SVATS MPO

Mercer County Long Range Transportation Plan Update

2021 - 2045

DRAFT - October 2021

Table of Contents

List of Exhibits

Introduction

Long Range Transportation Plan History & Background

Long Range Transportation Plans (LRTPs) are a requirement for Metropolitan Planning Organizations (MPOs) to receive federal funding. The Mercer County Planning Commission (MCRPC) assists the Shenango Valley Area Transportation Study Metropolitan Planning Organization (SVATS MPO) with updating its LRTP every five years. The LRTP covers a horizon of at least 20 years; this plan is for 2021 to 2045.

LRTPs typically include an assessment of the existing transportation system, provide planning context, outline goals and objectives, identify performance measures, and prioritize projects that meet the goals and objectives. Then, priorities are compared against financial guidance, and a fiscally constrained plan is prepared.

The previous Mercer County LRTP was adopted in 2016. Since then, a number of things have changed. Mercer County is an orphan maintenance area of the National Ambient Air Quality Standards (NAAQS) for the 1997 8-hour ozone as a result of the 2018 South Coast II court decision. However, through PennDOT's collaborative Financial Guidance Work Group process, the decision was made to direct CMAQ funding towards counties that are currently in nonattainment or maintenance of the NAAQS. As a result, the County will not have Congestion Mitigation and Air Quality (CMAQ) funds to allocate towards projects.The MPO has also conducted corridor safety studies and bicycle and pedestrian circulation studies which generated specific improvement project ideas on corridors identified in the 2016 LRTP. The roadway network functional classification and National Highway System also underwent a thorough review and adjustment in 2020 according to Federal Highway Administration (FHWA) guidance surrounding roadway function, accessibility, and traffic conditions. These changes influence design standards, project funding eligibility, and project oversight.

Performance-based planning is a data-driven process that serves to assess the performance of the transportation system in three key areas (safety, condition, and performance), identify locations in need of improvements, and program projects that will lead to better future assessments and an improved transportation system. This process helps MPOs and states prioritize projects to keep their respective parts of the transportation system in good order. The federal performance measures are discussed in more detail in later chapters.

Federal Guidance

FHWA oversees the LRTP process. There are 10 Federal planning factors to be considered and assessed in LRTPs, as required by the Fixing America's Surface Transportation (FAST) Act which was signed into law in 2015. The federal planning factors are as follows:

1. **Economic Vitality** - Support the economic vitality of the United States, the States, non-metropolitan areas, and metropolitan areas, especially by enabling global competitiveness, productivity, and efficiency.
2. **Safety** - Increase the safety of the transportation system for motorized and non-motorized users.
3. **Security** - Increase the security of the transportation system for motorized and non-motorized users.
4. **Personal and Freight Mobility** - Increase the accessibility and mobility of people and for freight.
5. **Environment** - Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.
6. **Mode Interconnectivity** - Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
7. **System Management** - Promote efficient system management and operation.
8. **System preservation** - Emphasize the preservation of the existing transportation system.

9. **Reliability and Stormwater** - Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation.
10. **Tourism** - Enhance travel and tourism.

State Guidance

The Pennsylvania Department of Transportation (PennDOT) updates the statewide LRTP every five to seven years. The PennDOT statewide LRTP update is currently in process in Fall 2021. The current statewide LRTP *PA On Track* was adopted in August 2016 and considered in the 2016 Mercer County LRTP. The goal areas of *PA On Track* are System Preservation, Safety, Personal and Freight Mobility, and Stewardship. These goal areas correspond to the FAST Act planning factors as described in **EXHIBIT 1**. *PA On Track*'s performance measures are also listed in this chart. Performance measures, targets, incentives, and penalties are evolving as agencies adopt and embrace performance-based planning.

Exhibit 1 – Federal and Statewide Planning Factors

FAST Act	PA On Track Goal Area	PA On Track Performance Measures
System preservation	System Preservation	Percent of pavements in good and poor condition, pavement structure index, percent of poor bridges, load-restricted bridges, average age of bus fleet
System Management		
Safety	Safety	Total number of fatalities and serious injuries, rate of crashes with fatalities and serious injuries per vehicle mile traveled, in work zones, at rail crossings, and related to bicycles and pedestrians
Security		
Personal and freight mobility	Personal and freight mobility	Annual hours of truck and auto delays and cost, annual transit ridership for fixed route and shared ride services, percent or number of freight bottlenecks eliminated
Mode interconnectivity		
Economic Vitality	Stewardship	Annual savings through Next Generation implementation, timely delivery of approved local and HOP projects, number of municipal officials trained through Local Technical Assistance Program on coordination of transportation and land use planning
Environment		
Reliability and Stormwater		
Tourism		

Planning Partners

The MPO's planning partners include federal, state, and local authorities that collaborate toward the common goals of safety and mobility in the transportation system within Mercer County.

The SVATS MPO is responsible for Mercer County's portion of the Youngstown PA-OH Transportation Management Area (TMA) shared with Eastgate Regional Council of Governments in Ohio. The TMA is designated as part of an urban area containing 200,000 or more population.

Mercer County's state planning partners include PennDOT District 1 based out of Oil City, PA and the Center for Program Development and Management at PennDOT's Central Office in Harrisburg, PA. The FHWA Pennsylvania Division based in Harrisburg, PA is a key planning partner that further coordinates the plan development with FHWA headquarters. Local planning partners include the Mercer County Regional Council of Governments (MCRCOG), the authority that is responsible for providing transit service through the Shenango Valley Shuttle Service and Mercer County Community Transit. Municipal leaders are valued planning partners and were invited to participate in the process through involvement with the project decision-making team known as the Steering Committee. Each of these planning partners was critical to the development of this LRTP.

Steering Committee

LRTP development was driven by a series of Steering Committee meetings. Members were invited by the MPO and consisted of planning partners including PennDOT District 1-0, PennDOT Central Office, the FHWA PA Division office, municipal leaders, and the MPO. The Steering Committee's roles were to guide the process, make key decisions, review planning products, and provide feedback. The meetings were conducted virtually due to in-person meeting restrictions resulting from the COVID-19 pandemic. Five Steering Committee meetings occurred roughly every other month for the duration of the plan and covered the following topics:

1. **Kickoff Meeting (December 2020)** – The plan approach, schedule, and key milestones and deliverables were discussed.
2. **Outreach Preparation Meeting (January 2021)** – Details of the public involvement plan were reviewed and Steering Committee members offered ideas for effective local outreach.
3. **Project Workshop (April 2021)** – The Steering Committee reviewed and discussed findings from the outreach efforts to date. General themes of the comments were examined and discussed for ways to frame the LRTP discussion.
4. **Prioritization and Constraint (July 2021)** – The prioritization and financial constraint of possible projects were discussed.
5. **Plan Review (September 2021)** – The draft plan outline and final outreach strategy were reviewed.

People & Places

Location

Mercer County is located on the western border of Pennsylvania and shares the Youngstown metropolitan area with Ohio. It is part of PennDOT District 1. Mercer County's proximity to the Interstates 79, 80, and 376 and National Highway System (NHS) routes of US 62 and SR 0018 make it an important transportation hub for regional and interstate travel and provide many opportunities for business development. It is also less than a two-hour drive to population centers such as Erie, Pittsburgh, Youngstown, and Cleveland, which make it a prime location for freight movement and a convenient stop along I-80 for cross-country travel (**EXHIBIT 2**).

Land Use

Land use in each municipality is dictated by the zoning code or lack of zoning code. Many areas are rural or agricultural in nature. The existing land use for Mercer County includes widely distributed urbanized areas along with farmland, forest, open spaces, and floodplains (**EXHIBIT 3**). The Shenango River and Reservoir and Lake Wilhelm are significant water features with State Parks and community parks nearby. The future land use for Mercer County, as noted in the 2006 Mercer County Comprehensive Plan, includes targeted mixed-use growth areas adjacent to existing urbanized areas, dedicated greenways and open space, and targeted industrial and manufacturing economic growth areas (**EXHIBIT 4**).

Tourism

Mercer County boasts a variety of destinations for tourists, ranging from unique shopping to outdoor adventure. A comprehensive map of tourist destinations gleaned from the Visit Mercer County website can be found in **EXHIBIT 5**. These sites are grouped into the main categories of shopping, attractions, golf, disc golf, historical sites, and natural sites. There are also sites just outside of the county which have regional tourism draws such as the Amish communities in Lawrence County and Lake Pymatuning in Crawford County. Identifying and tracking access to tourist sites is an important part of long-range planning as it influences quality of life and economic vitality. Proximity and accessibility to tourist destinations plays a role in LRTP project prioritization.

Exhibit 2 – Location Map

Mercer County LRTP
Location Map

Legend
— Interstates
State Lines
PennDOT District 1
Mercer County

200   0
Miles
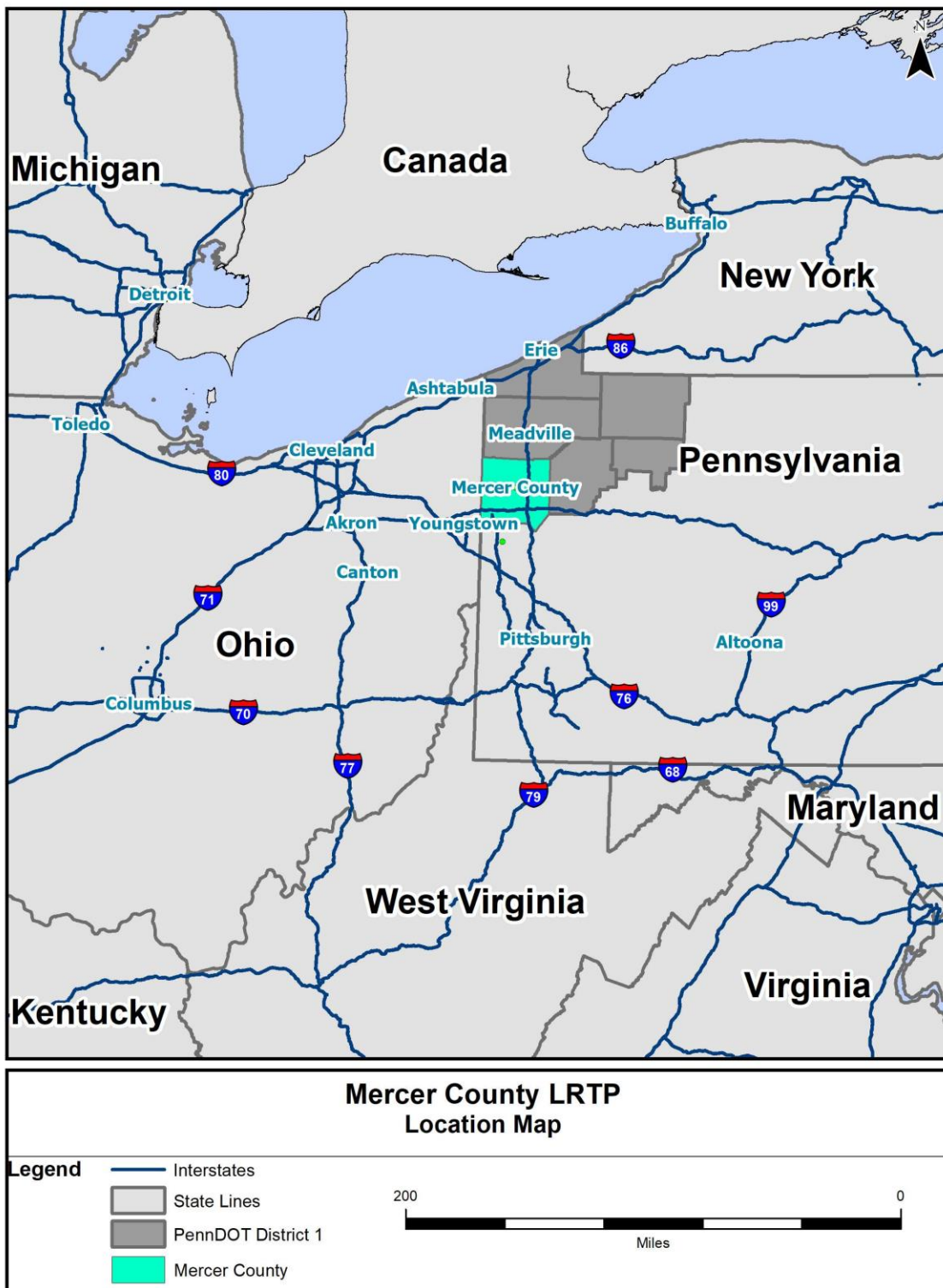
Exhibit 3 – Existing Land Use

Source: Mercer County Comprehensive Plan 2006

Mercer County LRTP
Existing Land Use

5   0
Miles

Legend

Water		Wetlands	
Low Density Urban		Quarries	
High Density Urban		Coal Mines	
Farmland		Beach	
Forest		Transitional	
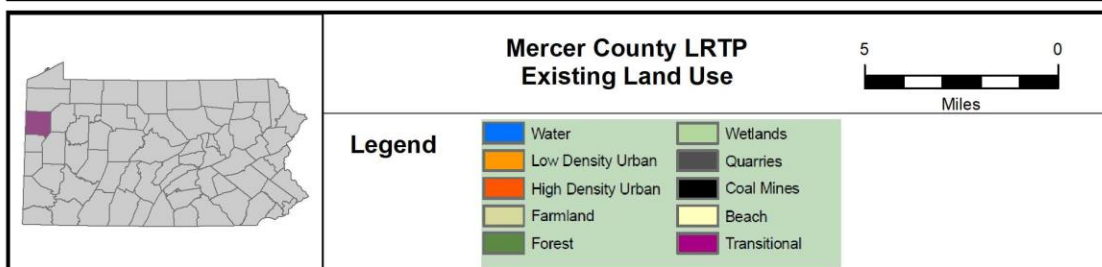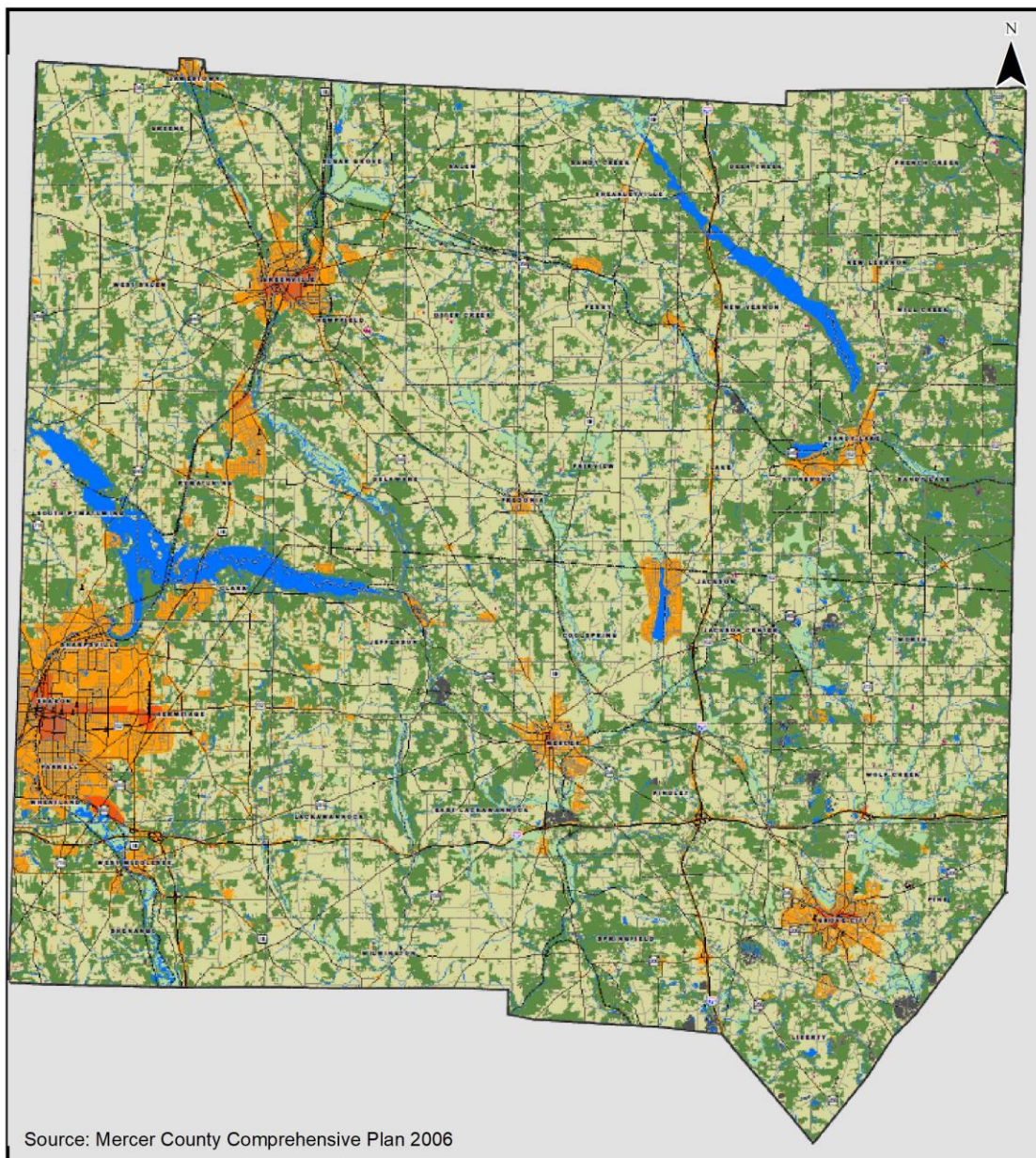
Exhibit 4 – Future Land Use Map

Source: Mercer County Comprehensive Plan 2006

**Mercer County LRTP
Future Land Use**

5   0

Miles

Legend

Urban / Suburban Preservation	Natural Resource Protection Areas
Economic Revitalization Areas	Greenway Connectors
Neighborhood Revitalization Areas	Natural Resource Production Areas
Mixed Use Growth Areas	Community Gateway Overlay
Economic Growth Areas	Conservation Easements

Exhibit 5 – Tourism Destinations

Mercer County LRTP
Tourism Destinations

5   0
Miles

Legend

⬤ Shopping	⬤ Historic	⬛ Attractions
⬤ Prior Plan	⬤ Disc Golf	
⬤ Outdoor	▲ Day Spas	

— Interstate
— State Route
— Local
▨ Urban Areas
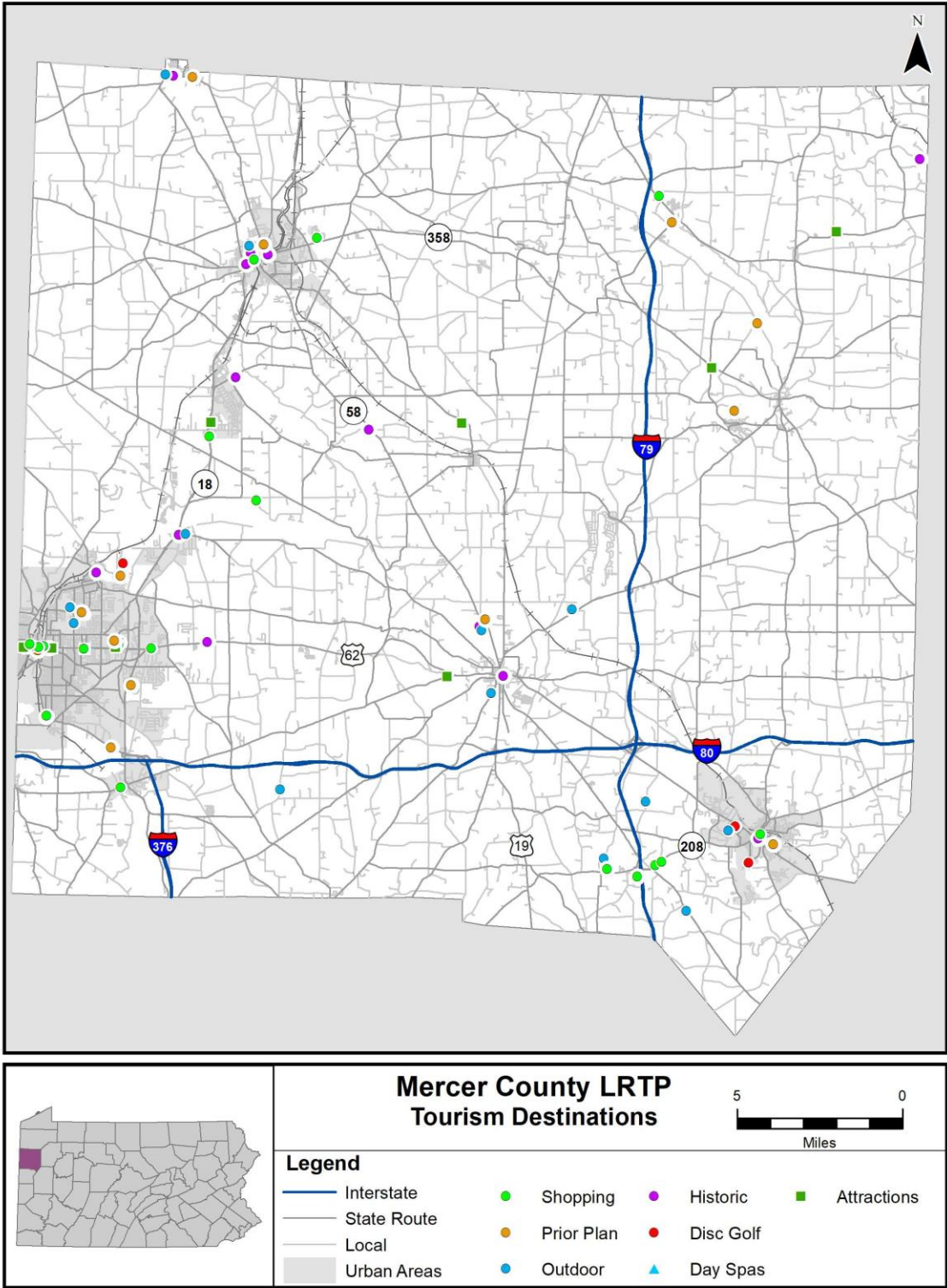
Population

Mercer County is home to a population of approximately 110,700 people according to the latest population estimates from the American Community Survey (ACS). The 2020 Census data is in limited release as of the writing of this plan. The county has seen a steady decline in population since the 1980's due to various factors including the aging population and the closing of some significant manufacturing facilities. The current population is approximately 18,000 fewer people from its recorded peak of approximately 128,300 in 1980 (**EXHIBIT 6**). Population centers and urbanized areas include Sharon, Farrell, Hermitage, Greenville, Mercer, and Grove City, along with smaller communities such as Stoneboro, Sandy Lake, and others located throughout rural and lower population density land (**EXHIBIT 8**). The most recent population projections from the Center for Rural Pennsylvania in March 2014 show Mercer County's population increasing slightly to approximately 123,000 by 2040.

The population in Mercer County trends older with a median age of 45.5 years, which is higher than both the statewide average of 40.8 years and the national average of 38.1 years (**EXHIBIT 7**). The combination of a declining and aging population creates unique circumstances for long range planning. Many regions in Pennsylvania are facing aging populations and the special planning considerations that come with them. These planning needs are important to consider, as many of the senior population are on fixed incomes and rely on public transportation for healthcare appointments, grocery shopping, and social activities. Many people approaching retirement age and older are expressing the desire to "age in place". The quality of life of an aging population is greatly impacted by access to safe mobility choices for all types of activities.

Exhibit 6 – Mercer County Population Over Time
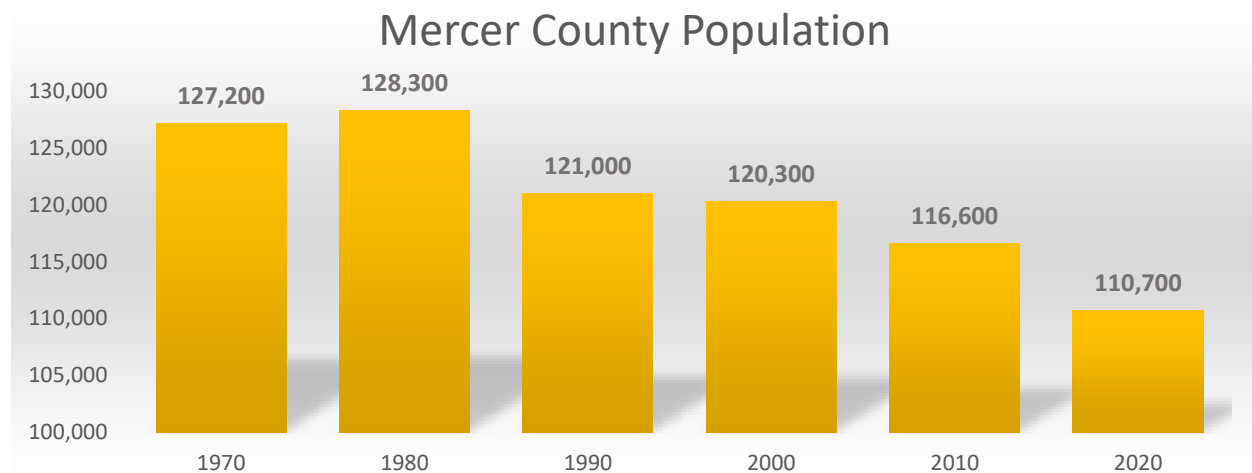
Exhibit 7 – Mercer County Age Distribution
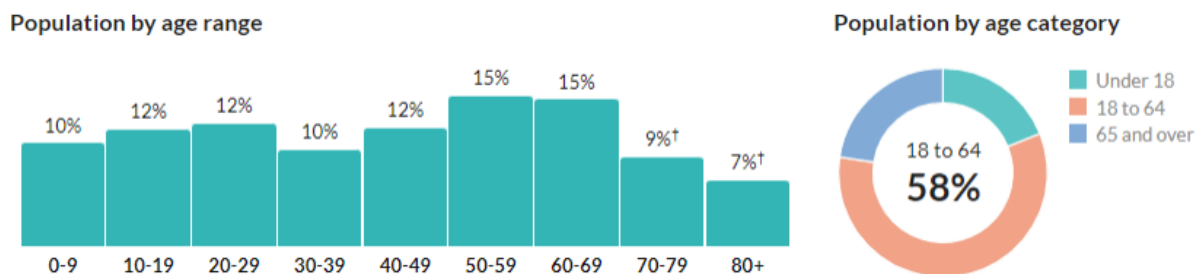
SOURCE: US CENSUS REPORTER

Exhibit 8 – Mercer County Population Density

Mercer County LRTP
Population Density
People per Square Mile

Legend

Municipal Boundary
Interstate
State Route

Less than 250
250 to 1000
1000 to 2000
Over 2000

Source: EJSCREEN
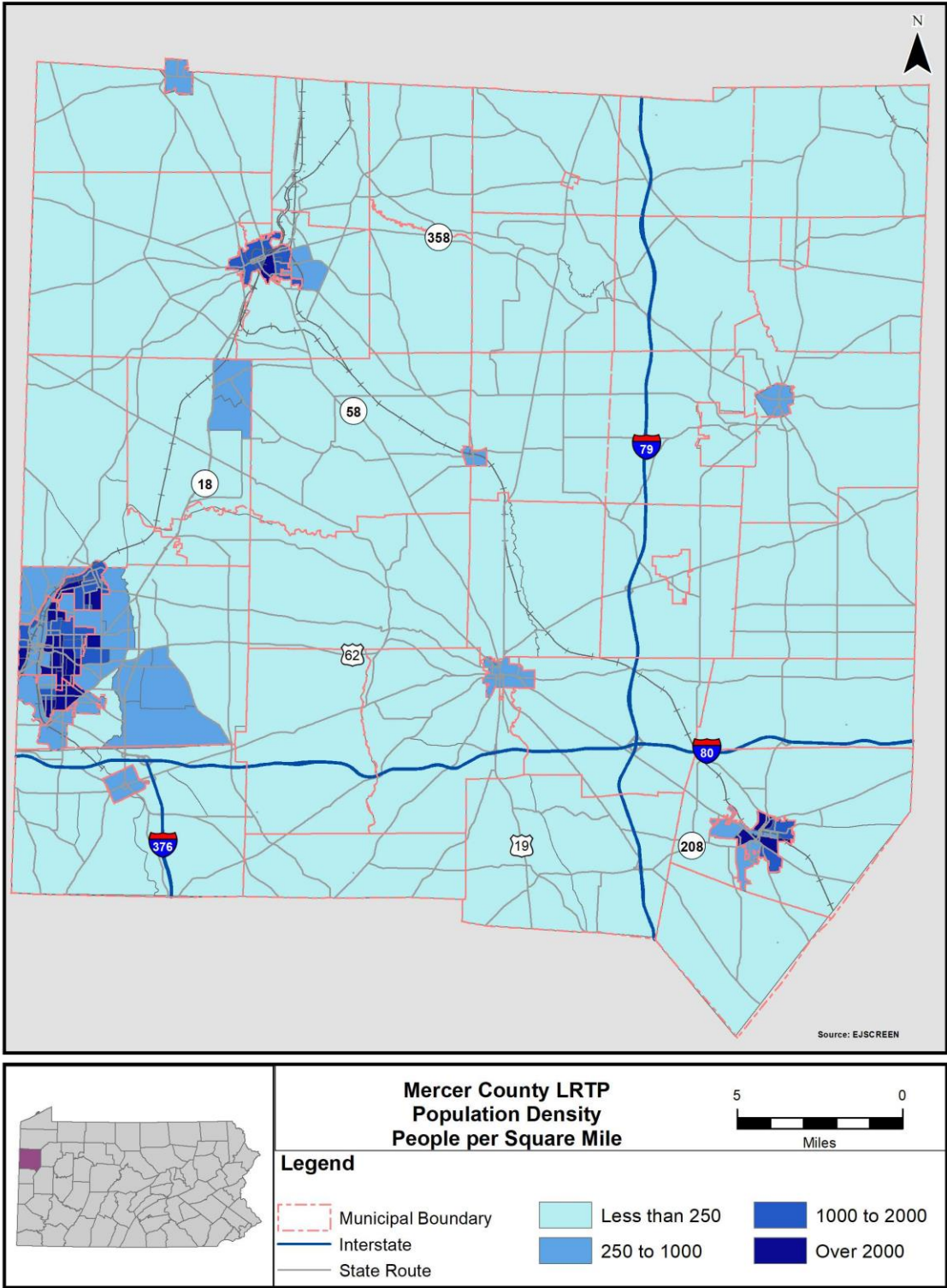
Environmental Justice

Mercer County is home to a diverse population in terms of race, ethnicity, and income classes. Regional long range planning efforts must include representation from residents and communities within the region. Planning efforts should meaningfully engage all residents and proposed projects should not adversely impact any traditionally marginalized groups.

Environmental Justice (EJ) refers to the policy set forth by *Title VI of the Civil Rights Act of 1964* that states, for the purposes of long range transportation planning, MPOs must specifically address EJ in the process of developing and advancing transportation programs and projects. The core principle is that all individuals in a community should enjoy the same protection from hazards, equal access to resources and infrastructure, and benefits from the economic and social influences and opportunities regardless of race, color, national origin, ability, English proficiency, or income. It also means that decisions made regarding the community are made in a way that is fair and honest. Historically these populations have been negatively affected and under-served by traditional planning efforts, especially during the interstate expansion era. A Benefits and Burdens analysis is performed on projects during each LRTP and Transportation Improvement Program (TIP) cycle to provide a deeper understanding of the potential impacts and benefits of each project on minority and low-income populations.

Key Points

- Nearly 13% of Mercer County residents are living in poverty. Some localized areas of the county have more than 50% of residents considered low income.
- Racial minorities represent roughly 6.8% of Mercer County's population. Most of that population is Black or African American with smaller groups of American Indian and Asian populations.
- In Mercer County, 18.8% of the population has some kind of disability. The most common disability, at 9.4%, falls into the category of Ambulatory Difficulty, or a serious difficulty walking or climbing stairs.
- 21% of Mercer County residents are over the age of 65, up from 18% in 2010.
- 10% of Mercer County households do not have access to a personal vehicle.
- Bicycle and pedestrian crashes tend to be clustered in more urban, highly travelled areas of the county which also tend to be in areas of high minority or low-income populations.

Planning Implications

- A Benefits and Burdens analysis identifies potentially disadvantaged populations and how proposed transportation improvements will impact these groups.
- An aging population will require considerations for how those individuals can engage with our transportation system to access necessary care and everyday errands when they can no longer drive a personal vehicle.
- Enhanced transportation options and infrastructure for modes other than personal vehicles should be considered to improve access for the aging population as well as others who do not have access to a vehicle for a variety of reasons.
- Strategies to avoid, mitigate, or minimize any disproportionate and adverse impacts that may arise will be coordinated closely with PennDOT District 1-0, FHWA, FTA, and community stakeholders.
- SVATS MPO is continuing to engage low income, minority, and other traditionally underserved populations in all planning processes to ensure that the needs and interests of these groups are represented and addressed as transportation improvements are planned.

EJ Core Elements Methodology and SVATS MPO Approach

SVATS MPO utilizes a methodology set out in the 2019 *South Central Pennsylvania Environmental Justice Unified Process and Methodology Guide*, developed by FHWA PA Division, FTA Region III, PennDOT Central Office, PennDOT Engineering District 8-0, and six MPOs within District 8-0. The guide outlines strategies for completing an EJ analysis as identified by FHWA and FTA and the specific core activities that MPOs in Pennsylvania should include in an EJ analysis.

The four Core Elements are: (1) Identification of EJ populations; (2) Assessment of conditions and identification of needs; (3) Evaluation of burdens and benefits; and (4) Identification and addressing of disproportionate and adverse impacts. These elements have been incorporated into the following analysis.

Identification of EJ Populations

High levels of minority and low-income residents are the two main indicators used to identify EJ populations. For the purposes of this analysis, the definitions used by the Pennsylvania Department of Environmental Protection (DEP) were used. The following data was sourced from the PA DEP EJ Viewer, US Environmental Protection Agency (EPA) EJScreen tool, and the US Census Bureau 2019 American Community Survey (ACS) estimates.

Income and Poverty

According to the US Census Bureau and 2019 American Community Survey data, the median household income in Mercer County is $54,543, nearly $10,000 lower than the median income for the state of Pennsylvania ($63,463). Nearly 13% of Mercer County residents are living in poverty, compared to 12% of all Pennsylvania residents. As of 2020, the US Census Bureau's Poverty Threshold for a family of four with two adults and two children was $26,246. 2019 American Community Survey data in **EXHIBIT 9** highlights the municipalities with the highest levels of poverty in the county.

Exhibit 9 – Top 10 Municipalities by Poverty Rate

Municipality	Population Below Poverty Level	% Population Below Poverty Level
Farrell City	1,511	33%
Jamestown Borough	205	28%
Sharon City	3,570	27%
New Lebanon Borough	48	24%
Sandy Lake Borough	148	24%
Sheakleyville Borough	46	22%
Wheatland Borough	126	21%
Greene Township	244	19%
Pymatuning Township	559	18%
Town of Greenville	815	18%

SOURCE: US CENSUS BUREAU, 2019 ACS DATA

The US EPA EJScreen tool was used to demonstrate the levels of low-income populations at the Census Block Group (BG) level throughout the county, as shown in **EXHIBIT 11**. These BGs are mostly concentrated around Sharon and Farrell in the southwestern portion of the county, with several of those with more than 50% of residents considered low income. Low-income households are most in need of enhanced transit services, improvements to walkability and bikeability, and access to the internet and other resources, and benefit from safety improvements at intersections.

