LEHIGH VALLEY

CONGESTION MANAGEMENT PLAN

LVPC

Lehigh Valley Planning Commission

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This Congestion Management Plan was researched, analyzed, written and coordinated as part of the Metropolitan Planning Organization, per requirements of the US Department of Transportation.

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Introduction

The Lehigh Valley is a vibrant, fast-growing region that continues to attract new residents, businesses, and investment. Its strong economy, strategic location, and high quality of life have made it one of Pennsylvania's most dynamic areas. More people are choosing to live and work here because of strong job opportunities, good schools, and a high quality of life. Growth is a positive sign of a healthy economy. But as more people use the roads, traffic congestion naturally increases. Some congestion is expected in busy areas. However, too much congestion can make it harder to get to work, school, stores, and medical care. It can slow travel, waste fuel, increase air pollution, and reduce overall quality of life. Managing congestion means finding the right balance, i.e., supporting growth while reducing the negative effects of traffic.

Growth drives opportunity, smart congestion management keeps it within reach

Because the Lehigh Valley's population is greater than 200,000, it is classified as a Transportation Management Area (TMA). Federal law requires regions like ours to prepare and maintain a Congestion Management Plan (CMP). Established under the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and expanded through subsequent laws such as Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Moving Ahead for Progress in the 21st Century Act (MAP 21), The Fixing America's Surface Transportation (FAST ACT) and the Infrastructure Investment and Jobs Act (IIJA), the CMP is a core component of metropolitan transportation planning.

The CMP integrates with the Metropolitan Transportation Plan (MTP), Transportation Improvement Program (TIP), and Unified Planning Work Program (UPWP) to ensure coordinated and performance-based decision-making. Under these federal frameworks, MPOs collaborate with state departments of transportation and transit agencies to track system performance.

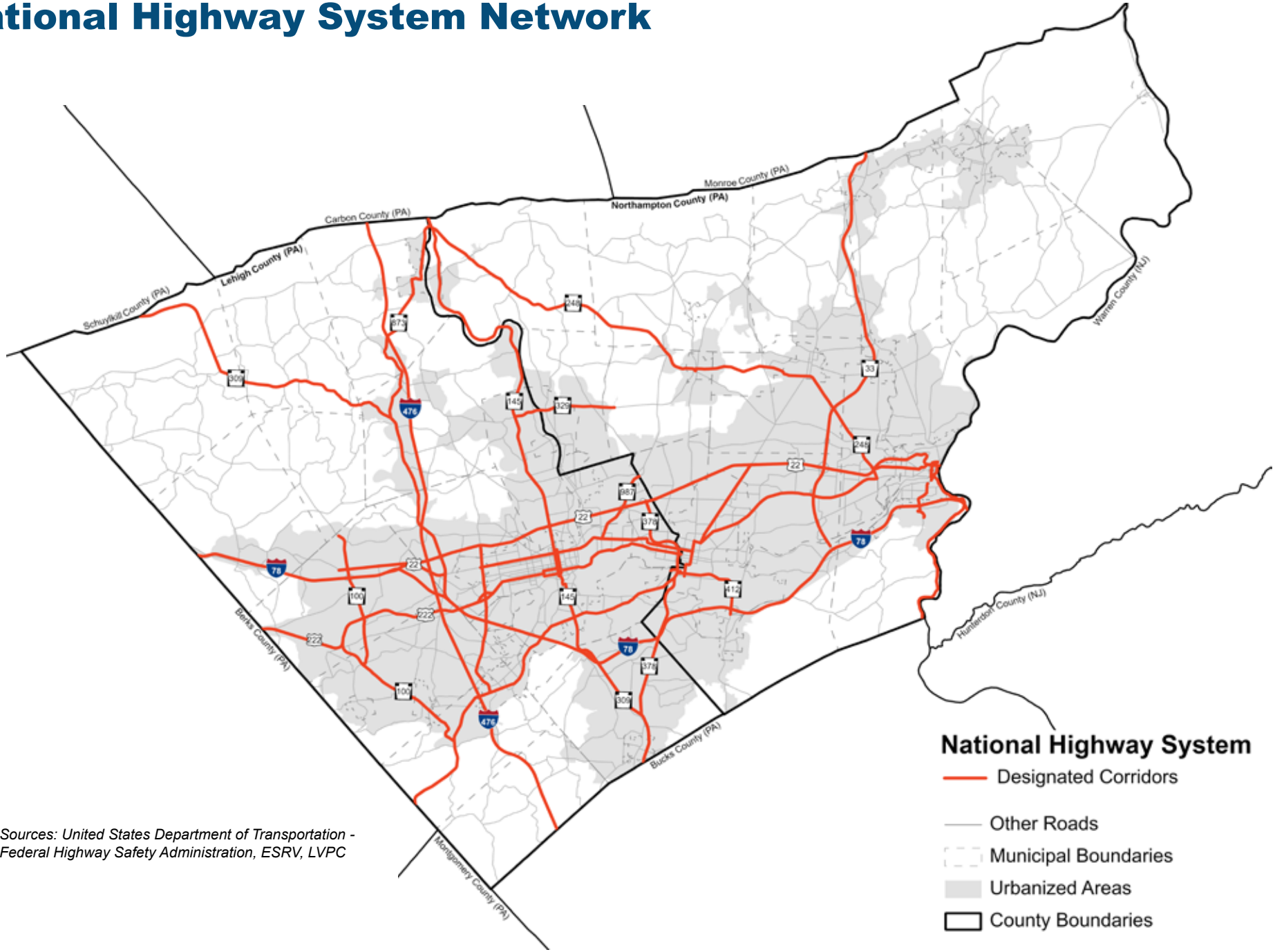
Under U.S. Department of Transportation (USDOT) and Federal Highway Administration (FHWA) performance management requirements, MPOs in TMAs are required to incorporate Performance Measure 3 (PM3) into the CMP to evaluate travel time reliability and congestion on the National Highway System, as well as the local road network. PM3 measures Peak Hour Excessive Delay (PHED), Level of Travel Time Reliability (LOTTR), and Truck Travel Time Reliability (TTTR), which assess the effectiveness of the transportation network for both passenger and freight mobility.

Congestion Management in action— reducing traffic, supporting transit, and keeping everyone connected

The Lehigh Valley Transportation Study (LVTS), housed within the Lehigh Valley Planning Commission (LVPC) creates the CMP to meet federal requirements and improve regional transportation performance. Using traffic and reliability data, it identifies congestion hotspots, analyzes causes, and prioritizes strategies that improve efficiency and safety. These strategies focus on reducing congestion, promoting transit and active transportation, and improving operations before expanding capacity.

The CMP also supports broader regional goals in the MTP, informs planning studies, policy decisions, and funding choices, including the Congestion Mitigation and Air Quality (CMAQ) program. Regular updates and coordination with regional partners allow the LVTS to proactively manage congestion, keeping the region connected, accessible, and economically strong.

National Highway System Network



Sources: United States Department of Transportation - Federal Highway Safety Administration, ESRV, LVPC

Congestion Management Plan Implementation

The CMP is a data-driven framework for evaluating and improving the Lehigh Valley's transportation network. Linking the MTP and the TIP, it uses congestion performance measures, and regional goals to identify and rank congested locations. The plan supports solutions like operational improvements, transit and multimodal options, demand management strategies, freight mobility enhancements, and selective roadway projects.

Linking Goals, Data, and Policy to Improve Regional Transportation

Federal law requires any project that adds single-occupant vehicles (SOV), which is any privately operated motor vehicle occupied solely by the driver with no passenger capacity to demonstrate consistency with the CMP to receive federal funding. Projects must also incorporate multimodal improvements from the earliest design phases and be documented in the TIP for LVTS Technical and Coordinating Committee approval before implementation.

To ensure performance-based decision-making, the CMP integrates federal PM3 measures for travel times and delays. These metrics, along with forthcoming targets for peak hour delays and non-SOV travel (trips made using modes other than a single-occupancy vehicle, such as walking, biking, public transit, carpooling, or ridesharing), support a comprehensive understanding of regional congestion.

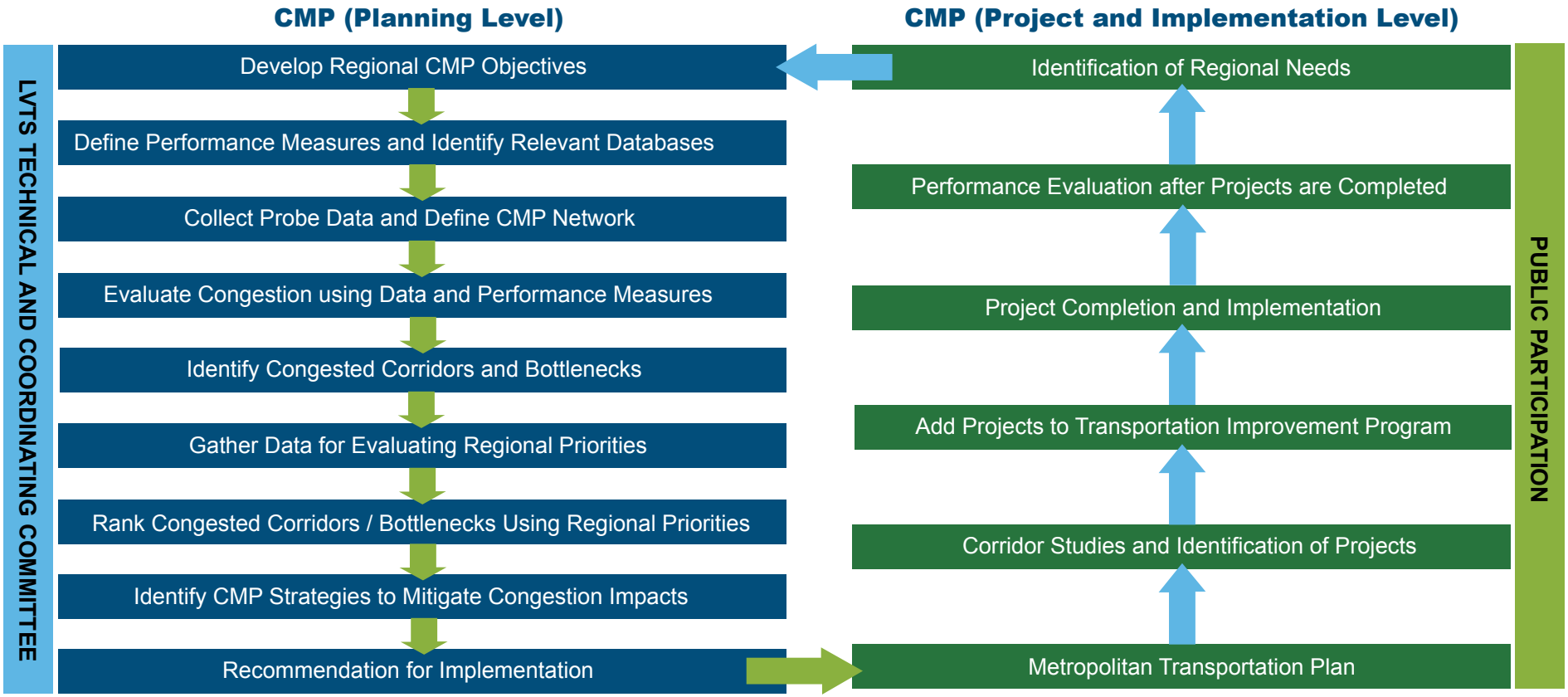
The CMP aligns with the FHWA's national guidance, linking data analysis, policy coordination and multimodal strategies to support an efficient, reliable and sustainable transportation system for the Lehigh Valley.

Federally mandated performance measures are used to identify, rank and visualize congested areas to guide congestion management strategies. These measures are selected in coordination with the LVTS Technical and Coordinating Committees to ensure consistency with regional objectives.

High-priority areas are targeted to improve reliability, reduce congestion, and integrate multimodal options, supporting goals like Vision Zero, infrastructure modernization, connectivity, resilience, and sustainability. Projects are incorporated into the MTP and guide funding, programming, and coordination with FHWA, PennDOT, and local municipalities.

Recognizing the region as a freight hub, the CMP prioritizes efficient goods movement while reducing conflicts with local travel, supporting a balanced, sustainable, and economically resilient transportation network.

Steps to Managing Congestion



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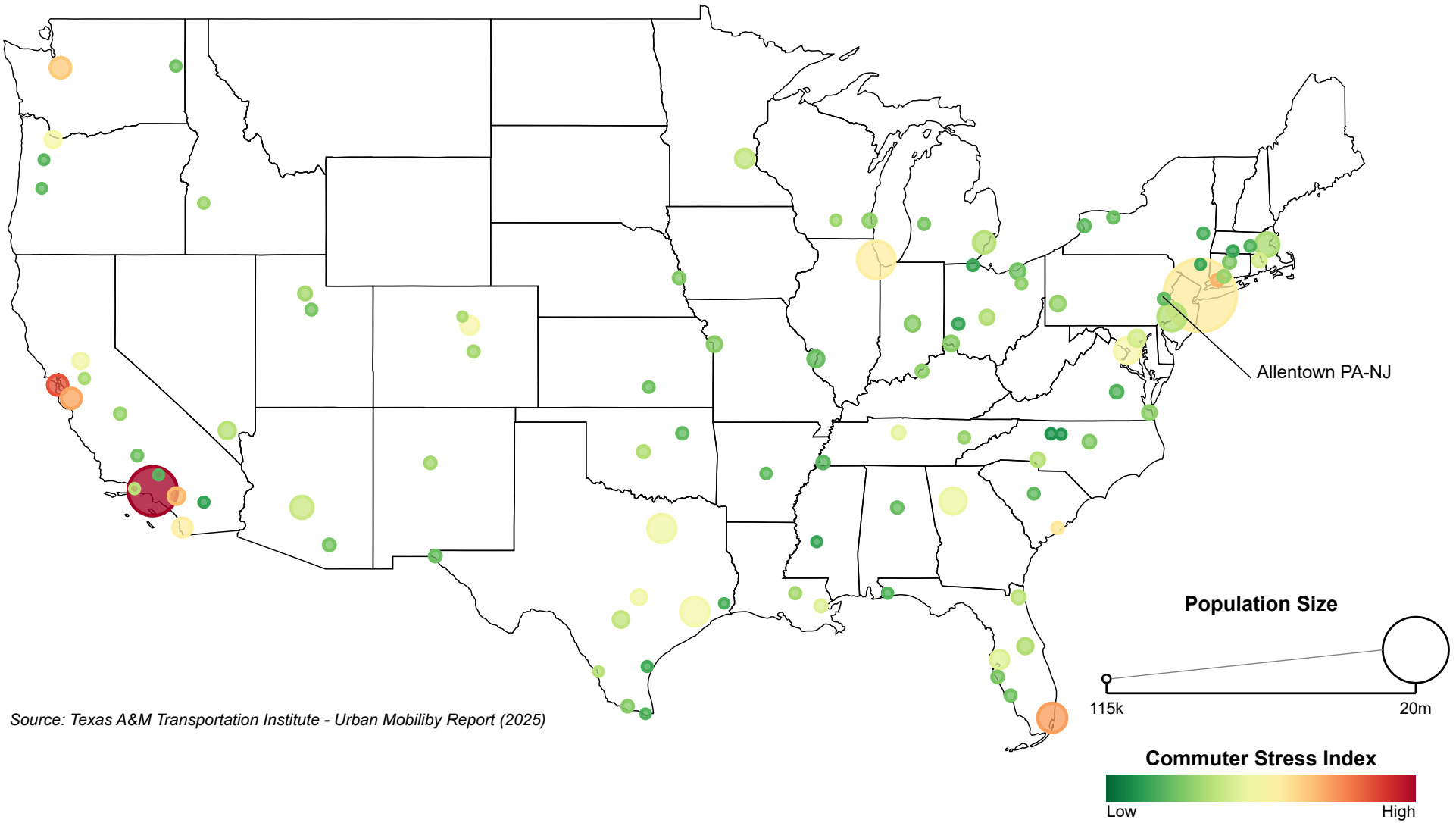
Trends

Commuter Stress Comparisons



Source: Texas A&M Transportation Institute - Urban Mobiliby Report (2025)

Urban Area Comparisons

As part of its strategic planning, the LVTS analyzed 15 metropolitan areas with similar economic characteristics to the Lehigh Valley to understand how the region compares to other metro areas.

Eight other regions were included in addition to those 15 for comparison in this CMP because of their geographic proximity to the Lehigh Valley.

The comparison focuses on two key congestion indicators from the 2024 Urban Mobility Report by the Texas A&M Transportation Institute: Annual Hours of Delay per Capita and the Commuter Stress Index (CSI).

Annual Hours of Delay per Capita measures the total annual delay experienced by all travelers in a region divided by the population, allowing fair comparisons across regions of different sizes.

The CSI is a unitless index that measures the main flow of commuters during morning and evening peaks. A CSI of 1 means free-flow traffic, while higher values indicate longer commuting delays.

High CSI values represent longer travel times toward employment centers in the morning and toward residential areas in the evening. By using per-capita and index measures, these metrics allow comparisons of congestion across regions.

In the Allentown, PA–NJ urbanized area, Annual Hours of Delay per Capita is 22 and CSI is 1.17, both below the averages of the 15 similar metro areas (28 and 1.19), showing that Lehigh Valley commuters experience slightly better congestion conditions during morning and evening peaks than comparable and nearby regions, despite having more inbound commuters, with more people traveling into the region for work than leaving it (Longitudinal Employer Household Dynamics Dataset, US Census Bureau, 2022).

Urban Area Comparison

Urban Area	Population	Annual Hours of Delay Per Capita	Commuter Stress Index
New York-Newark, NY-NJ-CT	18,990,000	47	1.48
Philadelphia, PA-NJ-DE-MD	5,645,000	39	1.29
Atlanta, GA	5,275,000	50	1.39
Pittsburgh, PA	1,745,000	33	1.24
Indianapolis, IN	1,680,000	32	1.22
Charlotte, NC-SC	1,530,000	38	1.29
Raleigh, NC	1,100,000	26	1.21
Dayton, OH	740,000	21	1.12
Allentown, PA-NJ	708,000	22	1.17
Grand Rapids, MI	630,000	32	1.2
Albany-Schenectady, NY	605,000	27	1.14
Akron, OH	560,000	29	1.23
Palm Bay-Melbourne, FL	525,000	20	1.11
Toledo, OH-MI	505,000	25	1.12
Harrisburg, PA	495,000	31	1.17
Lancaster, PA	430,000	26	1.18
Durham, NC	405,000	36	1.2
Scranton, PA	390,000	20	1.12
Concord, NC	270,000	14	1.06
Gastonia, NC-SC	190,000	26	1.23
Binghamton, NY-PA	156,000	24	1.12
Hanover, PA	69,000	25	1.14
East Stroudsburg, PA-NJ	60,000	48	1.15

Note: *Urban areas were selected based on data analysis from LVPC and table is sorted by number of population; **Grey colored Urban Areas considered as Urban Areas near the Lehigh Valley; ***Population data as of 2024

What has caused congestion in the Lehigh Valley?

Traffic congestion can be recurring or nonrecurring. Recurring congestion happens regularly, usually during predictable peak periods like morning and evening commutes. It occurs when routine demand exceeds roadway capacity, slowing traffic.

Common causes include daily commuter travel, roadway bottlenecks, limited capacity, inefficient traffic signals, high truck volumes, seasonal variations, and long-term construction. Nonrecurring congestion is caused by unexpected events that disrupt traffic, such as crashes, vehicle breakdowns, special events, severe weather, or short-term maintenance. These events create unpredictable delays and reduce travel time reliability. An effective CMP addresses both types using operational improvements and long-term planning strategies.

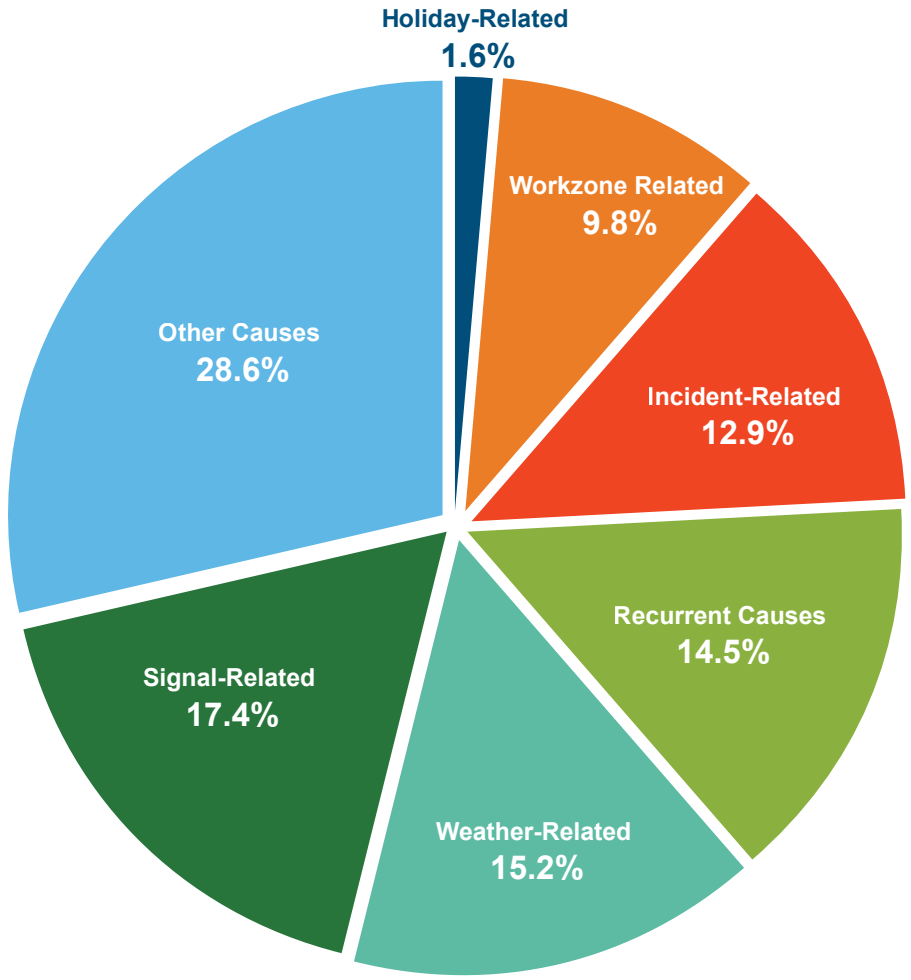
In the Lehigh Valley, the main contributors to congestion are traffic incidents and other/unclassified disruptions, which account for most delays. Incident-related congestion results from unplanned events such as crashes, stalled vehicles, or emergency responses that block lanes and disrupt normal traffic flow, while other causes include less common or unclassified disruptions, overlapping events, or temporary unusual traffic patterns that exacerbate delays.

Signal timing issues and peak-hour demand also create recurring congestion in key corridors; signal-related congestion occurs when traffic signal timing, coordination, or malfunctions impede smooth flow, and recurrent causes stem from predictable, regularly occurring factors like commuter demand or bottlenecks.

Secondary causes, such as weather, construction, or holidays, further worsening delays. Weather-related congestion arises from rain, snow, fog, or ice, workzone-related congestion comes from construction or maintenance activities that reduce roadway capacity, and holiday-related congestion results from increased travel during national or regional holidays.

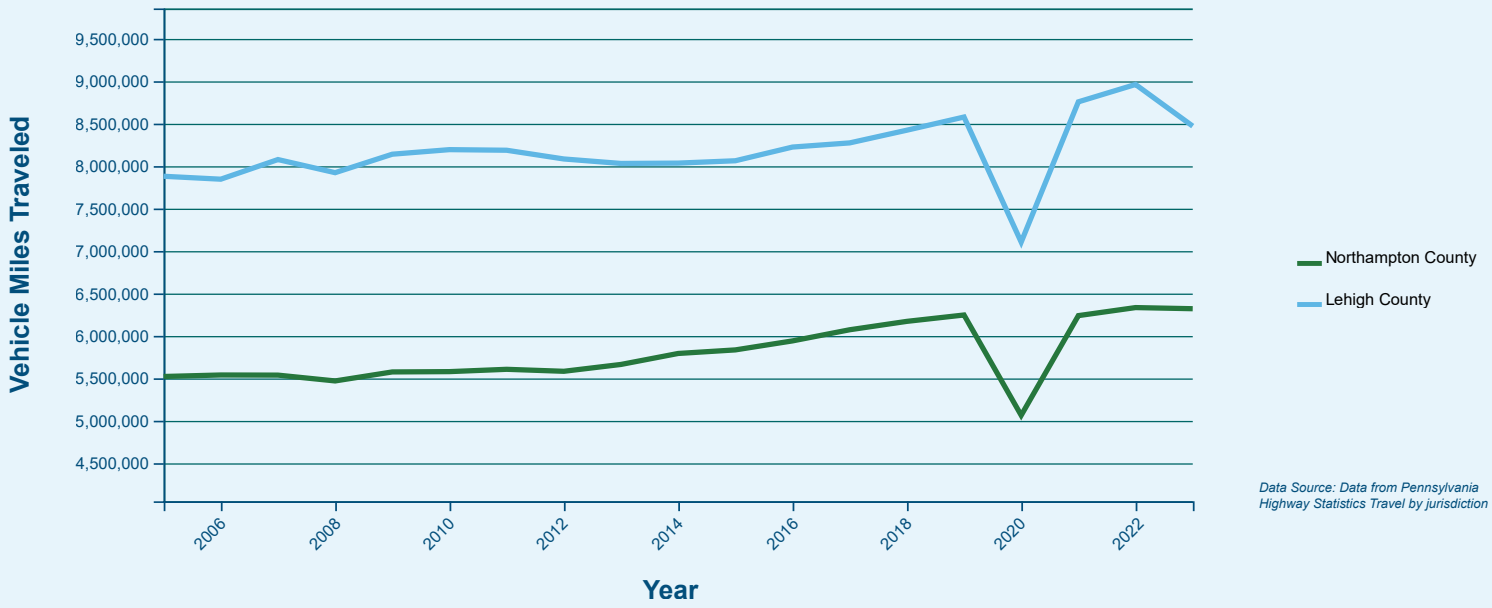
These patterns highlight the need for integrated strategies that combine better signal timing, data-driven operations, and proactive incident response to improve reliability and performance across the region.

Congestion Causes in the Lehigh Valley



Data Source: RITIS PDA Suite; Causes of Congestion Transportation Disruption and Disaster Statistics 2019

Vehicle Miles Traveled Throughout the Lehigh Valley



Data Source: Data from Pennsylvania Highway Statistics Travel by jurisdiction

Regional Transportation Performance Trends

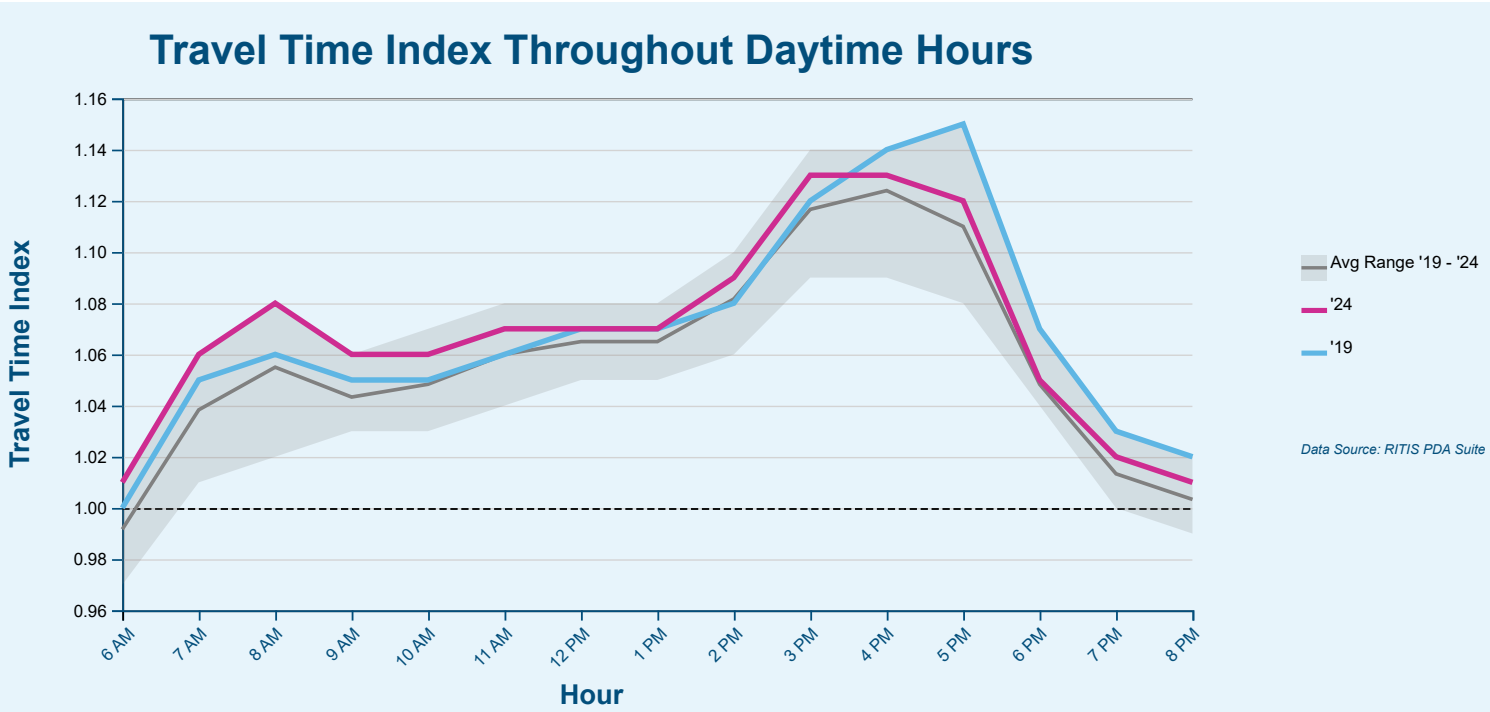
An overview of regional transportation performance trends focuses on key indicators such as Vehicle Miles Travels (VMT), Travel Time Index (TTI), ride-share travel and performance targets. These trends provide insight into how the region's transportation system is functioning and help guide future planning and investment priorities.

Vehicle Miles of Travel

VMT is the Federal Highway Administration's main measure of travel activity on roadways, calculated as the total daily miles traveled by all vehicles. Higher VMT generally indicates more congestion, making it an important metric for monitoring regional traffic. From 2005 to 2023, both Lehigh and Northampton counties saw overall VMT growth compared to 2005. Both counties experienced a sharp decline in 2020 due to the COVID-19 pandemic, then rebounded in the following years. While both counties followed similar trends, Northampton showed slightly more consistent year-over-year growth, especially from 2013 onward.

Travel Time Index (TTI)

TTI is a unitless index measures the ratio of observed travel time to free-flow travel time. In simpler terms, TTI shows how much longer a trip takes in traffic compared to if you could drive without any delays, helping quantify congestion and assess how efficiently roads are performing. A TTI value above 1 indicates congestion and longer travel times. From 2019 to 2024, TTI in the Lehigh Valley shows consistent congestion patterns throughout the day. Travel times peak in the morning (7–9 am) and again in the afternoon/evening (3–6 pm). The most significant delays occur between 3 pm and 6 pm, when travel times are 10–15% longer than free-flow conditions, making the evening commute the most congested period.



Non-SOV Travel Trends by County

Non-SOV, or non-single-occupant vehicle, travel refers to trips made using modes other than a single-occupancy vehicle, such as walking, biking, public transit, carpooling, or ridesharing. Monitoring and promoting Non-SOV travel is important because it helps reduce congestion, lower emissions, and improve overall transportation system efficiency and accessibility. From 2010 to 2024, the amount of non-SOV travel shows changing travel patterns across the overall Lehigh Valley.

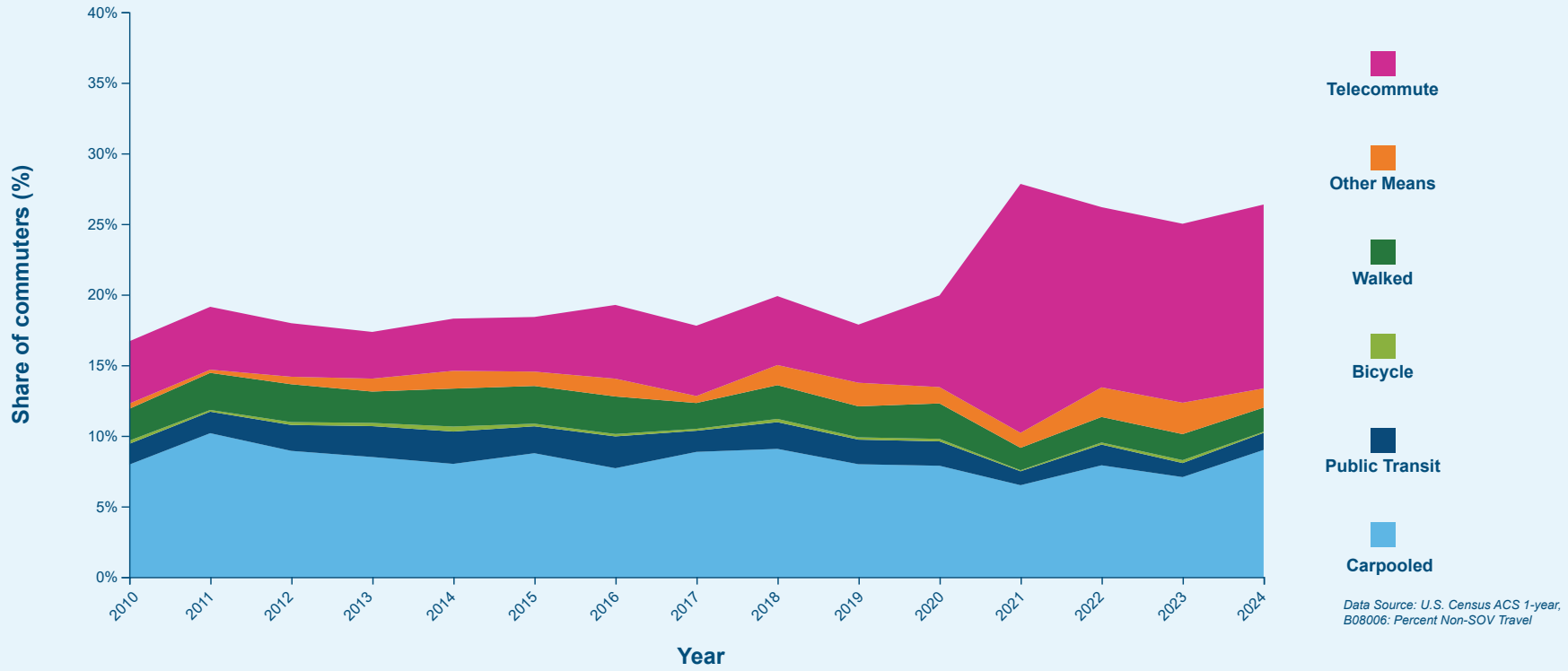
The most dramatic shift, particularly since 2020, has been the increase in telecommuting, which has grown from 4.4% (12,856 commuters) to 13% (46,032 commuters) of commuters. This reflects a lasting shift in work culture following the COVID-19 pandemic and the growing adoption of flexible work arrangements.

Carpooling, public transportation, bicycling, and walking have remained relatively stable from 2010 to 2024. In recent years, both counties have converged in their commuting trends, suggesting a regionwide shift toward flexible work and reduced use of shared transportation.

These stabilizing trends likely reflect the fact that many Lehigh Valley transit users are employed in occupations that are less amenable to telecommuting and therefore rely on these modes for their daily commute.

However, it is worth mentioning that for this trend interpretation, US Census Bureau data was used, which provides aggregate commuting statistics, but does not capture variations in individual commuting patterns within the same occupation or across different weeks. This gap warrants further investigation as additional data becomes available.

Share of Non-Single Occupancy Vehicle Commuters in the Lehigh Valley



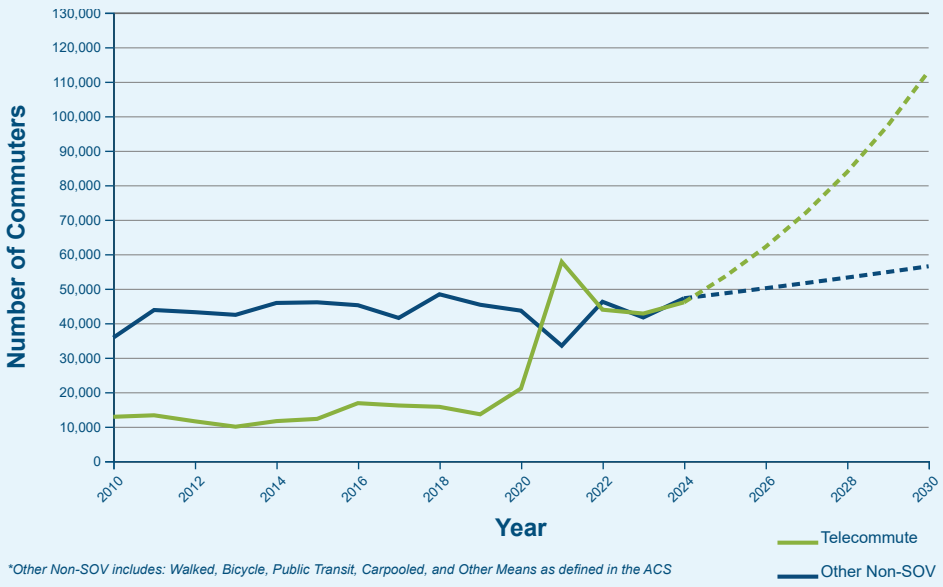
Non-SOV Travel Target Setting

The federal government tracks progress in reducing congestion by measuring how many people commute without driving alone. This is called the percent non-SOV commuter mode share, and it includes trips made by transit, carpooling, biking, walking, or working from home. Because the Lehigh Valley has an urbanized area with more than 200,000 residents, federal law under the IIJA requires LVTS to monitor this percentage and set short- and long-term improvement goals. Over the past decade, the share of people using options other than driving alone has increased across the Lehigh Valley.

In Lehigh Valley, the starting point for non-SOV travel comes from the ACS one-year estimates, which provide a reliable picture of how people commute. Factors like remote work, the economy, and shifting travel habits all affect this number, which is why ongoing monitoring is important for transportation planning. Forecasts for 2024–2030 show modest growth in non-SOV travel, while forecasts for telecommuting are expected to grow more quickly than other non-SOV counterparts.

