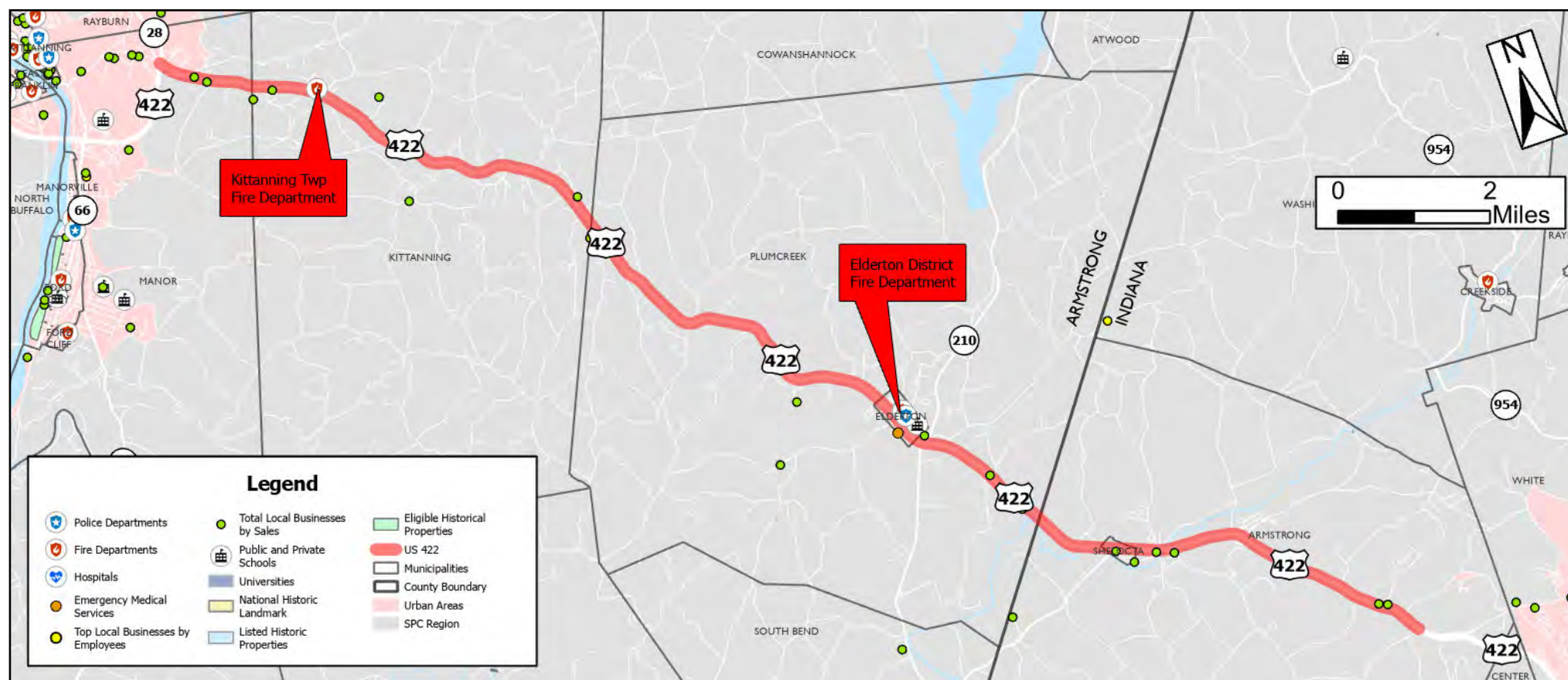
5 Roadway Preservation | MPMS 114605
2025-2028 TIP | US 422: Armstrong County to Indiana Bypass
Milling of existing roadway surface, level and wearing courses, minor drainage, guiderail upgrades and shoulder back-up along US 422 from the Armstrong County Line east to the Indiana Bypass near the intersection of SR 4422 in Armstrong Township, Indiana County
Programmed Amount: \$2.7 Million

6 Roadway Preservation | MPMS 114605
Fiscally Constrained List | US 422 Armstrong Co to Indiana Bypass
Milling of existing roadway surface, level and wearing courses, minor drainage, guiderail upgrades and shoulder back-up along US 422 from the Armstrong County Line east to the Indiana Bypass near the intersection of SR 4422 in Armstrong Township, Indiana County
Estimated Cost: \$18 Million

7 Efficiency & Operations | MPMS 100289
Fiscally Constrained List | SR 422 Cheese Rn Rd to Trim Tree Rd
Reconstruction including vertical and horizontal geometry improvements along US 422 between T-408 (Cheese Run Road) and T-433 (Trim Tree Road) in Armstrong Township, Indiana County
Estimated Cost: \$18 Million

For up to date information on LRP and TIP projects, please click [here](#).

REGIONAL, COUNTY, AND LOCAL PLANS AND USER PERSPECTIVES



Due to the rural character of this segment, there are very few community features that are found within the broader US 422 corridor. The only emergency services that are found within the broader US 422 corridor is the Kittanning Township Fire Department, Elderton District Fire Department, and the Elderton Borough Police Department.



Looking West, US 422 near Kittanning Township Fire Department

Relevant Local, County and Regional Plans

[Armstrong County Comprehensive Plan](#)

[Indiana County Comprehensive Plan](#)

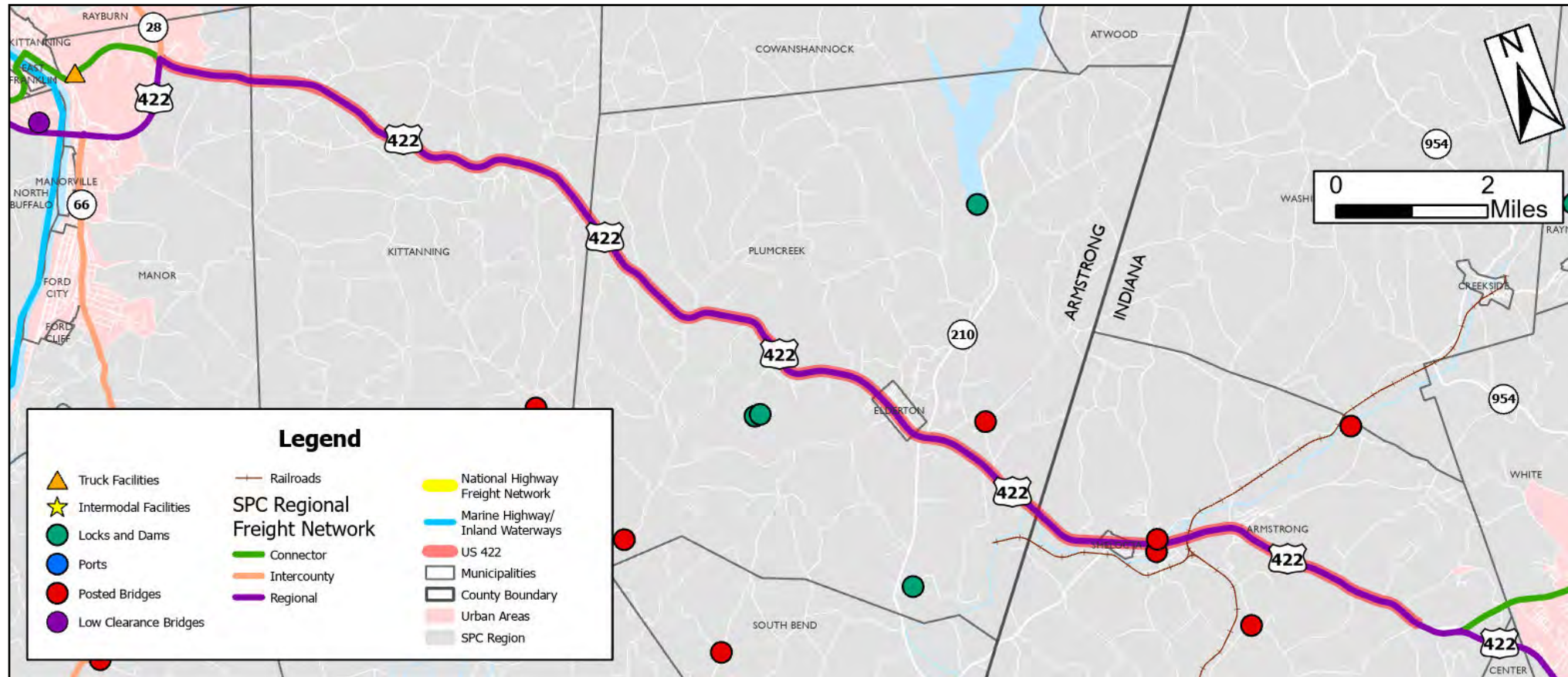


Looking East, US 422 through Shelocta Borough



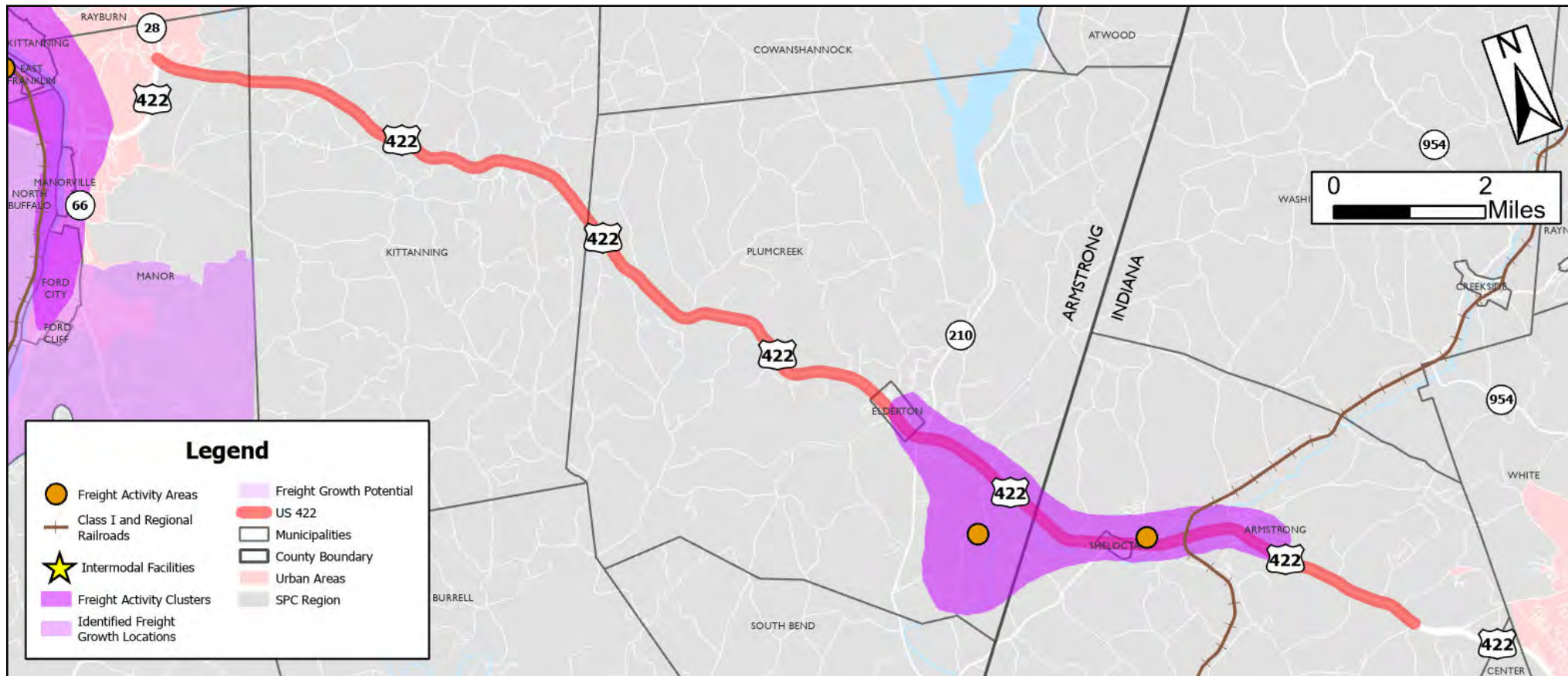
Looking East, US 422 in Elderton Borough

FREIGHT



SPC’s Regional Freight Network provides a more complete inventory of the key corridors and connections that service the region’s freight movement needs. The Regional Freight Network is divided into three different classifications, Regional Routes; Intercounty Routes; and Connector Routes. US 422 is a designated regional route on SPC’s Regional Freight Network that provides connections to SR 28 which is also on the Regional Freight Network. There is no truck or intermodal facility that is located on this segment of US 422. SPC Regional Freight Plan identifies areas of Freight Activity Clusters, Identified Freight Growth Locations and Potential Freight Growth Areas. Freight Activity Clusters can be found in Elderton, Plumcreek Township, Shelocta, and Armstrong Township. There are no Identified Freight Growth Location or Potential Freight Growth Areas along this segment of US 422.

Recently, the USDOT released the draft National Multimodal Freight Network (NMFN). The draft National Multimodal Freight Network (NMFN) assess and support federal investments to achieve national multimodal freight policy goals for highways, rail, marine ports and waterways. This draft network includes the entire segment of US 422 from SR 28 to US 119 to be include on the highway component of the NMFN. Railroads are also included in the National Multimodal Freight Network. Near Segment D, Norfolk Southern Railroad’s Keystone Branch is included in the draft NMFN. The Keystone Branch is located south of US 422 near Shelocta Borough and travels south towards Saltsburg and beyond



Truck counts are the highest from the SR 28 interchange to Scenic Drive in Manor Township, Blanket Hill Road in Kittanning Township to Margaret Road in Plumcreek Township, and SR 210 in Plumcreek Township to 5 Points Road in Armstrong Township. Data collected by PennDOT Roadway Management System (RMS) indicates that Average Daily Truck Traffic (ADTT) is between 1,900 and 2,700 on these roadway segments. Other areas with notable ADTT includes Scenic Drive to Blanket Hill Road, and 5 Points Road to Parkwood Road in Armstrong Township. ADTT measures between 1,200 and 1,900 trucks per day. US 422 in this segment travels through rural land, mostly on two or three lane undivided roadway, with steep and sharp curves. This can potentially cause hazardous conditions for freight movement traveling in between Kittanning and Indiana.

TRANSIT



Due to the rural nature of Segment D, there are no bus routes, bus stops, and park-and-ride facilities located on this segment of US 422. Many transit routes are located in Kittanning or Indiana Boroughs. There is also a lack of transit operations to allow transit users to travel between Kittanning and Indiana.

The [SmartMoves Connections Regional Transit Study](#) identifies clusters for multimodal hubs. The SMC clusters identify where unique transit supportive activities exist throughout the region based on demographic data, employment data, land use and other factors. These clusters are listed in the tables on this page.

Manor Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine; Security Cameras; Wayfinding; Real-Time Arrival Information

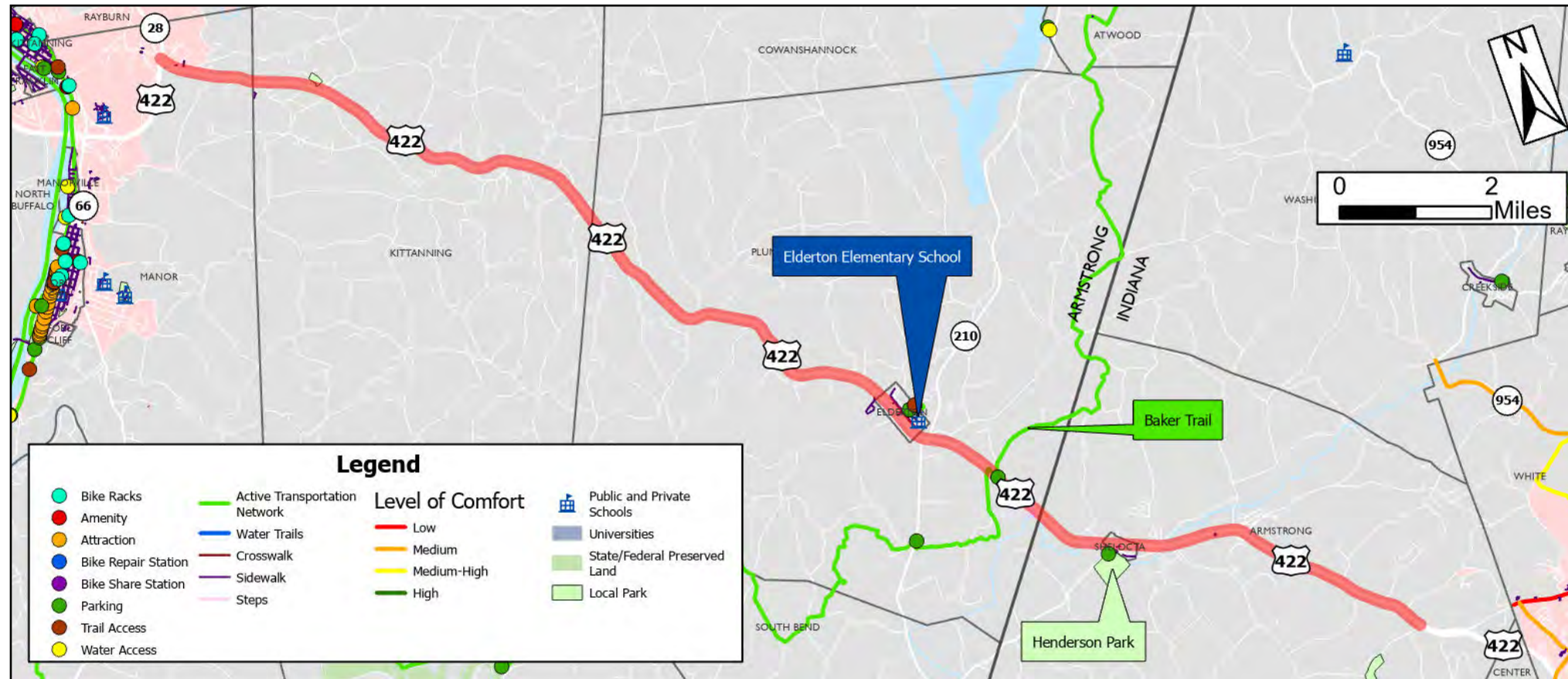
Kittanning Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

Armstrong Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

Elderton Borough and Plumcreek Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

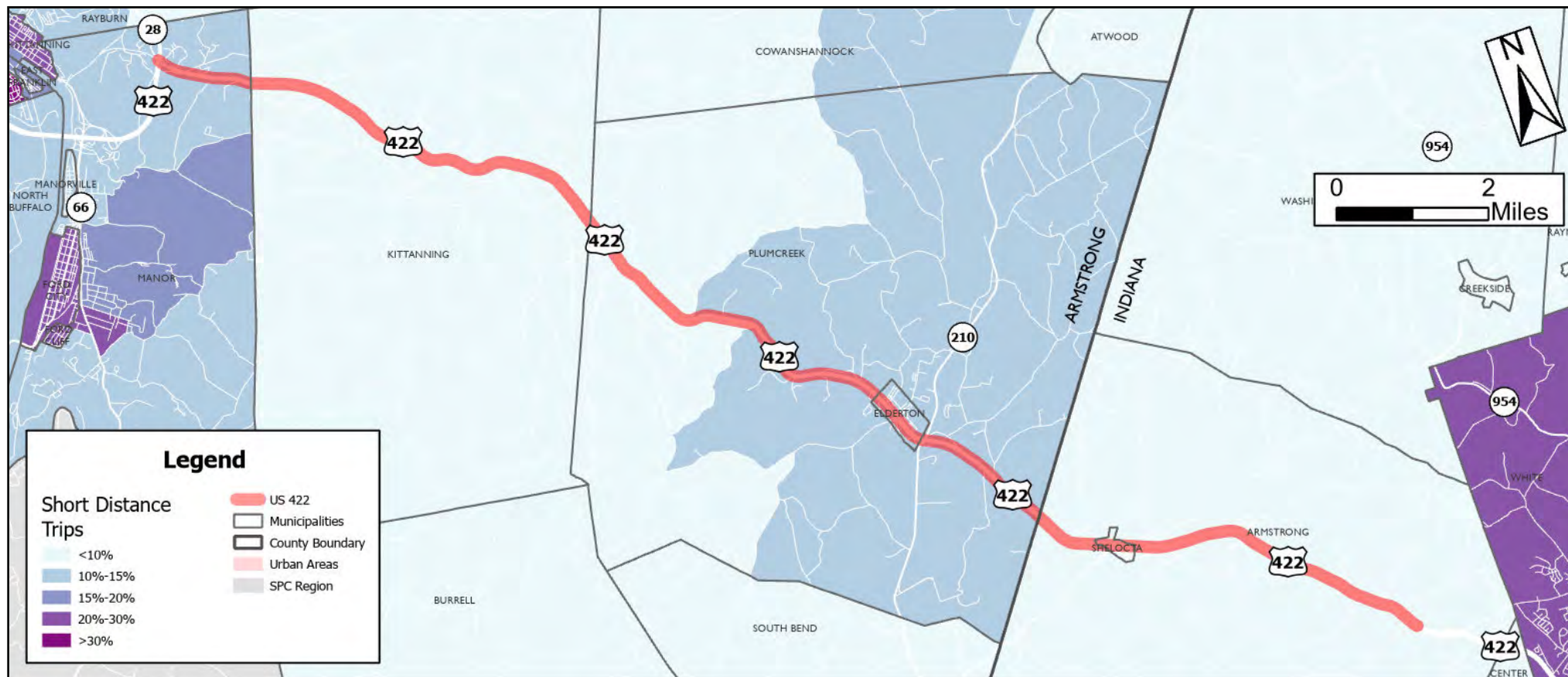
Shelocta Borough	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

ACTIVE TRANSPORTATION



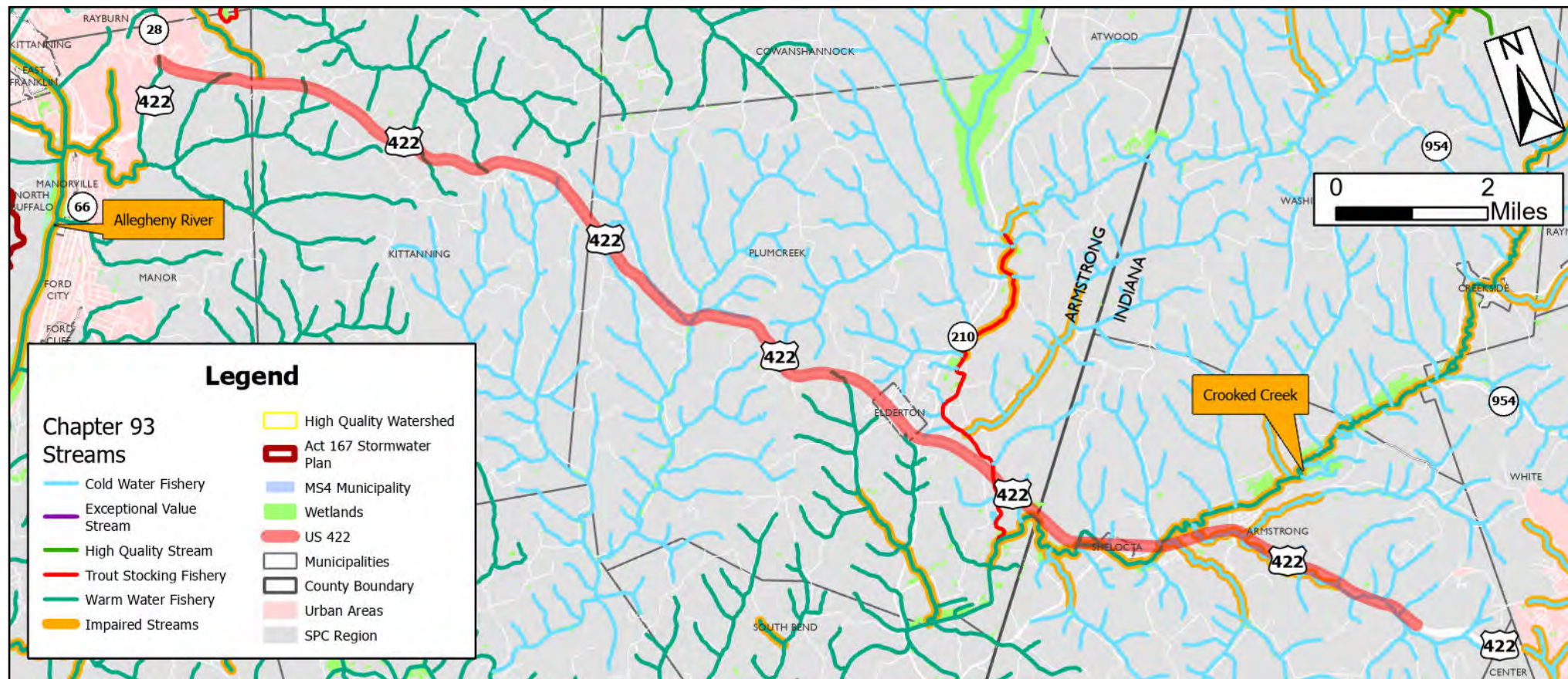
This segment of US 422, from SR 28 to Parkwood Road, has very limited bicycle and pedestrian infrastructure present. The only major bicycle and pedestrian infrastructure that is present along this corridor is the Baker Trail. The Baker Trail is a 134-mile hiking trail that connects Freeport to the Allegheny National Forest. The Baker Trail in Plumcreek Township is primarily an on-street bike route following Barks Hill Road. The trail crosses US 422 near Plum Creek and follows Kimmel School Road where it continues north. There are very few bicycle and pedestrian facilities in the broader US 422 corridor. Bicycle and pedestrian facilities are present within Elderton and Shelocta Boroughs

This corridor segment is mostly located in rural areas of Armstrong County which correlates to the low percentage of short distance trips throughout this segment of US 422. In Kittanning, Armstrong and parts of Plumcreek Townships, and in Shelocta Borough, short distance trips are less than 10%. In parts of Manor and Plumcreek Townships and in Elderton Borough, short distance trips are between 10%-15%.