Minority Population

The 2019 ACS estimates Mercer County's non-white population at roughly 7,500, or 6.8% of the roughly 110,000 total population. Most of the non-white population identified as Black or African American with smaller groups of American Indian and Asian populations. The municipalities in Mercer County with the largest minority populations are listed in **EXHIBIT 10** and include many of the same municipalities with high rates of population living below the poverty level. Minority populations were mapped by BG using the EPA EJScreen tool in **EXHIBIT 12**. These BGs are concentrated in Sharon and Farrell and include many of the same BGs as are noted in **EXHIBIT 11**, Low Income Population by Census Block Group.

Exhibit 10 - Top 10 Municipalities by Minority Population

Municipality	Non-White Population	% Non-White Population
Farrell City	2,203	47%
Findley Township	620	22%
Sharon City	2,225	17%
Wheatland Borough	48	8%
Hermitage City	1120	7%
Pine Township	282	6%
West Salem Township	146	4%
Pymatuning Township	120	4%
Grove City Borough	264	3%
Sandy Lake Borough	16	3%

SOURCE: US CENSUS BUREAU, 2019 ACS DATA

Mercer County Environmental Justice

Considering the low-income and minority demographic data reviewed above, higher than average poverty and minority populations were identified by Census BG based on the thresholds established by the PA DEP and their EJ Viewer tool. High poverty areas were designated by identifying those BGs with a population of residents in poverty greater than or equal to 20% of the total population of that BG, of which there are twenty-five (25) (**EXHIBIT 13**). Similarly, high levels of minority population were designated by identifying the BGs with a population of non-white residents greater than or equal to 30% of the total population. Eleven (11) BGs are considered high minority population areas (**EXHIBIT 14**).

In total, 35 BGs in Mercer County have high poverty and minority populations, as shown in **EXHIBIT 15**. Many BGs overlap in terms of poverty and minority population, particularly in the Farrell and Sharon areas. For the remainder of this Benefits and Burdens analysis, these 35 areas will be combined and assessed as a group.

Exhibit 11 – Low Income Populations by Census Block Group

Mercer County LRTP
Low Income Population
by Census Block Group

Miles

Legend

Under 20%   35 to 50%

20 to 35%   50% to 65%

Interstate

State Route   Over 65%

Source: EJSCREEN
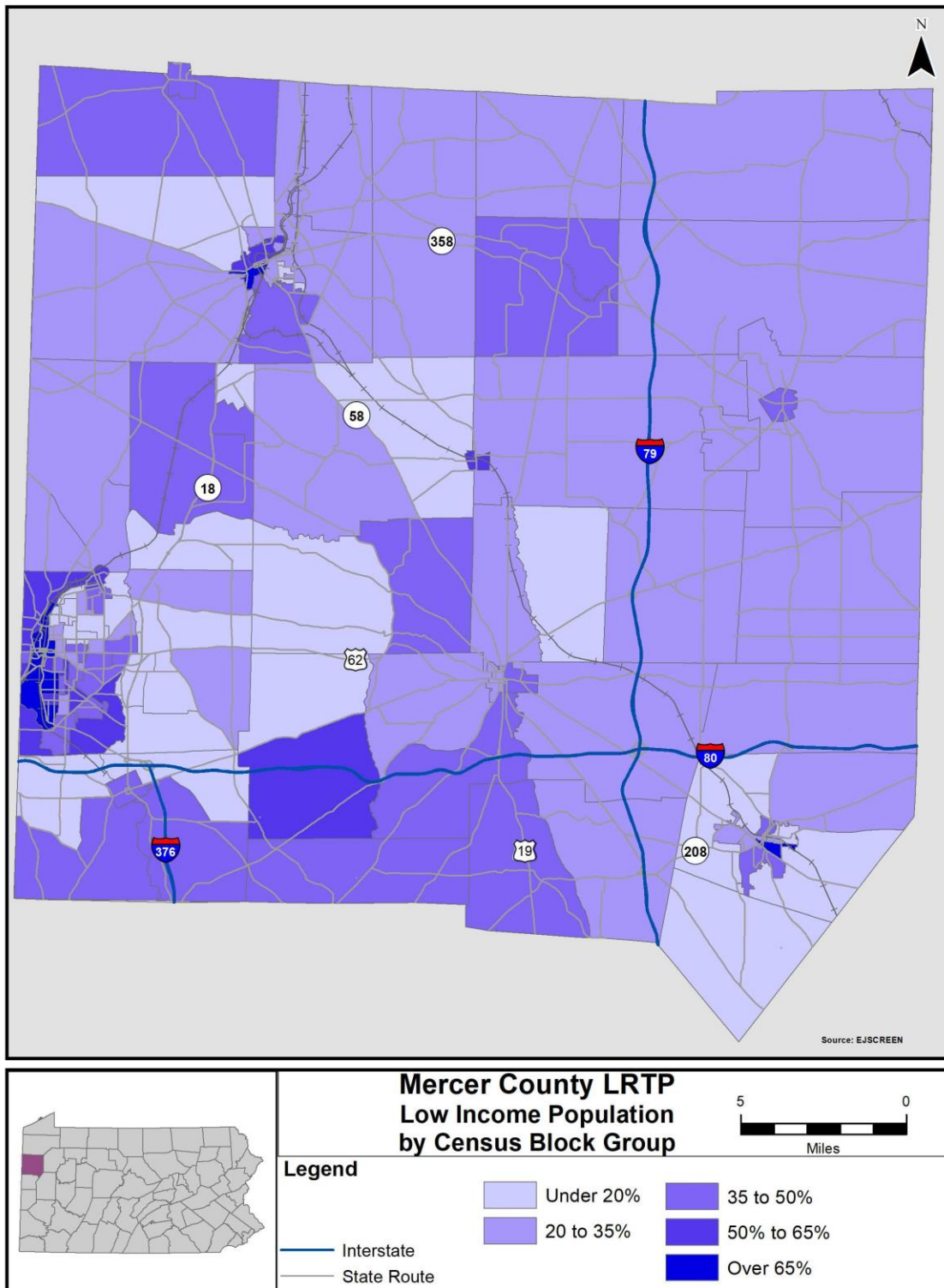
Exhibit 12 – Minority Populations by Census Block Group

Mercer County LRTP
Minority Population
by Census Block Group

Miles
5   0

Legend

Interstate
State Route

Below 15%   30 to 45%
15 to 30%   45 to 60%
                   Over 60%

Source: EJSCREEN
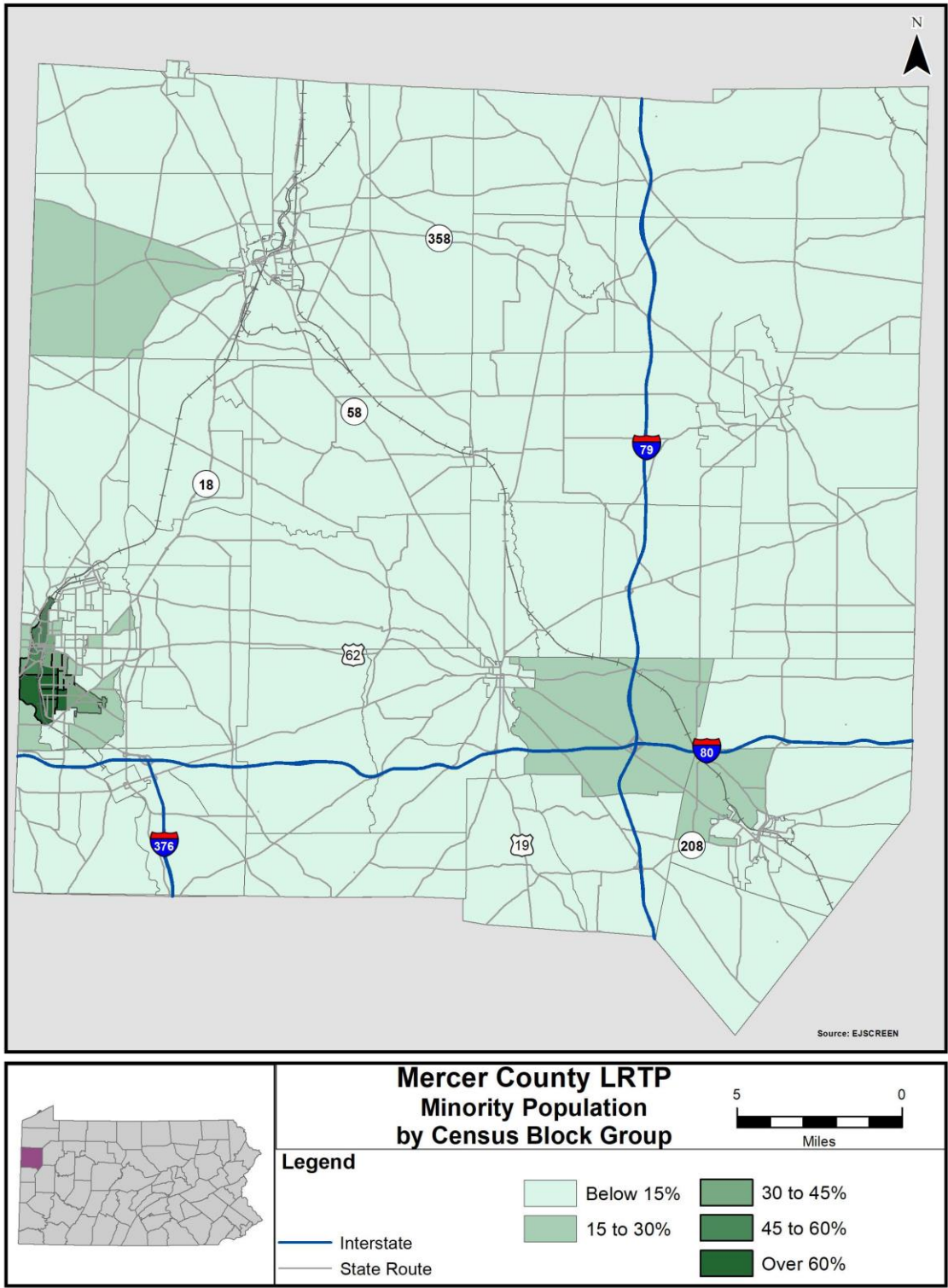
Exhibit 13 – High Poverty Areas by Census Block Group

Mercer County LRTP
High Poverty Areas
by Census Block Group

Source: PA DEP EJ Viewer

Legend
Interstate
State Route
Municipal Boundary
Local

20 to 30%
30 to 40%
Over 40%
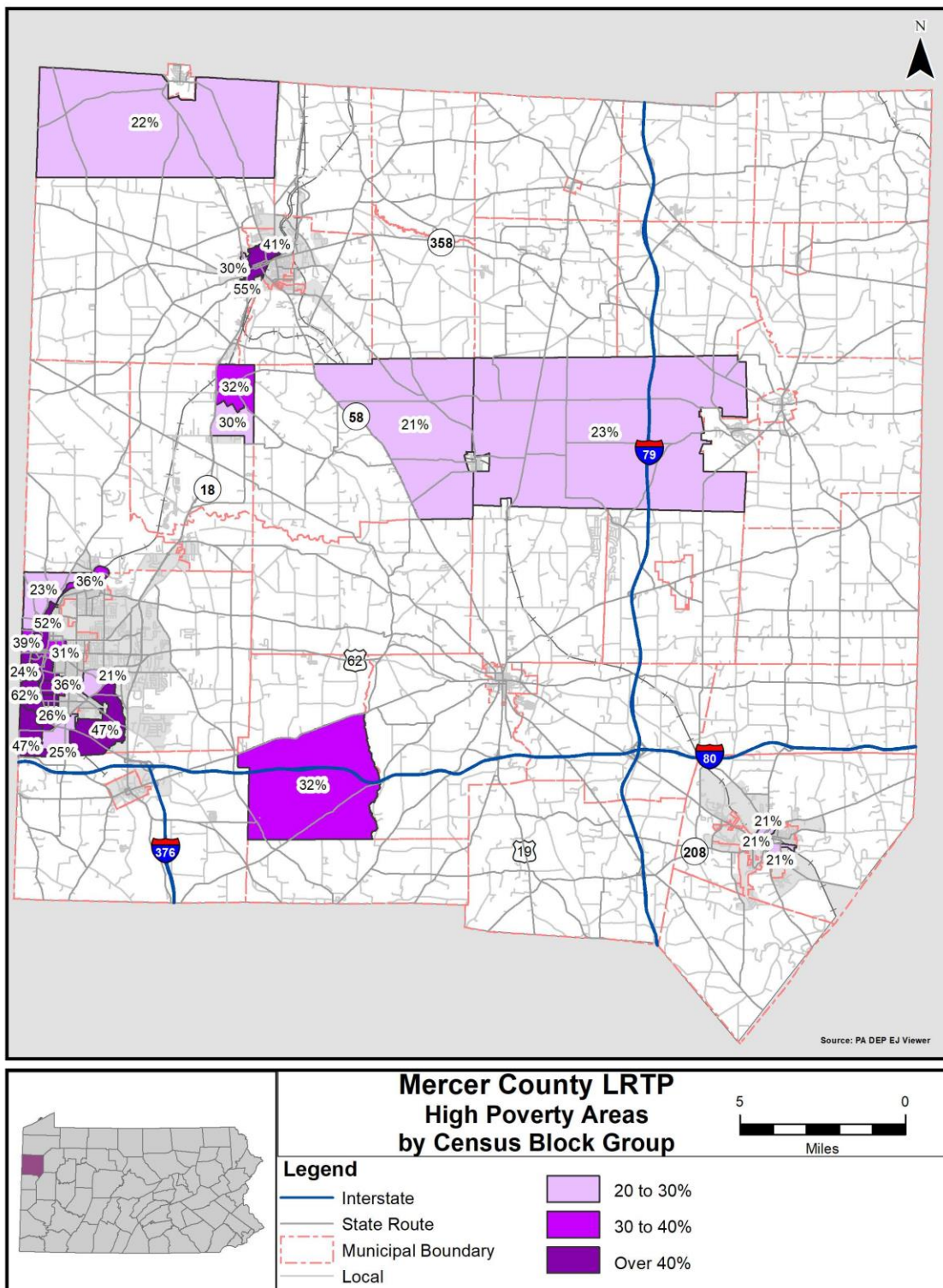
Exhibit 14 – High Minority Areas by Census Block Group

Mercer County LRTP
High Minority Areas
by Census Block Group

Legend
— Interstate
— State Route
- - - Municipal Boundary
— Local

30 to 45%
45 to 65%
Over 65%

Source: PA DEP EJ Viewer
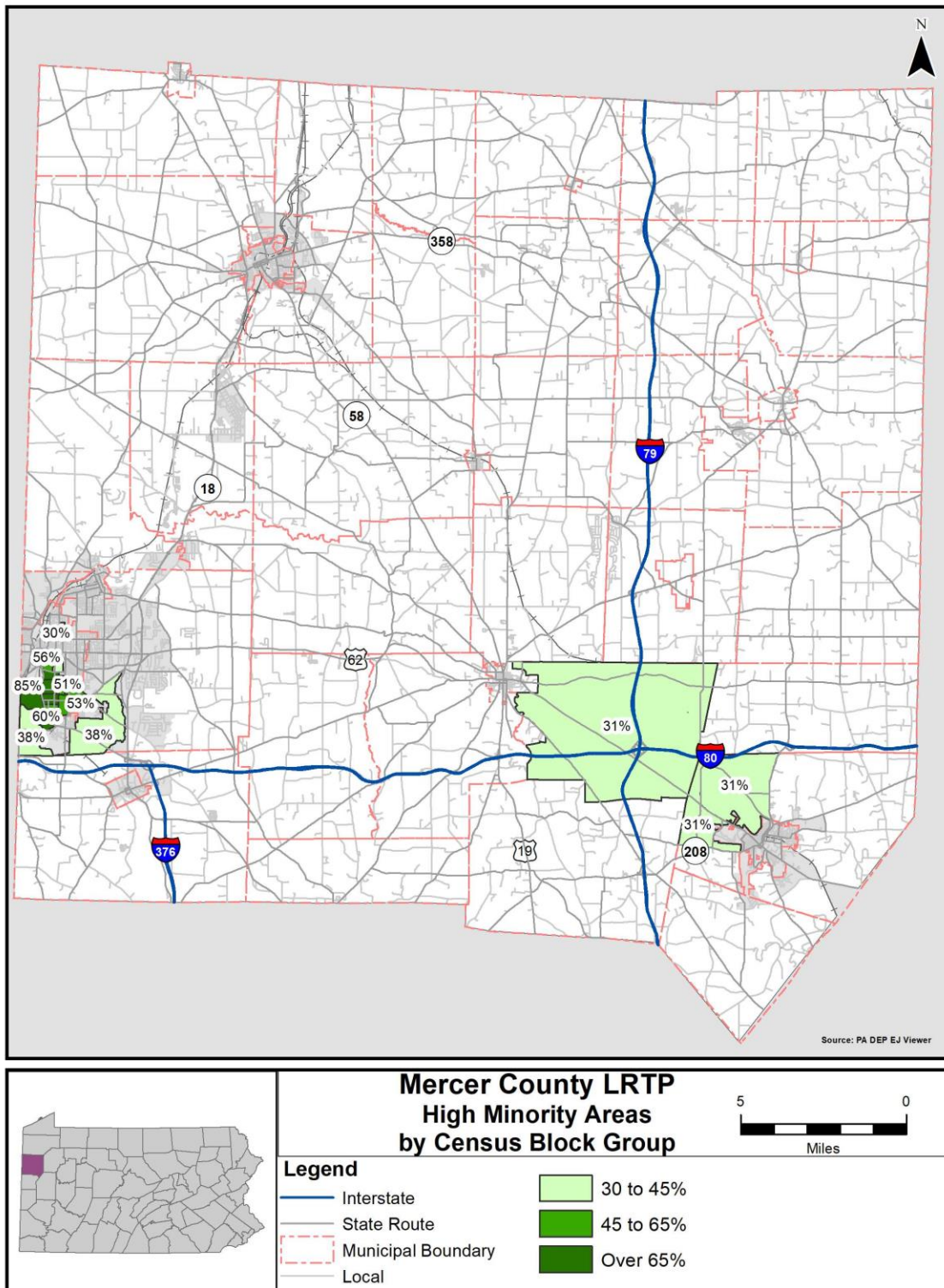
Exhibit 15 – High Poverty and Minority Areas by Census Block Group

Mercer County LRTP
High Poverty and Minority Areas by Census Block Group

5   0
Miles

Legend

— Interstate
— State Route
--- Municipal Boundary
— Local

EJ Area Type

Poverty
Minority
Poverty and Minority

Source: PA DEP EJ Viewer
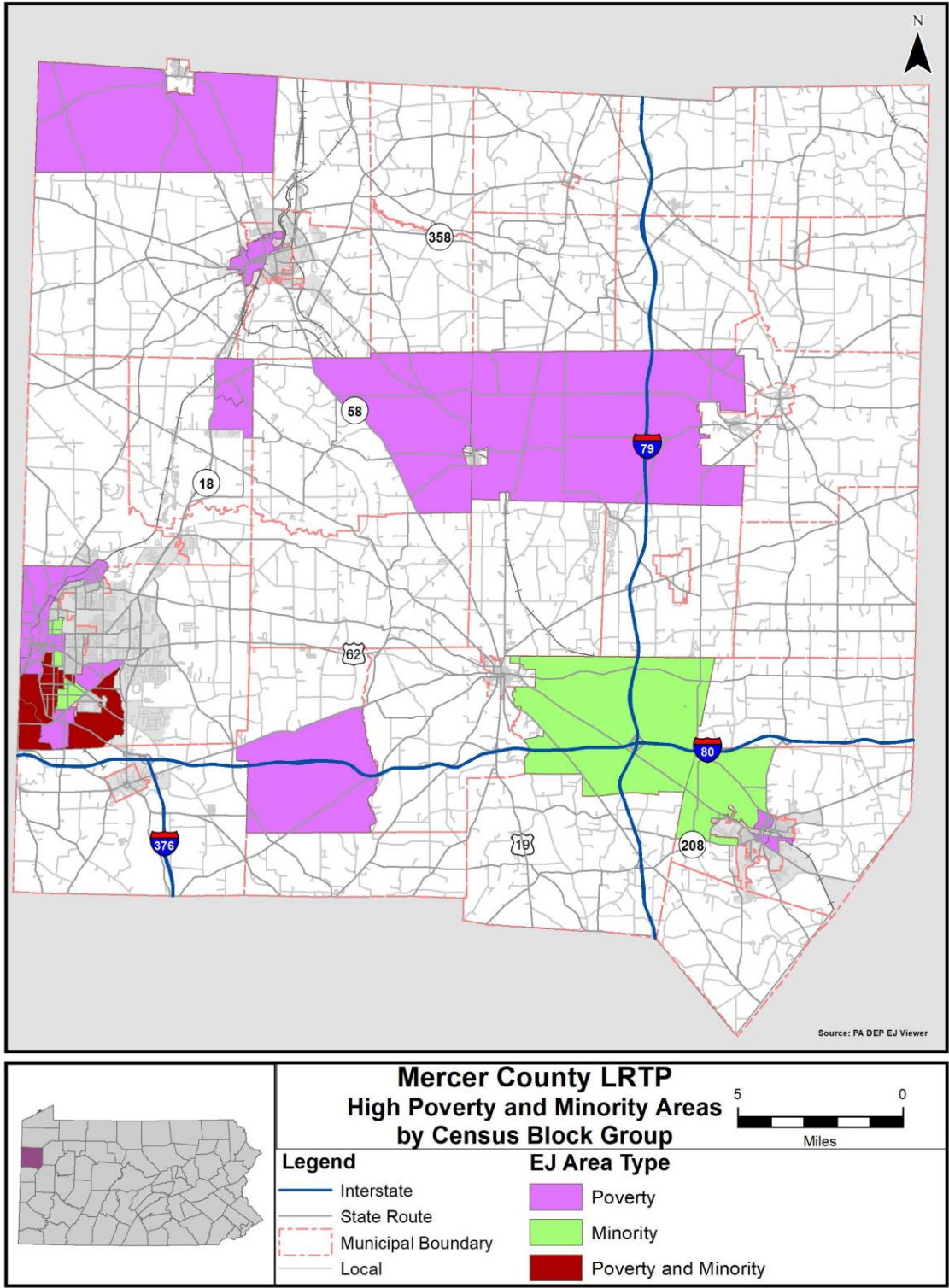
Other Potentially Disadvantaged Populations

While income and minority demographic data are the two characteristics traditionally included within EJ analyses, other populations should be given consideration in the planning processes. These groups are considered 'disadvantaged' or 'traditionally underserved', and SVATS MPO seeks to address their needs and interests in the planning and programming of transportation projects.

Limited English Proficiency

Limited English Proficiency (LEP) populations are another important part of public involvement in planning processes. SVATS MPO adopted an LEP Plan to outline procedures to provide meaningful access to information and services provided by the MPO to LEP persons. According to 2019 ACS data, more than 95% of Mercer County residents speak only English at home. The next largest group of languages fall into the category of 'Other Indo-European Languages' at just under 3% of the population. This may be attributed to the large Amish population in the county who speak a derivation of English and German known as Pennsylvania Dutch.

As noted in **EXHIBIT 16** the largest number of LEP households are in the larger, more populated areas like Sharon and Hermitage in 2019. Again, there are several municipalities noted that overlap with the poverty and minority populations.

Exhibit 16 - Top 10 Municipalities by LEP Households

Municipality	Total LEP Households
Sharon City	69
Hermitage City	27
Lackawannock Township	22
Fairview Township	19
Farrell City	18
Sharpsville Borough	15
Delaware Township	14
East Lackawannock Township	13
Town of Greenville	11
Grove City Borough	10

SOURCE: US CENSUS BUREAU, 2019 ACS DATA

Persons with a Disability

Disabilities can have profound effect on an individual's ability to interact with the larger community and use transportation services. Disabilities may include physical, mental, and cognitive disabilities and often limit an individual's independence. Those living with disabilities should be considered in efforts to improve accessibility to places in the county, especially among modes such as public transit or shared ride services.

In Mercer County, 18.8% of the population has a disability, according to the 2019 ACS. The most common disability falls into the category of Ambulatory Difficulty, which is defined by the US Census Bureau as having serious difficulty walking or climbing stairs. Other common disabilities noted in the ACS data are Independent Living Difficulty (having difficulty doing errands alone because of a physical, mental, or emotional problem) and Cognitive Difficulty (having difficulty remembering, concentrating, or making decisions because of a physical, mental, or emotional problem). The higher rates of these types of disabilities may be attributable to the County's aging population, as these medical concerns tend to be more common as people age.

Senior Population (65+ years of age)

The population of Mercer County is above both statewide and national averages and continues to age. There are many factors contributing to that trend including the facts that people are living longer in general and that many young people have moved from the county for a variety of reasons. The median age in the county is 45.5 years, five years older than the median age in Pennsylvania, 40.8 years. According to the 2019 ACS data, 21.2% of the county population is over the age of 65. In the 2010 US Census, that population was approximately 18%.

During the Stakeholder focus group meetings, a representative from the Mercer County Area Agency on Aging noted that seniors use transportation not just for errands like grocery shopping or doctor's appointments, but also for social events and visiting family. It was also noted that the individuals considered 'younger seniors' (60-70 years old, of the Baby Boomer generation) are more active, more interested in the ability to remain in their homes and "age-in-place" than previous generations.

Female Head of Household

The average family size in Mercer County is 2.74 people, which is slightly smaller than the average of 3 people per family in Pennsylvania as a whole. More than a quarter (28.2%) of families in Mercer County are led by a female householder with no spouse or partner present, and 4.5% of families are led by a female householder with children. Traditionally, these households are considered disadvantaged because women tend to make less than their male counterparts in general and tend to lack support as they are the only adult in the household.

Zero Car Households

Another key population that is considered traditionally disadvantaged and underrepresented in planning processes is the population without access to a personal vehicle. No matter the reason for this lack of personal vehicle, this population generally relies on bicycle or pedestrian infrastructure or public transportation to move around the community and access the resources they need in daily life. Overall, approximately 10% of the population of Mercer County have no vehicle available to them. When broken down by Census Tract, higher rates of households without access to a vehicle are concentrated in roughly the same areas where higher rates of low income and minority populations, as shown in **EXHIBIT 17**. This data was not available at the BG level with 2019 ACS data.

Exhibit 17 – Mercer County Zero Car Household Rate by Census Tract

Legend

	14%–45.6%	6
	9.1%–13.9%	7
	6.2%–9%	4
	3.6%–6.1%	11
	1.5%–3.5%	3
	No Data	0

Italicized numbers indicate the number of geography areas in each data class.
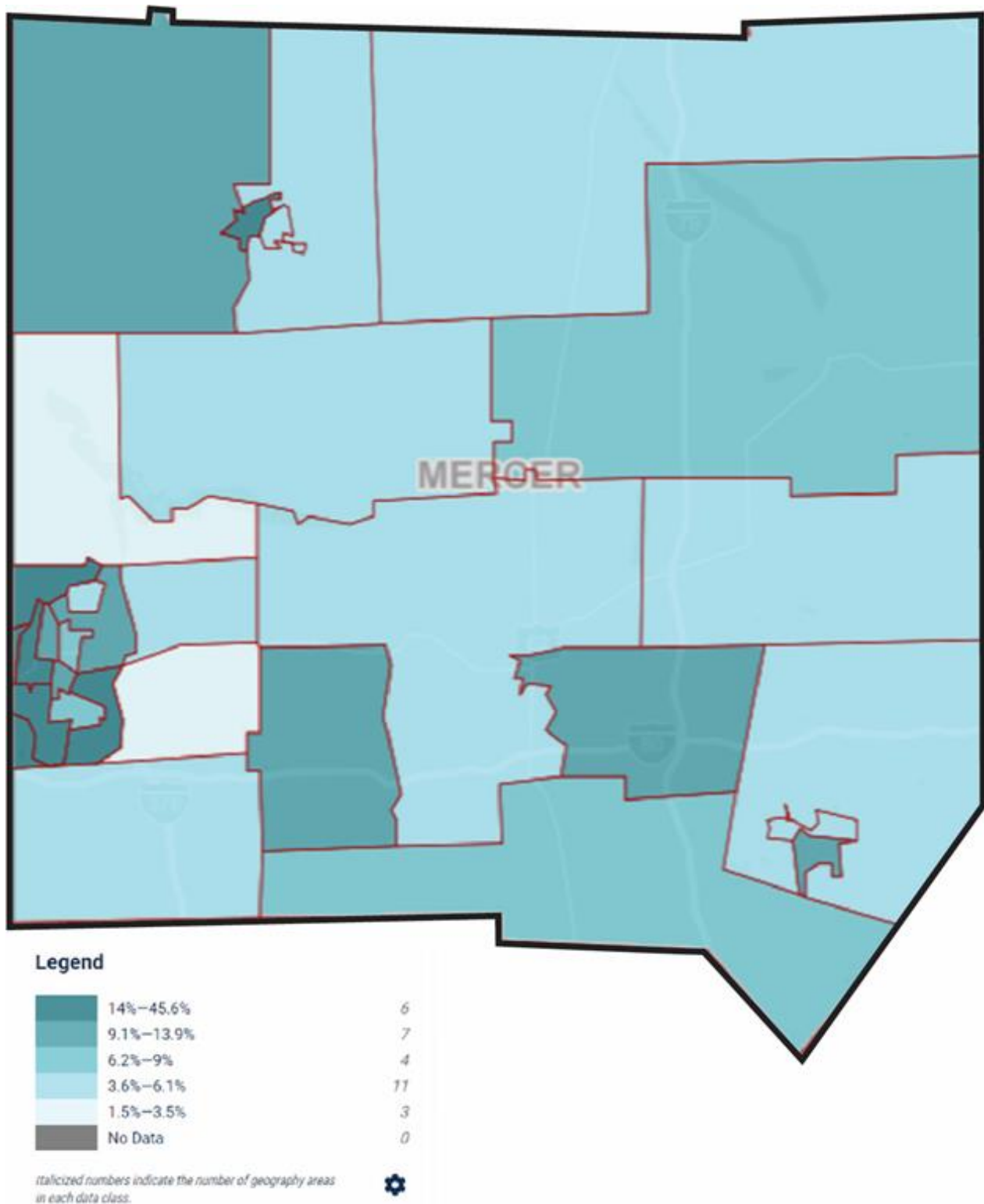
SOURCE: AMERICAN COMMUNITY SURVEY 2019, CENSUS TRACT LEVEL DATA

Assessment of Conditions and Needs in EJ Areas

As demographic data was analyzed and mapped, the condition of transportation assets was also assessed related to the identified high poverty and minority areas. Combining both sets of data will help to identify unmet needs and gaps in the transportation system that more significantly impacts these populations.

Pavement Condition

EXHIBIT 18 overlays the high poverty and minority areas and existing pavement condition on state roads. Pavement condition is measured by the International Roughness Index (IRI). IRI categorizes pavement as Excellent, Good, Fair, or Poor. EXHIBIT 19 includes insets in Farrell, Sharon, Greenville, and Grove City to show details for these areas. There are isolated areas in all three insets in or near the high poverty and minority areas where many state roads are in fair or poor condition.

Bridge Condition

EXHIBIT 20 and EXHIBIT 21 similarly overlays the high poverty and minority areas with existing bridge conditions. PennDOT classifies bridge condition as Good, Fair, and Poor. Statewide, PennDOT has made a concerted effort to repair or replace Poor condition bridges in recent years, and while PennDOT District 1-0 has seen a reduction in Poor condition bridges in Mercer County overall, there are clusters of Fair and Poor condition bridges in high poverty and minority areas, especially in the Sharon/Farrell area. There are currently action plans and additional funding is being sought to address these poor condition bridges.

Crash History

EXHIBIT 22 and EXHIBIT 23 show bicycle and pedestrian crashes in Mercer County in high poverty and minority areas. Clusters of crashes including fatalities and bicycle and pedestrian crashes are clustered in Sharon/Farrell and Greenville, with smaller clusters in Grove City. Many of these high poverty and minority areas are in the more urban, highly populated areas of the county with more people walking, so have higher crash rates. Bicycle and pedestrian crashes are spread out in the more rural areas of the county. This could be due to a variety of reasons including lack of infrastructure for biking and walking, the distances between those rural areas and other resources, or the higher likelihood that households in those areas have access to a personal vehicle.

The more populated high poverty and minority see more crashes due to the increased opportunity for traffic conflicts between pedestrians, cars, and bicycles. Low-income individuals are less likely to have access to a vehicle and more likely to rely on walking or biking. There were eight fatal crashes in the Sharon/Farrell high poverty and minority areas. SR 3008 (State Street), which runs through the high poverty and minority areas in Sharon, sees significant numbers of these crashes. This is a highly travelled street through a very populated and busy area with increased opportunities for conflicts between vehicles and bikes or pedestrians. Planning efforts and policies are endeavoring to provide dedicated walking space and sidewalks for pedestrians in these areas.