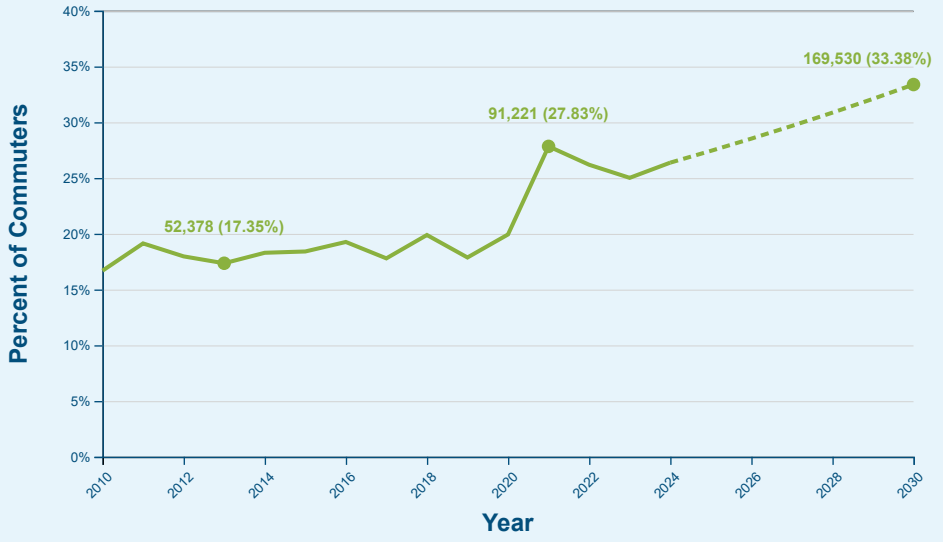
Targets were set based on the average historic year-to-year rate of change of the percentage non-SOV travel in the Lehigh Valley. The two-year non-SOV target in 2026 is approximately 28% and the four-year non-SOV target in 2028 approximately 31%. These numbers reflects a planning goal to shift travel behavior over time, encouraging more people to use transit, carpool, bike, or walk to reduce congestion and environmental impacts.

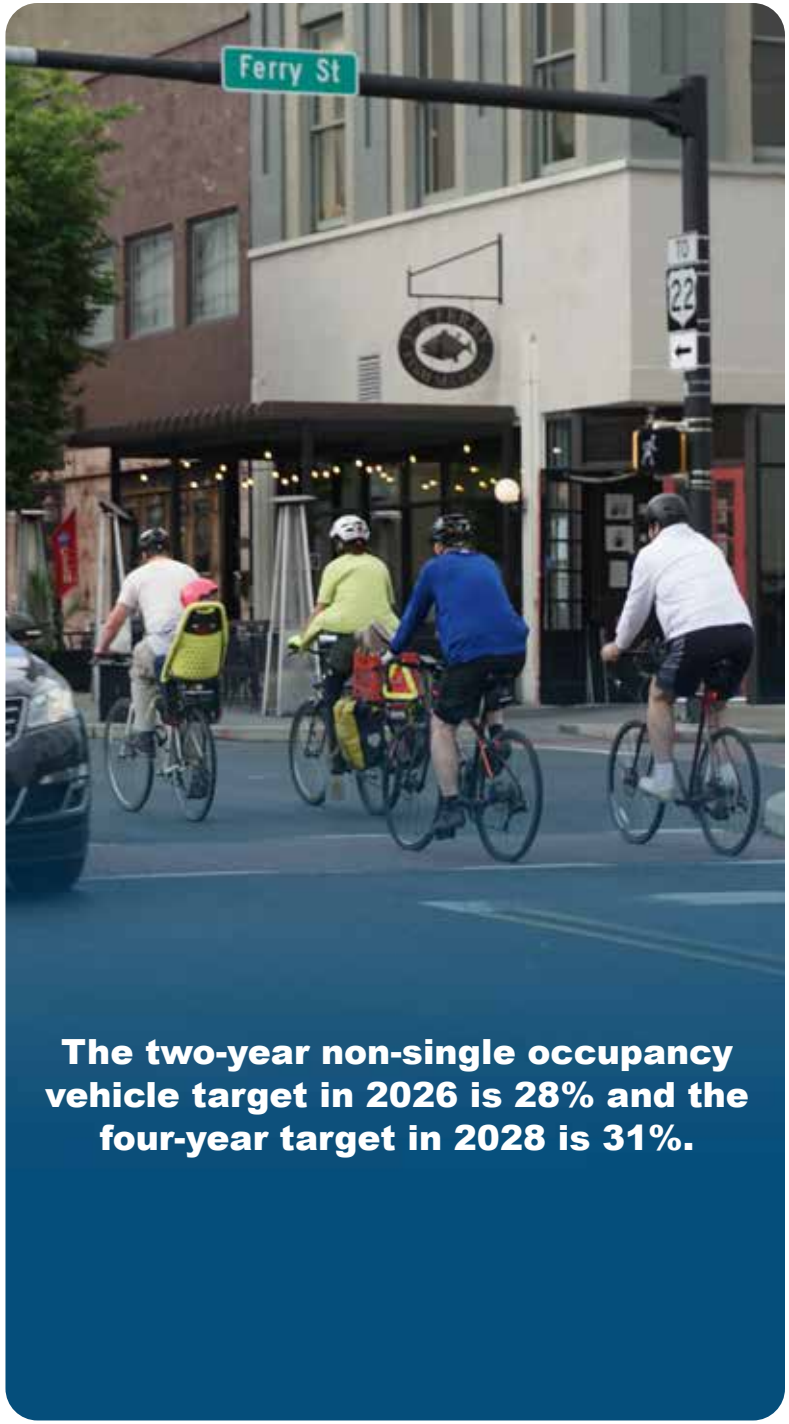
Number of Telecommuter and Other Non-SOV Commuters in the Lehigh Valley



*Other Non-SOV includes: Walked, Bicycle, Public Transit, Carpooled, and Other Means as defined in the ACS

Projected Non-Single Occupancy Vehicle Commuter Targets for the Lehigh Valley





The two-year non-single occupancy vehicle target in 2026 is 28% and the four-year target in 2028 is 31%.

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Performance-Based Measurement

Performance-based Measurement required for a CMP

The LVTS studies congestion and travel reliability to understand how serious, widespread and unpredictable traffic is across the region's road network. The analysis mainly uses travel time data collected by INRIX from vehicle-based GPS systems to provide a comprehensive picture of travel speeds and delay, across the Valley's street and highway network. The FHWA outlines how the data must be collected, processed, and used to calculate PM3 congestion and reliability measures. More information on the data sources or federal regulations is provided in the Appendix.

Congestion and Reliability Measures

Congestion and reliability measures were used to evaluate how well the transportation network is performing. Each measure helps show how traffic is flowing, where delays occur, and how dependable travel times are. Free-flow travel time serves as the baseline for these measures and is based on the reference speed provided in the INRIX dataset.

Travel Time Index (TTI)

The Travel Time Index (TTI) is derived from INRIX travel time data. TTI helps to compare how long a trip takes versus how long it would take with no traffic. It represents the ratio of average travel time during peak hours to the corresponding free-flow travel time for a roadway segment. A higher TTI value reflects more severe congestion. TTI was evaluated during the weekday AM peak of 7 am to 9 am. and PM peak of 4 pm to 6 pm.

Peak Vehicle Delay

This measure expresses travel time delay for individual roadway segments, reported in seconds. Peak vehicle delay is defined as the difference between the observed average peak-period travel time and the corresponding free-flow travel time. Larger differences reflect greater levels of delay. The measure was calculated based on INRIX travel time data for weekdays during the AM and PM peak periods.

Peak Volume Delay

Peak Volume Delay measures vehicle delay during peak hours, by taking the average vehicle delay and multiplying it by the number of vehicles using a segment during the peak periods. It is expressed as total hours.

Road segments that experience both high vehicle delay and high volume-related travel time typically generate congestion with broader regional impacts, as large numbers of vehicles are affected. This measure is applied to rank peak-period travel time and volume delays along Focus Roadway Corridors, and to assess travel time volume delay at Focus Bottlenecks.

For corridor-level analysis, volume delay is normalized by producing a peak volume delay per mile measure. Peak hour delays were derived from data published by PennDOT's Bureau of Planning and Research 2024 Pennsylvania Traffic Data document.

Volume-to-capacity (V/C) ratio

The volume-to-capacity (V/C) ratio is a measure of roadway performance that compares observed traffic volumes with the estimated capacity of a roadway segment.

The Highway Capacity Manual classifies capacity conditions using the critical volume-to-capacity ratio, where values are less than or equal to (≤) 0.85 indicate under-capacity conditions, values between 0.85 and 0.95 indicate near-capacity conditions, and values between 0.95 and 1.00 indicate at-capacity conditions.

Using FHWA guidelines and functional class-based reference tables, maximum AADT values were assigned to each roadway segment according to its classification.

The resulting V/C ratios were used to identify congestion conditions. Roadway segments with ratios greater than 0.85 were classified as congested.

Level of Travel Time Reliability or LOTTR is a statewide PM3 metric used to evaluate the performance of the NHS. It is a unitless index that represents the percentage of person-miles traveled on both interstate and non-interstate NHS routes that meet reliability standards within a region.

LOTTR is calculated for each roadway segment as the ratio of the 80th percentile travel time to the median (50th percentile) travel time, with higher ratios showing less reliable conditions.

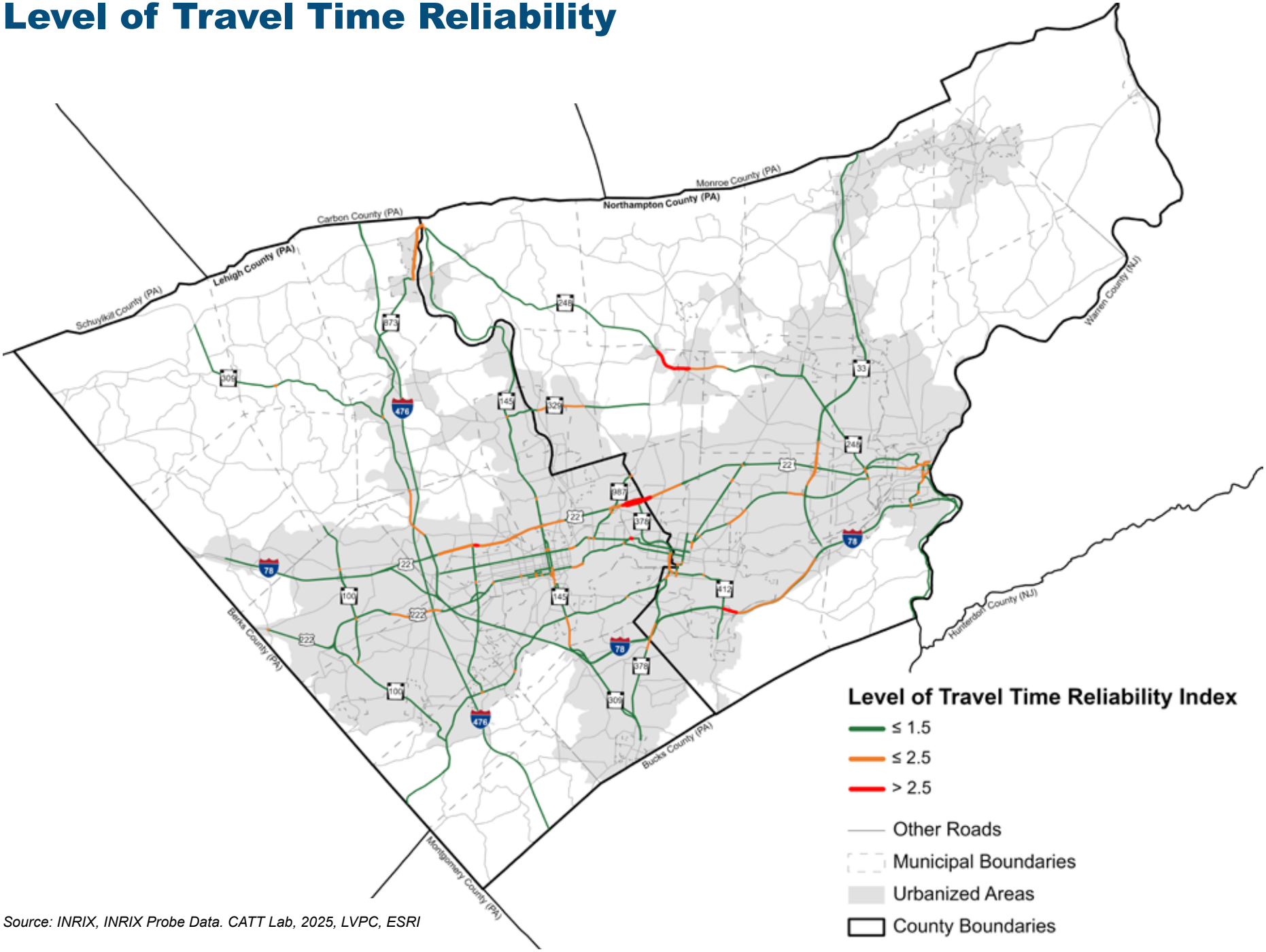
For instance, imagine a three-mile street that usually takes five minutes to drive. But sometimes it takes eight minutes instead. As eight divided by five equals 1.60, that means the trip can take 60% longer than normal. It means the street does not always take the same time to drive, sometimes it's much slower than usual, so it is not very reliable for planning your trip. This is what LOTTR measures.

In this CMP, LOTTR is computed across four peak periods: weekdays from 6 am to 10 am, 10 am to 4 pm and 4 pm to 8 pm, as well as weekends from 6 am to 8 pm. LOTTR values below 1.50 across all four periods classifies as reliable because travel times do not substantially deteriorate during peak or off-peak conditions.

Segments exceeding 1.50 in any period are considered unreliable, reflecting conditions where travelers experience frequent or unpredictable delays.

Annual traffic volume and average vehicle occupancy are incorporated into the calculation of the NHPP reliability measures presented in tables below. The NHPP reliability measure is reported separately for interstate and non-interstate routes in the tables.

Level of Travel Time Reliability



Source: INRIX, INRIX Probe Data. CATT Lab, 2025, LVPC, ESRI

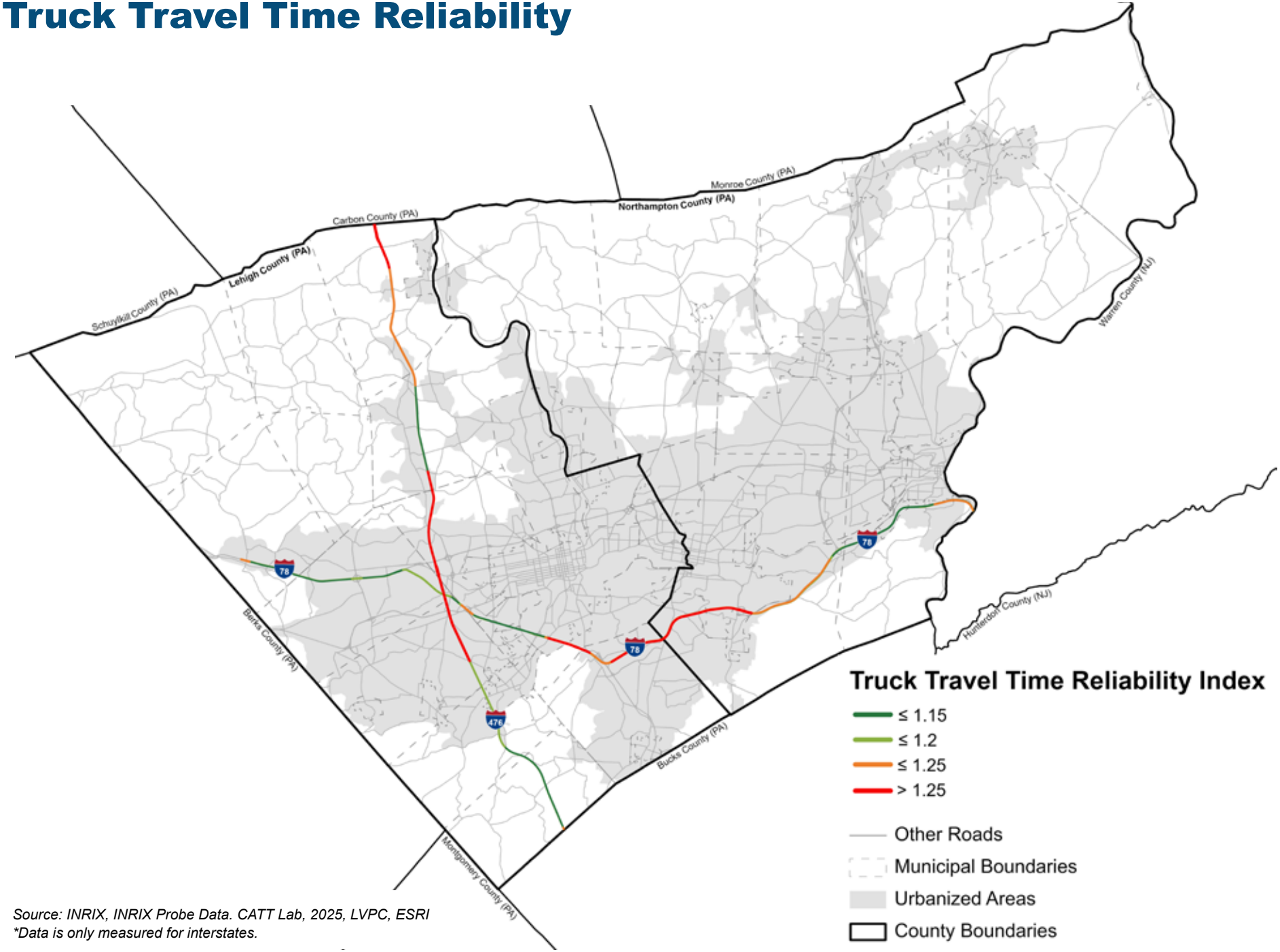
Truck Travel Time Reliability (TTTR) Index

Truck Travel Time Reliability or TTTR Index is a statewide PM3 measure used to evaluate the reliability of freight movement on the interstate system within a region. TTTR, also referred to as the freight reliability measure, is is a unitless index that is calculated for each interstate segment as the ratio of the 95th percentile travel time to the median (50th percentile) travel time.

For example, imagine a 10-mile stretch of highway. Most of the time, a truck can drive that stretch in 10 minutes. But sometimes traffic slows things down. About one out of every 20 trips, the same drive takes 17 minutes or more. So, to understand how reliable the road is, we compare the longer time (i.e., 17 minutes) to the normal time (i.e., 10 minutes). This number is called the Truck Travel Time Reliability (TTTR). A TTTR of 1.7 means the trip can take 70% longer than usual. That tells us the road is not very reliable for trucks, because travel times can change a lot. TTTR is calculated across five time periods: weekdays from 6 am to 10 am, 10 am to 4 pm, 4 pm to 8 pm, weekends 6 am to 8 pm, and each day from 8 pm to 6 am.

For analysis and mapping, the time-period with the highest TTTR for each segment is used as the reliability indicator. Freight Reliability of the whole region was calculated and presented in Reliability and TTTR Baseline and Target tables below.

Truck Travel Time Reliability



Source: INRIX, INRIX Probe Data. CATT Lab, 2025, LVPC, ESRI
**Data is only measured for interstates.*

For interstates and non-interstates, reliability is calculated by comparing the travel time people experience during rush hour to the normal or expected travel time. Roads that take longer than expected more often are considered less reliable.

Interstate reliability has remained consistently strong, staying above 95% across all reported years, though the slight decline in 2024 suggests growing pressures on the highway system that may warrant closer monitoring. Non-Interstate reliability showed a positive trend, between 2019 to 2023. However, it shows decreased reliability level, from 89.7% to 88.5%, in 2024. TTTR has fluctuated, ranging from a low of 1.31 in 2021 to a high of 1.40 in 2024.

While these values indicate that freight movement remains generally reliable, the upward trend in 2024 highlights potential challenges for goods movement that could affect regional economic competitiveness. Together, these measures suggest that while overall reliability remains strong, continued attention to freight performance and interstate trends will be essential for maintaining efficient mobility in the Lehigh Valley.

Looking ahead, the Lehigh Valley's reliability measures reflect a focus on sustaining strong performance across the region's transportation network. Interstate reliability targets are set at 95.5% for 2028, with a modestly higher 96.5% for 2026, reflecting expectations of continued high performance on the highway system.

Non-Interstate reliability is projected to remain stable, with targets of 88.8% for 2026 and 88.5% for 2028, consolidating the improvements achieved in 2024 on secondary and local roadways. Truck reliability targets are set at 1.39 for 2026 and 1.40 for 2028, indicating expectations of stable and manageable travel conditions for freight movement.

Overall, these targets emphasize maintaining strong interstate performance, sustaining gains on non-interstate routes, and preserving stable freight reliability over the next four years.

Lehigh Valley Truck Travel Time Reliability (Baseline)

Measure	2019 Actual	2021 Actual	2023 Actual	2024 Baseline
Interstate Reliability	99.4%	100%	99.6%	95.5%
Non–Interstate Reliability	85.2%	89.0%	89.7%	88.5%
Truck Reliability	1.35	1.31	1.36	1.40

Lehigh Valley Truck Travel Time Improvements (Targets)

Measure	2024 Baseline	2026 2-Year Target	2028 4-Year Target
Interstate Reliability	95.5%	96.53%	95.5%
Non–Interstate Reliability	88.5%	88.8%	88.5%
Truck Reliability	1.40	1.39	1.40

Annual Hours of Peak Hour Excessive Delay (PHED)

Peak Hour Excessive Delay (PHED) measures the total extra time vehicles spend on a roadway when travel is slower than expected during peak periods (6–10 am and 3–7 pm). The Lehigh Valley is included in the Allentown–Bethlehem–Easton, PA–NJ Urban Area geographical boundary.

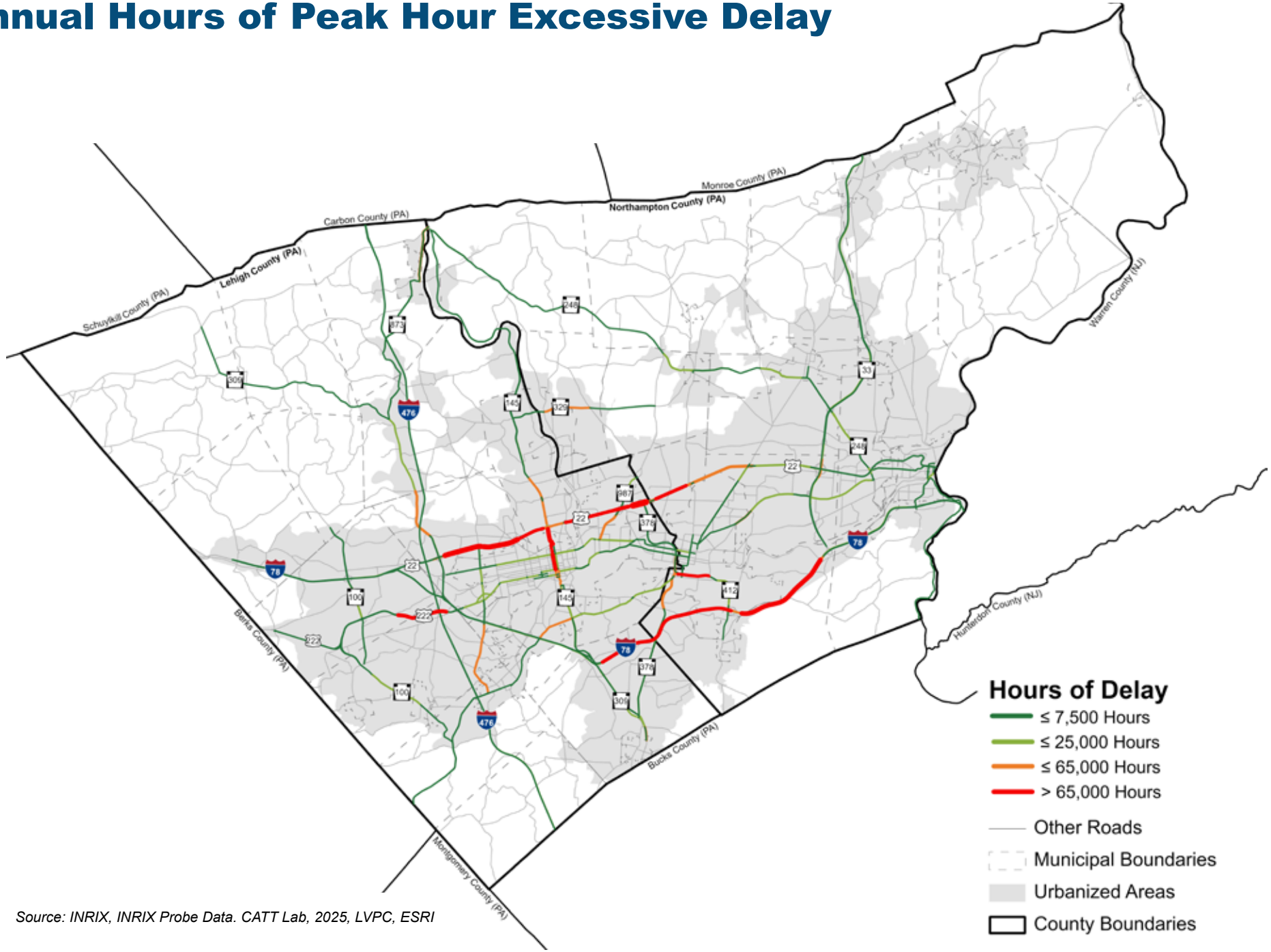
The calculation uses travel times, hourly traffic volumes, posted speed limits, mode shares (passenger vehicles, buses, and trucks), and average vehicle occupancy at the roadway segment level for the full calendar year. Mode share and vehicle occupancy data come from FHWA's Highway Performance Monitoring System and Average Vehicle Occupancy factors provided by FHWA.

Annual Hours of Peak Hour Excessive Delay (PHED) Per Capita is calculated by dividing the total excessive delay for the entire urban area by the total population. This single value represents the average amount of delay experienced per resident, showing the shared impact of congestion across the region and the potential benefit when some trips are reduced, shifted to walking or biking, or occur outside peak periods.

Peak Hour Excessive Delay (PHED) Measure and Non-Single Occupancy Vehicle (SOV) Baseline

Measure	2019	2021	2023	2024
Annual Hours of PHED Per Capita	7.30	6.81	7.78	8.00
Percent Non-SOV Travel*	18%	28%	25%	26%
Population	684,907	694,137	701,716	708,644

Annual Hours of Peak Hour Excessive Delay



Source: INRIX, INRIX Probe Data. CATT Lab, 2025, LVPC, ESRI

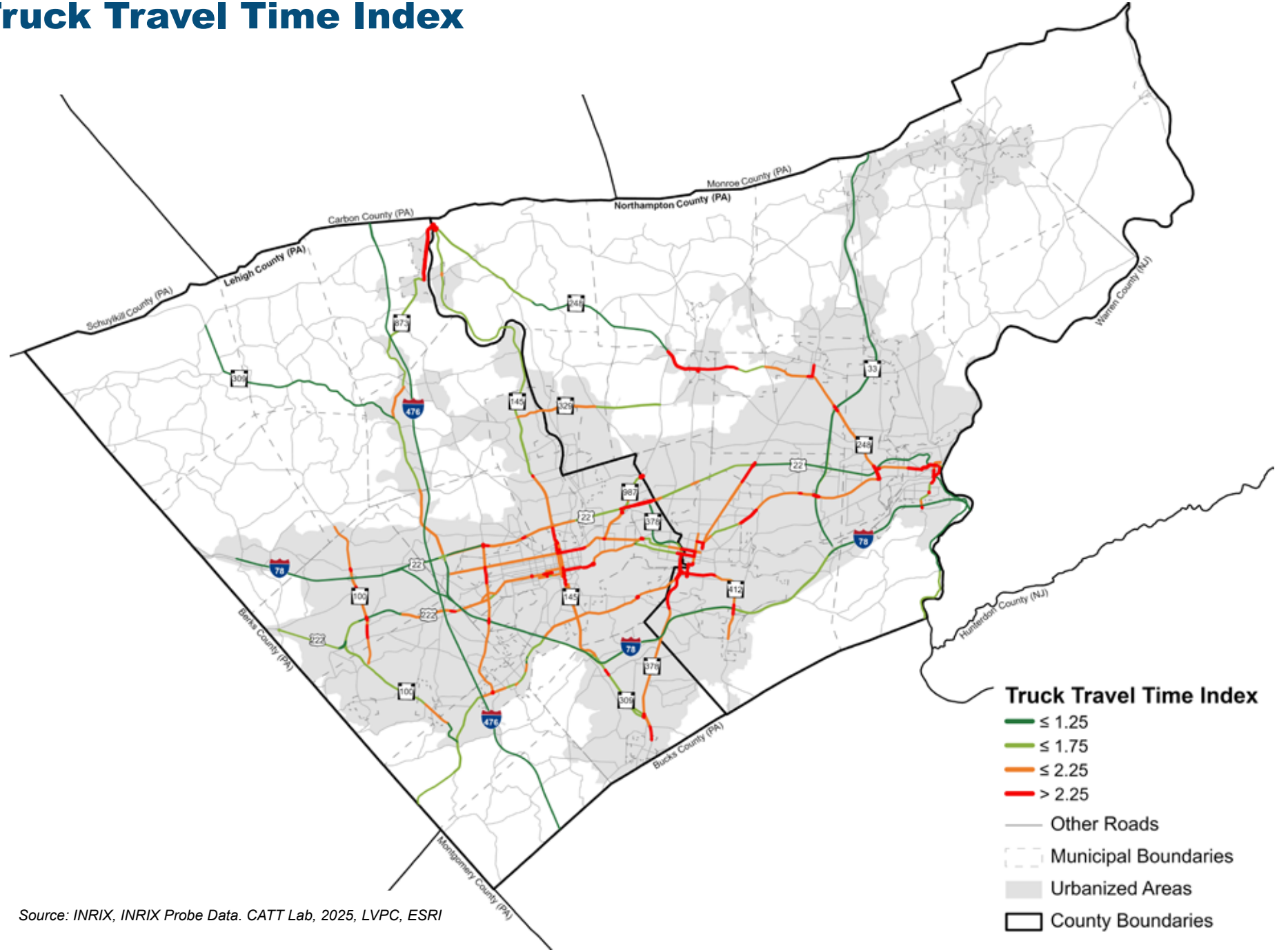
Truck Travel Time Index (TTTI)

The National Performance Management Research Data Set (NPRMDS), is a database of travel times and traffic speeds on highways across the U.S., approved by the U.S. Department of Transportation for performance management under the MAP-21 regulations.

Truck Travel Time Index, or TTTI, derived from the NPRMDS, is a measure that uses truck-only travel times on the NHS including both interstate and non-interstate routes. This measure is separate from the PM3 metrics and is used to identify locations where truck traffic contributes to congestion and unreliability.

The TTTI is a unitless index defined as the ratio of observed truck travel time to free-flow truck travel time for each roadway segment. TTTI is analyzed for weekdays during AM peak hours from 7 am to 9 am and PM peak hours from 4 pm to 6 pm. For CMP analysis, the NPMRDS truck travel data were conflated to the INRIX roadway network to align segment-level mapping and scoring.

Truck Travel Time Index



Source: INRIX, INRIX Probe Data. CATT Lab, 2025, LVPC, ESRI

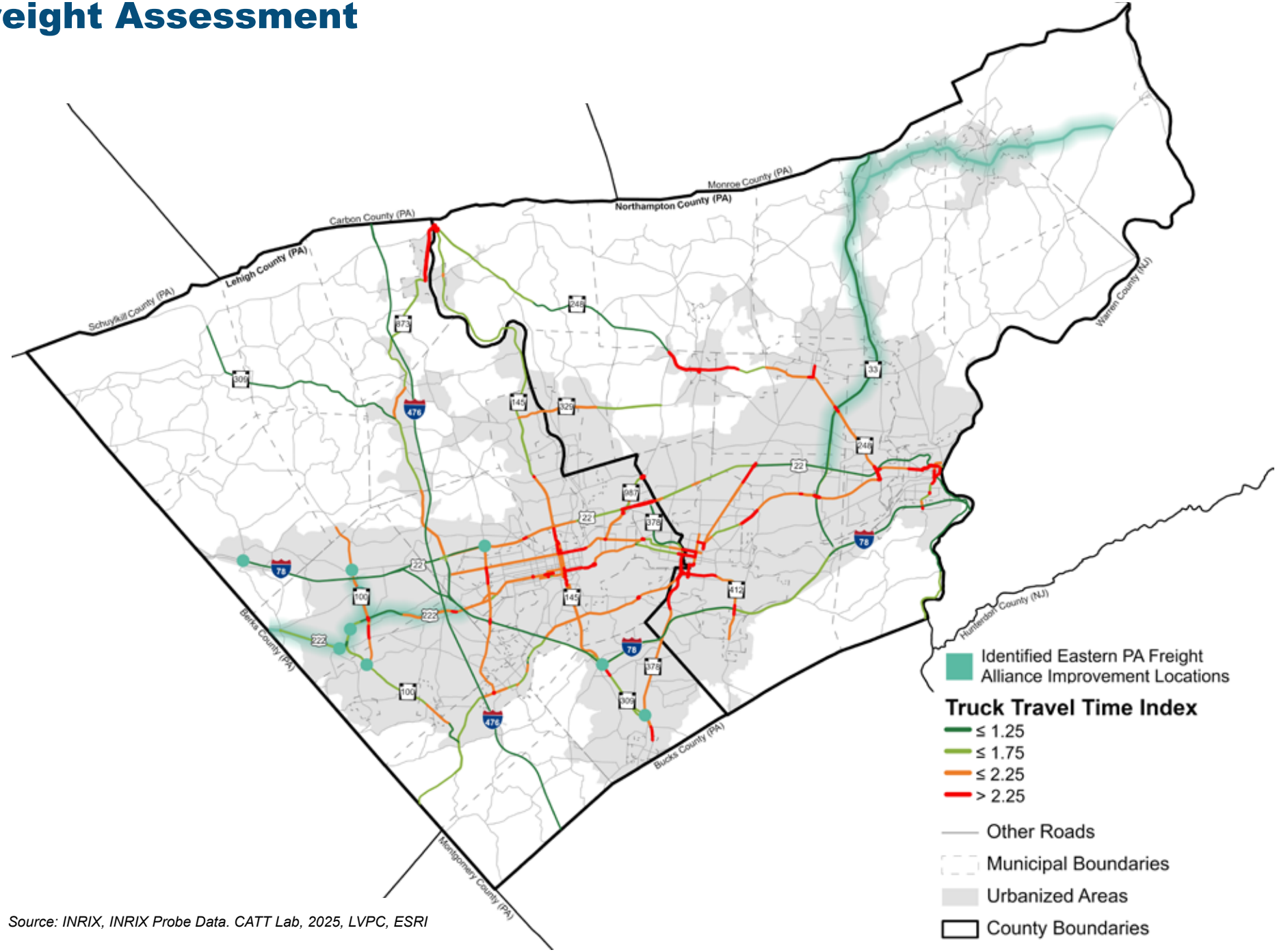
Freight Assessment

A key goal of managing congestion is to keep goods moving efficiently and support the region's economy. In 2024, LVTS completed the Eastern Pennsylvania Freight Alliance (EPFA) Infrastructure Plan, which identified important Priority Freight Corridors in the region. The recommendations from that plan are now being incorporated into the CMP to better coordinate freight planning with overall transportation goals.

Alongside, the TTTI was mapped to show where freight activity overlaps with major roadways and where truck congestion may be a concern.

This approach helps to highlight corridors that carry a large share of goods, supporting smarter strategies to improve freight movement, maintain efficiency, and direct funding where it is most needed.

Freight Assessment



Source: INRIX, INRIX Probe Data. CATT Lab, 2025, LVPC, ESRI

LEHIGH VALLEY
CONGESTION MANAGEMENT PLAN

Regional Objectives for Congestion Management

Regional Objectives for Congestion Management

The CMP sets out how the region manages congestion while supporting broader goals like livability, economic growth, safety, and access to multiple travel options. These objectives align with MTP to improve how the transportation system works.

Each CMP objective has specific performance measures, called CMP Objective Measure criteria. Some measures have multiple thresholds, with higher thresholds carrying more weight.

For example, the TTI is tracked using two levels: above 1.50 and between 1.20–1.50, each counted separately. The LVTS Technical Committee used local knowledge and regional priorities to evaluate these measures and guide congestion mitigation strategies.

LVTS has assigned custom weights to each objective (adding up to 100) to ensure balanced scoring. This approach helped identify the most congested corridors and bottlenecks.

Enhance Mobility and Reliability

Focus on reducing both chronic and unexpected traffic congestion to achieve established PM3 performance standards

Modernize and Maintain Infrastructure

Prioritize the efficiency and adaptability of road and transit networks, specifically ensuring they support freight needs and meet PM3 freight benchmarks.

THE REGIONAL PLAN
FUTURE LV

Align with FutureLV: *The Regional Plan* Priorities

Direct transportation investments toward established centers, improve multimodal coordination, expand transit in high-need areas, and bolster system-wide safety, security, and emergency resilience.