Crosswalk with Pedestrian Signals on US 422 at the Saltwork Street Intersection in Elderton Borough

ENVIRONMENTAL FEATURES



US 422 has numerous crossings of surface water resources in Segment D. There are several cold water fisheries, trout stocking fisheries, and warm water fisheries that crosses this segment of US 422. These include Anthony Run (Cold Water Fishery), Curry Run (Cold Water Fishery), Cheese Run (Cold Water Fishery), Cherry Run (Cold Water Fishery), Plum Creek (Trout Stocking Fishery), Crooked Creek (Warm Water Fishery), and several other smaller streams and tributaries. It should also be noted that Cheese Run, Crooked Creek, and Anthony Run are considered impaired streams. There are no high quality watersheds near this segment of US 422.

Areas on this segment with Stormwater 167 plans:

- There are no Stormwater 167 Plans in Segment D.

Areas on this segment with MS4 Permits:

- There are no MS4 Permits in Segment D

Water Quality Standards

All commonwealth waters are protected for a designated aquatic life use as well as a number of water supply and recreational uses. The **use designation** shown in the water quality standards is the aquatic life use. These uses are Warm Water Fishes (WWF), Trout Stocking (TSF), Cold Water Fishes (CWF) and Migratory Fishes (MF). A body of water is considered **“impaired”** if it fails to meet one or more water quality standards.

The water quality in a High Quality stream can be lowered only if a discharge is the result of necessary social or economic development, the water quality criteria are met, and all existing uses of the stream are protected. Exceptional Value waters are to be protected at their existing quality; water quality shall not be lowered.

Some water resources are also part of the **Total Maximum Daily Load (TMDL)** program, which identifies sources of pollution and allocates pollutant loads in places where water quality goals are not being achieved.

Stormwater Management

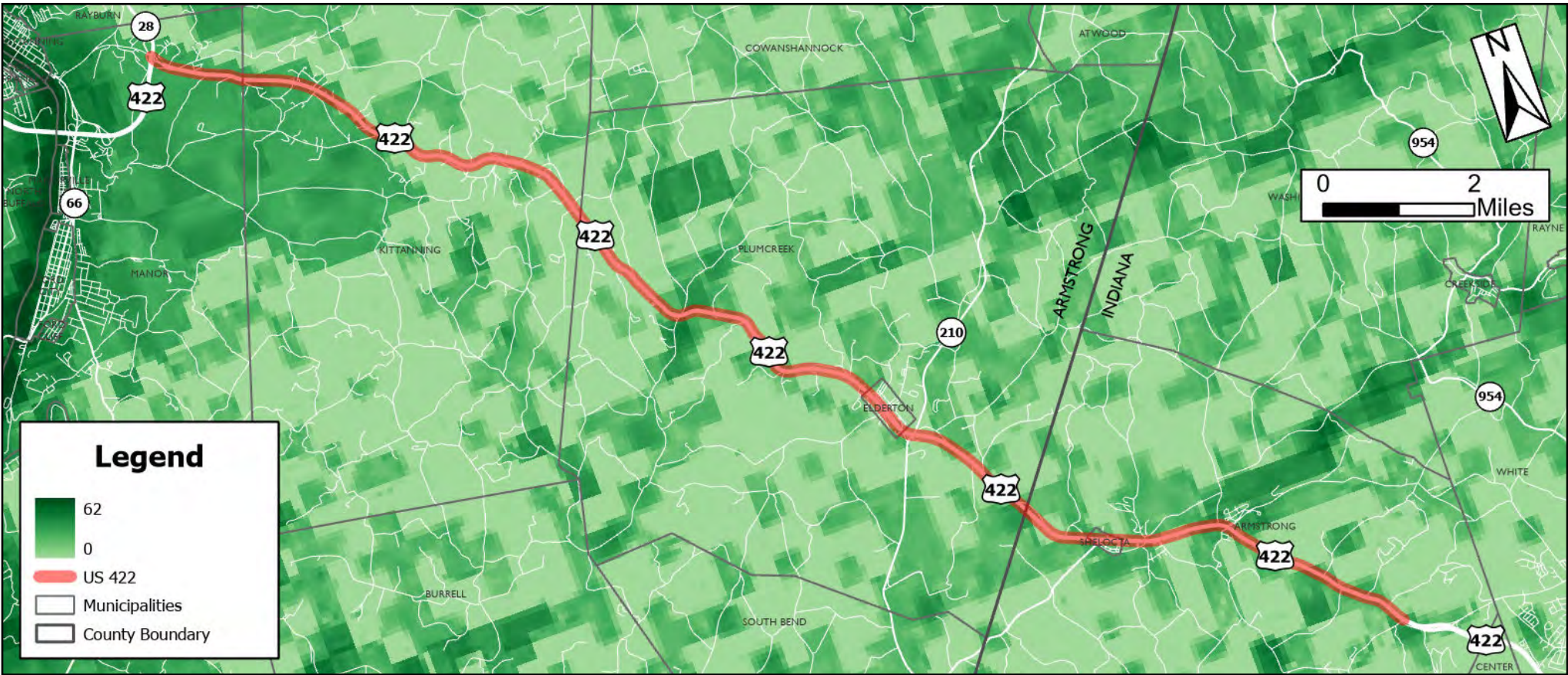
The **Storm Water Management Act (No. 167)** authorized a program of comprehensive watershed stormwater management that retains local implementation and enforcement of stormwater ordinances similar to local responsibility of administration of subdivision and land development regulations. Act 167 plans are required on a county-wide basis; however, the practice to this point has been to only develop plans for specific sensitive waters/watersheds.

A **Municipal Separate Storm Sewer System (MS4)** is owned or operated by a public agency, such as a city, town, county, flood control district, state, or federal agency that does not connect to the sanitary sewer system and does not lead to a wastewater treatment plant.



US 422 near Plum Creek, Plumcreek Township

ENVIRONMENTAL FEATURES

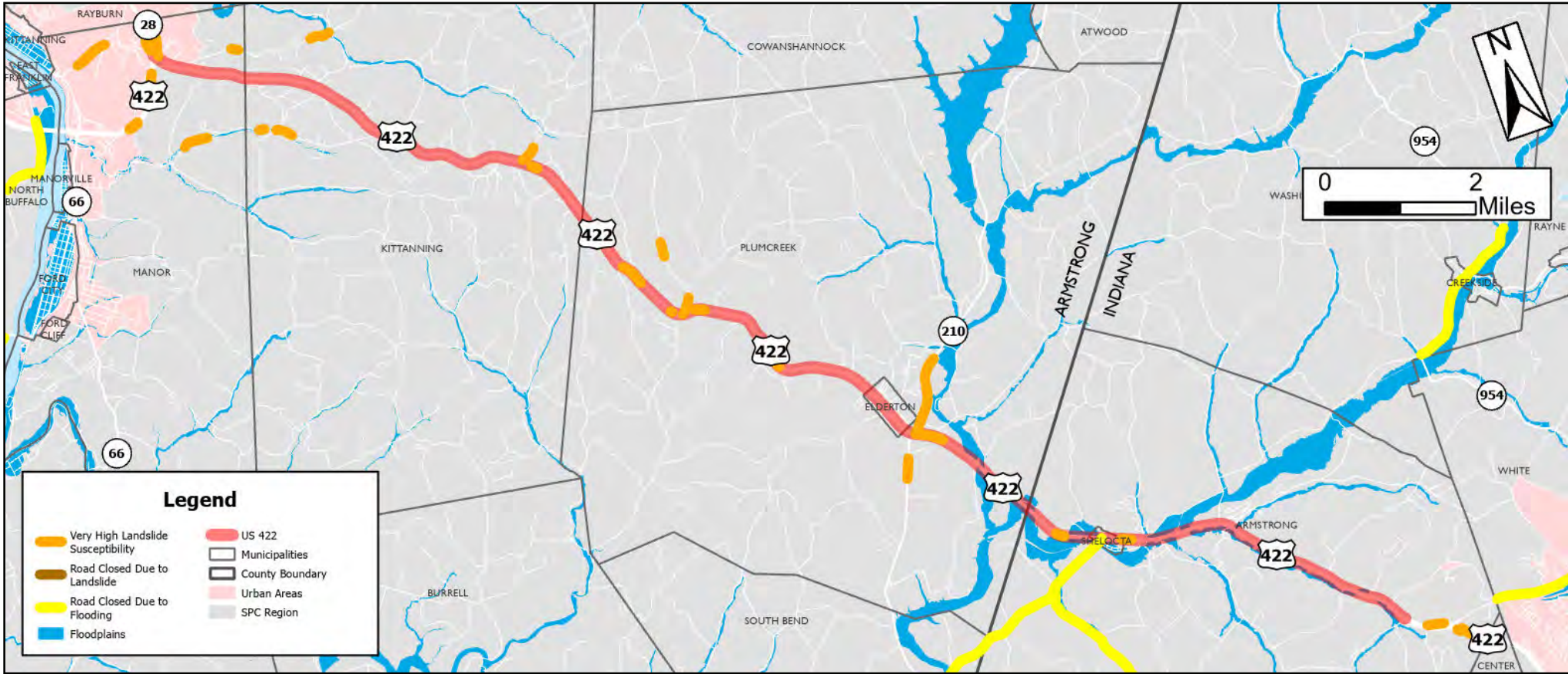


The **Regional Ecosystem Framework (REF)** integrates environmental inventory data, conservation priorities, maps, and plans, with input from and adoption by conservation and natural resource stakeholders identified that addresses species, habitats, and relevant environmental issues and regulatory requirements agreed upon by the stakeholders. SPC has identified available GIS data layers that when analyzed will spatially model ecological significance on a regional scale. The datasets that make up the prototype REF are included in the appendix.

SPC staff assigned a score to the relevant attribute of each environmental data layer, the score reflects the relative importance of the occurrence of any certain resource found in a dataset relative to other resources used in the analysis.

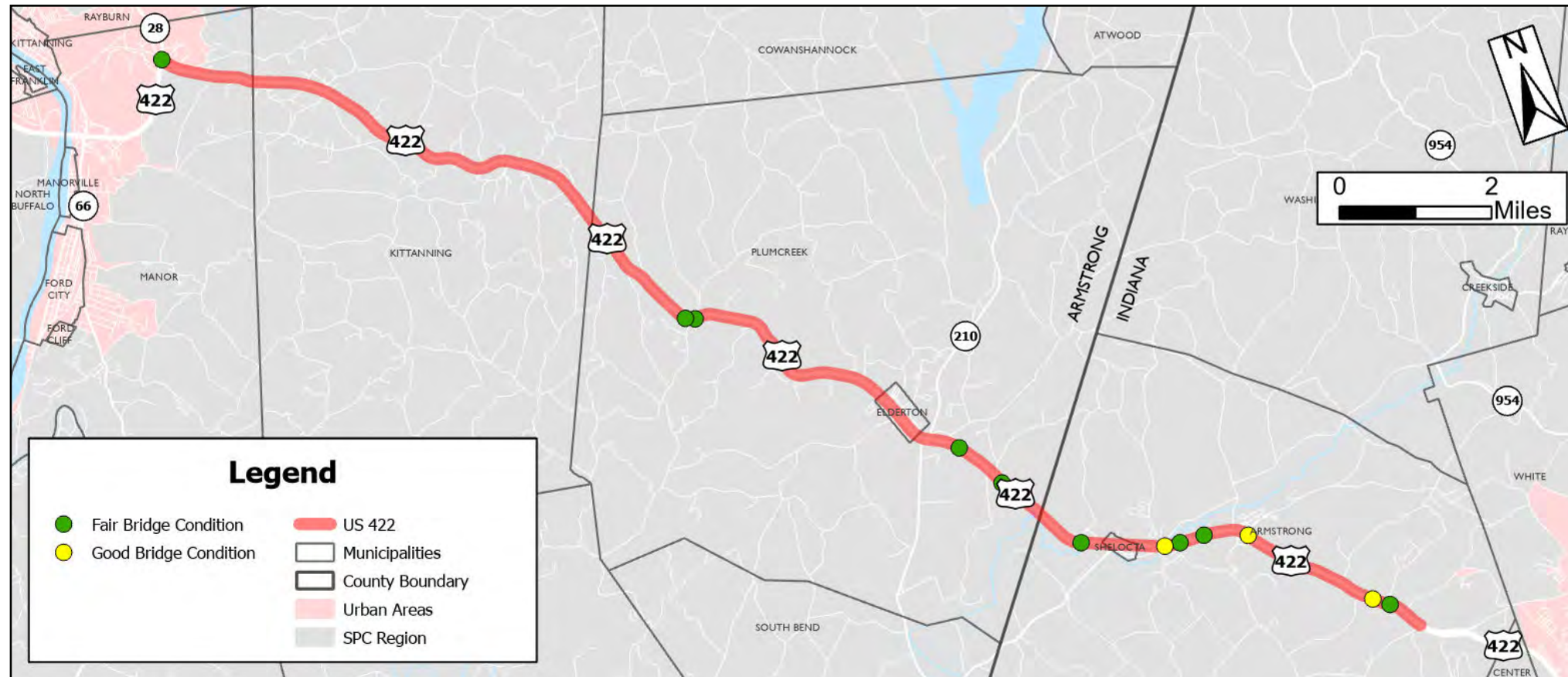
Greater values in the REF indicate greater environmental significance.

Within Segment D, the REF is showing a higher relative environmental value attributed to the area around the Allegheny River. Higher values at the Allegheny River are due to the river being a mussel management area, with nearby forests, protected lands, and wetlands. With this level of environmental quality, future projects on US 422 in this watershed can anticipate additional restrictions or measures related to waterway permitting and may have an increased chance of encountering threatened and endangered species.



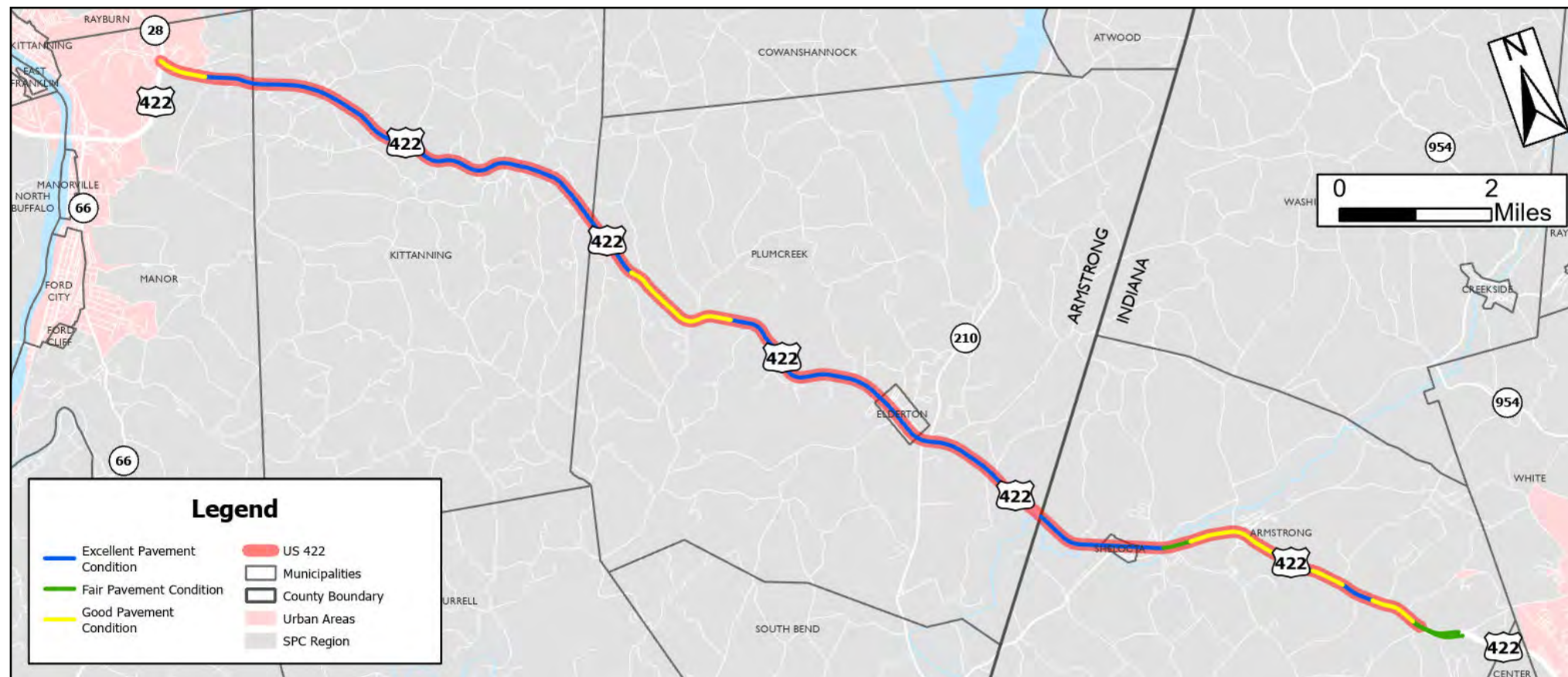
US 422 in Segment D includes some locations with very high vulnerability to landslides. These locations are based on regionwide landslide modeling done by SPC and isolated to the area within a mile of US 422 in this segment. There are areas of very high landslide susceptibility between near Blanket Hill Road, Margaret Road, Braddish Road, SR 210, Wood/Sycamore Road, and in Shelocta Borough. According to PennDOT RCRS data, no sections of US 422 along Segment D were closed due to landslides or flooding.

CONDITION OF ASSETS



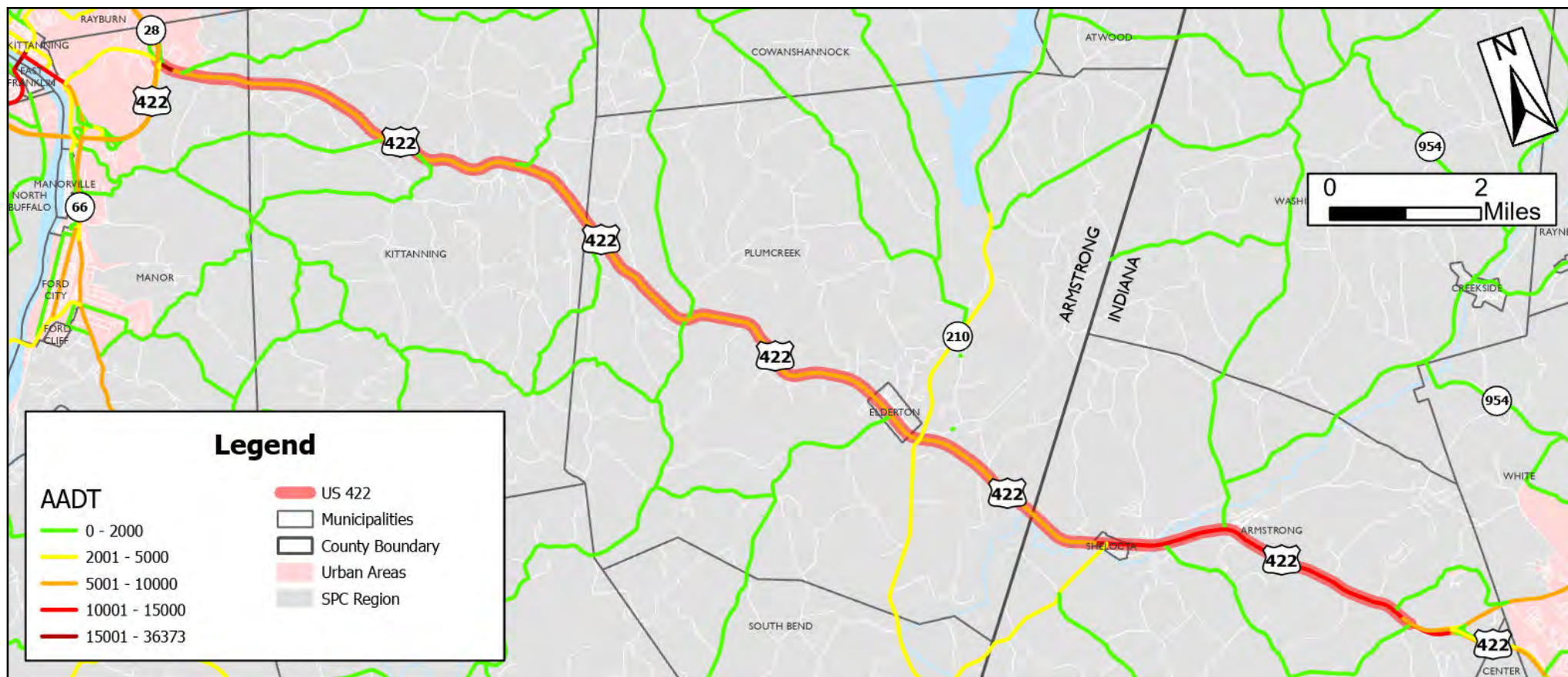
In Segment D, 75% of bridges on US 422 are rated in fair condition and 25% of bridges are rated in good condition. No bridges are rated in poor condition. 92% of US 422 has a pavement condition rating of good or excellent and 8% of pavement have a condition rating of fair. There is no pavement located on Segment D that is in poor condition.

