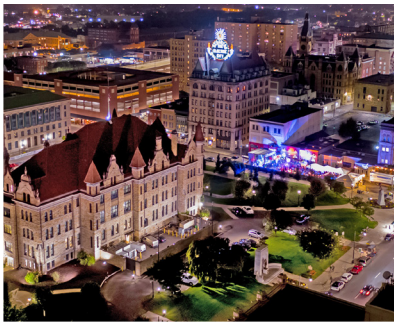
LACKAWANNA LUZERNE MPO

CONGESTION MANAGEMENT PROCESS

APRIL 2024



PREPARED FOR:

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PURPOSE AND ROLE OF THE CMP

A Congestion Management Process (CMP) provides the Lackawanna/Luzerne Transportation Study Metropolitan Planning Organization (LLTS MPO) a framework to evaluate and monitor traffic congestion within the region. It also assists LLTS in the identification and prioritization of transportation strategies that focus on congestion and travel reliability.

A CMP is required in metropolitan areas with population exceeding 200,000, known as Transportation Management Areas (TMAs). Federal requirements state that in all TMAs, the CMP shall be developed and implemented as an integrated part of the metropolitan transportation planning process; however, Federal regulations are not prescriptive regarding the methods and approaches that must be used to implement a CMP.

LLTS aims to update the CMP every four years to coordinate and support the MPO's Long Range Transportation Plan (LRTP), Transportation Improvement Program (TIP) and Regional Operations Plan (ROP). LLTS continues to refine the CMP drawing from the Federal Highway Administration (FHWA) **CMP Guidebook**, national best practices, and new and innovative data sources as they become more readily available. This document provides a technical summary of the 2024 CMP update. It is supported by a public survey, GIS mapping files, electronic databases and other coordination and outreach with key partners and stakeholders within the region.

PROCESS STEPS

The 2024 LLTS CMP has been developed through a series of steps that included stakeholder coordination, public outreach, data analysis, and location prioritization. The CMP sets the stage for future activities to further evaluate priority corridors, to identify and program congestion reduction projects, and to monitor the benefits of completed projects.

Stakeholder Committee

A stakeholder committee has been assembled to help guide the development of the 2024 CMP. The committee includes 19 members consisting of local, regional and state representatives as shown in **Table 1**. This included representation from major municipalities, PennDOT District 4 and PennDOT Central Office.

The committee met twice during the CMP development (November 14 and March 20) to review data sources for congestion and strategy evaluation, to support selection of performance measures, and to comment on the priority congestion locations.

Table 1: CMP Stakeholder Committee

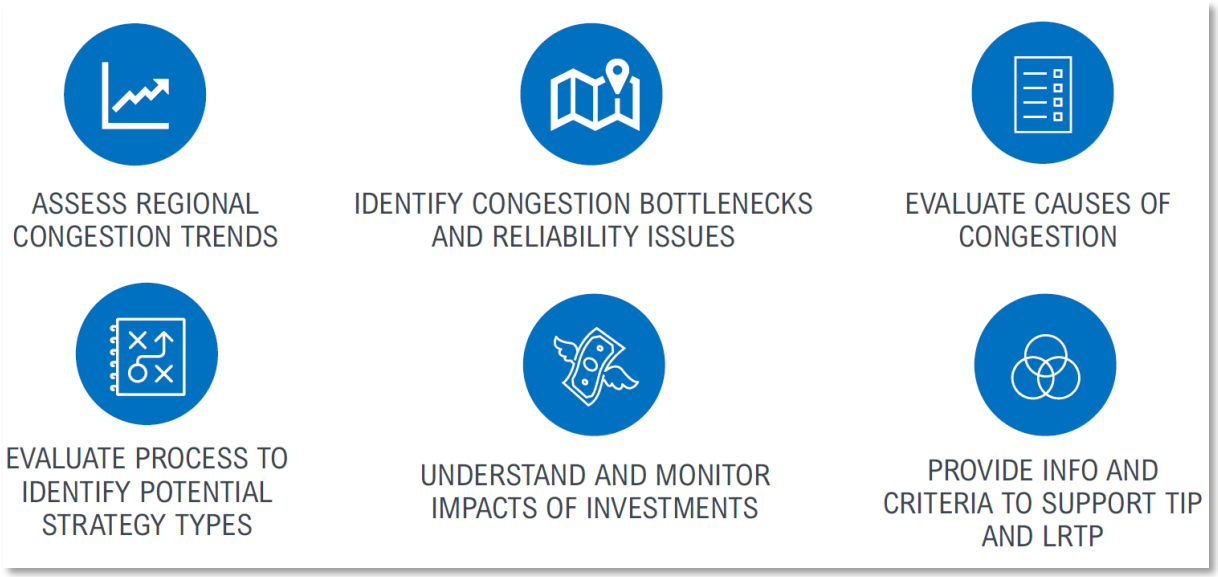
Name	Representing
Michele Bannon	Carbondale City
Mark Barry	Wilkes-Barre City
Scott Benedict	PennDOT Central Office
Joe Chacke	Pittston City
Joshua Esposito	Hazleton City
Steve Fisher	PennDOT District 4
Cesare Forconi	Dickson City
Steve Gault	PennDOT Central Office
Virginia Kehoe	Clarks Summit Borough
Bob Kretschmer	PennDOT District 4