CMP Objectives	Measure Type	Name of Measure	Definition	Measurement
Enhancing system reliability and mobility	PM3 (performance measures): reliability measures	Peak hour excessive delay (PHED)	PHED measures the amount of extra time drivers spend in traffic during rush hour. A corridor/bottleneck is considered highly congested if the delay is worse than the regional average.	Total hours of delay during rush hour go beyond an acceptable limit. A corridor/bottleneck is considered highly congested if its delay is above the regional average.
		Level of travel time reliability (LOTTR)	LOTTR shows how dependable travel times are from day to day. If this number is high, it means your trip time can vary a lot depending on the day.	Measures of how consistent travel times are during busy periods. A value of 2.50 or higher means low reliability; 1.50–2.49 means moderate reliability.
	Congestion intensity measures	Volume to capacity (V/C) ratio	V/C ratio compares how much traffic a road carries (volume) to how much it was built to handle (capacity). A higher ratio means the road is overcrowded.	Shows how much traffic a road carries compared to how much it was designed for. Roads/Bottlenecks are considered congested when this ratio is greater than 0.85.
		Travel time index (TTI)	TTI compares how long a trip actually takes versus how long it would take with no traffic.	Compares actual travel time to free-flow (no-traffic) conditions. The higher the number, the worse the congestion.
Ensuring Cross-Border Mobility and Network Modernization	PM3: Truck reliability and congestion intensity measures	Truck travel time index (TTTI)	Similar to TTI but focuses on trucks. A high number means trucks are heavily delayed compared to free-flow conditions.	Similar to TTI but focuses only on truck travel.
		Truck travel time reliability (TTTR)	TTTR evaluates how consistent truck travel times are. High values mean truck travel times vary widely and are less predictable.	Measures how reliable truck travel times are on major highways during peak hours.
	Network modernization	Freight centers and Lehigh Valley airport terminals	Corridors/bottlenecks are selected if they are located near major freight facilities or airports, where truck activity and deliveries are common.	Quarter-mile of major freight centers or airport terminals in the Lehigh Valley.
Supporting the goals identified in *FutureLV: The Regional Plan*	Ozone and particulate matter 2.5	Ozone and particulate matter 2.5 concentration	Identifies areas with higher air pollution levels than the regional average. These are areas more affected by emissions and poor air quality.	Census tracts where ozone or fine particulate matter levels are higher than the regional average.
	Multimodal accessibility	Near fixed-route transit system	Corridors/bottlenecks are selected if they are located close to fixed route public transit system.	Within a quarter-mile of the fixed-route transit system.
		Near population and employment centers	Corridors/bottlenecks are selected if they are located in an area with high concentrations of residents or jobs, where many people live or work.	Census blocks with high population density or within a quarter-mile buffer of employment centers.
		Near corridors identified in *FutureLV*	Corridors/bottlenecks are selected if they are close to major corridors that are part of the region's metropolitan transportation plan.	Quarter-mile buffer of a corridor identified in *FutureLV*.
	Safety	Locations with maximum crash severity	Corridors/bottlenecks are selected if they are in areas where serious crashes happen more frequently, indicating potential safety concerns.	Quarter-mile buffer of an area with high crash severity as determined through the Pennsylvania Crash Information Tool.
	Infrastructure Resilience	Near major bridges	Corridors/bottlenecks are selected if they are near bridges that carry higher daily traffic volumes.	If the Annual Average Daily Traffic on the bridge exceeds the regional average
		Located in a flood hazard area	Corridors/bottlenecks are selected if they fall within a flood-prone area as identified by FEMA. These are more likely to be impacted during flooding events.	Quarter-mile of the 2024 national flood hazard.


TRANS-BRIDGE LINES
470
TRANS-BRIDGE

LEHIGH VALLEY
CONGESTION
MANAGEMENT
PLAN

Network Analysis

Network Analysis

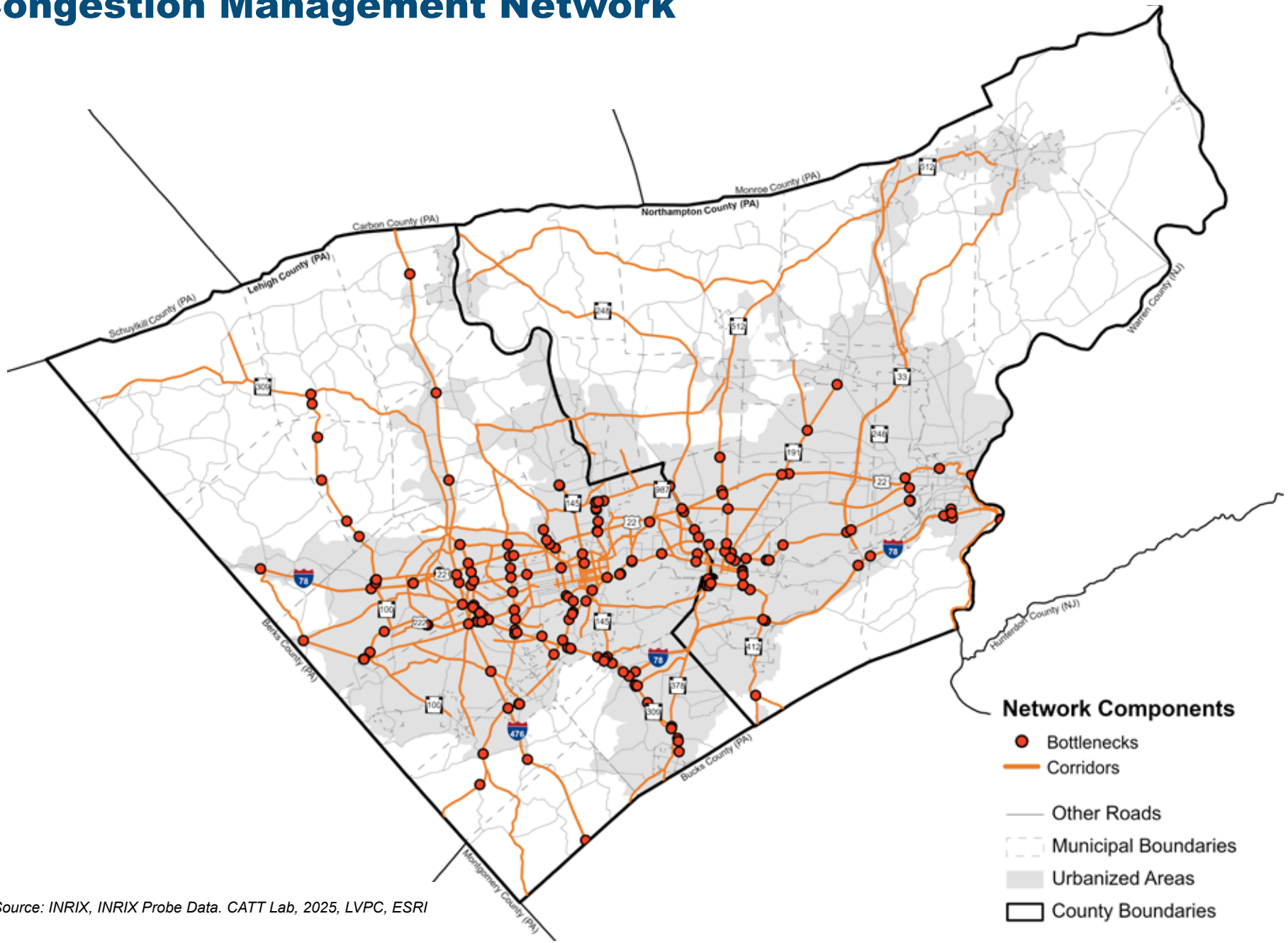
This section defines the congestion management network, identifies the significantly congested locations, and evaluates key performance measures. The congestion management network was identified, consisting of corridors and bottlenecks. Priority corridors and bottlenecks were identified based on scoring criteria created with LVTS.

Identifying the Congestion Management Network

Congestion management network corridors were then selected using thresholds from the empirical quantile distributions of key performance indicators: Annual Average Daily Traffic (AADT) > 12,622, Volume to Capacity Ratio (V/C) ≥ 0.575, or Annual Daily Truck Traffic (ADTT) ≥ 727.205 with V/C ≥ 0.401. These criteria ensured corridors represent above-average traffic, congestion or truck activity. Using this approach, the LVTS identified 326 focus corridors for analysis, considering both directions.

Focus bottlenecks were identified using the University of Maryland's Center for Advanced Transportation Technology (CATT) Lab Probe Data Analytics (PDA) Bottleneck Ranking Tool, which produced a ranked list of 1,000 bottlenecks. Segment-level congestion measures were averaged to create representative values for each metric. Bottlenecks were included if AADT > 10,685, V/C ≥ 0.61, or ADTT ≥ 427.5, resulting in 228 focus bottlenecks for analysis. Finally, consistent with HCM guidance, corridors with V/C ≥ 0.85 were highlighted during prioritization and evaluation of high-congestion locations, as described later in the document.

Congestion Management Network



Source: INRIX, INRIX Probe Data. CATT Lab, 2025, LVPC, ESRI

Identifying Congested Corridors and Bottlenecks for Regional Prioritization

To identify priority corridors and bottlenecks for regional investment, LVTS developed a scoring framework linking MTP goals and performance measures with CMP objectives. The LVTS Technical Committee assigned weights to each CMP objective and sub-objectives, which measure congestion, mobility, safety, multimodal access, freight efficiency, system resilience, and long-range planning priorities.

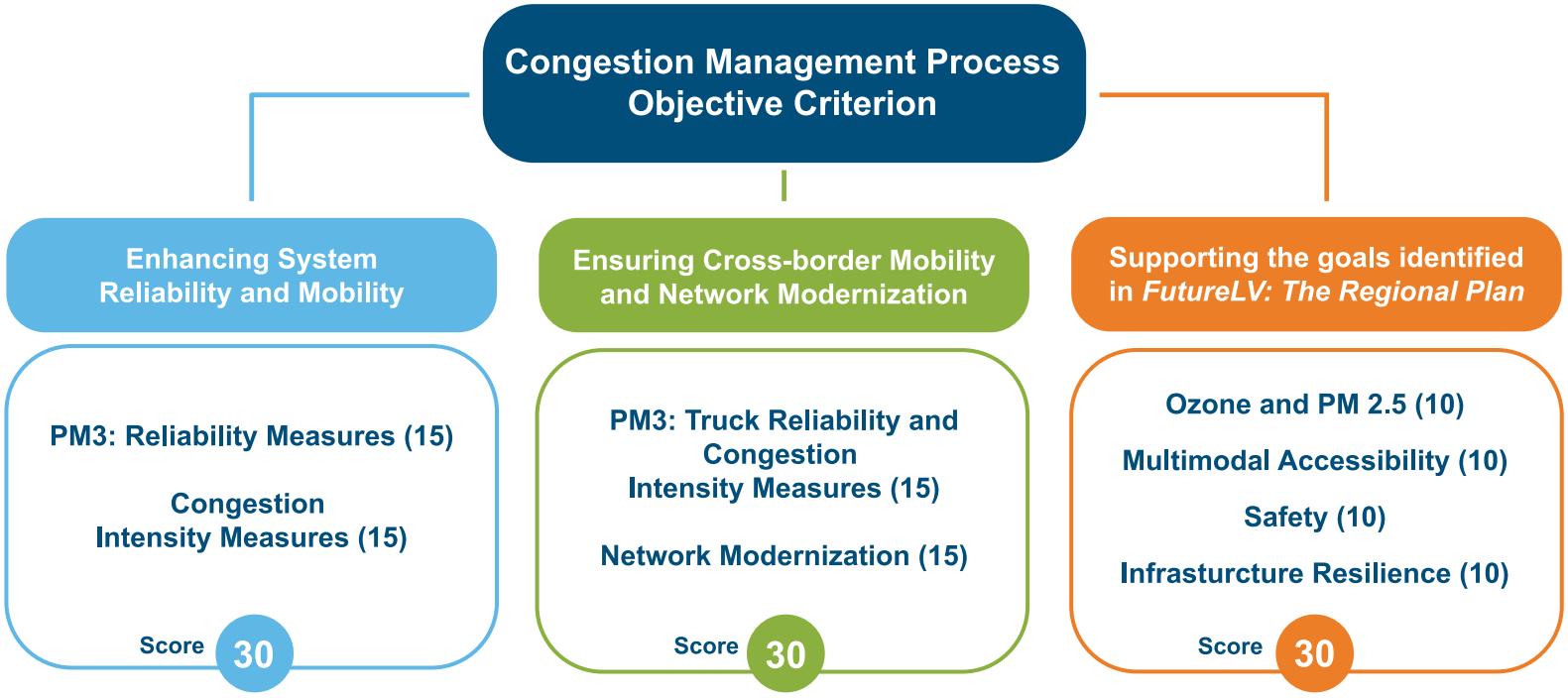
Corridors and bottlenecks were scored based on their performance across relevant CMP objectives and sub-objectives. Scores were aggregated by CMP objective and normalized to a maximum of 100 for consistent comparison. Locations with the highest cumulative scores represent the most critical areas for operational improvements and investment.

Using this process, LVTS identified the top 10 corridors and bottlenecks in Northampton and Lehigh counties. The top 10 scoring locations in both counties were identified, with volume to capacity ratio as a tie breaker to assign priority ranks.

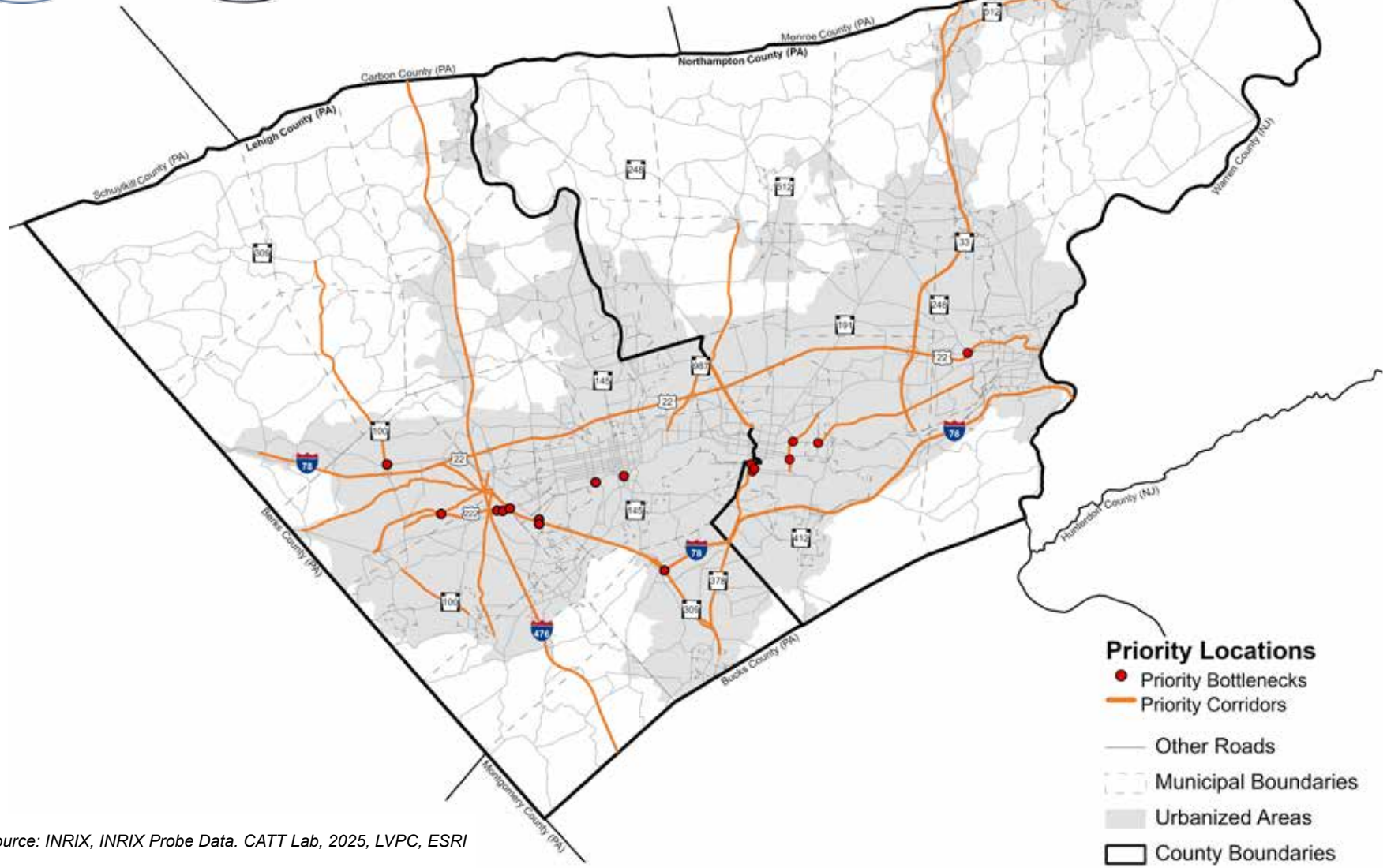
Shared corridors were given a rank for both counties. Restricted-access roadways, such as interstates, were moved to the bottom of the list to prioritize non-restricted-access roads. Lists of these priority corridors and bottlenecks are provided on the tables Priority Corridors and Priority Bottlenecks.

The LVTS Technical Committee formally adopted and weighed the CMP Objective Criteria on November 19, 2025, to guide the identification of priority corridors and bottlenecks.

LVTS staff then allocated points to specific sub-criteria to create a comprehensive score for each category. The tables in the upcoming pages show the resulting priority corridors and bottlenecks.

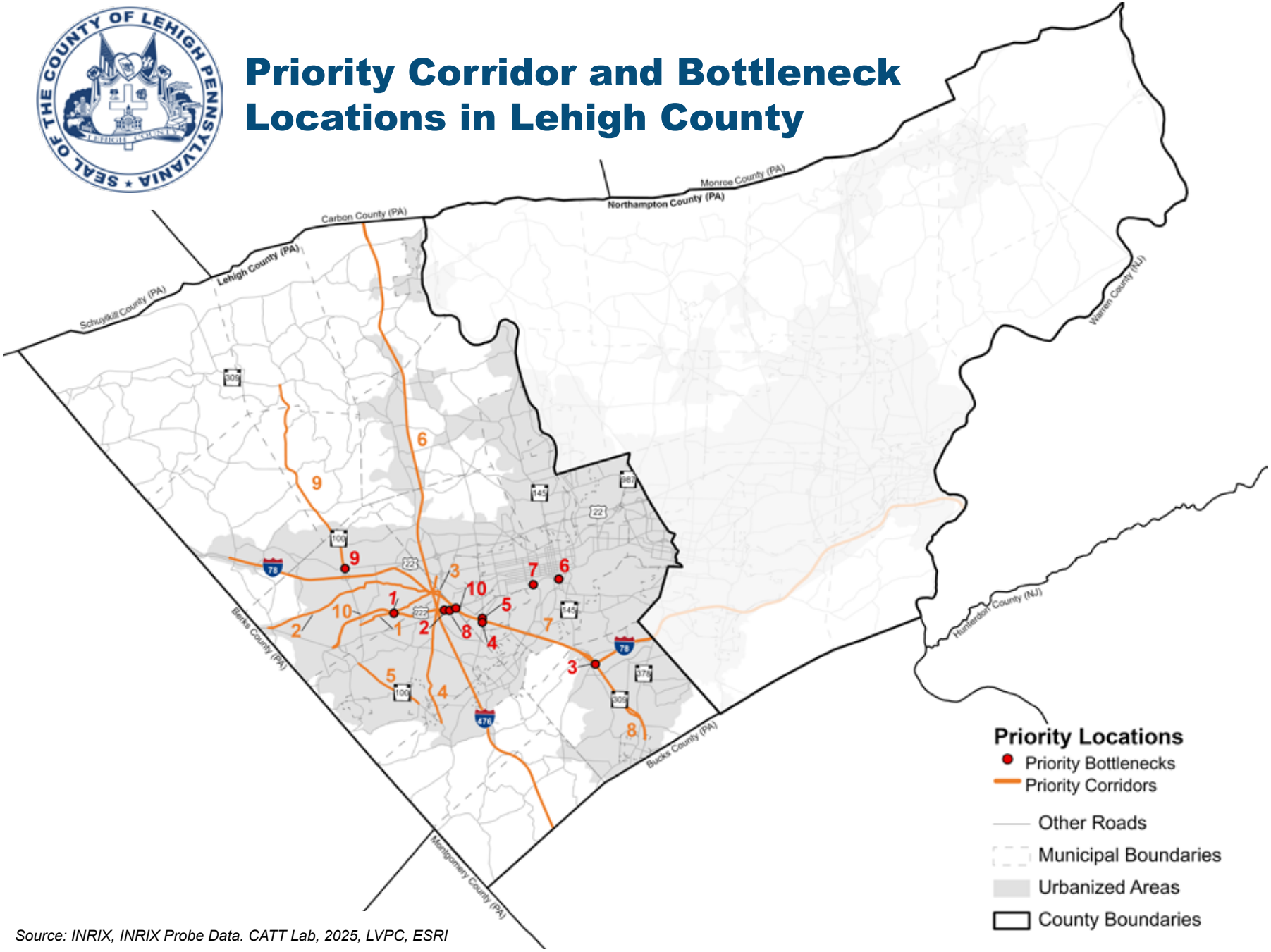


Priority Corridor and Bottleneck Locations in Lehigh and Northampton Counties



Source: INRIX, INRIX Probe Data. CATT Lab, 2025, LVPC, ESRI

Priority Corridor and Bottleneck Locations in Lehigh County



Source: INRIX, INRIX Probe Data. CATT Lab, 2025, LVPC, ESRI

Top 10 Priority Corridors in Lehigh County

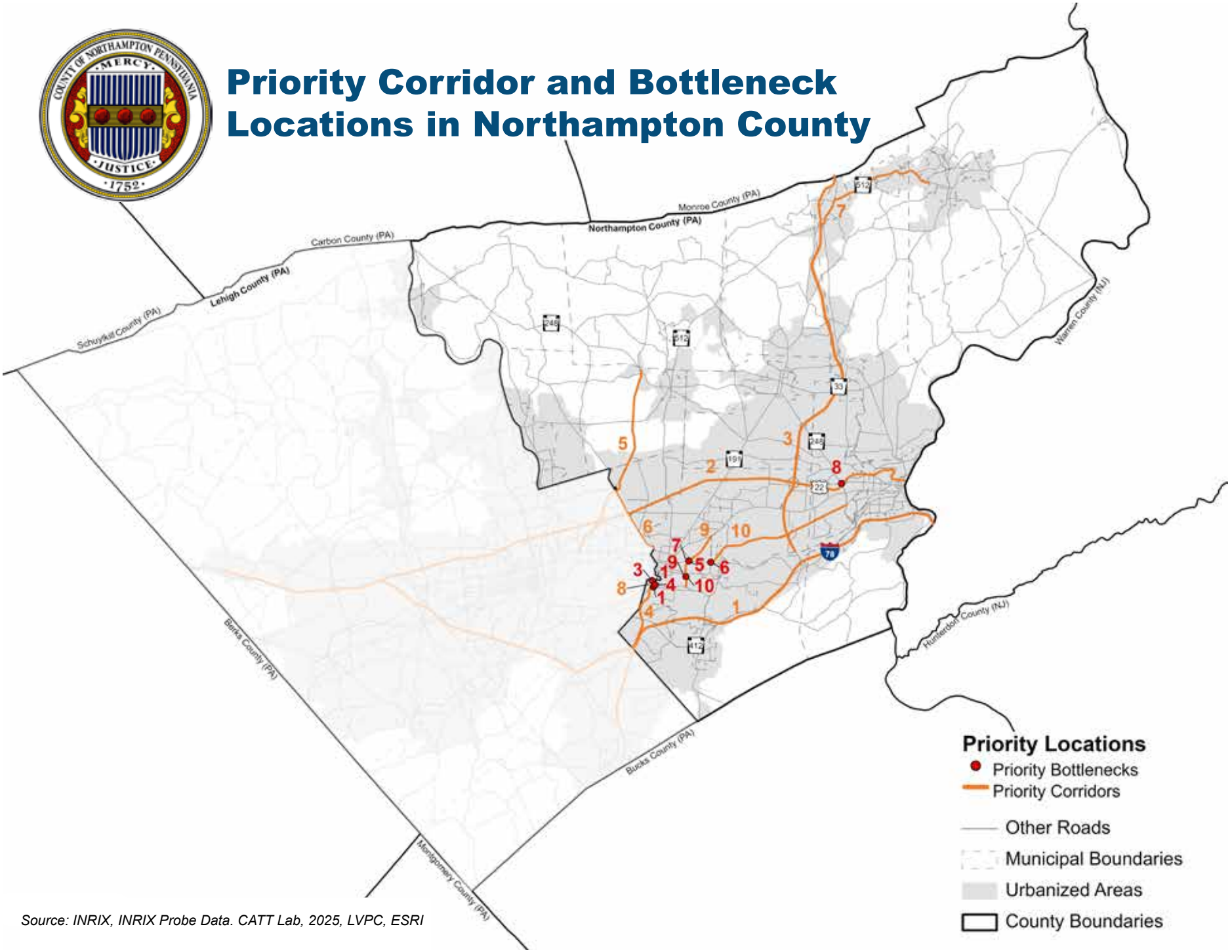
Roadway	Limits From	To	Length in Miles	AADT	ADTT	V/C	TTTI	TTTR	Objective Score	Rank
Cetronia Road	Old Route 100	Broadway	3.81	8,832	593	1.46	NA	NA	100	**1**
Schantz Road	Route 222	Cetronia Road	7.01	4,016	466	1.29	NA	NA	100	**2**
Schantz Road	Hamilton Blvd	Cetronia Road	1.21	9,755	828	1.03	NA	NA	100	**3**
Brookside Road	Kings Highway	Route 222	4.59	8,463	293	0.88	NA	NA	100	**4**
Main Street	Church Street	Spring Creek Road	2.85	9,425	888	0.88	1.54	NA	95.23	**5**
I-476	Lehigh County Line	Lehigh County Line	27.35	38,841	428	1.00	1.18	1.19	90.32	**6**
I-78	Lehigh County Line	Northampton County Line	32.40	29,594	5709	0.69	1.18	1.17	90.32	**7**
Route 309	Fairmount St	I-78	4.06	17,268	1,814	0.73	1.80	NA	89.29	**8**
Route 100	Tilghman St	Route 309	8.17	12,271	1,157	0.70	2.06	NA	89.29	**9**
Route 222	I-78	Hamilton Blvd	5.25	16,698	1421	0.670	1.48	NA	89.28	**10**

Top 10 Priority Bottlenecks in Lehigh County

Bottleneck	Municipality	County	AADT	ADTT	V/C	TTTI	TTTR	Objective Score	Rank
Route 222 (Westbound) near Mill Creek Road	Upper Macungie	Lehigh	19,400	1,248	0.73	1.62	NA	77.39	**1**
Route 222 (Eastbound) near Route 222 Bus / Hamilton Boulevard	Lower Macungie	Lehigh	16,379	1,537	0.65	1.42	NA	77.39	**2**
Route 309 (Southbound) near I-78 / Exit 60b & 20	Upper Saucon	Lehigh	26,344	3,712	0.71	1.39	NA	72.61	**3**
Route 29 (Northbound) near I-78 / Route 309	Salisbury	Lehigh	14,767	1,107	2.42	1.79	NA	71.43	**4**
Cedar Crest Boulevard (Northbound) near I-78 / 78/ Route 309	Salisbury	Lehigh	18,090	1,949	1.74	2.09	NA	71.43	**5**
Martin Luther King Junior Drive (Westbound) near Route 145 / Lehigh Street	Allentown	Lehigh	15,154	455	1.05	NA	NA	71.43	**6**
S. Jefferson Street (Northbound) near S. 15th Street / Martin Luther King Junior Drive	Allentown	Lehigh	12,728	586	0.99	NA	NA	70.67	**7**
Route 222 (Eastbound) near Route 222 Bus	Lower Macungie	Lehigh	16,178	1,497	0.66	1.53	NA	70.24	**8**
Tilghman Street (Eastbound) near Route 100	Upper Macungie	Lehigh	13,874	1,527	0.98	NA	NA	68	**9**
Route 222 (Southbound) near I-78	South Whitehall	Lehigh	12,883	1,117	0.76	1.84	NA	67.9	**10**


HCSC
COLD CRAFT BEER
STOCKERTOWN

Priority Corridor and Bottleneck Locations in Northampton County



Source: INRIX, INRIX Probe Data. CATT Lab, 2025, LVPC, ESRI

Top 10 Priority Corridors in Northampton County

Roadway	Limits From	To	Length in Miles	AADT	ADTT	V/C	TTTI	TTTR	Objective Score	Rank
I-78	Berks-Lehigh County Line	Delaware River Crossing	32.40	29,594	5,709	0.69	1.18	1.18	90.32	**1**
Route 22	I-78	Delaware River Crossing	22.66	31,466	3,590	0.58	1.52	NA	89.29	**2**
Route 33	I-78	Northampton-Monroe County Line	16.41	25,825	3,131	0.52	1.22	NA	89.29	**3**
Route 378	Route 309	Broadway Avenue	5.64	14,475	947	0.51	1.83	NA	89.29	**4**
Airport Road	Union Boulevard	West Main Boulevard	8.07	10,376	723	0.60	2.08	NA	87.50	**5**
Schonersville Road	Elizabeth Avenue	Airport Road	2.81	12,213	592	0.77	NA	NA	85.71	**6**
Route 512	Route 33	Market Street	5.51	11,592	676	0.91	NA	NA	84	**7**
Wyandotte Street	Broadway Avenue	Northampton County Rail Line	0.38	22,143	541	0.86	2.98	NA	78.57	**8**
Stefko Boulevard	Daly Avenue	Easton Avenue	2.47	13,802	774	0.93	NA	NA	76	**9**
Freemansburg Avenue	Cambria Street	Twenty fifth Street	6.14	13,640	799	0.86	NA	NA	76	**10**

Top 10 Priority Bottlenecks in Northampton County

Bottleneck	Municipality	County	AADT	ADTT	V/C	TTTI	TTTR	Objective Score	Rank
Route 412 (Westbound) near W. 4th Street	Bethlehem	Northampton	13,314	450	1.09	NA	NA	68	**1**
Route 412 (Eastbound) near W. 3rd Street / River Street	Bethlehem	Northampton	13,314	450	1.09	NA	NA	68	**2**
Route 378 (Northbound) near Hill-to-hill Bridge	Bethlehem	Northampton	17,267	852	0.62	2.37	NA	67.86	**3**
Route 412 (Westbound) near W. 3rd Street / River Street	Bethlehem	Northampton	17,832	813	0.61	2.34	NA	60.71	**4**
Stefko Boulevard (Northbound) near Pembroke Road	Bethlehem	Northampton	14,633	951	1.01	NA	NA	60	**5**
Pembroke Road (Eastbound) near Washington Street / Cambria Street	Freemansburg	Northampton	13,136	648	0.94	NA	NA	60	**6**
Pembroke Road (Westbound) near Stefko Boulevard	Bethlehem	Northampton	14,113	533	0.88	NA	NA	60	**7**
S. 25th Street (Northbound) near Route 22	Palmer	Northampton	14,039	551	0.65	2.61	NA	56.95	**8**
Stefko Blvd (Northbound) near Minsi Trail Bridge	Bethlehem	Northampton	13729	1115	1.00	NA	NA	54.67	**9**
Stefko Blvd (Southbound) near Minsi Trail Bridge	Bethlehem	Northampton	12368	996	0.98	NA	NA	54.67	**10**

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Public Participation

Public Participation

On March 2, 2026, LVTS hosted WorkshopLV: Transportation as part of the Congestion Management Plan (CMP) update process to identify congested locations across the Lehigh Valley. The workshop was advertised in the Lehigh Valley Press on February 26, 2026, and specific outreach was made to employers, private and non-profit providers of public transportation, transportation management organizations, and organizations that provide job access reverse commute projects or job-related services to low-income individuals.

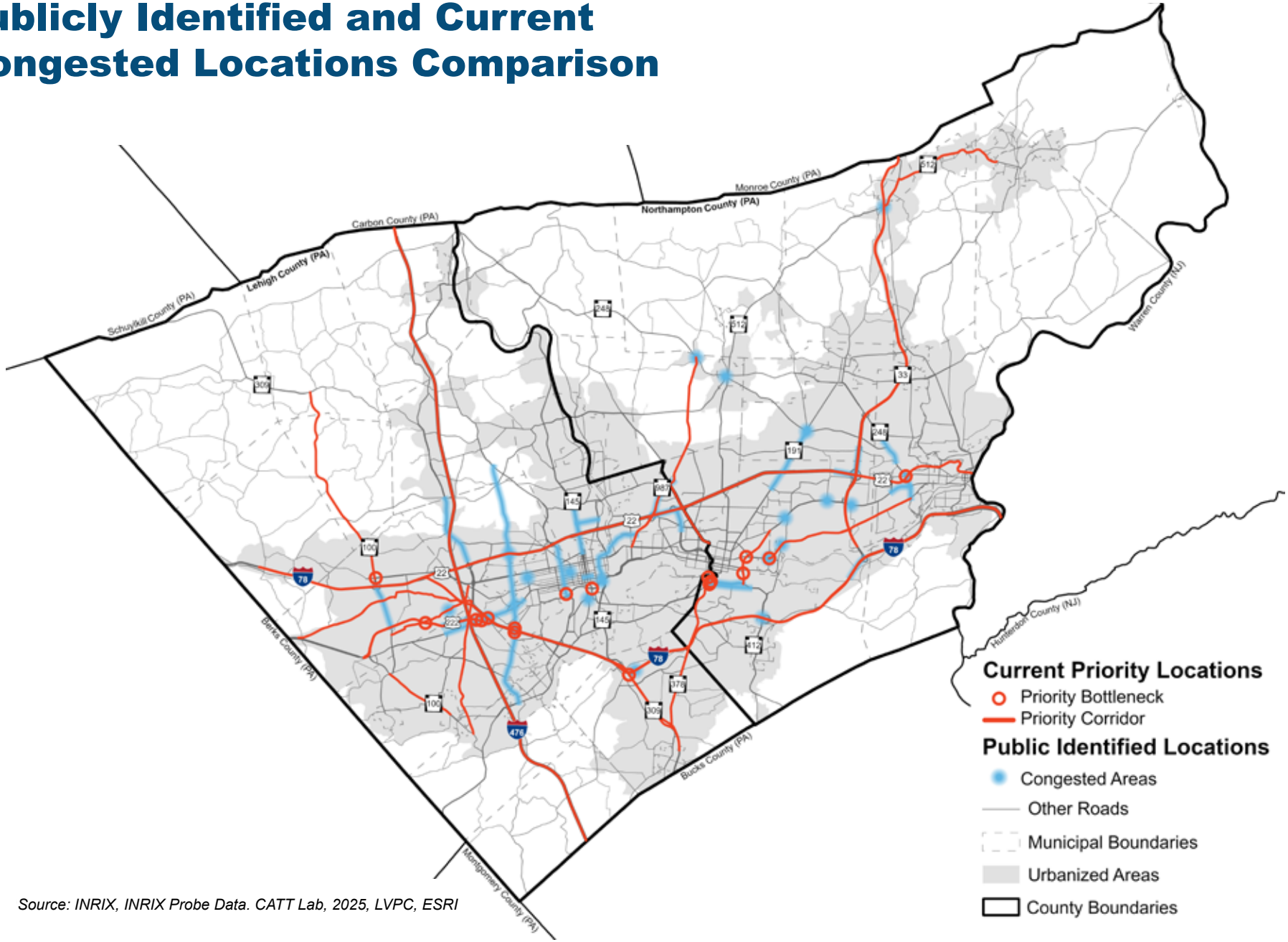
During the meeting, public participants, including employers, members of the public, local municipalities, and other stakeholders, were provided an overview of the Congestion Management Plan and invited to identify locations experiencing recurring congestion along the designated CMP network. The workshop resulted in the identification of multiple congested locations throughout the Valley. These locations were identified through a discussion at the event where participants expressed their concerns and experiences about congestion at these locations. This contextualizes qualitatively the congestion encountered throughout the Lehigh Valley.

Throughout the discussion, participants repeatedly emphasized that "schools, universities, healthcare locations, and shopping centers are recurring congestion generators, creating traffic surges at varying times of day, both during traditional peak hours and outside of them." Others noted that this is also true for truck movements, especially along western Lehigh County, which occur at irregular and often unpredictable times throughout the day. This is particularly noteworthy because the CMP analysis focused on AM and PM peak periods; the public's input suggests that congestion associated with these land uses may extend beyond those windows, indicating that time-of-day dynamics could be broader than captured in the peak-period analysis alone.

Participants noted common causes of congestion, including:

- **Badly timed lights**
- **No designated turning lanes**
- **Outdated intersections**
- **Complex intersections**
- **Lanes merging and weaving ramps**
- **Backup traffic around shopping centers and schools**
- **Non-coordinated signaling across municipalities**
- **Heavy industrial and truck traffic**
- **Driver behavior**
- **Stop signs**

Publicly Identified and Current Congested Locations Comparison



Source: INRIX, INRIX Probe Data. CATT Lab, 2025, LVPC, ESRI

One participant recognized that "we can never eliminate congestion entirely." Others emphasized that "even if travel speeds are lower, maintaining steady movement without frequent stops would represent a significant improvement".

"Congestion Can't Be Eliminated, but Steady Traffic Flow Is a Meaningful Improvement"

- Participant

This perspective closely aligns with the intent of the PM3 performance measures, which focus on improving travel time reliability and reducing excessive delay rather than eliminating congestion altogether.

A third, and perhaps most significant comment we heard was that "people are recognizing the increasing pace of economic development across the region." Participants widely agreed that "planning for the future is of utmost importance," emphasizing that growth must be managed proactively.

This sentiment underscores the need for coordinated, forward-looking planning efforts such as the Congestion Management Plan (CMP) and *FutureLV: The Regional Plan* to ensure that transportation infrastructure keeps pace with development and continues to support the region's long-term mobility and economic objectives.

Together, these insights show that congestion is a complex issue, and its timely and effective management is important. By and large, the comments from the participants aligned with the data analysis.

Qualitative feedback complemented quantitative analysis, validating identified locations and highlighting areas data alone might miss. Locations identified through both methods include:

1. Route 33
2. Route 512
3. 25th Street in Palmer Township
4. Route 22
5. Route 222
6. Cedar Crest Boulevard
7. Cetronia Road
8. Krocks Road
9. Route I-78
10. Freemansburg Avenue
11. Airport Road
12. Route 100

Most of the other locations identified through the public participation process were on or in close proximity to locations identified in the plan.

Congestion Mitigation Strategies

Traffic Congestion Mitigation Strategies

FHWA encourages identification and evaluation of strategies to address congestion in a systematic and effective manner. Recommended strategies typically fall into various categories, which may be considered individually or in combination depending on the congested location under study.

1. Demand Management Strategies focus on influencing travel behavior to reduce congestion and emissions. Key approaches include promoting compact, transit-oriented and infill development, managing parking through pricing and restrictions, encouraging alternatives to single-occupancy vehicles via employer programs and flexible schedules, and supporting active transportation by completing bicycle lane/trail networks and sidewalks, and developing public awareness initiatives.

2. Traffic Operational Improvements involve optimizing the performance of the existing roadway network. Strategies may include signal timing and coordination, intersection and interchange improvements, incident management, and other operational techniques designed to enhance traffic flow and reduce delays.

3. Public Transportation Improvements aim to provide viable alternatives to driving, including expanded transit service, improved frequency and reliability, and enhanced access to transit facilities. These strategies encourage a shift from single-occupancy vehicles to higher-occupancy buses, supporting air quality goals. They may also include fare and incentive programs, demand-responsive and flexible transit options, and transit-oriented development (TOD) strategies to integrate land use with transit access.