Segment D Bridge Conditions			
Bridge Condition	Count	Deck Area (SQ Ft)	By %
Good	3	17026.8	25%
Fair	9	34767.4	75%
Poor	0	0	0%



Segment D Pavement Conditions			
Road Condition	Count (RMS Segments)	Miles	By %
Good/Excellent	42	19.7	92%
Fair	3	1.7	8%
Poor	0	0	0%

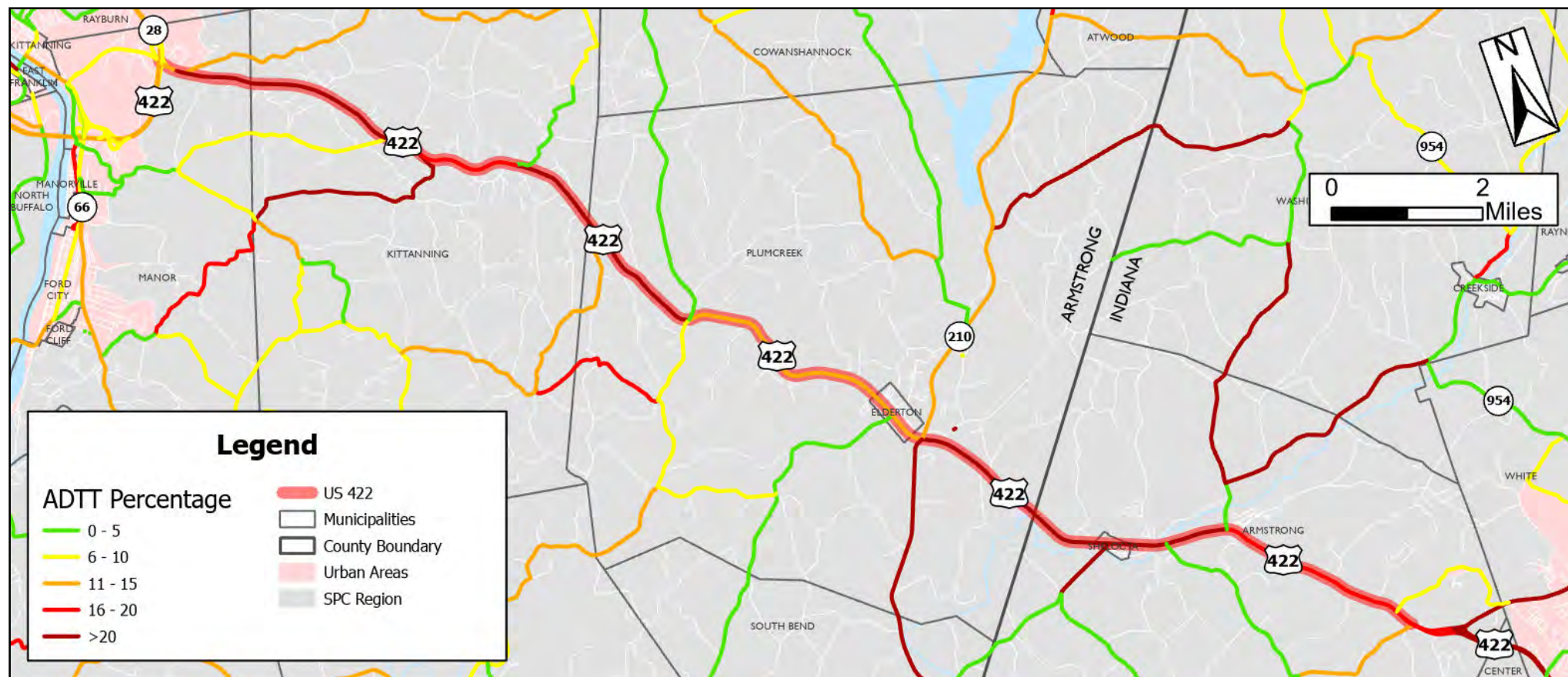
SEGMENT TRAVEL PATTERNS



Annual Average Daily Traffic (AADT) is the typical daily traffic on a roadway segment for all the days in a week over a one-year period. Truck percentage is the percent of the AADT that is comprised of truck traffic, excluding pickups, panels, and light trucks. The current AADT and truck percent figures included in this section were derived from the Pennsylvania Department of Transportation (PennDOT) Roadway Management System (RMS).

Traffic volumes for individual roadway segments on this portion of the corridor fall between 6,500 and 17,500 vehicles per day. The AADT for this segment of the US 422 corridor is highest between the SR 28 interchange to Scenic Drive in Manor Township. Roadway segments on this stretch of the US 422 corridor have an AADT of 17,022. High AADT can also be located approaching SR 156 in Shelocta Borough to Parkwood Road in Armstrong Township. AADT on these roadway segments range from 10,000 to 11,500.

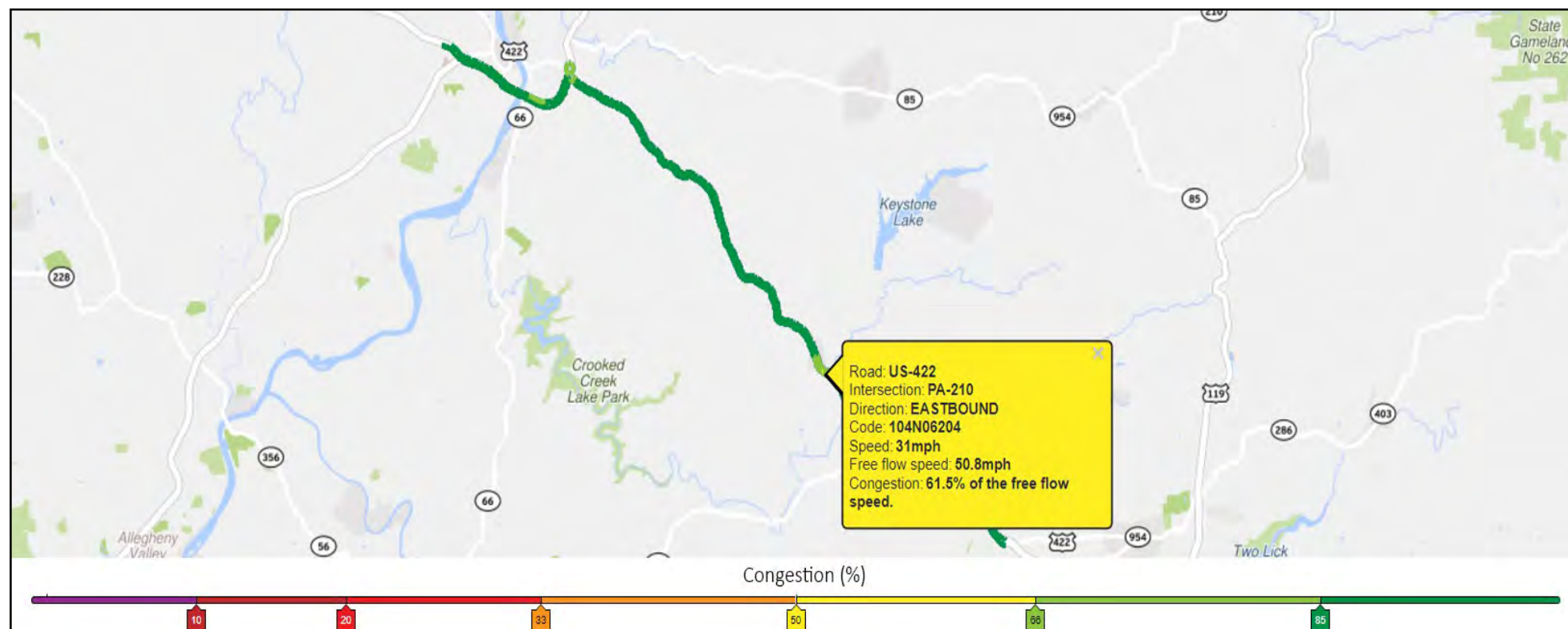
Truck percentages on individual roadway segments on this portion of the US 422 corridor falls between 11% and 29% in each travel direction. Truck percentage for this segment of the US 422 corridor is highest on US 422 between Blanket Hill Road in Kittinging Township and Margaret Road in Plumcreek Township. Roadway segments on this stretch of the US 422 corridor have a truck percent of 29%. Truck percentages are also high on US 422 between Scenic Drive in Manor Township and Silvis Hollow Road in Kittinging Township and SR 210 in Plumcreek Township to 5 Points Road in Armstrong Township. Truck percentages are between 21% and 24% on these segments.



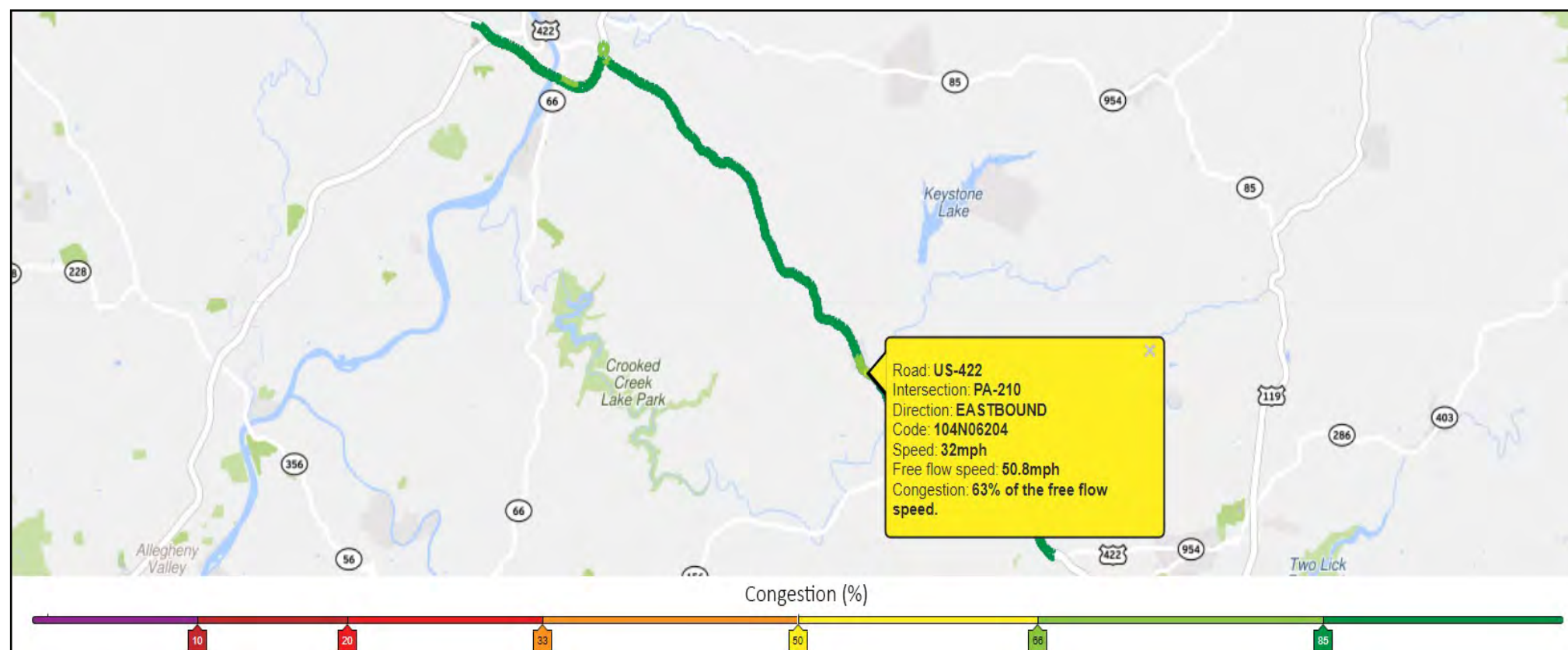
US 422 at 5 Points Road in Armstrong Township

CONGESTION & RELIABILITY

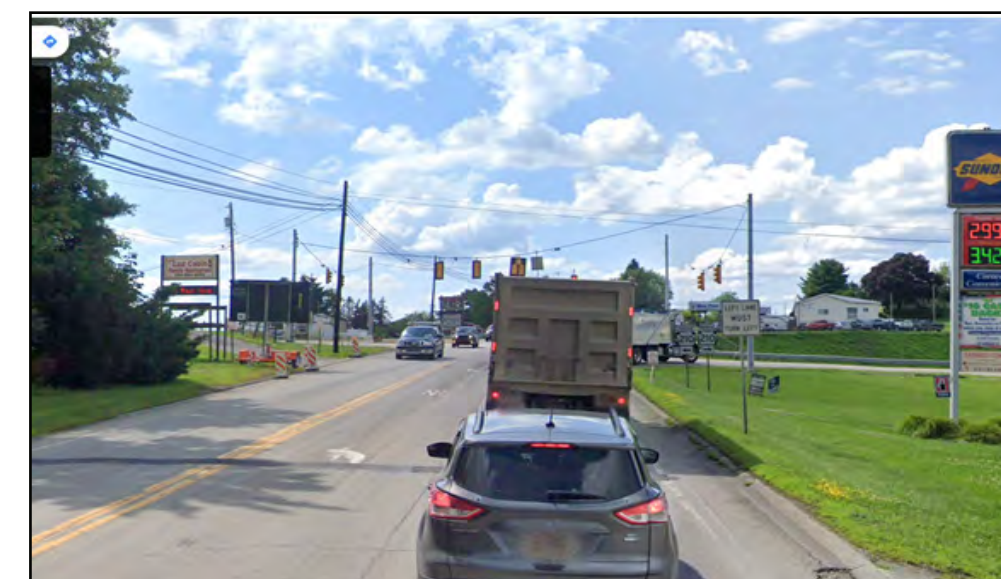
US 422 Segment D Congestion Trend Map for AM Peak for January 01, 2023 through December 31, 2023 (Every weekday)



US 422 Segment D Congestion Trend Map for PM Peak for January 01, 2023 through December 31, 2023 (Every weekday)



- AM and PM peak period congestion trend mapping is shown for Segment D. Congestion percentage is shown as the percent of free flow speed achieved on the segment. Higher percentages indicate less congestion (greener colors), and lower percentages indicate more congestion (redder colors).
- In the AM peak period, travelers on Segment D approximately achieve 62% or higher of free flow speed.
- In the PM peak period, travelers on Segment D approximately achieve roughly 63% or higher of free flow speed.
- Travelers on Segment D generally experience negligible to light congestion in the peak periods.



Looking West, US 422 at SR 210 in Plumcreek Township

Travel Time in Minutes				
Eastbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				17.83
Monday	18.89	18.75	18.72	
Tuesday	18.99	19.08	18.53	
Wednesday	19.11	19.04	18.84	
Thursday	19.23	18.97	18.72	
Friday	18.89	18.86	18.99	
Saturday				17.98

Planning Time Index				
Eastbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				1.5
Monday	1.56	1.56	1.58	
Tuesday	1.59	1.6	1.53	
Wednesday	1.61	1.61	1.59	
Thursday	1.6	1.58	1.58	
Friday	1.58	1.59	1.59	
Saturday				1.48

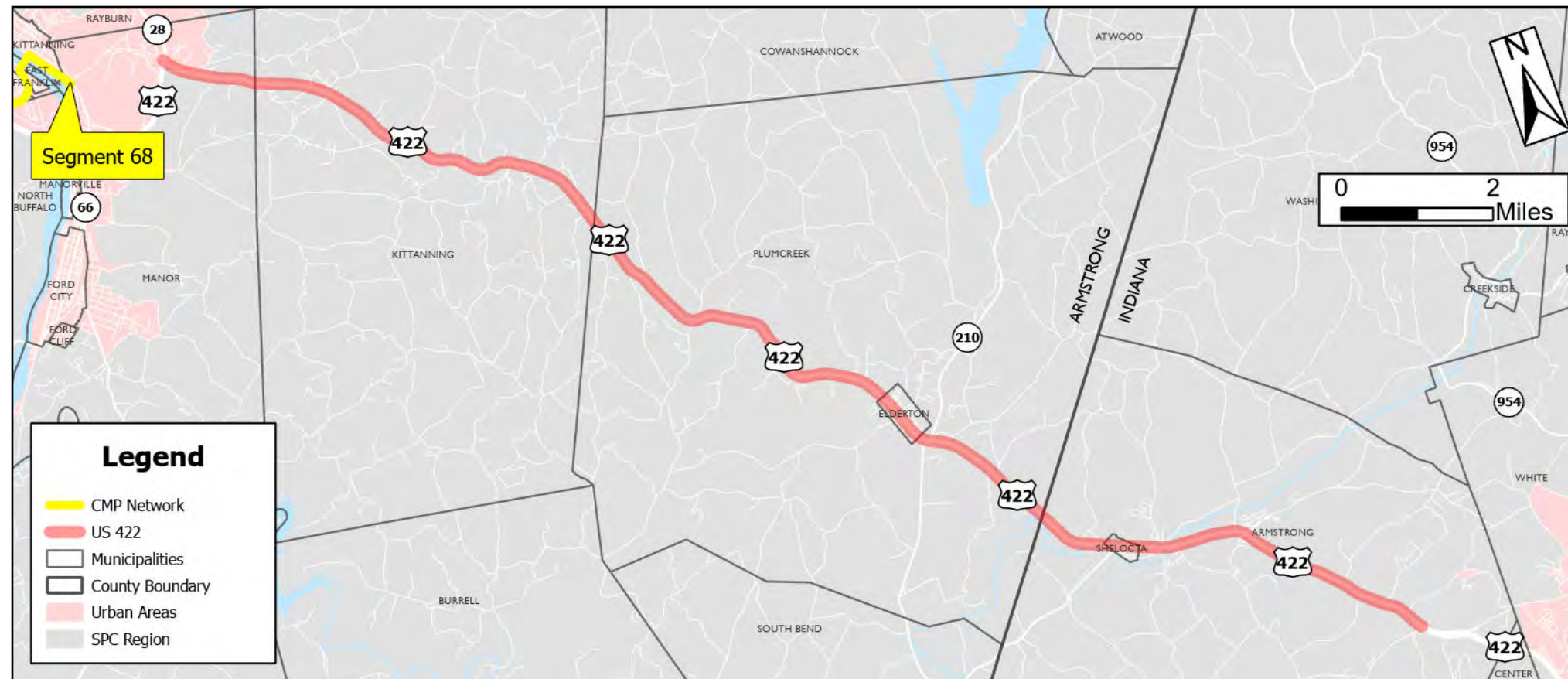
Travel Time in Minutes				
Westbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				17.24
Monday	18.13	18.12	18.27	
Tuesday	18.32	18.24	18.02	
Wednesday	18.24	18.28	18.11	
Thursday	18.41	18.15	18.12	
Friday	18.27	18.14	18.48	
Saturday				17.47

Planning Time Index				
Westbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				1.37
Monday	1.46	1.44	1.47	
Tuesday	1.49	1.48	1.45	
Wednesday	1.49	1.48	1.48	
Thursday	1.47	1.45	1.48	
Friday	1.47	1.44	1.5	
Saturday				1.41

Planning Time Index (PTI) is the extra time required to arrive at a destination on time, 95% of the time. It is calculated as the ratio of the 95th-percentile highest vehicle-hours traveled divided by the vehicle hours traveled if the same trips could have been completed at free flow speed. For example, a PTI of 1.5 means that a traveler should plan on 50% more time for their trip compared to light traffic conditions for a 95% probability of arriving on time (meaning that 15 minutes should be planned for what would be a 10 minute trip in light traffic conditions). SPC reports PTI for arterial CMP corridors in the region by direction for peak and off-peak times.

- PTI for Segment D in the eastbound direction ranges from 1.48 to 1.61
- PTI for Segment D in the westbound direction ranges from 1.37 to 1.5

CONGESTION MANAGEMENT PROCESS



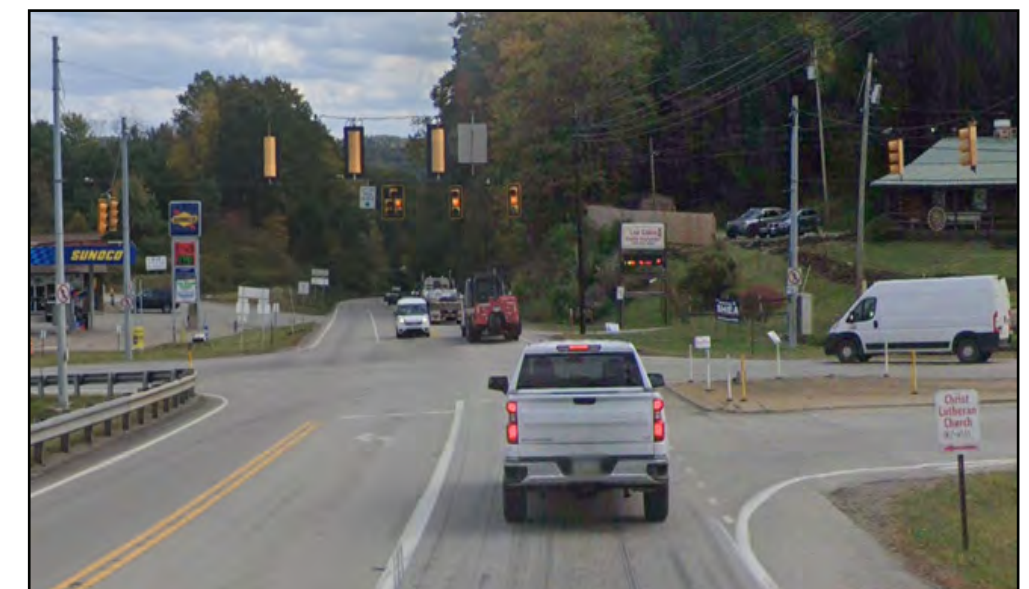
- Segment D is not monitored as part of SPC’s Congestion Management Process network.
- Most of Segment D takes on the characteristics of a rural principal arterial with few to no signalized intersections and grade separated interchanges. There are no adaptive traffic signals located on this segment of US 422; however the traffic signals located at Scenic Drive, Saltwork Street and SR 210 have emergency preemption.
- Detour routes for this segment include:
 - SR 28
 - SR 85
 - SR 210