Name	Representing
Julianne Lawson	PennDOT District 4
George Lear	PennDOT District 4
CJ Mustacchio	Olyphant Borough
Jennifer Polito	Nanticoke City
Tom Reilly	Scranton City
Fred Rosencrans	Kingstown Township
Jan Sterling	Moosic Borough
Pierce Sube	PennDOT Central Office
Bob Wasilchak	PennDOT District 4

Key Components of CMP Analysis Process

The CMP aims to address the key components provided in **Figure 1**. These include a regional view of congestion trends, the identification of priority congestion locations and bottlenecks, an evaluation of corridor data to assist in the identification of congestion causes and potential strategy ideas, and efforts to better understand the impact of completed projects on the transportation system.

Figure 1: Key Components of a CMP



This 2024 CMP update focused on several of these components to set the stage for future corridor evaluations and studies. The key focus areas included:

- **Re-evaluation of the priority CMP congestion locations based on available vehicle travel time data**. New data sources have become available to the MPO since the last CMP was completed in 2015. Such data is expected to become an important resource for future CMP updates and for monitoring the impacts of completed projects. This CMP integrates this new information and highlights the tool sets and procedures for extracting and processing the data.
- **Inclusion of more robust public involvement in evaluating congestion needs and strategies**. This CMP included a web-based public survey to capture a variety of congestion insights within the region. The results were integrated with the data analyses to help inform priority corridor selection. The public information received not only supports this CMP but also other LLTS planning processes.
- **Development of web-based mapping to better visualize available data**. These mapping products have combined information from a variety of sources to assist in congestion location identification and the evaluation of congestion causes. The map information will be integrated into the LLTS GIS system and used for future planning activities including the MPO's LRTP.

The CMP is an evolving process and future updates will continue to focus on the above items as well as methods and procedures to better assess potential strategies. Strategy assessments will require continued coordination with local and state partners including PennDOT's District office.

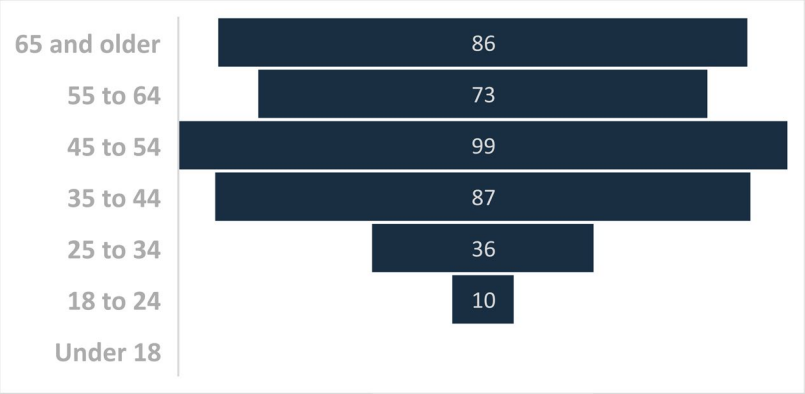
PUBLIC CONGESTION SURVEY

This CMP update has included public outreach to capture insights on regional congestion needs and priority locations. The public outreach used a web-based survey using the *MetroQuest* software platform. The survey aimed to gather information from the public about what they believe are the causes of congestion, strategies to mitigate it, and locations in need of improvement. The survey included an interactive map that allowed participants to provide comments at any location within the region. This map information played an important role in defining the CMP priority congestion locations.

The survey was open from January 15, 2024, to February 9, 2024. The survey screens and associated questions are provided in **Appendix A**. The survey promotion was led by LLTS and included a multi-channel

approach leveraging social media, stakeholder distribution lists, and the MPO website. A total of 622 responses were received, of which 216 participants shared their email addresses for further information. **Figure 2** highlights the age responses to the congestion survey.