4. Intelligent Transportation Systems (ITS) Technologies leverage technology to improve real-time traffic management, traveler information, and overall system efficiency. ITS strategies should be consistent with the regional ITS architecture and may include traffic monitoring, adaptive signal control, integrated traveler information systems, and readiness for connected and autonomous vehicles (CAVs). Regional coordination, linking ITS across jurisdictions, can further enhance corridorwide efficiency and support seamless multimodal travel.

5. Additional System Capacity may only be considered when other strategies cannot adequately address congestion. As the Lehigh Valley is in a Transportation Management Area (TMA) designated as nonattainment for ozone and maintenance for PM 2.5, federal funding for projects that significantly increase SOV capacity is restricted, with exceptions limited to safety improvements or the elimination of bottlenecks. When adding capacity, a Complete Streets approach should be applied to accommodate multimodal users, including pedestrians, cyclists, and transit riders. Environmental mitigation should also be integrated, such as green infrastructure, low-impact construction methods, and other strategies to minimize ecological impacts.

6. The CMP requires a thorough analysis, when additional capacity is warranted, demonstrating that travel demand reduction and operational strategies cannot fully meet corridor needs. It also requires that all reasonable strategies for managing the new SOV capacity are incorporated, with public engagement and clear communication of results to decision-makers and stakeholders to ensure transparency and informed decision-making.

7. Freight and Commercial Vehicle Strategies aim to reduce congestion and improve efficiency by incentivizing delivery trucks to operate during non-peak hours, encouraging consolidation of shipments, and reducing unnecessary truck trips. These measures help minimize conflicts between commercial vehicles and general traffic while supporting smoother, safer travel for all road users.

For all strategies, the CMP includes identification of implementation schedules, responsible agencies, and potential funding sources. Additionally, a process for periodic assessment of implemented strategies is essential, with results communicated to decisionmakers and the public to guide future planning and ensure that strategies remain effective in meeting established performance and air quality objectives.

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Priority Corridors

In this CMP, priority corridors and bottlenecks are identified through performance-based data analysis and a weighting methodology developed by LVTS to establish regional priorities. These corridors and bottlenecks are ordered based on their composite CMP objective scores.

Specific strategies for each location are then developed through a comprehensive review process that includes manual screening of current conditions using tools such as Google Maps Streetview, along with data-driven evaluation of PM3 system performance, asset management conditions and safety-related indicators.

This analysis is further informed by a review of project priorities identified in the TIP and *FutureLV: The Regional Plan* to ensure consistency with regional goals, investment priorities, and long-range planning objectives.

Cetronia Road (Old Route 100 to Broadway)

Cetronia Road serves a mix of residential, commuter, institutional and freight traffic. The western segment passes established neighborhoods, while central and eastern sections provide access to major employment and activity centers.

Key traffic generators, including St. Luke's University Health Network orthopedic and dental facilities, logistics hubs like U-Line and Amazon, and commercial operations such as the Coca-Cola plant, cause congestion unpredictably throughout the day, highlighting the need for strategic traffic management and infrastructure improvements.

Participants in the CMP workshop on March 2 noted the intersection with Krocks Road, which is controlled by an all-way stop as particularly congested.

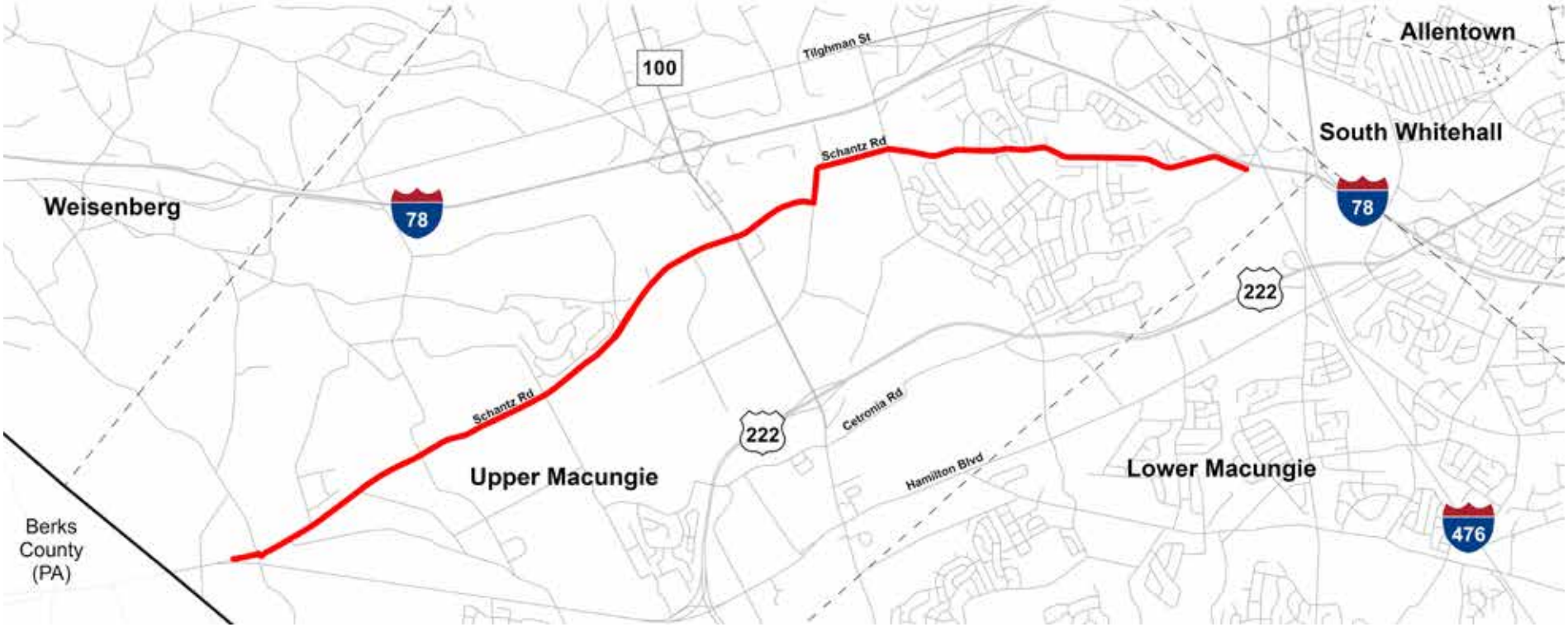
Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	593
Annual Average Daily Traffic	8,832
Land use classification	Residential, Agricultural, Commercial
Length	3.81 miles
Lanes	2
Municipalities	Upper Macungie and South Whitehall Townships
Level of Service (V/C)	1.47
PHED	N/A
LOTTR	N/A
TTTI	N/A
TTTR	N/A
High Crash Severity	Yes
Priority Rank	1

Planned Improvements

- *FutureLV: The Regional Plan*
  - Jaindl Highway (Route 222), Grim Road and Cetronia Road Intersection Improvements - Replace turn lanes with “jughandle” ramps to improve safety and capacity, project also involves multimodal infrastructure, including sidewalks.

Strategies

- Signal improvements
- Integrated Corridor Management (ICM) - Corridor wide management of freeways, transit, arterials, and parking using ITS and innovative strategies
- Walking and bicycle improvements
- Incident management and emergency response
- Accommodate residential, employment and healthcare-related travel, while reducing crash risk



Schantz Road (Route 222 to Cetronia Road)

Schantz Road is a major east-west corridor in Upper Macungie Township, linking Route 100 with Route 222 and serving agricultural, industrial, residential, and freight land uses. The western segment near the Route 863/Route 222 roundabout is primarily agricultural, transitioning to industrial and warehousing near Ruppsville Road with substantial truck activity. Eastward toward I-78, land use becomes increasingly residential, requiring the corridor to accommodate both commuter and freight traffic.

Schantz Road provides access to one of the Lehigh Valley's most economically significant industrial districts, including major manufacturing, food and beverage, medical supply, and distribution facilities.

Key employers and freight generators include Coca-Cola, Ocean Spray, Niagara Bottling, B. Braun Medical, Bimbo Bakeries, Nestlé, Sharp Corporation and Kane Logistics. High truck volumes and time-sensitive freight movements make Schantz Road a critical connector for the region's economic base.

Planned Improvements

- *FutureLV: The Regional Plan*
  - Replacement/Rehabilitation of the Schantz Road (Route 2015) bridge over a tributary of Cedar Creek.

- Nestle Way/Grim Road Corridor and Schantz Road (Route 3012) Intersection Improvements - Widen Nestle Way, including a culvert to accommodate turning lanes between Adams Road and Oldt Road, intersection improvements at Schantz Road and Grim Road/Industrial Boulevard to improve freight mobility in the area and improve safety. Project also includes pedestrian and multimodal facilities such as sidewalks.
- Schantz Road resurfacing betterment from Route 222 to Boulder Drive, improving pavement conditions along a freight-heavy section.

- Transportation Improvement Program (TIP)
  - Schantz Road over a Tributary to the Cedar Creek: Replacement/ Rehabilitation of Schantz Road (Route 2015) bridge over a tributary of Cedar Creek (MPMS 92049)*
- Past CMP actions addressing congestion and safety include new traffic signals and geometric upgrades at Schantz Road and Farmington Road (MPMS 78556); planned roundabouts at key intersections (MPMS 79554; construction programmed in the 2015 and 2017 TIPs)

Strategies

- Resurface freight-heavy segments and rehabilitate or replace bridges
- Geometric design and signal enhancements
- Prioritize heavy-vehicle accommodation while maintaining corridor connectivity
- Incorporate pedestrian facilities where feasible
- Implement adaptive signal timing for variable truck flows
- Evaluate truck parking/staging, access management
- Intersection upgrades including roundabouts
- Loading and deliveries improvement

** Multimodal Project Management System (MPMS) serves as the identification number for TIP projects.*

Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	466
Annual Average Daily Traffic	4,015
Land use classification	Industrial, Residential, Agriculture
Length	7.01 miles
Lanes	2
Municipalities	Upper Macungie Township
Level of Service (V/C)	1.30
PHED	N/A
LOTTR	N/A
TTTI	N/A
TTTR	N/A
High Crash Severity	Yes
Priority Rank	2

Schantz Road (Cetronia Road to Hamilton Boulevard)

Beginning at Cetronia Road, this segment of Schantz Road passes a mix of commercial, industrial, and institutional uses. Key generators include Rye Barker Fire & Safety, Hannabery HVAC, Green Acres Outdoor Living, U-Haul and Budget Store & Lock Self Storage, manufacturing supply operations, multiple auto dealerships and a stone quarry, along with a church and smaller businesses that contribute to steady local traffic. Approaching Hamilton Boulevard, the corridor becomes a major access point for expanding regional industrial and commercial activity. Portions lie within a designated floodplain, highlighting vulnerability to storm impacts and the need for resilient infrastructure. An off-system bridge requires structural monitoring and targeted investment to maintain safe movement for passenger and truck traffic. Sharp curves leading to a narrow one-lane bridge create bottlenecks, elevate safety risks, and combined with limited shoulders, constrain emergency access and heavy-vehicle maneuvering.

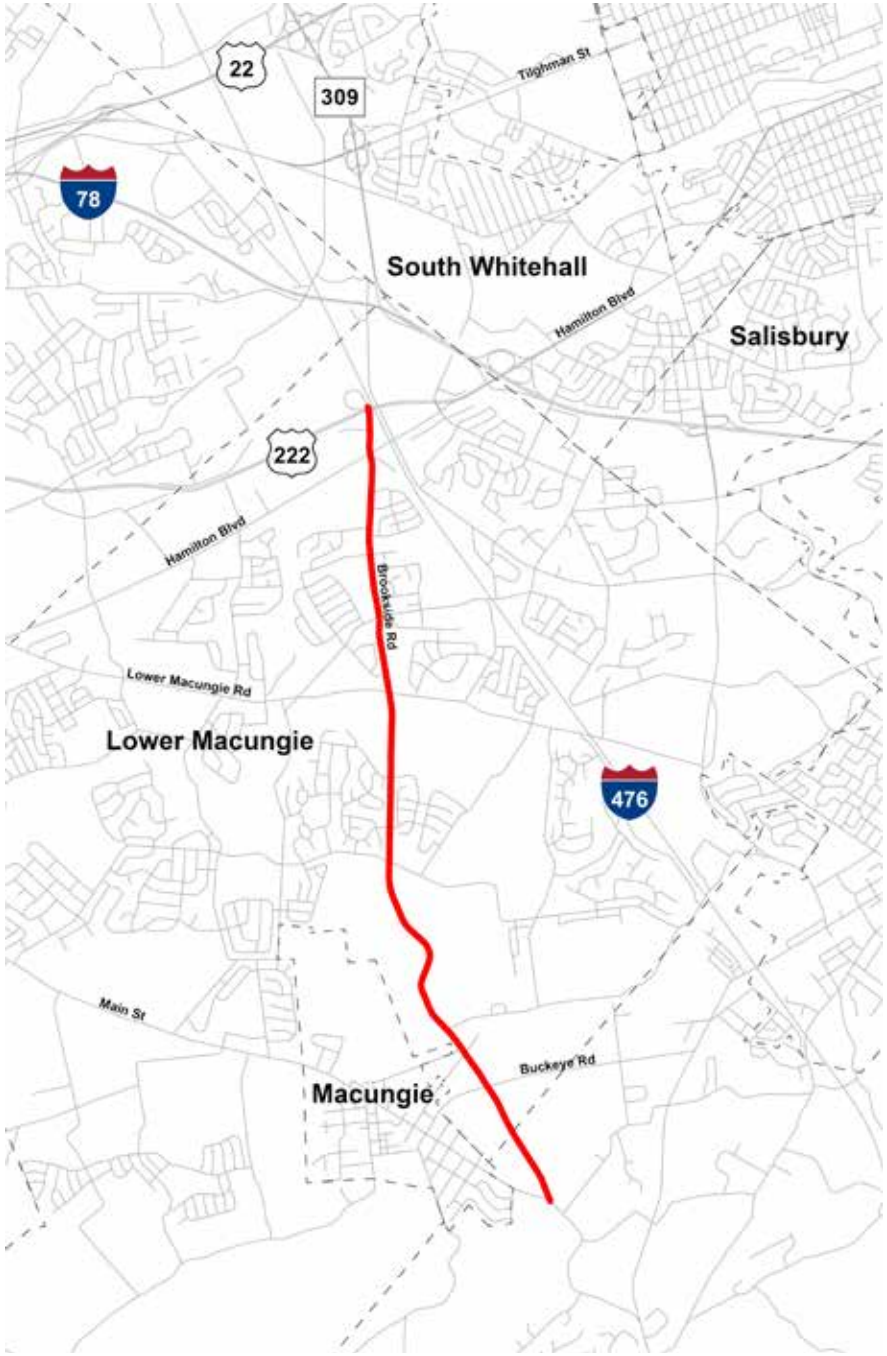
Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	828
Annual Average Daily Traffic	9,754
Land use classification	Commercial, Industrial
Length	1.20 miles
Lanes	2
Municipalities	Upper Macungie and Lower Macungie Townships
Level of Service (V/C)	1.04
PHED	NA
LOTTR	NA
TTTI	NA
TTTR	NA
High Crash Severity	Yes
Priority Rank	3

Planned Improvements

- Transportation Improvement Program (TIP)
  - Schantz Road/Tributary of Cedar Creek: This project involves a replacement/rehabilitation of the Schantz Road bridge over a tributary of Cedar Creek in Upper Macungie Township, Lehigh County. (Project Manager Number: 6108714550)

Strategies

- Reconfigure geometric design
- Add emergency pull-offs to improve truck maneuverability
- Implement adaptive signal control and coordinated intersection upgrades
- Support freight demand
- Upgrade drainage and monitor off-system bridges
- Apply structural improvements to address floodplain risks
- Prioritize improvements that maintain reliable truck access.



Brookside Road/E. Macungie Road (Route 222 to Kings Highway North)

Brookside Road is a major north-south corridor in Lehigh County, serving Lower Macungie Township and connecting Route 222 with Route 100. It carries significant commuter traffic and provides access to residential neighborhoods, commercial centers, and institutional uses.

The corridor serves schools including Eyer Middle School, Shoemaker Elementary and Macungie Elementary, creating peak travel periods tied to student pick-up and drop-off. Portions intersect pipeline infrastructure operated by Buckeye Partners, and the road functions as an evacuation route for pipeline-related emergencies, emphasizing its role in regional safety and emergency management. Previously identified as a focus corridor in *MoveLV: The Congestion Management Process*, Brookside Road faces operational and safety challenges. Key intersections at Spruce Road, Liberty Lane and Oplinger Road lack traffic control despite increasing turning movements and school traffic, highlighting the need for CMP attention and targeted improvements.

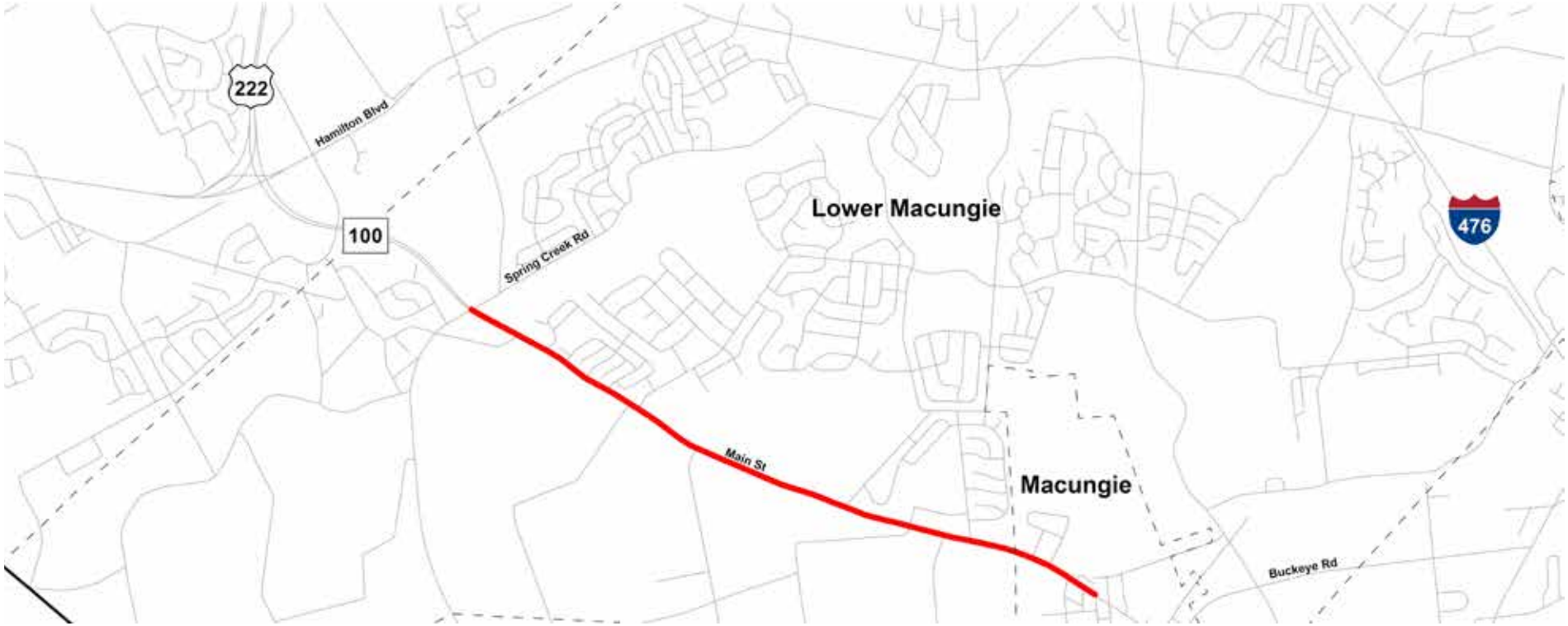
Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	293
Annual Average Daily Traffic	8,463
Land use classification	Residential, Agriculture
Length	4.61 miles
Lanes	2
Municipalities	Lower Macungie and Upper Milford Townships
Level of Service (V/C)	0.89
PHED	N/A
LOTTR	N/A
TTTI	N/A
TTTR	N/A
High Crash Severity	Yes
Priority Rank	4

Planned Improvements

- Not available currently.

Strategies

- Signal upgrades at key intersections
- Expand sidewalk connectivity near high pedestrian areas
- Strengthening traffic control and coordinating evacuation routes
- Incident and emergency management
- Integrated corridor management
- Balance residential, school, and through-traffic needs to reduce crashes and improve corridor reliability



Main Street (Church Street to Spring Creek Road)

Along this segment of Route 100, logistics and industrial facilities such as Mack Trucks, Allentown Logistics, Pratt Industries, UPS Shipping and St. Lukes Care at Macungie sit directly opposite dense residential neighborhoods, creating a corridor where heavy truck and commuter traffic routinely compete for limited roadway space.

The narrow roadway with single lanes in each direction and no usable shoulders leaves little room for emergency stops and contributes to capacity constraints and elevated volume-to-capacity ratios. Several intersections along Main Street require lighting and signal upgrades for recurring congestion and safety risks.

Portions of the corridor lie within a floodplain and include off-system bridges, underscoring vulnerability to storm events and the need for infrastructure resilience.

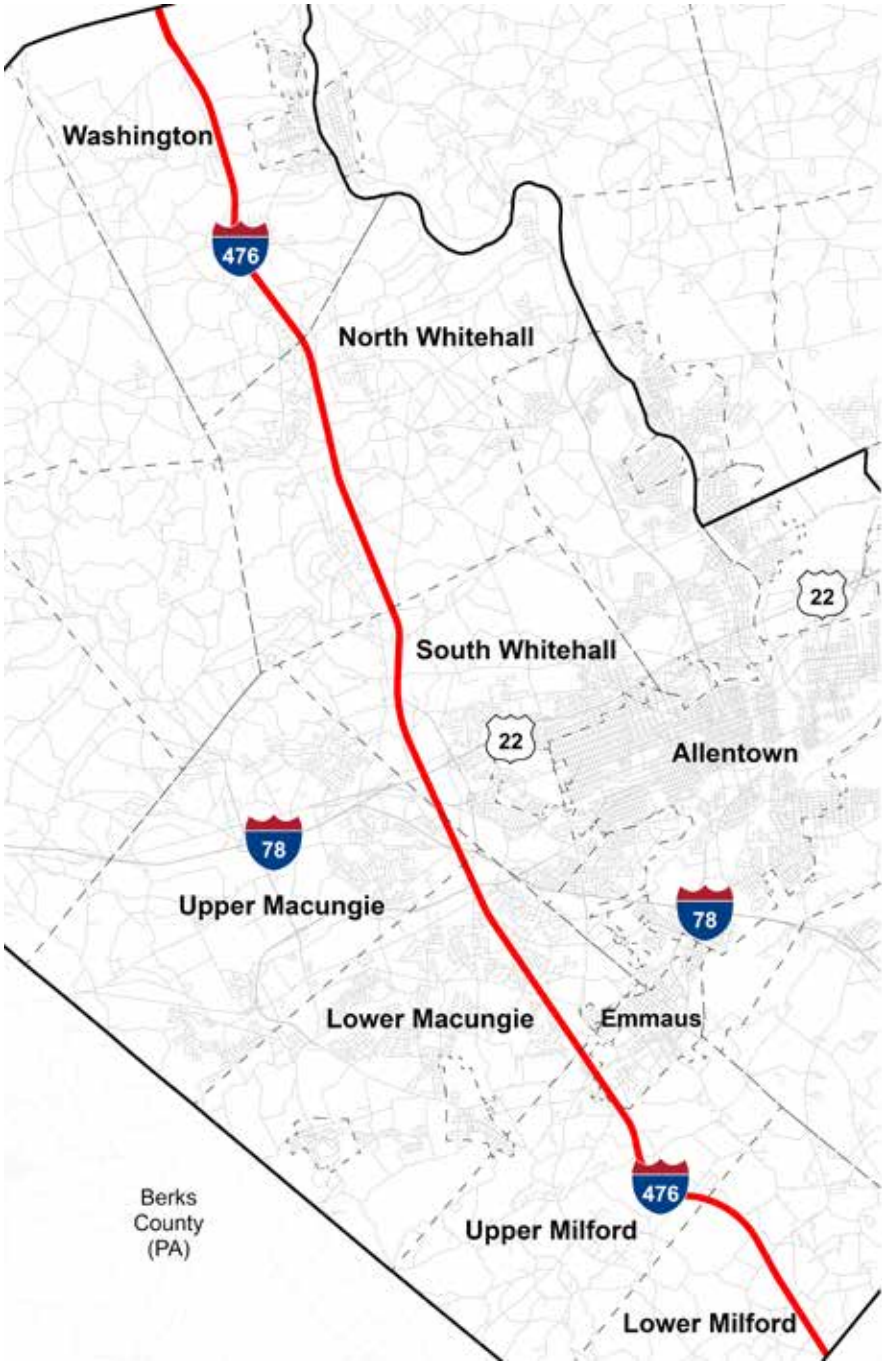
Planned Improvements

- *FutureLV: The Regional Plan*
- Schantz Road resurfacing betterment from Route 222 to Boulder Drive, supporting pavement condition improvement along a freight-heavy section.
- Resurfacing between Alburtis Road and Weilers Road.
- Targeted upgrades from Chestnut Street to Creamery Road.
- Major intersection improvements at Route 29 and Kings Highway.

Strategies

- Resurface and perform betterment along freight-heavy sections
- Implement targeted upgrades and intersection improvements
- Prioritize improvements that accommodate heavy vehicles
- Maintain connectivity between key industrial and regional routes
- Create infrastructure resilience for storm or flood related traffic response strategies

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	888
Annual Average Daily Traffic	9,425
Land use classification	Residential, Rural, Residential, Agriculture
Length	2.85 miles
Lanes	2
Municipalities	Macungie Borough and Lower Macungie Townships
Level of Service (V/C)	0.89
PHED	1828
LOTTR	1.049
TTTI	1.131
TTTR	1.205
High Crash Severity	Yes
Priority Rank	5



I-476 in Lehigh County

The Pennsylvania Turnpike (I-476) serves as a major regional and interstate freight corridor, providing critical north–south connectivity through the Lehigh Valley and linking local roadways to the Turnpike and other key arterials. It carries high volumes of passenger and heavy truck traffic, particularly for freight accessing industrial areas and regional distribution centers.

While the roadway is designed for high-capacity travel, congestion at interchanges, speed differentials between passenger vehicles and trucks, and limited merging areas can create operational challenges and safety concerns. These conditions may contribute to travel time variability and elevated crash risk, particularly during peak periods and adverse weather, affecting both mobility and freight efficiency in the region.

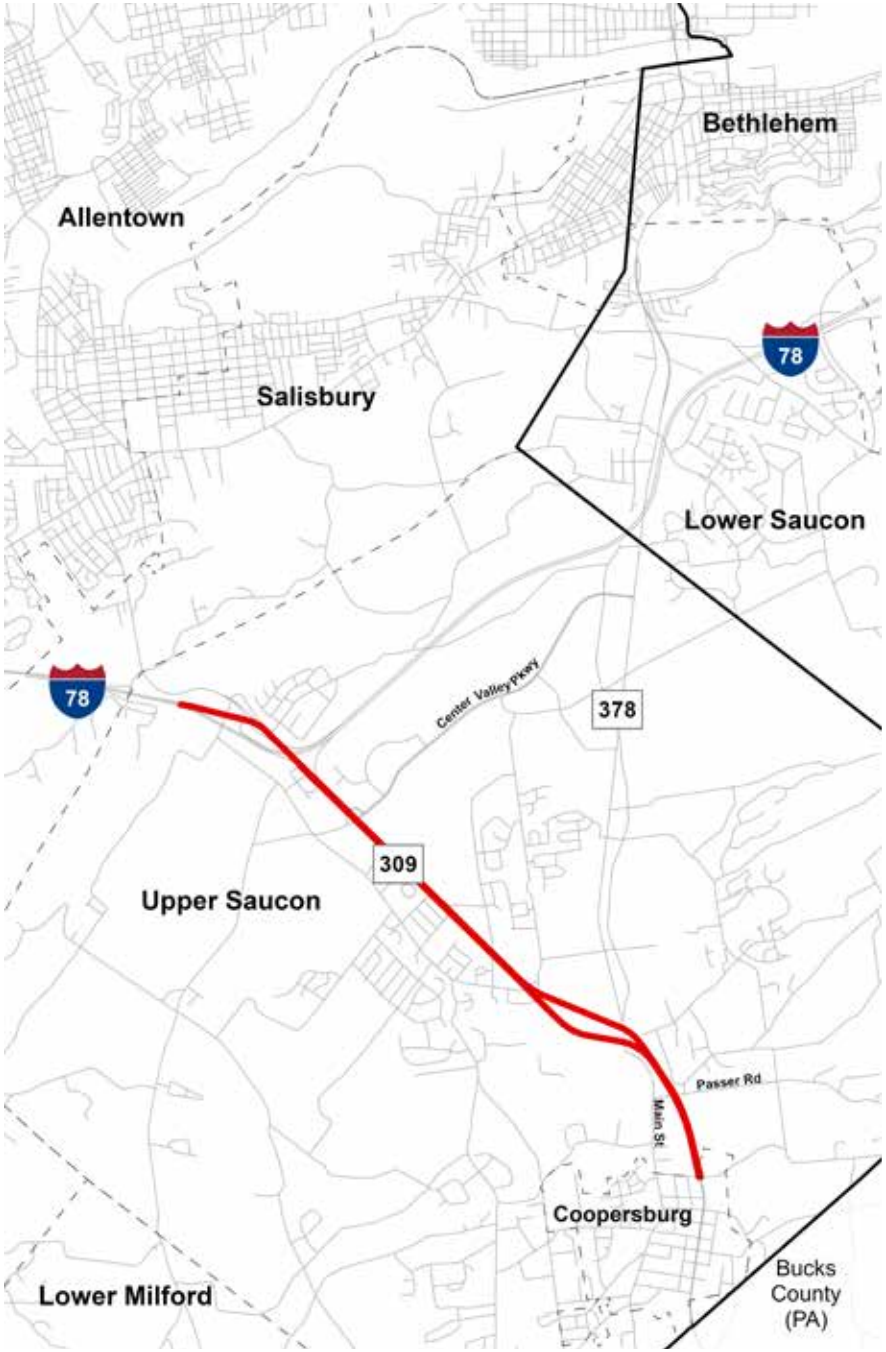
Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	427
Annual Average Daily Traffic	38,841
Land use classification	Many use types
Length	27.35
Lanes	4
Municipalities	Through Lehigh County
Level of Service (V/C)	1.01
PHED	1827.992
LOTTR	1.49487
TTTI	1.238096
TTTR	1.205507
High Crash Severity	Yes
Priority Rank	6

Planned Improvements

- *FutureLV: The Regional Plan*
  - Planned to widen section from Quakertown 663 interchange to the Lehigh tunnel from four lanes to six.

Strategies

- Reconfigure geometric design
- Add emergency pull-offs to improve truck maneuverability
- Support freight demand
- Upgrade drainage and monitor off-system bridges
- Apply structural improvements to address floodplain risks
- Prioritize improvements that maintain reliable truck access



Route 309 (I-78 to Fairmount Street)

Route 309 serves as a critical north - south arterial linking I-78 in the Lehigh Valley to Bucks County, Montgomery County, and Philadelphia, accommodating a mix of regional through traffic and substantial local access demand. Existing conditions along the corridor reflect this dual role, with high daily traffic volumes, frequent congestion during peak commuting periods, and recurring delays at major intersections and commercial access points. The roadway traverses a predominantly suburban context characterized by intensive roadside development, numerous signalized intersections and closely spaced driveways, all of which contribute to reduced travel time reliability and operational inefficiencies.

Heavy truck activity associated with regional freight movement further compounds congestion, particularly where through traffic interacts with local turning movements.

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	1,814
Annual Average Daily Traffic	17,268
Land use classification	Residential, Agriculture
Length	4 miles
Lanes	4
Municipalities	Upper Saucon Township
Level of Service (V/C)	0.74
PHED	9430.585923
LOTTR	1.19534
TTTI	1.833575
TTTR	NA
High Crash Severity	Yes
Priority Rank	8

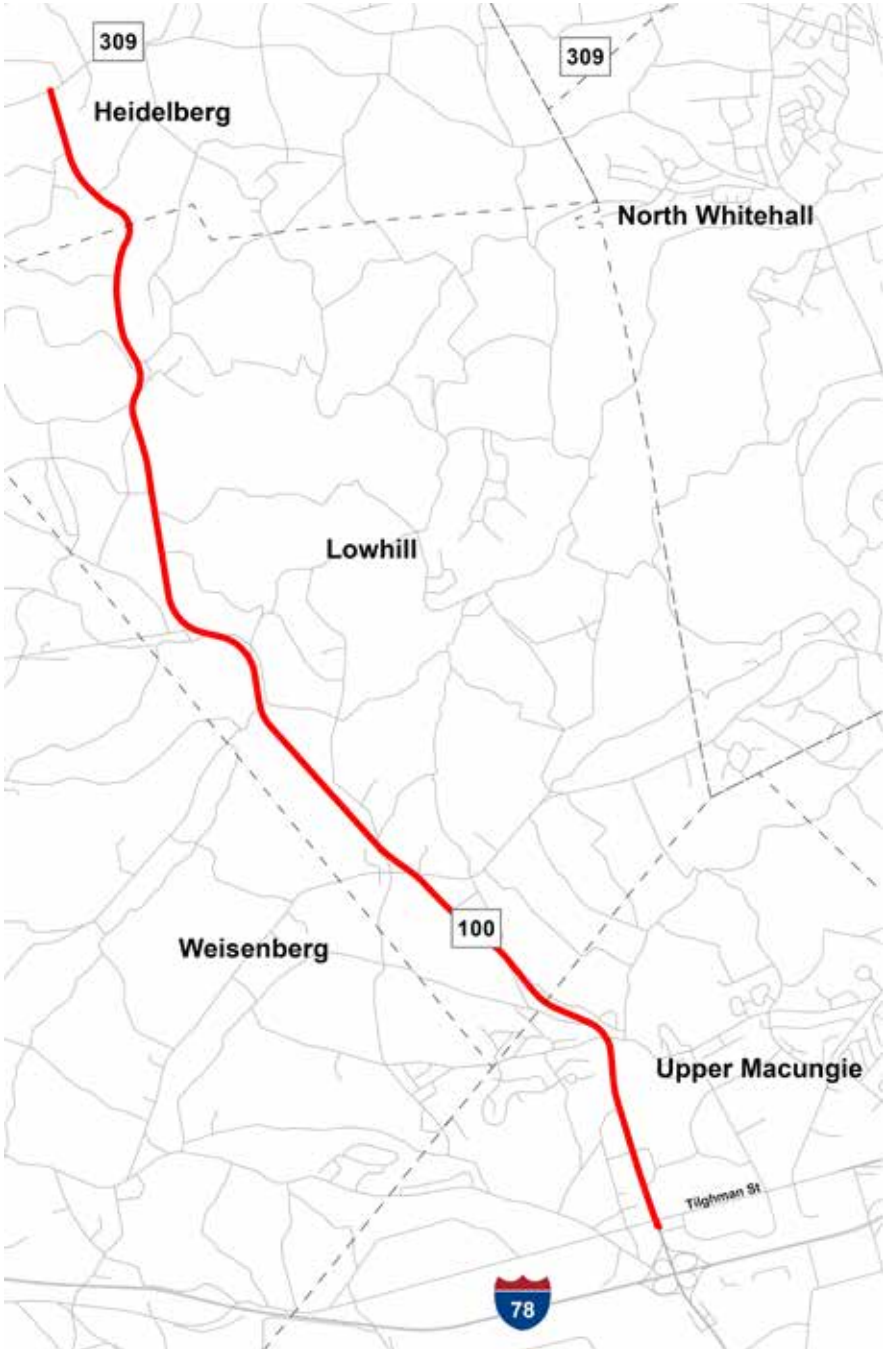
While the corridor provides important connectivity for commuters, freight, and goods movement, its current operating conditions indicate constrained capacity, limited multimodal accommodations in some segments, and heightened sensitivity to incidents and seasonal demand fluctuations.

Planned Improvements

- *FutureLV: The Regional Plan*
  - Route 309 - Rehabilitation/replacement of box culvert over tributary to Kistler Creek.
  - Route 309 Resurface Betterment Project - Resurface from Lehigh/Bucks Counties Line in Coopersburg Borough to Center Valley Parkway (Route 2044) in Upper Saucon Township.
  - Route 309 - Signal Head Reflective Backplate - The low cost safety improvement is adding signal head backplates on the northbound and southbound Route 309 signals.
  - Route 309 Center Valley Interchange - Interchange improvements.
  - Interstate 78 from Lehigh Street (Route 2005) to Route 309 South Interchange - Highway preservation/restoration, including pavement overlay and patching of existing mainline and shoulders, rehabilitation/replacement of drainage system, including access ramps.
  - Interstate 78 Corridor Safety Improvements from Emmaus Avenue (Route 2002) to east of Route 309 Interchange for Center Valley - Improvements include conversion of shoulders into a dual use lane on I-78 eastbound from the Emmaus Avenue (Route 2002) Interchange to the Route 309 southbound split. The median barrier will be updated to add glare screens, and the drainage system will be rehabilitated or replaced. Two ramps at the Route 309 interchange will also be reconstructed.
  - Route 309 Northbound Realignment - Relocated northbound traffic to southbound traffic side between Route 378 and Lanark Road (Route 2039) to improve traffic congestion, safety and the quality of life of residents along the current northbound side of Route 309.
  - Route 309 Pedestrian Bridge - Construct an alternative mode of transportation multimodal bridge over Route 309 to connect residents to recreational amenities and trails on both sides of highway.
- Transportation Improvement Program (TIP)
  - Route 309 and Center Valley Interchange (MPMS: 102160).

Strategies

- Rehabilitate and replace aging roadways, bridges and drainage assets
- Integrated corridor management
- Implement low-cost and targeted safety improvements
- Upgrade key interchanges to reduce congestion, improve ramp functionality
- Use operational and geometric improvements to better manage demand
- Expand pedestrian and multimodal connections to improve safe access across major roadway barriers.
- Apply roadway realignments and design solutions



Route 100 (Tilghman Street to Route 309)

Route 100 functions as a major north - south connector between Tilghman Street and Route 309, carrying medium levels of freight activity along its rural segments.

Despite its importance for goods movement, the corridor lacks sufficient shoulder width, creating unsafe conditions for emergency pullovers and limiting operational flexibility. Turning lane design deficiencies and outdated pavement markings further contribute to movement inefficiencies, particularly where rural cross-sections narrow.