US 422 at Saltwork Street in Elderton Borough

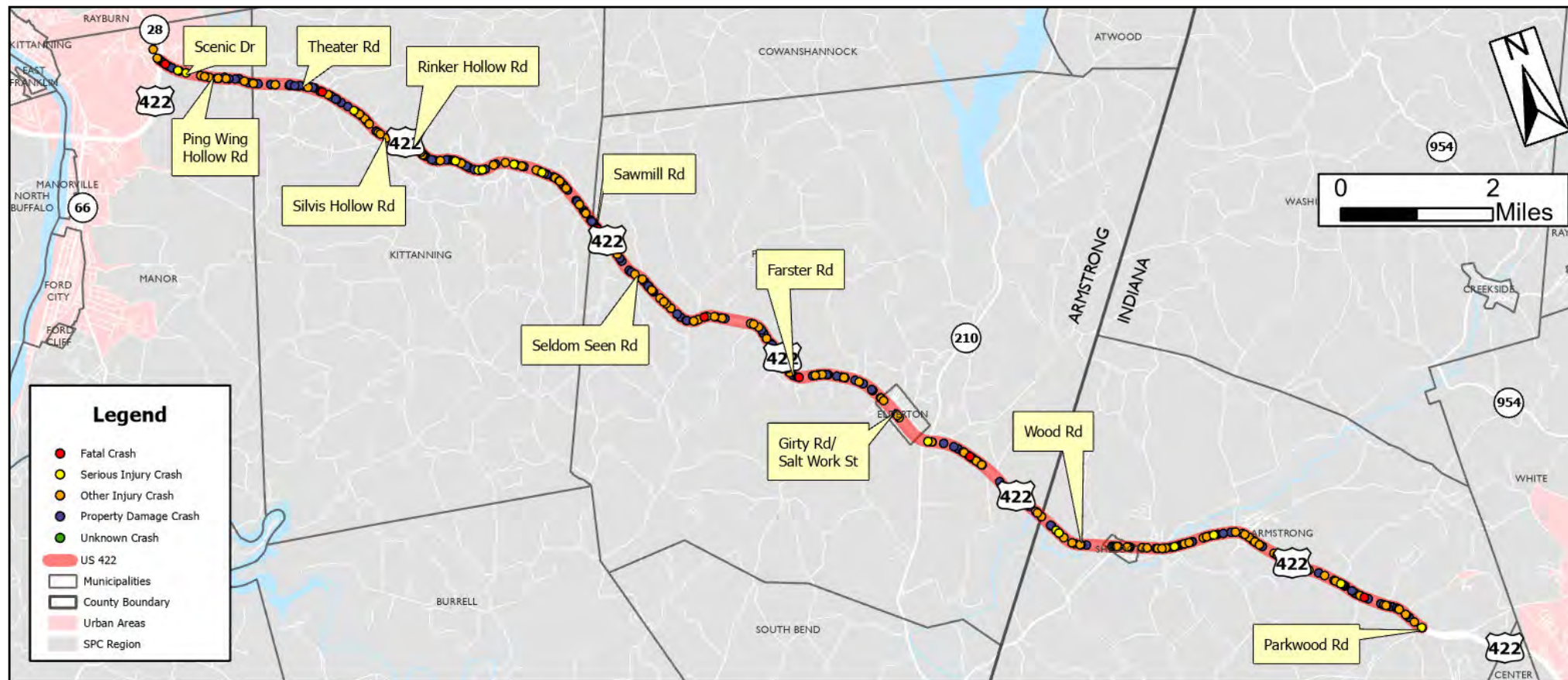


US 422 at Scenic Drive in Manor Township



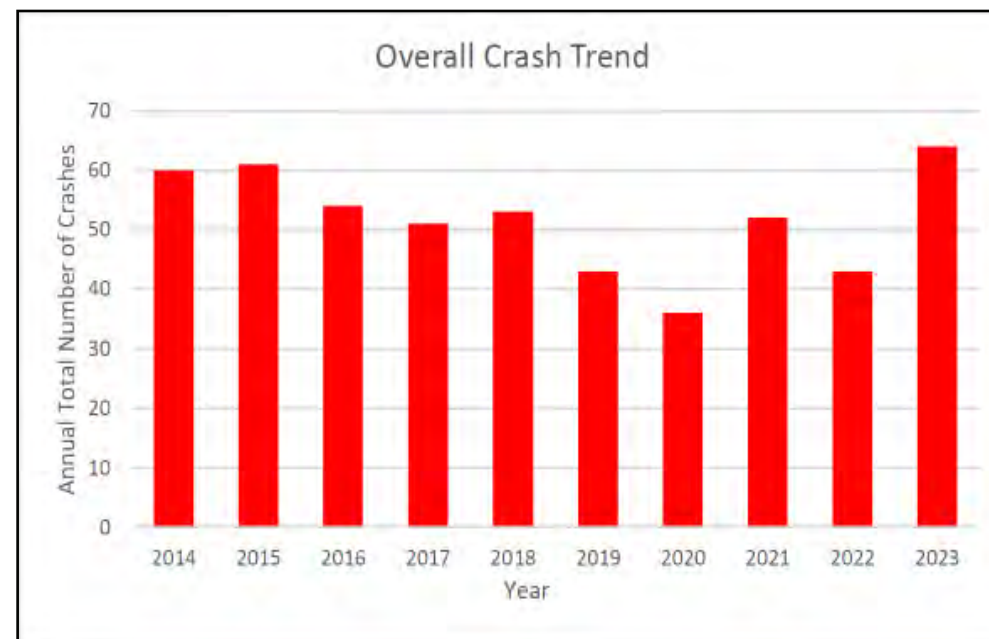
Looking East, US 422 at SR 210 in Plumcreek Township

SAFETY

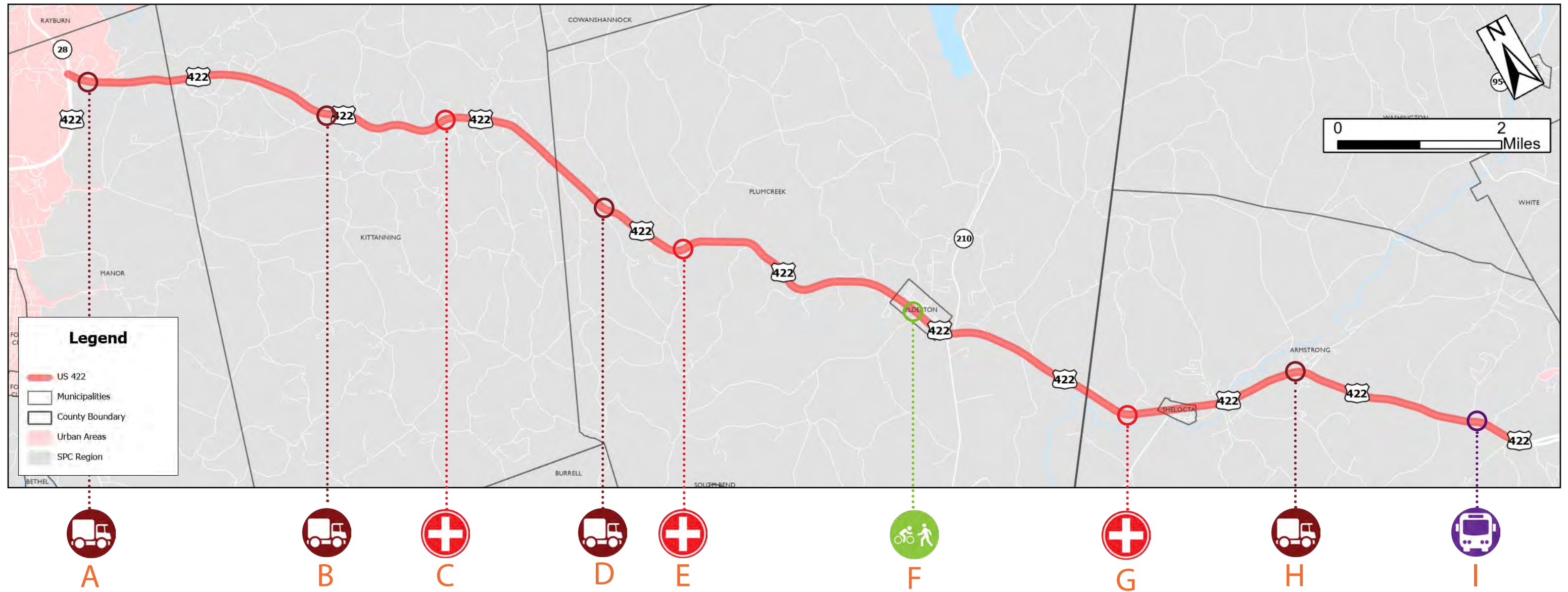


- For Segment D, the overall number of crashes appear to be decreasing before an increase resulting in a flat trend over the 10-year period (2014-2023). The fatal and serious injuries appear to have a significant downward trend over the same time period.
- Segment D's 2023 crash rate (0.81 crashes per MVMT) is lower than the average 2023 crash rate for similar roadways in Armstrong County (0.98 crashes per MVMT), similar in Indiana County (0.81 crashes per MVMT) and lower than the average 2023 crash rate for similar roadways in the SPC region (1.16 per MVMT).
- According to the PennDOT Highway Safety Network Screening (HSNS) Analysis, the following areas of Segment D are underperforming from a safety perspective:
 - Scenic Drive to Ping Wing Hollow Road
 - Theater Road to Silvis Hollow Road
 - Rinker Hollow Road/Green Tree Road to Sawmill Road
 - Seldom Seen Road to Farster Road
 - Girty Road/East Salt Work Street Intersection
 - SR 210 to Indiana County Line
 - Wood Road to Parkwood Road

US 422 Segment D Crash Statistics	
Timeframe	2014-2023
All Crashes	539 (~1 crash per week)
Fatal Crashes	8 (~1% of all crashes)
Crashes Involving Serious Injuries	17 (~3% of all crashes)
Crashes Involving Other Injuries	193 (~36% of all crashes)
Crashes Involving Property Damage	312 (~58% of all crashes)
Unknown	9 (~2% of all crashes)








SEGMENT D: FOCUS AREAS







FOCUS AREA CATEGORIES



SEGMENT D: FOCUS AREAS

A		Roughly 20% of the traffic on US 422 corridor between Scenic Drive in Manor Township and Silvis Hollow Road in Kittanning Township are from heavy trucks only.
B		Freight movement on this segment of US 422 can potentially be hazardous due to the steep and sharp curves that are present along this segment of US 422.
C		There is major investment in safety with project #98689, Dunbar Dip. This project involves the construction of a three-lane section and realignment of several intersections and extensive geometry improvements along US 422 from Silvis Hollow Road to T-590 in Kittanning Township.
D		Roughly 30% of the traffic on US 422 corridor between Blanket Hill Road in Kittanning Township and Margaret Road in Plumcreek Township are from heavy trucks only.
E		There is major investment in safety with project #85574, Margaret Road Intersection. This project involves the realignment and reconstruction of US 422 in Plumcreek Township, Armstrong County.

F		US 422 is an expressway through a predominantly rural area which is prohibited to additional pedestrian or bicycle specific facilities. Many existing facilities are located within the broader the US 422 corridor and provides an alternate bicycle and pedestrian mode to US 422.
G		Along this segment of US 422 there have been eight fatal accidents resulting in nine fatalities and 17 crashes resulting in 34 serious injuries in the past ten years. While serious injuries and fatal accidents have been trending downward during this period, the overall crash trend has increase.
H		Roughly 25% of the traffic on US 422 corridor between SR 210 in Plumcreek Township to 5 Points Road in Armstrong Township are from heavy trucks only.
I		There is a lack of transit options between Kittanning and Indiana



US 422 at Silvis Hollow Road in Kittanning Township
92



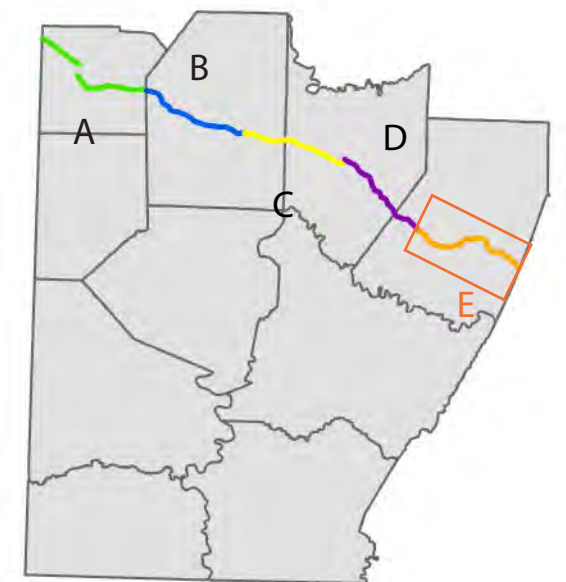
US 422 at Blanket Hill Road in Kittanning Township



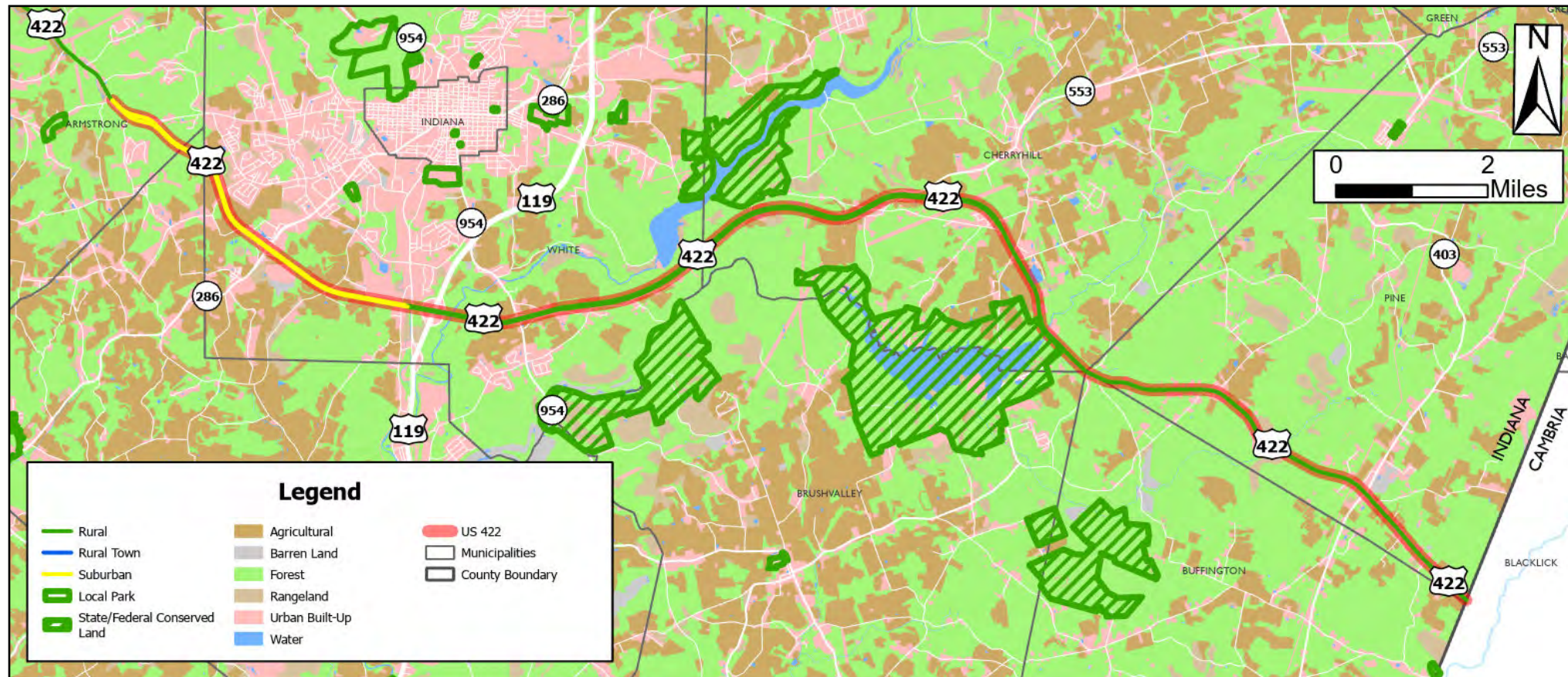
SECTION III: SEGMENT PROFILES

SEGMENT E

- SEGMENT OVERVIEW
- FUTURE HIGHWAY & BRIDGE PROJECTS
- REGIONAL, COUNTY, AND LOCAL PLANS AND USER PERSPECTIVES
- FREIGHT
- TRANSIT
- ACTIVE TRANSPORTATION
- ENVIRONMENTAL FEATURES
- CONDITION OF ASSETS
- SEGMENT TRAVEL PATTERNS
- CONGESTION & RELIABILITY
- SAFETY
- FOCUS AREAS

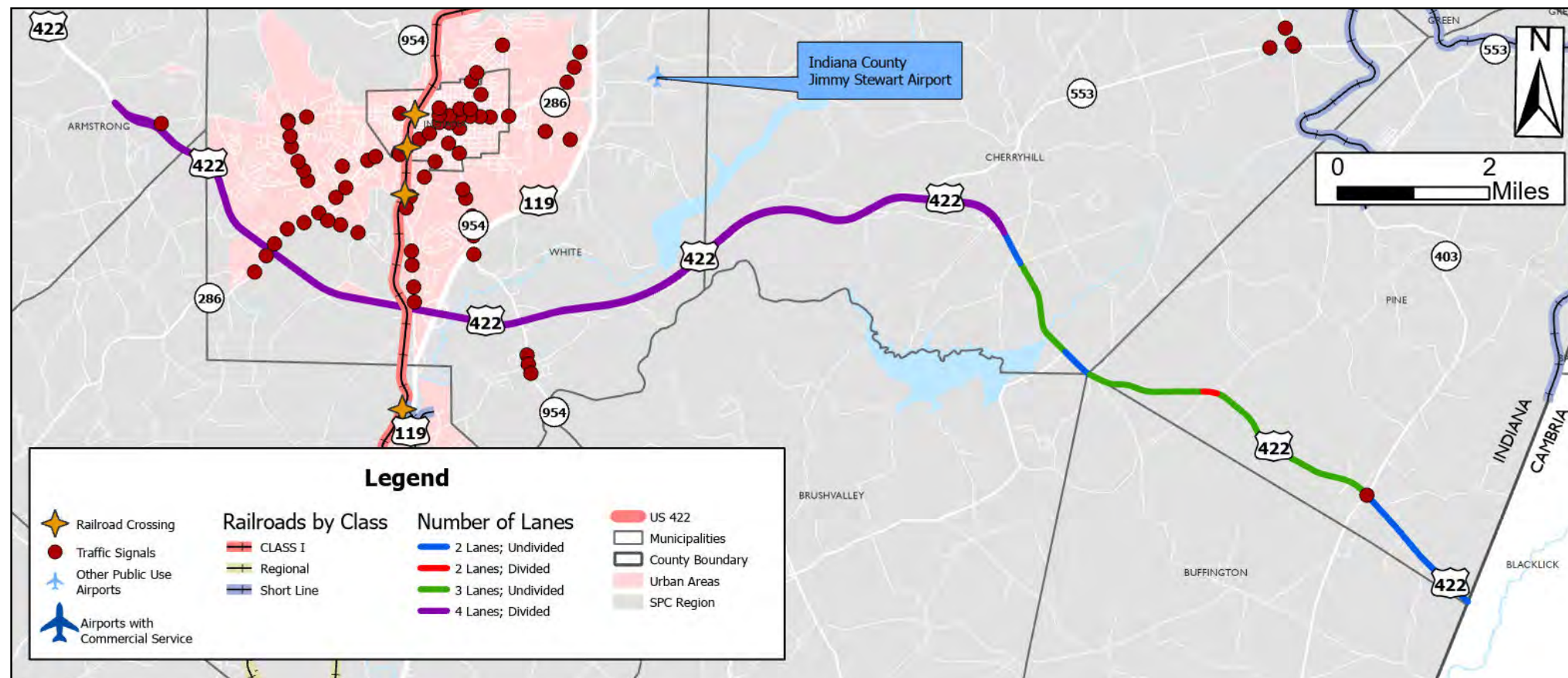


SEGMENT E: OVERVIEW



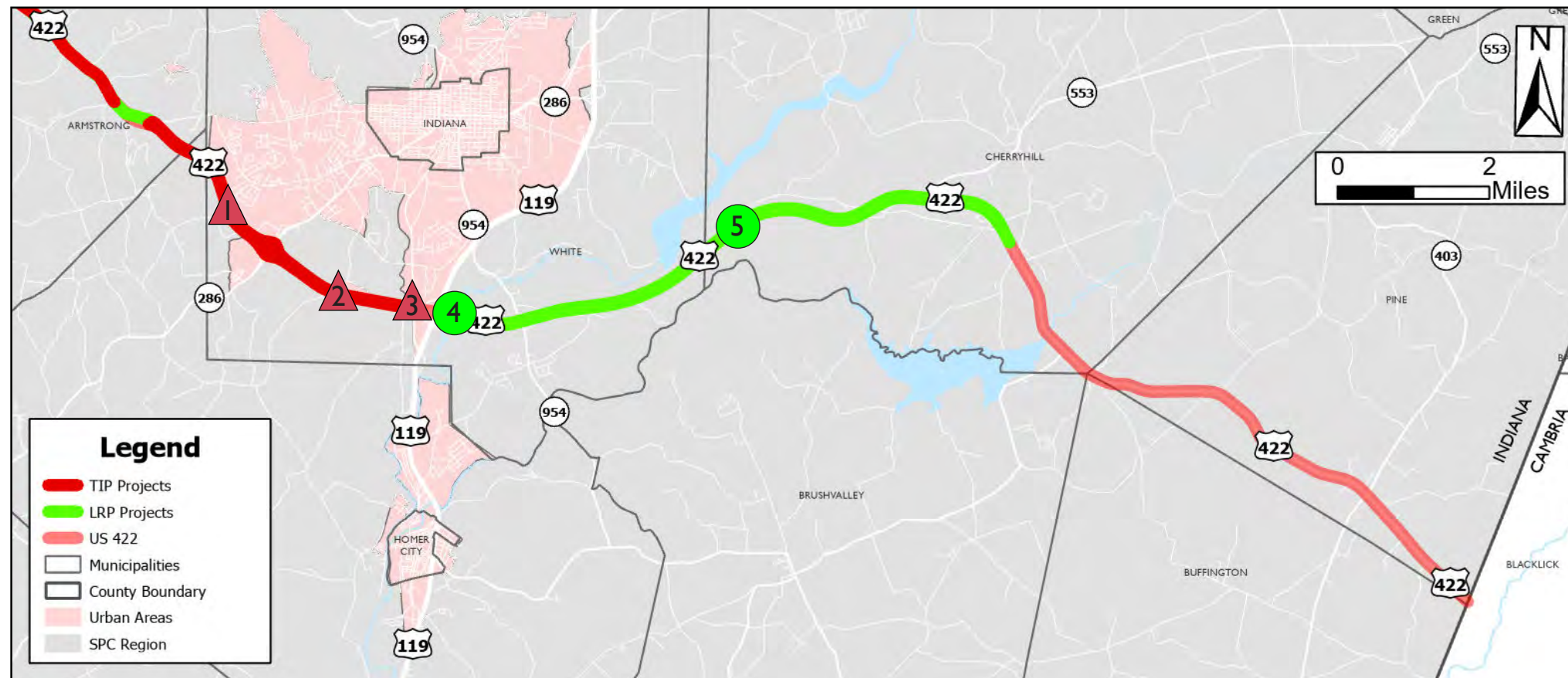
US 422 from Parkwood Road in Armstrong Township to the Cambria County Line features multiple lane configurations. Starting at Parkwood Road and heading east, US 422 becomes the Indiana Bypass. This bypass is a four-lane, limited access highway that bypasses Indiana Borough to the south. Once off the Indiana Bypass, US 422 becomes a two-lane, undivided roadway and then turns to a three-lane, undivided roadway east of Diehl Road. This three-lane configuration continues until the SR 259 intersection, where US 422 goes back down to a two-lane, undivided roadway. From SR 259 to SR 403, US 422 is a three-lane, undivided roadway except for a small section of US 422, where US 422 is a two-lane, divided roadway. From SR 403 to the Cambria County Line, US 422 is a two-lane, divided roadway.

This segment of US 422 provides connections to major routes located in Indiana County. These routes include US 119, SR 259, SR 286, SR 403, SR 553 and SR 954. Along the Indiana Bypass, there are grade-separated interchanges located at Philadelphia Street, SR 286, US 119, SR 954, Chestnut Ridge Road and SR 553. The remainder of the intersections along this segment of US 422 are unsignalized, at-grade intersections, except for US 422 at SR 403, where that intersection has a flashing beacon.