Figure 2: Survey Participant by Age



Causes of Congestion

"What do you feel are the primary causes of traffic congestion based on the roads you travel on?"

The first survey question asked participants to rank the top five causes of congestion. The nine proposed causes are shown in **Figure 3**. Based on the results, the most identified causes of congestion are:

- High Volume of Vehicle Traffic,
- Poor Road Design or Layout, and
- Behavior of Drivers.

In addition to the eight proposed causes of congestion, one option was given as "Other," allowing participants to incorporate their suggestions. Common responses under this option were related to I-81, potholes, and speed limits.

Congestion Severity within Region

How would you rate traffic congestion in our region?

The survey included a question on how participants perceive congestion in the region. The severity of congestion options ranged from "not at all" to "highly congested." **Figure 4** highlights the responses. Eighty-seven percent of respondents indicated that the region experiences moderate to high congestion, while only 1% stated no congestion.

Figure 3: Ranked Causes of Congestion (by number of reponses)

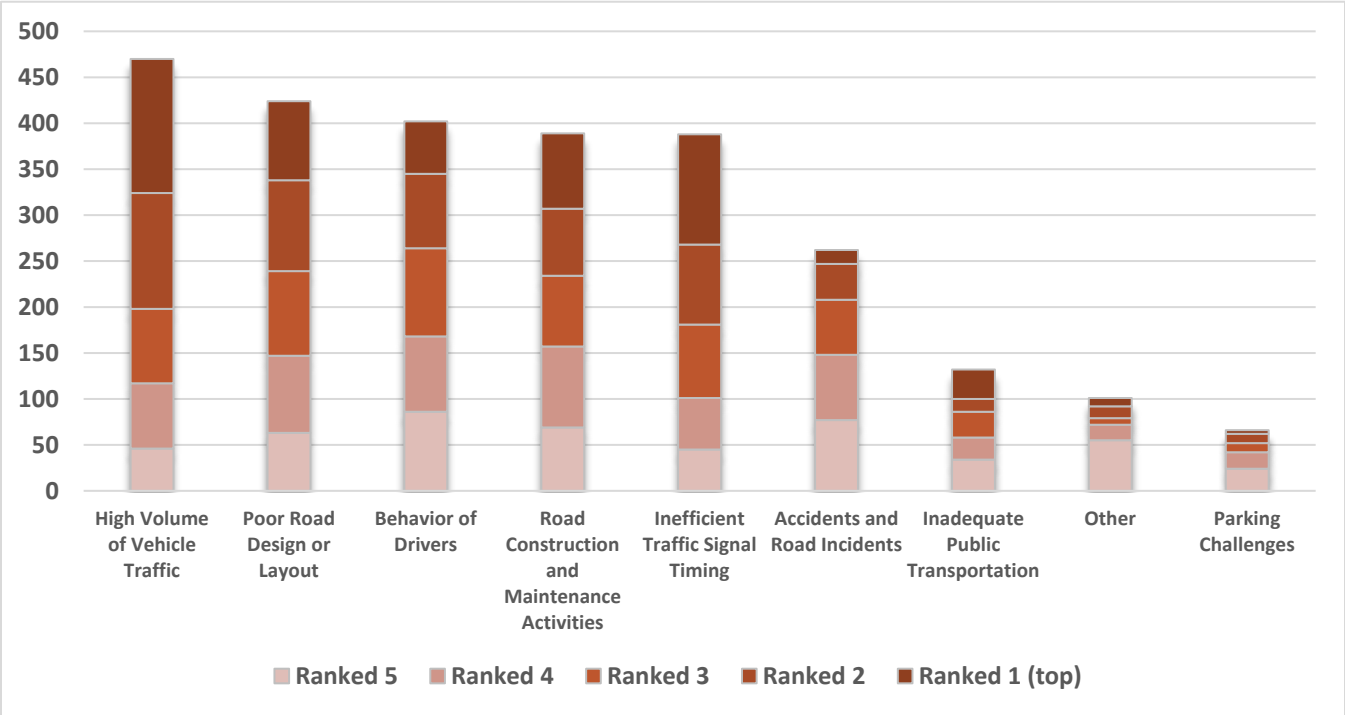
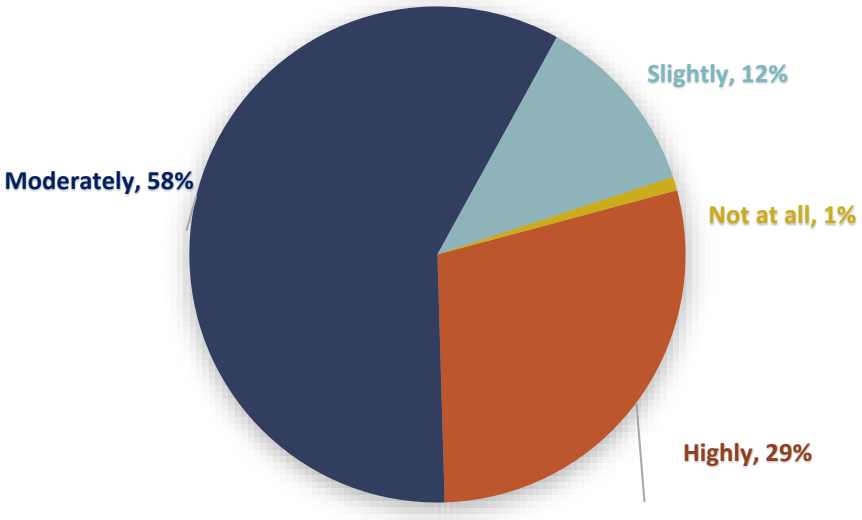