Exhibit 18 – Pavement Condition by High Poverty and Minority Block Groups
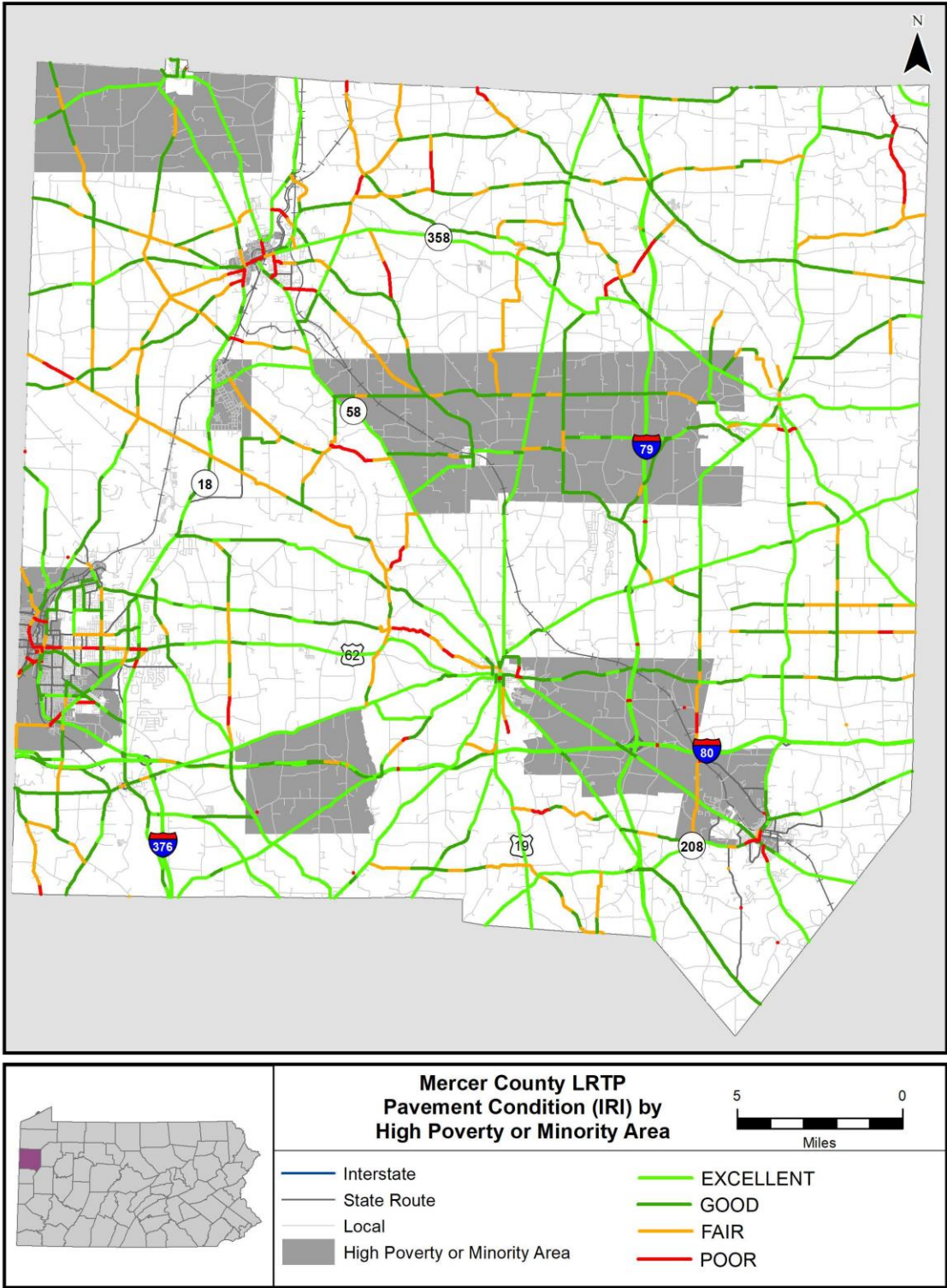
Mercer County LRTP
Pavement Condition (IRI) by
High Poverty or Minority Area

5   0

Miles

— Interstate
— State Route
— Local
▨ High Poverty or Minority Area

— EXCELLENT
— GOOD
— FAIR
— POOR

Sharon & Farrell Area Inset

Greenville Area Inset

Grove City Inset

Mercer County LRTP
Pavement Condition by
High Poverty or Minority Area (Insets)

N

Legend

High Poverty or Minority Area
Interstate
State Route
Local

EXCELLENT
GOOD
FAIR
POOR
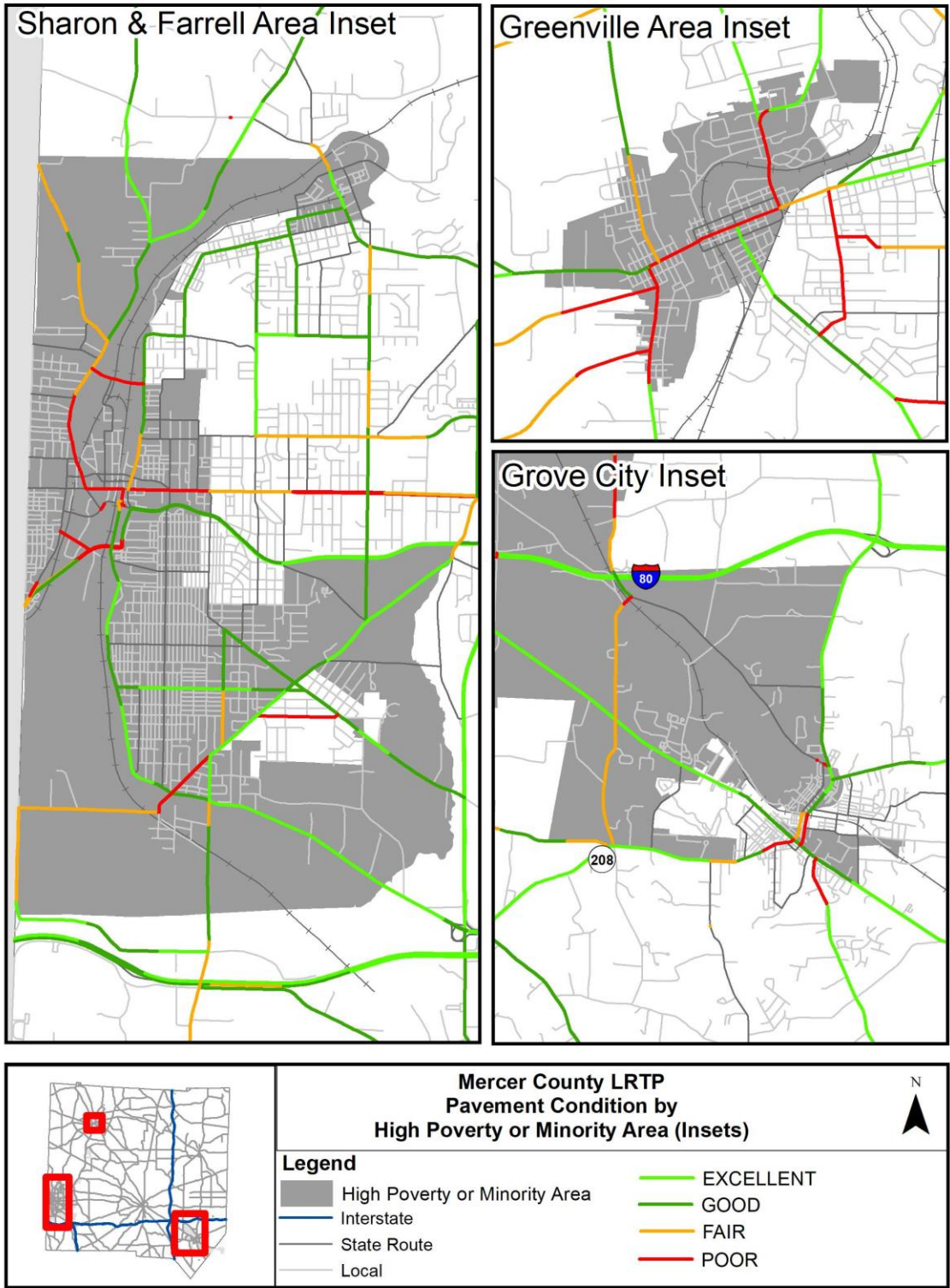
Exhibit 20 – Bridge Condition by High Poverty and Minority Block Groups
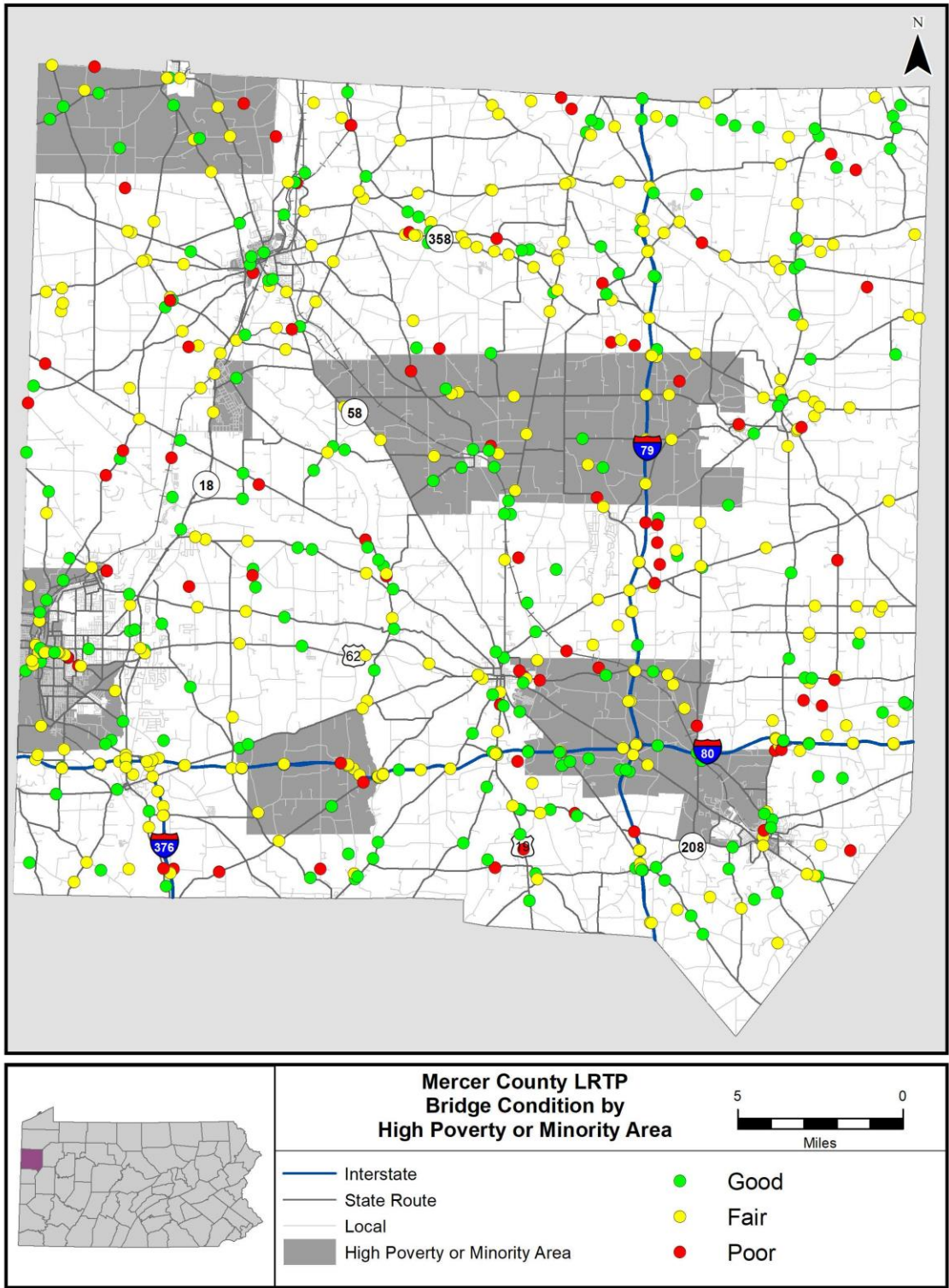
Mercer County LRTP
Bridge Condition by
High Poverty or Minority Area

Interstate
State Route
Local
High Poverty or Minority Area

Good
Fair
Poor

Miles
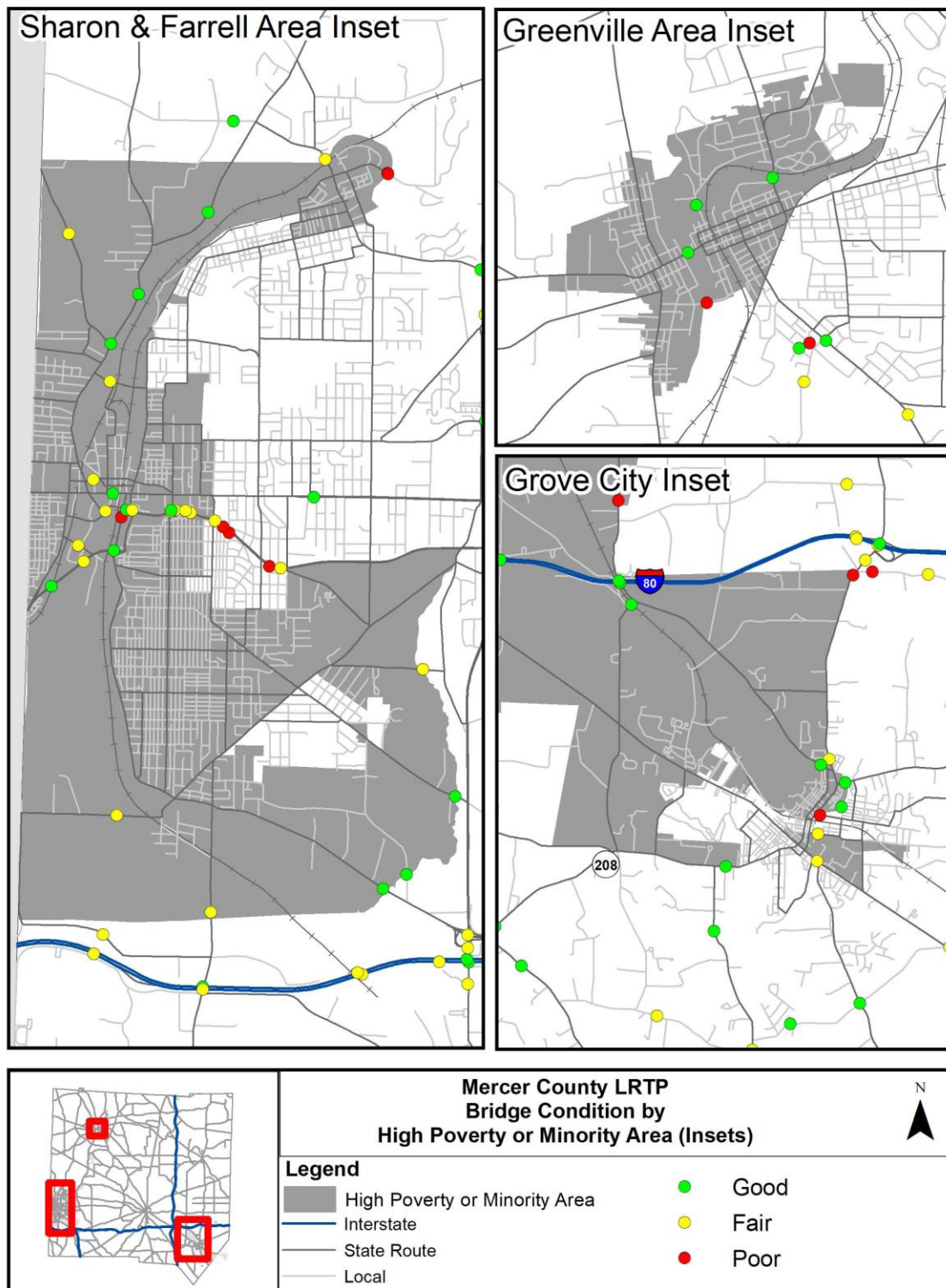
Exhibit 22 – Crash History by High Poverty and Minority Block Groups
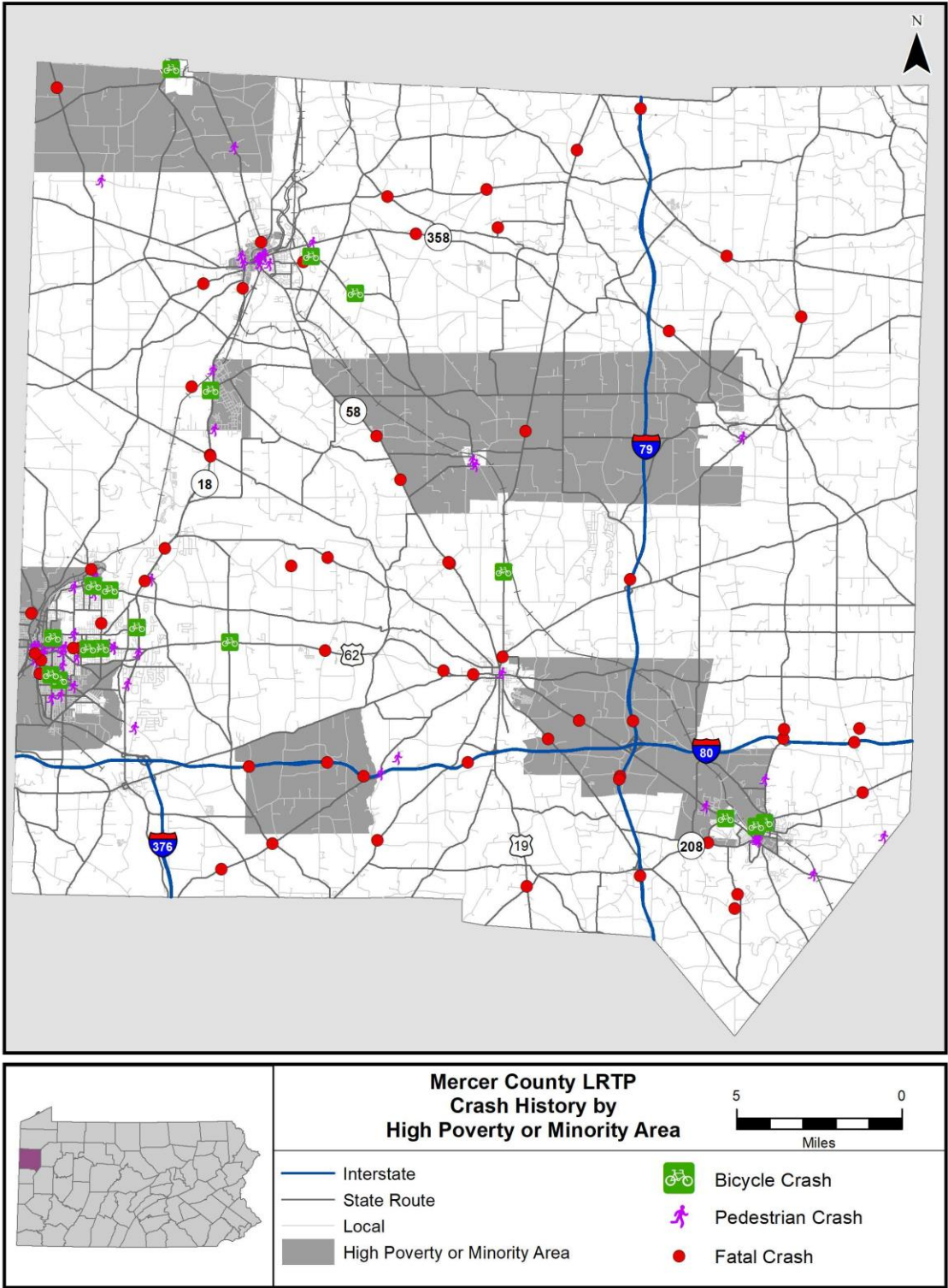
Mercer County LRTP
Crash History by
High Poverty or Minority Area

Miles

5   0

Legend:
— Interstate
— State Route
— Local
▓ High Poverty or Minority Area
🚲 Bicycle Crash
🏃 Pedestrian Crash
● Fatal Crash

Sharon & Farrell Area Inset

Greenville Area Inset

Grove City Inset

Mercer County LRTP
Crash History by
High Poverty or Minority Area

N

Legend

High Poverty or Minority Area
Interstate
State Route
Local

Bicycle Crash
Pedestrian Crash
Fatal Crash

Benefits & Burdens Evaluation

A Benefits and Burdens analysis serves to examine the equity of a transportation plan by reviewing identifying any disproportionate impacts on high poverty and minority populations. Transportation needs will continue to grow as our infrastructure ages, and funding has been decreasing from all typical funding sources. Prioritizing transportation improvements is more important now than ever, and the benefits and burdens of each project must be weighed when those prioritization decisions are made. These decisions involve assessment of the people served by the improvement, the cost of the project, and the impact the project may have on the surrounding communities.

Different types of projects result in different types and significance of impacts. Impacts can range from temporary traffic disruptions and noise during construction to permanent disconnections of the transportation network or significant changes in safety within the network. Impacts should be considered from all perspectives – some projects will positively impact some community members while negatively impact others.

This LRTP includes a variety of projects located in the identified BGs (**EXHIBIT 24**), such as the Greenville SR 0018 & Packard Avenue intersection improvement project (GREEN_D1) which will improve pedestrian safety, sight distance, and accessibility; the Kidds Mill Road project (LRTP_H8) which will improve access and enhance economic vitality for the block groups near the Greenville Reynolds development, the reconfiguration of the SR 0418 (Mercer Avenue) and Council Street intersection (LRTP_H41B) to improve sight distance and safety, and the SR 0418 (Mercer Avenue) at Morefield Road intersection reconfiguration (LRTP_H10) which will improve safety and accessibility. This LRTP also identifies a myriad of sidewalk and multi-use trail investments and betterment needs to improve safe bicycling and walking opportunities as funding opportunities arise. This LRTP also supports a comprehensive transit study to be completed to study routes and timetables to improve services. These projects, betterments, and studies are expected to benefit high poverty and minority populations.

Any project that proposes to alter any transportation asset beyond simple maintenance or preservation activities requires a planning study before any designs are made or funding allocated. During a planning study, extensive public outreach is conducted to ensure all voices are heard and all needs and interests are considered. When projects are formally added to the TIP, a formal Benefits & Burdens evaluation will be conducted to further quantify positive and negative impacts to high poverty and minority populations.

Future Planning Efforts

As the projects proposed in this LRTP are further studied and programmed for design and construction, strategies to avoid, mitigate or minimize any disproportionate and adverse impacts that may arise will be coordinated closely with community stakeholders, PennDOT District 1-0, FHWA, and FTA.

SVATS MPO is continually learning and updating processes to meaningfully consider impacts to high poverty and minority populations and proactively working to make strategic investments in communities with significant levels of high poverty and minority populations or other potentially disadvantaged populations. In future updates to the TIP and other planning documents, additional analyses will be conducted following the framework outlined in the *South Central Pennsylvania Environmental Justice Unified Process and Methodology Guide*, learning best practices from other planning partners utilizing this framework across the state.

Outreach to Environmental Justice Communities

As discussed in the EJ Benefits and Burdens analysis above, SVATS MPO is continuing to engage low income, minority, and other traditionally underserved populations in all planning processes including the LRTP. The team assembled a focus group of community leaders who serve various traditionally under-represented communities. Participants included the Community Action Partnership of Mercer County, George Junior Republic, Mercer County Area Agency on Aging, Mercer County Housing Authority, and MCRCOG which runs the fixed route transit Shenango Valley Shuttle Service. These groups provided important feedback which was primarily focused on providing their communities with transportation access to education, employment centers, and services like healthcare. More details can be found in the Stakeholder Focus Groups section of this plan.

A public survey was made available from February to March 2021 and was promoted by LRTP Steering Committee members, Stakeholder Focus Group participants, and through Facebook advertisements based on user location. Some of the municipalities found in the top 10 survey response zip codes can also be seen in at least two of the Environmental Justice lists above, including Greenville, Hermitage, Sharon, Sharpsville, and Wheatland. Public survey summary results can be found in Appendix A. The top 10 municipalities by survey response are shown in **EXHIBIT 25**.

Exhibit 24 – LRTP Projects by High Poverty and Minority Block Groups

Mercer County LRTP
LRTP Projects by
High Poverty or Minority Area

Source: PA DEP EJ Viewer

5   0
Miles

Legend

- - - Municipal Boundary
—— Interstate
—— State Route
—— Local

Poverty
Minority
Poverty and Minority

● Intersection Projects
—— Corridor Projects
● Bike / Ped Projects
—— Bike / Ped Corridors
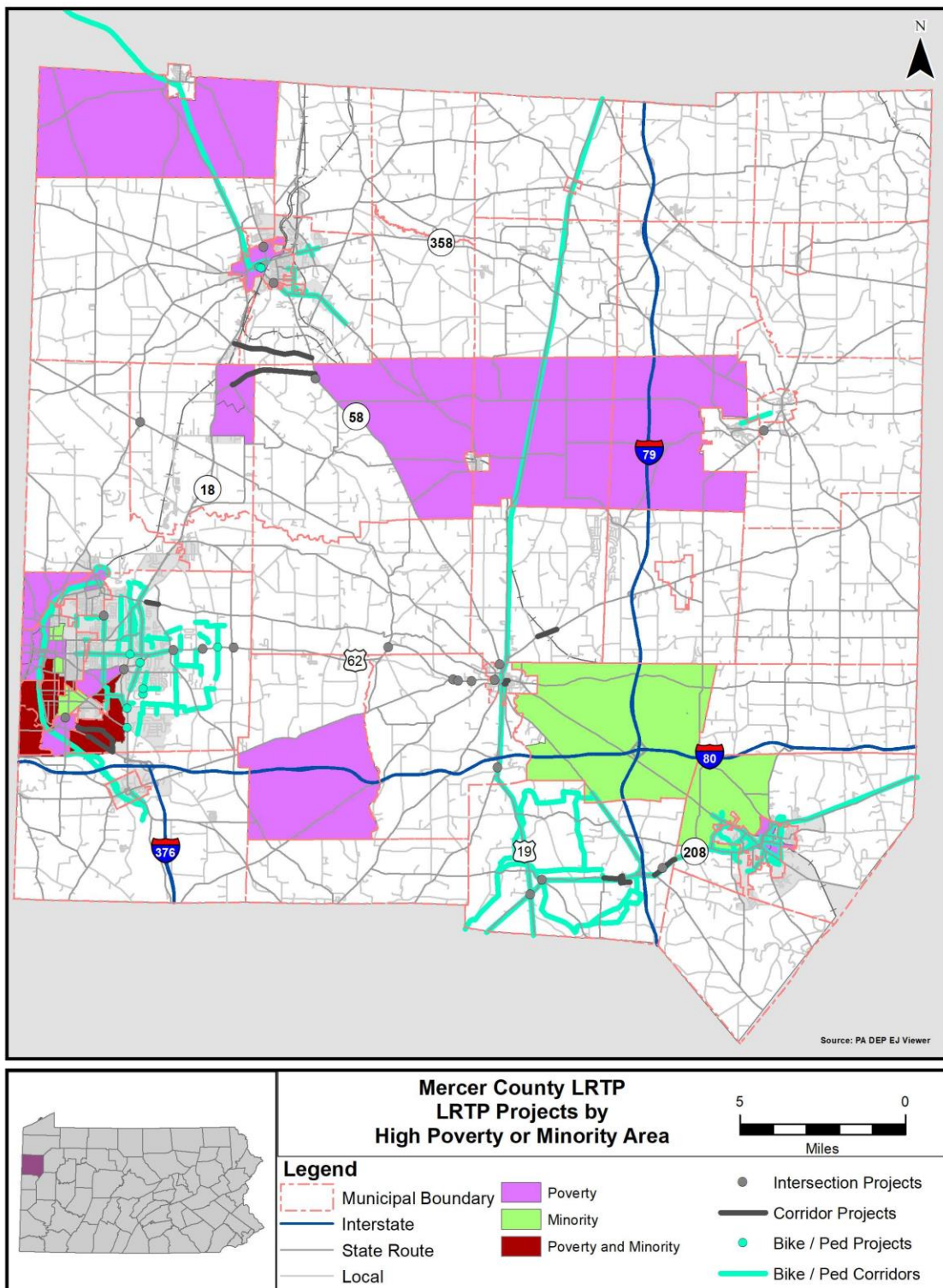
Exhibit 25 – Public Survey Responses by Top 10 Municipalities

Mercer County LRTP
Top 10 Survey Response Municipalities

5   0
Miles

Legend

— Interstate
— State Route
⬜ UrbanAreas
- - - Municipality
🟩 Top 10 Response Municipality
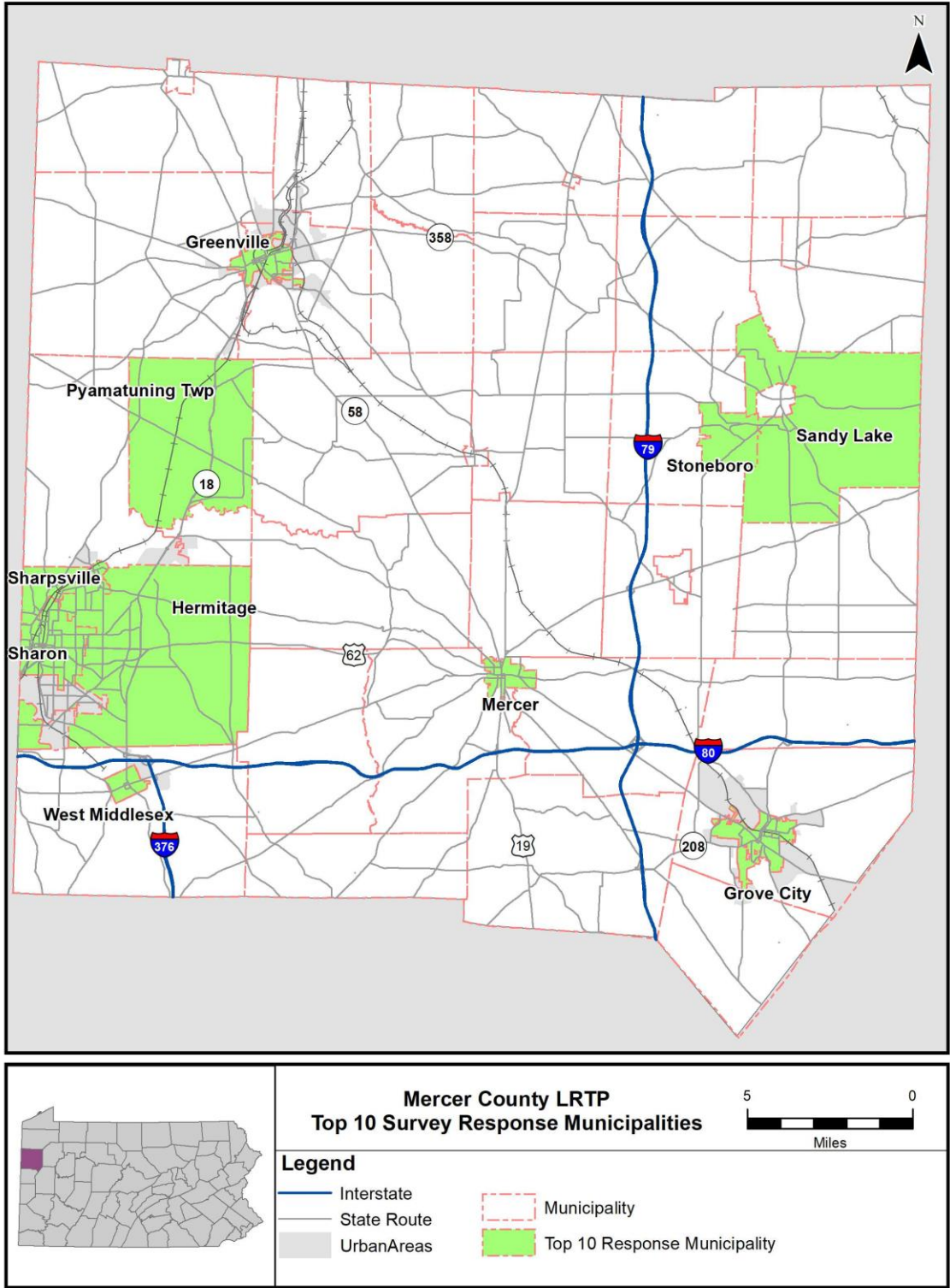
Outreach

A community-driven plan is one plan that is most likely to succeed. The outreach efforts followed SVATS MPO's Public Participation Plan (PPP). Despite restrictions on in-person meetings due to the COVID-19 pandemic during the development of this plan, the public outreach was tailored to make participation as easy and flexible as possible in a safe way. The public engagement effort for this LRTP update was conducted virtually, included virtual public meetings and online surveys. The public was involved early in the planning process to provide input and later in the planning process for review of the draft plan and recommendations.

Virtual Public Meeting #1: LRTP Update Kickoff – February 2021

The initial public outreach focused on notifying the community that the MPO was undertaking the LRTP update and soliciting public input for the plan. LRTP update information was shared on the MPO website, complemented by informational flyers and paper surveys at informational outposts across the county to collect input from those unable or unwilling to participate online. The MPO coordinated with local facilities to make these materials available.

Online Survey – February 2021

An online survey collected public input related to priorities and local concern areas during the initial public outreach period from February to March 2021. Steering Committee members were encouraged to share the survey and plan update information with their networks to reach a broad cross section of the county. The public survey was advertised via Facebook and a press release to local media. Through advertisement metrics, the LRTP update information reached 11,164 users reached on Facebook, which resulted in 421 visits to the public survey and 382 unique responses received, which is an exceptional response compared to traditional methods of promotion for LRTPs.

The team used the ArcGIS Survey123 online survey tool and incorporated an interactive map and targeted survey questions on the following topics:

Vision & Goals
- Overall goals or priorities
- Condition assessment of existing transportation
- Personal use of current modes of transportation
- Policy and funding questions

Specific Issues & Concern Areas
- Transportation concern areas
- Locations for future amenities

Demographics & Contact information
- Zip code
- Demographic questions
- Sign up for future LRTP-related emails

Survey results were compiled and analyzed to glean overall trends and identify concern areas that could be addressed by the LRTP. Some of the top priorities and key themes collected in the survey are listed below.

Respondent Demographics

Respondents were asked to provide their age, race, and home zip codes. 50% of respondents were over the age of 55 (**EXHIBIT 26**), and more than 80% were white (**EXHIBIT 27**). The top five zip codes appearing in the responses were 16148 (Hermitage), 16125 (Greenville), 16137 (Mercer), 16146 (Sharon), and 16127 (Grove City), but surveys were submitted from a total of 29 zip codes in Mercer County and eastern Ohio.

Age of Survey Respondents

Legend:
- 19-25
- 26-40
- 41-55
- 56-65
- 65+
- Prefer not to answer
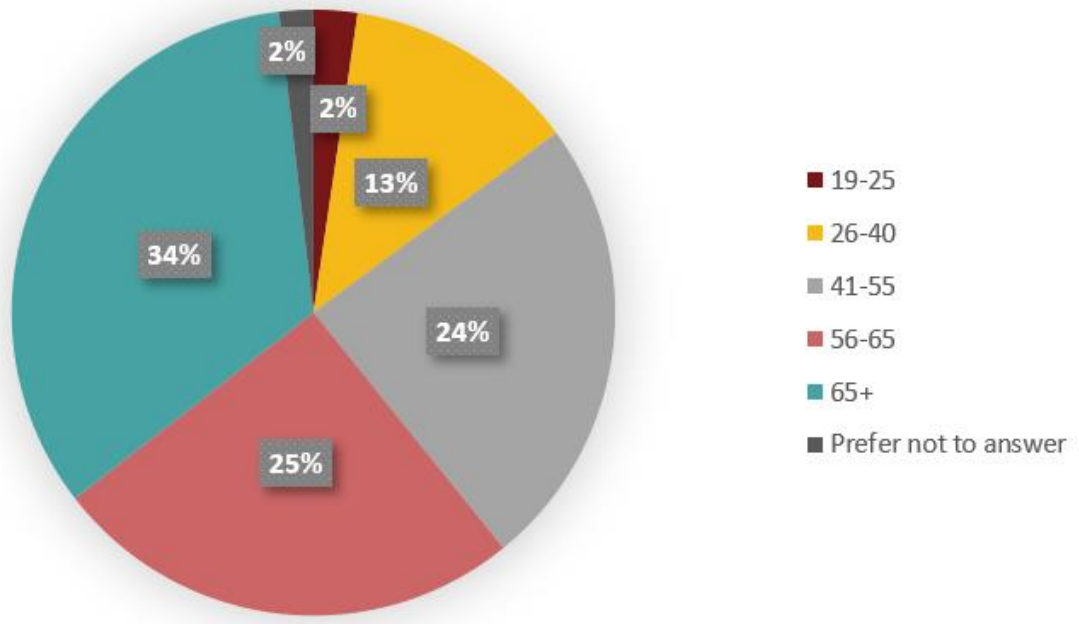
Exhibit 27 – Race of Survey Respondents

Race of Survey Respondents

Legend:
- White
- Other
- American Indian or Alaska Native
- Black or African American
- Asian
- Prefer Not to Answer
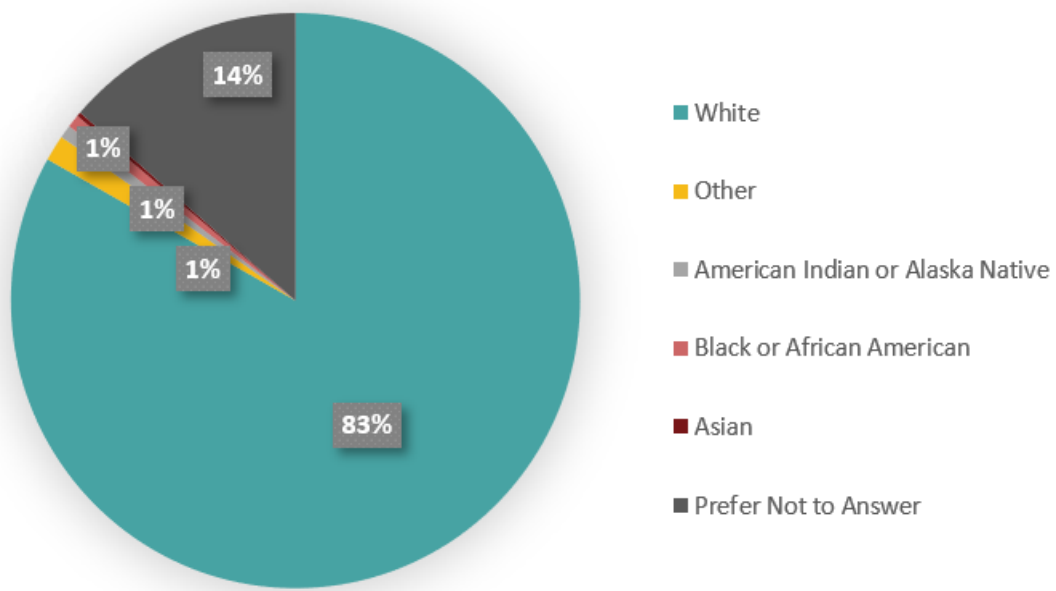
Most Important Topics

Respondents rated several transportation-related topics on a scale from Very Important (5) to Very Unimportant (1). When these rankings were averaged across all responses, the survey respondents ranked the topics in the following order of importance (**EXHIBIT 28**). Roadway safety remains the #1 priority between 2016 and 2021. Sidewalks and trails received a noticeable increase in ranking, followed by truck and freight access, parking, and public transit. Interstate access, tourism, and bicycle amenities decreased in ranking.