The corridor also experiences a high Travel Time Index, indicating congestion and delay that could be mitigated through signal retiming strategies aimed at improving flow for both freight and general traffic.

South of Tilghman Street, the road provides essential access to Upper Macungie Township's extensive distribution and logistics clusters, an area that generates sustained commercial and freight volume. Its direct connectivity between I-78 and Route 309 positions

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	1,156
Annual Average Daily Traffic	12270
Land use classification	Rural Residential, Agriculture, Industrial
Length	8.17 miles
Lanes	2 and 4
Municipalities	Upper Macungie, Heidelberg and Lowhill Townships
Level of Service (V/C)	0.71
PHED	7096.487
LOTTR	1.409
TTTI	2.116
TTTR	NA
High Crash Severity	Yes
Priority Rank	9

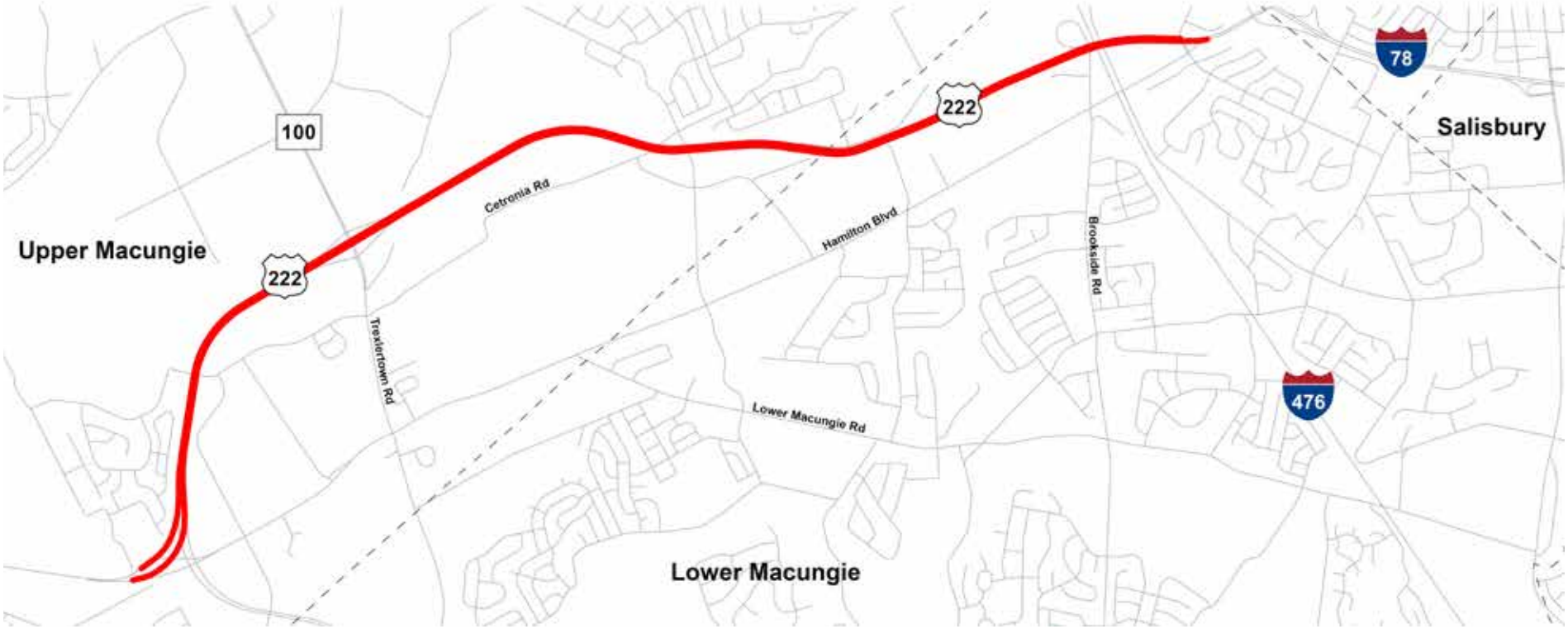
Route 100 as a preferred bypass for through-truck traffic, reinforcing its regional function as both a freight corridor and a pressure-relief route for parallel highways.

Planned Improvements

- *FutureLV: The Regional Plan*
  - Route 100 - Rehabilitation/replacement of bridge over Hassen Creek.
  - Route 100 Betterment Project - Improvements from Creamery Road to Routes 100/222 split.
  - Route 100 Betterment Project - Improvements from Chestnut Street to Creamery Road.
  - Route 100 Betterment Project - Improvements from Tilghman Street to Kernsville Road.
  - Route 100 Betterment Project - Improvements from Kernsville Road to Route 309.
  - Route 100 Turning Lane at Hollenbach Road - Construct turning lane from northbound Route 100 onto Hollenbach Road.
  - Route 100 Turning Lane at Lyon Valley Road - Construct turning lane from northbound Route 100 onto Lyon Valley Road.

Strategies

- Prioritize rehabilitation and replacement of aging bridges for long-term reliability
- Integrated corridor management
- Implement Route 100 betterment projects and intersection upgrades to improve throughput and reduce congestion
- Incorporate sidewalks and pedestrian infrastructure at key intersections
- Turning and Geometric Improvements
- Freight Operations Improvements
- Maintain and expand Freeway Service Patrol coverage to reduce non-recurring congestion



Route 222 (Hamilton Boulevard to I-78)

Route 222 between Hamilton Boulevard and I-78 in the Lehigh Valley is a principal arterial carrying commuter, freight and regional traffic, with two to four lanes per direction and auxiliary or turn lanes at major intersections.

Daily volumes are moderate to heavy, with peak-hour congestion near Hamilton Boulevard, Airport Road, and I-78 ramps due to high turning movements and merging conflicts.

The corridor has multiple signalized intersections, some outdated, and varying pavement conditions, including rutting and cracking.

Pedestrian and bicycle facilities are inconsistent, with intermittent sidewalks and limited bike accommodation.

Adjacent land uses -- commercial, industrial, and residential -- generate frequent turning movements and localized congestion, while freight access adds heavy vehicle volumes.

Safety concerns are concentrated at intersections, merging areas and high-turning-demand segments, and limited stormwater management and impervious surfaces present environmental challenges.

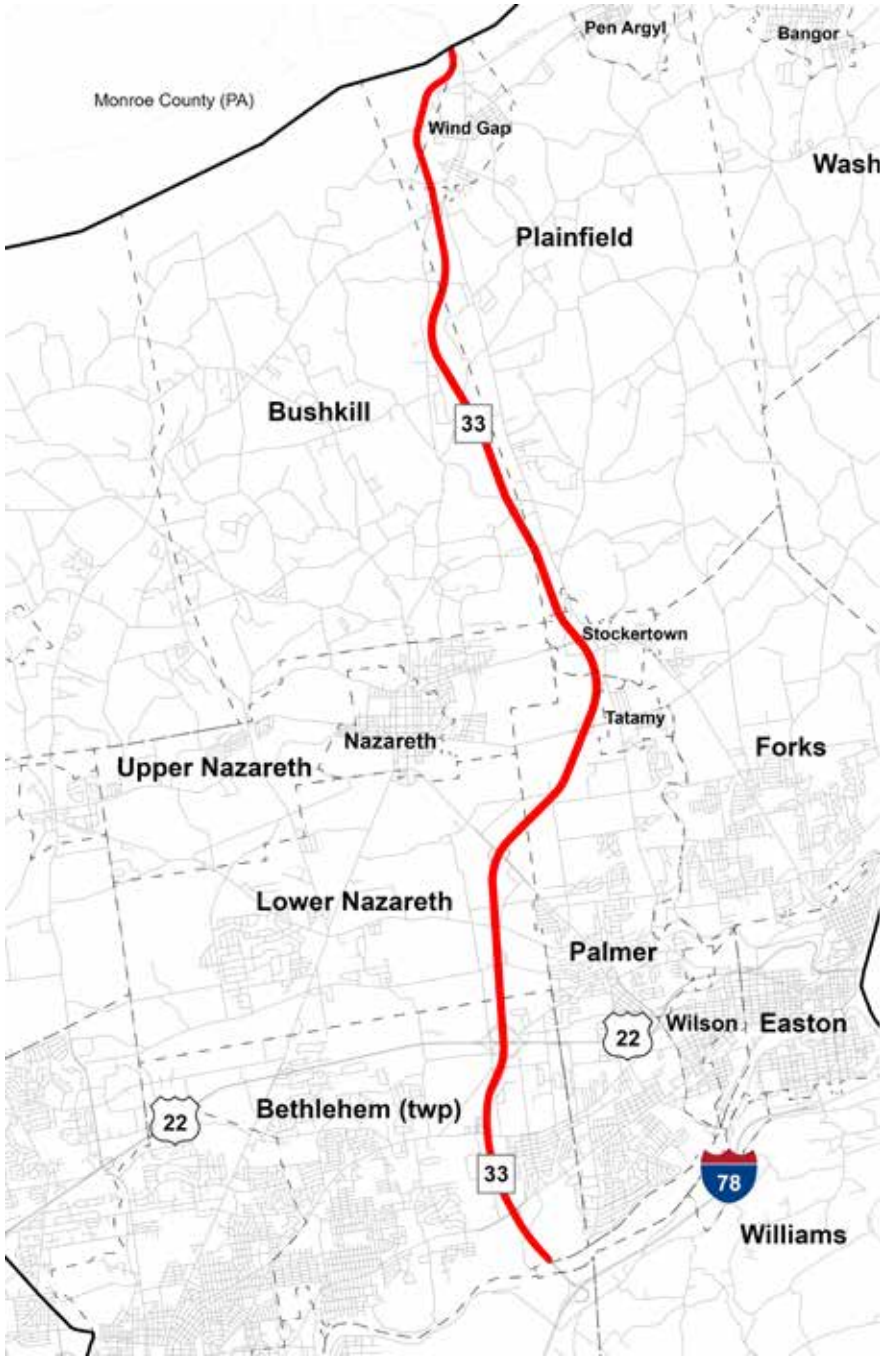
Planned Improvements

- *FutureLV: The Regional Plan*
  - Box culvert rehabilitation/replacement over Breinig Run - Route 222 north widening and betterment projects from Cedar Crest Boulevard to 15th Street, Kutztown Road to Grimm Road, Grimm Road to Cedar Crest Boulevard, west of Weilers Road to Trexlertown Road, and I-78 to 15th Street.
  - Intersection improvements at Route 222 and Shantz Road and Route 863, Jaindl Highway at Krocks, Grim, and Cetronia Roads; signal upgrades along Jaindl Highway/Hamilton Boulevard/ Hamilton Street at 17 intersections.
  - Safety and traffic management redesign in the “weave area” near Turnpike bridge and I-78 interchange, including Kessler and Cedarbrook Roads.
  - Roundabouts at Breinigsville/Newtown Roads and Hamilton Boulevard/Lower Macungie Road; I-78/Route 222 interchange improvements with lane reconfigurations, revised signals, and ramp modifications.
- Transportation Improvement Program (TIP)
  - Route 222/Schantz Road/Route 863 roundabout to improve safety, traffic operations and mobility at the intersection of Independent Road and Schantz Road.

Strategies

- Prioritize safety improvements via roundabouts, intersection redesigns and upgraded signals
- Integrated corridor management
- Expand corridor capacity with lane reconfigurations, turn lanes, and interchange upgrades
- Maintain and resurface pavement for reliability and long-term infrastructure health
- Integrate multimodal infrastructure, including sidewalks and bike facilities
- Use data-driven traffic management to optimize signal timing and monitor project performance

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	1,420
Annual Average Daily Traffic	16,698
Land use classification	Residential, Industrial
Length	5.3 miles
Lanes	4
Municipalities	Upper Macungie and Lower Macungie Townships
Level of Service (V/C)	0.68
PHED	16547.202
LOTTR	1.211
TTTI	1.580
TTTR	NA
High Crash Severity	Yes
Priority Rank	10



Priority Corridors in Northampton County

Route 33

Route 33 is a major north–south expressway in the Lehigh Valley, connecting I-78 in the south to the Monroe County line in the north. It serves as a critical freight and commuter route, linking Route 22 and other primary highways while providing access to employment centers, industrial areas, and residential communities.

Congestion and bottlenecks occur near major interchanges, especially I-78 and Route 22, during peak periods, increasing travel times. Undersized interchanges and ramps limit large freight vehicle movements, creating operational and safety concerns.

Pavement conditions vary, with some segments needing resurfacing or rehabilitation. High freight and commuter traffic elevate crash risk, particularly at interchanges and curves. The corridor also experiences localized flooding in low-lying areas and noise impacts affect adjacent residential neighborhoods.

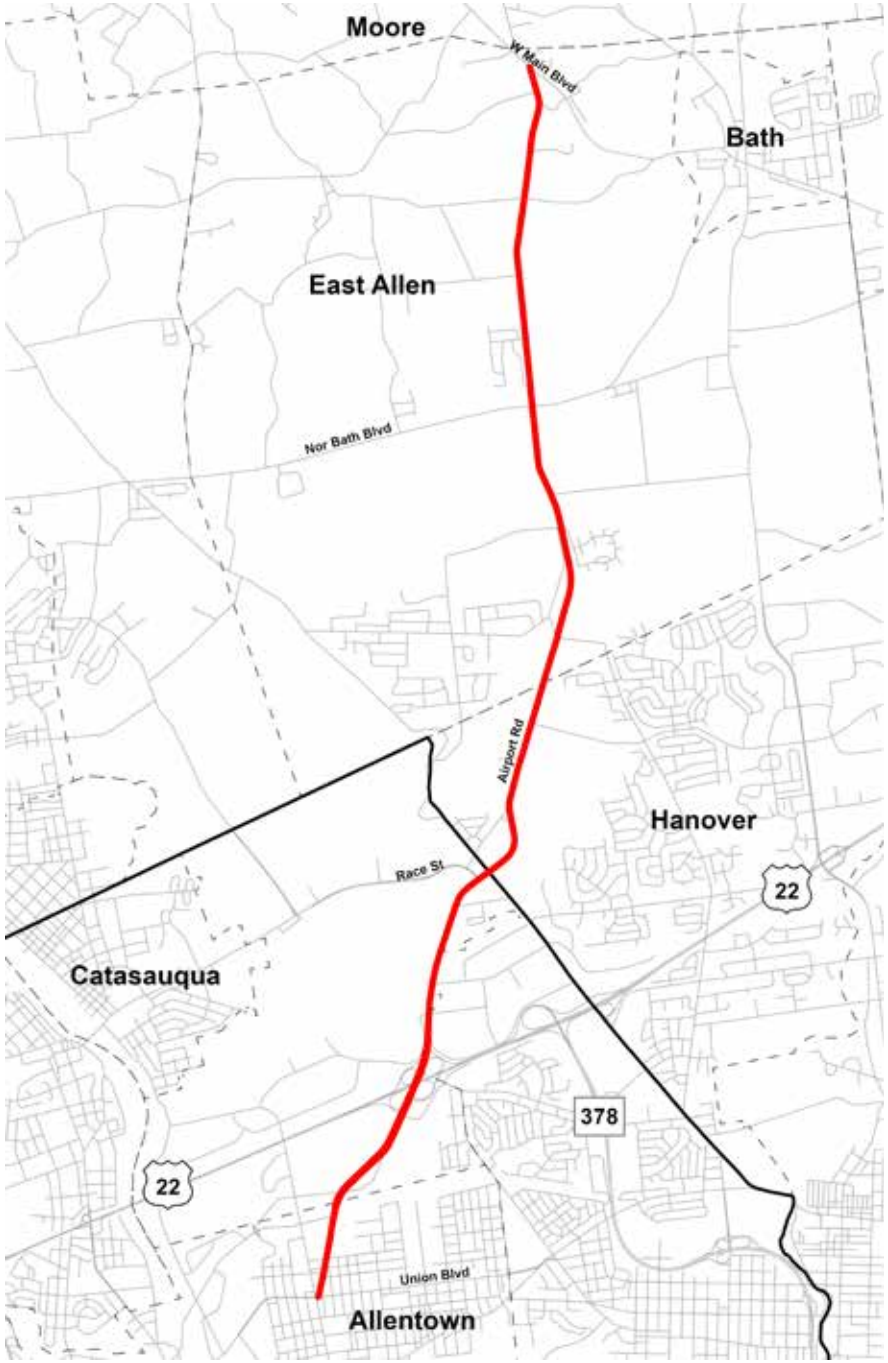
Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	3,066
Annual Average Daily Traffic	26,711
Land use classification	All
Length	16.47 miles
Lanes	4
Municipalities	Stockertown and Wind Gap Boroughs, and the Townships of Palmer, Bethlehem, Bushkill, Lower Nazareth and Plainfield
Level of Service (V/C)	0.52
PHED	7515.689
LOTTR	1.201
TTTI	1.221
TTTR	NA
High Crash Severity	Yes
Priority Rank	3

Planned Improvements

- *FutureLV: The Regional Plan*
  - Replacement of Bushkill Creek Bridges for long-term safety.
  - Route 33 pavement rehabilitation and resurfacing from I-78 to Monroe County line, including Route 22 to Tatamy Interchange, Belfast, and Route 512.
  - Route 33/I-78 interchange reconstruction to improve operations.
  - William Penn Highway (Route 2020)/Route 33 interchange converted to diverging diamond to enhance capacity.
  - Route 22, Route 33, and I-78 landscape improvements with green spaces, public art, and sustainable design.
- Transportation Improvement Program (TIP)
  - Pedestrian trail along Route 33 from Sullivan Trail to Henry Road (MPMS 119824)
  - Adaptive traffic management upgrades (MPMS 110086); Route 33 resurfacing from I-78 to Route 22 to improve pavement, safety, and operational efficiency (MPMS 96423)

Strategies:

- Replace aging bridges Bushkill Creek Bridges and reconstruct interchanges to reduce crashes and improve safety
- Implement interchange redesigns and upgrade traffic management technology for adaptive corridor control
- Prioritize resurfacing and rehabilitation along key corridors like Route 33 for safe, efficient freight and commuter travel. Incorporate green spaces, public art, and sustainable design to support community livability



Airport Road

Airport Road serves as a primary north–south arterial corridor in Northampton County, connecting Union Boulevard to West Main Boulevard while accommodating a diverse mix of commuter, commercial, retail, and freight traffic. The corridor provides direct access to major regional destinations, including Lehigh Valley International Airport, large distribution and warehouse facilities, retail centers, and hospitality uses.

Proximity to the airport, logistics hubs, and industrial operations generates consistent truck volumes, while adjacent commercial strip development and signalized intersections contribute to recurring congestion during peak travel periods.

Traffic conditions fluctuate throughout the day due to shift changes, flight schedules, delivery activity, and retail demand, underscoring the importance of coordinated access management, intersection optimization, and long-term capacity and safety enhancements along the corridor.

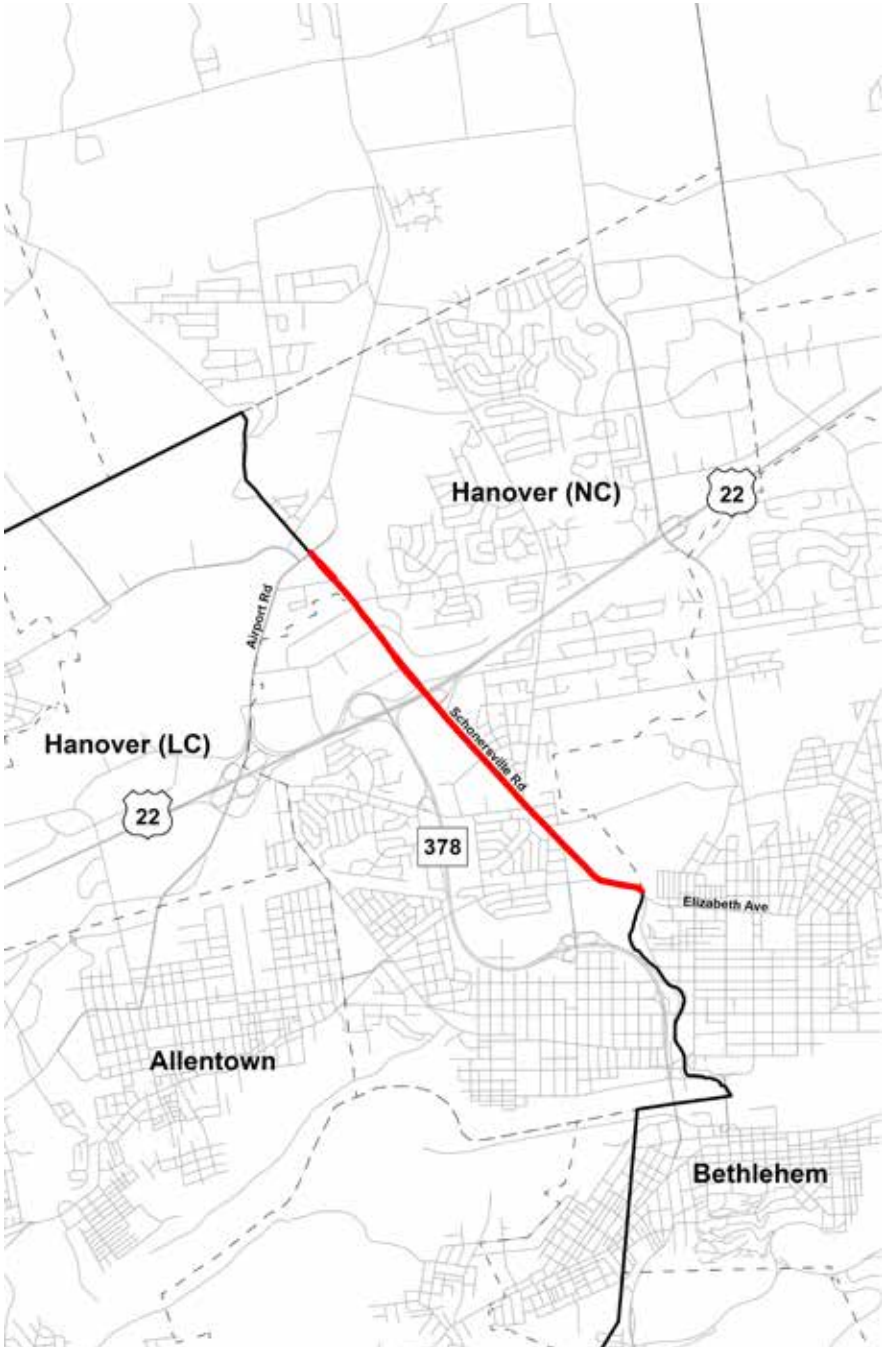
Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	723
Annual Average Daily Traffic	10,376
Land use classification	Residential, Commercial, and Industrial
Length	8.07 miles
Lanes	2
Municipalities	Hanover and East Allen Townships, and Allentown City
Level of Service (V/C)	0.60
PHED	7,943
LOTTR	1.46
TTTI	2.08
TTTR	N/A
High Crash Severity	Yes
Priority Rank	5

Planned Improvements

- *FutureLV: The Regional Plan*
  - Airport Road Bridge - Rehabilitation of bridge over abandoned railroad.
  - Airport Road (State Route 987) Betterment Project - Improvements from US Route 22 to Schoenersville Road.
  - State Route 1003 Airport Road Resurfacing Betterment Project - Repaving and traffic signal upgrades along the corridor and creating center turn lanes at Union Boulevard and Congress Street.
  - Airport Road/Chestnut St (State Route 987) Resurface Betterment Project - Resurface from county line at Schoenersville Road (State Route 1009) in Hanover Township (Northampton County) to Nor-Bath Boulevard (State Route 329) in East Allen Township and from Northampton Street (State Route 248) in Bath Borough to Community Drive (State Route 946) in Moore Township.
  - Airport Road North-bound Ramp from Route 22 Westbound Ramp to Postal Road/Avenue A - Jughandle for left turns onto Postal Road.
  - Airport Road Corridor Study - Evaluation and identification of infrastructure improvements needed to improve functionality, safety and multimodal mobility along Airport Road from American Parkway and including the interchange of Route 22, the intersection of Schoenersville Road to the intersection of Route 248.
  - Airport Road Corridor Phase 1 Infrastructure Implementation Line Item - Funding for implementation of recommendations of infrastructure improvements identified as a result of the Airport Road Corridor Study of Airport Road from American Parkway to State Route 248.
  - Airport Road Corridor Phase 2 Infrastructure Implementation Line Item - Phase 2 Funding for implementation of recommendations of infrastructure improvements identified as a result of the Airport Road Corridor Study of Airport Road from American Parkway to State Route 248.
  - Airport Center Road & Airport Road - Add traffic-calming and pedestrian crossing upgrades along Airport Road at Airport Center Shopping Center area.
- Transportation Improvement Program (TIP)
  - Route 248/Airport Road Intersection Improvements: Intersection improvements at Route 248 and Airport Road to improve safety and efficiency.

Strategies

- Rehabilitation of Bridges and Corridors wherever necessary
- Traffic signal upgrades and repaving
- Jughandle for left turns onto Postal Road
- Infrastructure improvements to improve functionality, safety, and multimobility
- Traffic calming and pedestrian crossing upgrades
- Intersection improvements



Schoenersville Road

Schonersville Road functions as an important east–west connector between Elizabeth Avenue and Airport Road, serving a blend of residential neighborhoods, commercial establishments, and institutional land uses. The corridor provides access to established housing areas while also supporting traffic destined for nearby retail centers, light industrial properties, and employment hubs in the Airport Road area. Peak-period congestion is influenced by commuter travel, school-related traffic, and commercial vehicle movements, particularly near signalized intersections and driveway access points. Its role as a feeder route to Airport Road further amplifies turning movements and corridor demand during morning and afternoon peaks.

These conditions highlight the need for targeted intersection improvements, access management strategies, and multimodal enhancements to improve traffic flow, safety, and overall corridor performance.

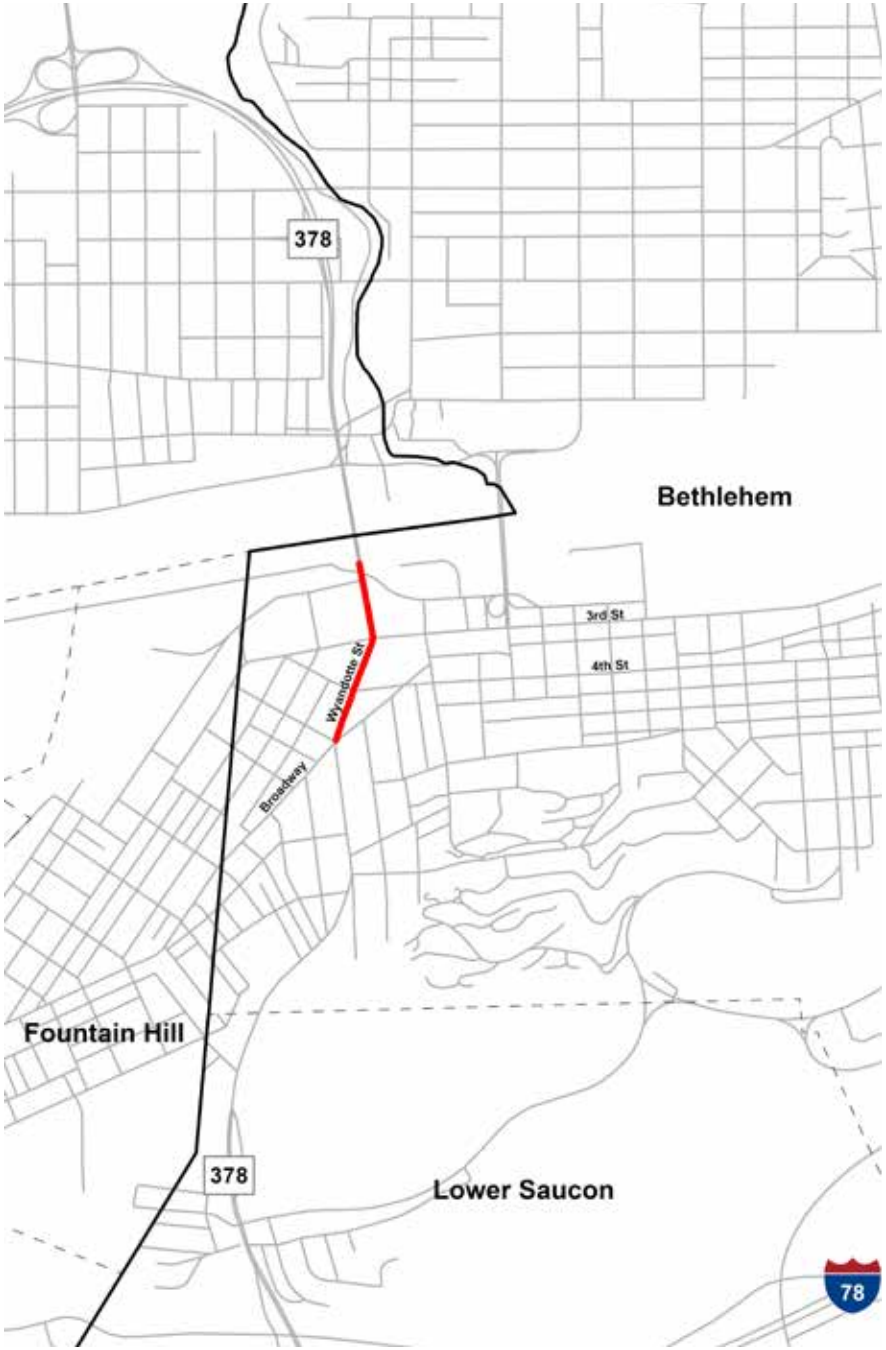
Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	593
Annual Average Daily Traffic	12,550
Land use classification	Residential, Commercial, and Industrial
Length	2.81 miles
Lanes	2
Municipalities	Bethlehem and Hanover Townships
Level of Service (V/C)	0.77
PHED	N/A
LOTTR	N/A
TTTI	N/A
TTTR	N/A
High Crash Severity	Yes
Priority Rank	6

Planned Improvements

- *FutureLV: The Regional Plan*
  - Schoenersville Road (Route 1009) Corridor Improvements.
  - Reduce congestion and improve safety along the corridor between Route 22 and Eaton Avenue.

Strategies

- Sidewalk enhancements
- Geometric redesign
- Integrated corridor management
- Safety enhancements at key intersections



Wyandotte Street

Wyandotte Street, extending from Broadway Avenue to the Northampton County Rail Line, functions as a local collector serving a mix of residential, neighborhood commercial, and light industrial land uses. The corridor provides important connectivity between Broadway Avenue and adjacent employment and service areas, while also accommodating daily neighborhood circulation.

Proximity to the rail line and nearby industrial properties contributes to periodic truck traffic and freight-related activity, which can create localized congestion and turning conflicts.

On-street parking, closely spaced driveways, and pedestrian activity further influence operational performance along the corridor. While traffic volumes are generally moderate, peak-hour commuter flows and freight movements highlight the need for intersection visibility improvements, traffic calming where appropriate, and enhanced multimodal safety measures to support balanced corridor operations.

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	541
Annual Average Daily Traffic	22,143
Land use classification	Residential, Commercial, and Industrial
Length	0.38 miles
Lanes	2
Municipalities	Bethlehem
Level of Service (V/C)	0.85
PHED	0.04
LOTTR	1.37
TTTI	2.97
TTTR	N/A
High Crash Severity	Yes
Priority Rank	8

Planned Improvements

- *FutureLV: The Regional Plan*
  - Wyandotte Street (Route 378) Resurface Betterment Project - Resurface from the county line at Colesville Road in Lower Saucon Township to Brighton Street in Bethlehem.
  - Wyandotte Street (Route 378) Corridor Improvements - Reduce congestion and improve safety along the corridor between Third Street to and including the “5-points” intersection at Broadway.
- Transportation Improvement Program (TIP)
  - Hill-to-Hill Bridge: Rehabilitation of Route 378 Bridge over the Lehigh River, Norfolk Southern railroad and various city streets.

Strategies

- Adaptive signal retiming
- Adequate turning radius and sign truck movements
- Pedestrian signal enhancements and high visibility crosswalks
- Resurface corridors and rehabilitation bridges that require investments
- Detour traffic during peak periods

Stefko Boulevard

Stefko Boulevard, extending from Daly Avenue to Easton Avenue, operates as a principal urban arterial supporting a diverse mix of residential, commercial, and institutional traffic. The corridor serves established neighborhoods while also providing access to retail centers, service businesses, schools, and community facilities. Its function as a north–south connector between major east–west routes contributes to sustained traffic volumes throughout the day, with peak-period congestion influenced by commuter travel, school-related activity, and commercial turning movements.

Multiple signalized intersections, closely spaced driveways, and pedestrian crossings affect operational efficiency and safety conditions along the corridor.

These characteristics underscore the need for coordinated signal timing, access management strategies, and multimodal enhancements to improve mobility, safety, and overall corridor performance.

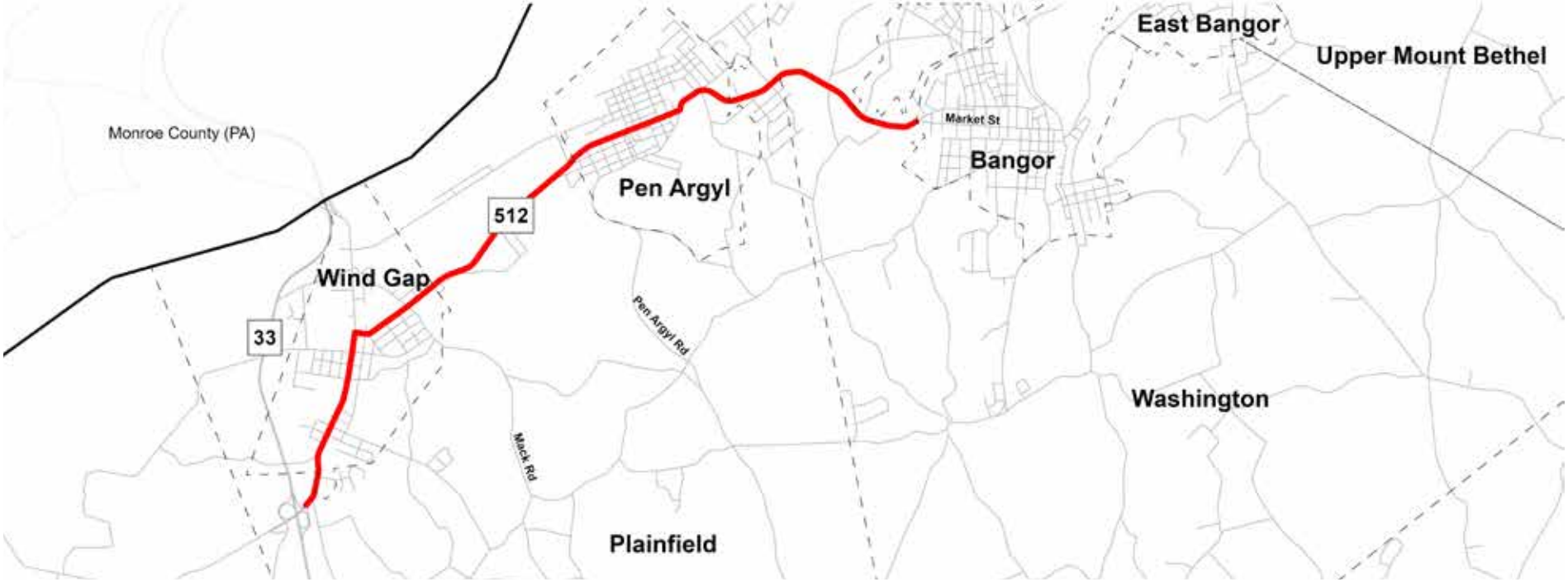
Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	774
Annual Average Daily Traffic	13,801
Land use classification	Residential, Commercial, and Institutional
Length	2.47 miles
Lanes	2
Municipalities	Bethlehem City
Level of Service (V/C)	0.93
PHED	N/A
LOTTR	N/A
TTTI	N/A
TTTR	N/A
High Crash Severity	Yes
Priority Rank	9

Planned Improvements

- None currently.

Strategies

- Signal retiming and coordination
- Intersection optimization
- Consolidate redundant commercial driveways
- Sidewalk continuities
- High visibility crosswalks and pavement marking improvements



Route 512

Route 512, extending from Route 33 in Wind Gap to Market Street in Bangor, serves as the main arterial through the borough, accommodating a mix of local residential, commuter, and small-scale commercial traffic.

The corridor provides critical connectivity between Route 33 and the borough's commercial and civic areas, supporting daily travel for residents, local businesses, and service vehicles.

Traffic volumes fluctuate throughout the day, with peak congestion occurring near key intersections and commercial access points. Its dual role as both a local access route and a connector to regional highways underscores the need for coordinated signal timing, pedestrian and bicycle safety enhancements, and context-sensitive roadway improvements to maintain efficient and safe operations along the corridor.