US 422 at SR 403 in Pine Township

FUTURE HIGHWAY & BRIDGE PROJECTS



1 Roadway Preservation | MPMS 88615
 2025 -2028 TIP | Indiana Bypass Repair
 Concrete restoration to include slab stabilization, full depth slab patching, dowel bar retrofits, guiderail upgrades, ramp work, bridge structure work, crack and joint sealing and bituminous binder and wearing resurfacing along US 422 from approximately the SR 4422 (West Pike Road) overpass intersection to the bridge carrying US 422 over SR 4422 (Wayne Ave) and SR 3035 (old US 119 Highway) in Armstrong and White Townships, Indiana County
 Programmed Amount: \$5.7 Million

2 Bridge Preservation | MPMS 117247
 2025 -2028 TIP | Indiana Latex Group
 Preservation of various structures carrying SR 422 over various features in various municipalities in Indiana County
 Programmed Amount: \$800,000

3 Bridge Rehab/Replacement | MPMS 98811
 2025 -2028 TIP | Bridge to Nowhere EB/WB PM
 Rehab/replacement project for the existing structure carrying US 422 eastbound over SR 4422 (Ben Franklin Road), SR 4005 (Indian Springs Rd), SR 3035 (Old US 119) and the Buffalo and Pittsburgh Railroad in White Township, Indiana County.
 Programmed Amount: \$13.3 Million

4 Bridge Rehab/Replacement | MPMS 98811
 Fiscally Constrained List | Bridge to Nowhere EB/WB PM
 Rehab/replacement project for the existing structure carrying US 422 eastbound over SR 4422 (Ben Franklin Road), SR 4005 (Indian Springs Rd), SR 3035 (Old US 119) and the Buffalo and Pittsburgh Railroad in White Township, Indiana County.
 Estimated Cost: \$15.9 Million

5 Roadway Reconstruction | MPMS 112430
 Fiscally Constrained List | SR 422 Indiana Bypass Reconstruction
 Reconstruction along SR 422 from the SR 119 Interchange East to 1/2 mile east of SR 553 interchange in Cherryhill Township, Indiana County
 Estimated Cost: \$53.9 Million



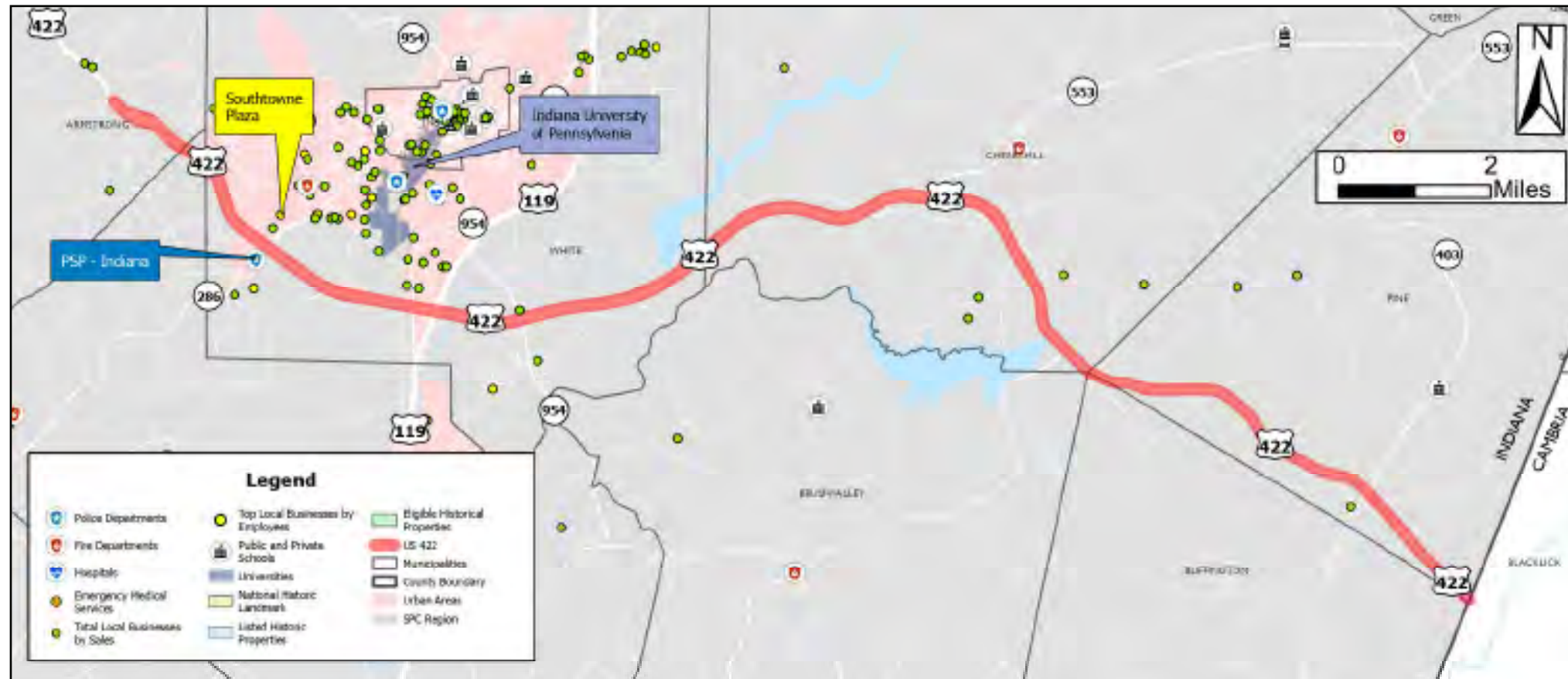
Bridge to Nowhere, US 422 over SR 4422 (Ben Franklin Road), SR 4005 (Indian Springs Rd), SR 3035 (Old US 119), and the Buffalo and Pittsburgh Railroad in White Township



US 422 Indiana Bypass near SR 286 in White Township

For up to date information on LRP and TIP projects, please click [here](#).

REGIONAL, COUNTY, AND LOCAL PLANS AND USER PERSPECTIVES



Along this segment of US 422, many community features can be found within White Township and Indiana Borough. In White Township, Indiana Regional Medical Center is located approximately two miles north of the US 422/SR 954 interchange. North of US 422 within Indiana Borough is Indiana University of Pennsylvania (IUP). IUP, which has a student population of approximately 9,000 students, is located approximately three miles from the US 422 and SR 286 interchange. Other community features located within the broader US 422 corridor include Pennsylvania State Police – Indiana and Yellow Creek State Park. Commercial corridors can be found on arterial routes near US 422. In White Township, there are commercial and industrial developments found along SR 286 (Oakland Avenue) such as Southtowne Plaza and the Windy Ridge Business & Technology Park.

A review of existing plans at the regional, county, and local level can provide valuable information on planned projects, existing transportation issues and community priorities that can inform project development. Indiana County Comprehensive Plan states that improvements to the US 422 between Indiana and Kittanning are a high priority for both the county and the region.

Relevant Local, County and Regional Plans

[Indiana County Comprehensive Plan](#)

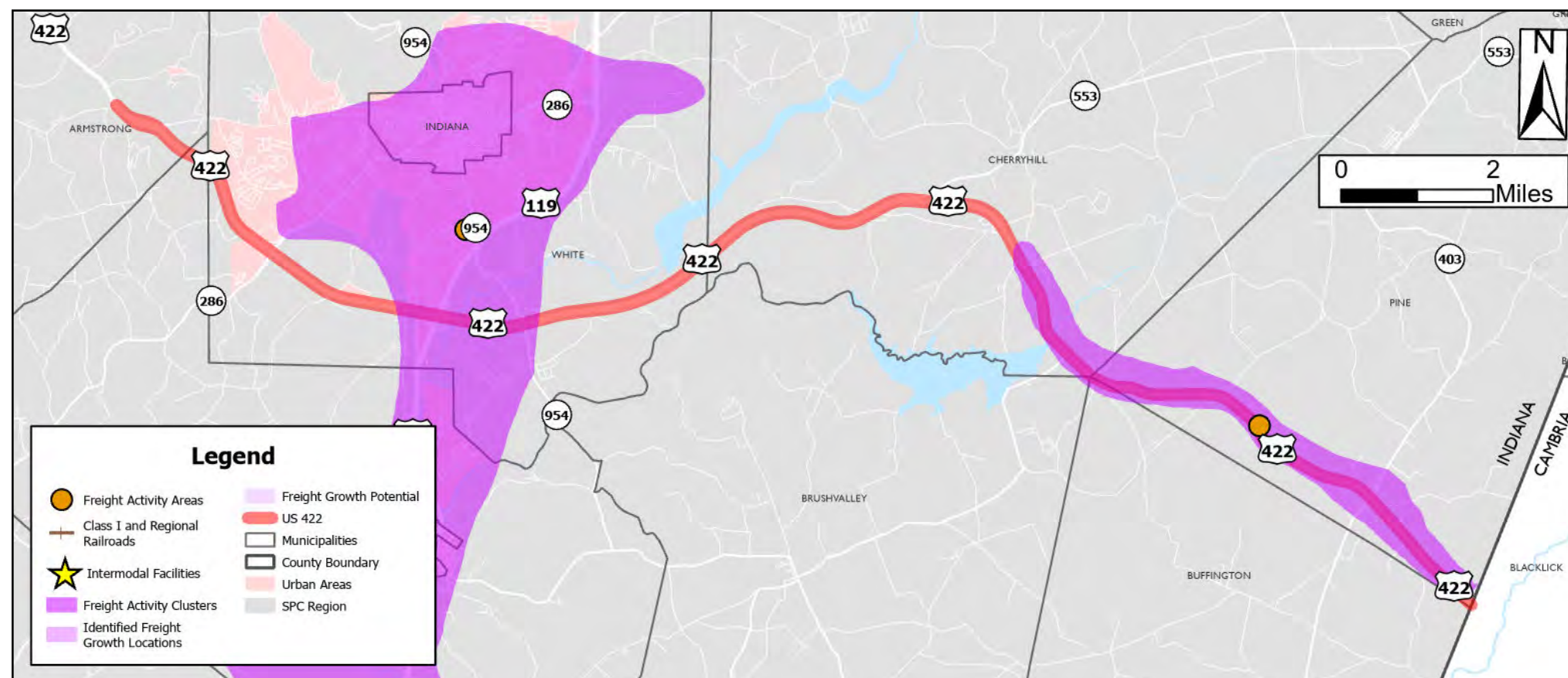
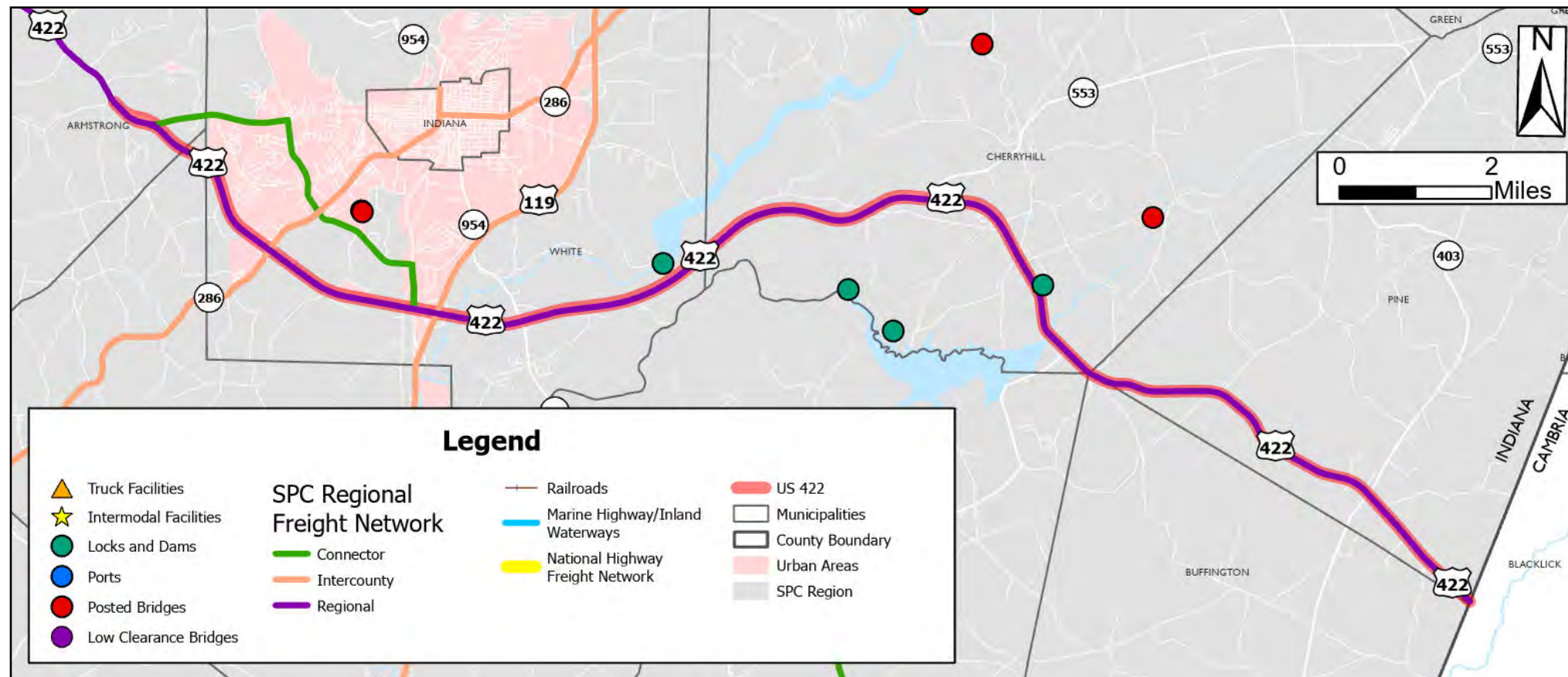
[White Township Comprehensive Plan](#)



Yellow Creek State Park in Brush Valley Township



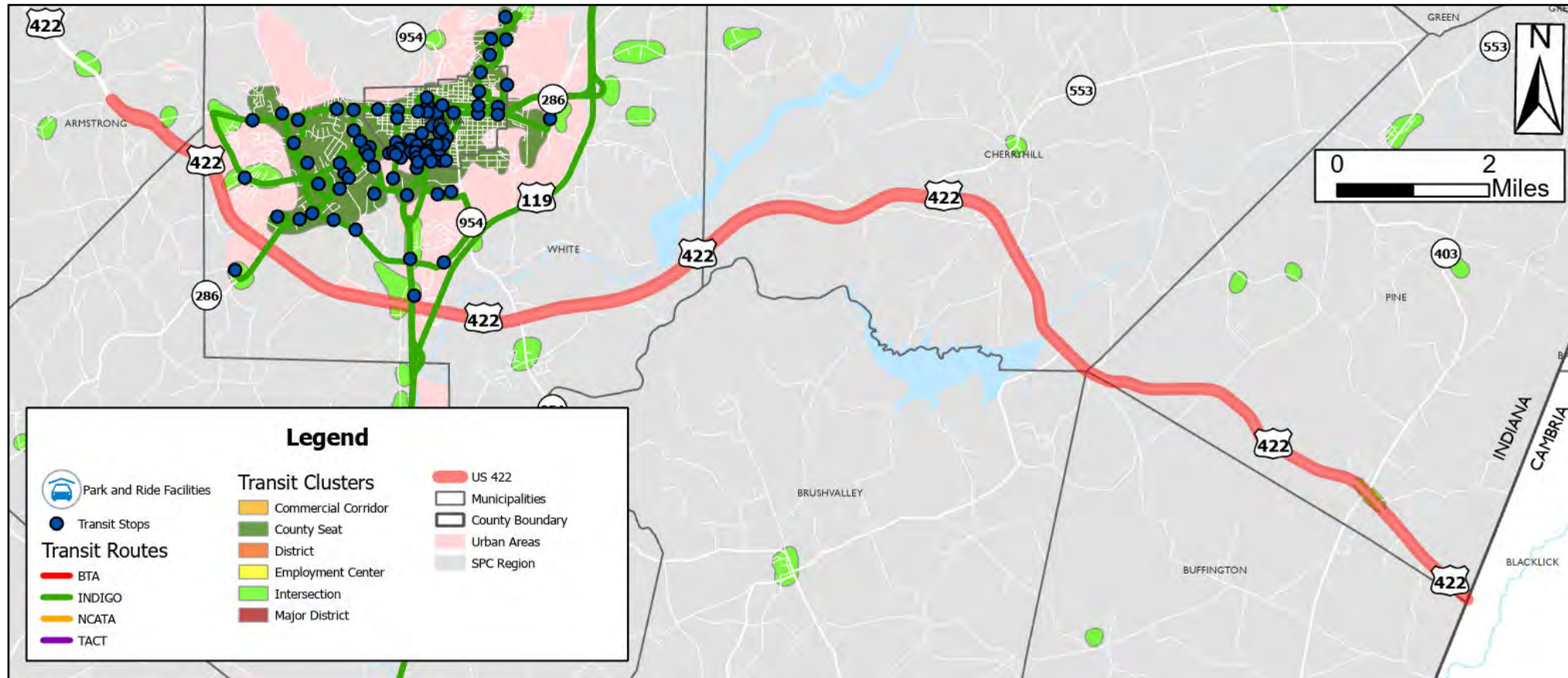
FREIGHT



SPC’s Regional Freight Network provides a more complete inventory of the key corridors and connections that service the region’s freight movement needs. The Regional Freight Network is divided into three different classifications, Regional Routes; Intercounty Routes; and Connector Routes. US 422 is a designated Regional Route on SPC’s Regional Freight Network that provides connections to other routes that are on the Freight Network. Other routes include Business 422, SR 286, and US 119 which are classified as either Intercounty or Connector routes. There is no truck or intermodal facility that is located on this segment of US 422. SPC Regional Freight Plan also identifies areas of Freight Activity Clusters, Identified Freight Growth Locations and Potential Freight Growth Areas. Freight Activity Clusters can be found along US 119 in Indiana Borough, White and Center Townships and along the eastern sections of US 422 in Cherryhill and Pine Townships. It should be noted that the Windy Ridge Business and Technology Park is located just off US 422 in White Township. The Windy Ridge Business and Technology Park is home to the regional distribution hub for Urban Outfitters. Recent investments in infrastructure will open up an additional 50 acre site to new development, which could include manufacturing or distribution facilities.

Truck counts are the highest from Parkwood Road in Armstrong Township to US 119 in White Township and Chestnut Ridge Road in Cherryhill Township to the Cambria County Line. Data collected by PennDOT Roadway Management System (RMS) indicates that Average Daily Truck Traffic (ADTT) is between 900 and 1,700 on these roadway segments. Notable ADTT includes the eastbound US 422 from US 119 in White Township to SR 553 in Cherryhill Township. ADTT measure between 800 and 900 trucks per day. In general, this corridor is in fair to good condition for truck operations, with most bridges and pavement in fair or good condition. On the western half of this segment, truck traffic moves generally along the Indiana Bypass on a four-lane divided roadway causing through traffic to avoid downtown Indiana. Overall, there is little to no truck traffic congestion backups along this section of US 422. Once off of the Indiana Bypass, US 422 travels through rural land, mostly on two or three lane undivided roadway, with steep and sharp curves. This can potentially cause hazardous conditions for freight movement between Indiana and Cambria County.

TRANSIT



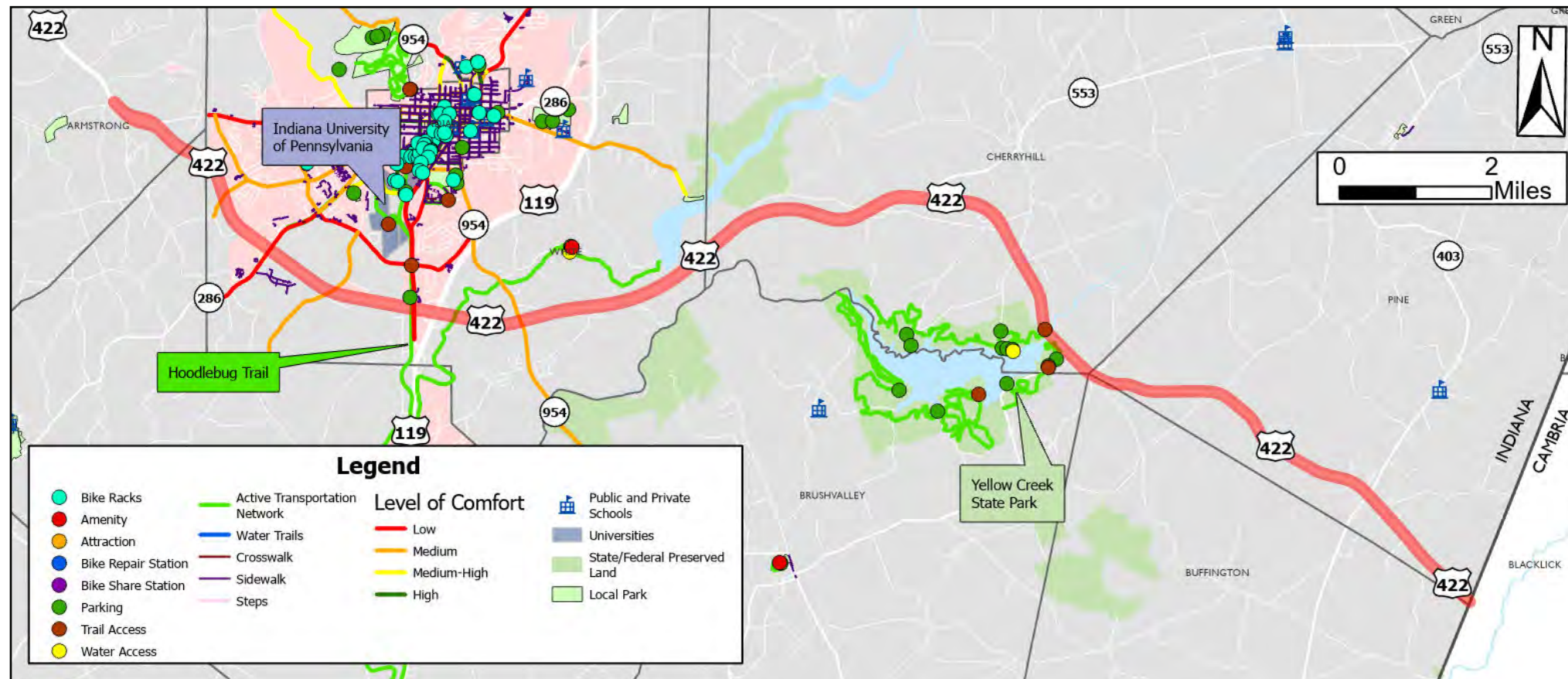
Segment E of the US 422 corridor has very limited transit routes that utilize US 422. Indiana County Transit Authority (INDIGO), the transit agency covering Indiana County, has routes located off of US 422. These include routes IN2—Blue, IN6—Tan, IN23—Punxsutawney. There are no transit routes that provide connections between Indiana Borough and Kittanning to the west and to areas in eastern Indiana County. There are no park-and-ride facilities that are near the US 422 corridor in Indiana County.

The [SmartMoves Connections Regional Transit Study](#) identifies clusters for multimodal hubs. The SMC clusters identify where unique transit supportive activities exist throughout the region based on demographic data, employment data, land use and other factors. These clusters are listed in the tables on this page.

White Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine; Security Cameras; Wayfinding; Real-Time Arrival Information

Pine Township	
SMC Cluster	Intersection
Recommendations	Bluetooth Low Energy Beacons; ADA Accessible Sidewalks, Crosswalks, Curb Ramps, and Parking; Park-and-Ride; Lighting; Paved Bus Stop Connected to Sidewalks; Branding; Timetable & Routes Signage; Facilities for Accessible Transportation
Evaluate & Consider	Bike Racks; Bike Share; Connections to Local Bicycle Network; Electric Scooter; Shelter; Seating and Lean Rails; Trash and Recycling; Ticket Vending Machine (TVM); Security Cameras; Wayfinding; Real-Time Arrival Information

ACTIVE TRANSPORTATION



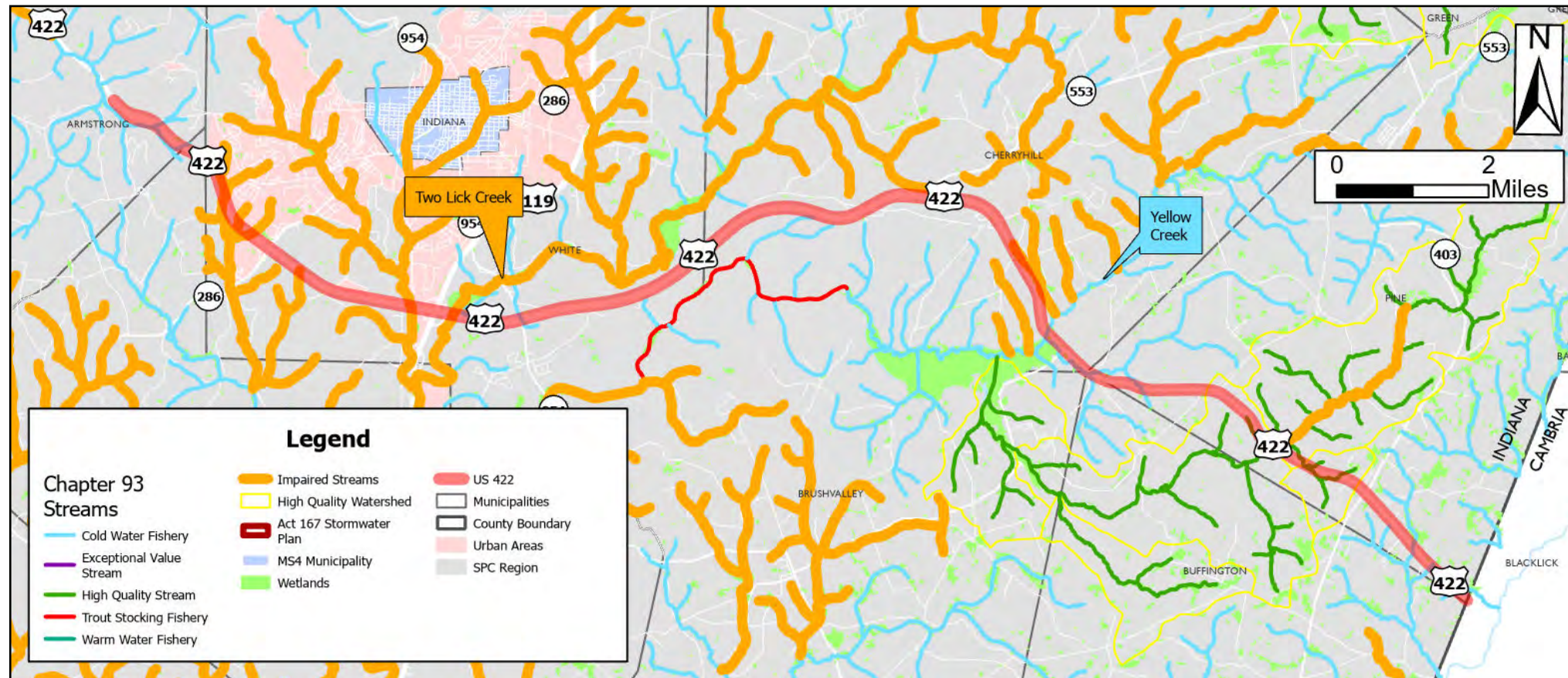
Similar to the previous four segments, Segment E from Parkwood Road to the Cambria County Line, has very limited bicycle and pedestrian facilities along the corridor. This is due to the fact that most of the corridor is in rural areas and a good portion of the route being the Indiana Bypass. Bicyclist and pedestrians are prohibited on the Indiana Bypass. Much of the sidewalk network is found away from the US 422 corridor in Indiana Borough. Although there is no direct connection to US 422, the Hoodlebug Trail goes underneath the Indiana Bypass near the US 422/ Wayne Avenue overpass in White Township. The Hoodlebug Trail is a 10-mile trail that connects Indiana to Black Lick. There are also trails located within Yellow Creek State Park.

This corridor segment includes a combination of low, medium, and high dense areas within Indiana County. In many rural areas of Indiana County, short distance trips (less than two miles long) in this corridor segment are less than 10%. These areas include Armstrong, Brush Valley, Cherryhill, Pine and Buffington Townships. In medium dense areas, short distance trips increases. In medium dense areas, such as Center and White Townships, short distance trips are between 10%-30%. In high dense areas, such as Indiana Borough, short distance trips are greater than 30%.



Hoodlebug Trail

ENVIRONMENTAL FEATURES



US 422 has numerous crossings of surface water resources in Segment E. There are several cold water fisheries and high quality streams that crosses this segment of US 422. These include Carney Run (Cold Water Fishery), Stoney Run (Cold Water Fishery), Yellow Creek (Cold Water Fishery), Two Lick Creek (Cold Water Fishery), Curry Run (Cold Water Fishery), Laurel Run (Cold Water Fishery) and Little Yellow Creek (High Quality Stream) and several small creek and tributaries. It should also be noted that Stoney Run and Two Lick Creek are considered impaired streams. Little Yellow Creek is also located in a high quality watershed.

Areas on this segment with Stormwater 167 plans:

- There are no Stormwater 167 Plans in Segment E.

Areas on this segment with MS4 Permits:

- There are no MS4 Permits in Segment E

Water Quality Standards

All commonwealth waters are protected for a designated aquatic life use as well as a number of water supply and recreational uses. The **use designation** shown in the water quality standards is the aquatic life use. These uses are Warm Water Fishes (WWF), Trout Stocking (TSF), Cold Water Fishes (CWF) and Migratory Fishes (MF). A body of water is considered **“impaired”** if it fails to meet one or more water quality standards.

The water quality in a High Quality stream can be lowered only if a discharge is the result of necessary social or economic development, the water quality criteria are met, and all existing uses of the stream are protected. Exceptional Value waters are to be protected at their existing quality; water quality shall not be lowered.

Some water resources are also part of the **Total Maximum Daily Load (TMDL)** program, which identifies sources of pollution and allocates pollutant loads in places where water quality goals are not being achieved.

Stormwater Management

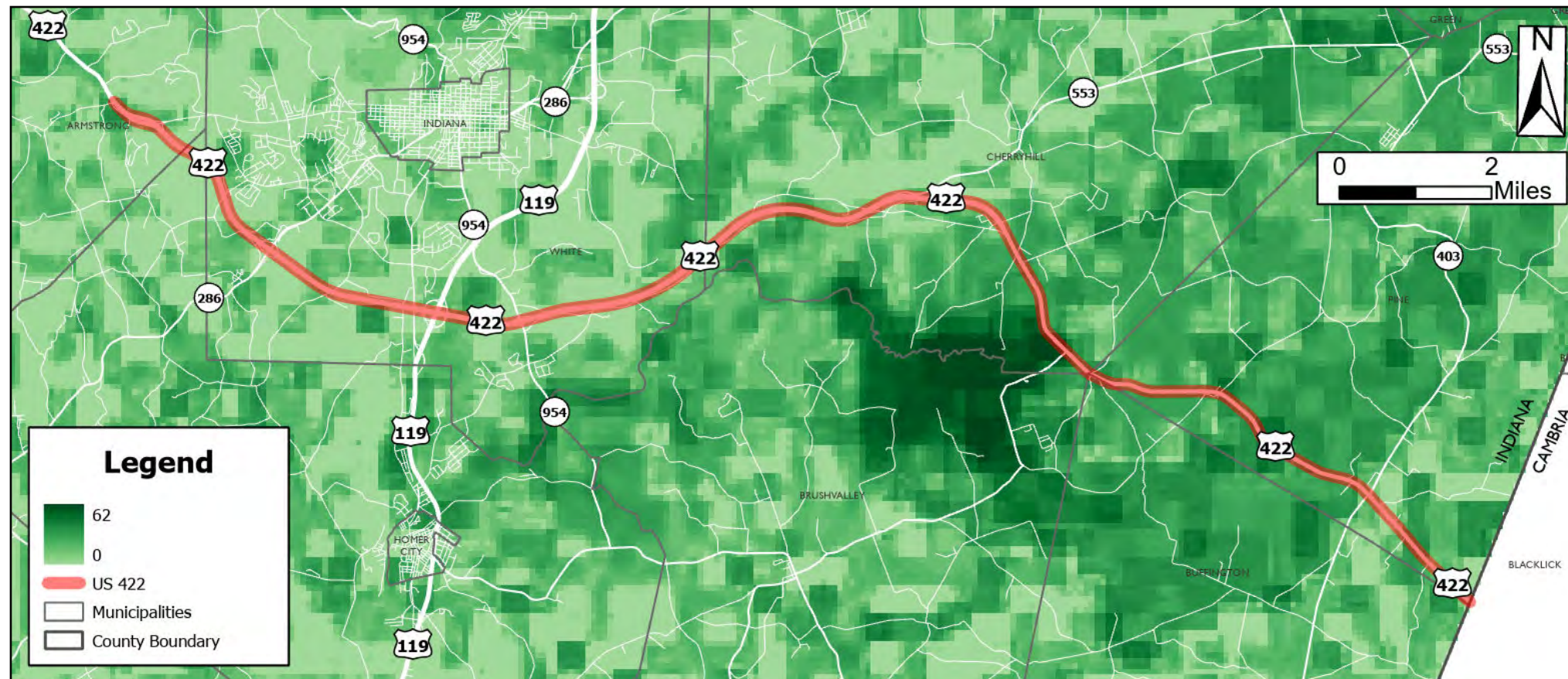
The **Storm Water Management Act (No. 167)** authorized a program of comprehensive watershed stormwater management that retains local implementation and enforcement of stormwater ordinances similar to local responsibility of administration of subdivision and land development regulations. Act 167 plans are required on a county-wide basis; however, the practice to this point has been to only develop plans for specific sensitive waters/watersheds.

A **Municipal Separate Storm Sewer System (MS4)** is owned or operated by a public agency, such as a city, town, county, flood control district, state, or federal agency that does not connect to the sanitary sewer system and does not lead to a wastewater treatment plant.



US 422 near Two Lick Creek in White Township

ENVIRONMENTAL FEATURES

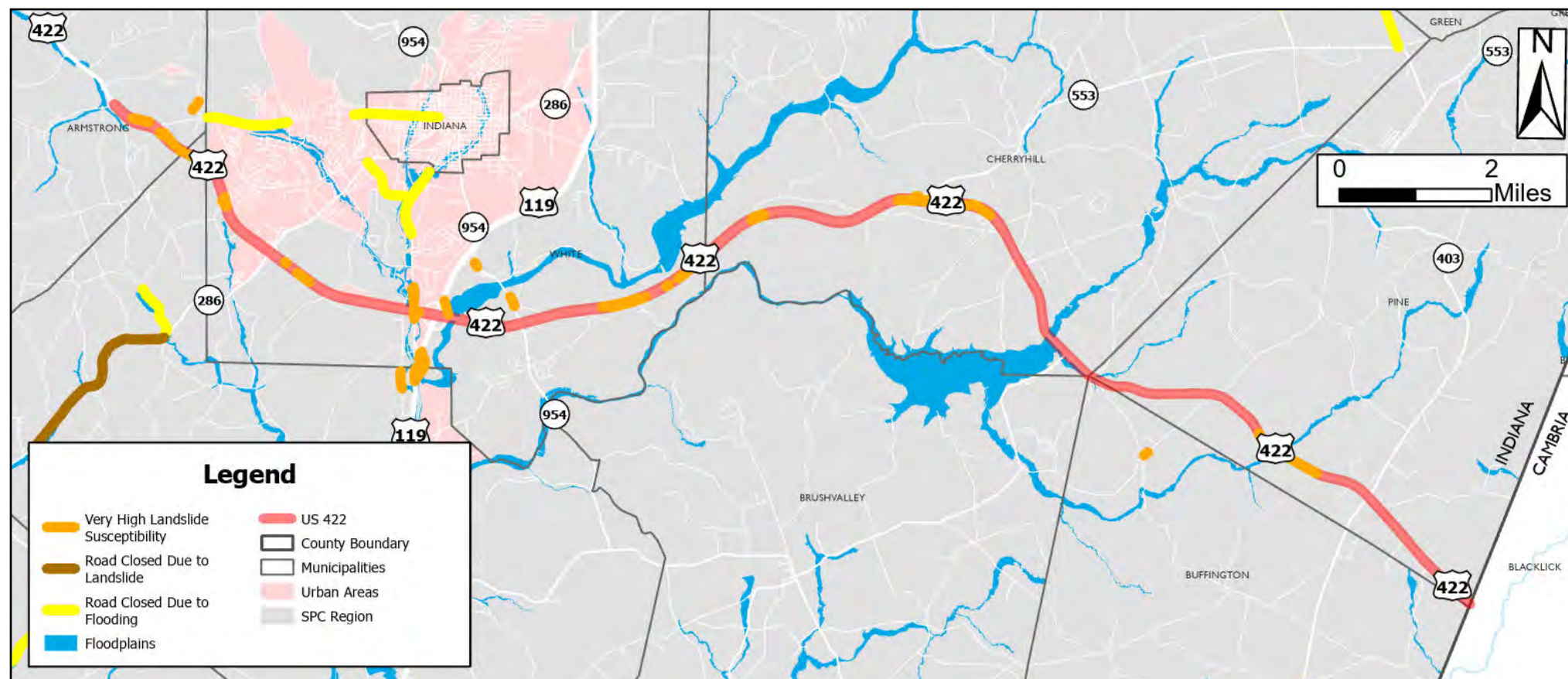


The **Regional Ecosystem Framework (REF)** integrates environmental inventory data, conservation priorities, maps, and plans, with input from and adoption by conservation and natural resource stakeholders identified that addresses species, habitats, and relevant environmental issues and regulatory requirements agreed upon by the stakeholders. SPC has identified available GIS data layers that when analyzed will spatially model ecological significance on a regional scale. The datasets that make up the prototype REF are included in the appendix.

SPC staff assigned a score to the relevant attribute of each environmental data layer, the score reflects the relative importance of the occurrence of any certain resource found in a dataset relative to other resources used in the analysis.

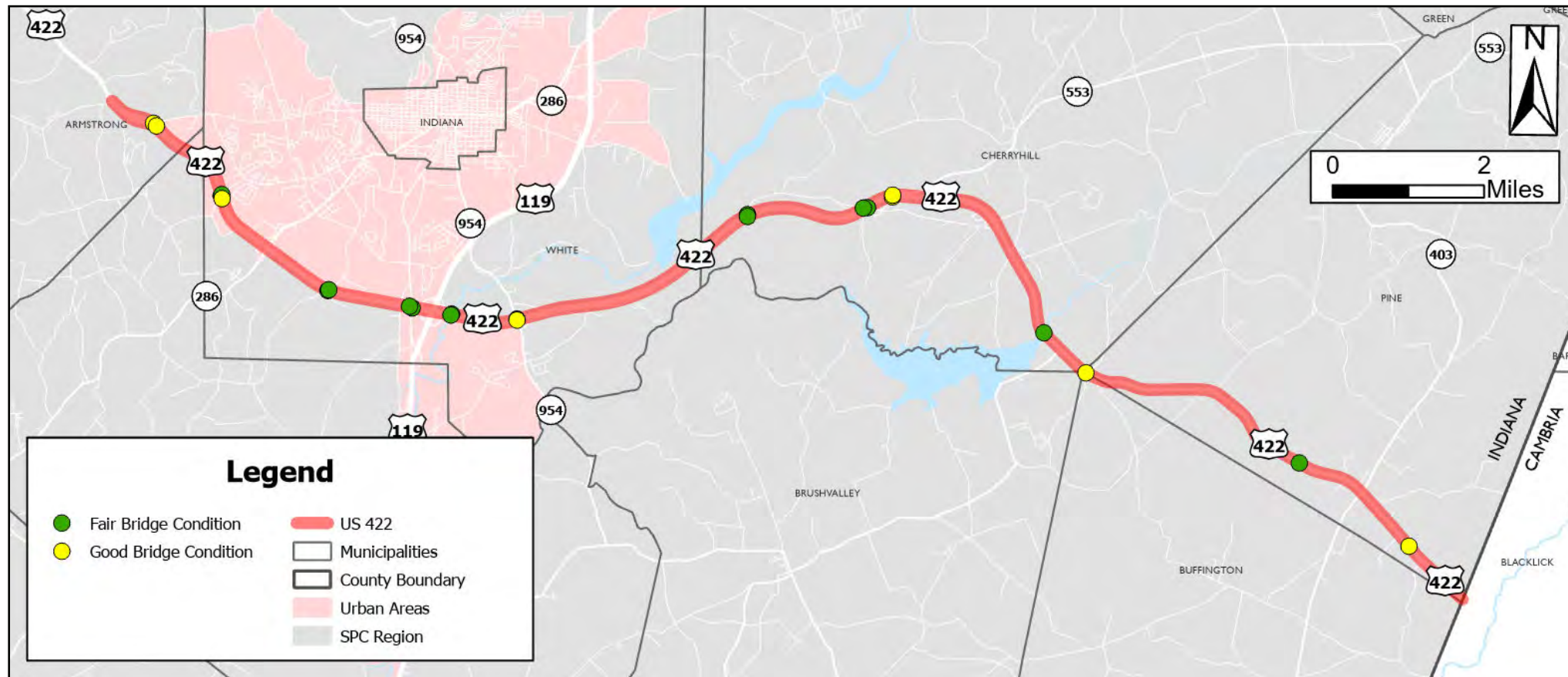
Greater values in the REF indicate greater environmental significance.

Within Segment E, the REF is showing a higher relative environmental value attributed to the area around Yellow Creek. Higher values at Yellow Creek are due to the river being a cold water fishery in a high quality watershed surrounded by conservation easements, forests and wetlands. Nearby Yellow Creek State Park is a protect area which is also designated as an Important Bird and Mammal Area. Yellow Creek State Park is also a Natural Heritage Core Area. With this level of environmental quality, future projects on US 422 in this watershed can anticipate additional restrictions or measures related to waterway permitting and may have an increased chance of encountering threatened and endangered species.



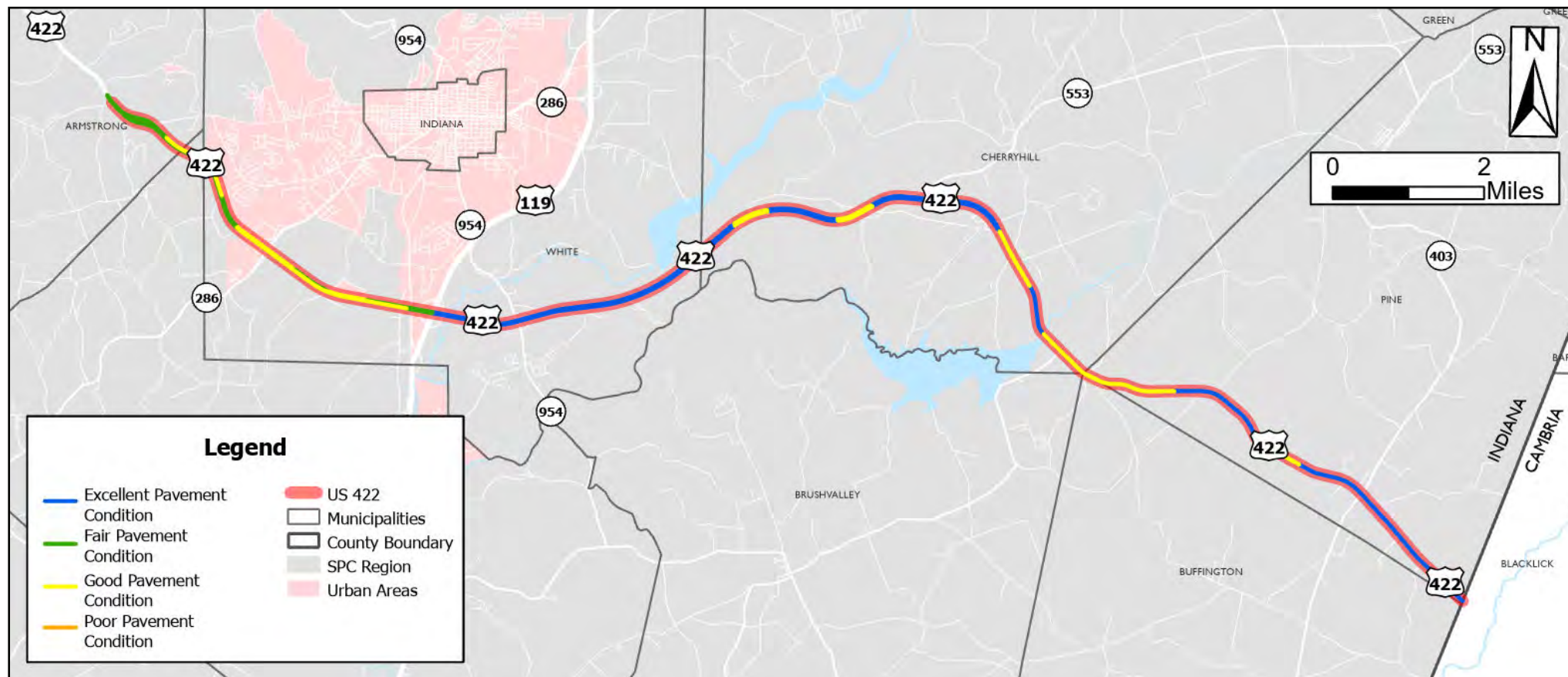
US 422 in Segment E includes some locations with very high vulnerability to landslides. The locations are based on regionwide landslide modeling done by SPC and isolated to the area within a mile of US 422 in this segment. Most significant of these areas is US 422 Indiana Bypass. Slopes above and/or below the Indiana Bypass are vulnerable to landslides. Another area with significant landslide vulnerability is US 422 from Nolo Road to SR 403. According to PennDOT RCRS data, no section of US 422 along Segment E was closed due to landslides or flooding.