Figure 4: Congestion Rating within the Region



Transportation Mode and Flexibility

Do you have the flexibility to adjust the times that you travel to/from work?

Participants were asked about their commuting schedule. The question was split into two parts. Firstly, the participants were asked about their flexibility regarding their commute time. Secondly, they were asked whether they change their schedule to avoid congestion. This two-part question generated 556 responses regarding "part 1" and 421 responses regarding "part 2." Approximately 20% of people identified they have flexible commute times, and 23% "sometimes" have flexible commute times. Among those who responded to "part 2" of the question, approximately 44% adjusted their schedules to avoid traffic congestion.

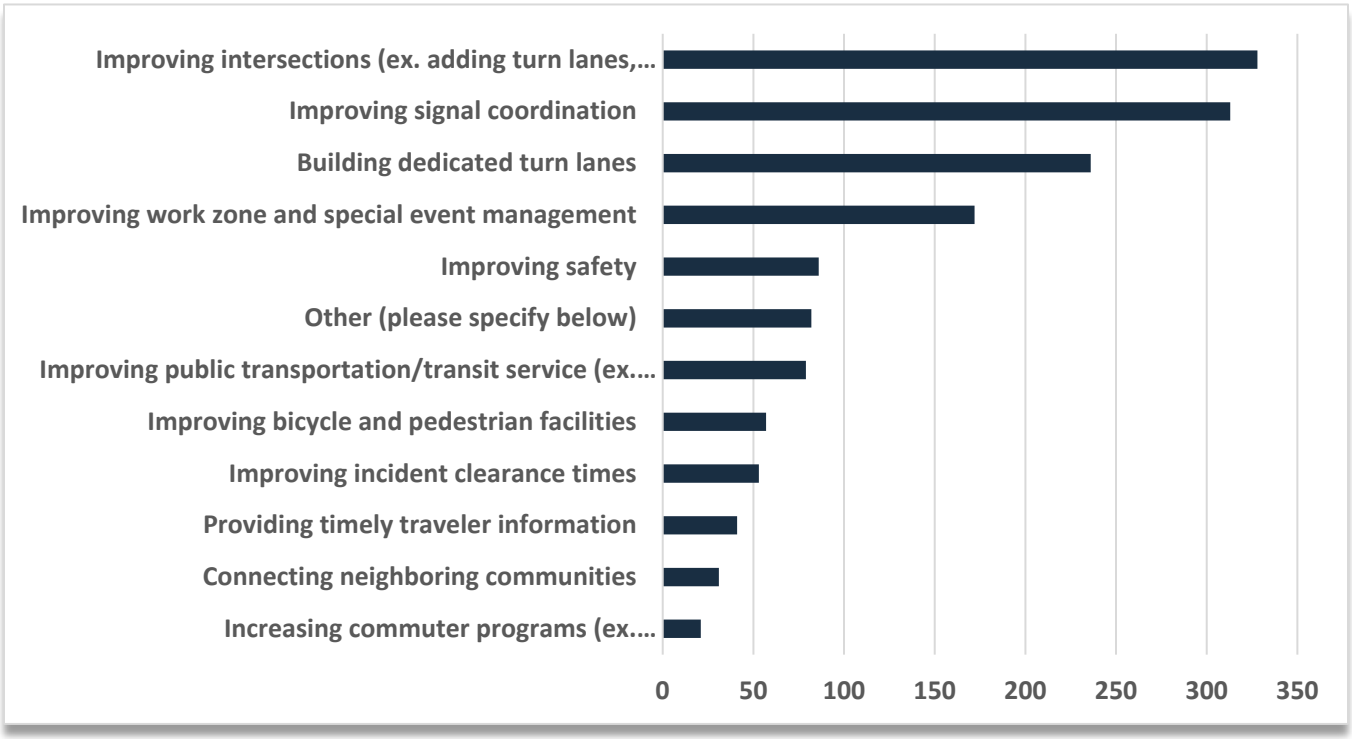
Congestion Mitigation Strategies

To reduce traffic congestion, our region should prioritize implementing which of the following strategies?

The survey asked participants to choose the top three strategies for reducing congestion in the region. Among the 12 proposed strategies shown in **Figure 5**, the three most popular options to alleviate traffic congestion were improving intersections (22%), improving signal coordination (21%), and building dedicated turn lanes (16%).