Exhibit 28 - Survey Most Important Topics

Category	Current LRTP (2021)	Prior LRTP (2016)	Difference
Roadway Safety	1	1	Same
Pavement Condition	2	2	Same
Economic Vitality	3	3	Same
Sidewalks & Trails	4	7	Increased
Environmental Sustainability	5	5	Same
Interstate Access	6	4	Decreased
Truck & Freight Access	7	9	Increased
Tourism	8	6	Decreased
Parking	9	10	Increased
Public Transit	10	11	Increased
Bicycle Amenities	11	8	Decreased

Most Needed Improvements

Respondents also rated the current state of the regional transportation infrastructure. The survey question asked respondents to rate each aspect of the infrastructure as Adequate (3), Needs Minor Improvement (2), or Needs Major Improvement (1). When these ratings were averaged across all responses, the respondents rated these topics in the following order of most in need of improvement (**EXHIBIT 29**). Local road pavement condition ranked #1 in need of most improvement, which beat out economic vitality. The public survey in 2021 separated the pavement question between "local roads" and "US and State Routes". Sentiments regarding pavement condition support the current trend toward asset management projects.

Exhibit 29 - Survey Most Needed Improvements

Category	Current LRTP (2021)	Prior LRTP (2016)	Difference
Local Road Pavement Condition	1	*	*
Economic Vitality	2	1	Decreased
US/SR Pavement Condition	3	3	Same
Sidewalks & Trails	4	2	Decreased
Tourism	5	5	Same
Roadway Safety	6	6	Same
Bicycle Amenities	7	4	Decreased
Interstate Access	8	10	Increased
Environmental Sustainability	9	7	Decreased
Public Transit	10	8	Decreased
Truck & Freight Access	11	9	Decreased
Parking	12	11	Decreased

Long-Term Effects of COVID-19 on Travel

The survey asked respondents to share how they expected their long-term choices regarding housing, shopping, and travel to change after the pandemic. They were asked to indicate whether they would do each activity more, less, or the same amount. In general, most responses for each activity showed that the behavior would be the same after the pandemic (**EXHIBIT 30**). The largest increase of 46% is for travel to parks and trails which is unsurprising as parks and trails offer fresh air and recreational space. Online shopping is also expected to be significantly higher at 34%. Interestingly, views on moving and public transportation are more polarized, with a similar proportion expecting both less and more frequent use.

Exhibit 30 – Long Term Anticipated Travel Behaviors

Activity	Less	Same	More
Drive to work	12%	81%	7%
Drive children to school	8%	58%	34%
Take public transportation	22%	63%	15%
Shop online	8%	58%	34%
Have items like groceries delivered	22%	52%	26%
Consider moving	25%	45%	29%
Travel to parks and trails	3%	51%	46%

Areas of Concern

The public used the GIS-based survey platform to provide specific areas of concern. Concerns were organized according to categories including bridge, freight, pedestrian or bicyclist, roadway, safety, and transit (**EXHIBIT 31**). Respondents were asked to describe the issue and if desired, to send further information to the team. Every point of concern was reviewed in detail by a subcommittee of the Steering Committee and used to compile project listings, identify maintenance action items, and generate areas in need of improvements for betterments. Many concerns fell under the jurisdictions of local municipalities and were forwarded to the appropriate agencies.

Exhibit 31 – Public Survey Points of Concern

Mercer County LRTP
Public Survey Points of Concern

Legend
Interstate
State Route
Local
UrbanAreas
Bridge
Safety
Transit
Freight
Ped-Bike
Roadway
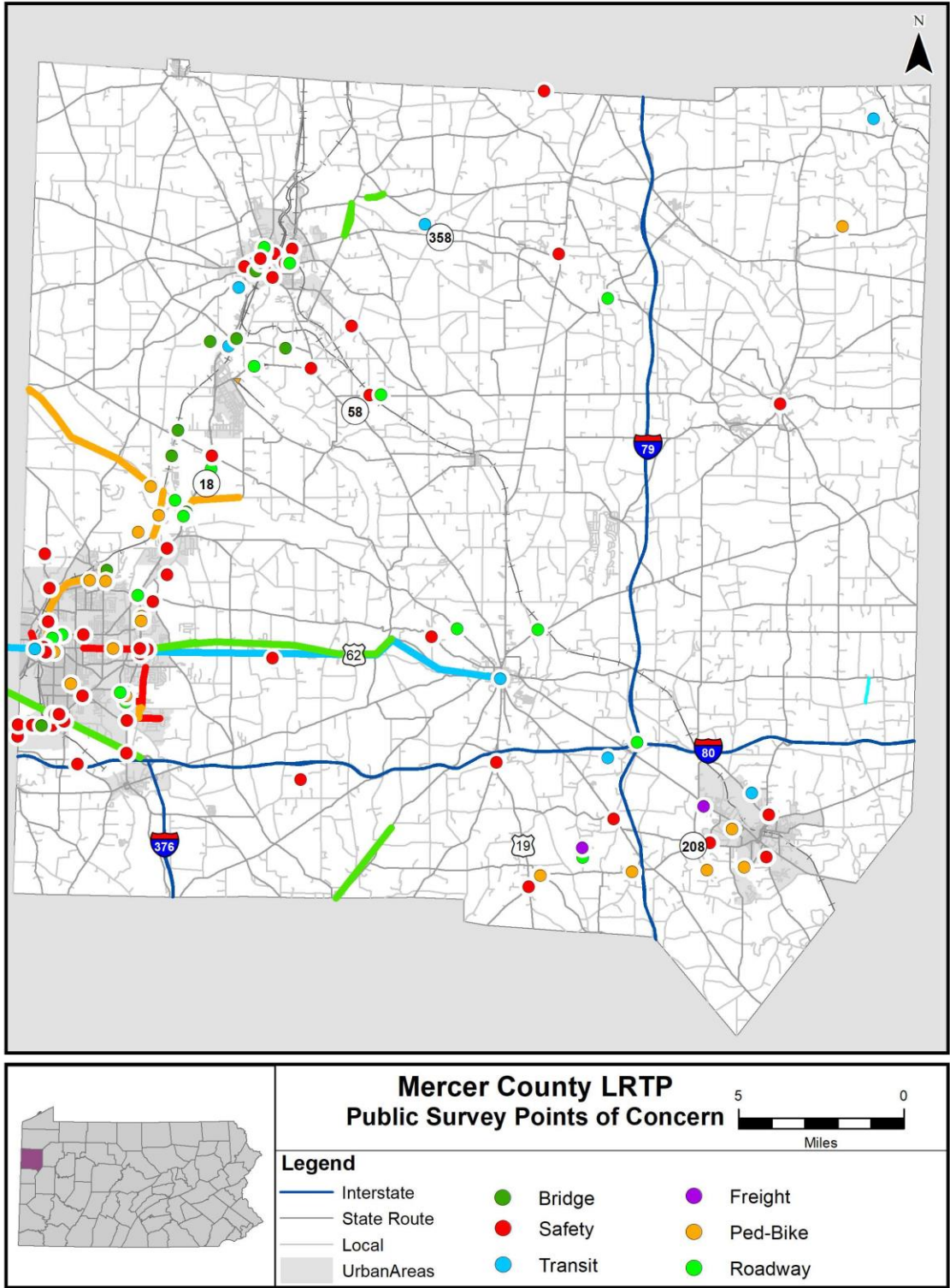
Public Meeting #2: Draft LRTP for Public Review – October 2021

The second major public outreach activity occurs in October 2021 to provide the required 30-day public comment period. The plan document and associated information is currently available on the MPO website including:

- Draft LRTP document
- Short comment form

The request for public comment is promoted with a press release, legal notice, and coordination with Steering Committee members and other stakeholders. Hard copies of the draft document and comment form are available at locations throughout the county for those without adequate internet access and those who prefer to review materials in hard copy. Comments collected during the 30-day comment period will be documented and reviewed to determine whether the draft plan should be revised to address the comments.

Stakeholder Focus Groups

Six virtual focus group meetings were held in March 2021 to gather targeted input on transportation needs. A short summary of feedback including transportation priorities from each focus group is included below. The issues and specific concern areas were collected and used by the Steering Committee in developing the project listings and priorities. Mercer County Planning Commission, PennDOT District 1-0, and McCormick Taylor representatives attended all six focus group interviews. The complete list of attendees and focus group meeting summaries are available in Appendix B. Stakeholders were organized into the following groups:

- Municipal Representatives
- Social Services & Environmental Justice
- Economic Development
- Multimodal Transportation
- Highway Professionals
- Environmental Agencies

Municipal Representatives

The top priorities for the municipal representatives were related to increasing development and growth, downtown revitalization, and addressing safety and traffic congestion concerns. Each municipality identified specific locations of potential development and where safety improvements are desired. Other concerns related to flooding, landslides, and stormwater issues were expressed. The pandemic caused a lot of municipalities to lose retail and restaurant businesses and associated tax income, necessitating the municipalities to think more about how to encourage the diversification of businesses and industries in their communities through ordinances, marketing, and collaboration with other agencies.

Social Services & Environmental Justice

The social service groups shared top priorities related to access to education and employment centers, especially by public transit outside of the urbanized areas of the county. Access to high-speed internet is also a priority for these groups to assist in connecting their communities with education, employment, and other services. Reliable transportation is important to access social and recreational activities which can be difficult when relying on public transit or friends and family. Representatives from the Area Agency on Aging also noted that the 60+ age group is expected to continue to grow in Mercer County. They have found that this generation of seniors is more active, more interested in

Entrance to George Junior Republic

aging-in-place, and more technologically savvy than previous generations, and expect their transportation needs to reflect that.

Economic Development

Economic development stakeholders discussed trends in freight movement, warehousing, employment, growth opportunities, new industries, and safety for large vehicles and passenger vehicles. They discussed the locations throughout the county that create safety concerns and 'pinch points' for freight movements and other economic activity.

Multimodal Transportation

Discussion in the multimodal stakeholder group focused on increasing access and connections for pedestrian and bicycle traffic. It was agreed that personal vehicles are the dominant transportation mode in Mercer County, but that could change in the future if existing infrastructure is improved and connections are made between available paths and trails and popular destinations. Access to active transportation and recreation is becoming more important as people have more flexibility to work remotely away from large cities, and these resources can be real assets in attracting and retaining residents. It was noted that there are challenges in using the transit system to get to work in places outside of the Valley; there are additional needs in terms of routes and timetables for transit. The transit agency is planning to complete a comprehensive study in the coming years.

Highway Professionals

The highway stakeholders included representatives from PennDOT and Mercer County who discussed specific locations that need improvements, bridge rehabilitations or replacements, potential corridor studies, as well as flooding and stormwater issues. It was agreed that the County and PennDOT have coordinated well over the last several years to maintain the transportation network. Both are focusing on low-cost improvements to keep the system in good repair in efforts to make the best use of limited funding.

Environmental Agencies

Mercer County volunteered to pilot a new program and method for conducting Agency Coordination Meetings (ACM). Agency Coordination typically happens toward the end of LRTPs, but the guidance from PennDOT around that is changing. Rather than just including the agencies to inform them of the potential impacts of the planned projects, they were included early in the planning process as a targeted stakeholder group for the focus group interviews.

Discussion in the focus group centered on ways to better connect agency resources such as the State Parks and Army Corps Recreational Areas to the wider transportation network to improve public access. These types of facilities saw large increases in attendance with the pandemic as people sought outdoor activities, which highlighted transportation, parking, and access issues. Each agency also discussed challenges related to their respective environmental areas. These concerns

Upper Shenango River Water Trail

included updating data resources, specific species requiring additional attention and conservation, flooding, and access to water resources. Emerging technology like electric vehicle charging and solar power facilities were also discussed as positives when looking toward the future.

Literature Review

Studies completed since 2016 were reviewed and relevant project improvements from those studies were included in this LRTP update (**EXHIBIT 32**). The effort to include specific project recommendations as implementable projects in the current LRTP is critical so that they can be prioritized against existing projects and moved through the LRTP process to be programmed on the TIP. The general themes of the recently completed studies were related to safety and multimodal transportation, which reflect the common themes heard from the public and stakeholders.

Exhibit 32 – Literature Review Plans Reviewed

Plan	Year
Southeastern Mercer County Bike & Pedestrian Master Plan	2017
US 62 Corridor Safety Study (Hermitage-Mercer)	2019
Borough of Greenville Pedestrian Circulation Study	2019
S.R. 0062 Canadian National Railway Overpass Study	2020
SR 0058 Safety Study	2019
PennDOT District 1 Bicycle and Pedestrian Plan	2020
PennDOT Extreme Weather Vulnerability Study	2017
Hermitage Trails and Sidewalks Prioritization Plan	2017
Western RTMC Region Regional Operations Plan Draft	2019
Congestion Management Process	2018

Goals & Objectives

Based on targeted discussions with the public and stakeholders and a thorough literature review, the goals and objectives are categorized as follows:

Mercer County LRTP Goals & Objectives

Enhance Economic Vitality

- Improve access to local, regional, and national markets
- Provide transportation mobility choices for regional travel
- Ensure travel time reliability
- Increase and support tourism
- Encourage vibrant towns

Improve Quality of Life

- Improve safety and security for motorized and non-motorized modes
- Improve transportation mobility choices
- Provide access to natural resources
- Promote environmental stewardship
- Provide and enhance recreational opportunities

Pursue System Preservation and Enhancements

- Pursue proper stormwater management & interagency communication
- Enhance pavement quality
- Prioritize bridge maintenance
- Emphasize project delivery and intergovernmental cooperation

Emerging Trends and Disruptors

Long range planning is currently faced with a wide set of challenges. New technologies are developing rapidly, and people are changing how they live, work, and play. Some things remain constant: people will always need a safe and reliable transportation system. The early identification of emerging trends and so-called "disruptors" is key in the planning process so that policies can be in place to support these developments in a way that positions Mercer County to embrace and benefit from these changes.

Economic Forces

Freight & E-Commerce

EXHIBIT 33 from the U.S. Census Bureau Department of Commerce illustrates the share of e-commerce as a percent of national retail sales rising steadily from approximately 5% in 2012 to approximately 13% in 2021. The spike in 2020 is attributed to the pandemic restrictions on in-person shopping and the industry-wide transition to online ordering and home delivery. Ignoring the spike in 2020, the general trend is increasing, and e-commerce is likely to reach a share of more than 20% of national retail sales in the next 10-15 years. Many reasons exist for the shift, including better access to internet service, free shipping, faster delivery times, ease of payment and broader product selection. As more of the consumer population becomes computer- and app-savvy, more may choose the opportunity to purchase online from retailers large and small. This trend impacts land use and development, as same-day delivery services depend on local warehouses and distribution centers to be close to population centers. Mercer County would be a prime location, given its interstate access and proximity to cities in Pennsylvania and Ohio. Rising e-commerce will also impact land use, both in terms of increased need for distribution centers in industrial and commercial areas, and decreased need for physical retail space in commercial and mixed-use areas.

Exhibit 33 – Estimated Quarterly U.S. Retail E-Commerce % of Total Retail Sales 2012-2021
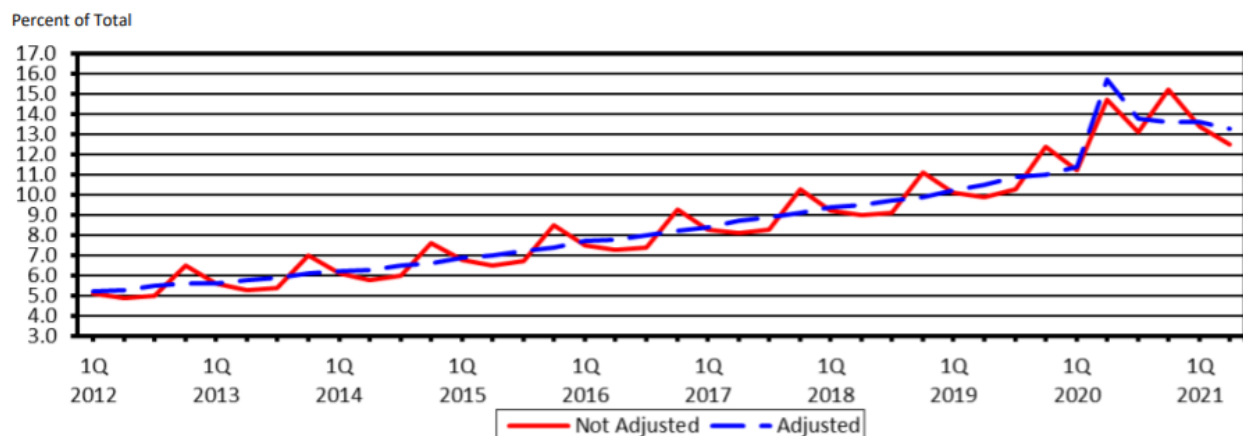
Adaptive Reuse

In recent years, in-person shopping facilities like malls have been closing due to rising rents, increased maintenance costs, and lower foot traffic as people turn to e-commerce. As stores close, more consumer activity shifts to e-commerce which exacerbates the cycle. A looming question for local authorities is what to do with these large, unused retail spaces. They are typically located in popular destinations near community resources with good connections to the transportation system. Some malls around the country have been finding new life as medical outposts for regional health systems, community college satellite campuses, and repurposed office space for businesses. Mercer County's economic leaders are considering repurposing vacant and underutilized sites for medical products manufacturing, warehousing, and customer service call centers. MCRPC can facilitate the transition by revisiting "allowed uses" in the zoning code where applicable.

The City of Hermitage has been actively planning and pursuing a Town Center concept for the underutilized Shenango Valley Mall property near the intersection of US 62 Business (E. State Street) and SR 0018. The Hermitage Town Center project was awarded a $1.2M Multimodal Transportation Fund Grant in 2021, which will be used to upgrade the existing shopping center to have a more park-like, livable, mixed-use place with a sense of community and town center feel.

Another vacant site in Mercer County that is looking toward adaptive reuse is the former Trinity Site in Greenville. An ideal development candidate would be mixed-use and provide transportation connections to existing infrastructure in the downtown to improve revitalization efforts.

Telecommuting

One effect of the pandemic saw some employers switching to entirely virtual Work from Home (WFH) employment. Moving forward, there may be lasting changes in the workforce resulting from this experiment, including workers that want to remain remote full-time, or those who choose a hybrid schedule. This would apply to a smaller portion of the workforce in Mercer County, as many are in the manufacturing and service industries. Only 12% of public survey respondents expected to work from home more in the long-term. It is still an important consideration for both work and school environments. Traffic patterns may change, spreading the peak hours and creating more mid-day traffic. Land use patterns may also change as some companies decide to reduce the size of their offices and close physical locations completely.

With telecommuting, there is much more choice about where to work and live. Mercer County has an opportunity to capitalize on this choice, because it offers a high quality of life for a lower cost of living. The county provides significant recreational opportunities and a an adaptive political climate, which may be attractive to younger generations. Stakeholders indicated that they believe people are moving to Mercer County due to this situation. Time will tell if these changes are permanent, but Mercer County could easily attract residents from Pittsburgh, Erie, Youngstown, and other local populated areas.

A key factor in attracting remote workers is access to high-speed internet such as broadband. Internet also plays a strong role in equity for low income and minority populations, with some political efforts working toward making internet access a basic human right. The right-of-way on roadways is often used for broadband infrastructure. The nearby Southwestern Pennsylvania Commission (SPC), serving the Pittsburgh metropolitan area, is conducting a regional broadband study.

Another interesting concept for internet access is the new satellite-based internet company StarLink. From entrepreneur Elon Musk, StarLink is launching satellites into orbit that provide high speed internet in very remote locations. The system is currently in beta testing in Canada. According to the StarLink website, areas of Mercer County could receive StarLink service as early as 2021. Satellite internet is ideal for locations where physical internet infrastructure has been a challenge or not available at all. Other satellite internet providers, such as Viasat and HughesNet, could also be options to expand high-speed internet coverage in Mercer County.

As more school assignments are done virtually on tablets and computers, internet access becomes more critical to educational attainment and social well-being. The ability to learn entirely online also extends to those seeking advanced degrees and can provide much more flexibility. Adults seeking post-secondary education can virtually attend a college or university anywhere in the world, while maintaining a job and staying close to family and friends. These new tools can allow Mercer County to retain larger portions of the population if residents can remain in the county, instead of moving away for educational and work opportunities.

New Mobility & Evolving Technologies

Connected and Autonomous Vehicles

Connected vehicles are those that can communicate with other connected vehicles and infrastructure. They have significant onboard computing power to transmit and accept data from their surroundings that can help other vehicles determine safe following speeds, traffic signal phasing, safety hazards, and identify congestion. Most technological advances are developed by private vehicle manufacturers, but local authorities play a supporting role by providing reliable communication networks such as 5G infrastructure and upgraded traffic signals that can send and receive data.

Self-driving vehicles are also becoming more commonplace on our state roads. More privately owned vehicles are incorporating semi- and fully-autonomous technologies. The Society of Automotive Engineer outlines levels of automation from 0 to 5, with 5 being a fully self-driving vehicle (**EXHIBIT 34**). A self-driving vehicle has an onboard computer that makes lane positioning, speed, and braking decisions based on inputs such as video and LIDAR mapping. The condition of infrastructure such as signs and pavement markings plays an important role in providing visibility to the computer. PennDOT and municipalities can assist in the safe transition to autonomous vehicles by maintaining their assets and providing properly retroreflective and legible signs and pavement markings.

Exhibit 34 – Automation Levels

0	1	2	3	4	5
No Automation	**Driver Assistance**	**Partial Automation**	**Conditional Automation**	**High Automation**	**Full Automation**
Zero autonomy; the driver performs all driving tasks.	Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design.	Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.	Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice.	The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.	The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.

SOURCE: SOCIETY OF AUTOMOTIVE ENGINEERS

The COVID-19 pandemic highlighted the nationwide truck driver shortage, as freight demand increased. The trucking industry lacks sufficient manpower for long-haul trucking, and the industry faces significant turnover and reduced retention rates. Demand for freight transportation between warehousing centers and delivery routes making those first- and last-mile connections is expected to remain high. Shipping companies such as FedEx and UPS are actively researching the conversion of some long-haul routes to autonomous or semi-autonomous vehicles. PennDOT is a partner in the regional connected and autonomous vehicle initiatives, so the MPO should keep close coordination with PennDOT on technologies. Mercer County's interstates are the likeliest place for early adoption of new technologies, and private self-driving vehicles are being used on all roadways regardless of their status as a state- or locally-owned road.

Autonomous vehicles also provide new venues for accessibility for people without driver's licenses, the disabled, the elderly, and school age children. They also are expected to increase safety by eliminating human error in driving.

Smart Belt Coalition

PennDOT is part of the Smart Belt Coalition. This coalition is a test bed for new technology. From the Smart Belt Coalition website: "Formed in 2016, the Smart Belt Coalition (SBC) is a strategic transportation collaborative comprised of 12 organizations, including five transportation agencies and seven research and academic institutions, located throughout Michigan, Ohio, and Pennsylvania. The purpose of the SBC is to foster collaboration amongst multiple agencies and research affiliates from Michigan, Ohio, and Pennsylvania, involving research, testing, policy, standards development, deployments, outreach, and funding pursuits in the area of connected and automated vehicle technology as well as other innovations in the transportation industry." The twelve members of the SBC currently include:

1. Michigan DOT
2. Ohio DOT
3. PennDOT
4. Ohio Turnpike
5. Pennsylvania Turnpike
6. American Center for Mobility
7. University of Michigan
8. Kettering University
9. Transportation Research Center
10. Ohio State University
11. Penn State
12. Carnegie Mellon University

Smart Belt Coalition
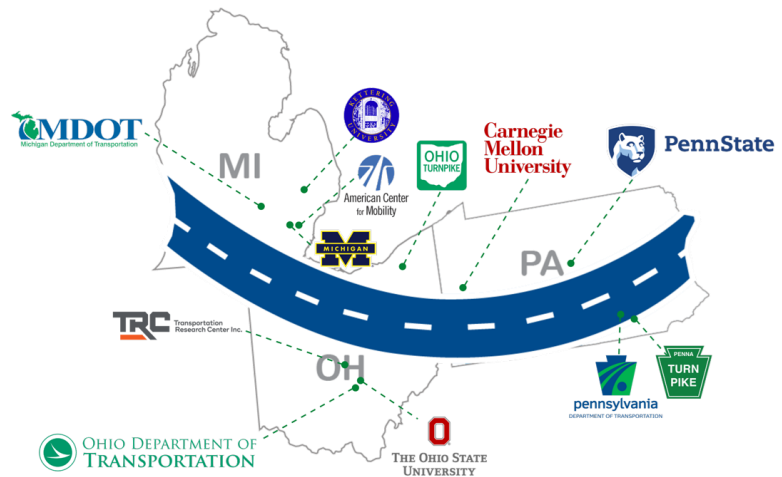
In 2020, the Smart Belt Coalition coordinated to test the deployment of Level 1 Automation on Interstate 80 for truck platooning. This involved the lead truck manually operating while the following trucks were automated to follow. All vehicles had an operator at all times. This is important as e-commerce advances, freight movement becomes more localized, and demand continues to grow. Automation will help to alleviate industry issues with long-haul trucking and safety concerns.

Programs undertaken at the federal level are focused on enabling activities to advance technology, incorporate connected and automated vehicles (C/AV), and update national policies in anticipation of their deployment. The following objectives are identified by FHWA:

- Advance knowledge of Connected Vehicle (CV) and Automated Vehicle (AV) systems.
- Collect benefits and costs and implementation lessons learned information from high priority CV and AV applications.
- Support State and local, and transit agency integrating CV environment deployments.
- Define the Federal role in facilitating and encouraging deployment of automated systems.

Research conducted by Carnegie Mellon University in 2014 surveyed transportation planners at the largest 25 MPOs in the United States. Only one of these MPOs, the Delaware Valley Regional Planning Commission, Philadelphia, PA, mentioned C/AV in their LRTP. Most MPOs indicated that uncertainty drives discussions of how C/AV will impact transportation system investment decisions. It is not yet clear which technologies will emerge, what their cost will be, and who will bear those costs. Outcomes of C/AV may affect congestion and operations, accessibility, mobility, productivity, value of time, vehicle miles traveled, air quality and noise, energy usage, parking, land use, non-motorized modes, vehicle cost, ownership, freight, transit, equity, and security.

Ride Sharing

Uber and Lyft are the major ride sharing companies operating in the region. They have evolved to replace traditional taxis and operate mostly outside of regulatory structure. The public survey indicated that ride sharing use is low in Mercer County. Of the 372 respondents who completed this survey question, only 37 or roughly 10% of respondents indicated that they use ridesharing more than 'Never/Infrequently' and only seven indicated that they use these services daily. While there are many households in Mercer County without a vehicle who are dependent on friends, family, and public transit for rides, these ridesharing services may be too expensive and unreliable to be a benefit.

Micromobility

Micromobility is a term that encompasses modes of transportation such as e-bikes and e-scooters which provide a relatively quick way to get from one place to another. Transportation hubs may be provided that connect transit stops and many of these modes of transportation. Typically using these services has basic requirements such as a smartphone and the application for each service provider, which raises equity questions for those without access to a smartphone. During stakeholder interviews, the Mercer County Community Action Partnership (MCCAP) envisioned a system where e-scooters could be deployed to help people with their first- and last-mile connections to transit. A vision would be that the e-mobility stations are near parks, transit stops, or existing public services, and docking stations could provide WiFi and charging ports. Transit buses are equipped with real-time tracking software so people can see where their bus is along the route and plan accordingly.

E-bike and bike share stations are another form of micromobility. In some places, agencies are dedicating curb space to solar-powered mobility stations. Planners in Pittsburgh took time to consider how to handle e-scooters before allowing them on their streets. They set policies with respect to curb usage where the scooters are allowed to be parked, charged, and driven. The Pittsburgh Mobility Collective, part of the City of Pittsburgh's MovePGH initiative, is a micromobility work group that provides mobility hubs. This came together through collaboration from government agencies such as the Pittsburgh Department of Mobility and Infrastructure.

These micromobility modes can help to solve transportation challenges for those who do not own personal vehicles, who cannot obtain a driver's license, or in areas where public transit connections are lacking. Affordability and ease of use is important. Otherwise, the people who could see the most benefit from these services will not have access to them. Private ownership of e-bikes and e-scooters is on the rise as affordability increases. These modes can increasingly be seen on public trails in Mercer County.

It is important to proactively plan for these new technologies and services to ensure that they are accessible to all community members, and that the docking stations and discarded e-scooters do not become a public nuisance. Some considerations when planning for these new mobility solutions should include a variety of payment options like using existing public transit passes or options for purchasing rides in cash at convenience stores and placement of the docking stations in neighborhoods where there is the greatest need.

Electric Vehicles

PennDOT and the Pennsylvania Department of Environmental Protection (DEP) are working together to facilitate the transition to more electric vehicles by educating the public and providing the necessary infrastructure. According to the joint PennDOT and DEP webinar called *Amped 2021*, a total of over 28,000 electric vehicles were registered in Pennsylvania as of February 2021. Sales forecasts show electric vehicles to be 25% of total vehicle sales by 2030. Electric vehicle demand also surged despite the COVID-19 pandemic. Nationally, electric vehicle sales rose 15% in 2020, which created a 40% increase in market share for electric vehicles in 2020, despite the overall drop in auto sales in 2020.

To encourage increased purchase of electric vehicles, the PA DEP provides incentives for individuals and grant programs for businesses, non-profits, and organizations. PennDOT has created an internal cross-

departmental working group to coordinate studies and infrastructure efforts and coordination with other agencies. In May 2021, PennDOT began developing the statewide *Electric Vehicle Mobility Plan*, which builds on previous research by the PA DEP, including the PA Electric Vehicle Roadmap. This planning effort involves evaluating current electric vehicle infrastructure, identifying mobility challenges, and identifying ways to build the electric vehicle network. It is expected to be complete by 2022.

PennDOT is also participating in two pilot programs to install electric vehicle and compressed natural gas facilities and amenities like restaurants along the I-78/I-81 and I-80 corridors. The I-80 pilot program is lead by the Illinois Department of Transportation and involves multiple states; it is still in the early planning stages, but the effort aims to install infrastructure along I-80 from New Jersey to the border between Iowa and Nebraska border, passing through Mercer County along the way. Private entities also play an important role in electric vehicle infrastructure. Many grocery stores are now offering electric vehicle only parking spaces. Partnerships between auto manufacturers such as Tesla and gas stations such as Sheetz to provide super charging stations adds a critical layer of coverage for the EV network. There is potential for ancillary services while people wait for their batteries to be charged.

Intelligent Traffic Systems (ITS)

Advanced Traffic Management Systems (ATMS) describes the use of real-time traffic data from probes and sensors compiled and assessed at a Traffic Management Center (TMC) to adjust signal timings and improve system efficiency and mobility in real time. PennDOT TMCs oversee operations of highway and major roadways through the use of ITS and coordination with service patrols, emergency responders, and other agencies.

Transportation Systems Management and Operations (TSMO)

TSMO describes the practice of evaluating and improving performance of the transportation system from a system-wide perspective, not just one strategy, project, or corridor. TSMO strategies are coordinated across jurisdictions and agencies with the aim of improving safety and mobility for all modes of transportation. The menu of TSMO strategies may include:

- Hard shoulder running
- Ramp metering
- Reversible lanes
- Road weather management
- Smart signals
- Traffic incident management
- Traveler information
- HOV lanes
- Park and rides
- Variable speed limits
- Connected and autonomous vehicle deployment
- Access management
- Active transportation and demand management

- Bicycle and pedestrian safety
- Congestion pricing
- Electronic toll collection
- Express toll lanes
- Freeway management
- Freight management
- High-occupancy toll (HOT) lanes
- Integrated corridor management
- Managed lanes
- Special events management
- Traffic signal program management
- Transit priority and integration
- Work zone management

PennDOT describes its TSMO business areas as follows: inclement weather, ITS and traffic signals, work zones, traffic incidents, special events, bottlenecks, traffic management centers, traveler information, and connected and autonomous vehicles. PennDOT has a committee for Transportation Systems Management & Operations Western Region, which is comprised of the current Northwest and Southwestern Regions and Jefferson County. Its counties are Allegheny, Armstrong, Beaver, Butler, Clarion, Crawford, Erie, Fayette, Forest, Greene, Indiana, Jefferson, Lawrence, Mercer, Venango, Warren, Washington, and Westmoreland.

There are two major reports published on the TSMO Western Region, including the Regional Operations Plan (2019) and the Regional ITS Architecture reports for the Northwestern region (2005). Several signal improvement projects have been completed across Mercer County following the previous Regional Operations Plan (ROP) which was published in 2007, including Mercer Borough signals project, the I-80 traffic surveillance project at the I-79 and I-80 Interchange. Other ITS projects include the SR 0058 signals project in Grove City and the Hermitage and Sharon Traffic Signals Project along State Street and SR 0018.

The ROP identifies Mercer County as a key location for Smart Corridor project initiatives (**EXHIBIT 35**). A series of corridors near I-80 in Mercer County including US 19, US 62, and PA-18 were identified which could benefit from Smart Corridor Initiatives. Strategies include combining adaptively adjusted traffic signal timings with incident detection and arterial dynamic messaging signs (DMS) to improve operations on parallel corridors when an incident occurs on I-80. Emergency detour routes can be found in **EXHIBIT 36**.

Other Mercer County specific projects mentioned in the ROP include:

- TS.05 – PA 18 Traffic Signal Improvements - Upgrade signal equipment and detection, as well as improving timing/coordination on PA-18 in Mercer County.
- TS.09 – Grove City Signal Improvements - Upgrade signal equipment, including detection, and improve timing along signalized corridor of PA-58 (Main Street) through Grove City in Mercer County.
- TI.22 – West Middlesex Interchange ITS - Install CCTV camera and Arterial DMS at PA-18/PA-318
- FA-06 – Mercer County Smart Corridor Initiatives - Institute Smart Corridor Initiatives along the corridors of US 19, US 62, and PA-18 in Mercer County. Consider adaptive signal technology and increased coordination of signal timing and operations during detours related to incidents on I-80 and other major parallel corridors.