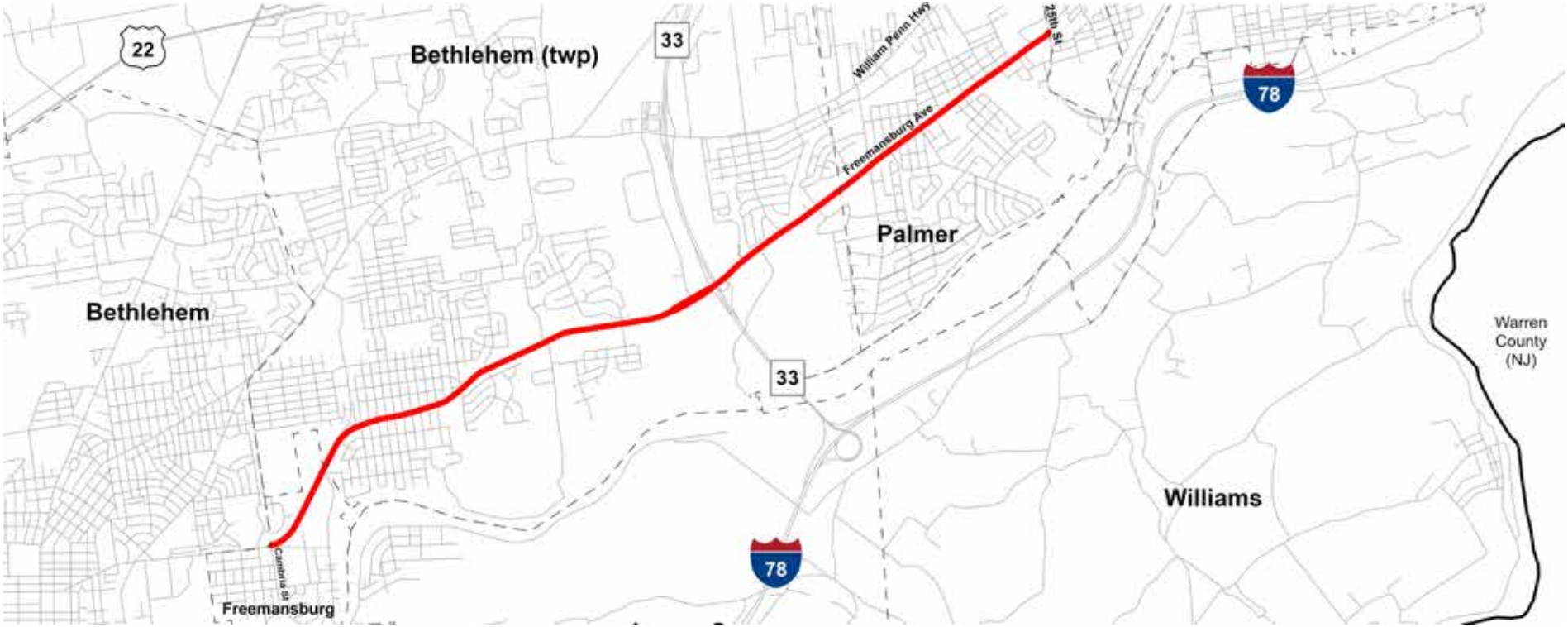
Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	676
Annual Average Daily Traffic	11,592
Land use classification	Residential and Commercial
Length	5.5 miles
Lanes	2
Municipalities	Wind Gap and Pen Argyl Boroughs and Washington and Plainfield townships
Level of Service (V/C)	0.91
PHED	N/A
LOTTR	N/A
TTTI	N/A
TTTR	N/A
High Crash Severity	Yes
Priority Rank	7

Planned Improvements

- None currently.

Strategies

- Signal enhancements
- Pedestrian infrastructure enhancements



Freemansburg Avenue

Freemansburg Avenue, extending from Cambria Street to 25th Street, functions as a key east–west arterial serving residential neighborhoods, commercial properties, and community-oriented land uses.

The corridor provides important connectivity between local streets and higher-capacity regional routes, accommodating daily commuter traffic as well as local circulation.

Adjacent retail establishments, service businesses, and institutional uses generate frequent turning movements and driveway activity, contributing to operational friction along the roadway.

Traffic volumes fluctuate throughout the day, with peak congestion occurring near signalized intersections and commercial nodes. Its role as both a neighborhood access route and a through corridor highlights the need for intersection optimization, access management strategies, and multimodal safety improvements to enhance efficiency and corridor livability.

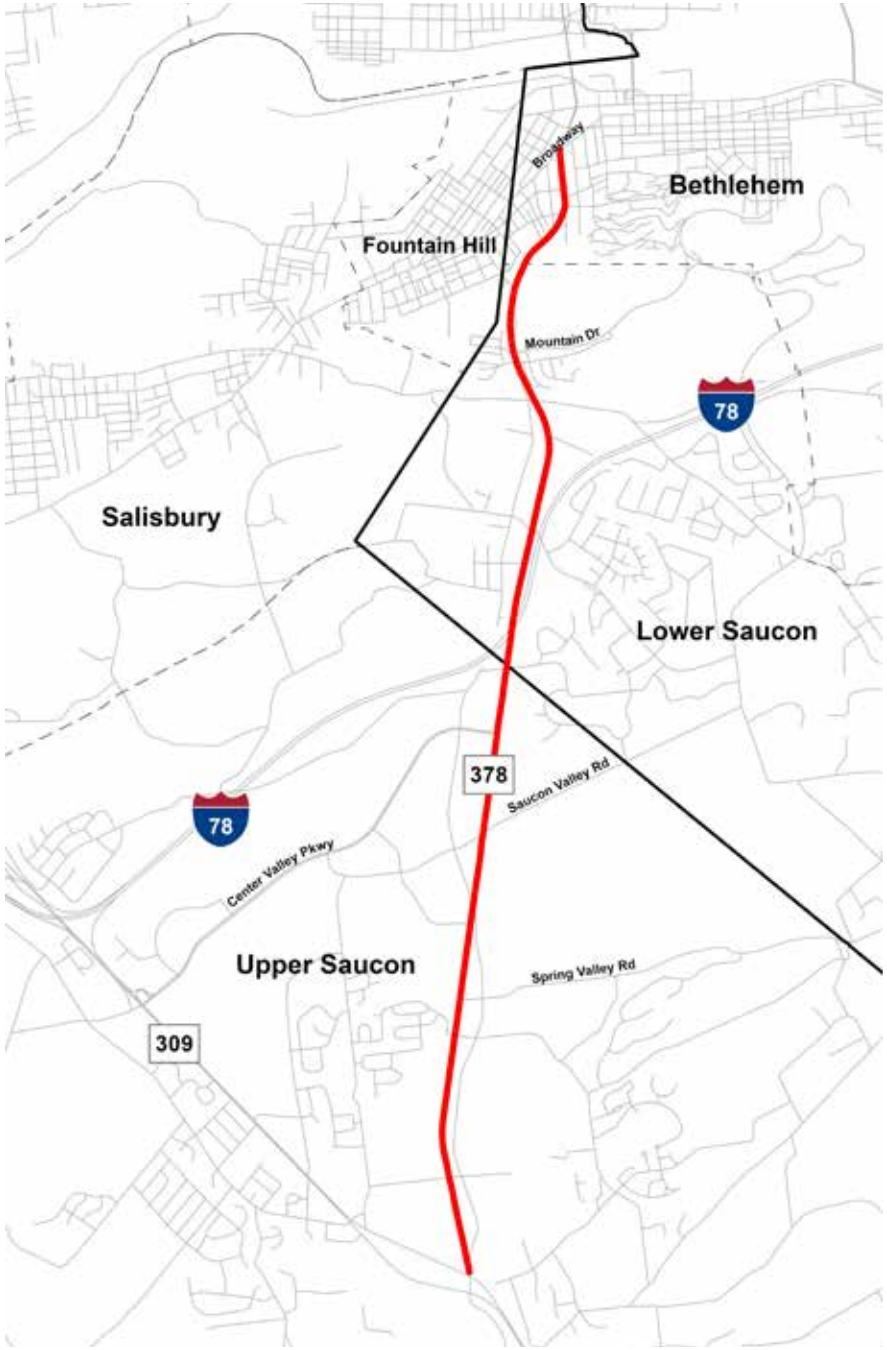
Planned Improvements

- *FutureLV: The Regional Plan*
  - Freemansburg Avenue and Willow Park Road Intersection Improvements - Project would review the challenges of the current intersection geometry and provide recommended solutions that the Township would work toward implementing with PennDOT.
  - Freemansburg Avenue (Route 2018) Safety Improvements - Intersection safety improvements.
  - Signal & Sign Installation - Freemansburg Avenue at 9th Street and 9th Street at Hamilton Street.
  - Freemansburg Avenue (Route 2018) and Willow Park Road (Route 3007) Intersection Study - Conduct study along State Route 2018 and State Route 3007 to improve safety and traffic flow.
- Transportation Improvement Program (TIP)
  - Freemansburg Avenue Safety Improvements: Reconstruction and realignment of the intersection at Freemansburg Avenue (Route 2018) and Farmersville Road.

Strategies

- Intersection improvement and geometric realignment
- Intersection safety improvement, including signal and sign installation
- Reconstruction and realignment of intersections of concern
- Pedestrian enhancements and sidewalk connectivity
- Crossroad visibility improvements

Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	799
Annual Average Daily Traffic	13,640
Land use classification	Residential and Commercial
Length	6.13 miles
Lanes	2
Municipalities	Palmer Township, Freemansburg Borough, and Bethlehem City
Level of Service (V/C)	0.86
PHED	N/A
LOTTR	N/A
TTTI	N/A
TTTR	N/A
High Crash Severity	Yes
Priority Rank	10



Priority Corridors in Both Counties

Route 378 (Route 309 to Broadway Avenue)

Route 378, between Route 309 and Broadway Avenue, serves as a principal arterial providing north–south connectivity for residential neighborhoods and direct access to downtown Bethlehem.

The corridor experiences recurring congestion, limited multimodal accommodations, and several constrained segments that affect safety and travel reliability.

As a principal arterial supporting both through and local traffic, it is particularly sensitive to outdated roadway conditions, aging structures, and high pedestrian activity at key intersections.

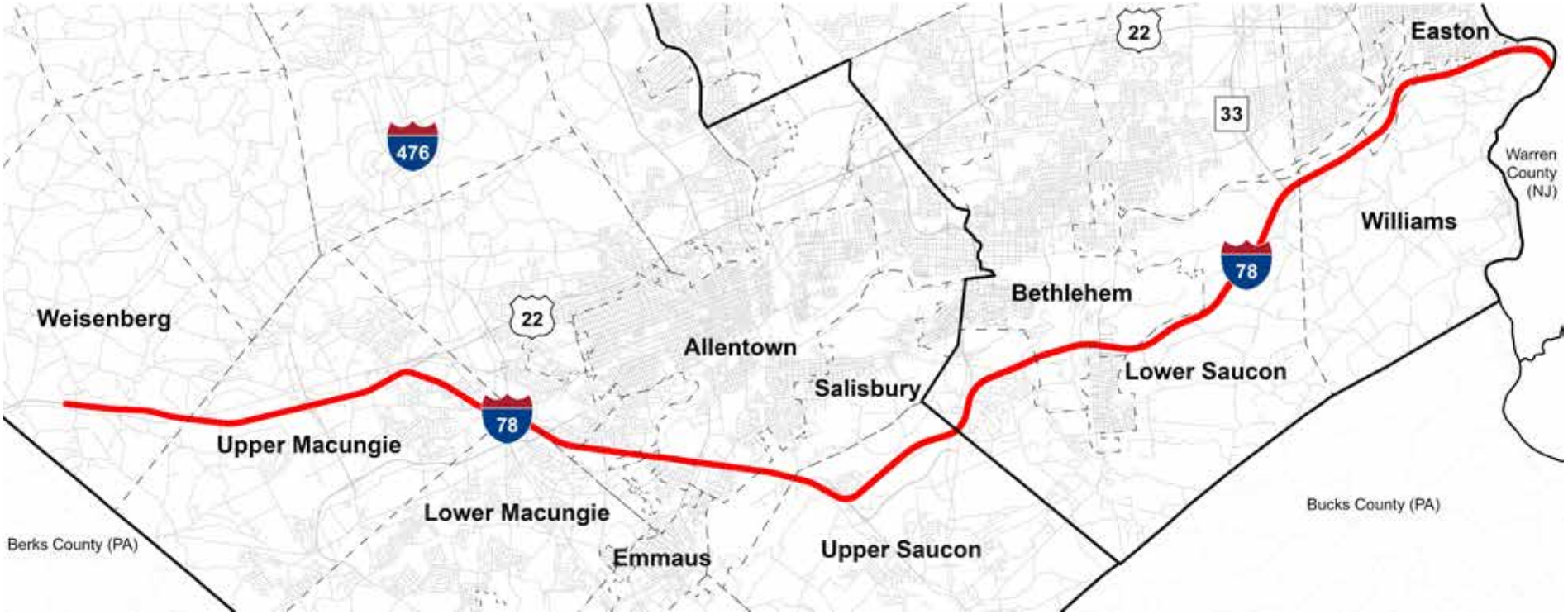
Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	947
Annual Average Daily Traffic	14,475
Land use classification	Agriculture, Rural Residential
Length	5.64 miles
Lanes	2
Municipalities	Bethlehem, Upper Saucon and Lower Saucon Townships
Level of Service (V/C)	0.51
PHED	15.9004
LOTTR	1.566
TTTI	1.718
TTTR	NA
High Crash Severity	Yes
Priority Rank	4 (NC), NA (LC)

Planned Improvements

- *FutureLV: The Regional Plan*
  - Main Street Ramp Bridge Rehabilitation - Rehabilitation of bridge to connect to Main Street from Route 378.
  - Route 378 Betterment Project - Improvements from Colesville Road to Brighton Street.
  - Route 378 Betterment Project - Improvements from Main Street to Route 22.
  - Wyandotte Street (Route 378) Corridor Improvements - Reduce congestion and improve safety along the corridor between Third Street and including the “5-points” intersection at Broadway.
  - Route 309 Northbound Realignment - Relocated Northbound traffic to Southbound traffic side between Route 378 and Lanark Road (Route 2039) to improve traffic congestion, safety and the quality of life of residents along the current northbound side of Route 309.
  - Route 378 Lighting - Route 378 street lighting upgrades.
- Transportation Improvement Program (TIP)
  - Route 378 Lighting (110398) upgrades.

Strategies

- Fully rehabilitate bridges to maintain structural integrity and support regional mobility
- Resurface and implement corridor betterments for improved ride quality
- Upgrade intersections and signals to reduce congestion and enhance operations
- Implement corridorwide lighting to improve safety and livability
- Integrate safety treatments and operational enhancements accommodating non-motorized users



I-78

I-78 is a major east–west interstate in the southern Lehigh Valley, serving as a critical freight and commuter corridor. It connects employment centers in Allentown, Bethlehem and surrounding municipalities, providing access eastward to New Jersey and the New York metropolitan area and westward to Berks and Lebanon Counties. The corridor links key north–south routes, including Routes 309, 100, 145, 412, 33 and 22, supporting regional and interstate goods movement.

Industrial, logistics and commercial development -- particularly in Upper and Lower Macungie Townships and near the I-78/I-476 interchange - generates high truck volumes and peak-period congestion. Interchanges face bottlenecks from high turning movements, closely spaced ramps, and limited auxiliary lanes, while geometric and capacity constraints reduce travel-time reliability. Stormwater, drainage, and pavement deterioration, along with noise and frequent truck-involved crashes, highlight the corridor's operational, safety, and infrastructure challenges.

Planned Improvements

- *FutureLV: The Regional Plan*
  - Interstate 78/Route 309 - Rehabilitation/replacement of bridge over Fish Hatchery Road (Route 2010) and Little Lehigh Creek (Lehigh Parkway).
  - Freeway Service Patrol - To provide two roaming tow trucks along Interstate 78 from Route 100 to the Route 309 split, and along

Route 22 from Route 100 to Route 33 for removal of disabled or accident vehicles.

- Variable Speed Limit Technologies - Implement signing to incorporate the ability to adjust speed limits on Route 22 and Interstate 78 to improve operations and safety during inclement weather or times of congestion.
- Interstate 78 from Lehigh Street (Route 2005) to Route 309 South Interchange - Highway preservation/restoration, including pavement overlay and patching of existing mainline and shoulders, rehabilitation/replacement of drainage system, including access ramps.
- Interstate 78 Corridor Safety Improvements from Emmaus Avenue (Route 2002) to East of Route 309 Interchange for Center Valley - Improvements include conversion of shoulders into a dual use lane on I-78 eastbound from the Emmaus Avenue (Route 2002) Interchange to the Route 309 south split. The median barrier will be updated to add glare screens, and the drainage system will be rehabilitated and/or replaced. Two ramps at the Route 309 interchange will also be reconstructed.
- Interstate 78 from Route 309 Interchange Ramps for Center Valley/Allentown Interchange to Saucon Viaduct Structure at Route 412 Interchange - Highway preservation overlay of existing mainline and shoulders.
- Interstate 78 from Saucon Viaduct Bridges west of Route 412 Interchange to Easton Road (Route 2006) Bridge - Highway preservation overlay of existing mainline and shoulders.
- Interstate 78 from Berks County/Lehigh County Line to East of Route 100 - Highway reconstruction to add truck climbing lanes and Route 100 interchange ramp reconfiguration.
- Interstate 78 Saucon Valley Viaduct Bridges West of Route 412 over College Drive, Silvex Road and Saucon Creek - Rehabilitation and preventative maintenance, including paint and miscellaneous substructure and drainage repairs.
- Interstate 78 Various Bridges in Glendon Borough, Lower Saucon Township and Williams Township - Bridge rehabilitation, replacement and preservation activities.

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	5,708
Annual Average Daily Traffic	29,593
Land use classification	Many Uses
Length	32.400 miles
Lanes	4
Municipalities	Cities of Allentown Bethlehem and Easton, Glendon Borough and the Townships of Upper Macungie Township, Salisbury, Weisenberg, Upper Saucon, Lower Saucon, Williams, Lower Macungie and South Whitehall
Level of Service (V/C)	0.69
PHED	9244.444
LOTTR	1.130
TTTI	1.197
TTTR	1.177
High Crash Severity	Yes
Priority Rank	7 (LC), 1 (NC)

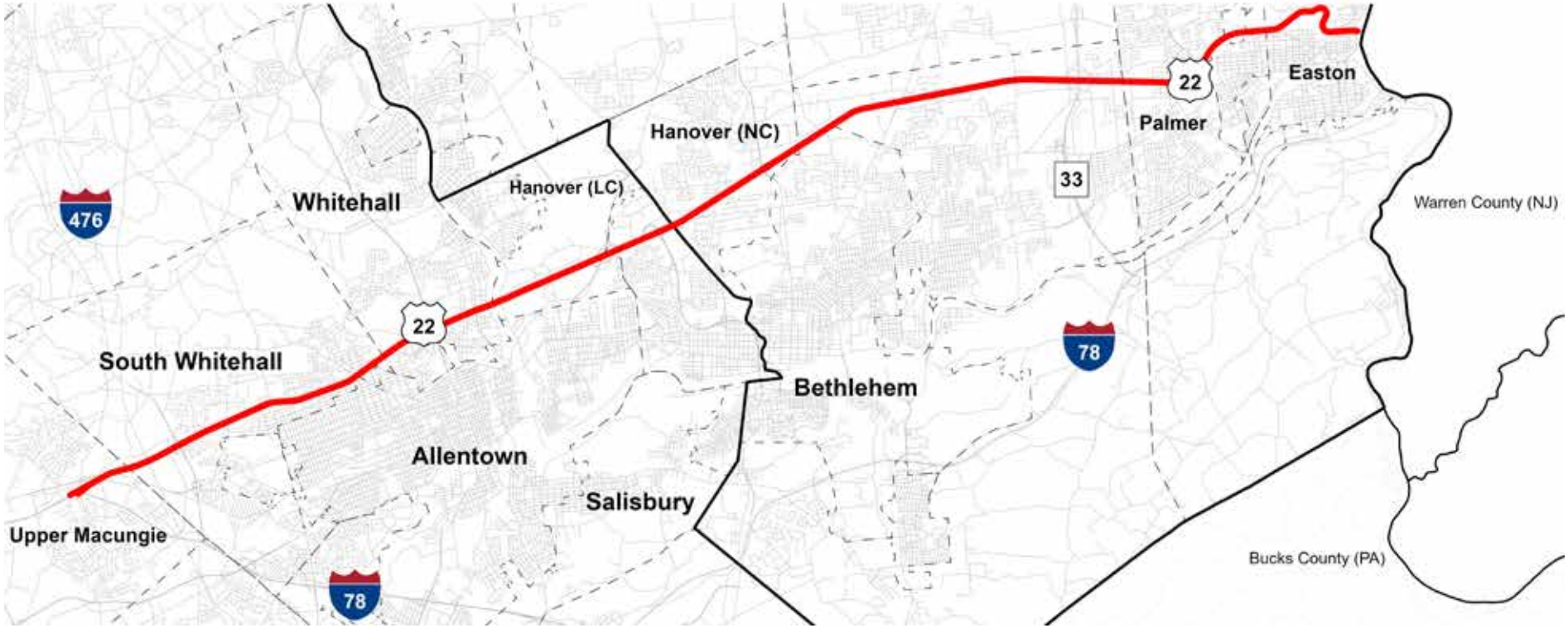
- Interstate 78 from Route 33 Interchange to Pennsylvania/New Jersey State Line - Highway preservation pavement overlay of existing mainline and shoulders and resurfacing of associated ramps.
- Interstate 78 Bridge over Fish Hatchery Road (Route 2010) and the Little Lehigh River/Lehigh Parkway - Rehabilitation of the bridge “Parkway Arches” support structures.
- Interstate 78 from Lehigh Street (Route 2005) to Route 309 Northbound Exit - Highway preservation overlay of existing mainline and shoulders.
- Interstate 78 Bridge Rehabilitation, Replacement and Preventative Maintenance at Various Locations - Rehabilitation of PennDOT bridges identified by the following bridge key numbers: 23005, 28523, 28526, 28540; replacement of bridge identified by PennDOT key number: 28545 (over Route 2014/Redington Road) and preventative maintenance at PennDOT bridges.

- Interstate 78 Various Bridges in Upper Macungie Township - Bridge rehabilitation, replacement and preservation activities.
- Interstate 78 Bridge Substructure Condition Study - Study of bridge over Easton Road (Route 2006).
- Interstate 78 over Easton Road (Route 2006) to Route 33 Interchange - Highway preservation/ restoration of concrete slab roadway.
- Route 33 and I-78 Interchange Reconstruction - Reconfigure and reconstruct the interchange and approaches to improve safety and operational functionality.

- Transportation Improvement Program (TIP)
  - Freeway Service Patrol – Two roaming tow trucks to patrol I-78 from Route 100 to Route 309 split and I-78/Route 22 from Route 100 to Route 33, for rapid incident removal to reduce congestion and improve safety.

Strategies

- Prioritize rehabilitation, replacement, and preventative maintenance of key bridges and viaducts
- Conduct resurfacing and reconstruction of mainline and ramps to support reliable travel
- Implement lane reconfigurations, ramp modifications and truck climbing lanes
- Implement variable speed limits, and Freeway Service Patrols
- Incorporate landscaping, green spaces and sustainable design
- Convert shoulders to dual-use lanes and update median barriers
- Rehabilitate drainage systems to improve safety and manage stormwater



Route 22

Route 22 is a key east–west corridor in the Lehigh Valley, running from the I-78 junction through eleven municipalities before crossing the Delaware River in Easton.

It forms the backbone of regional mobility. It connects major employment and population centers -- including Allentown, Bethlehem and Easton -- and provides links to I-78, facilitating traffic between Berks County and Warren County, New Jersey.

The corridor intersects significant routes such as Route 33, Route 512, Route 145, Route 309, and Route 100, supporting freight and commuter flows.

Heavy commercial, industrial, and residential development, along with undersized interchanges, contribute to congestion and operational inefficiencies.

Recurring flooding, stormwater management issues, and noise impacts highlight infrastructure challenges. Safety remains a concern, with 11 fatal, 51 suspected serious injury, and 2,111 crashes reported during the period of 2020-2024.

Planned Improvements

- *FutureLV: The Regional Plan*
  - Route 22 bridge rehabilitation or deck replacement over Bushkill Creek and Jacksonville Road.
  - Pavement resurfacing and betterment from Farmersville Road to Route 512 and along segments connecting to Route 33 and I-78.
  - Landscaping enhancements with green spaces, public art, and sustainable design.
  - Interchange upgrades per “22 Tomorrow” plan at Route 22/Route 191, Route 22/Fullerton, and Route 22/13th Street.
  - Widening from Lehigh River to Airport Road and Mauch Chunk Road to Route 145 (DDI).
  - Multimodal and operational improvements via Freeway Service Patrol, variable speed limits, and corridor studies
- Transportation Improvement Program (TIP)
  - Bridge preservation (MPMS 68190) for design and construction of various repairs and maintenance activities to support long-term structural integrity.

Strategies

- Prioritize rehabilitation and deck replacement of key bridges (e.g., Bushkill Creek, Jacksonville Road) and implement bridge preservation programs
- Conduct resurfacing and betterment projects along key segments to enhance safety, reliability, and operational efficiency
- Widen critical segments, upgrade interchanges
- Deploy operational improvements such as variable speed limits and Freeway Service Patrols
- Integrate landscaping improvements, including green spaces, public art, and sustainable design

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	3,589
Annual Average Daily Traffic	31,466
Land use classification	All
Length	22.7 miles
Lanes	4
Municipalities	Cities of Allentown, Bethlehem, Easton, Wilson Borough and the Townships of Upper Macungie and Hanover (NC and LC), Palmer, Bethlehem, South Whitehall and Whitehall
Level of Service (V/C)	0.58
PHED	22821.733
LOTTR	1.480
TTTI	1.543
TTTR	N/A
High Crash Severity	Yes
Priority Rank	2 (NC), NA (LC)

LEHIGH VALLEY
CONGESTION
MANAGEMENT
PLAN

Priority Bottlenecks in Lehigh County

Route 222 (Westbound) near Mill Creek Road

Congestion increases where Grange Road merges into Route 222 and uncoordinated signal timing at the Mill Creek Road intersection further contributes to delays.

Hamilton Boulevard, from Grange Road to Schantz Road was also identified as a congested corridor in CMP 2016.

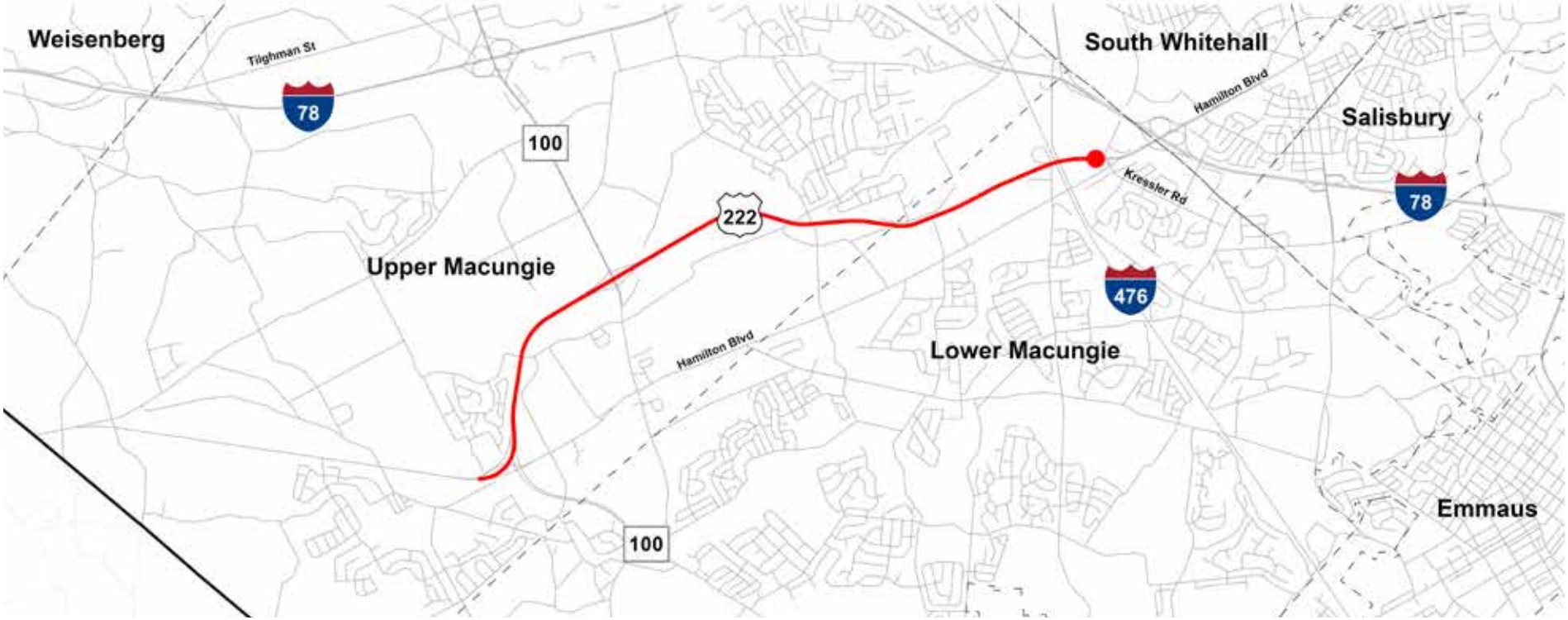
Planned Improvements

- *FutureLV: The Regional Plan*
  - Route 222 Betterment Project - Improvements from Grimm Road to Cedar Crest Boulevard.

Strategies

- Retime signals and evaluate lane configurations to reduce delays

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	1,248
Annual Average Daily Traffic	19,400
Municipality	Upper Macungie Township
Level of Service (V/C)	0.73
PHED	4365.131
LOTTR	1.215
TTTI	1.622
TTTR	N/A
High Crash Severity	Yes
Priority Rank	1



Route 222 (Eastbound) near Route 222 Bus/Hamilton Boulevard

Recurring congestion on Route 222, at the eastbound intersection with BUS/Hamilton Boulevard eastbound contributes to vehicle queues at the signalized intersection, creating a chokepoint and intermittent bottlenecks along Hamilton Boulevard.

Planned Improvements

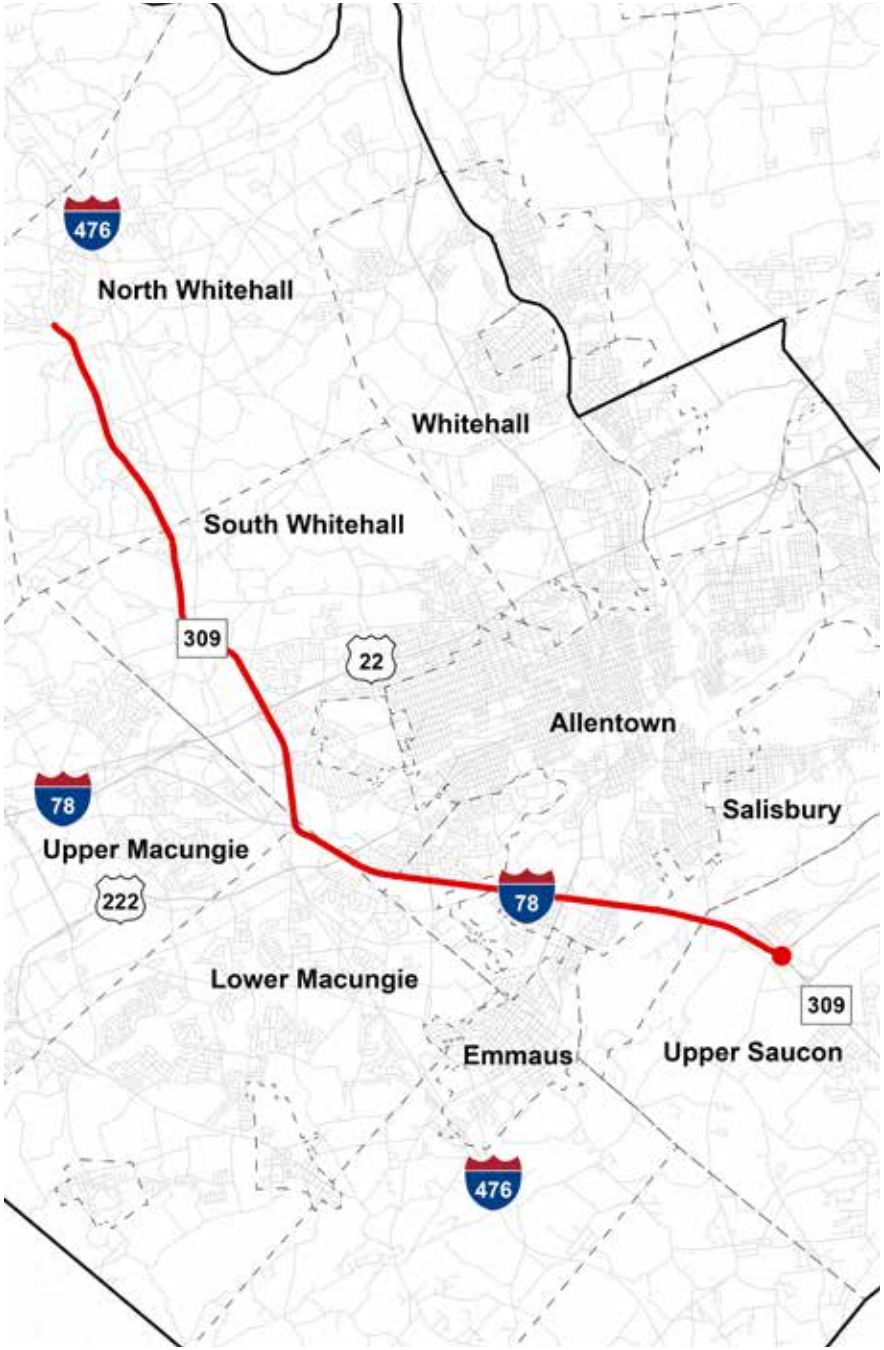
- *FutureLV: The Regional Plan*
  - Route 222 Betterment Project – Improvements from Grimm Road to Cedar Crest Boulevard.
  - Route 222/Hamilton Boulevard Betterment Project – Improvements from Route 222 to Kressler Road.

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	1,537
Annual Average Daily Traffic	16,379
Municipality	Lower Macungie Township
Level of Service (V/C)	0.65
PHED	14665.530
LOTTR	1.169
TTTI	1.416
TTTR	N/A
High Crash Severity	Yes
Priority Rank	2

- Jaindl Highway/Hamilton Boulevard/Hamilton Street (Route 222) Signal Improvements – upgrades to traffic infrastructure and timing to implement automated traffic signal performance measures at approximately 17 intersections.
- Jaindl Highway (Route 222) Safety Improvements – Redesign and construction for safety and traffic management in the "weave area" between the Pennsylvania Turnpike Northeast Extension (I-476) bridge and I-78 interchange, including Hamilton Boulevard, Kessler Road and Cedarbrook Road (Route 2011).

Strategies

- Extend merge lanes
- Coordinate signals to reduce queue spillback



Route 309 (Southbound) near I-78/Exit 60b & 20

Route 309 South at the I-78 interchange (Exit 60B & 20) functions as a major gateway between the regional interstate system and the Route 309 corridor, carrying high volumes of commuter, regional, and freight traffic.

Conditions at this location are characterized by recurrent peak-period congestion driven by heavy merging and weaving movements between I-78 ramps and Route 309 mainline traffic, resulting in reduced speeds and travel time reliability.

The closely spaced ramps, signalized intersections and downstream commercial access intensify operational constraints, particularly during weekday commuter peaks and seasonal travel periods.

These conditions make the interchange a critical bottleneck, where minor disruptions can quickly propagate delays along both Route 309 and I-78.

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	3,712
Annual Average Daily Traffic	26,344
Municipality	Upper Saucon Township
Level of Service (V/C)	0.71
PHED	4213.84555
LOTTR	1.092399
TTTI	1.394608
TTTR	N/A
High Crash Severity	Yes
Priority Rank	3

Planned Improvements

- *FutureLV: The Regional Plan*
  - Route 309 - Rehabilitation/replacement of box culvert over tributary to Kistler Creek.
  - Route 309 Resurface Betterment Project - Resurface from Lehigh/Bucks County Line in Coopersburg Borough to Center Valley Parkway (Route 2044) in Upper Saucon Township.
  - Route 309 - Signal Head Reflective Backplate - The low-cost safety improvement is adding signal head backplates on the northbound and southbound Route 309 signals.
  - Route 309 Center Valley Interchange - Interchange improvements.
  - Interstate 78 from Lehigh Street (Route 2005) to Route 309 South Interchange - Highway preservation/restoration, including pavement overlay and patching of existing mainline and shoulders, rehabilitation/replacement of drainage system, including access ramps.
  - Interstate 78 Corridor Safety Improvements from Emmaus Avenue (Route 2002) to east of Route 309 Interchange for Center Valley. - Improvements include conversion of shoulders into a dual use lane on I-78 eastbound from the Emmaus Avenue (Route 2002) Interchange to the Route 309 South split. The median barrier will be updated to add glare screens, and the drainage system will be rehabilitated or replaced. Two ramps at the Route 309 interchange will also be reconstructed.
  - Route 309 Northbound Realignment - Relocate northbound traffic to southbound traffic side between Route 378 and Lanark Road (Route 2039) to improve traffic congestion and safety.
  - Route 309 Pedestrian Bridge - Construct an alternative mode of transportation multimodal bridge over Route 309 to connect residents to recreational amenities and trails on both sides of highway.
- Transportation Improvement Program (TIP)
  - Route 309 and Center Valley Interchange improvements (MPMS: 102160)

Strategies

- Rehabilitate and replace aging roadways, bridge and drainage assets
- Implement low-cost and targeted safety improvements
- Upgrade key interchanges to reduce congestion, improve ramp functionality, and enhance traffic flow
- Use operational and geometric improvements to minimize recurring congestion
- Expand pedestrian and multimodal connections to improve safe access across major roadway barriers
- Apply roadway realignments and design solutions that improve safety and quality of life for adjacent neighborhoods

Route 29 Northbound near I-78 / Route 309

The exit lane of the Route 29 northbound interchange with I-78/Route 309 merges onto Cedar Crest Boulevard while allowing both left and right turns.

This configuration creates recurring conflicts that contribute to a continuous bottleneck along Cedar Crest Boulevard.

Traffic accumulation is further compounded by the downstream signalized intersection, exacerbating congestion along the corridor.