This question allowed participants to select "other" strategies, and 5% of responses fell into this category. Common recommendations included adding lanes to I-81, coordinating signals, widening lanes and roads, and conducting nighttime roadwork.

Figure 5: Recommended Traffic Reduction Strategies

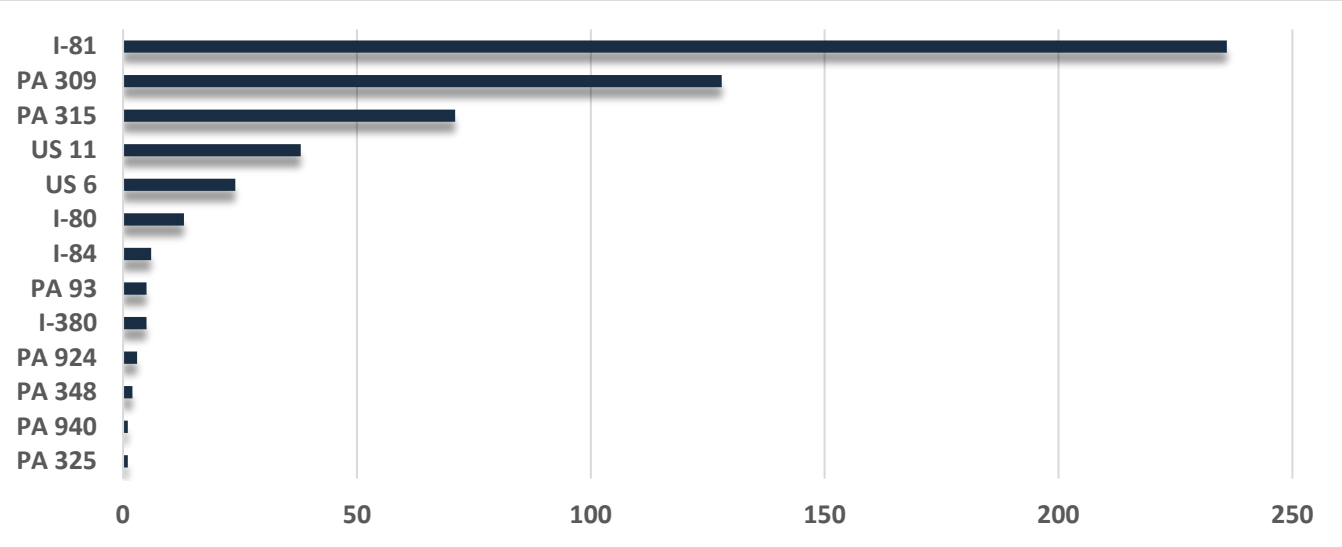


Roads or Location for Implemented Change

What roads or locations have the worst traffic congestion in the region?

The final survey section contained two open-ended questions. Each question received over 400 responses. The first question asked which roads or locations in the region have the worst traffic congestion. **Figure 6** highlights the most frequent roadway names in the survey responses. The most mentioned roads were I-81, PA 309, and PA 315. More than 25% of the comments reported high congestion levels on I-81, while approximately 15% indicated PA 309.

Figure 6: Roads or Locations With the "Worst" Traffic Congestion in the Region



The second question asked which specific changes people would like to see implemented to improve traffic flow in their area. Some common strategies mentioned in the responses include increasing capacity, such as adding lanes to I-81. Other suggestions include improving signal connections and intersections and adding dedicated turn lanes at intersections.