Study recommendations include:

- Regional Winter Truck Restriction Study
- Regional Truck Parking Study

The current SVTS FFY 2021 TIP includes TSMO upgrades near the I-80 and US 19 interchange. This LRTP includes a new type of betterment map that summarizes the recommendations of the 2019 comprehensive countywide signal study, as well as the above ROP recommendations for inclusion in asset management projects. Municipalities and other agencies are encouraged to pursue the special funding sources for these operational improvements.

Exhibit 35 – Mercer County Potential ROP Projects

Source: Regional Operations Plan 2019

Exhibit 36 – Emergency Detour Routes

Mercer County LRTP
Emergency Detour Routes
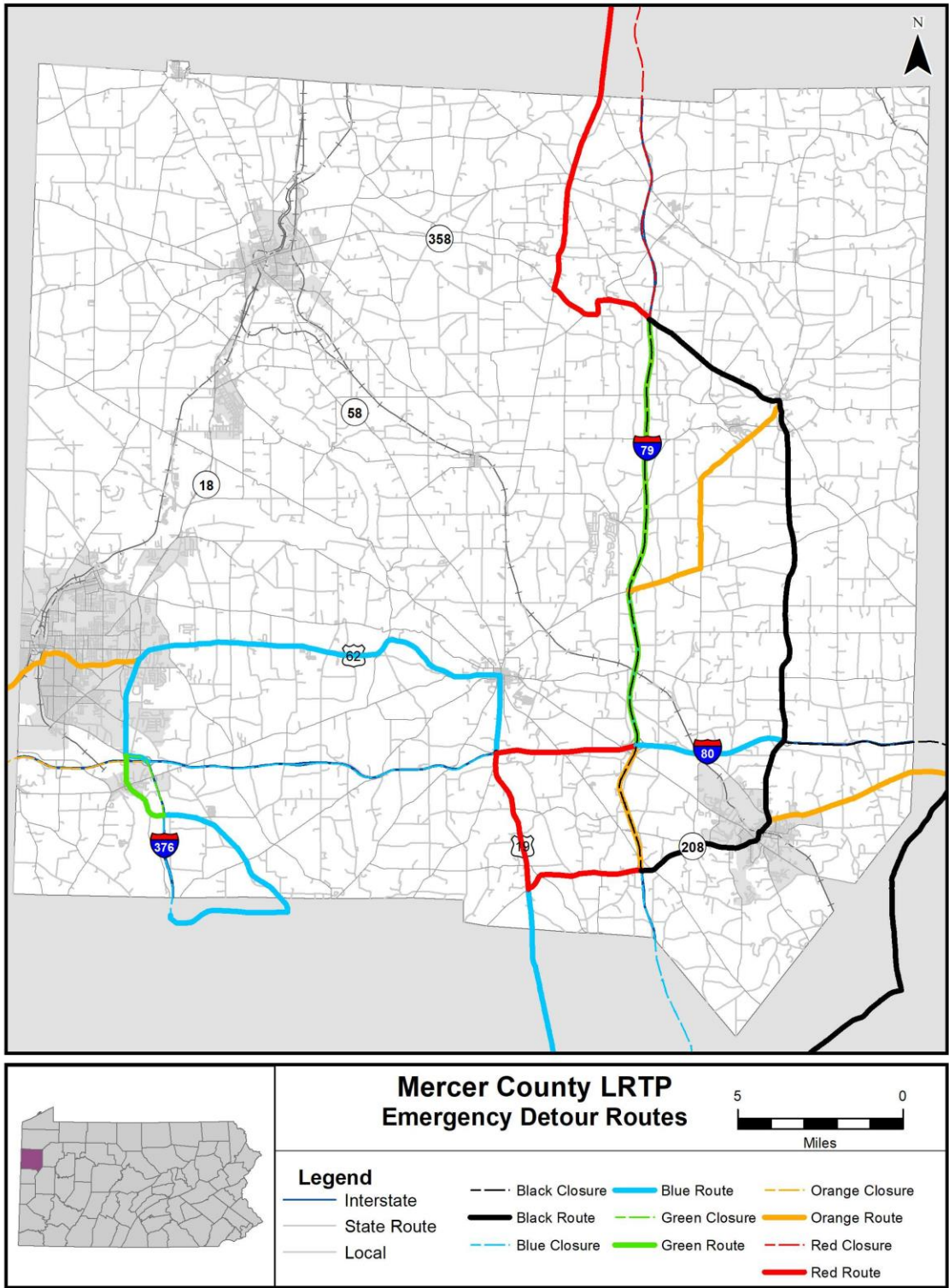
Integrated Corridor Management (ICM)

ICM is a subset of TSMO strategies that is applied to a specific corridor. ICM refers to an infrastructure management process where authorities coordinate to manage individual corridors across all modes of transportation for the most efficient movement of people and goods. For example, selecting a geographic corridor and coordinating services between traffic operations, transit, micromobility, ridesharing, taxi, freight, and others. One such example would be coordinating transit stops with the placement of micromobility and bikeshare stations so that travelers have options for first- and last-mile connections to the transportation network. Carsharing services such as Car2go and ZipCar could also be important pieces of this system.

Data is a large backbone for the assessment of the effort, as well as coordination between the services. It is important for travelers to understand where a transit vehicle is on the route so they can make informed decisions about getting to their destinations. Freight vehicles rely on real-time information reported through overhead message signs, and emergency responders may use real-time data feeds such as the Regional Integrated Transportation Information System (RITIS) portal. Historical incident data can help emergency management teams prepare for closure and emergency detour situations. Truck parking availability and occupancy is also monitored, and as electric vehicle charging stations become more widely available and in demand, occupancy and capacity of charging stations will need to be monitored. The MPO could support data sharing among agencies and commercial operators to inform parking investment decisions.

Resiliency

Resiliency refers to how the transportation system handles and adapts to increasingly strong weather. Along with the rest of the country, Mercer County has experienced stronger storms and flooding on a more frequent and severe basis. In 2017, PennDOT conducted the Extreme Weather Vulnerability Study which identified infrastructure in danger of negative impacts from climate change. It identified key elements of a changing climate that will affect infrastructure across the state, including increased maximum temperatures, increased severity and frequency of precipitation events, and more frequent freeze thaw cycles. All of these have negative impacts on infrastructure.

The plan identified roadways that are high risk for vulnerability in Mercer County (**EXHIBIT 37**). They are as follows:

- SR 0018 north of Shenango Reservoir
- SR 0058 to the west and east of Jamestown and southeast of Mercer
- SR 0258 northwest of Mercer
- SR 0760 Broadway Avenue
- SR 2007 Springfield Church Road
- SR 2014 Scrubgrass Road east of Mercer
- SR 3015 Church Street
- SR 3039 Valley Road in the vicinity of SR 3022 Rutledge Road
- SR 4019 Methodist Road

SR 4014 Crestview Drive Washout 2021

The local experience is that Mercer County, along with the rest of PennDOT District 1, is currently faring better than other parts of the state because of its fairly flat geography, which helps reduce the frequency of landslides and slope failures. It also has relatively low-density population in most of the county and fewer manmade pervious surfaces in those areas that create additional stress on the stormwater infrastructure. However, flooding is a lasting concern and roadway wash outs such as those seen in the image are becoming more common.

Debris accumulates in pipes and under bridges, which clog the stormwater infrastructure and exacerbate flooding. Increased and regular maintenance of the system can help lessen the impact of stormwater surges. Municipal subdivision and land development ordinances (SALDOs) also play a role in local stormwater management. SALDOs can help to improve resiliency and system reliability by containing stormwater best practices such as reducing impervious surfaces such as large paved areas; identifying local infrastructure improvements such as drainage swales, recharge zones, and permeable pavement. The US 62 and SR 0058 corridor studies both identify specific areas in need of drainage improvements. These are included in the betterment maps toward the end of this report.

Exhibit 37 – Extreme Weather Vulnerability Study Predicted Risk Score
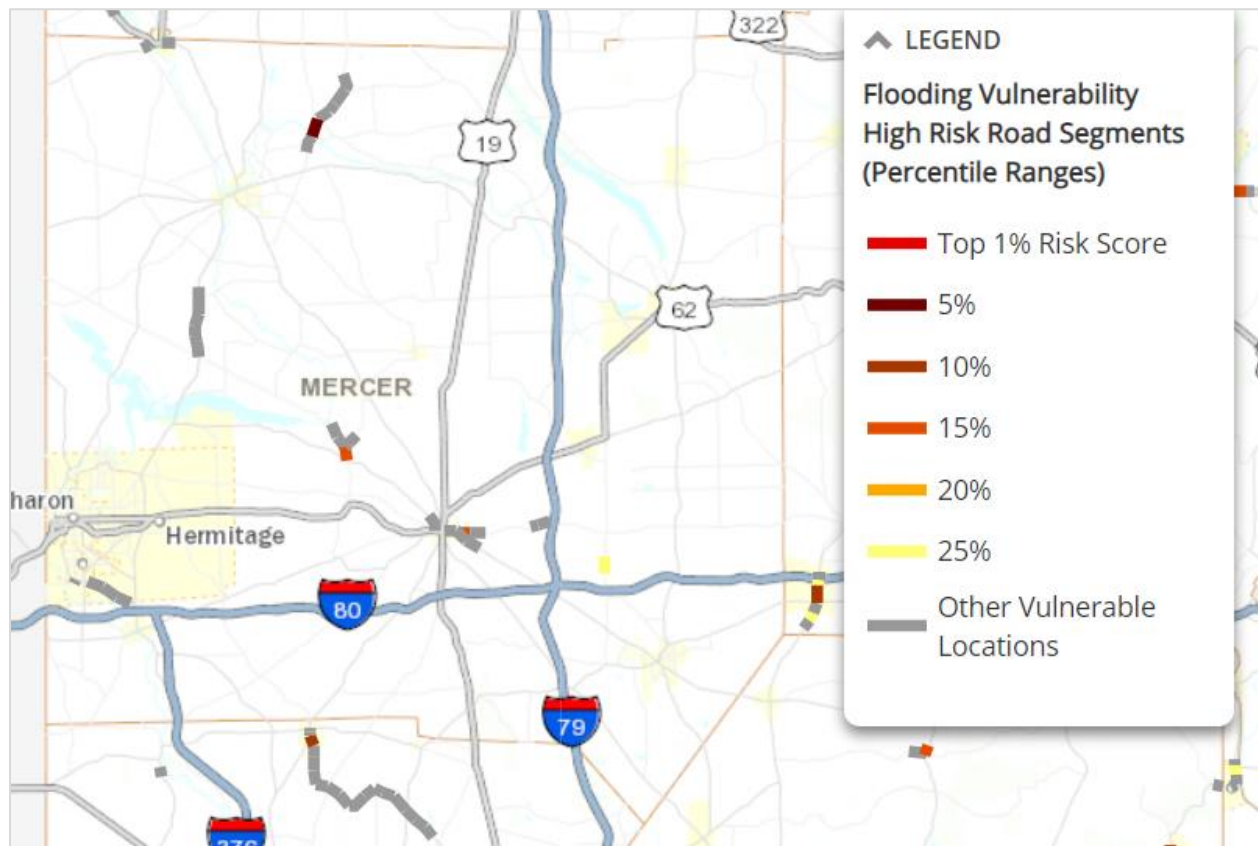
Transportation System

Roadways

There are currently 2,038 linear miles of roadway in Mercer County, with 740 owned by PennDOT, 39 miles owned by other agencies, and 1,262 miles owned by local county or municipalities. Traffic volumes were examined across Mercer County from PennDOT's Traffic Information Repository (TIRe) website (**EXHIBIT 38**). Interstate 80 regularly has the highest ADT in the county, hovering around 28,000 to 30,000 vehicles per day. I-80 is followed by I-79, I-376, and sections of US 62, SR 0018, SR 0058, and SR 0358 (**EXHIBIT 39**). Interstate 80 continues to be a major thoroughfare for freight traffic, with truck percentages reaching near 50% and expected to continue to rise. Any interstate detour onto state and local roads will include significant trucks. In 2020, traffic volumes had generally decreased due to the COVID-19 pandemic related restrictions, but volumes are beginning to return to pre-pandemic levels.

Exhibit 38 – High Traffic Roadways in Mercer County

Route	Location	Average Daily Traffic	Truck Percentage	Count Year	PennDOT Traffic Monitor Site
I-80	East of US 19	28,100	46%	2021	3655
I-79	North of I-80	21,200	24%	2018	4799
I-376	South of SR 0018	17,500	15%	2019	4734
SR 0018	North of SR 0518	18,200	6%	2020	3607
SR 0062	East of SR 3037	9,700	8%	2017	3643
SR 3008	West of SR 0018	13,700	2%	2019	3722
SR 0358	East of SR 4023	4,200	10%	2019	3685
SR 0058	South of Golf Road	4,300	11%	2020	3631
SR 0518	North of State Street	7,600	4%	2019	14009
SR 3025	North of SR 3008	12,000	2%	2018	3736

Exhibit 39 – Mercer County Average Daily Traffic Volumes

Mercer County LRTP
Average Daily Traffic

5   0
Miles

Legend
Interstate
State Route
Local

Under 4,000 Vehicles Per Day
4,000 to 8,000 Vehicles Per Day
8,000 to 12,000 Vehicles Per Day
Over 12,000 Vehicles Per Day
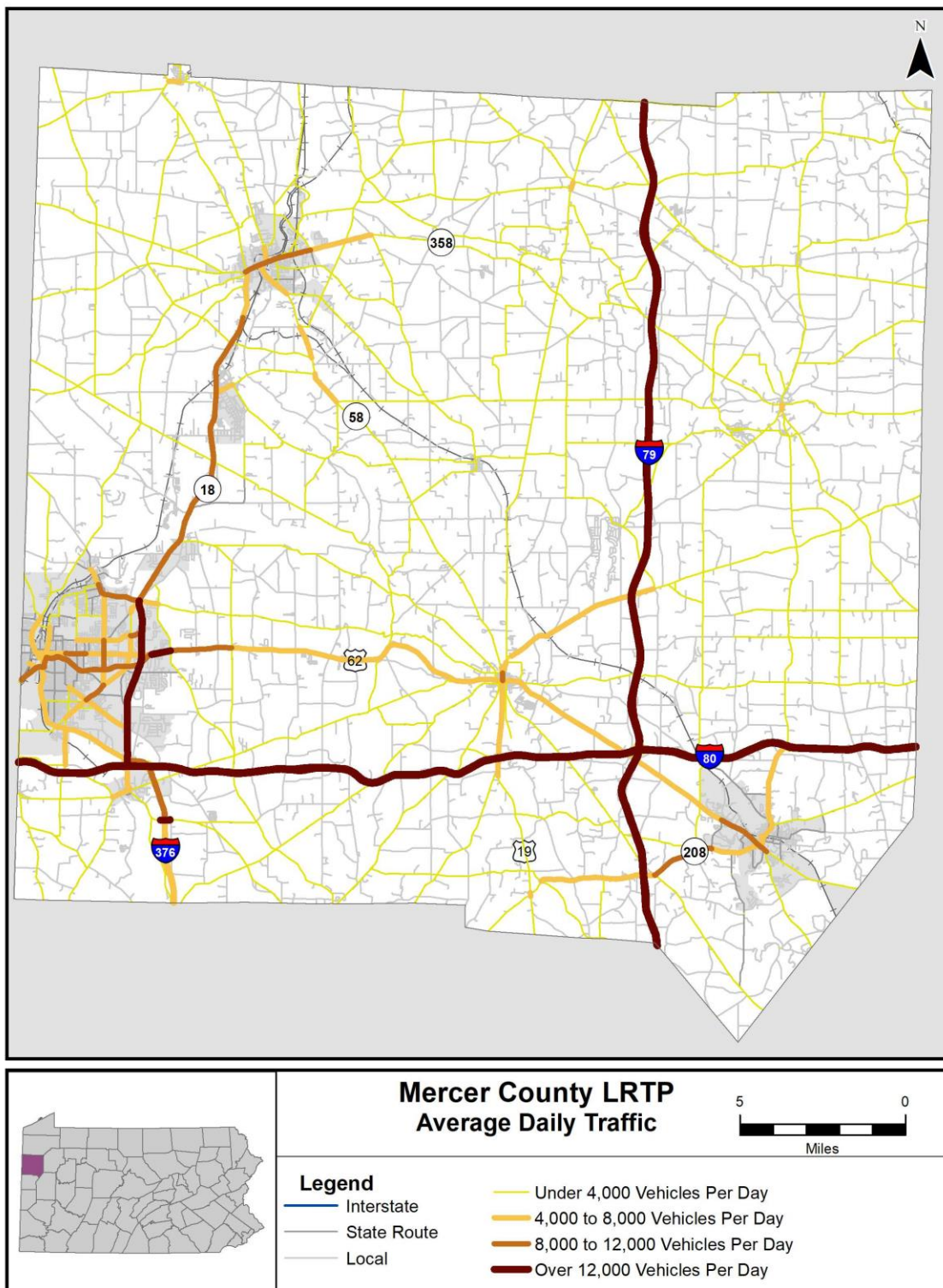
Exhibit 40 – Mercer County Truck Percentage

Mercer County LRTP
Truck Percentage

Legend
Interstate
State Route
Local

0 to 5%
5 to 10%
10 to 15%
15 to 30%
30 to 60%

Miles
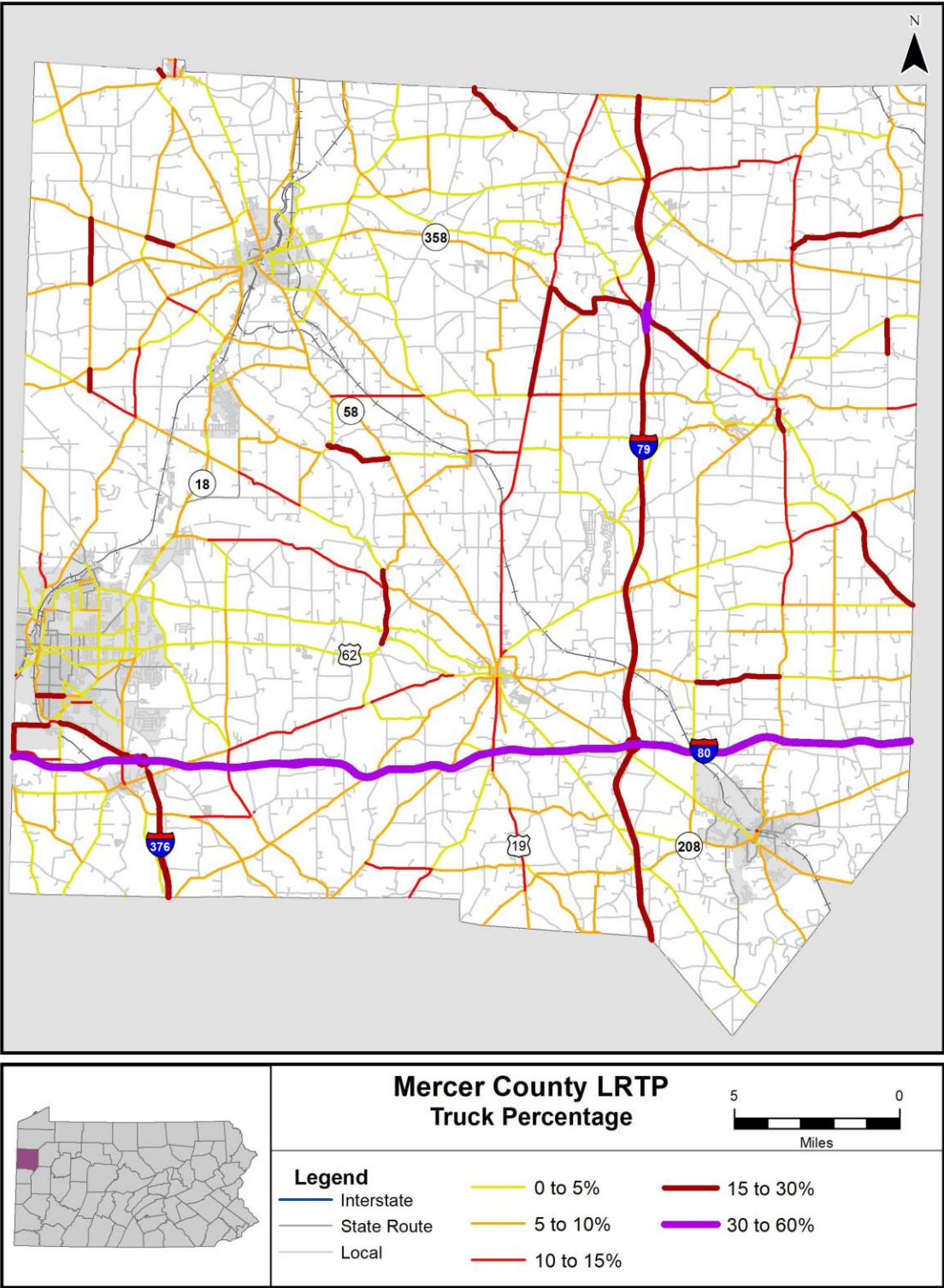
Transit

Mercer County is home to the Mercer County Community Transit (MCCT) paratransit service and Shenango Valley Shuttle Service (SVSS) fixed route bus service. MCCT is a door-to-door advanced registration program that is funded by state and federal grants and the Mercer County Area Agency on Aging, Inc. Discounted service is available to Senior Citizens aged 60 or older and qualified disabled residents.

MCRCOG is the administrator of the SVSS which covers a service area surrounding Farrell, Sharon, and Hermitage, commonly referred to as the "Valley". It also runs a longer route between the Valley, the Mercer County Courthouse in Mercer, and the Grove City outlets. In recent years, MCRCOG has transitioned to using the MYSTOP smartphone application for trip planning, service alerts, and real-time bus tracking. SVSS operates the following daily routes which are shown in **EXHIBIT 42**:

Central Route - Service between Downtown Sharon and the Shenango Valley Mall along the State Street corridor.

Courthouse Route - Service between the Shenango Valley and the Mercer County Courthouse and Grove City Outlet Mall.

Express Route - Service between Longview Road and Wal-Mart along the Route 18 corridor.

Northern Route - Service between Downtown Sharon and the Shenango Valley Mall via Sharpsville.

Southern Route - Service between Downtown Sharon and the Shenango Valley Mall via Farrell and Wheatland.

SVSS Fixed-Route Transit Bus

Many public comments were received with respect to geographic coverage, timetables, and availability of public transit services throughout the broader county. It is important for social equity for transit to be made available for every community to have an opportunity to reach education, healthcare, and work safely and reliably. MCRCOG plans to undertake a comprehensive study of services and needs in the next few years. Previous planning efforts include the 2016 Coordinated Public Transit Human Services Transportation Plan. It should be noted that there are currently no intercity bus services such as Greyhound or Megabus servicing Mercer County. **EXHIBIT 41** shows the transit ridership by mode between SVSS and MCCT for Fiscal Years (FY) 2017 through 2021. The COVID-19 pandemic has had dramatic negative impacts on ridership for Mercer County and other transit providers throughout the nation.

Exhibit 41 – Transit Ridership by Mode

Total Ridership by Transit Mode

	Shared Ride (MCCT)	Fixed Route (SVSS)
FY17-18	92,101	82,599
FY18-19	95,754	83,653
FY19-20	82,218	63,369
FY20-21	61,343	41,132

Exhibit 42 – Shenango Valley Shuttle Service (SVSS Transit Routes)

Sharon, Farrell, Hermitage Service Area

Mercer County LRTP
SVSS Transit Routes

1   0

Miles

Legend

Municipality
Interstate
State Route
Local

Northern
Central
Southern

Express
Courthouse

Bicycle and Pedestrian Network

Mercer County is home to many natural and recreational amenities such as Lake Wilhem, Sandy Lake, Lake Latonka, and the Shenango Reservoir. Jamestown in Mercer County serves as a trail town connecting the Shenango Trail with Lake Pymatuning, a regional tourist destination. Greenville could also serve as another trail town for the Shenango Trail. **EXHIBIT 43** illustrates the existing trails in Mercer County, including the John C. Oliver Loop Trail around Lake Wilhem in Maurice K. Goddard State Park, the Kidds Mill Trail and Shenango River Water Trail, and the Trout Island Trail near the Shenango Reservoir. Inactive railroads are also identified as potential Rails to Trails locations.

Sharpsville Avenue Bicycle Lane

Progress has been made in recent years to convert excess road space to cycle tracks and bicycle lanes, such as in the City of Sharon along SR 0518 (Sharpsville Avenue) which extends along Thornton Avenue to Buhl Park. Springfield Township near the Grove City Outlets has also been working to add multi-use pedestrian facilities crossing SR 0208 between hotels and the Grove City Outlets which are a regional tourist destination.

Some boroughs and cities in Mercer County have well-developed sidewalk networks, but the majority of suburban and rural communities currently lack sidewalks, trails, and sidepaths. Studies and planning efforts have been completed in recent years as residents and municipal leaders express interest in walking and cycling for transportation, recreation, and tourism.

Grove City Premium Outlets

Some of the challenges associated with programming bicycle and pedestrian projects includes local municipal engagement and an organized volunteer group who sponsors each trail system. Some municipal leaders are unwilling to accept maintenance agreements and liability exposure for building additional sidewalks and trails.
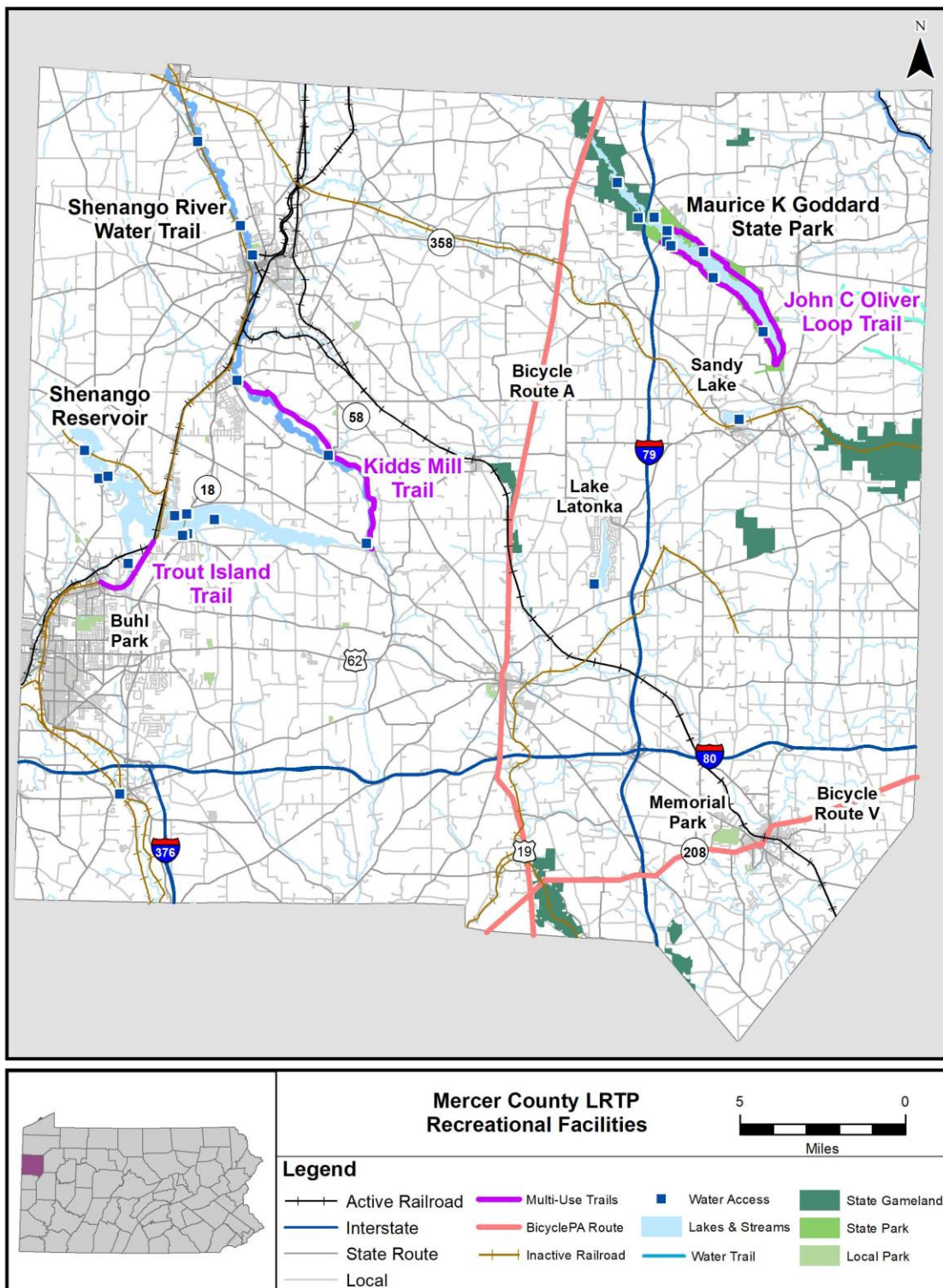
Exhibit 43 – Bicycle and Pedestrian Trail Facilities

Freight

Historically, Mercer County has been a manufacturing hub. While the steel industry has generally declined in the greater region, there are still active manufacturing facilities such as Joy Cone, Werner Ladder, NMLK Steel, and industrial parks located throughout the county in the Sharon flats, Greenville-Reynolds business park, Wheatland industrial area, Cooper's Commons, and other locations. Leaders for these commercial and industrial business parks have been focused on attracting new development to the area.

At the time of the development of this LRTP, PennDOT's draft Freight Movement Plan was under public comment period. The SVATS MPO freight profile includes statistics about freight-related employment (**EXHIBIT 44**). Health care and social assistance, manufacturing, and retail trade dominate the freight-related industries in the county. The plan also includes statistics about the commodities moved in and out of the county (**EXHIBIT 45**). Primary iron and steel products were the top commodities moved both inbound and outbound.

PennDOT's 2016 Comprehensive Freight Movement Plan (CFMP) includes an appendix breaking down the freight data according to Partnerships for Regional Economic Performance (PREP) regions. Mercer County is included in the Northwest PREP region. Based on future projections in the report, total freight tonnages and values are expected to almost double statewide and in each PREP region through 2040. In 2040, the report projects that the Northwest region will move 102,669,947 tons ($110,977,000) in freight into, out of, and within the region.

Exhibit 44 – Employment by Freight Related Industry

Industry	Percentage
Manufacturing	17%
Retail Trade	14%
Transportation and Warehousing	4%
Construction	4%
Wholesale Trade	3%
Healthcare and Social Assistance	21%
Accommodation and Food Services	9%
Mining, Quarrying, Oil and Gas Extraction	0%

SOURCE: 2021 PENNDOT FREIGHT MOVEMENT PLAN (DRAFT)

Exhibit 45 – Inbound and Outbound Commodities (2020)

Inbound	Tons (1000s)	Inbound	Tons (1000s)
Primary iron or steel products	1,451,709.2	Primary iron or steel products	1,701,146.5
Warehouse & distribution center	477,889.6	Processed milk	459,483.4
Dairy products	455,328.6	Gravel or sand	459,443.5
Petroleum refining products	440,340.7	Grain	294,967.1
Gravel or sand	273,128.7	Warehouse & distribution center	269,604.3
Broken stone or riprap	217,950.8	Metal scrap or tailings	211,265.9
Processed milk	106,550.2	Lumber or dimension stock	159,249.5
Primary forest materials	93,706.7	Miscellaneous field crops	129,709.7
Plastic matter or synthetic fibers	82,177.9	Dairy products	99,043.0
Concrete products	73,195.7	Primary lead smelter products	75,222.4

SOURCE: 2021 PENNDOT FREIGHT MOVEMENT PLAN (DRAFT)

Freight Network

The main areas of industrial activity are clustered around the interstates and NHS routes. The NHS in Mercer County was reassessed in 2020. The 2021 Moving Ahead for Progress (MAP-21) federal legislation automatically upgraded any roadway with a functional classification of Primary Arterial or higher to the NHS; as such, some roadways were put onto the network that should not have been eligible and others were not included simply due to their functional classification. FHWA and State DOTs have been working to review and upgrade the NHS designations as appropriate. The Mercer County NHS changes were approved in 2021 which expanded the US 62 NHS designation to I-79 based on its regional proximity to other state routes. This is reflected on the freight map.

The majority of freight in Mercer County is transported by truck, though many cities and boroughs are still tied directly into the railroad system, as most of the settlement in the county developed around significant rail access and rail support industries. The cities of Sharon and Farrell have a major rail yard and industrial corridor surrounding the railroad tracks; other notable rail connections are in Greenville and Grove City, Reynolds Industrial Park, and Wheatland Borough. Canadian National / Bessemer & Lake Erie Railroad and Norfolk Southern have active rail lines in Mercer County. Proximity to rail infrastructure, interstate access, and intermodal facilities broadens the county's access to regional and national markets.

Trucking is largely dependent on the interstate system with more outbound than inbound truck traffic. This is already evident by the amount of truck traffic on I-80 through Mercer County, where trucks comprise nearly 50% of total traffic. Future impacts of interstate dependence include growing congestion, needs for transloading and intermodal facilities, and increased demand for warehousing. With respect to future freight projections, FHWA predicts growth in VMT by single-unit trucks at an average of 2.3% per year to 2049. FHWA attributes this increase to continued growth in construction activity, distribution and delivery of consumer goods, and other economic activities that depend heavily on local trucking. VMT by combination trucks is also expected to increase by 1.6% annually over the forecast period, reflecting the outlook for sustained growth in shipping-intensive sectors of the economy such as U.S. goods manufacturing and international trade. This growth is likely to be seen most intensively on interstates such as I-80 and I-79 in Mercer County.

Freight Bottlenecks

PennDOT's OneMap platform provides data about a range of transportation and infrastructure in Pennsylvania, including Truck Bottleneck Rankings. 2019 OneMap data shows the most severe bottleneck is near the Pennsylvania/Ohio state line on I-80. Other bottlenecks exist on I-80 between I-376 and I-79 and from SR 0173 to the Mercer and Venango county lines. The Sharon and Hermitage areas are home to many of the larger manufacturing facilities, and it is to be expected that trucks traveling to and from those areas would use the western portion of I-80. Bottlenecks are also found on I-79 where it crosses both the northern and southern borders of Mercer County.

During the stakeholder interviews, freight and business development stakeholders discussed the current trends in Mercer County regarding freight movement, warehousing, employment, growth opportunities for new industries, and large vehicle safety. They also identified locations throughout the county that create safety concerns and 'pinch points' for freight movements and other economic activity along SR 0358, and potential sites for development such as I-79 Exit 130, I-80 Exit 15, and Cooper's Commons in Grove City. These are shown in **EXHIBIT 46**.