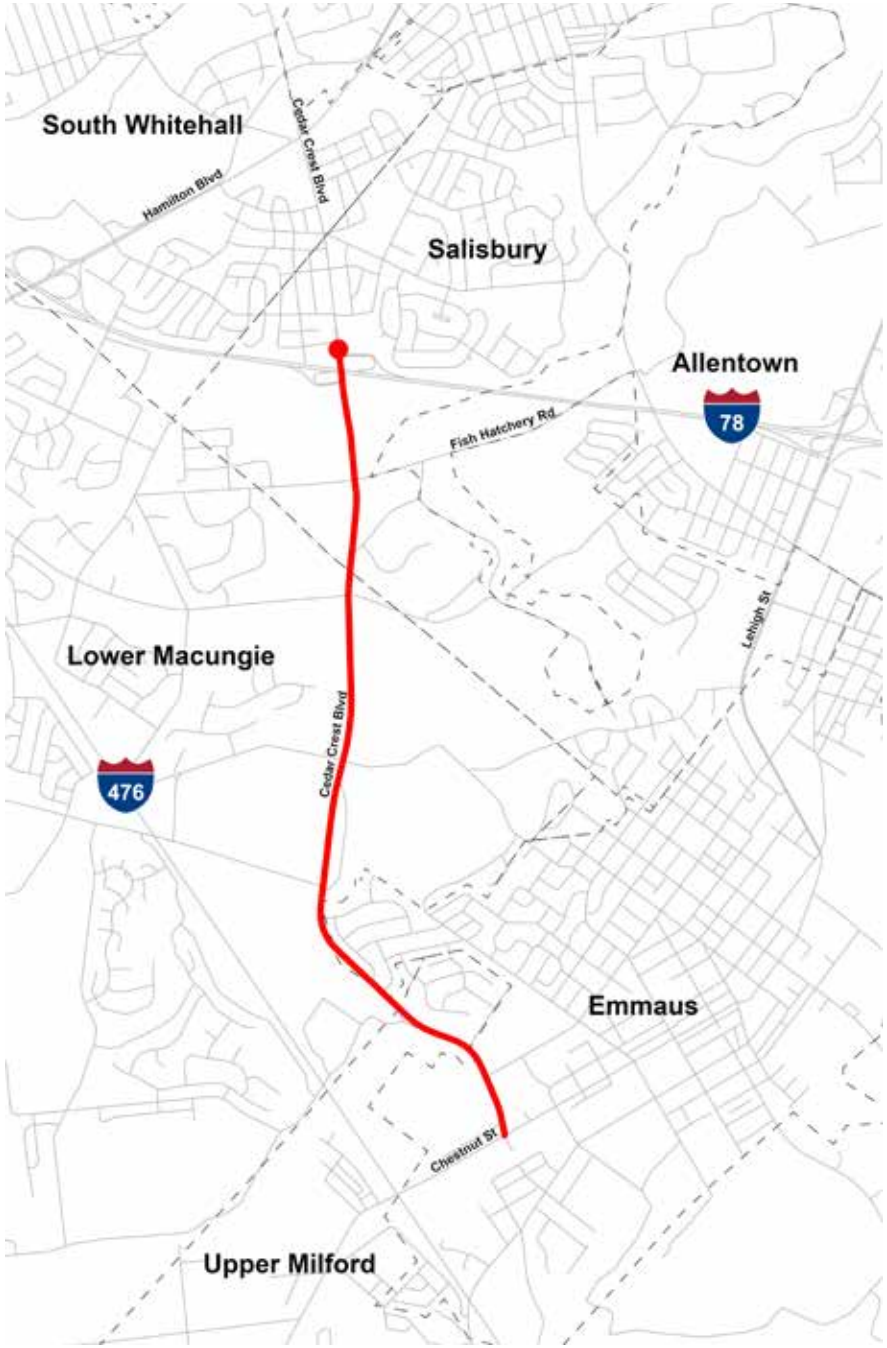
Planned Improvements

- None currently.

Strategies

- Redesign merge zones
- Add directional lanes to reduce conflict and improve flow

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	1,107
Annual Average Daily Traffic	14,767
Municipality	Salisbury Township
Level of Service (V/C)	2.42
PHED	29299.462
LOTTR	1.174
TTTI	1.786
TTTR	N/A
High Crash Severity	Yes
Priority Rank	4



Cedar Crest Boulevard Northbound near I-78/Route 309

The exit lane of the Cedar Crest Boulevard North interchange with I-78/Route 309 merges onto Cedar Crest Boulevard while allowing both left and right turns, creating a continuous conflict that contributes to recurring congestion.

Traffic is further impeded by the downstream signalized intersection, which leads to vehicle accumulation and a non-stop bottleneck along Cedar Crest Boulevard.

Participants in the CMP workshop on March 2 mentioned Emmaus High School and LHVN Cedar Crest Hospital as significant traffic generators.

Planned Improvements

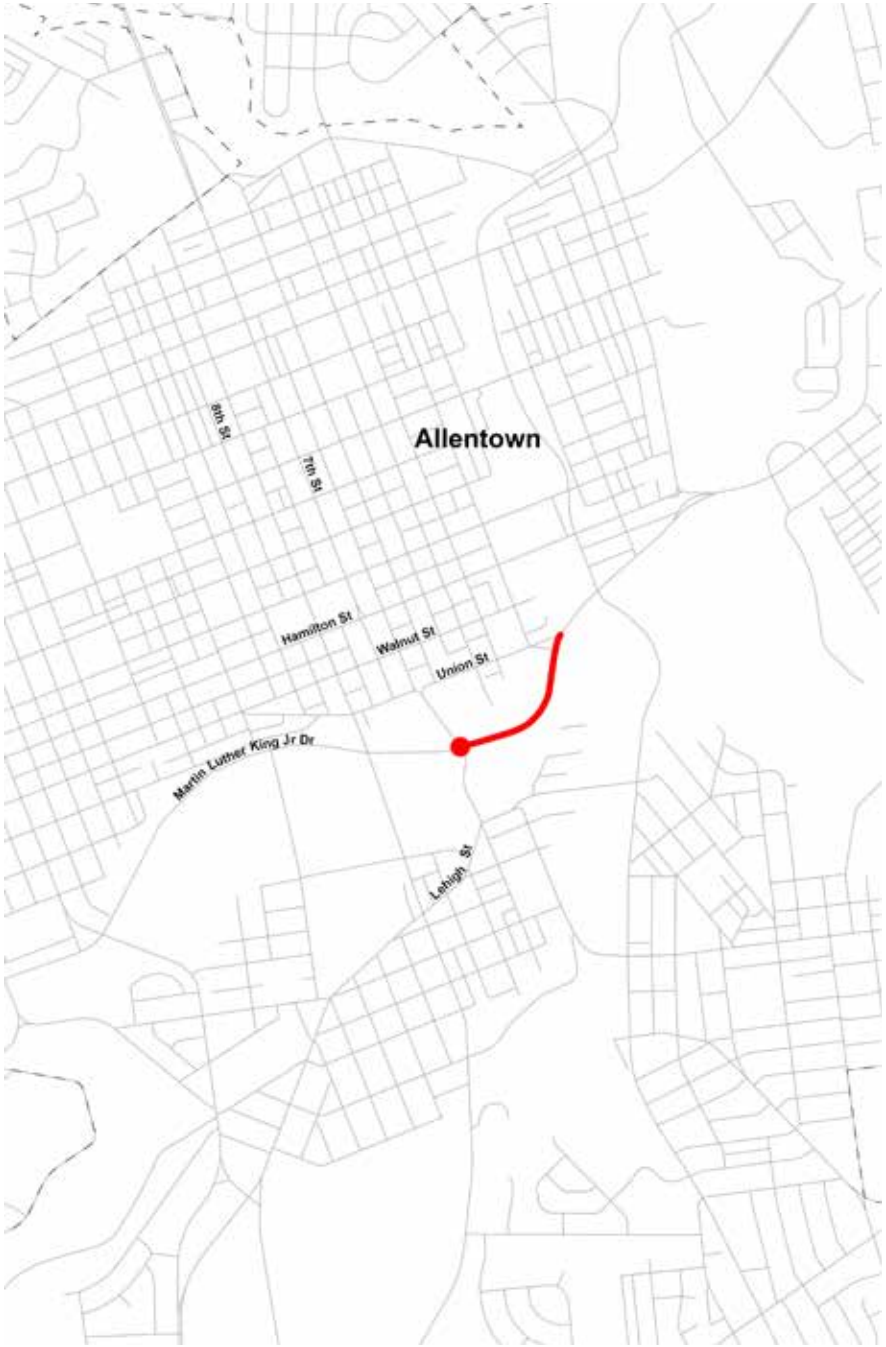
- *FutureLV: The Regional Plan*
  - Cedar Crest Boulevard (Route 29) Resurface Betterment Project - Resurface from Minesite Road in Lower Macungie Township to I-78 in Salisbury Township.

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	1,420
Annual Average Daily Traffic	16,698
Land use classification	Residential, Industrial
Length	5.3 miles
Lanes	4
Municipalities	Upper Macungie and Lower Macungie Townships
Level of Service (V/C)	0.68
PHED	16547.202
LOTTR	1.211
TTTI	1.580

- Transportation Improvement Program (TIP)
  - Cedar Crest Signal Upgrade - Traffic signal upgrades along Route 2005 from Fish Hatchery Road to Lincoln Avenue.
  - Freeway Service Patrol - Two roaming tow trucks responding to incidents on I-78 from Route 100 to the Route 309 split and I-78/Route 22 from Route 100 to Route 33 to improve corridor reliability and safety.

Strategies

- Add dedicated turn lanes
- Optimize downstream signals to reduce vehicle accumulation



Martin Luther King (MLK) Jr. Drive Westbound near Route 145/Lehigh Street

Traffic merging from Lil Peep Street onto MLK Jr. Drive contributes to queuing at the signalized intersection, creating a recurring bottleneck. Additional factors include school bus parking and notable pedestrian activity.

Planned Improvements

- *FutureLV: The Regional Plan*
  - Allentown MLK Jr. Drive Project - Pedestrian enhancements along MLK Jr. Drive at 4th Street and Lehigh Street.
  - MLK Jr. Drive Pedestrian Improvements - Upgrade multimodal infrastructure including Americans with Disabilities Act-compliant ramps, traffic control devices, and crosswalks.
  - MLK Jr. Trail Extension - Construct the next phase of the trail network to connect the corridor to the Cedar Creek Parkway trail network.

Strategies

- Implementing roundabouts with sidewalk enhancements

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	454
Annual Average Daily Traffic	15,154
Municipality	Allentown
Level of Service (V/C)	1.05
PHED	N/A
LOTTR	N/A
TTTI	N/A
TTTR	N/A
High Crash Severity	Yes
Priority Rank	6

S. Jefferson Street/Ward Street (Northbound) near S. 15th Street at Martin Luther King Junior Drive

A mix of merging lanes, unsignalized intersections, pedestrian crossings, and nearby signalized intersections within a short distance contributes to recurring congestion and bottlenecks.

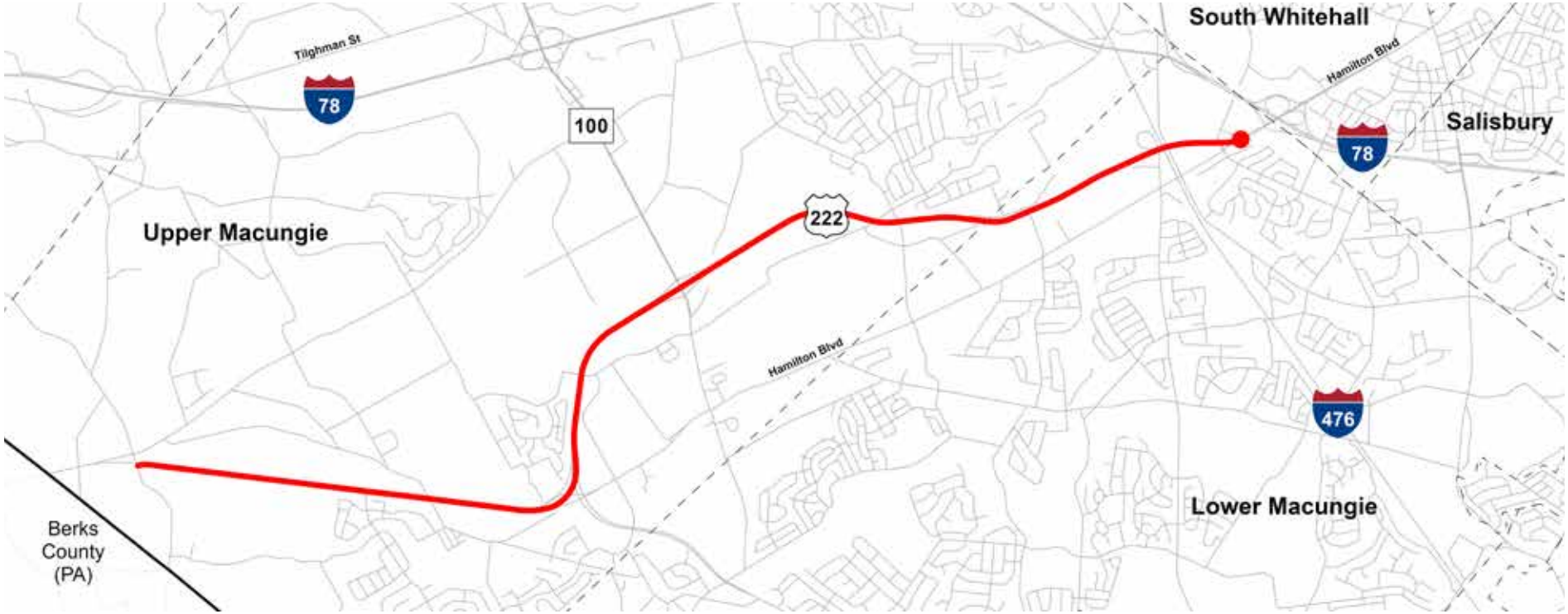
Planned improvements

- *FutureLV: The Regional Plan*
  - Jefferson Street Road Diet/Roundabout - Construction of a roundabout at the intersection of Jefferson Street and Park Drive, Lehigh Parkway East, Lehigh Parkway South and Tioga Street. Implement lane narrowing and multimodal pedestrian improvements along the corridor.

Strategies

- Enhance crosswalks and geometric redesign
- Signal enhancements to improve traffic flow and safety

Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	586
Annual Average Daily Traffic	12,728
Municipality	Allentown
Level of Service (V/C)	0.99
PHED	NA
LOTTR	NA
TTTI	NA
TTTR	NA
High Crash Severity	Yes
Priority Rank	7



Route 222 (Eastbound) near Route 222 Business

Recurring congestion is driven by conflicting lane-changing maneuvers from both the freeway and the arterial. Vehicles exiting Route 222 eastbound toward Hamilton Boulevard and continuing to I-78 must merge across traffic entering from Hamilton Boulevard headed toward Allentown, creating turbulence in the traffic stream.

These weaving and merging conflicts reduce operational efficiency and cause recurring delays, with queues frequently extending downstream to the Route 222/Schantz Road roundabout.

The overlapping movements - drivers from Hamilton Boulevard attempting to reach I-78 and those from Route 222 attempting to reach Allentown - concentrate demand in the same limited merge area, intensifying the bottleneck.

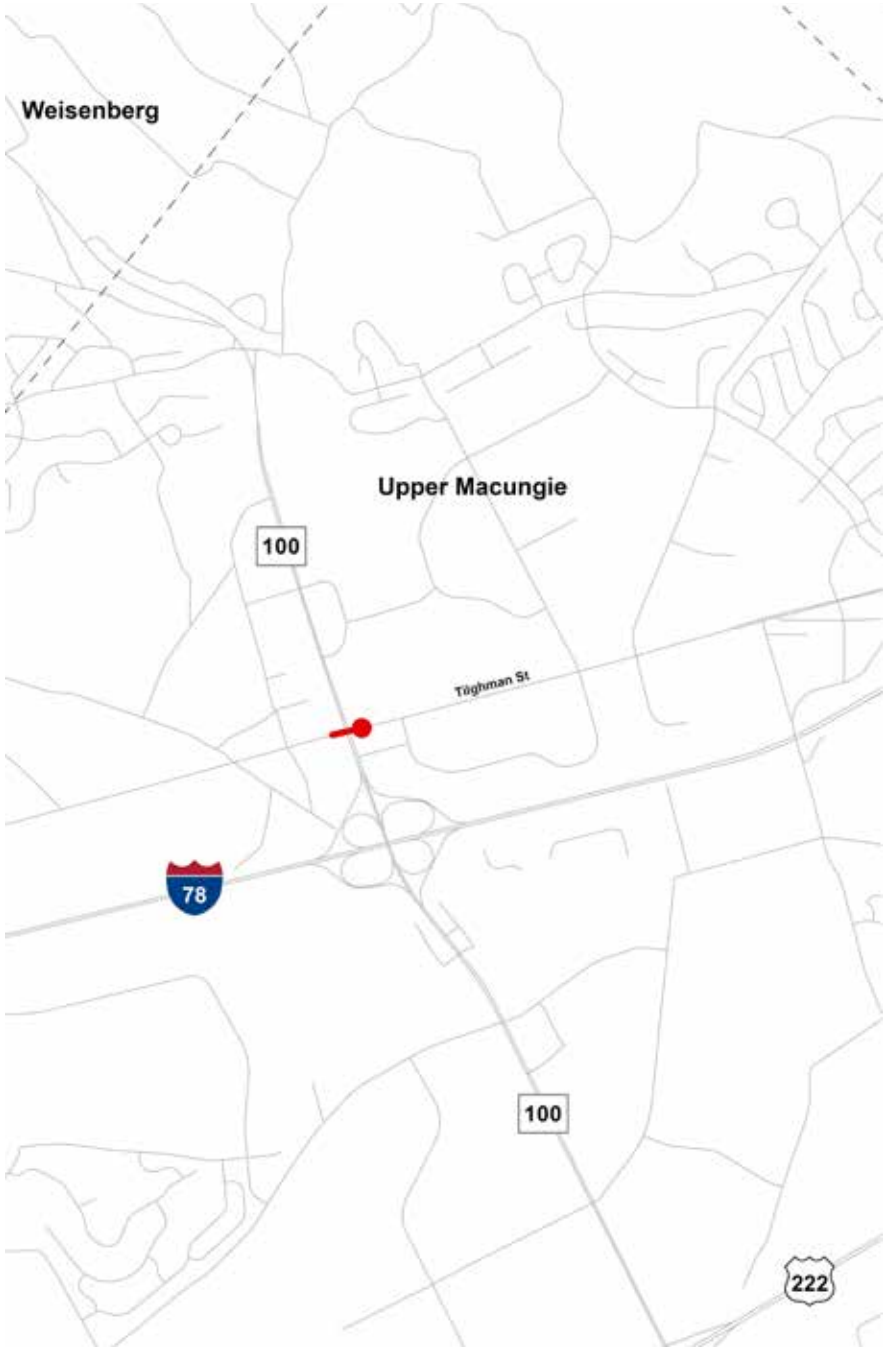
Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	1,496
Annual Average Daily Traffic	16,177
Municipality	Lower Macungie Township
Level of Service (V/C)	0.66
PHED	11797.806
LOTTR	1.179
TTTI	1.534
TTTR	N/A
High Crash Severity	Yes
Priority Rank	8

Planned Improvements

- *FutureLV: The Regional Plan*
  - Route 222/Hamilton Boulevard Betterment Project - Improvements from Route 222 to Kressler Road.
  - Hamilton Boulevard (Route 222) Resurface Betterment Project - Resurface from I-78 in South Whitehall Township to 15th Street in Allentown.
  - Jaindl Highway/Hamilton Boulevard/Hamilton Street (Route 222) Signal Improvements - Upgrades to traffic infrastructure and timing to implement automated traffic signal performance measures at approximately 17 intersections.
  - Hamilton Boulevard (Route 222) and Lower Macungie Road (Route 2012) Roundabout - Construction of a new roundabout at this intersection, including feasibility analysis per PennDOT guidelines.
  - Jaindl Highway (Route 222) at Krocks Road Intersection Improvements - Intersection upgrades to reduce congestion and improve safety.

Strategies

- Signalize and coordinate timings with the adjacent signals to reduce conflict and better meter flow



Tilghman Street (Eastbound) near Route 100

Tilghman Street East at Route 100 operates as a key suburban arterial intersection supporting both regional through movements and local access within the western Lehigh Valley.

Existing conditions include high traffic volumes, particularly during weekday peak periods, driven by commuter travel and commercial activity along both corridors.

The signalized intersection experiences recurring delay and queuing due to heavy turning movements, closely spaced access points, and downstream congestion along Tilghman Street.

Surrounding retail and employment land uses generate frequent ingress and egress, which, combined with limited roadway spacing, contribute to operational constraints and reduced travel time reliability at this intersection.

Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	1,527
Annual Average Daily Traffic	13,874
Municipality	Allentown
Level of Service (V/C)	0.98
PHED	NA
LOTTR	NA
TTTI	NA
TTTR	N/A
High Crash Severity	Yes
Priority Rank	9

Planned Improvements

- *FutureLV: The Regional Plan*
  - Tilghman Street (Route 1002) Resurface Betterment Project - Resurface Tilghman Street from Route 100 in Upper Macungie Township, through South Whitehall Township to North Dauphin Street (Route 1007) in Allentown.
  - Route 100 Betterment Project - Improvements from the Routes 100/222 split to Tilghman Street.
  - Route 100 Betterment Project - Improvements from Tilghman Street to Kernsville Road.
  - Tilghman Street (Route 1002) Improvements - Widen corridor from Route 100 to Ruppsville Road (Route 3019), including betterment of traffic management through traffic signal upgrades, pavement markings, multimodal accommodations and sidewalks.

Strategies

- Resurface and perform betterment projects to enhance ride quality and corridor durability
- Upgrade and modernize intersections
- Integration with the Traffic Management Center to optimize operations
- Incorporate sidewalks and enhanced pavement markings
- Implement widening and interchange reconstruction projects
- Improve vehicle throughput and operational reliability
- Ensure Freight Operations Improvements and Integrated Corridor Management (ICM) strategies

Route 222 (Southbound) near I-78

At this location, which sees significant seasonal traffic for Dorney Park, the lack of dedicated merging lanes between the I-78 exits and Route 222 contributes to recurring congestion, as vehicles entering Route 222 must merge directly into through traffic, causing delays and safety risks.

Planned Improvements

- *FutureLV: The Regional Plan*
  - Hamilton Boulevard and I-78/Route 222 Projects – Hamilton Boulevard (Route 222) Resurface Betterment Project from I-78 in South Whitehall Township to 15th Street in Allentown.

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	1,117
Annual Average Daily Traffic	12,883
Municipality	South Whitehall Township
Level of Service (V/C)	0.76
PHED	5292.792
LOTTR	1.217
TTTI	1.838
TTTR	NA
High Crash Severity	No
Priority Rank	10

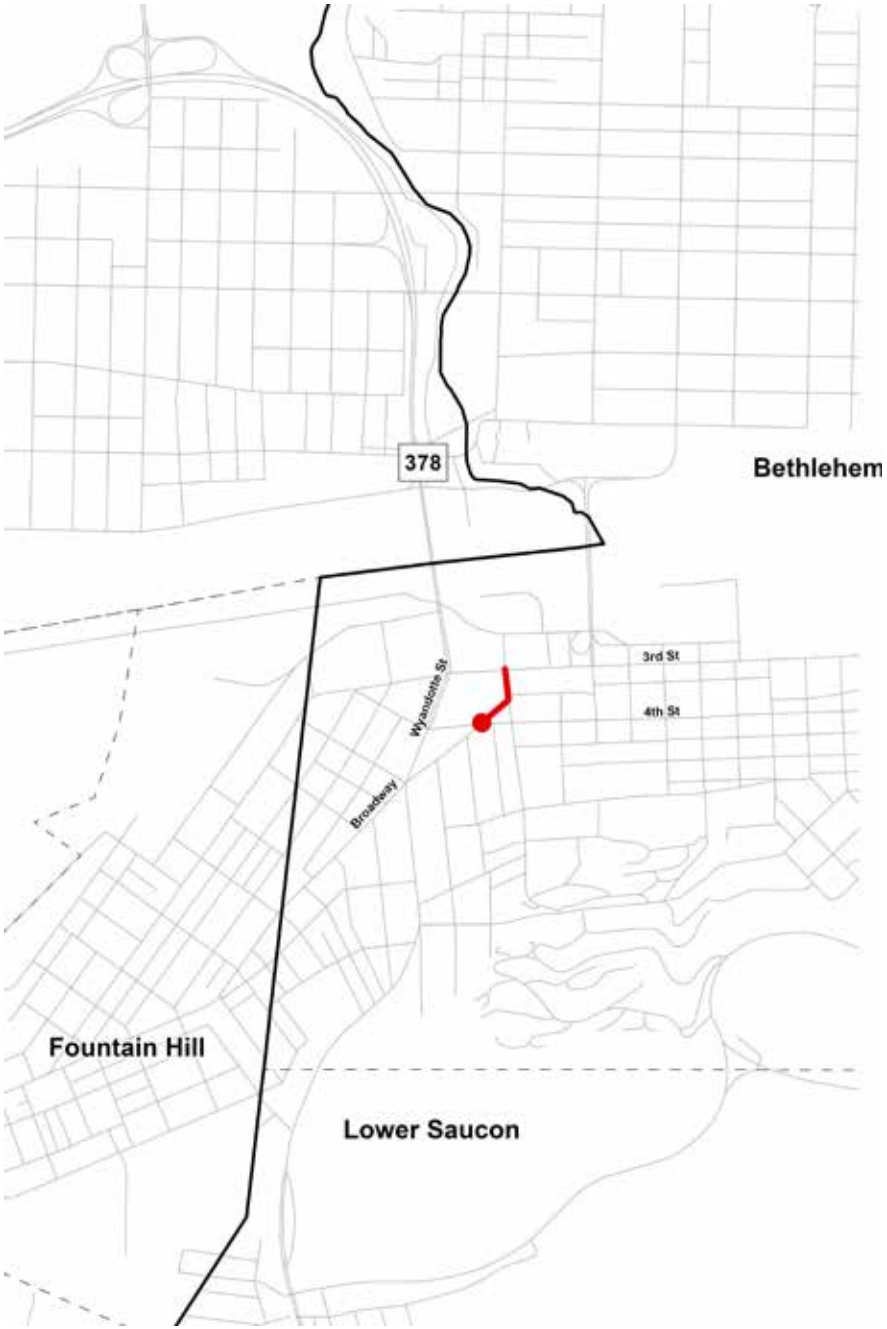
- Jaindl Highway (Route 222) Safety Improvements - Redesign and construct for traffic management in the “weave area” near the Pennsylvania Turnpike Northeast Extension (I-476) bridge and I-78 interchange, covering Hamilton Boulevard (Route 222), Kessler Road and Cedarbrook Road (Route 2011).
- Interstate 78/Route 222 Interchange Upgrades – Improvements to include lane reconfigurations, revised signalization and ramp modifications.

Strategies

- Construct continuous auxiliary lanes
- Reconfigure ramps to improve merging and reduce delays

LEHIGH VALLEY
CONGESTION
MANAGEMENT
PLAN

Priority Bottlenecks in Northampton County



Broadway (Westbound) at 4th Street

Broadway Westbound at 4th Street Ramp and Broadhead Avenue operates as a key urban arterial segment within the City of Bethlehem, supporting a mix of local circulation and regional connectivity across the Lehigh River.

Existing conditions at this location are influenced by a dense urban street network, signalized intersections, and frequent pedestrian activity associated with adjacent residential, commercial, and institutional land uses.

Traffic operations are characterized by moderate to high peak-period volumes, turning movement conflicts and constrained roadway geometry, which contribute to reduced speeds and intermittent queuing.

The presence of on-street parking, transit activity and limited curb space further affect operational efficiency, making this bottleneck location sensitive to minor fluctuations in demand and requiring careful balancing of vehicle, pedestrian, and multimodal needs.

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	450
Annual Average Daily Traffic	13,314
Municipality	Bethlehem
Level of Service (V/C)	1.09
PHED	NA
LOTTR	NA
TTTI	NA
TTTR	N/A
High Crash Severity	Yes
Priority Rank	1

Planned Improvements

- Currently none.

Strategies

- Optimize signal timing and turning movements to reduce delays and queuing during peak periods
- Upgrade crosswalks, pedestrian signals and curb geometry to improve safety for pedestrians and cyclists
- Improve on-street parking management and loading zones to reduce conflicts and maintain traffic flow

Broadway (Eastbound) near W. 3rd Street

Broadway eastbound at West 3rd Street/River Street functions as an important urban connector along the Lehigh River, linking downtown Bethlehem with adjacent neighborhoods and regional routes.

Existing conditions at this location reflect a constrained urban setting with closely spaced intersections, signalized control, and a high level of pedestrian and bicycle activity tied to nearby residential, commercial, and recreational land uses.

Traffic operations are influenced by turning movements, on-street parking, and periodic curbside activity, resulting in moderate congestion and queuing during peak periods.

The corridor's proximity to the riverfront and downtown destinations increases multimodal demand, requiring careful management of vehicular flow while maintaining accessibility and safety for non-motorized users.

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	450
Annual Average Daily Traffic	13,314
Municipality	Bethlehem
Level of Service (V/C)	1.09
PHED	NA
LOTTR	NA
TTTI	NA
TTTR	N/A
High Crash Severity	Yes
Priority Rank	1

Planned Improvements

- Currently None.

Strategies

- Optimize signal timing and turning movements to reduce delay and queuing during peak periods
- Upgrade crosswalks, pedestrian signals, and curb geometry to improve safety for pedestrians and cyclists
- Improve on-street parking management and loading zones to reduce conflicts and maintain traffic flow

Route 378 (Northbound) near Hill-To-Hill Bridge

Travel slows at the Route 378, northbound approach to the Hill-to-Hill Bridge, causing delays, traffic stoppages and safety risks. Congestion is compounded by queues from upstream signalized intersections, causing a recurring bottleneck.

Planned Improvements

- *FutureLV: The Regional Plan*
  - Route 378 and Main Street Bridge Projects – Main Street Ramp Bridge Rehabilitation to connect to Main Street from Route 378.
  - Route 378 Betterment Project from Colesville Road to Brighton Street.
- Transportation Improvement Program (TIP)
  - Hill-to-Hill Bridge Improvements - Rehabilitation of Route 378 Bridge over the Lehigh River, Norfolk Southern railroad and various city streets.
  - Bridge Preservation and Repair 8 - Preservation and rehabilitation of various bridges.
  - Route 378 Lighting - Installation of lighting from Hill-to-Hill Bridge to Route 22.

Strategies:

- Bridge replacement or rehabilitation to improve traffic flow

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	851
Annual Average Daily Traffic	17,267
Municipality	Bethlehem
Level of Service (V/C)	0.62
PHED	19794.963
LOTTR	1.421
TTTI	2.367
TTTR	NA
High Crash Severity	Yes
Priority Rank	3

W. 3rd Street (Westbound) at 2nd Street Ramp

W. 3rd Street (westbound to 2nd Street ramp/Brodhead Ave)is a recurring bottleneck within the corridor due to high volumes, closely spaced intersections, and concentrated turning movements.

Westbound traffic experiences queuing during peak commuter periods as vehicles merge, turn, and navigate signalized control in a constrained urban setting.

The interaction between regional through traffic and local access movements creates operational friction, particularly where lane configurations and signal timing limit discharge capacity.

Proximity to mixed-use development and institutional destinations further intensifies short-term demand surges. These combined factors contribute to recurring delay, reduced travel time reliability,

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	450
Annual Average Daily Traffic	13,314
Municipality	Bethlehem
Level of Service (V/C)	1.09
PHED	NA
LOTTR	NA
TTTI	NA
TTTR	N/A
High Crash Severity	Yes
Priority Rank	1

and increased rear-end and side-swipe conflict potential, highlighting the need for targeted intersection optimization, lane-use evaluation, and access management strategies to improve westbound flow and safety.

Planned Improvements

- None currently.

Strategies

- Dedicated truck routing and off-peak delivery incentives
- Corridor-wide redesign of 3rd street to avoid shifting bottlenecks downstream
- Signal Retiming

Stefko Boulevard (Northbound) near Pembroke Road

Stefko Boulevard (northbound) near Pembroke Road is a localized bottleneck driven by high directional peak-hour demand during both AM and PM peaks, signalized intersection control, and concentrated turning movements.

Northbound queues frequently develop during commuter periods as through traffic competes with left- and right-turn movements serving adjacent residential and commercial properties.

Closely spaced access points and pedestrian crossings further influence progression and reduce effective capacity along the approach. Variability in traffic flow, including school-related activity and neighborhood circulation, contributes to intermittent but recurring delays.

These conditions result in reduced travel time reliability and elevated rear-end conflict potential, indicating the need for signal timing optimization, turn-lane evaluation, and targeted operational improvements to enhance northbound performance and safety.

Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	951
Annual Average Daily Traffic	14,633
Municipality	Bethlehem
Level of Service (V/C)	1.01
PHED	NA
LOTTR	NA
TTTI	NA
TTTR	NA
High Crash Severity	Yes
Priority Rank	5

Planned Improvements

- None currently.

Strategies

- Signal retiming and coordination
- Intersection optimization
- Redundant commercial driveways
- Sidewalk continuities
- High visibility crosswalks and pavement marking improvements

Freemansburg Avenue (Westbound) near Washington Street / Cambria Street

Freemansburg Avenue (westbound) near Washington Street / Cambria Street functions as a recurring bottleneck due to concentrated peak-hour traffic and high turning activity at the intersection.

Westbound vehicles frequently experience queuing as left- and right-turn movements compete with through traffic, compounded by closely spaced driveways serving adjacent residential and neighborhood commercial land uses.

Limited storage capacity for turning lanes and signal progression constraints further reduce corridor efficiency. These conditions result in periodic congestion, increased rear-end conflict risk, and reduced travel time reliability, emphasizing the need for signal timing adjustments, turn-lane enhancements, and targeted access management to improve westbound flow and overall safety.

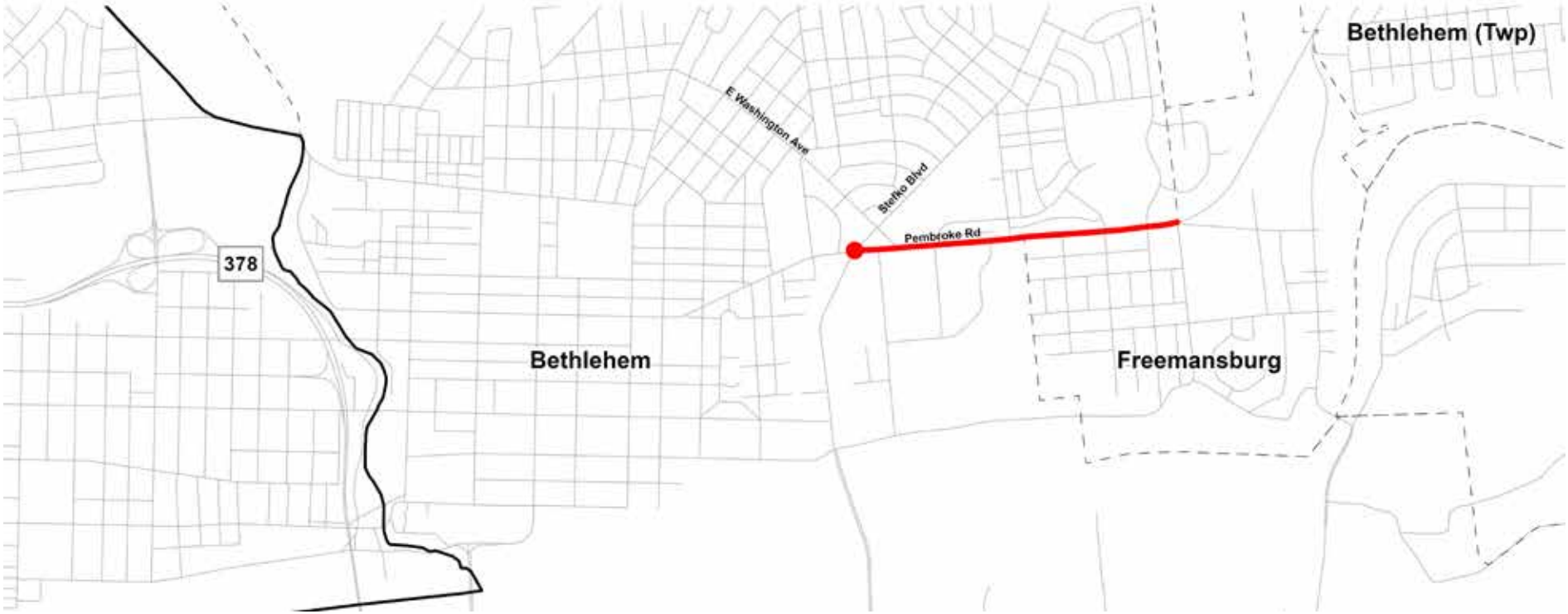
Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	859
Annual Average Daily Traffic	13522
Municipality	Bethlehem
Level of Service (V/C)	0.856
PHED	NA
LOTTR	NA
TTTI	NA
TTTR	NA
High Crash Severity	Yes
Priority Rank	6

Planned Improvements

- Transportation Improvement Program (TIP)
  - Freemansburg Avenue Safety Improvements: Reconstruction and realignment of the intersection at Freemansburg Avenue (Route 2018) and Farmersville Road.

Strategies

- Signal timing optimization
- Off-peak delivery for truck delivery
- Sidewalk connectivity and pedestrian enhancements
- Crosswalk enhancements



Pembroke Road (Westbound) near Stefko Boulevard

Pembroke Road (westbound) near Stefko Boulevard is a localized bottleneck due to high directional AM and PM peak-hour demand and turning movements at the signalized intersection. Westbound traffic often experiences queuing and delays as vehicles navigate left- and right-turn movements serving adjacent residential and commercial properties. The combination of closely spaced driveways, pedestrian crossings, and merging traffic from side streets further reduces effective lane capacity and limits progression. These conditions create recurring congestion during morning and afternoon peak periods, increase rear-end collisions potential, and diminish travel time reliability, highlighting the need for signal timing optimization, turn-lane enhancements, and targeted access management to improve westbound corridor performance.