Interactive Map

Provide any comments on congestion, safety issues or recommended improvements on the map.

The final section of the survey requested comments to be placed on an interactive map of the region. Over 1,600 "pins" were placed on the map by the survey respondents, of which 1,014 had accompanying comments. **Figure 7** highlights these comments, which have been integrated into mapping conducted for the CMP location evaluation process described in later sections of this CMP. The available pin categories provided in the map include "congestion", "safety", "improvement ideas", and a miscellaneous category. Additional information was provided on many of the pin locations provided by respondents. **Figure 8** highlights responses related to the time-of-day congestion was experienced.

Figure 7: Visualization of Survey Map Comments Received

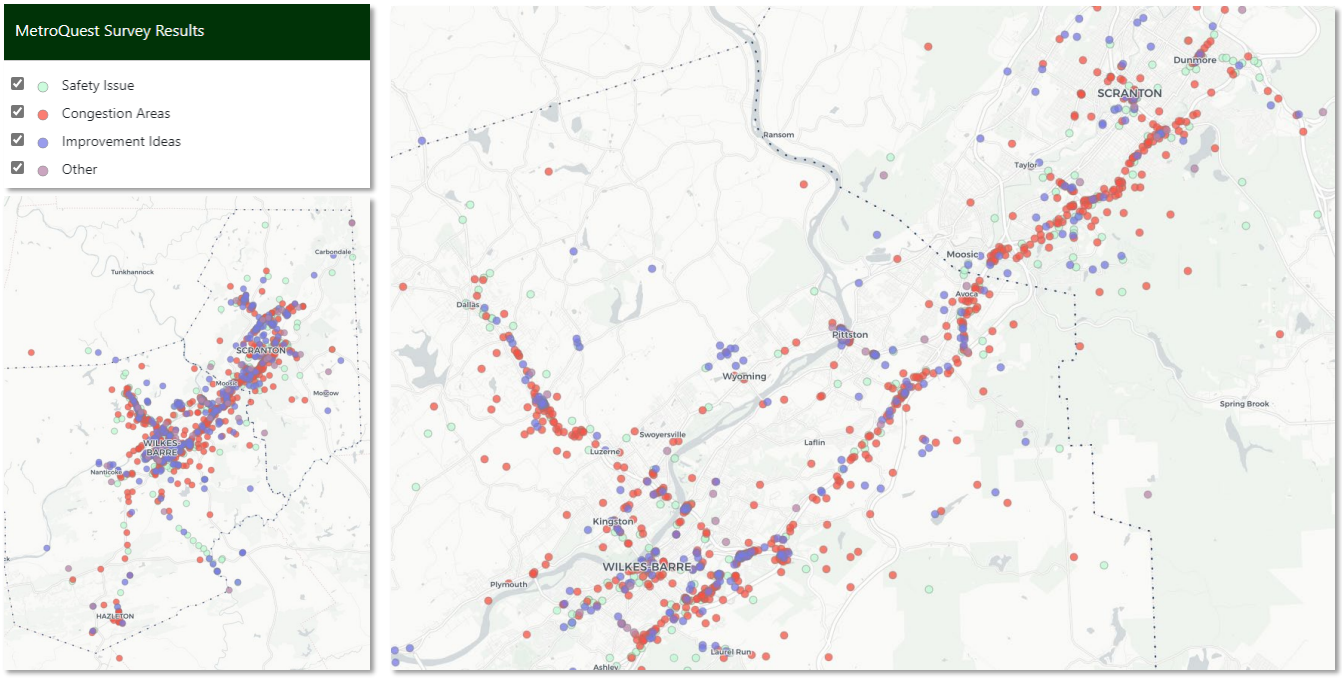
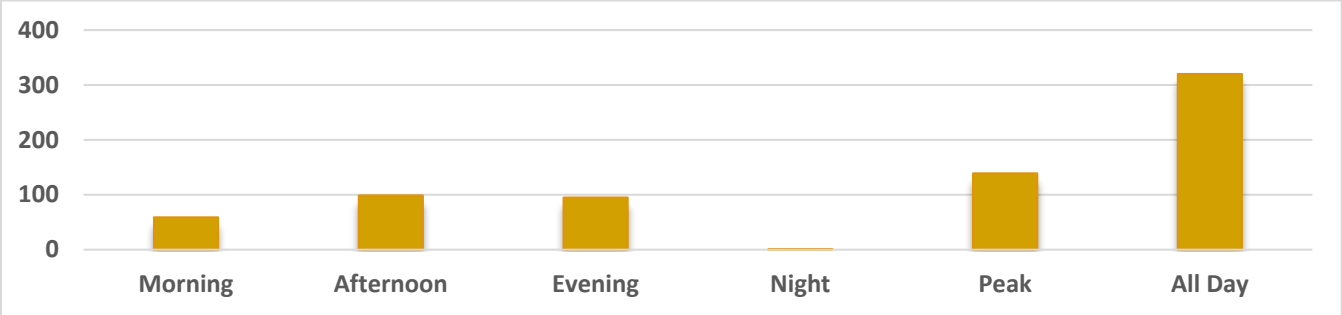