Exhibit 46 – Mercer County Freight Network
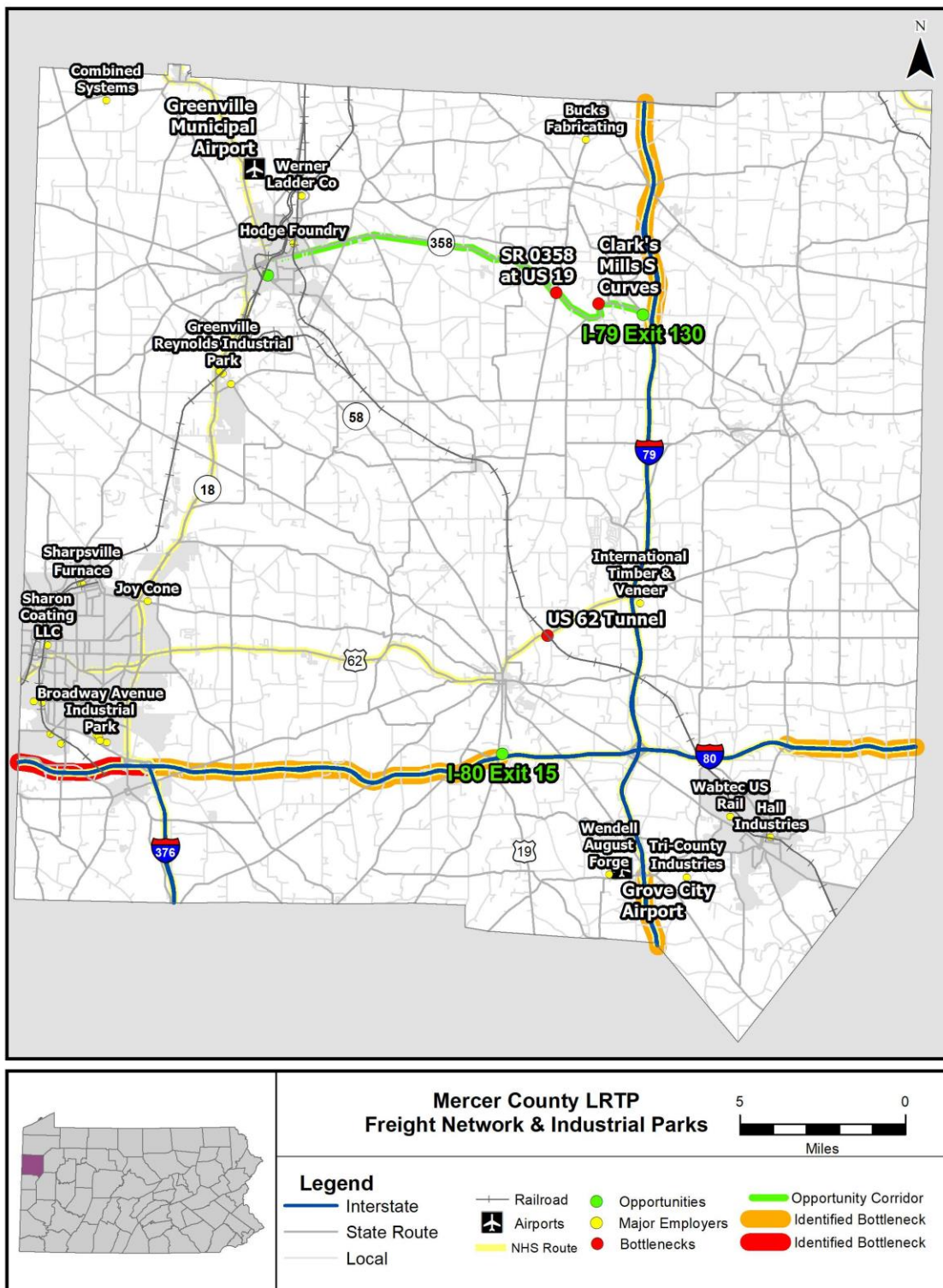
Aviation Facilities

Aviation facilities are a component of the overall transportation system in Mercer County. There are two public use airports in Mercer County, one in Greenville (FAA Identifier: 4G1, **EXHIBIT 49**) and one in Grove City (FAA Identifier: 29D, **EXHIBIT 50**). The Greenville airport is located approximately 3 miles north of Greenville along SR 0058. The Grove City airport is located approximately 0.5 miles west of I-79 along SR 0208 by the Grove City Outlets. The regional tourist destination SkyDive PA also operates from this airport. According to the FAA Traffic Flow System Management Counts system, Grove City airport operations have been growing consistently over the past 5 years, almost doubling their annual operations in 2020 from 2016 (**EXHIBIT 47**). Greenville had between 34 and 102 operations annually in the same period.

There are private airports, recreational aviation facilities, and medical heliports that are not available to the general public scattered throughout the county. International, domestic, and local airports within 90 minutes of Mercer County are reported in **EXHIBIT 48**. Planned investments for both airports are included in Appendix D.

Exhibit 47 – Grove City Operations by Year

Grove City (29D)
Total Departures & Arrivals by Year

Year	Operations
2016	387
2017	394
2018	396
2019	521
2020	736
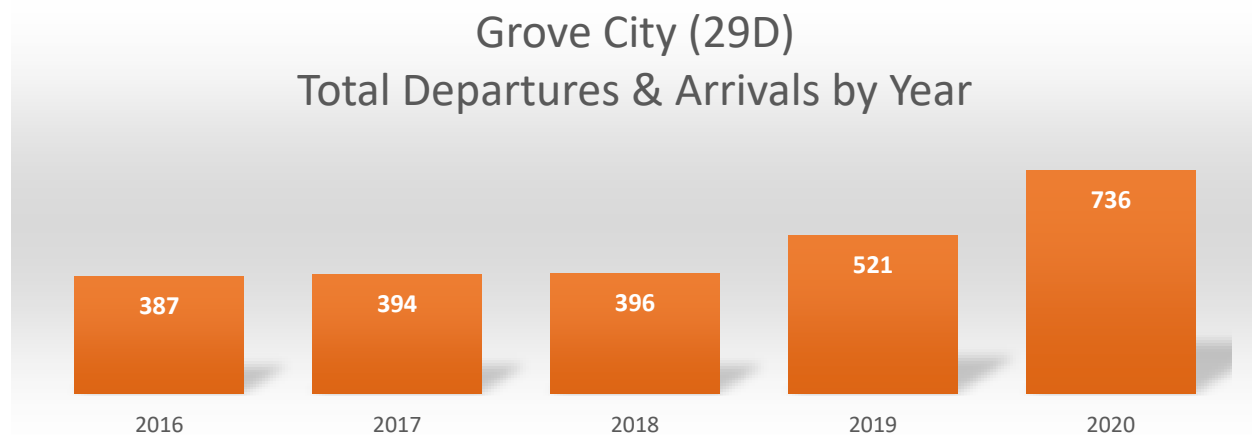
Exhibit 48 – Airports in Proximity to Mercer County

Type	Distance (miles)	Airport Code	Airport Location	Airport Name
International	60	PIT	Pittsburgh, PA	Pittsburgh International Airport
	70	ERI	Erie, PA	Erie International Airport
	100	CLE	Cleveland, OH	Cleveland Hopkins International Airport
Domestic	31	FKL	Franklin, PA	Venango Regional Airport
	37	YNG	Vienna, OH	Youngstown-Warren Regional Airport
	79	LBE	Latrobe, PA	Arnold Palmer Regional Airport
	80	DUJ	Reynoldsville, PA	DuBois Regional Airport
	84	CAK	North Canton, OH	Akron-Canton Regional Airport
	115	JHW	Jamestown, NY	Chautauqua County-Jamestown Airport
	118	BFD	Lewis Run, PA	Bradford Regional Airport
Local	46	BTP	Butler, PA	Butler County Airport
	47	BFP	Beaver Falls, PA	Beaver Falls County Airport
	56	JFN	Jefferson, OH	Northeast Ohio Regional Airport

Exhibit 49 – Greenville Airport Satellite View

Exhibit 50 – Grove City Airport Satellite View
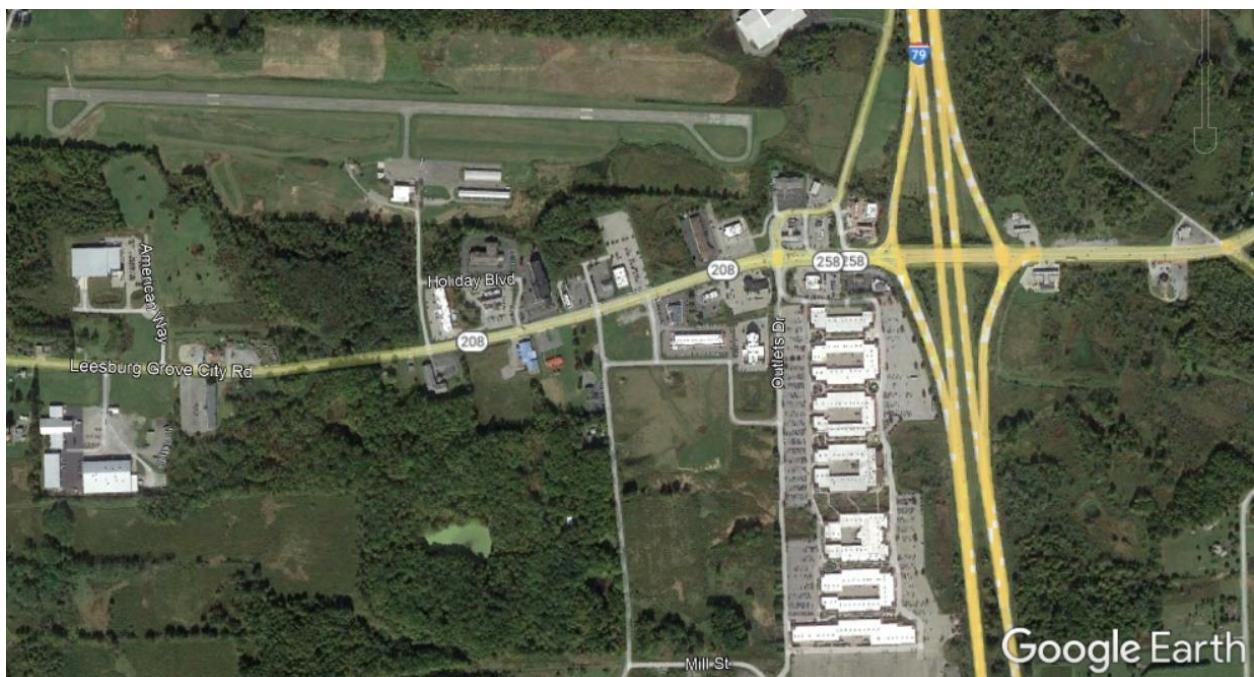
Performance Measurement

Federal performance management and performance-based planning is a critical endeavor from PennDOT and FHWA. Performance measurement is required by the FAST Act (40 CFR 490). The FHWA final rule for performance measures became effective in June 2016. This rule established the statewide and metropolitan transportation process to support these performance measures.

To support the performance management process, data about the condition, deterioration rates, and others are used as tools to identify the status of the current system and then plan for the future, taking action to address issues before they become more costly. There are many sources of data for performance measurement, including the three performance measures (PM) that the MPOs report to FHWA each year: Safety (PM-1), Pavement and Bridge Condition (PM-2), and System Performance (PM-3). FTA also requires Transit Asset Management (TAM) and a transit safety plan and review to be completed.

PM-1 Safety

Safety has been identified as the top priority locally across all modes. SVATS MPO's current safety performance is described in **EXHIBIT 51**. The MPO adopted PennDOT's statewide targets. Currently there are no penalties for missing these targets. The spirit of performance-based planning is to track activities, reflect on those activities, and make changes if needed to increase system performance.

Exhibit 51 – Safety Performance Mercer County

Safety Performance Measure	Statewide Baseline (2014-2018)	Statewide Target (2016-2020)	SVATS MPO Baseline (2014-2018)	SVATS MPO Target (2016 2020)
Number of fatalities	1,182.00	1,171.90	12.8	12.1
Rate of fatalities per 100 million VMT	1.169	1.148	1.095	0.993
Number of serious injuries	3,839.60	4,400.30	51.2	50.5
Rate of serious injuries per 100 million VMT	3.797	4.309	4.379	4.144
Number of non-motorized fatalities and serious injuries	679	781.7	6	5.8

SVATS MPO is aware of the statewide safety improvement targets and will continue to monitor, assess, identify, and prioritize improvements to move further toward a safer transportation system. Thirteen of the 29 projects included on the fiscally constrained highway project list are focused on improving safety on intersections and along corridors. Most recent studies completed (US 62 in 2019, SR 0058 in 2019, I-80 in 2020), ongoing (US 19 at SR 0208 in 2021) and planned (SR 0358) in Mercer County relate to corridor safety improvements. Aside from the highway project listing, the betterment maps identified for bicycle and pedestrian infrastructure, roadway shoulder widening and guide rail upgrades, and low-cost safety improvements will be critical to maintaining and improving safety.

The PennDOT District 1 Safety Manager closely tracks the crash history in Mercer County. **EXHIBIT 52** shows a compilation of the previous five years of crash data (2016-2020). PennDOT has begun using quantitative crash analysis methods to predict the number of expected crashes and then compare that number to actual observed crashes. From this, an "excess cost" is calculated and assigned to each roadway segment and intersection. The "excess cost" data was used in project prioritization. This serves to identify intersections that could be eligible for Highway Safety Improvement Program (HSIP) funding. A safety line item is included in the programming beyond the initial period to account for projects at these locations, and appropriate improvements may be included during routine maintenance, and are shown on safety betterment maps.

Exhibit 52 – Crash History Map
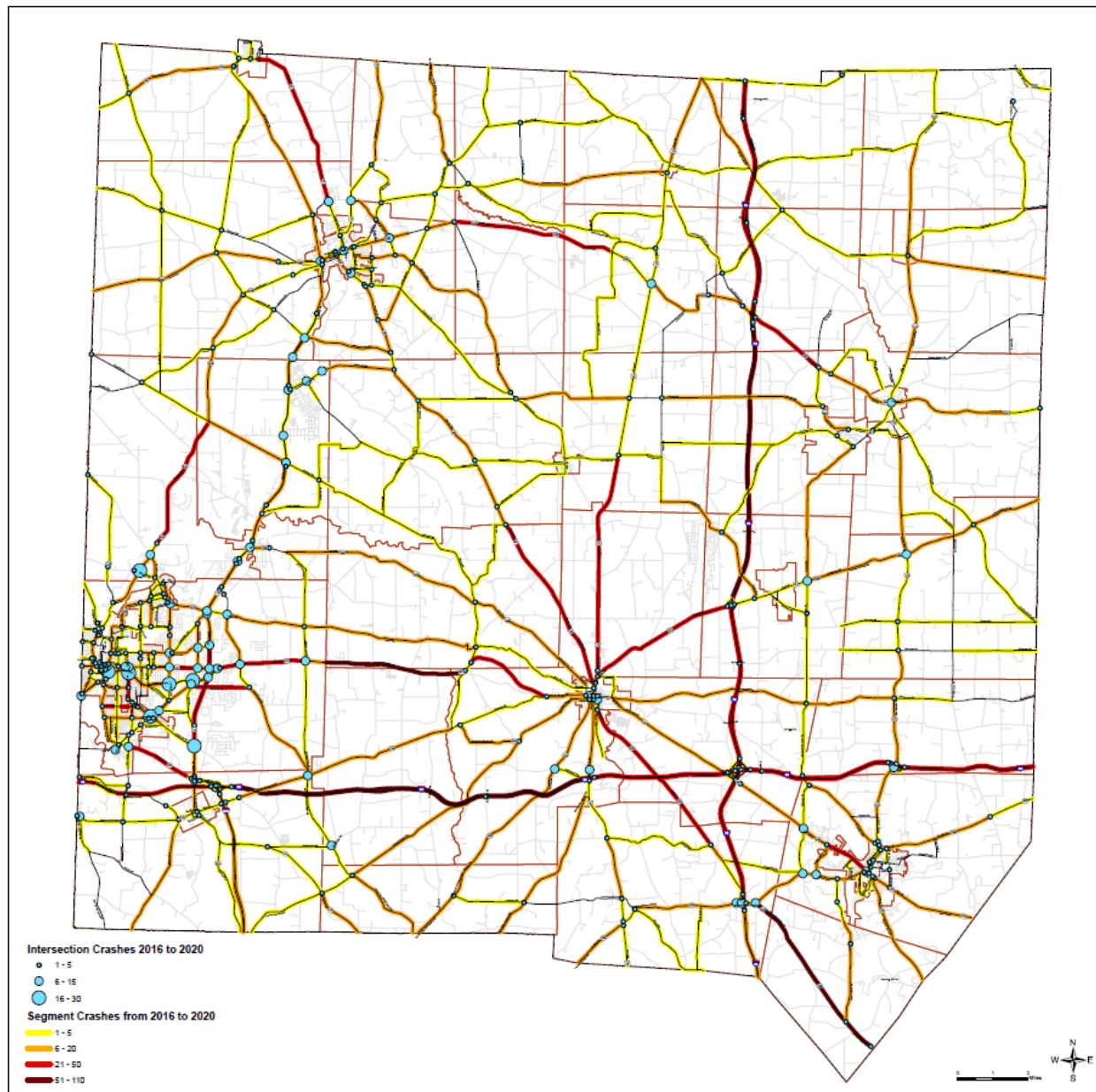
PM-2 Pavement & Bridge Condition

Pavement

A key index of roadway quality is the International Roughness Index (IRI); the index is an annual inventory of pavement quality conducted by PennDOT using specialized equipment that quantifies pavement smoothness. IRI is an expression of the ride quality of the roadway as experienced by vehicle passengers. When it comes to pavement quality, a lower IRI is better. Overall Pavement Index (OPI) is the metric used to measure the overall pavement structure.

PennDOT District 1-0 and Mercer County take pride in their innovative approaches to maintaining their extensive system of roadways and bridges, from pioneering the Recycled Asphalt Pavement process to maintain pavement surfaces on state highways, to its precast bridge program that facilitates rapid bridge replacement. District 1-0 has historically been ranked #1 in the state in pavement quality (IRI) and highly ranked for the lowest number of state-owned poor bridges. **EXHIBIT 53** shows the current interstate system performance and **EXHIBIT 54** shows the non-interstate NHS system performance in Mercer County. FHWA tracks this measure only for Interstate and non-interstate NHS routes.

Exhibit 53 – Mercer County Interstate System Performance

Interstate Routes				
Measure	2017 Baseline	2019 2-Year Target	2021 4-Year Target	2020 Actual
% in Good Condition	67.2%	N/A	60%	95.56%
% in Poor Condition	0.4%	N/A	2%	0%

Exhibit 54 - Mercer County Non-Interstate NHS System Performance

NHS Non-Interstate Routes				
Measure	2017 Baseline	2019 2-Year Target	2021 4-Year Target	2020 Actual
% in Good Condition	36.8%	0.35	33%	53.67%
% in Poor Condition	2.3%	0.04	5%	1.00%

Asset management refers to maintaining the condition of the existing infrastructure. Many tools exist to help PennDOT plan for deterioration of its assets. The Pavement Asset Management System (PAMS) is a tool that takes into account the existing condition and materials of the roadway structure including roadway condition measurements such as IRI and OPI, age, deterioration rates, budget scenarios, and possible treatments. PAMS runs a simulation calculating overall risk and the lowest life cycle cost (LLCC) treatment. 5

This approach to LLCC is a shift from the "worst first" programming methodology, which prioritizes work on the poorest condition assets at the expense of rehabilitation and preventative maintenance on other assets in better condition.   PAMS recommends the timing of each

Freshly Repaved Roadway

treatment. Treatments range from crack sealing and coating, to patching, to mill and overlay, to full depth reconstruction. If a recommended treatment is missed in the timeframe window that it is suggested, other

more costly treatments may be warranted in later years. Therefore it is important to stay as closely on the recommended maintenance schedule as possible when programming roadway rehabilitations. PAMS outputs may change according to data inputs and budget constraints, so these tools should serve as guidance and be regularly monitored and communicated between PAMS administrators, PennDOT Districts, MPOs, and others with maintenance responsibilities. A list of planned Highway and Bridge asset management projects prioritized by PennDOT is included in Appendix D.

Mercer County's current system IRI is shown in **EXHIBIT 55**. Pavement condition was the #2 priority for the public in Mercer County, with local road pavement condition being identified as #1 in need of improvements, more than US and State Routes. Local federal aid roads have great potential for improvement. Coordination with local municipalities and systemwide data collection on local road IRI is critical for diagnosis.

Exhibit 55 – Pavement Condition (IRI)

Mercer County LRTP
Pavement Condition (IRI)

Legend
Interstate
State Route
Local

IRI Rating
GOOD   POOR
EXCELLENT   FAIR
             OTHER
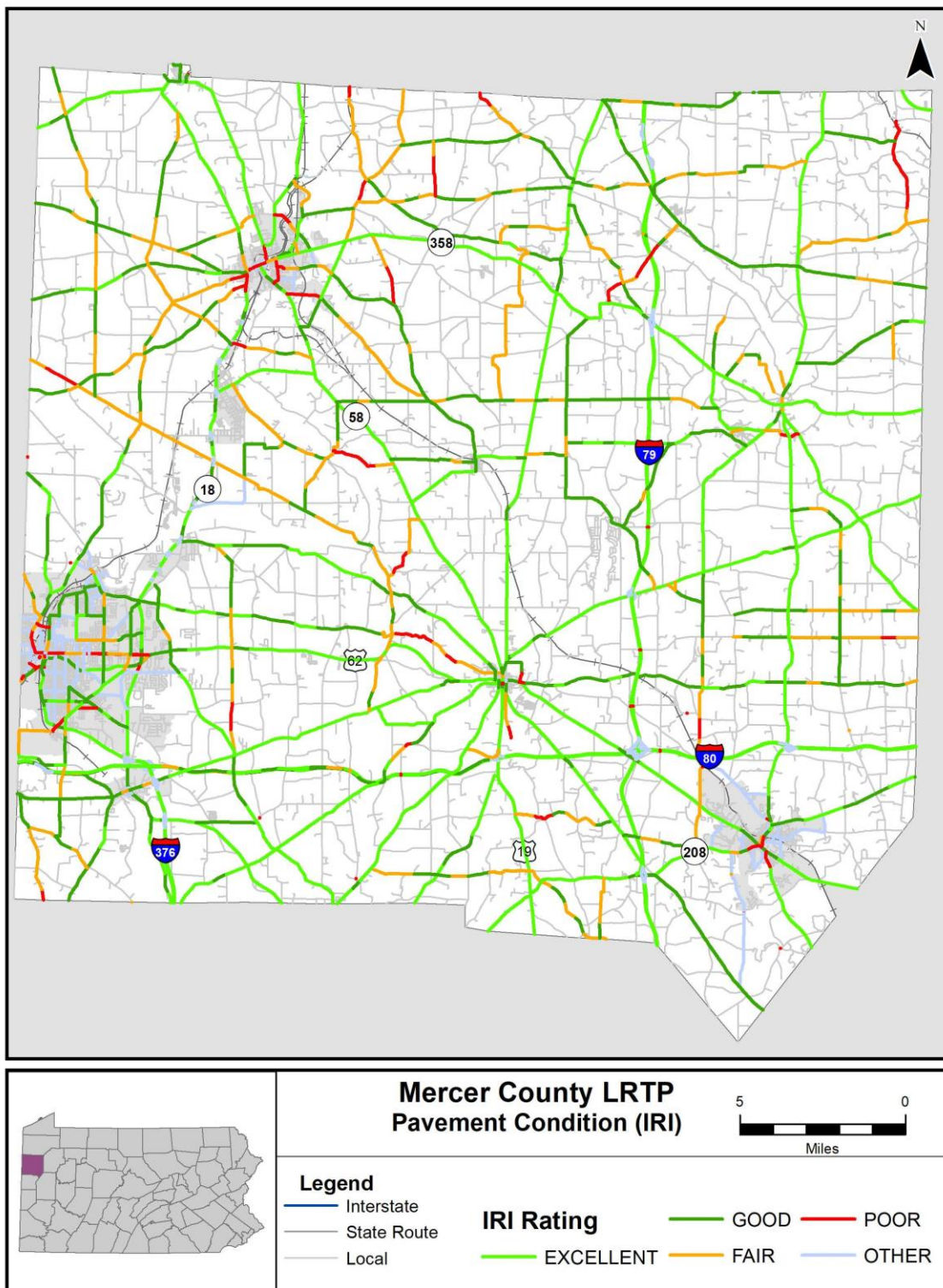
Bridge

There are a total of 591 bridges in Mercer County, 424 are state-owned and 167 are locally-owned. Bridges are inspected regularly and rated from Good to Fair to Poor. It should be noted that bridge condition ratings have changed nomenclature from the prior LRTP where functionally obsolete (FO) and structurally deficient (SD) bridges are now in the "Poor" category. As of July 2021 condition ratings for the state owned bridges, 36% are good, 58% are fair, and 5% are poor. Of the local bridges, 35% are good, 35% are fair, and 31% are poor. It should be noted that "Poor" condition bridges are not an indication of unsafe conditions; poor can be assigned to a bridge that does not meet current design standards. Many locally-owned bridges are reaching their expected design life and the County is pursuing additional funding sources to address these bridges. **EXHIBIT 56** shows the performance of the NHS system bridges in the county, which are part of federal performance measures. **EXHIBIT 57** shows the current bridge conditions across the county.

Exhibit 56 – Mercer County Bridge System Performance

Bridge Measures (NHS)				
Measure	2017 Baseline	2019 2-Year Target	2021 2-Year Target	2020 Actual
% in Good Condition	25.6%	25.8%	26%	26.51%
% in Poor Condition	5.5%	6%	2.25%	0%

The Bridge Asset Management System (BAMS) is a tool that takes into account bridge ownership and maintenance responsibilities, bridge funding and budget expectations, structure types and materials, age, and deterioration rates. BAMS runs a simulation calculating overall risk and the lowest life cycle cost (LLCC) treatments. This approach to LLCC is a shift from the "worst first" programming methodology, which prioritizes work on the poorest condition assets at the expense of rehabilitation and preventative maintenance on other assets in better condition.

BAMS recommends the timing of each treatment. Treatments range from low-cost efforts such as bituminous overlays, epoxy coating, and painting, to component replacement such as the deck, substructure rehabilitation, and superstructure replacement or rehabilitation, all the way up to full bridge replacement. The BAMS tool was run to a 2045 horizon year using the LLCC treatments. This information was incorporated into the LRTP infrastructure condition prioritization criteria. BAMS outlines how many times work should be done within the LRTP horizon, and the type of work. BAMS outputs may change according to data inputs and budget constraints, so these tools should serve as guidance and be regularly monitored and communicated between BAMS administrators, PennDOT Districts, MPOs, and others with maintenance responsibilities. Interviews were held with the PennDOT District 1-0 Bridge Engineer and Mercer County Bridge Engineer to identify bridge priorities for the transportation system. A list of planned local and PennDOT bridge projects is included in Appendix D.
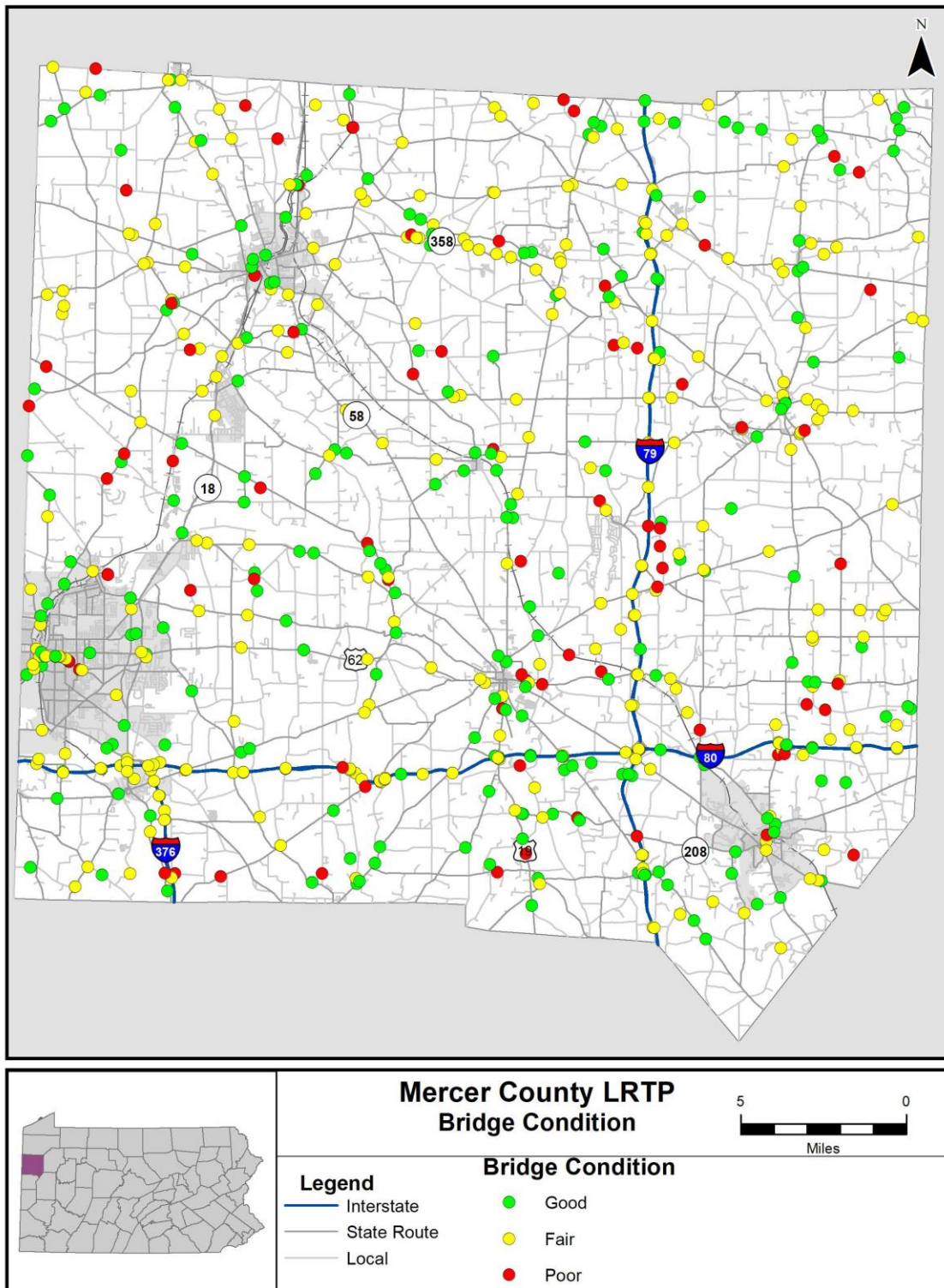

Ohl Street Bridge in Greenville

Bridge Deck Deterioration

Exhibit 57 – Bridge Condition Map

Mercer County LRTP
Bridge Condition

Legend
Interstate
State Route
Local

Bridge Condition
Good
Fair
Poor

PM-3 System Performance

The PM-3 System Performance measures are a reliability index that is a measure of travel time reliability on interstates and non-interstate NHS routes (**EXHIBIT 58**). PM-3 also typically covers air quality but is not applicable to Mercer County as it is in attainment. The travel time reliability statistics are complex and are derived from and calculated by FHWAs National Performance Management Research Data Set (NPMRDS). Three measurements are used to define system performance—two measurements for overall person travel (Interstate and Non-Interstate NHS) and the third is specific to Interstate truck travel, as follows:

- Percentage of person-miles traveled on the Interstate System that are reliable
- Percentage of person-miles traveled on the non-Interstate NHS that are reliable

> Both of these reliability measures reference, "Level of Travel Time Reliability", which is a ratio between a more congested travel time (80th percentile) and a normal travel time (50th percentile). The measure gives the percentage of person-mile travelled on the Interstate or NHS system that is considered reliable. The statistic only considers daytime travel between 6:00 AM and 8:00 PM.

- Truck Travel Time Reliability (TTTR) Index – Interstate System only

> The truck measure references the "Truck Travel Time Reliability Index". The measure compares congested travel time (95th percentile) to normal travel time (50th percentile) on a roadway segment across various times of the day. Then, the TTTR Index is generated by multiplying each segment's largest ratio of the five periods by its length, then dividing the sum of all length-weighted segments by the total length of Interstate.

Mercer County has adopted the PennDOT statewide targets, which call for maintaining the baseline through the 2-Year and 4-Year windows. States are permitted to adjust their 4-Year targets at the 2-Year point.

Supplementary to this performance measure, Mercer County prepares the Congestion Management Process (CMP) plan which was last updated in 2018. The CMP incorporates data from RITIS and other sources to examine the worst corridors for travel time reliability and congestion. That being said, Mercer County is generally less congested compared to other counties and the decreasing population and traffic volumes are helping ease congestion. Signal upgrades and transit ridership also help to reduce congestion. The CMP data was referenced in the project prioritization process to help move forward projects that further decrease congestion. Many LRTP Highway projects are on corridors monitored by the CMP (**EXHIBIT 59**).

Exhibit 58 – System Reliability Performance

Travel Time Targets				
Measure	2017 Baseline	2019 2-Year Target	2021 4-Year Target	2021 New Target
Interstate Reliability	89.8%	89.8%	89.8%	89.5%
Non-Interstate NHS Reliability	87.4%	N/A	87%	-
Truck Reliability Index	1.34	1.34	1.34	1.40

In addition to the federal reporting requirements for interstate and non-interstate NHS, Mercer County regularly tracks the performance of various state and local roads with its Congestion Management Process. The latest CMP was updated in 2018. The CMP looks at data to identify the worst corridors by congestion and reliability. Data collection procedures in support of the CMP have evolved – historically, the CMP was examined through an intensive series of data collection processes such as GPS-enabled floating car travel time runs. In recent years, big data sources such INRIX, RITIS, and Streetlight offer historical travel time information with a high level of geographical and temporal detail. This means that more roadways can be examined as part of the process without significantly increasing the data collection efforts. The CMP includes the three interstates, major US routes such as US 19 and US 62 and many 3-digit arterial state routes, and some local federal aid routes such as Kerrwood Drive and George Junior Road.

The CMP informs the LRTP by influencing project prioritization. Projects that include congestion improvements on corridors with documented poor congestion and reliability as reported by the CMP score higher than those that are on adequate corridors. A map showing the LRTP Highway projects overlaying the CMP corridors is shown in **EXHIBIT 59**. Many highway projects are on corridors that are monitored by the CMP. These projects along with the signal improvements listed on the signal betterment maps as recommended by the Mercer County Signal Inventory should improve travel time reliability and congestion throughout the county.