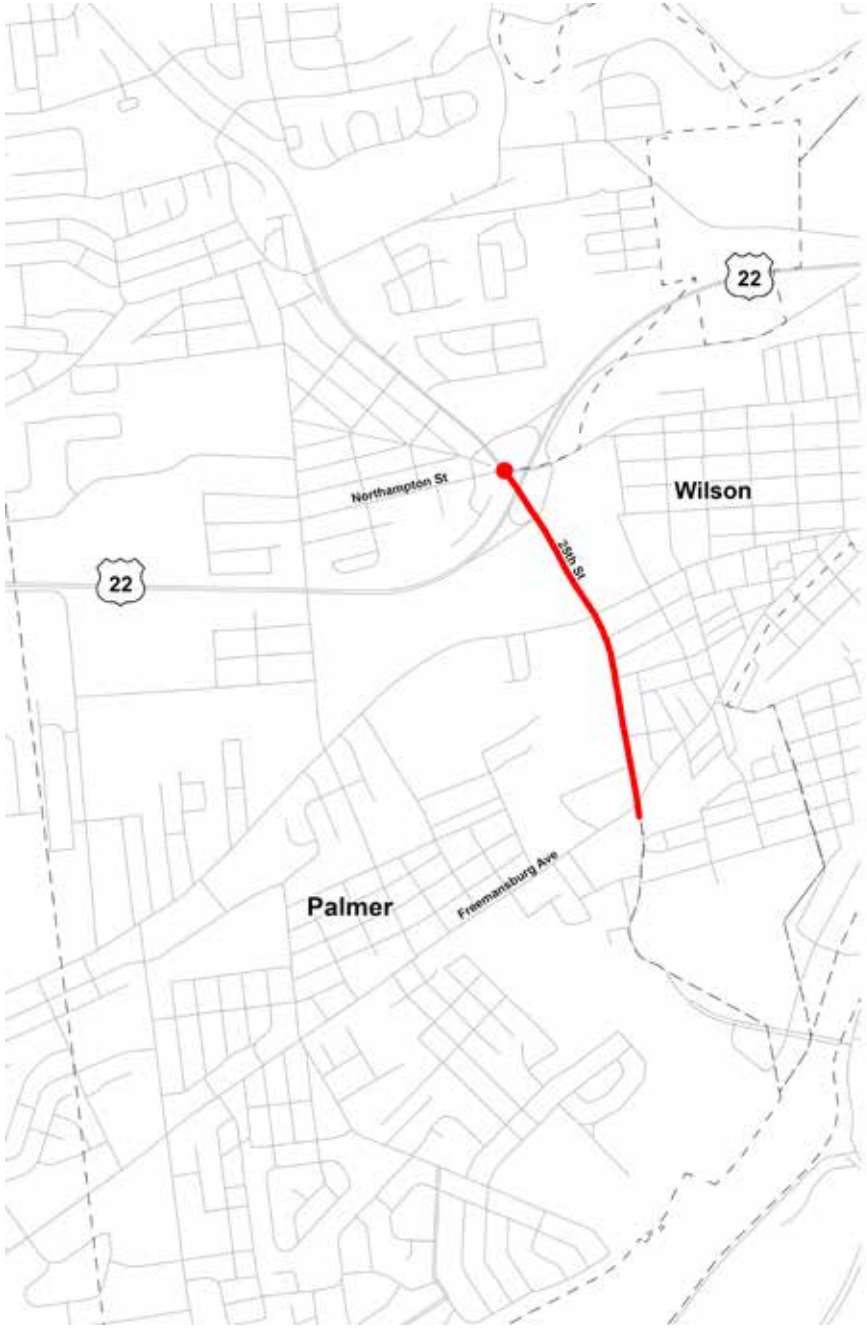
Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	533
Annual Average Daily Traffic	14,113
Municipality	Bethlehem
Level of Service (V/C)	0.88
PHED	NA
LOTTR	NA
TTTI	NA
TTTR	NA
High Crash Severity	Yes
Priority Rank	7

Planned Improvements

- None currently.

Strategies

- Reconstruction and realignment of intersection
- Rectangular rapid flash beacon light upgrades
- Pedestrian improvements and sidewalk connectivity
- Improving transit amenities at bus stops



S. 25th Street (Northbound) near Route 22

S. 25th Street (northbound) near Route 22 is a significant bottleneck due to heavy commuter and regional traffic merging onto and off the highway. Northbound volumes peak during morning and evening periods, creating queuing at the intersection and limiting upstream progression. Frequent turning movements, closely spaced commercial access points, and interactions with adjacent traffic signals exacerbate congestion, while the mix of passenger vehicles and trucks further constrains capacity.

These conditions result in recurring delay, reduced travel time reliability, and increased potential for rear-end and turning-related conflicts, emphasizing the need for signal timing optimization, turn-lane evaluation, and strategic access management to improve northbound flow and overall corridor safety.

Attribute / Metric	Value / Description
NHS status	Yes
Annual Daily Truck Traffic	551
Annual Average Daily Traffic	14,039
Municipality	Palmer
Level of Service (V/C)	0.65
PHED	7,048
LOTTR	1.32
TTTI	2.61
TTTR	NA
High Crash Severity	Yes
Priority Rank	8

Planned Improvements

- *FutureLV: The Regional Plan*
  - 25th Street Hill Improvement - A full restoration, resurfacing and rehabilitation to South 25th Street (State Route 2012) from the intersection of Freemansburg Avenue to the divided highway at the Lehigh River Bridge near Glendon Borough.
  - Nazareth Road (State Route 248) Resurface Betterment Project - Resurface from Hollo Road in Lower Nazareth Township to South 25th Street in Palmer Township.
  - 25th Street Hill (State Route 2012) Improvements - Safety and infrastructure enhancements and reconstruction, including drainage upgrades, shoulder widening, flattening of curves, intersection improvements, signage and guiderail upgrades including embankment removal.
  - Butler Street (State Route 2020) Streetscape Improvements - Improve streetscapes along South 25th Street (State Route 2012) and South 15th Street.
  - South 25th Street Multimodal Corridor Study - Plan for three phases of future multimodal transportation improvement recommendations and designs along the corridor from Park Avenue to the Lehigh River.
  - US State Route 22, State Route 248 and 25th Street - Conduct a US Route 22 interchange study for State Route 248.

Strategies

- Restoration, resurfacing, and rehabilitation of corridors and infrastructure
- Safety and Infrastructure enhancements and reconstruction
- Drainage upgrades and geometric redesign
- Sidewalk and guiderail improvements
- Streetscape and multimodal enhancements
- Interchange studies along Route 22

Stefko Blvd (Southbound) near Minsi Trail Bridge

Stefko Boulevard (southbound) near the Minsi Trail Bridge operates as a frequent bottleneck due to high peak-period traffic, constrained bridge lane capacity, and significant turning movements at nearby intersections. Southbound queues often form as vehicles merge and navigate signalized access points, while interactions with commercial driveways and pedestrian crossings reduce effective throughput. The combination of bridge geometry, peak commuter flows, and local access demands contributes to recurring congestion, diminished travel time reliability, and elevated rear-end conflict potential. These conditions underscore the need for targeted operational improvements, including signal timing coordination, turn-lane optimization, and strategies to enhance southbound corridor flow and safety across the bridge.

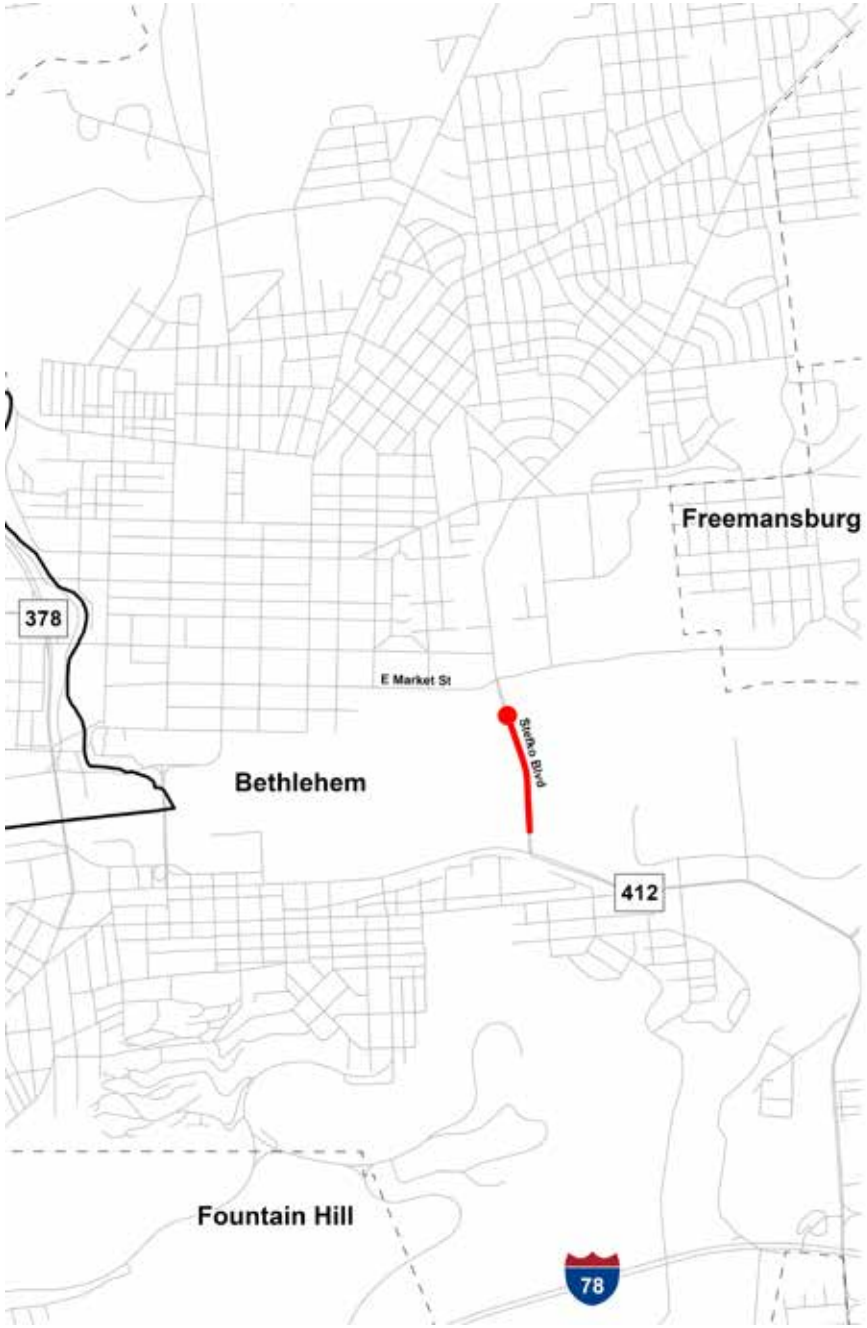
Planned Improvements

- Transportation Improvement Program (TIP)
  - Board street multimodal improvements.

Strategies

- Signal Retiming
- Left turn lane configuration coming from Stefko Road and Market Street up to Broad Street
- Pedestrian Infrastructure

Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	996
Annual Average Daily Traffic	12,368
Municipality	Bethlehem
Level of Service (V/C)	0.98
PHED	NA
LOTTR	NA
TTTI	NA
TTTR	NA
High Crash Severity	No
Priority Rank	9



Stefko Blvd (Northbound) near Minsi Trail Bridge

Stefko Boulevard (northbound) near the Minsi Trail Bridge functions as a recurring bottleneck due to high peak-hour commuter demand, bridge-related lane constraints, and concentrated turning movements at adjacent intersections. Northbound traffic frequently experiences queuing as vehicles merge and navigate signalized approaches, with limited lane capacity on the bridge exacerbating congestion. The proximity of commercial and residential access points, along with pedestrian crossings, further reduces progression and contributes to stop-and-go conditions.

These factors create recurring delays, increased rear-end conflict risk, and reduced travel time reliability, highlighting the need for signal timing optimization, turn-lane evaluation, and operational improvements to enhance northbound flow and safety across this critical bridge segment.

Planned Improvements

- Transportation Improvement Program (TIP)
  - Board street multimodal improvements.

Strategies

- Signal Retiming
- Left turn lane configuration coming from Stefko Road and Market Street up to Broad Street
- Pedestrian Infrastructure

Attribute / Metric	Value / Description
NHS status	No
Annual Daily Truck Traffic	1,115
Annual Average Daily Traffic	13,729
Municipality	Bethlehem
Level of Service (V/C)	1.00
PHED	NA
LOTTR	NA
TTTI	NA
TTTR	NA
High Crash Severity	No
Priority Rank	10

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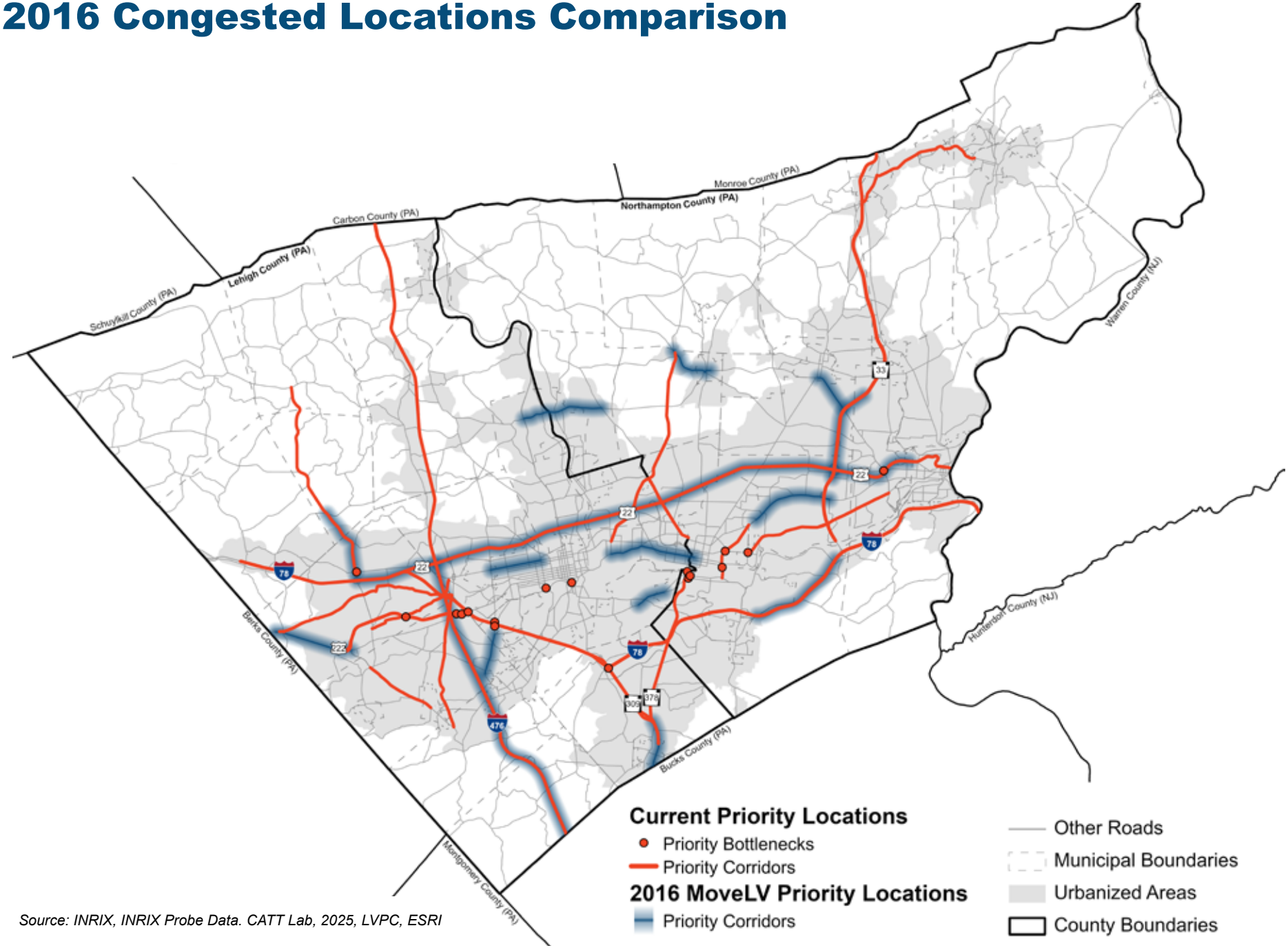
Evaluating Performance Trends

The CMP helps track how the Lehigh Valley's transportation network performs and identifies ways to reduce congestion across different travel modes. However, it does not directly measure how well implemented solutions work. Evaluating conditions before and after a project is important to see if strategies improve traffic flow, but such assessments are often limited by staffing and data availability.

Traffic patterns are influenced by factors like land use, economic shifts and travel behavior, making it difficult to measure a single project's impact. Still, estimating potential effects is critical for prioritizing investments that deliver the most meaningful improvements.

In the 2016 CMP update, LVTS identified 15 congested corridors, designating them as priorities due to their importance and severity of congestion. For this 2026 update, LVTS used INRIX to probe vehicle data for more precise congestion evaluation. The analysis compared current conditions with the 2016 list to determine if any corridors have improved enough to be removed.

2016 Congested Locations Comparison



Source: INRIX, INRIX Probe Data. CATT Lab, 2025, LVPC, ESRI

The 15 priority corridors received a focused review to determine whether they remain critical congestion locations. Checked boxes indicate where previous priority corridors overlap with current ones.

The CMP analysis shows that several corridors prioritized in the *2016 MoveLV* plan have seen measurable traffic improvements.

Of the 15 priority corridors, six – Tilghman Street, Route 29, Emmaus Avenue, Hanover Avenue, Route 248, and Easton Avenue – currently show no significant congestion at either the corridor or bottleneck level.

This suggests that the 2016 plan's mitigation strategies were effective. Ongoing monitoring and targeted interventions on the remaining congested corridors will be important to maintain and improve traffic flow in the Lehigh Valley.

2016 *MoveLV* Priority Corridors	Current Corridors
Route 222/Hamilton Boulevard (Folk Road to Route 100)	X
Route 100 (Claussville Road to Tilghman Street)	X
Route 22 (Route 100 to Wood Avenue)	X
Route 329 (Route 145 to Weaversville Road)	X
Tilghman Street (N Cedar Crest Boulevard to N 15th Street)	
Route 476 (Route 22 to Lehigh County Line)	X
Route 29 (Fish Hatchery Road to Little Lehigh Drive)	
Route 309 (U-Turn S of Main Street to Lehigh County Line)	X
Emmaus Avenue/Broadway (Church Road to Delaware Avenue)	
Hanover Avenue/W Broad Street (N Irving Street to Guetter Street)	
Route 248 (Grouse Drive to Washington Street)	
Route 33 (Van Buren Road to Church Road)	X
Route 248 (Wambold Street to Route 33 southbound ramps)	
Easton Avenue (Nottingham Road to Hope Road)	
I-78 (Route 412 East ramps to Route 33 East ramps)	X

Lehigh Valley Congestion Management Strategies to Reduce Single-Occupancy Vehicle Travel

To address congestion and reduce reliance on single-occupancy vehicle (SOV) travel, the Lehigh Valley has advanced a range of coordinated strategies spanning transit, active transportation, pricing and regional connectivity. Examples include:

- The LVTS Coordinated Public Transit: Human Services Transportation Plan identifies transportation needs of transit-dependent older adults, low-income populations and individuals with disabilities, and evaluates service providers while also outlining strategies, projects, and activities to improve service efficiency and set implementation priorities based on funding, timing and feasibility.
- LANTA's Enhanced Bus Service (EBS) represents a key transit investment aimed at improving service frequency, reliability, and overall system attractiveness, making transit a more competitive alternative to driving alone. Reduced fare programs are also provided by LANTA which include three-hour passes, day passes, monthly passes, and special fares for seniors, people with disabilities, people with a Medicare card, and children.
- *Walk/RollLV: Active Transportation Plan* focuses on coordinating trails, bikeways, sidewalks, roadways, and public transit to create a convenient, safe, and multimodal transportation network. This effort supports reducing SOV travel and enhancing quality of life by improving air quality, health, mobility, safety, tourism, recreation, and overall environmental outcomes.
- Parking pricing strategies in the cities of Allentown, Bethlehem and Easton are being used to better manage demand, encourage turnover, and reduce incentives for SOV in high-activity areas.
- *The Lehigh Valley Trail Connection Strategy* focuses on closing gaps between existing and proposed trails to create a more continuous regional network. By strengthening these linkages, the strategy expands options for both everyday travel and recreational use without dependence on single-occupant vehicles. It also complements broader active transportation efforts across the region and provides municipalities and partner organizations with guidance and supporting information for pursuing funding for trail development and improvements.

Guidelines for Aligning Projects with the Congestion Management Plan

Under federal requirements, proposed transportation projects must be evaluated to ensure they align with the CMP. When initiating a study or advancing a project that could increase roadway capacity, project sponsors are expected to coordinate early with LVTS staff.

This coordination helps ensure that the project follows the appropriate procedures and is incorporated into the review.

LVTS staff can provide support in identifying and developing strategies for projects that introduce minor increases in SOV capacity. However, greater emphasis is placed on reviewing projects that result in substantial capacity expansion. Determining whether a project does not add SOV capacity or should be classified as a minor or major capacity increase requires careful evaluation.

Project sponsors are expected to assess their proposals using the criteria outlined in the flowchart.

1 Is the project adding single-occupancy vehicle capacity?

- Yes ▼
- No ▶ No Action Required

2 Is the project located in a congested corridor or at/near a bottleneck?

- Yes ▶ Requires further analysis
- No ▶ Discuss alternatives

3 Could the project move forward without adding capacity?

- Yes ▼
- No ▶ Document findings

4 Is the project consistent with the Congestion Management Plan?

- Yes ▼
- No ▶ Consider alternative strategies

5 Have stakeholders been consulted and general concensus achieved?

- Yes ▼
- No ▶ Consult stakeholders and achieve concensus

6 Review and agree to strategies and set implementation timeline with the Lehigh Valley Transportation Study

Projects that do not increase SOV capacity are typically identified through their eligibility for exempt categories under regional air quality guidelines. These include safety improvements, transit investments, air quality programs, and other designated activities.

Project types not expected to increase capacity include:

- **Active transportation** - bicycle and pedestrian facilities
- **Infrastructure maintenance** - bridge repair or replacement, drainage and dam upgrades, resurfacing, routine maintenance (e.g., signal updates), shoulder and guiderail improvements, and sight distance enhancements
- **Streetscape and environment** - landscaping, historic preservation, sound barriers, and environmental mitigation (e.g., wetland restoration)
- **Roadway changes** - widening that does not add travel lanes
- **Programs and systems** - Safe Routes to School, Intelligent Transportation Systems (ITS) for monitoring, traveler information, or emergency response, and signage improvements
- **Transit and demand management** - transit projects, Transportation Demand Management (TDM), and off-roadway infrastructure like parking garages
- **Air quality and funding programs** - Congestion Mitigation and Air Quality (CMAQ) projects
- **Planning and support activities** - outreach, transit/TDM planning, regional or local studies, regulatory reviews, freight planning, and GIS data collection

The only exception is when planning or support activities directly contribute to major highway expansion projects, which are classified separately.

Minor SOV capacity projects create small, localized increases in roadway capacity without adding new through lanes or constructing new roads that would significantly alter travel patterns. They are typically implemented as stand-alone improvements and evaluated based on consistency with congestion management goals and their role within existing or planned corridors.

Common examples include:

- ITS applications that improve flow (e.g., signal coordination)
- Intersection upgrades such as added turn lanes or geometric adjustments (though widespread upgrades may be classified as major)
- Center turn lanes, acceleration/deceleration lanes, and jughandles
- Modifications to ramps at existing interchanges, including improved merging areas
- Roundabouts, traffic circle cut-throughs, and small-scale bottleneck improvements that do not significantly affect travel times or corridor performance
- Access management strategies that improve traffic flow and safety by controlling driveway access, managing turning movements, and reducing conflict points, without increasing roadway capacity (e.g., no added through lanes)

In general, these projects improve operations, including turning movements or merging, without materially changing corridor function, land use patterns, or overall travel demand.

Major SOV capacity projects substantially increase roadway capacity and are likely to influence travel behavior at the corridor or regional scale. While factors such as inclusion in air quality modeling or non-exempt study codes may inform classification, they are not determinative on their own. Projects are evaluated based on consistency with congestion management strategies, their presence in heavily traveled corridors, and their role in long-range plans and state transportation agency descriptions. Projects identified as major regional expansions in long-range plans typically receive added scrutiny.

Common examples include:

- Construction of new highways or bypasses
- Adding through lanes to existing roadways
- Coordinated corridor improvements that collectively increase capacity
- New interchanges or adding missing movements to existing interchanges
- Converting intersections to grade-separated interchanges
- Operational strategies such as shoulder running or flex lanes

Projects undergoing an Environmental Assessment (EA) or Environmental Impact Statement (EIS) or similar reviews that include high-capacity alternatives may be temporarily classified as major to support early coordination. Final classification is determined once a preferred alternative is selected.

Periodic Update and Implementation Schedule of Congestion Management Plan

Several strategic actions are recommended for future implementation to ensure the CMP remains adaptable and responsive to changing conditions.

Those include:

- **Promoting Multimodal Solutions for Capacity Projects** - Maintain ongoing dialogue with stakeholders whenever large-scale highway capacity expansion projects are proposed. The objective is to integrate multimodal and alternative transportation modes, such as public transit, pedestrian walkways, and bicycle infrastructure, to maximize the investment's long-term vision and value.
- **Evaluating Project Effectiveness and Refine Metrics** - Capitalize on historical travel time data to conduct before-and-after assessments on recently completed congestion relief initiatives. Established performance measures must be specifically used to evaluate the effectiveness of the proposed implementations. This will measure how well these projects improve traffic flow and reliability. Additionally, the metrics established in the current CMP should be refined to more systematically pair specific congestion issues with the most effective mitigation tactics at the corridor and bottleneck levels.
- **Collaborating on Targeted Interventions** - Work closely with local municipalities, PennDOT, and FHWA planning partners to assess needs at the most congested locations. This collaborative effort should focus on drafting immediate and long-range improvement strategies, complete with projected cost estimates where appropriate.
- **Tracking Year-over-Year Data Trends** - Continue the annual collection of travel time data to build robust comparative models. Analyzing year-to-year trends is vital for judging the success of past congestion strategies, guiding future financial investments, and informing PM3 performance target benchmarks.

- **Modeling the impact of economic activity on travel demand** As development intensifies, trip generation must be explicitly accounted for, since increased land use activity directly drives higher travel demand. While the intended level of service for a corridor may remain unchanged, or might decrease, the actual traffic volumes operating within that design framework will rise, placing greater pressure on the corridor's capacity, leading to increased congestion.
- **Diagnosing the Root Causes of Delay** - Deepen the analysis of why traffic builds up in priority corridors and bottlenecks. By utilizing datasets like INRIX, planners can map origin-destination patterns to see where short and long trips are concentrated. Additionally, platforms like the University of Maryland's Center for Advanced Transportation Technology Laboratory Probe Data Analytics Suite should be used to pinpoint the location, severity, and regional impact of unpredictable traffic disruptions, such as accidents, construction zones, extreme weather, or special events.
- **Enhancing GIS Mapping and Visualization** - Develop GIS web maps so users can more easily visualize congestion metrics like AADT, ADTT, V/C Ratio, and LOS that clearly link the plan's proposed mitigation strategies to their respective corridors and bottlenecks.
- **Aligning with Regional Freight Initiatives** - Continue executing the CMP in coordination with the Eastern Pennsylvania Freight Alliance (EPFA) multi-regional freight plan, ensuring that all strategies mutually support broader freight and logistics goals.

During the creation of the 2026 CMP update, the LVTS Technical Committee served as the primary driving force, receiving continuous backing from the Coordinating Committee. By convening monthly, these groups collaborated and provided steady feedback to successfully achieve a unified consensus for the new plan.

Both LVTS committees will maintain their regular meeting schedules to manage routine business, with plans to revisit the CMP frequently during subsequent revision cycles. This timeline will be closely aligned with the schedule for the update of subsequent versions of *FutureLV: The Regional Plan*. The participating organizations and entities who will actively contribute, or use the CMP for future development, project justification, and monitoring efforts include:

- Lehigh and Northampton Counties
- Local municipalities
- PennDOT
- LANTA
- Federal partners, including Federal Highway Administration and Federal Transit Administration
- Transportation Management Associations
- Other LVPC Committees, including the LVPC Transportation, Environmental and Comprehensive Planning Committees
- Other participants as invited or asked to join

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Conclusion

The CMP provides a data-driven framework for evaluating congestion, mobility and reliability across the Lehigh Valley's transportation network. Linking Metropolitan Transportation Plan (MTP) goals to measurable PM3 indicators helps planners consistently identify priority corridors, bottlenecks and other critical locations.

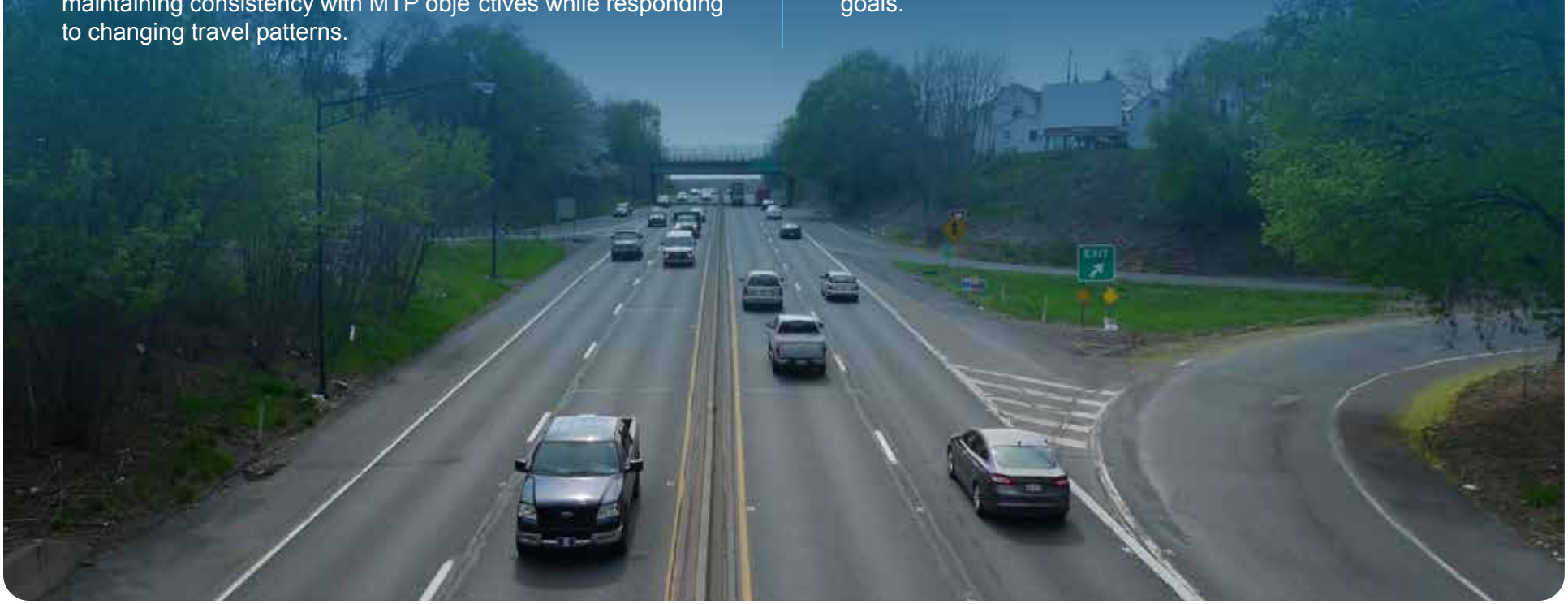
The scoring framework ensures investments and operational strategies target areas with the greatest need, considering travel reliability, safety, multimodal access, system efficiency and freight movement. Implementation relies on collaboration among LVPC, LVTS, PennDOT, transit operators, freight stakeholders, municipalities and regional partners. This coordinated approach aligns strategies across jurisdictions and modes, leverages shared data, and supports regional performance goals.

As new data and tools become available, the CMP will evolve to refine thresholds, corridor definitions and evaluation metrics, maintaining consistency with MTP obje`ctives while responding to changing travel patterns.

The CMP provides transparent, repeatable methods for planning, prioritizing investments and monitoring performance. Priority corridors and bottlenecks identified through this process guide targeted operational improvements, demand management, and capital investments. Ongoing monitoring of congestion, reliability, safety and multimodal access will inform future MTP updates and ensure accountability.

Overall, CMP implementation benefits all system users. Commuters gain more reliable travel and improved safety, freight operators benefit from reduced delays and more efficient goods movement, and multimodal travelers see better access and connectivity for transit, walking and biking.

By linking performance metrics to clear objectives and coordinated action, the CMP supports a safer, more reliable and more efficient transportation system that advances the Lehigh Valley's mobility, economic vitality and quality-of-life goals.



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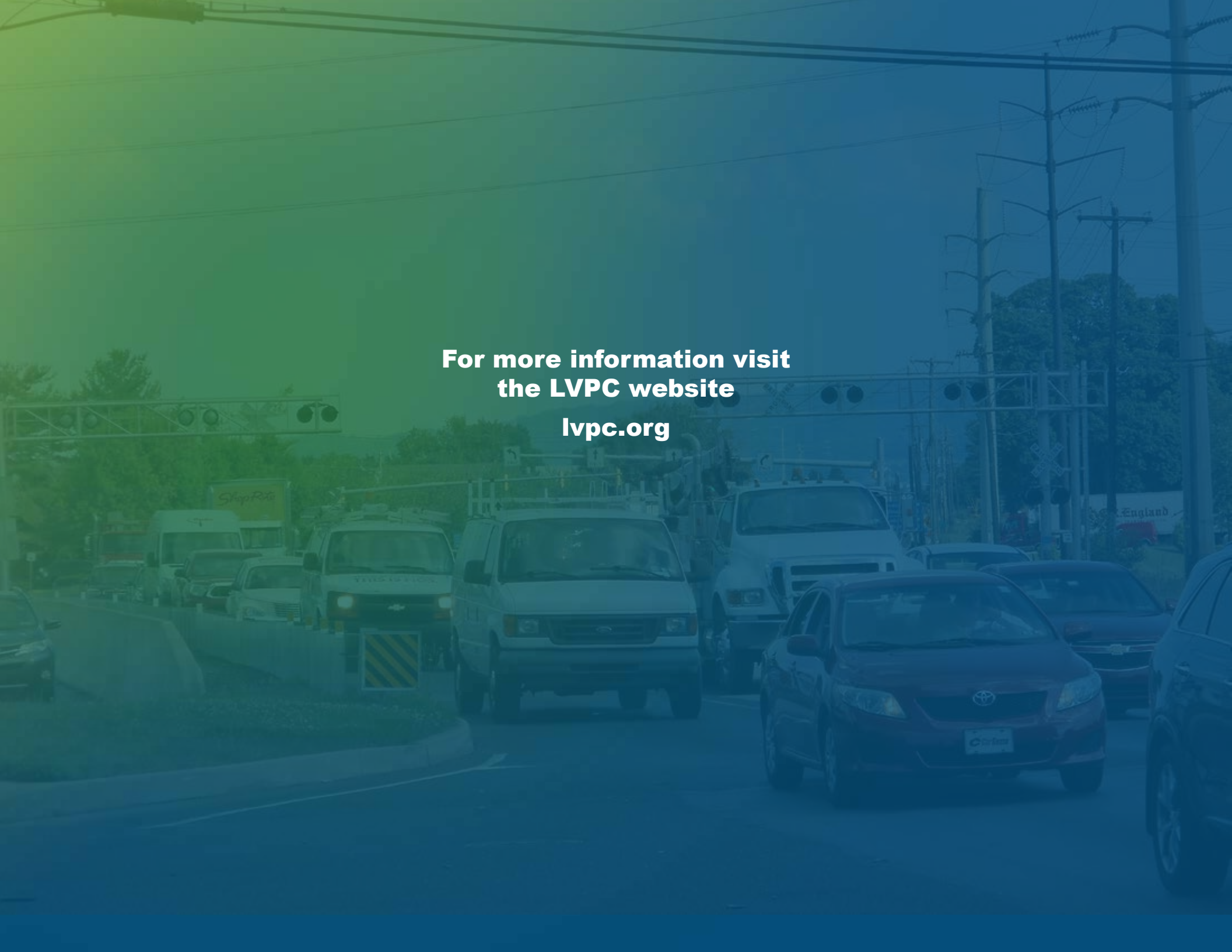

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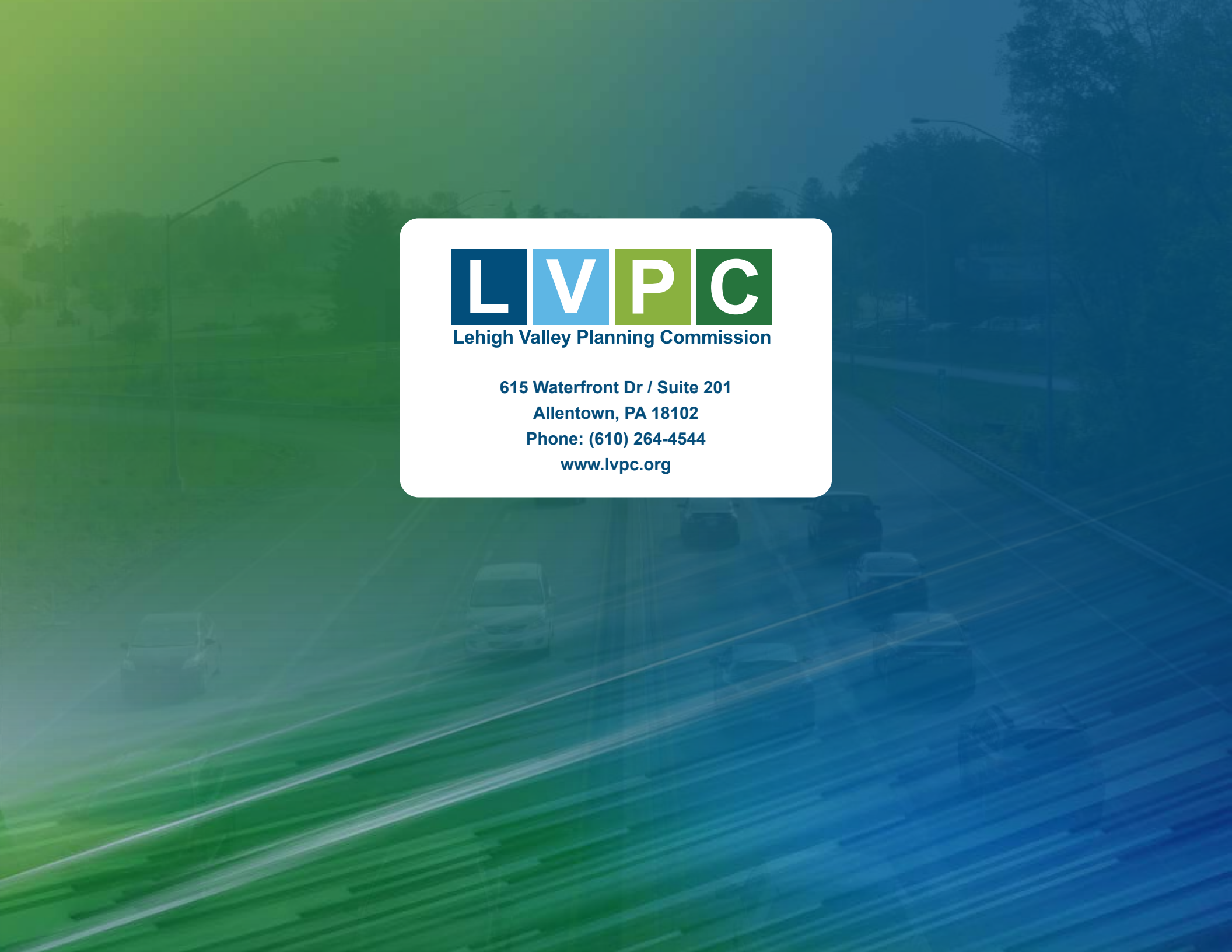
lvpc.org



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