CONDITION OF ASSETS



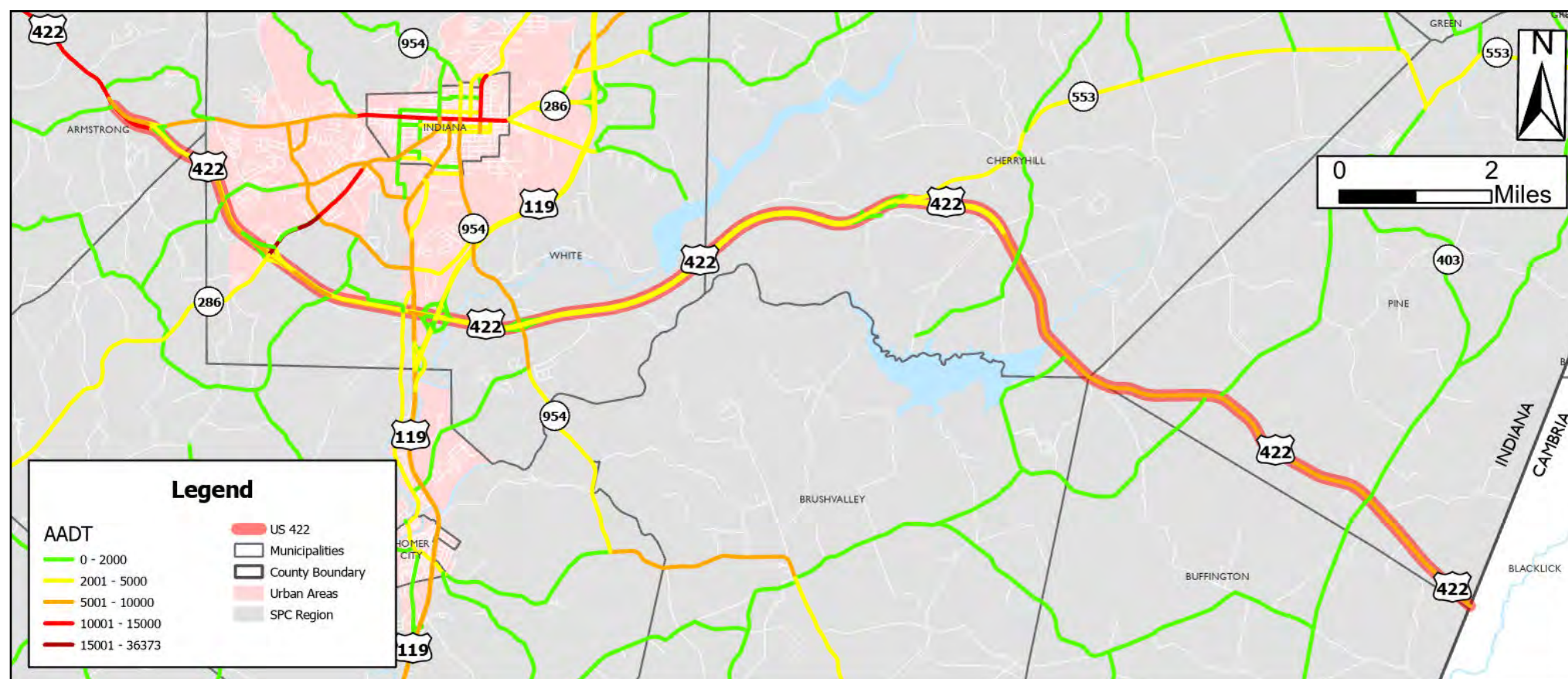
In Segment E, 58% of bridges on US 422 are rated in fair condition and 42% of bridges are rated in good condition. No bridges are rated in poor condition. 83% of US 422 has a pavement condition rating of good or excellent and 17% of pavement has a condition rating of fair. There is no pavement located on Segment E that is in poor condition.

Segment E Bridge Conditions			
Bridge Condition	Count	Deck Area (SQ Ft)	By %
Good	10	38922.5	42%
Fair	14	181677.6	58%
Poor	0	0	0%



Segment E Pavement Conditions			
Road Condition	Count (RMS Segments)	Miles	By %
Good/Excellent	67	29.6	83%
Fair	12	6	17%
Poor	0	0	0%

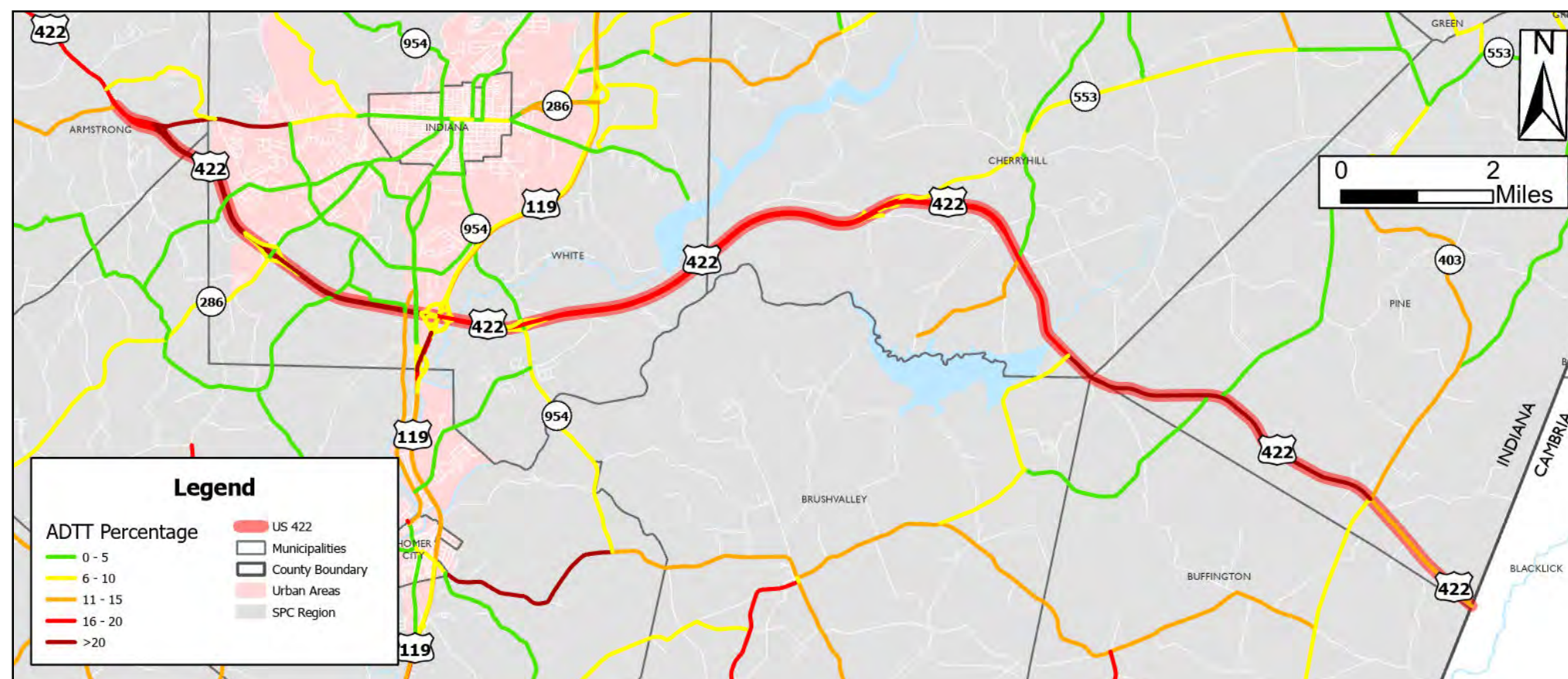
SEGMENT TRAVEL PATTERNS



Annual Average Daily Traffic (AADT) is the typical daily traffic on a roadway segment for all the days in a week over a one-year period. Truck percentage is the percent of the AADT that is comprised of truck traffic, excluding pickups, panels, and light trucks. The current AADT and truck percent figures included in this section were derived from the Pennsylvania Department of Transportation (PennDOT) Roadway Management System (RMS).

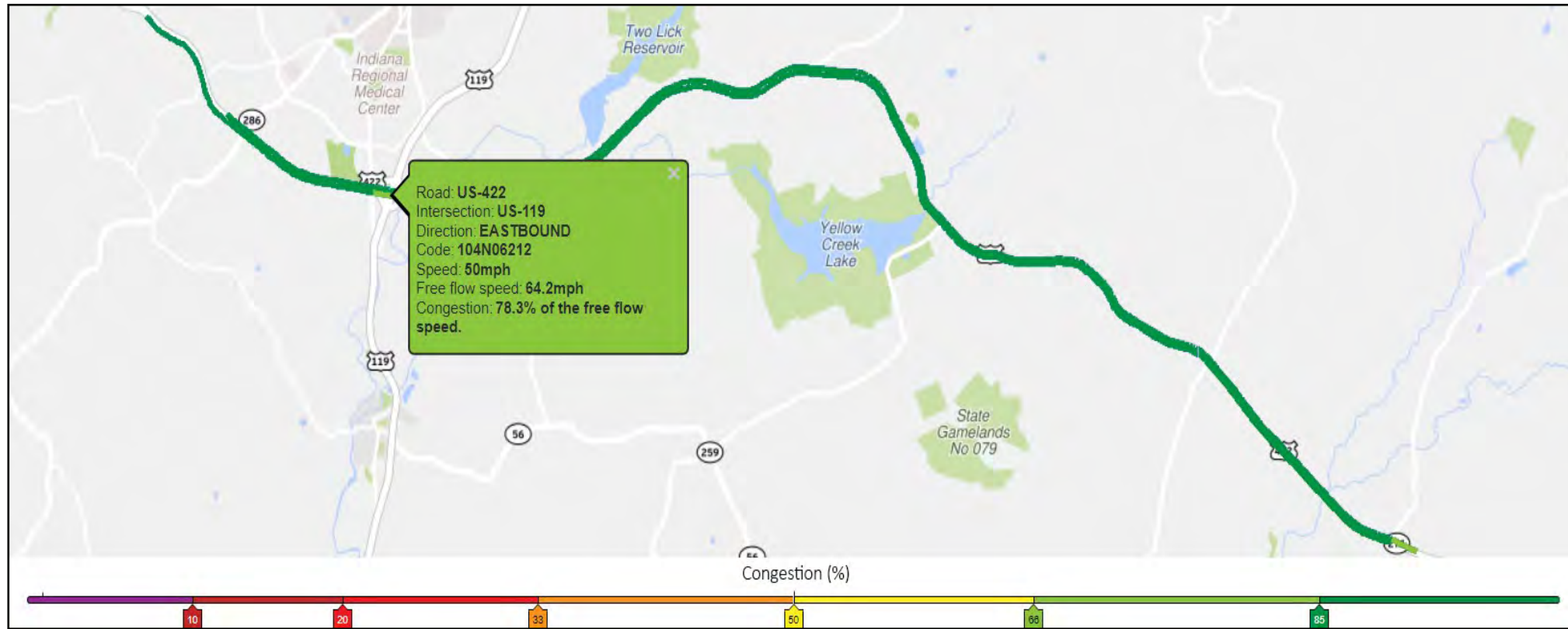
Traffic volumes for individual roadway segments on this portion of the corridor falls between 3,900 and 10,100 vehicles per day. The AADT for this segment of the US 422 corridor is highest on the eastbound lanes in between Parkwood Road and Business 422/West Pike Road in Armstrong Township. Roadway segments on this stretch of the US 422 corridor have an AADT of 10,011. Other areas with high AADT includes westbound US 422 between Business 422/West Pike Road and Parkwood Road in Armstrong Township, eastbound US 422 between Business 422/West Pike Road in Armstrong Township and US 119 in White Township, and Chestnut Ridge Road in Cherryhill Township and the Cambria County Line. AADT for these roadway segments range from 5,000 to 10,000.

Truck percentages on individual roadway segments on this segment of the US 422 corridor falls between 14% and 28% in each travel direction. Truck percentage for this segment of the US 422 corridor is highest on the westbound lanes of US 422 between US 119 in White Township and Business 422/West Pike Road in Armstrong Township. Roadway segments on this stretch of the US 422 corridor have a truck percentage of 28%. Truck percentages are also high on the eastbound lanes of US 422 between Business 422/West Pike Road in Armstrong Township and US 119 in White Township and between SR 259 in Cherryhill Township and SR 403 in Pine Township. Truck percentages are between 22% and 25% on these segments.

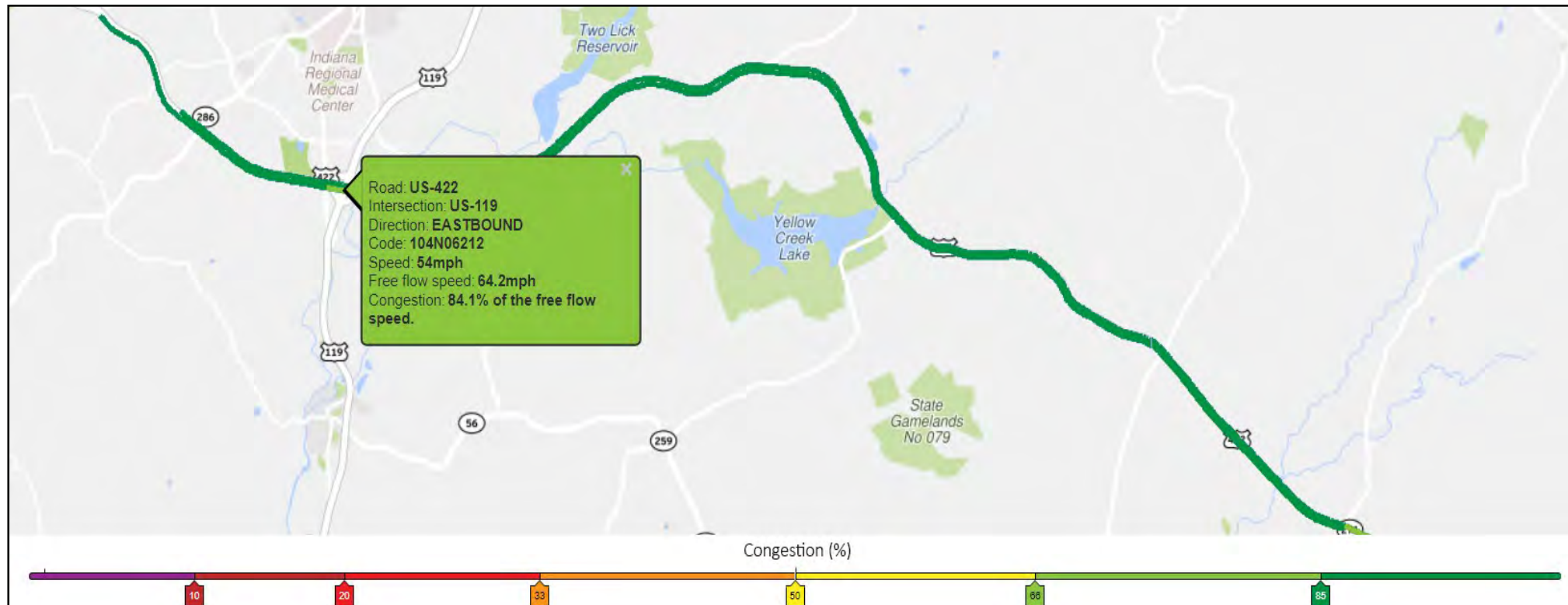


CONGESTION & RELIABILITY

US 422 Segment E Congestion Trend Map for AM Peak for January 01, 2023 through December 31, 2023 (Every weekday)



US 422 Segment E Congestion Trend Map for PM Peak for January 01, 2023 through December 31, 2023 (Every weekday)



- AM and PM peak period congestion trend mapping is shown for Segment E. Congestion percentage is shown as the percent of free flow speed achieved on the segment. Higher percentages indicate less congestion (greener colors), and lower percentages indicate more congestion (redder colors).
- In the AM peak period, travelers on Segment E approximately achieve 78% or higher of free flow speed.
- In the PM peak period, travelers on Segment E approximately achieve roughly 84% or higher of free flow speed.
- Travelers on Segment E generally experience negligible to light congestion in the peak periods.



Looking East: US 422 at the US 119 Interchange

Travel Time in Minutes				
Eastbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				26.36
Monday	27.92	28.87	27.14	
Tuesday	28.08	29.05	27.22	
Wednesday	28.21	29.38	27.26	
Thursday	28.19	29.44	27.26	
Friday	27.99	29.35	27.07	
Saturday				27.86

Planning Time Index				
Eastbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				1.34
Monday	1.41	1.85	1.36	
Tuesday	1.43	1.81	1.34	
Wednesday	1.45	1.88	1.37	
Thursday	1.43	1.95	1.35	
Friday	1.42	1.99	1.34	
Saturday				1.69

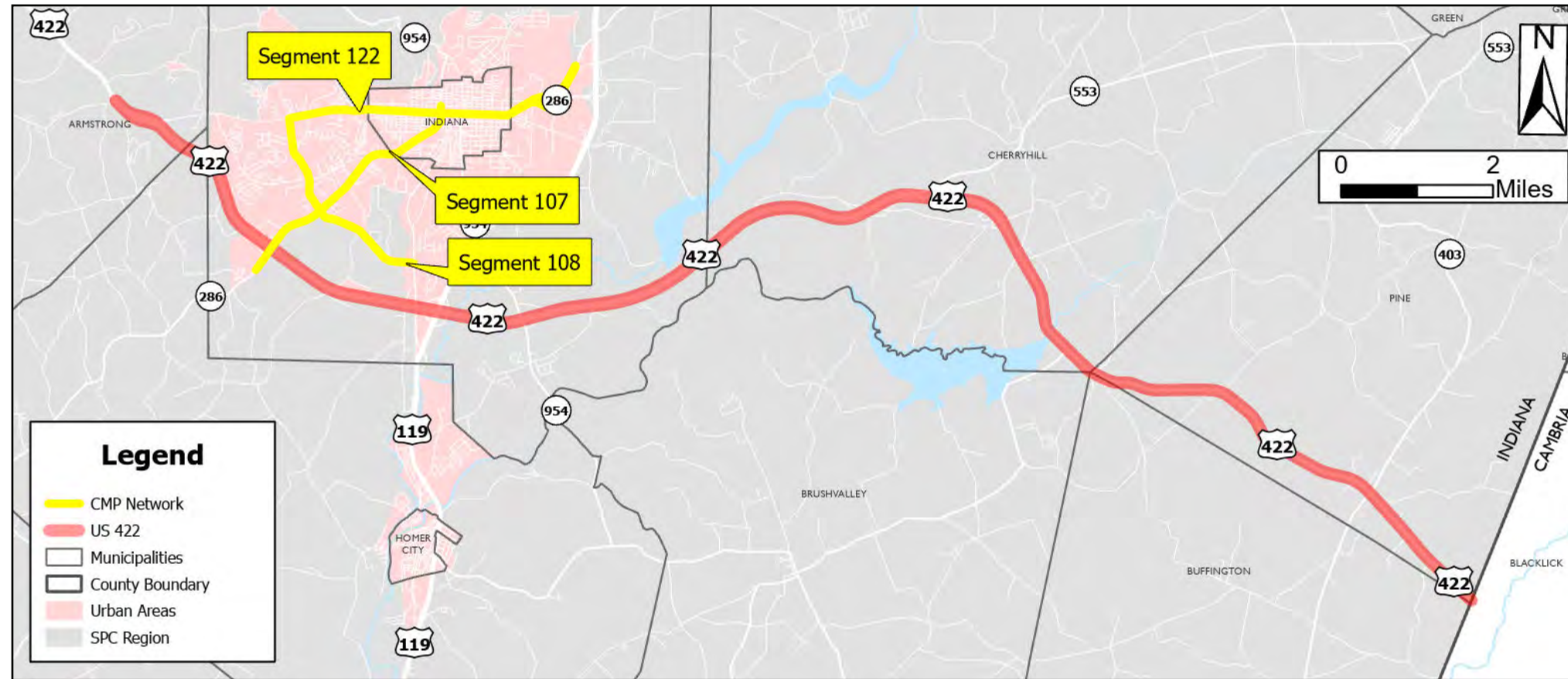
Travel Time in Minutes				
Westbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				27.13
Monday	28.04	27.89	27.66	
Tuesday	28.47	28.6	27.76	
Wednesday	28.29	28.54	27.76	
Thursday	28.23	28.23	27.72	
Friday	28.06	28.42	27.56	
Saturday				27.55

Planning Time Index				
Westbound				
NPMRDS from INRIX (Trucks and passenger vehicles)				
	Weekdays	Weekdays	Weekdays	Weekends
	all day	6 am-10 am	3 pm-7pm	all day
Sunday				1.37
Monday	1.38	1.38	1.36	
Tuesday	1.41	1.41	1.36	
Wednesday	1.4	1.4	1.36	
Thursday	1.4	1.39	1.38	
Friday	1.39	1.39	1.36	
Saturday				1.38

Planning Time Index (PTI) is the extra time required to arrive at a destination on time, 95% of the time. It is calculated as the ratio of the 95th-percentile highest vehicle-hours traveled divided by the vehicle hours traveled if the same trips could have been completed at free flow speed. For example, a PTI of 1.5 means that a traveler should plan on 50% more time for their trip compared to light traffic conditions for a 95% probability of arriving on time (meaning that 15 minutes should be planned for what would be a 10 minute trip in light traffic conditions). SPC reports PTI for arterial CMP corridors in the region by direction for peak and off-peak times.

- PTI for Segment E in the eastbound direction ranges from 1.34 to 1.99
- PTI for Segment E in the westbound direction ranges from 1.36 to 1.41

CONGESTION MANAGEMENT PROCESS



- Segment E is not monitored as part of SPC's Congestion Management Process network.
- Most of Segment E takes on the characteristics of a rural principal arterial with non-signalized intersections and grade-separated interchanges along the Indiana Bypass.
- Detour routes for this segment include:
 - US 119
 - Business 422
 - SR 286