Exhibit 59 – LRTP Projects on CMP Corridors

Mercer County LRTP
CMP Corridors & Highway Projects

5   0
Miles

Legend
Interstate
State Route
Local

━━ CMP Corridor
● Intersection Projects
━━ Corridor Projects
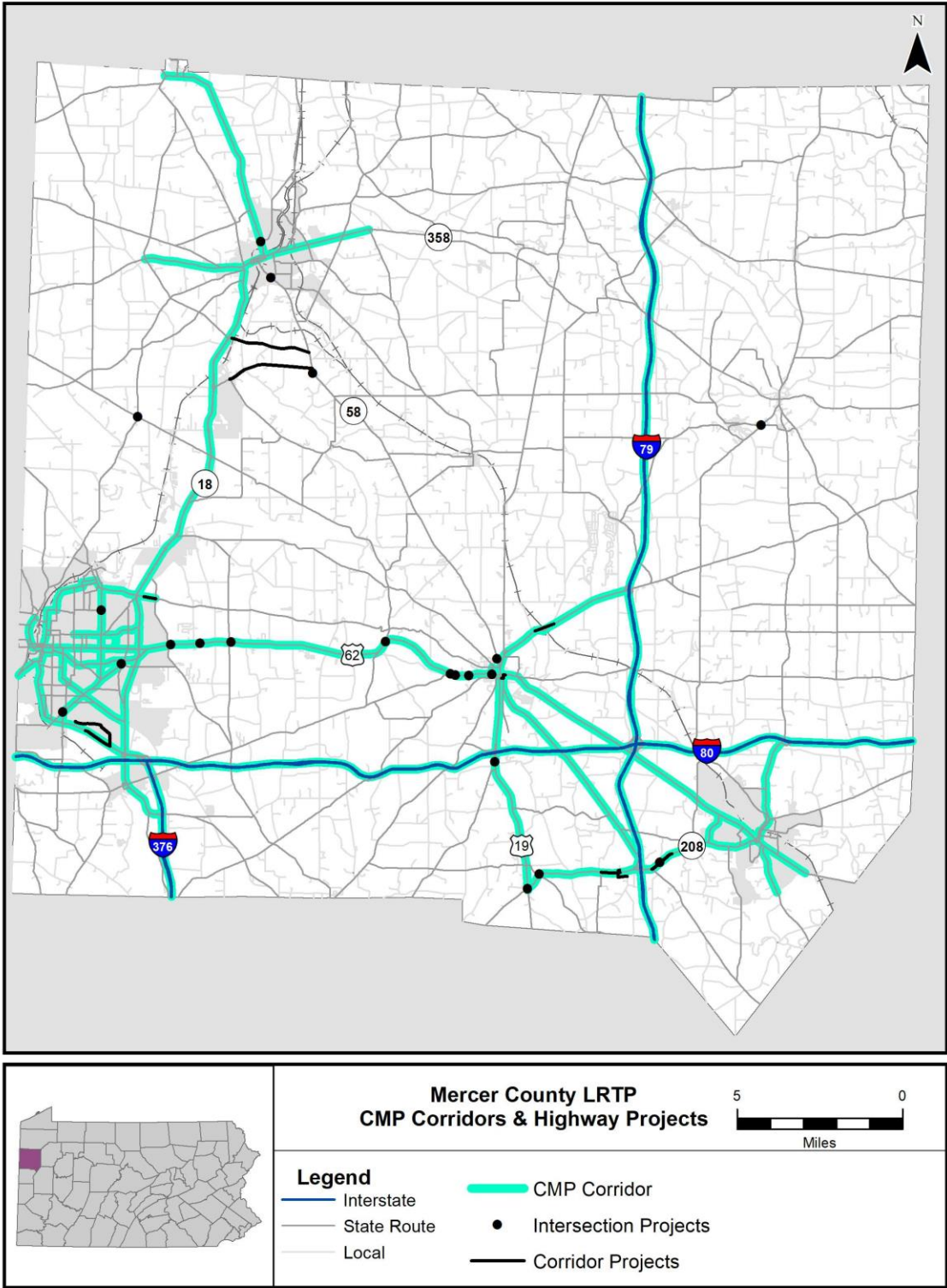
TAM - Transit Asset Management

MCRCOG runs the fixed-route Shenango Valley Shuttle Service, which falls into the Tier II transit performance measures. They are required to report on their rolling stock, equipment, and facilities. The Tier II Transit Performance measures are in **EXHIBIT 60**. The transit TIP is included in Appendix D.

Transit safety is set forth in the Federal Transit Administration (FTA) Public Transportation Safety Program and National Public Transportation Safety Plan. MCRCOG administers the SVSS fixed-route transit and paratransit services. In 2020, MCRCOG developed their Agency Safety Plan (ASP). The ASP includes the Preventative Safety System Program (PSSP) which sets safety performance targets and outlines safety procedures for the organization. There are four main categories of safety measures, with seven targets under each. The main categories are fatalities, injuries, safety events, and system reliability. The safety targets were set in 2021 based on previous years of SVSS safety performance data. The targets were adopted by the SVATS MPO in August 2021 (**EXHIBIT 61**).

The PSSP and safety performance will be assessed annually in July by MCRCOG, where it can choose to set new targets, which the MPO may elect to adopt. MCRCOG will follow the PSSP by communicating regularly with staff, providing training, monitoring best practices, measuring performance, identifying and mitigating hazards, and establishing appropriate rules and regulations to achieve its targets. The PSSP outlines the roles and responsibilities of all staff within the agency to establish a culture of safety.

Exhibit 60 – Tier II Transit Performance Measurement

Transit Performance			
Performance Measure	Asset Class	Current Performance	FY 2020-2021 Target
Rolling Stock (Revenue Vehicles)			
Age - % of revenue vehicles within a particular asset class that have met or exceeded their Estimated Service Life (ESL)	AO - Automobile	15%	16%
	BR-Over-the-road Bus	--	12%
	BU - Bus	18%	29%
	CU - Cutaway	44%	42%
	VN - Van	62%	64%
	SV - Sports Utility Vehicle	75%	17%
Equipment (Non-Revenue Vehicles)			
Age - % of non-revenue/service vehicles within a particular asset class that have met or exceeded their ESL	Automobiles	39%	46%
	Other Rubber Tire Vehicles	100%	50%
Facilities			
Condition - % of facilities with a condition rating below 3.0 on the FTA TERM scale	Administrative / Maintenance Facilities	26%	30%
	Passenger / Parking Facilities	20%	83%

Exhibit 61 – Transit Safety Performance Measures

Area	Fatalities		Injuries		Safety Events		System Reliability
	Total	Rate	Total	Rate	Total	Rate	
Mode	Events	per vehicle revenue mile	Events	per vehicle revenue mile	Events	per vehicle revenue mile	Miles between Major Mechanical Failures
Fixed Route	0	0 per 100,000	1	1 per 100,000	1	1 per 10,000	9,800
Paratransit	0	0 per 100,000	1	1 per 100,000	1	1 per 10,000	60,000

Local Performance Measurement

In 2016, the Mercer LRTP introduced a report card for self-assessment on a voluntary basis. The report card categories are tied directly to the goals and objectives established locally and are intended to be used by the MPO to drill down further than the state and federal performance measures to assess how recent projects have helped the county achieve its goals. **EXHIBIT 62** summarizes the result of this assessment.

In most categories, the MPO has met or exceeded its goals. As this was a voluntary self-assessment, there are no penalties for not meeting a target. The locations that did not meet the targets are being monitored. This helps to identify locations where further coordination needs to happen. Key findings are as follows:

- As a result of this assessment, further coordination with the safety unit at PennDOT District 1 was conducted regarding the specific locations of crash assessments that showed a slight increase in the near-term. It is believed that driver behavior patterns are the cause of the increase in crashes, but more years of crash data need to be collected to evaluate outliers in crash patterns.
- Pavement quality is slightly down since 2016 in general but is still in overall good condition. PennDOT is moving towards a LLCC structure. This means in some years the IRI may drop, but it is the best investment strategy for pavement performance.
- The intergovernmental training on stormwater maintenance has been coordinated on an ongoing basis with interested municipalities rather than an annual training.
- PennDOT has replaced the Linking Planning to NEPA (LPN) forms with the PennDOT Connects form which must completed for every project.

Overall, the MPO and PennDOT worked together to score well on this voluntary report card. The MPO also has the opportunity to review and assess its own targets for the next five years and choose to be more or less aspirational. The revised report card is included in Appendix B.

Exhibit 62 – LRTP Report Card Assessment

SVATS MPO LRTP Report Card - Monitoring Performance		Current (2017-2021)	
		Goal	Actual
Quality of Life			
Safety and Security	Number of HSIP-funding applications or safety improvement projects implemented, number of Roadway Safety Audits	5	13
	Total crash rate, fatality, or serious injury accidents reduced where enhancements were made	Yes	Progress
Improve Mode Choice and Inter-Governmental Cooperation	Number of roadway betterment and new construction projects that include sidewalks and bicycle amenities	5	8
Access to Natural Resources, Improving Mode Choice, Recreational Opportunities, and Vibrant Spaces	Number of TA, STU, and Multimodal Transportation Fund application that directly impact mode choice, recreational opportunities, and revitalization	5	22
Environmental Stewardship	Percent of Planning projects with Linking Planning to NEPA (LPN) forms completed	-	PennDOT Connects Completed
	Number of projects with coordination between multiple agencies (MCRPC, PFBC, PHMC, DEP, DCNR, etc.)	5	All

Exhibit 62 – LRTP Report Card Assessment (Continued)

SVATS MPO LRTP Report Card - Monitoring Performance		Current (2017-2021)	
		Goal	Actual
Economic Vitality			
Travel Time Reliability and Access to Local, Regional, and National Markets	Congestion Management Process plan to monitor travel time along congested roadways to maintain/improve travel time reliability and congestion, updated quadrennially	1x	1
Improving Mode Choice to Regional Travel	Plan developed and projects implemented to improve non-automobile access to intercity travel options (i.e., Coordinated Services Plan, re-establishment of intercity bus stop)	Yes	Yes
Access to local, regional, and national markets	Number of plans or projects related to freight movement completed	2	2
Improving Recreational Opportunities and Connecting Tourist Destinations	Prioritization scheme developed for regional land and water trail system	Yes	To Be Done
	Number of recreational trail funding applications	2	20 MTF applications 2 TA awarded

Exhibit 62 – LRTP Report Card Assessment (Continued)

SVATS MPO LRTP Report Card - Monitoring Performance		Current (2017-2021)	
		Goal	**Actual**
System Preservation and Enhancement			
Project Delivery and Intergovernmental Cooperation	Annual Stormwater Management and Highway Occupancy Permit (HOP) Training for municipal officials conducted	Yes	Support on Ongoing Basis
Pavement Quality	Percent of Systemwide Good or Excellent IRI Values Improving	Yes	No
Bridge Maintenance	Percent of Poor Bridges Improving	Yes	Yes
Project Delivery	Number of LRTP projects completed or programmed	5	8
Intergovernmental Cooperation	Number of issues addressed on the Maintenance / Quick Hit project listing	20	All

Transportation Plan

LRTP, TIP, and TYP

The Long Range Transportation Plan (LRTP), Transportation Improvement Plan (TIP), and Twelve Year Program (TYP) all work together. The LRTP is a 20+ year document, focusing on all modes of transportation, examining the how and the why of each project, and serving as the incubator for new project ideas. The TYP is a 12-year cycle document with a longer-term focus. The TIP is a three-year cycle document, focusing more on the funding and timing of specific project phases. The TIP contains asset management projects as well as capital projects. Mercer County's current TIP is the SVATS MPO FFY 2021 TIP. The MPO develops the LRTP and PennDOT develops the TYP, and both contribute projects that will eventually be programmed onto the TIP and built.

Project Prioritization

Once the LRTP projects were grouped and categorized, the Highway projects were prioritized. In 2016, a comprehensive update of the project ranking framework was undertaken using the Decision Lens tool administered by PennDOT Central Office. Municipal and agency leaders participated in the development of the prioritization framework which was then accepted by the SVATS MPO Coordinating Committee. The Decision Lens model ranks each project based upon categories customized for the LRTP, including safety & security, infrastructure condition, economic vitality, accessibility & mobility, traffic congestion, feasibility, and environmental impacts.

For the 2021 LRTP Update, the overall category weightings were assumed to remain the same, but a number of subitems were enhanced to include new and more data-driven criteria such as incorporating the Excess Cost of crashes for the safety measure, using the Congestion Management Process (CMP) data for the congestion measure, referencing asset management data in the infrastructure condition measure, and including more specific poverty and minority population data for the Environmental Justice measure. Most highway projects retained similar rankings, although some were shifted as projects recommended by recent studies made their way into the listing. A highly ranked project may not be fully funded in the LRTP, because it is assumed to either be assisted by others such as the railroad or private developers, or to be submitted for a competitive funding source. Enhanced project prioritization criteria appear in Appendix C.

Funding Sources

PennDOT releases fiscal guidance annually. The guidance from June 2021 is summarized in **EXHIBIT 63**, highlighting the categories that are regularly available for all activities including the heightened asset management activities. **EXHIBIT 64** shows the percentages allotted to these categories that were assumed to be available for LRTP projects. As Mercer County is in attainment as of 2019, it is no longer receives Congestion Mitigation and Air Quality (CMAQ) funds as were shown in the 2016 LRTP. The funding categories are as follows, typically referred to by these acronyms:

- National Highway Performance Program (NHPP)
- Surface Transportation Program (STP)
- State Highway capital funds (581)
- State Bridge construction (185)
- Bridge Off-System Program (BOF)
- Highway Safety Improvement Program (HSIP)
- Transportation Alternatives (TA Set-Aside)
- Surface Transportation Program – Urbanized Areas (STU)

SR 0062 C.N. Railroad Tunnel

Discretionary funds—known in the past as "spike" funds—along with grant funds (Multimodal, Green Light Go, TIGER, BUILD/RAISE, etc.) are not included in the fiscal assumptions as they are competitive and unpredictable from year to year. Therefore, the project program in this LRTP assumes the worst-case funding scenario. As funding and project costs are clarified, the TIP will reviewed regularly and amended by the MPO to allocate funding, keep projects moving, and add the next set of project priorities.

The asset condition requirements of the FAST Act are redirecting more money towards the Interstate Asset Management program, which shows decreased funding in the NHPP programs. More funding is needed to address infrastructure condition, while less money is made available for other capital or capacity-adding improvements. The MPO programs the entirety of the STU funds, and smaller portions of the NHPP, HSIP, STP funds for LRTP projects. To make the most use of resources, elements from LRTP projects should be considered for inclusion when asset management projects such as repaving and betterments are coming through. Identification here is the first step, further coordination between PennDOT and the MPO is necessary.

The TA Set-Aside is one dedicated source of funding for multimodal projects, coming in at about $41,000 per year. Most bicycle and pedestrian projects must apply for supplemental and competitive funding sources and require engaged project sponsors to shepherd each project through the process.

Exhibit 63 – Yearly Funding by Source from 2026 Onward

**Yearly Funding by Source for Mercer 2026+
Source: 2021 Financial Guidance**

TAP, $41,000 STU, $800,000 NHPP, $670,000
CMAQ, $-
HSIP, $962,000 STP, $2,846,000
BOF, $1,289,000
185, $2,371,000
581, $4,005,000

■ NHPP ■ STP ■ 581 ■ 185 ■ BOF ■ HSIP ■ TAP ■ STU
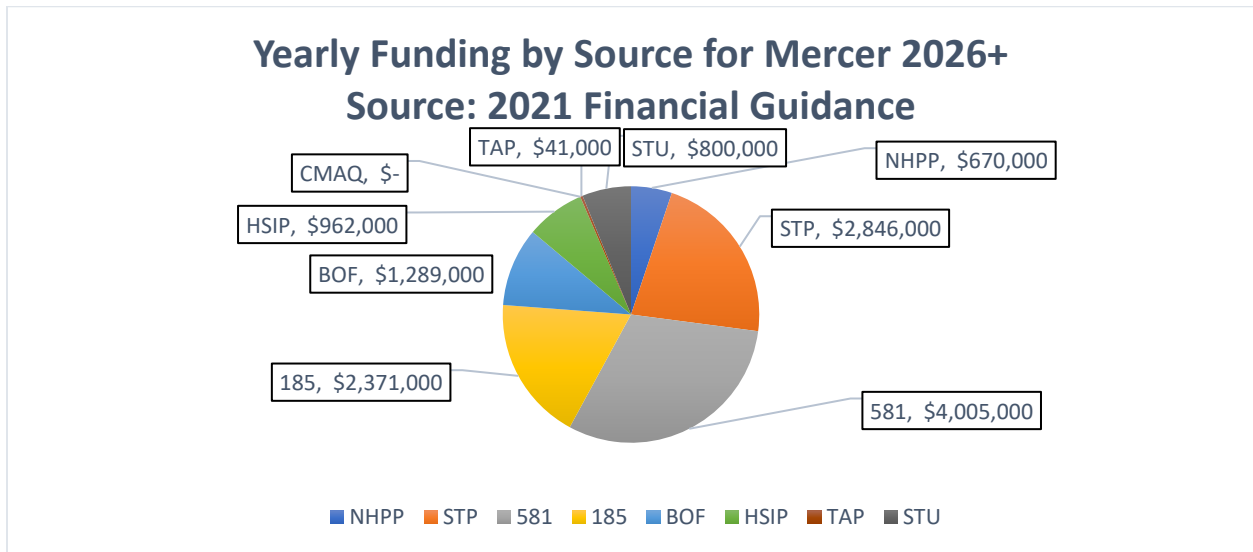
Exhibit 64 - Funding Category Assumptions Available for LRTP Projects

Year	NHPP ($)	STP($)	581($)	185($)	BOF($)	HSIP($)	TA ($)	STU($)
2023	61,400	230,000	0	0	1,289,000	865,800	41,000	800,000
2024	51,850	227,920	0	0	1,289,000	865,800	41,000	800,000
2025	42,700	227,840	0	0	1,289,000	865,800	41,000	800,000
2026	33,500	227,680	0	0	1,289,000	865,800	41,000	800,000
2027								
2028								
2029	201,000	1,366,080	0	0	7,734,000	5,194,800	246,000	4,800,000
2030								
2031								
2032								
2033								
2034								
2035								
2036								
2037								
2038								
2039	435,500	2,959,840	0	0	16,757,000	11,255,400	533,000	10,400,000
2040								
2041								
2042								
2043								
2044								
2045								

Fiscal Constraint

A fiscal constraint was applied using an assumption of yearly funds available to Mercer County over the life of the plan. Cost estimates were prepared for each highway project at a planning level using a percentage of construction cost set aside for Preliminary Engineering (P), Final Design (F), Right-of-Way (R), and Utilities (U). Preliminary engineering and final design were assumed at 7.5% of construction cost, with right-of-way and utilities at 5% each of construction cost. A contingency of 20% was added to the construction cost to account for unknown or unforeseen costs. All planning-level forecasts should be carefully reviewed before moving a project forward to account for new project area information and fluctuations in unit costs.

The programming assumes steady, or "flat" funding levels after 2026 according to the PennDOT's fiscal guidance. The proportion of funding assumed available to program for LRTP projects was decided on through discussions with PennDOT District 1-0; note that availability of funds in certain years is subject to change due to many factors including federal infrastructure funding and unforeseen needs. Inflation in project costs is adjusted for the Year of Expenditure (YOE). Accounting for inflation over future years results in the decreased buying power of the dollars over the life of the plan since the funding remains consistent while construction costs increase with inflation. According to guidance from PennDOT's Center for Program Development and Management, inflation was assumed to be 3% per year compounded over the life of the plan.

Programming Phases

The fiscal constraint groups projects into project-delivery phases in which they are likely to have a funding source: Current, Mid-Range, and Long Range. The "Current" phase represents the Transportation Improvement Program (TIP) which has dedicated funding for four-years from 2021 to 2024, plus two non-TIP years covering 2025 and 2026; the "Mid-Range" phase represents the remainder of the Twelve Year Program (TYP), which covers the years 2027 to 2033; the "Long Range" phase represents the remaining time between the end of the current TYP and the next TYP from 2034 to 2045, which extends beyond the minimum required 20-year planning horizon year of 2041 (**EXHIBIT 65**).

Exhibit 65 – Project Programming Phases

Phase	Years	Additional Information
Current	2021-2024 (Years 1-4) 2025-2026 (Years 5-6)	This phase is the current TIP + 2 years. Projects on this list are occurring at the present time, may have already occurred, or are planned to begin over the next few years. Some studies fall into this category to kick off a list of projects that could be included and resolved in the next LRTP update.
Mid-Range	2027-2033 (Years 7-12)	These are the higher priority projects that will ideally advance to the TIP within the next dozen years. Some projects in this phase are split-funded between this phase and the long range phase.
Long Range	2034-2045 (Years 13-25)	Projects in this phase are supported but will not likely occur within the next 12 years for a variety of reasons including funding, cost, and lower priority through Decision Lens ranking.

Environmental Agency Involvement and Mitigation

Historically the LRTP process has included an Agency Coordination Meeting. However, PennDOT's processes and policies around environmental agency engagement have changed. Agencies are now provided a forum earlier in the plan process rather than at the end. In this LRTP, agencies were interviewed at a stakeholder focus group meeting to gather input and identify areas of concern and opportunities for collaboration.

The MPO works with all agencies to avoid, minimize, and mitigate impacts from projects on the LRTP, TYP, and TIP. The PennDOT Connects process further facilitates the identification of potential impacts of projects early in the conceptual design process so that agencies can be contacted to review and comment on strategies to reduce negative impacts.

All projects are designed and coordinated to minimize and mitigate their environmental impacts. Wetland impacts are the most common form of mitigation requirements. Wetland banking for each watershed will be explored in the Shenango River watershed. The strategies discussed to mitigate potential environmental impacts from the LRTP involve early identification of potential impacts to the environment and communities, tracking threatened and endangered species, coordinating with agencies early on project locations, providing multimodal access, and implementing stormwater and erosion control measures throughout the county.

Threatened and endangered species impacts will be identified and mitigated as deemed appropriate by the Pennsylvania Fish and Boat Commission (PFBC) and Department of Conservation and Natural Resources (DCNR). The project sponsor will work with Pennsylvania Historical and Museum Commission (PHMC) to identify key cultural and historic resources, as well as archaeological sites, and implement advanced mitigation strategies as needed. Additional consideration will be given to decommissioned historical bridges for re-purposing to parks and bicycle and pedestrian trails.

Stormwater and erosion will be addressed by coordination with the County Conservation District, including maintaining erosion control on construction sites, maintaining the existing stormwater systems, providing ongoing support to municipalities and providing communication between involved agencies, and preserving open space in floodplains.

Multimodal connectivity will be improved to bring awareness of environmental issues to the public eye, to reduce vehicular emissions and noise, and to minimize the impact of climate change by meeting EPA emissions budgets through the travel demand forecasting and Air Quality Conformity Process.

There are no projects on the LRTP project listing that will likely be burdensome to low income or minority populations. The projects are generally positive in nature for these populations. A main need heard in the outreach was to enhance non-motorized travel and access for populations that do not have access to private vehicles. MCRCOG is planning to undertake a comprehensive route study.

Air Quality Conformity

The fiscally constrained list of projects is being analyzed by PennDOT's Interagency Consultation Group (ICG) for air quality impacts. The conformity determination process for the SVATS TIP and LRTP likely will demonstrate that these planning documents meet the Clean Air Act and Transportation Conformity rule requirements for the 1997 ozone NAAQS. The air quality resolution for the SVATS MPO 2021-2024 TIP and 2021-2045 LRTP can be found in an appendix of the final document.

Programming

Project Listing

To address all modes of transportation, the project team consulted with airport, district, and local bridge engineers, and transit officials to get their prioritized project listing to complete the list of projects for the LRTP. The LRTP list of projects were a result of stakeholder outreach such as Highway, Bicycle and Pedestrian Projects, Betterments, Studies, local projects, and policies (**EXHIBIT 66**).

PennDOT's Bureau of Aviation (BOA) compiled and updated the project listing for Mercer County's two airports. The BOA develops their own long term planning document which contains a list of projects for eight years into the future. District 1-0's Bridge Engineer and the Mercer County Bridge Engineer provided the MPO with their prioritized bridge lists based on bridge conditions and deficiency ratings and provided costs for upgrades. The MCRCOG oversees the transit operations within the county. MCRCOG staff was asked to provide an updated look at their project priorities. As was the case during the 2016 update, Mercer County's transit agencies do not plan projects past the current phase of their TIP. Most projects are operational costs or minor equipment purchases, which makes projecting several years into the future challenging.

It should be noted that the Airport, Transit, and Bridge projects are in current year dollars, while the LRTP projects are in Year of Expenditure dollars. The prioritized project listing with funding sources and full descriptions can be found in Appendix D.

Roundabout at the US 62 and SR 3008 (E. State Street) Intersection, Completed in 2020

Exhibit 66 – All LRTP Categories

Category	Description
Highway Projects	Projects primarily affecting personal automobile and freight travel that are clearly defined and well developed; many of these projects were recommendations from earlier studies or were a clear solution to an identified concern. These projects aim to improve accessibility, mobility, safety, congestion, and aesthetics.
Bicycle & Pedestrian Projects	Projects primarily affecting bicycles and pedestrians that are clearly defined and well developed; many of these projects were recommendations from earlier studies or were a clear solution to an identified concern. These projects aim to address equity, mobility, recreation, and improve health and expand tourism.
Betterments - Signals - Safety - Bike/Ped	Betterment maps are used to identify locations where amenities are desired such as bicycle or pedestrian elements (widened shoulders, ADA ramps, sidewalks), signal upgrades, and safety improvements. These are identified to be completed, as they do not warrant standalone individual projects. With the emphasis on asset management, these lists can be considered during future roadway improvement or maintenance projects when they occur along the identified routes.
Study	Studies are recommended when groups of comments focus on a particular area, but there is insufficient information to develop a specific project to address the expressed needs of the public and stakeholders.
Policy	Policy statements are more general recommendations for land use, municipal coordination, and improved procedures. For example, one challenge noted was the communication and understanding of the stormwater management regulations and procedures. A policy statement was included to recommend conducting stormwater management and highway occupancy permit training for municipal officials.
Local Projects	These projects were identified by stakeholders and the public along non-PennDOT roadways. These projects were mapped and included in the plan so that they can be incorporated into future municipal planning and project development efforts.

Highway Projects

Highway projects recommended by the LRTP are projects primarily affecting personal automobile and freight travel that are clearly defined and well developed; many of these projects were recommendations from earlier studies or were a clear solution to an identified concern. The prioritized project listing with funding sources and full descriptions can be found in Appendix D. Highway projects are listed in **EXHIBIT 67** and shown in **EXHIBIT 68**.

Not all projects on this listing were able to be fully programmed with the available funding. Those projects are marked with an asterisk in the listing and red on the map to indicate that they are aspirational. Some projects such as LRTP_H23 along SR 0208 and LRTP_H32 along SR 0062 may rely on special or private funding sources to move forward. As new funding sources become available, projects should be considered for development in the order they are prioritized.

Exhibit 67 – Highway Projects

| ID	Project Name	Description
GREEN_D1	SR 0018 College Avenue & Packard Avenue Intersection Improvements	Install improvements to the SR 0018 College Avenue & Packard Avenue intersection near Thiel College including an intersection reconfiguration for better sight distance, reduction of skew, pedestrian crossing, and addition of turn lanes as required
LRTP_H23A*	SR 0208 Two-Way Left Turn Lane from Old Ash to Oakley Kelly Road & from SR 0258 to Pine Township Line	Widening for a two-way left turn lane along SR 0208 as development occurs
LRTP_H1	Broadway Avenue (SR 0760) Phase 4 Truck Improvements	Truck and freight-related intersection and roadway improvements along Broadway Boulevard from approximately Industrial Road through Kirila Boulevard to the interstate ramps
LRTP_H10	Mercer Avenue (SR 0418) at Morefield Road Intersection Geometry Upgrades	Realign intersection approaches to provide a conventional four-way plus intersection to improve sight distance
LRTP_H32*	US 62 Railroad Tunnel Reconstruction	Reconstruction of US 62 railroad tunnel to current specifications and realignment of US 62 to provide better sight distance through tunnel
US62_E3	US 62 at Bestwick Road Turn Lanes and Realignment	Realignment of the Bestwick Road intersection and widening along US 62 to accommodate the addition of a dedicated left-turn lane on US 62 South (westbound); coupled with review and potential modification of the existing 45-55 mph speed limit boundary to shift the transition point to the west of the intersection
LRTP_H13	Mercer Truck Route Improvements on SR 2008 & SR 2011	Truck route improvements such as intersection geometry for ease of diverting trucks eastbound around downtown Mercer through SR 0258 at SR 2008 (Butler Street and South Pitt Street) and Pitt Street/SR 0258 at Market Street/SR 0058

Exhibit 68 – LRTP Highway Projects (Continued)

ID	Project Name	Description
LRTP_H25	SR 0845 at SR 1004 Intersection Reconfiguration, Signal Improvements & Pedestrian Improvements	Improvement of traffic signal and geometry at intersection along with pedestrian amenities for school students to cross safely between points west to the east
US62_B3	US 62 at Robertson Road Turn Lanes	Widening of US 62 at Robertson Road to install dedicated turn lanes
LRTP_H7	Hazen Road (SR 3016) at Buhl Farm Drive (SR 3025) Intersection Improvements	Improvements to Hazen Road and Buhl Farm Drive intersection for congestion, including pedestrian elements connecting the sidewalks on the east side of Hazen Road in Hermitage to new sidewalks along the west side of Hazen Road in Sharpsville
US62_F2	US 62 at Maple Street Traffic Signal with Turn Lanes	Add a traffic signal and widen US 62 to add left-turn lanes in each direction at the Maple Street (SR 0258) intersection
LRTP_H8	Kidds Mill Road (SR 4012) Truck Climbing Lane	Truck climbing lane on Kidds Mill Road to connect the east-west corridor that leads to the Greenville Reynolds Industrial Park from points east along SR 0058
US62_E4	US 62 Center Turning Lane between Autumn Road and Landis Drive	Widening of US 62 to install a two-way left-turn lane (TWLTL)
US62_C6*	US 62 at Neshannock Road Turn Lanes	Widening of US 62 at Neshannock Road to install dedicated turn lanes
SR58_01*	SR 0058 at SR 4011 (Columbia Ave) and T470 (Hamburg Rd) Access Management Improvements	Install pavement markings and delineators, Intersection Control Beacon, and curbing to control access at intersection
LRTP_H31*	Wasser Bridge Road (SR 4003) Reconstruction	Full depth reconstruction and widening of Wasser Bridge Road to improve freight access to Greenville Reynolds Industrial Park
US62_E2*	US 62 Eastbound Climbing Lane to west of Bestwick Road	Widen US 62 to install an additional climbing lane
LRTP_H23B*	SR 0208 Parallel Collector Road & Oakley Kelly Road Realignment	Realignment of the intersection of Collector Road & Oakley Kelly Road for improved access and sight distance
LRTP_H41B*	SR 3015 (Mercer Avenue) Intersection Skew Corrections at SR 0418 Council Street and Grandview Drive	Improvements to reduce intersection skew and improve sight distance at crossroads to SR 3015 Mercer Avenue

Exhibit 68 – LRTP Highway Projects (Continued)

ID	Project Name	Description
US62_A234	US 62 Shoulder Widening with Barrier east of Keel Ridge Road	Widening of US 62 South (WB) shoulder, additional barrier along shoulder, and update of drainage features
LRTP_H15	SR 0846 & Rutledge Road (SR 3022) Intersection Realignment	Intersection realignment to eliminate offset intersection and improve sight distance
LRTP_H23C*	SR 0208 and Pine Road Realignment	Realignment of the intersection of SR 208 at Pine Road to provide more favorable sight distance
LRTP_H9*	Lamor Road (SR 3020) Reconstruction Continuation	Continuation of Lamor Road reconstruction east of the Joy Cone facility
SR58_05	SR 0058 (Seg 0310/0622 to Seg 0310/1402) Kidds Mill Curve Correction	Project to include roadway realignment to address curvature and sight distance issues
SR58_06*	SR 0058 (Seg 530/1489 TO Seg 530/2202) Coolspring Township Turn Lanes	Construct center left-turn lane with an exclusive left turn onto Coolspring Road
US62_D3*	US 62 at Valley Road Turn Lanes and Realignment of Valley Road	Widen US 62 from west of the Valley Road intersection to approximately Kyle Road (T 580) to install turn lanes and wider shoulder to enhance access and sight-distance through the horizontal curve section and realign Valley Road
LRTP_H40A*	SR 0208 and US 19 Intersection Improvements (under Study in 2021)	Improvements to sight distance at the offset intersections *to be determined from study
LRTP_H40B*	SR 0208 and Leesburg Station Road/SR 2002 Intersection Improvements (under Study in 2021)	Improvements to curve geometry *to be determined from study
LRTP_H28*	US 19 at SR 0402 Old Mercer Road Reconstruction	Reconstruction of US 19 to eliminate vertical crest sight distance issues and improve safety for side streets on Old Mercer Road

Exhibit 68 – LRTP Highway Projects

Exhibit 68 – LRTP Highway Projects
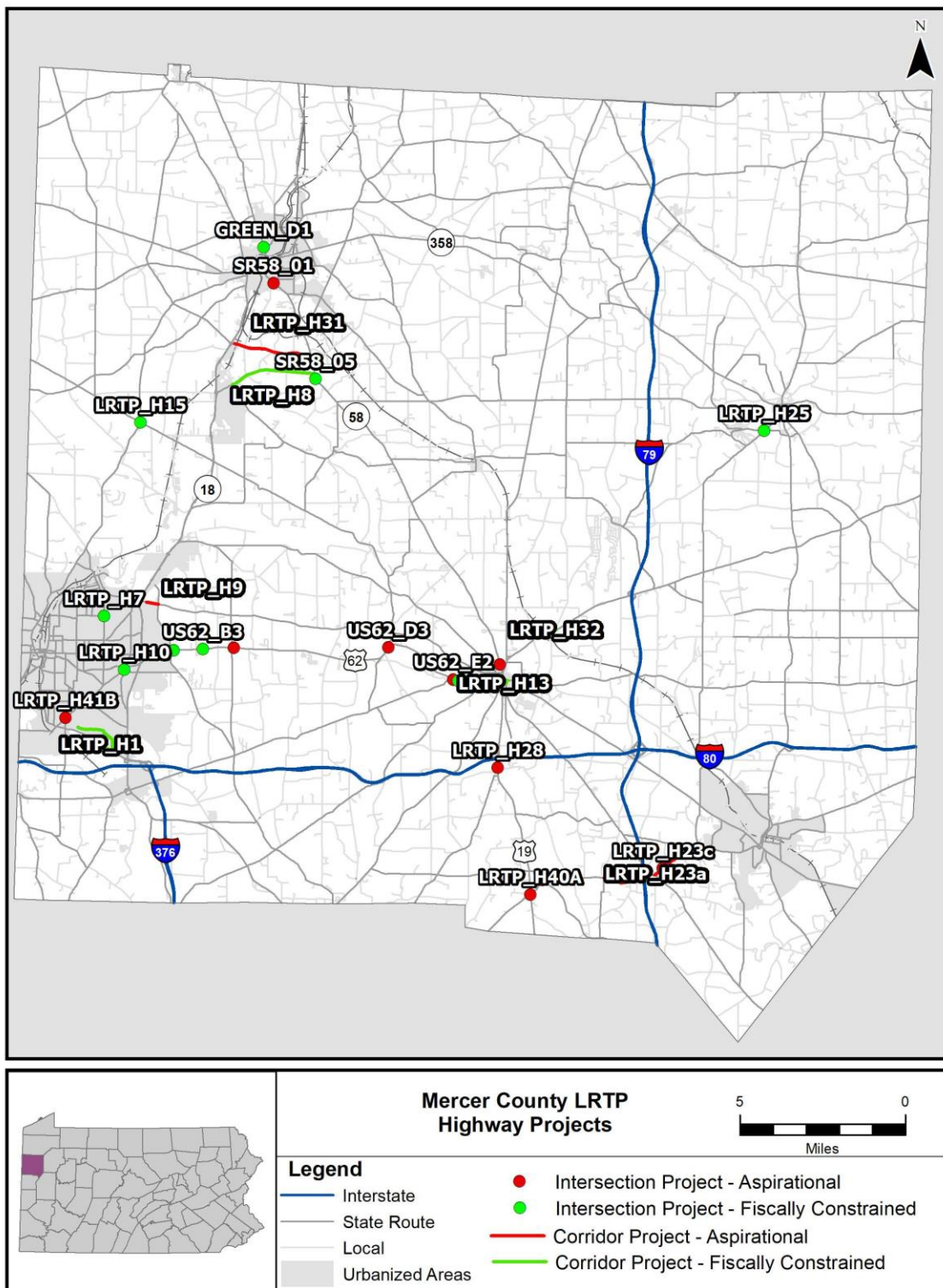
Bicycle and Pedestrian Projects

Bicycle and pedestrian projects were identified. **EXHIBIT 69** is the project listing and **EXHIBIT 70** is the map.