Figure 8: Time of Day Experiencing Congestion



The improvement pin comments included specific ideas on projects. Frequent "improvement ideas" provided through the survey include:

- Adding lanes to highways
- Lengthening entrance ramps
- Eliminating left turns and adding turning lanes and arrows
- Adding roundabouts
- Implementing traffic signal improvements
- Coordinating signal timings
- Installing sensors

MEASURES, DATA, AND TOOLS FOR CONGESTION ASSESSMENT

Developing performance measures is a critical element of the CMP. Performance measures assist in identifying problem areas and communicating this information to the public and decision-makers. At the regional level, performance measures can be used to monitor congestion trends and track progress toward the achievement of objectives. At the roadway level, performance measures are used to identify locations experiencing congestion problems. They also are used to support assessment and selection of congestion mitigation strategies and evaluation of completed projects.

Sources of Travel Time Data

The 2015 LLTS CMP assessed congestion through the calculation of a volume to capacity (V/C) ratio for individual roadway segments. Traffic volumes were based on available traffic count data compiled by PennDOT and the capacity was estimated based on the physical attributes of the road including the number of lanes. Accepted traffic engineering formulas and assumptions were used to correlate the V/C ratio to levels of traffic congestion. The 2015 CMP also included field observations along each corridor to estimate corridor travel times and to evaluate congestion characteristics and potential mitigation strategies.

This 2024 CMP update integrates travel time data from cellular and vehicle Global Positioning System (GPS) devices in lieu of the V/C and vehicle travel time runs used for the past CMP. Within the last 5 years, PennDOT has supported the sharing of travel time data to MPOs across the state for transportation planning. Data is provided through the company INRIX and is free of charge for MPOs that sign a data sharing agreement. An online software platform **RITIS**, maintained by the University of Maryland CATT Lab, provides a platform to download the data or run a variety of performance reporting tools. RITIS provides access to travel times for every hour and day on many of the primary roads within the region.

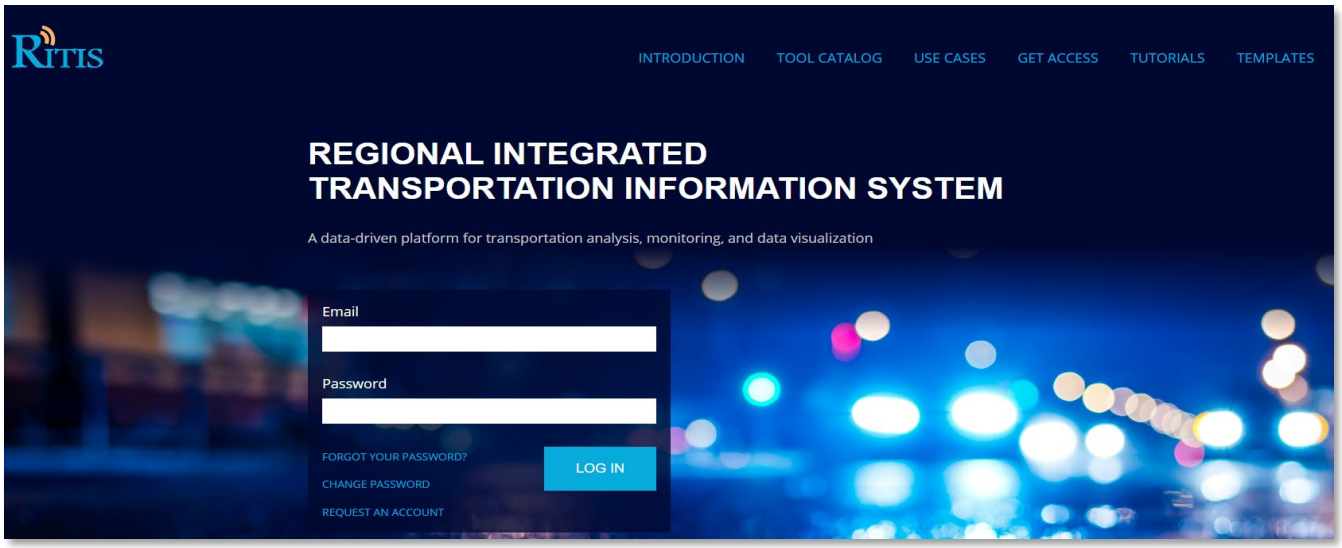


Figure 9 highlights the suite of tools available through the RITIS platform. This CMP update has made use of the tools outlined in red; however, future CMP enhancements may make use of many of the other available tools.