Looking East, US 422 at SR 954 in White Township

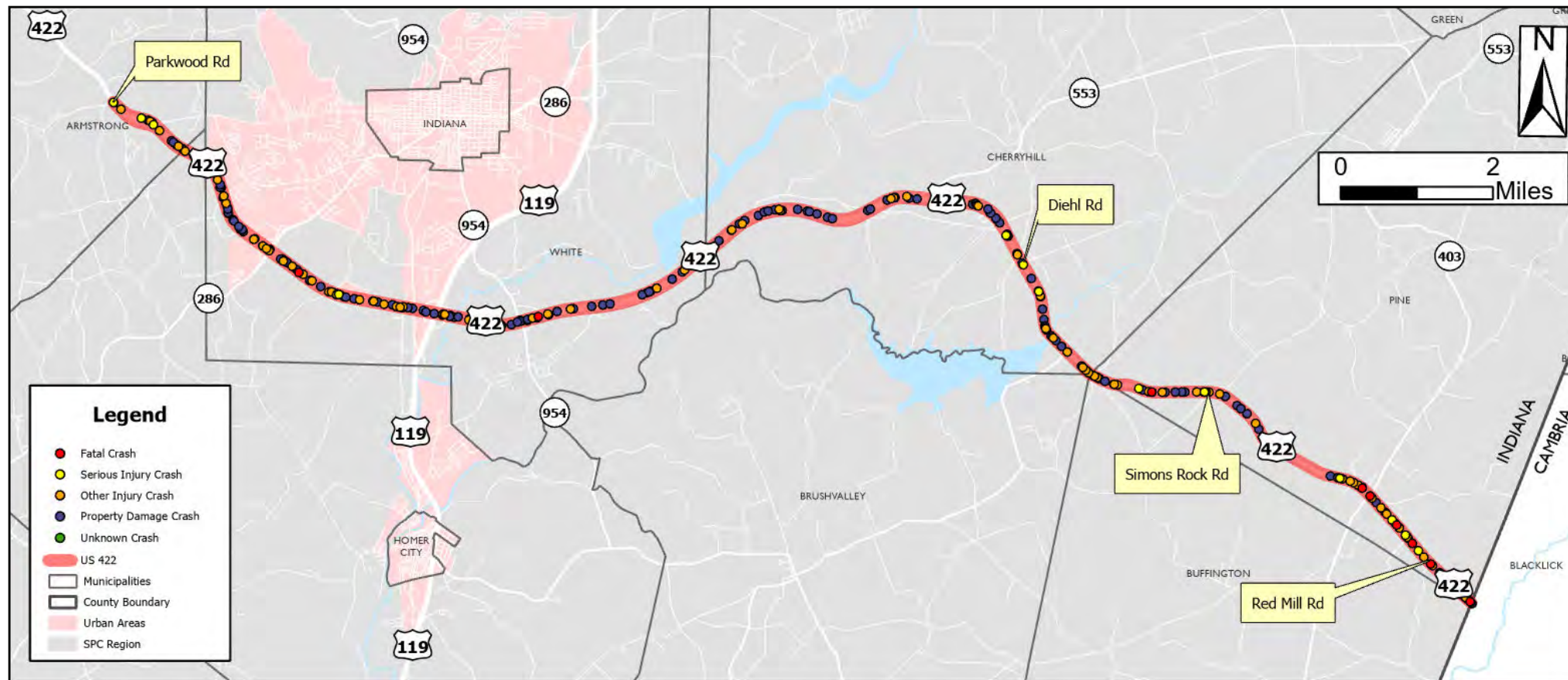


Looking East, US 422 at SR 553 in Cherryhill Township



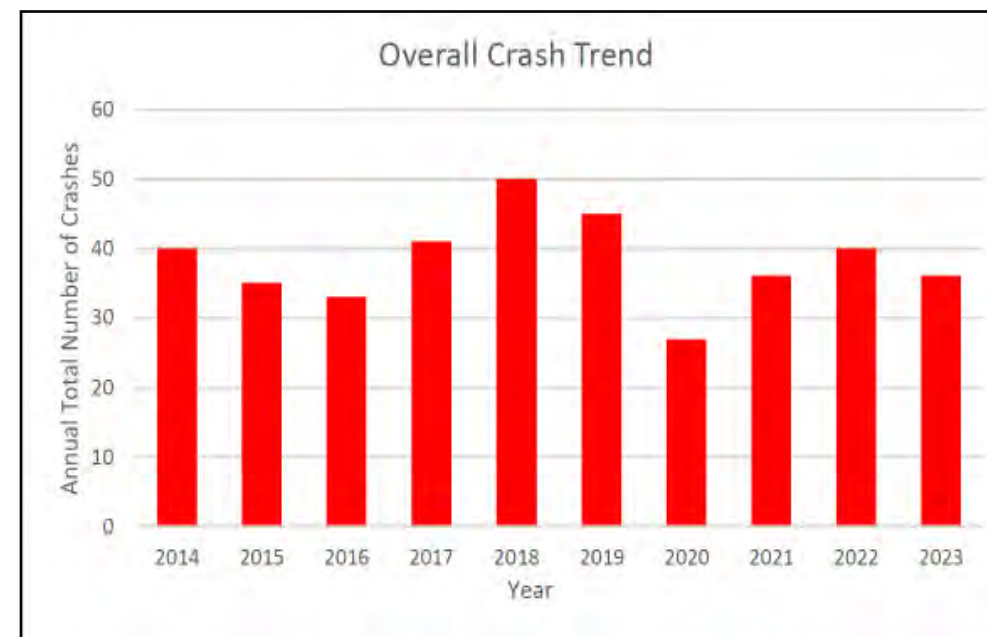
US 422 at SR 403 in Pine Township

SAFETY

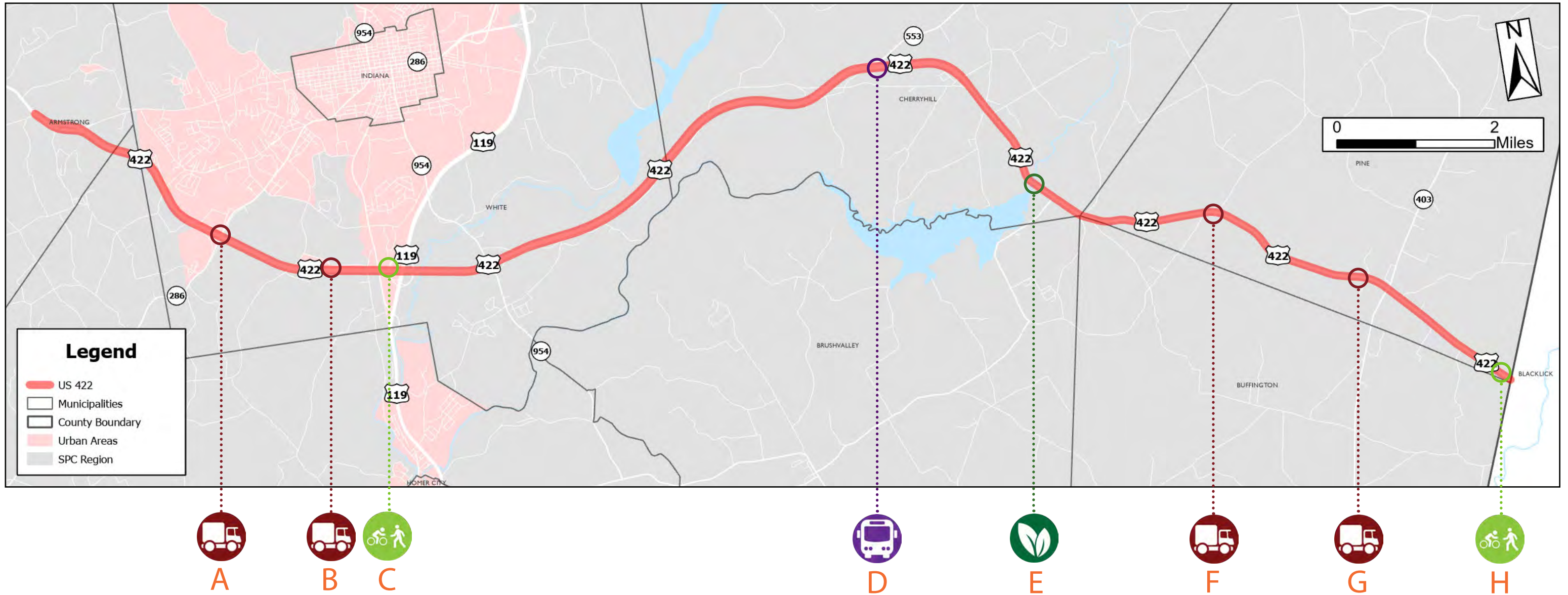


- For Segment E, the overall number of crashes appear to slightly decrease over the 10-year period (2014-2023). The fatal and serious injuries appear to fluctuate over the same time period with years with high fatal and suspected serious injuries and years with low fatal and suspected serious injuries.
- Segment E's 2023 crash rate (0.89 crashes per MVMT) is higher than the average 2023 crash rate for similar roadways in Indiana County (0.81 crashes per MVMT) and lower than the average 2023 crash rate for similar roadways in the SPC region (1.16 per MVMT).
- According to the PennDOT Highway Safety Network Screening (HSNS) Analysis, the following areas of Segment E are underperforming from a safety perspective:
 - Parkwood Road Intersection
 - East of Diehl Road to Simmons Rock Road
 - SR 403 to Red Mill Road

US 422 Segment E Crash Statistics	
Timeframe	2014-2023
All Crashes	354 (<1 crash per week)
Fatal Crashes	11 (~3% of all crashes)
Crashes Involving Serious Injuries	15 (~4% of all crashes)
Crashes Involving Other Injuries	109 (~31% of all crashes)
Crashes Involving Property Damage	217 (~61% of all crashes)
Unknown	2 (<0.5% of all crashes)







SEGMENT E: FOCUS AREAS







FOCUS AREA CATEGORIES



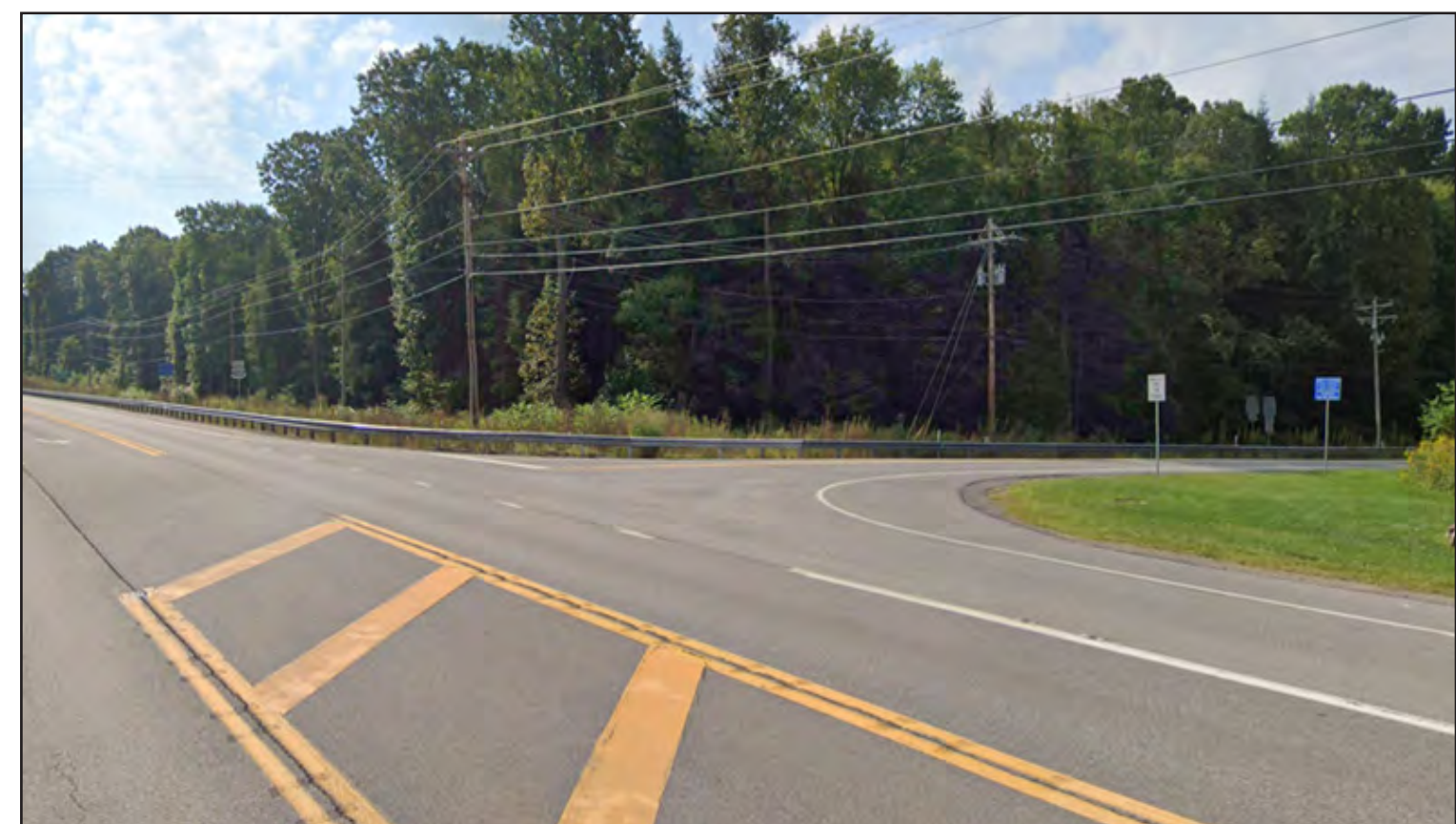
SEGMENT E: FOCUS AREAS

A		The Windy Ridge Business & Technology Park in White Township, is a 200 acre mixed use development that sits near the US 422/SR 286 interchange in White Township. Recently, Indiana County Development Corporation was awarded funding to further assist in the development of the park.
B		Roughly 30% of the traffic on the westbound side of US 422 between US 119 in White Township and Business Route 422/West Pike Road in Armstrong Township are from heavy trucks only. Roughly 25% of traffic on the eastbound side are from heavy trucks.
C		The Hoodlebug Trail provides good north/south bicycle and pedestrian route to connect IUP campus in Indiana Borough to areas in Southern Indiana County.
D		There is a lack of transit options for potential users to travel inbetween Indiana Borough and eastern Indiana County.

E		Higher values at Yellow Creek is due to the river being a cold water fishery in a high quality watershed surrounded by nearby conservation easements, forests and wetlands. Nearby Yellow Creek State Park is a protected area which is also designated as an Important Bird and Important Mammal Area. Future projects on US 422 can anticipate additional restrictions or measures related to waterway permitting and may have an increased chance of encountering threatened and endangered species.
F		Through the eastern segment of US 422, freight travel could potentially be hazardous to due to US 422 is mostly on a rural, two to three lane undivided roadway with steep hills and slopes.
G		Roughly 25% of traffic on US 422 between SR 259 in Cherryhill Township and SR 403 in Pine Township are from heavy trucks.
H		US 422 is an expressway through a predominantly rural area which is prohibited to additional pedestrian or bicycle specific facilities. Many existing facilities are located within the broader the US 422 corridor and provides an alternate bicycle and pedestrian mode to US 422.



US 422 at Yellow Creek in Cherryhill Township



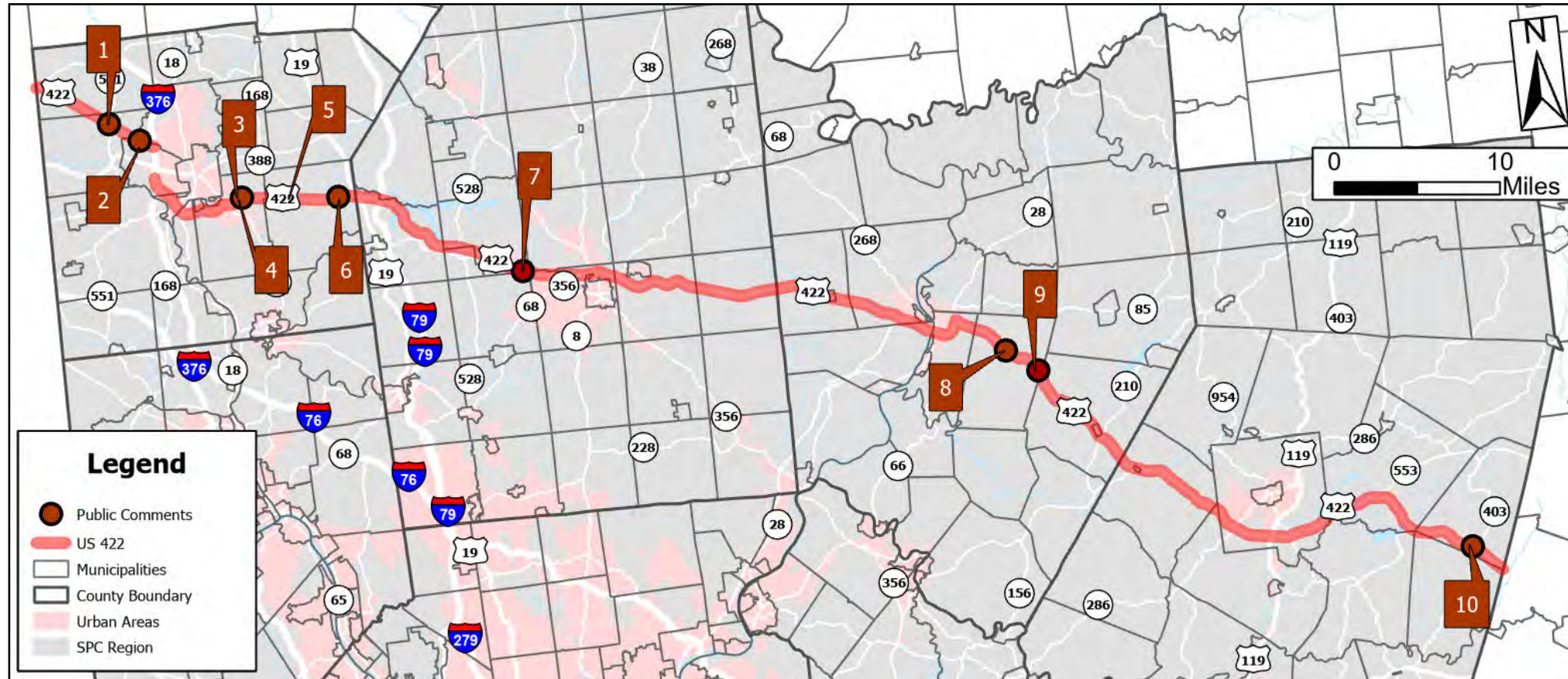
US 422 at SR 259 in Cherryhill Township



APPENDICES

- Appendix A: Public Comments
- Appendix B: Data Sources & Definitions

APPENDIX A: PUBLIC COMMENTS



In addition to the quantitative and mapping based summaries compiled in the US 422 Master Planning Framework, a collection of public comments are provided to help fill in, validate, or expand upon the overall planning insights for this Master Planning Framework. These public comments provide perspectives and details that may not be available through data sources or written documents. The map to the left represents recent public comments that SPC received regarding US 422.



US 422 at Hoover Road in Shenango Township

Comment Number	Location	Comment
1	SR 551	May require a full traffic light and not just a flashing light. Over 200 acres are available for sale and would make an excellent location for warehousing and distribution thus requiring significant truck traffic and the need for a traffic light
2	Pulaski Road	This misaligned intersection makes it extremely difficult to turn onto Pulaski Road into Neshannock Township. Realigning the intersection is the best solution, however; if not feasible, then additional overhead lighting would be great.
3	Hoover Road	Dangerous intersection at Hoover Road and US 422 in Shenango Township. This intersection is sorely in need of lighting and/or an overhead Hoover Rd sign to clearly designate that there is an intersection located there. This intersection is especially dangerous at night. Both cars and trucks travel at very high speeds through this intersection. Many people while signaling to turn onto Hoover Rd have narrowly been hit from behind because Hoover Rd is virtually invisible to those drivers traveling behind the cars making turns.
4	Hoover Rd	The residents and the township supervisors have asked for a light on the pole to illuminate the intersection at night but are told it can't be done. There are 2 poles on each side of US 422. The intersection has a 35 MPH speed limit (heading east only) which is not followed and is a risk to those trying to turn right then immediately uphill. Vehicles pass the no passing zone constantly, even if you give them plenty of notice that you are about to turn. Traffic coming off of an off ramp which is posted 45 MPH but no warning for the intersection ahead until the intersection. The speed limit on US 422 heading west is posted 50 MPH. The on ramp going west has a 35 MPH limit right as you are entering a curve on the ramp. Again, no warning signs on that side either. Signs also would be helpful naming the intersection, so that people traveling at night can see where the intersection is located since its not illuminated.
5	Slippery Rock	Significant traffic requires widening to allow passing lanes to I-79.
6	Slippery Rock	Pavement in this area is always rough. There are drainage issues on either side of the bridge over Slippery Rock Creek after it rains.
7	North Road	Multiple close calls and accidents. Houses sit too close to the road. The house have been hit by cars recently. Backups happen often at light. Would be better to have 5 lanes here with green turning arrows light to allow better flow of traffic.
8	Blanket Hill to Silvis Hollow	Speeding occurs along US 422 from Blanket Hill to Silvis Hollow Road
9	Sandy Flat Road	Lack of visibility on US 422 turning into oncoming traffic. A commercial trailer retailer is located at this intersection. Commercial trucks traveling US 422 have difficulty stopping for turning traffic. Addition of a turning lane would be beneficial.
10	Eastern Indiana County	No public transportation is available.

APPENDIX B

DATA SOURCES & DEFINITIONS

The source for all data and GIS layers is the Southwestern Pennsylvania Commission, unless otherwise noted.

Demographic and Employment Trends:

- Trends are taken from SPC's Cycle 12 Forecast (June 2023). Employment statistics are from the Mergent Intellect Database (January 2024)

Environmental Justice:

- SPC 2025-2028 TRANSPORTATION IMPROVEMENT PROGRAM: REPORT ON ENVIRONMENTAL JUSTICE

Land Use Context:

- National Academies of Sciences, Engineering, and Medicine 2018. An Expanded Functional Classification System for Highways and Streets. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24775>

Multimodal Systems:

- SPC Regional Active Transportation Plan (2019)
- Transit Clusters (2020), SPC SmartMoves Connections
- SPC Park-N-Ride Facility Inventory

Freight:

- Southwestern Pennsylvania Regional Freight Plan (2016), Southwestern Pennsylvania Commission. https://www.spcregion.org/wp-content/uploads/2019/09/SWPA-FinalPlan_2016.pdf
- FAF4 Network Database and Flow Assignment: 2012 and 2045, Federal Highway Administration https://ops.fhwa.dot.gov/freight/freight_analysis/faf/faf4/netwkdbflow/index.htm
- National Highway Freight Network (2019), Federal Highway Administration <https://ops.fhwa.dot.gov/freight/infrastructure/nfn/index.htm>
- Interim National Multimodal Freight Network (2016), Federal Highway Administration <http://nmfn-usdot.opendata.arcgis.com/>

Corridor Travel Patterns:

- StreetLight Data (2019) <https://www.streetlightdata.com/>
- Traffic Growth Rate: CUBE Model Run Data (Cycle 12)
- Percent Non-SOV travel: U.S. Census Bureau, American Community Survey 5-year Estimates (2018-2022), by census tract

Segment Overview:

- Federal and State Conserved Lands (2024), PA Land Trust Association via PASDA. These files cover land owned by the state or federal government and managed by state or federal government agencies (including state parks, state forests, game lands, Historic & Museum Commission properties, Fish & Boat Commission properties, US Forest Service, US Fish & Wildlife Service, National Park Service, Department of Defense, and Army Corps of Engineers).

Environmental Features:

- Streams Chapter 93 Designated Use (2024), Non-Attaining Streams and Lakes (2024), TMDL Streams and Lakes (2024), Stormwater 167 Plans (2024), MS4 Permits (2023): PA Department of Environmental Protection via PASDA.
- Special Flood Hazard Areas (2020), FEMA
- HUC boundaries (2022), USDA
- Regional Ecosystem Framework (2023), Southwestern Pennsylvania Commission. The REF integrates environmental inventory data, conservation priorities, maps, and plans, with input from and adoption by conservation and natural resource stakeholders identified that addresses species, habitats, and relevant environmental issues and regulatory requirements agreed upon by the stakeholders. SPC staff assigned a score to the relevant attribute of each environmental data layer, the score reflects the relative importance of the occurrence of any certain resource found in a dataset relative to other resources used in the analysis. Greater values in the REF indicate greater environmental significance. The layers included in the REF are as follows:
 - NHI Natural Heritage Core Areas
 - Important Mammal Areas
 - Important Bird Areas
 - University of Vermont Modeled Wetlands
 - Small Watersheds Chapter 93 designation (Exceptional Value, High Quality, etc.)
 - Surface Waters
 - Streams CWF & TSF
 - Mussel Management Streams
 - Streams trout natural reproduction
 - Conservation Easements (existing)
 - Priority Conservation Watersheds
 - Conservation Opportunity Areas

- DCNR Forest Wild Natural Areas
- Federal Wildlife Refuge
- Protected land (SPC parks, State gamelands, State forests merged)
- Forested Land Use
- Ag Security areas
- Additional resources for understanding stormwater regulations:
 - <https://www.dep.pa.gov/Business/Water/CleanWater/StormwaterMgmt/Pages/Act-167.aspx>
 - <http://files.dep.state.pa.us/EnvironmentalEd/Environmental%20Education/EnvEdPortalFiles/MS4%20Resource%20Guide.pdf>

Segment Travel Patterns:

- PennDOT Roadway Management System (June 2024), PennDOT via PASDA

Transit:

- Transit Clusters (2020), SPC SmartMoves Connections

Congestion & Reliability:

- INRIX Data Compilations from REGIONAL INTEGRATED TRANSPORTATION INFORMATION SYSTEM (RITIS), Probe Data Analytics Suite (2024) <https://ritis.org/>

Safety:

- Pennsylvania Crash Information Tool (PCIT), 2014-2023
- Safety Focus Areas: Regional Transportation Safety Action Plan (<https://www.spcregion.org/programs-services/transportation/operations-safety/>). The Safety Action Plan identifies innovative strategies and programs to improve safety throughout the region. Efforts include the assessment of federally-required safety performance measures in terms of the numbers and rates of fatalities and serious injuries, as well as support for establishing regional safety targets and tracking safety performance. Crash data assessments are used to identify safety focus areas – both categorically and by location – and ongoing updates are exploring Highway Safety Manual (HSM) screening data generated by PennDOT to highlight locations that may yield the greatest potential benefit with future safety improvements.

SmartMoves Corridors

Corridors of Regional Significance