The bicycle and pedestrian project listing has grown significantly since 2016's LRTP. In 2016, there were 12 identified bicycle and pedestrian specific projects. Since then, the Greenville Pedestrian Circulation Study, the Southeast Mercer County Bicycle and Pedestrian Plan, the Hermitage Trails and Sidewalk Priorities Plan, the US 62 safety study, and the public and stakeholder outreach sessions have added to that desired list.

Many more locations were identified in need of widened shoulders, which are on the betterment maps. The direction we are hearing from municipal leaders and the public is more multimodal transportation.

As this list of potential projects grows, it will be imperative for the MPO to establish a group that evaluates and prioritizes each potential project and shepherds it through competitive funding applications. Currently the Transportation Alternatives Program (TAP) funding has $41,000 set aside per year for multimodal transportation improvements. There are millions of dollars of desired improvements, and those should be focused in areas that best serve the populations, connect destinations, and provide safe alternatives to walking on the street. The success of these projects depends on project sponsorship, the communication between agencies to express when improvements are coming through.
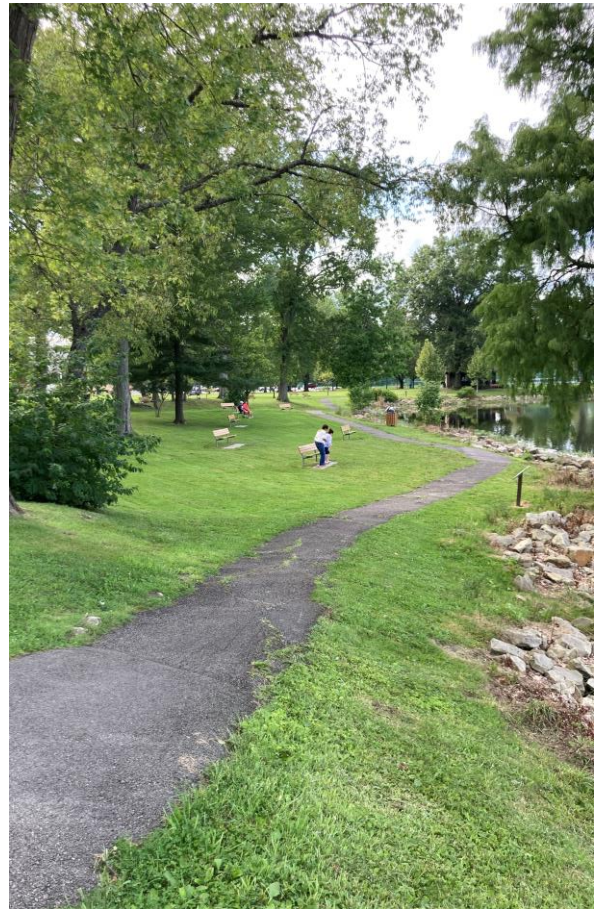
Walking Trail at Buhl Park

Exhibit 69 – Bicycle and Pedestrian Trail Projects

ID	Project Name	Project Description
LRTP_B1	Erie Tow Path and Canal Park Trail Extension	Trail extension connecting the existing ~700 foot length tow path that extends from the parking lot of the Sharpsville Area Recreation Park to the historic Erie Extension Canal Lock #10 around the Shenango River north of Sharpsville along borough-owned land, making a connection to the existing Trout Island Trail which extends approximately 2.5 miles north from the trailhead along the Shenango River
LRTP_B4	Pine Hollow Run Trail	Trail connecting to the Trout Island Trail along Pine Hollow Run in Hermitage
LRTP_B5	Sandy Lake to Stoneboro Trail	Trail connecting Stoneboro and Sandy Lake parks
LRTP_B6	Sharpsville to Sharon Hike/Bike Trail	Trail connecting Sharpsville at Trout Island Trail down to Sharon at Thornton Avenue using abandoned rail bed or onstreet means
LRTP_B7	Shenango Trail	Shenango trail construction within the Mercer County portion of the trail from Greenville to Jamestown, Stone Arch to Depot Street section
LRTP_B10	West Middlesex River Trail	River trail from West Middlesex along abandoned rail corridor
LRTP_B12	West Middlesex Trail by Water Treatment Plant	River trail from West Middlesex starting near the water treatment plant on the east side of the river
US62_D6	Multi-use Trail near US 62 and Darby Road	Multi-use trail installation from Robertson Road to Darby Road
GREEN_E1	Multi-use Trail to Elementary	New multi-use trail from Greenville Elementary School to Hempfield Park
SE_1	Springfield Falls Trail	This alignment primarily utilizes existing abandoned railroad right-of-way to connect Springfield Falls to Old Mercer Road. The trail crosses Perry Hwy. at two locations, once to connect to the Volant route heading south, and then again as it heads north to connect to the Woodland Rd. sidepath.
SE_5	Old Ash Road Connector Trail	This portion of the loop connects the Falls Rd. sidepath to the Spring Rd. connection, as well as terminates at Old Ash Rd. A planned paved trail by Springfield Twp. will connect directly to this route on its eastern tip, just north of the Springfield Falls community building.
SE_33	Volant Connector Trail	The Volant connector trail utilizes the existing abandoned railroad corridor to traverse the Neshannock Creek valley. This southern connection to Volant allows local and visiting trail users to extend their trips to include the many historic and antique shops in Volant, as recommended in the destination analysis.

Exhibit 69 – Bicycle and Pedestrian Trail Projects (Continued)

ID	Project Name	Project Description
SE_37	Watts Lake Trail	As an alternative to the Veterans Rd. sidepath alignment, this off-road trail would avoid the significant grade and right-of-way challenges of that route by traversing the edges of farm fields and some forested areas before joining back to the sidepath at the southern edge of the Outlets.
SE_9	Memorial Park Trail	This alignment provides a connection into and through Memorial park. The southern gateway from SR-208 features a boardwalk before entering the park property. Once in the park, the east fork connects to the high school campus and sidepath, while the west fork follows adjacent to the existing park drive.
SE_26	Vic Hughes Little League Loop Trail	This internal trail circles around the fields of the Vic Hughes Little League Complex, creating an internal loop that allows increased recreational opportunities for those attending or participating in events on the property. This portion is recommended for local funding, as it is a shorter, internal park trail loop.
SE_30a	Memorial Park Southern Gateway Trail	An off-road trail connecting from the southern gateway into Memorial Park across SR-208. The alignment continues as a sidepath along Lake Dr. before cutting east into the Hunter Farms property and the existing network of paved trails that connect and loop around the property.
SE_30b	Greenwood Drive Trail to Memorial Park	Additional connectivity into Hunter Farms is provided from a sidepath alignment along the west side of Greenwood Dr. This route would connect to the residential neighborhoods at Clark St. and then continue north through the Borough property until reaching the junction with the proposed widened sidewalk.

Exhibit 70 – Bicycle and Pedestrian Trail Projects Map

Mercer County LRTP
Bicycle and Pedestrian Trail Projects

Legend
— Interstate
— State Route
— Local
  Urbanized Areas
━━ Bicycle and Pedestrian Trail Projects
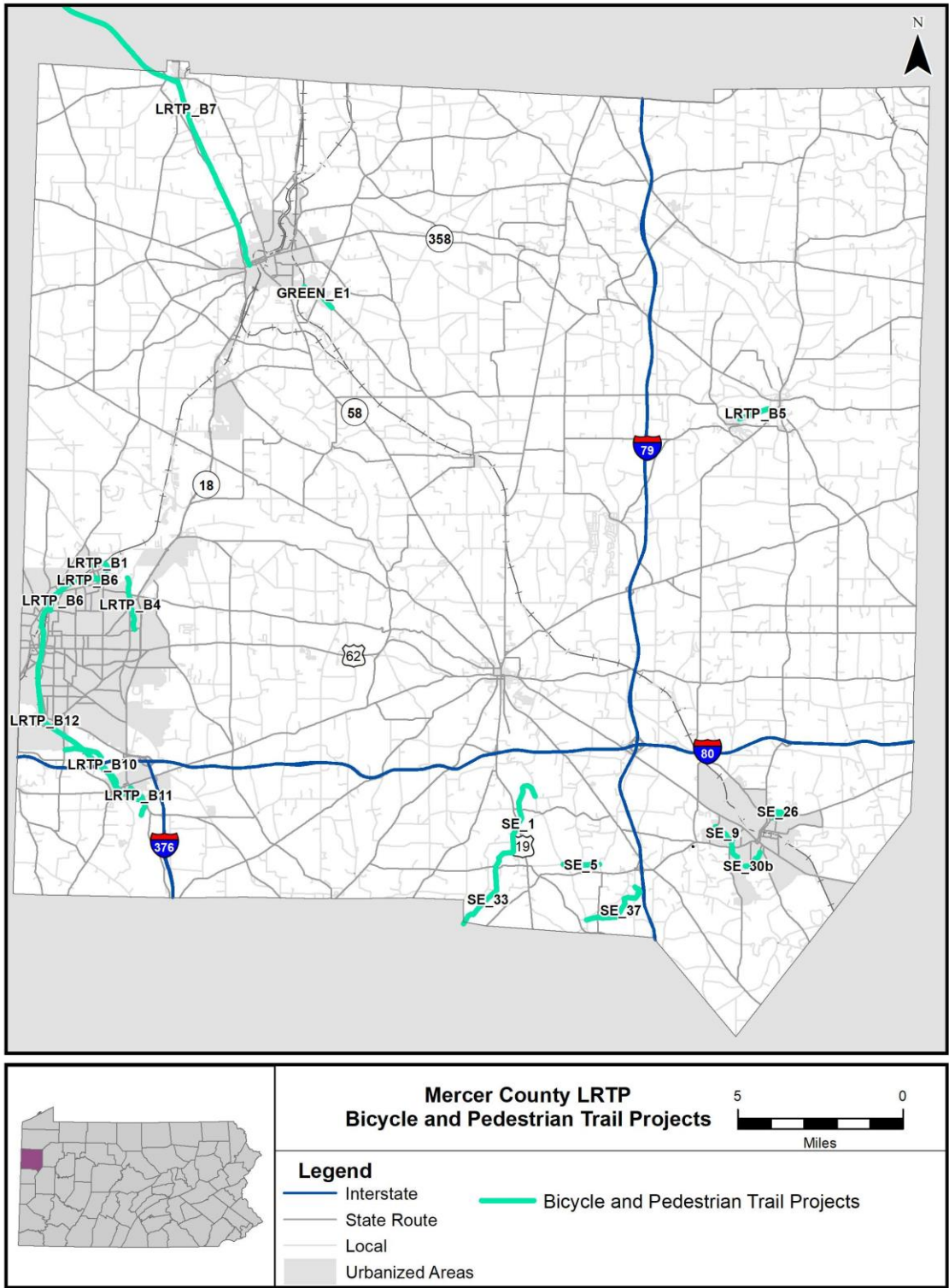
Local Projects

Local projects were identified by stakeholders and the public along non-state-owned roadways. These projects were included in the plan so that they can be incorporated into future municipal planning and project development efforts (EXHIBIT 71). Appended to the local project list are the leftover Highway and Bicycle & Pedestrian projects that were unable to be funded by the year 2042 given the fiscal constraint due to their cost, ranking, and available funding sources; if these projects are desired to be moved forward, reprioritization can take place to examine updated data, and funding could be pursued locally or with innovative partnerships.

Exhibit 71 – Local Project Listing

ID	Municipality	Local Projects
1	West Middlesex Borough	West Middlesex Borough Sidewalks
2	City of Sharon	Budd Street Truck Circulation
3	City of Sharon	US 62 & Spencer Ave Access
4	Grove City Borough; Hempfield Township	Grove City Parking Lot Access Management Plan
ID	Municipality	Highway Projects
3	City of Hermitage	Christy Road Bike/Ped Traffic Calming
9	City of Hermitage	Lamor Road (SR 3020) Reconstruction Continuation
18	Greene Township; Pymatuning Township	Shenango River Boat Launch Parking Lots
31	Hempfield Township; West Salem Township	Wasser Bridge Rd (SR 4003) Reconstruction
32	Coolspring Township	US 62 Railroad Tunnel
ID	Municipality	Bicycle and Pedestrian Projects
2	Sharpsville Borough; City of Hermitage; City of Sharon	Sharpsville to Sharon Hike/Bike Trail
8	Shenango Township; West Middlesex Borough	West Middlesex River Trail
10	Greenville; Hempfield Township	Hempfield Twp Elementary School Bike/Ped Connections
11	City of Hermitage	Pine Hollow Run Trail

Betterments

A roadway betterment consists of surface treatments or corrections to the existing roadway, preferably within the existing right-of-way, to maintain and bring the infrastructure to the current design standards for that classification of highway. This may involve full-depth base repair, shoulder widening, increased lane widths, correction of super-elevation, as well as drainage improvements, guide rail updates, and sidewalks. PennDOT gathers data and assesses pavement condition yearly and endeavors to apply these roadway treatments on a cyclical basis to maintain the roadway surface and underlying base.

As more emphasis is placed and more funding allocated to asset management, it is important to combine routine maintenance projects with desired improvements from the LRTP projects to conserve financial resources. This can best be accomplished by early coordination and communication of desires and cooperation on funding sources.

While betterments are typically done to improve pavement and subgrade quality, they can also be used to bring other facilities up to standards, such as bicycle and pedestrian facilities, signals, drainage, and low-cost safety improvements. During the public and stakeholder outreach and literature review, critical gaps in pedestrian and bicycle infrastructure as well as preferred walking and biking routes were identified. The purpose of these maps is to highlight critical routes so that amenities can be considered for upgrades or new construction when scoping future roadway betterments along the identified routes.

Curbing & Stormwater Upgrades

The betterment maps have been expanded from the 2016 LRTP to include signal improvements (**EXHIBIT 72**), safety improvements (**EXHIBIT 73**), and areas in need of wider shoulders for bicyclists and pedestrians and drainage upgrades (**EXHIBIT 74**). These betterments are not intended to serve as a comprehensive list of locations that may benefit from improvements, only those that were communicated through outreach or existing studies. These can be logged into the PennDOT Connects system so that each project manager is aware of the community's needs during project scoping and development.

Exhibit 72 – Betterment Identification of Traffic Signal Improvements

Mercer County LRTP
Betterment - Signal Improvement Locations

Legend

—— Interstate	○ No Recommendations
—— State Route	● Improvements
—— Local	● Full Replacement
Urbanized Areas	● Full Replacement or Removal
	■ ROP Project
	—— ROP Smart Corridors
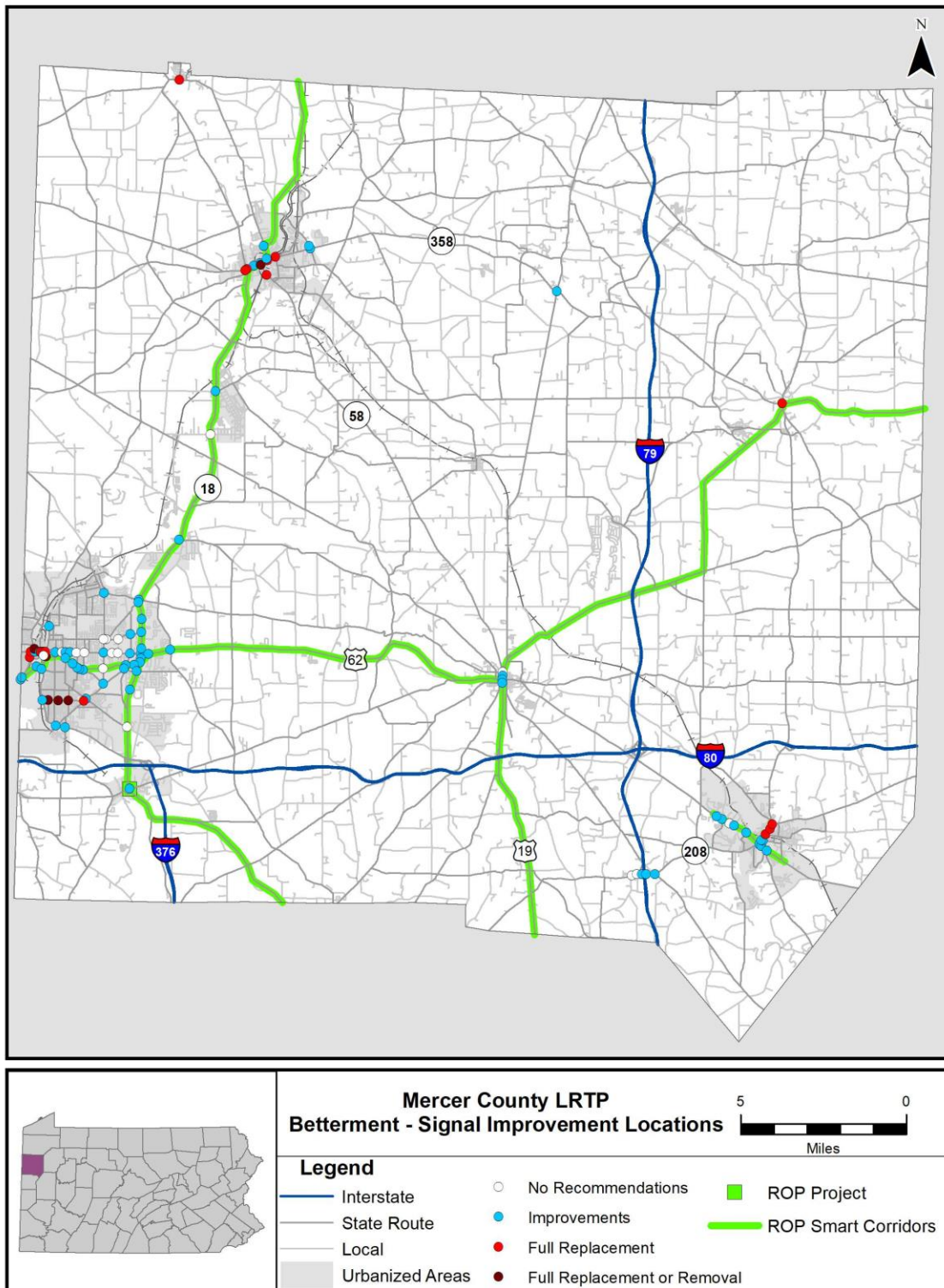
Exhibit 73 – Betterment Identification of Safety Improvement Locations

Mercer County LRTP
Betterment - Safety Locations

Legend

— Interstate
— State Route
  Local
  Urbanized Areas

Cost of Excess Crashes
○ $1 to $100,000
● Over $100,000
— Corridor Safety
● Intersection Safety
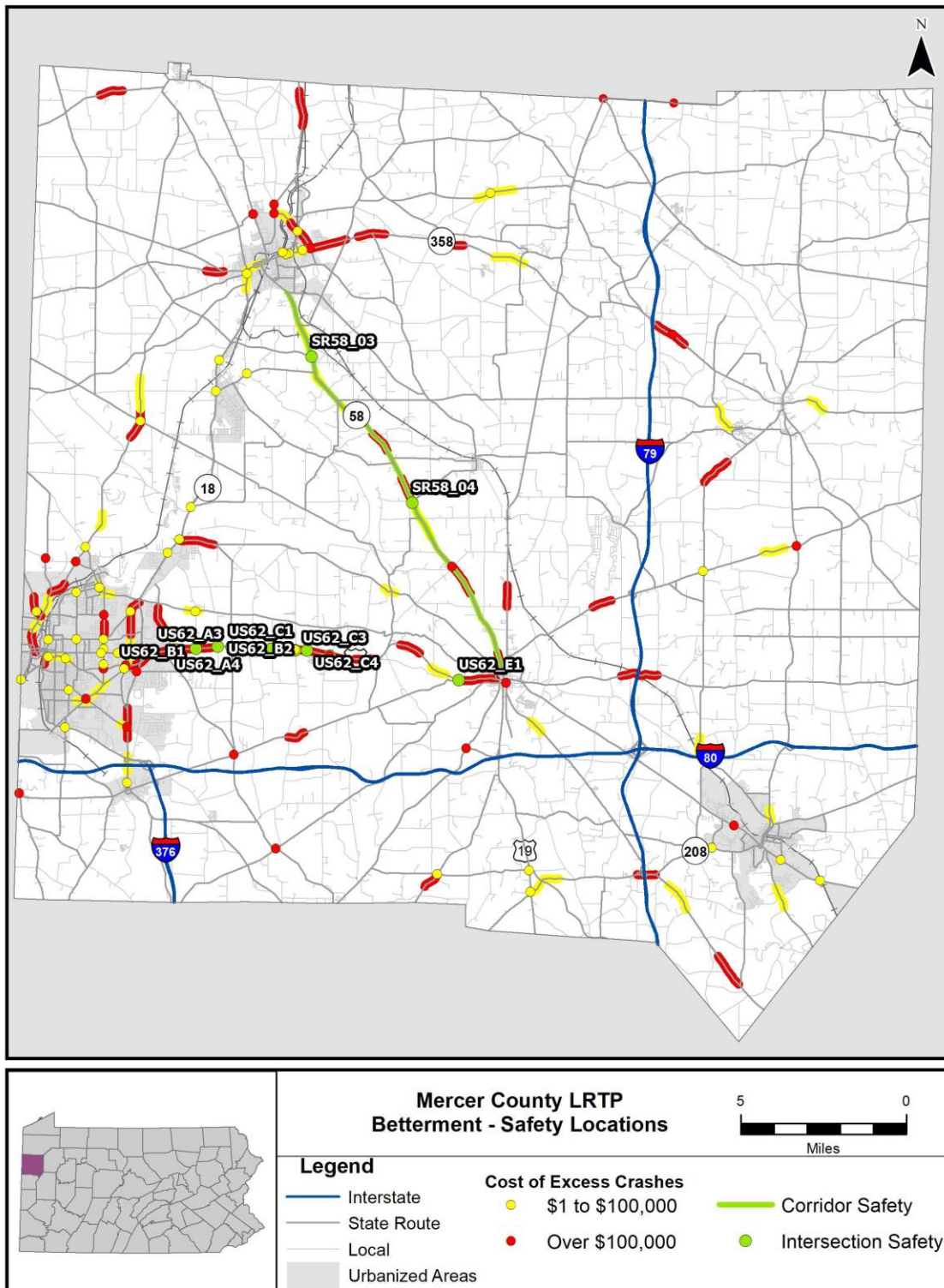
Exhibit 74 – Betterment Key Bicycle and Pedestrian Corridors

Mercer County LRTP
Betterment - Key Bike & Pedestrian Areas

Miles

Legend

— Interstate
— State Route
— Local
 Urbanized Areas

● Key Bike Ped Intersections
— Key Bike Ped Corridors
 Key Bike Ped Areas
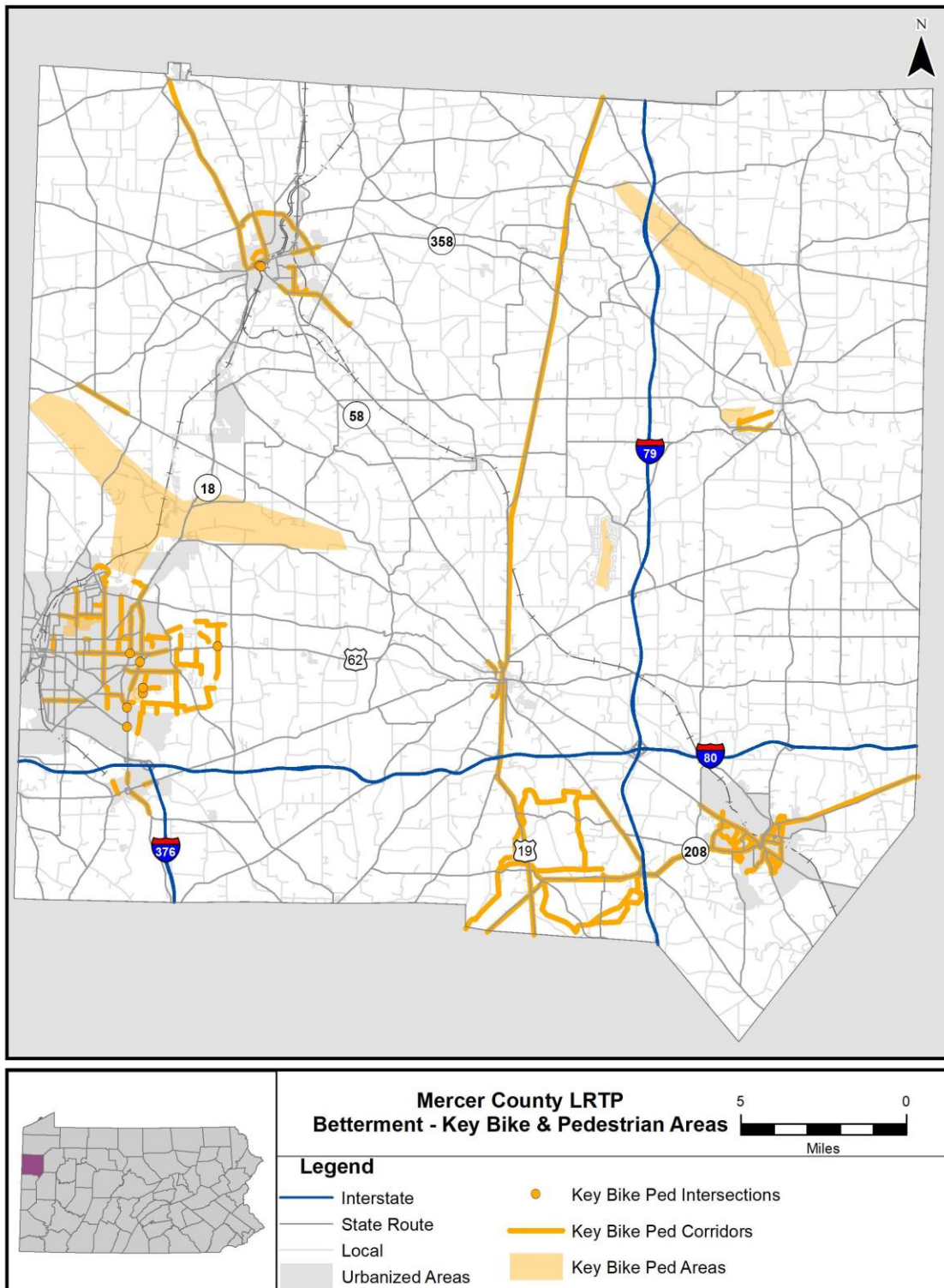
Studies

Planning studies are recommended when groups of comments focused on a particular area, but there was insufficient information to develop a specific project or set of projects to address the needs (**EXHIBIT 75**). For instance, access and safety issues were reported along SR 0358. A corridor study is recommended along the corridor to identify targeted solutions. For this reason, the "SR 0358 Safety Study" was added to the plan so that safety improvements can be programmed in the near term and future years.

Studies are assumed to be financed through avenues such as the Unified Planning Work Program (UPWP); the studies and their recommended projects may move more quickly through the implementation schedule and the remaining line items and studies may be shifted forward.

Exhibit 75 – Studies

ID	Study Name	Study Description	Recommended By
1	Regional Winter Truck Travel Restriction Study	This study would examine truck travel restrictions during the winter and develop infrastructure and maintenance strategies to improve the freight network and accessibility and safety for freight travel in winter months.	Western RTMC Regional Operations Plan 2019
2	Regional Truck Parking Study	This study would examine truck parking infrastructure in both state-owned and private lots, particularly with respect to interstate travel and regional economic development.	Western RTMC Regional Operations Plan 2019
3	SR 0358 Corridor Study	Truck circulation study for the Greenville area, including Reynolds Industrial Park, Wasser Bridge Road, Kidds Mills Road, as well as northeast of Town of Greenville, the Werner Ladder plant and Hodge Foundry, Clarks Mills S-Curves and access to the interstate. At a minimum, specific recommendations from this study should include intersection and roadway improvements and programs to enhance truck and freight mobility and access to industry in the area. Study expanded to include multimodal improvements	SVATS MPO 2016 LRTP
4	Bicycle and Pedestrian Priority Study	A comprehensive evaluation of all recommended bicycle and pedestrian projects in the county, identify project sponsors and funding sources, and develop a plan for pursuing funding for bicycle and pedestrian project implementation. Prioritization framework to be applied to all projects.	SVATS MPO 2021 LRTP
5	C/AV, Freight, and Electrification Study	This study would examine the current infrastructure and develop infrastructure and policy recommendations to support connected and autonomous vehicles and electrification of personal and freight vehicles.	SVATS MPO 2021 LRTP
6	Transit Development Plan (TDP)	The TDP will analyze the need for transit in a defined area, evaluate the services that are provided, and develop strategies to match the service to the identified transit needs.	MCRCOG

Policies

Policy statements are general recommendations for coordination, land use, and improved procedures (**EXHIBIT 76**). Responsible parties may include municipalities, state agencies, the regional planning commission, private entities, and others.

Exhibit 76 - Policies

ID	Responsible Parties	Recommended Policy
1	Municipalities, PennDOT	Coordinate future development along the divided portion of SR 0018 with PennDOT to include modifications to access management, allowing appropriate development while maintaining safety and providing sidewalk infrastructure where appropriate. This may apply to the Reynolds Development area.
2	SVSS, MCCT, PennDOT	Pursue an advertising campaign for SVSS and MCCT to make residents aware of services that are being offered; improve coordination between PennDOT and transit agencies so drivers can be aware of roadway construction and planned detours; develop a plan for bus pull-offs and shelters, particularly considering public private partnerships at establishments such as Walmart to provide shelters on their property; continue to pursue recommendations set forth in the Updated Coordinated Public Transit - Human Services Transportation Plan including regionalization, centralization of information, investments in technology, service maintenance and expansion, continued service to elderly and disabled, and progress monitoring
3	PennDOT, DEP, MCRPC, Private Developers	Encourage the development of electric vehicle infrastructure on public and private property by connecting interested developers with available grants and funding sources through DEP
4	PennDOT, MCRPC	Stay engaged and up-to-date on regional connected and autonomous vehicle initiatives through the Smart Belt Coalition and others; engage and train private developers
5	MCRPC, Municipalities	Provide flexible zoning to encourage diversification of land uses for economic development, discuss contemporary planning issues such as accessory dwelling units (ADUs) for the aging population, enable mixed-use and transit-oriented development to allow people to live, work, and play in the same location, identify strategies for key parcels such as retail centers that are prime for adaptive reuse
6	Hotels, Grove City Premium Outlets, Springfield Township, MCRPC	Determine potential solutions for a private, cooperative shuttle service between Springfield Township near the Grove City Outlets and Grove City Borough, as well as regional destinations like the Pittsburgh International Airport and downtown Pittsburgh. Private shuttle is preferred over a public transportation service due to limitations on the public transportation services competing with private entities operating in this area. Develop an official parking procedure for routing and parking tour buses.
7	MCRPC, Urban Municipalities, MCCAP, SVSS	Develop a framework for the adoption of shared micromobility such as e-scooters and e-bikes as needed; coordinate with other agencies such as Community Action Partnership and SVSS to identify locations that best serve the communities. This working group could be modeled off of the Pittsburgh Mobility Collective group.
8	Pine Township, Grove City Borough, PennDOT, MCRPC	Improve truck routing through Grove City and Pine Township to reduce congestion through downtown Grove City

Exhibit 76 - Policies (Continued)

ID	Responsible Parties	Recommended Policy
9	Town of Greenville, Hempfield Township, MCRPC	Implement the Hadley Rd (SR 0358) / Williamson Rd (SR 4006) access management plan through developer funding to ensure safe and efficient traffic operations as development occurs; pursue the development of a sidewalk network
10	Municipalities, PennDOT, MCRPC	Continue pursuing a Complete Streets Policy at the Hermitage Town Center to improve bicycle and pedestrian accessibility and safety, particularly encouraging developers to align their sidewalks so that pedestrians can continue along an uninterrupted path
11	PennDOT, East Lackawannock Township, Mercer County, Penn Northwest, Private Developers	Advertise the I-80 Exit 15 area for commercial or industrial development; upgrade roadway infrastructure as appropriate to support development
12	PennDOT, New Vernon Township, Mercer County, Penn Northwest, Private Developers	Advertise the I-79 Exit 130 area for commercial or industrial development; upgrade roadway infrastructure as appropriate to support development
13	Multi-Municipal, MCRPC, PUC, Rail Owners	Develop a highway/rail crossing plan to eliminate crossing hazards
14	Jamestown Borough, Town of Greenville, Sharpsville Borough, MCRPC, Mercer County Chamber of Commerce, Visit Mercer County PA, Mercer County Trails Association	Work with trail groups, bicyclist advocacy groups, and municipal officials to develop a trail town marketing strategy to bring economic development benefits and recreational awareness to Jamestown, Greenville, and Sharpsville
15	MCRPC, Mercer County Trails Association, Municipalities, Others	Develop a countywide "Active Transportation Committee" to identify common goals for recreational opportunities, identify trail gaps, review existing studies, develop a prioritization plan for multimodal projects, and champion projects through funding applications
16	Multi-Municipal, MCRPC	Improve coordination between MCRPC, municipalities, and PennDOT for municipal comprehensive plans, the LRTP, and the statewide transportation plan. Continue advancing coordination efforts between organizations, educating partners about internal processes and how each agency operates. Have meaningful conversations about ensuring the transportation planning process is continuing, cooperative and comprehensive (3C). Continue holding quarterly planning meetings with all partners and look for other opportunities to advance this collaboration.
17	Multi-Municipal, MCRPC, PennDOT, DEP, Conservation District	Provide ongoing municipal officials training for stormwater management and Highway Occupancy Permits to clarify the process, introduce appropriate points of contact, and improve cooperation between entities

Exhibit 76 - Policies – (Continued)

ID	Responsible Parties	Recommended Policy
18	MCRPC, PennDOT, Multi-Municipal	Encourage development of escrow accounts for maintaining HOP installed infrastructure such as inlets and traffic signals to alleviate unforeseen cost impacts of maintenance
19	City of Sharon	Pursue economic development along Dock Street through business incentives and freight upgrades
20	Springfield Township, Pine Township, Grove City Borough	Implement access management plan along SR 208 corridor as development occurs through developer funding sources, public private partnership to alleviate congestion and improve circulation and safety in the vicinity of the I-79 / SR 208 interchange
21	MCRPC, PennDOT, Municipalities along US 19	Locate a public place that is willing to host a bus stop and re-establish a regional intercity bus station to bring intercity bus travel (e.g. Greyhound) back to Mercer County. Potential candidate locations for this would be near the interchange of I-79 and I-80 due to its proximity to easy highway access, or somewhere along the existing intercity bus routes along US 19 in Mercer Borough or I-80 Interchange 15
22	MCRPC, MCTA, PMHC, PennDOT Cultural Resources	Develop a plan for prioritized trail segments and coordinate with the Pennsylvania Museum and Historical Commission to repurpose decommissioned bridges into multimodal bicycle and pedestrian bridges or parks
23	PennDOT District 1, MCRPC	Continue to work toward educating the MPO boards and other transportation stakeholders with educational programs about various aspects of transportation planning, programming, components of transportation infrastructure, and the roles and responsibilities of the SVATS MPO
24	MCRPC, Multi-Municipal, PennDOT, Industry Representatives	Work, as needed, at understanding the effects on the transportation system and land use related to new generators of heavy vehicle and freight traffic in Mercer County. For example in emerging industries such as online retail warehousing and distribution or drilling (e.g. Marcellus and Utica shale). This includes examining ground transportation to and from new sites, pipeline and warehouse construction, travel behaviors of temporary workforces, etc.