Figure 9: RITIS Performance Measure Tools
(Tools Outlined in Red Served a Primary Role for the 2024 CMP Update)

The key RITIS tools used for this CMP include:

- The "**User Delay Cost Analysis**" tool was used to assess regional travel delay trends for the LLTS region.
- The "**Trend Map**" tool was used to calculate and extract segment hourly travel time data in the form of a travel time index (TTI). This measure was used to help identify congestion locations throughout the region.
- The "**Bottleneck**" tool was used as a secondary data source to identify and prioritize congestion locations within the region.

In addition to the information extracted from the above tools, a variety of other information was extracted from PennDOT databases and used to evaluate congestion causes and to support future strategy evaluations. **Table 2** provides a summary of these data measures and sources.

Table 2: CMP Performance Measures and Data Sources

Measure	Description	Data Source	Role in CMP
Travel Time Index (TTI)	Ratio of average travel time in the peak period to the travel time at free-flow conditions. Analyses conducted for average weekdays.	2023 INRIX "XD"	Identify locations of recurring congestion. Primary data used to assess congested locations in region.
Travel Delay (Hours)	Vehicle hours of travel above free-flow conditions	2018-2023 INRIX "TMC"	Assess regional congestion trends within the region
Regional Bottlenecks	RITIS methodology to assess sources of congestion based on multiple factors including duration and extent	2023 INRIX "TMC"	Assess priority locations where congestion originates
Federal Reliability Measures	Ratio of peak period to free-flow travel times (calculated differently than TTI)	2023 NPMRDS[1]	Assess regional trends on National Highway System
Crashes	Numbers of Crashes and Fatalities	PennDOT (C-DART)	Used to evaluate source of non-recurring delay on segments
Traffic Volume	Total daily traffic volume on roadway	PennDOT 2023 RMS[2]	Measure of demand – utilized in delay calculations

[1] NPMRDS = "National Performance Management Research Data Set"
[2] RMS = "Roadway Management System"

Measure	Description	Data Source	Role in CMP
Truck Volume	Total daily truck volume on roadway	PennDOT 2023 RMS	Can be used to help assess potential strategies
Number of Signals	Total number of signals along CMP corridor	PennDOT TSAMS[3]	Evaluate potential for signal technology strategies
Signal Characteristics	Evaluated signal systems and PennDOT "Super Critical" and "Critical" classifications	PennDOT TSAMS	Evaluate potential for signal technology strategies
Public Comments	2024 LLTS survey results with responses grouped by congestion, safety and improvement locations	2024 online MetroQuest Survey	Assist in identifying and prioritizing congestion locations in the region
	PA State Transportation Commission (STC) Survey grouped by congestion, bike-pedestrian, roadway, bridge and transit categories	2023 STC online Survey	
High Volume Retail Locations	Point locations of high volume retail locations (Walmart, Sheetz, Home Depot, CVS etc.)	Open Street Map	Evaluation of congestion causes
Employment Totals by Census Block	PA Department of Labor & Industry	2018 data though PennDOT user agreement	Evaluation of congestion causes and potential strategies
MPMS Future TIP Projects	Existing congestion & safety related projects on PennDOT's existing TIP	PennDOT OneMap	Assess other programmed projects that may provide benefits or support additional operation improvement enhancements
PennDOT's Road Closure Reporting System	RCRS Closures mapped to PennDOT's RMS Segments for usage in calculating annual closure trends by closure category	PA511 and Additional PennDOT RCRS Acquisition	Evaluation of congestion causes
Replica O/D Trip Activity	Aggregated commercial vehicle probe data of trip origin & destination hot-spot locations	Michael Baker Intl. license for Replica-HQ	Assist in evaluating potential congestion causes or potential strategies

[3] *T*SAMS = "PennDOT Traffic Signal Asset Management System"

REGIONAL CONGESTION TRENDS & NATIONAL MEASURES

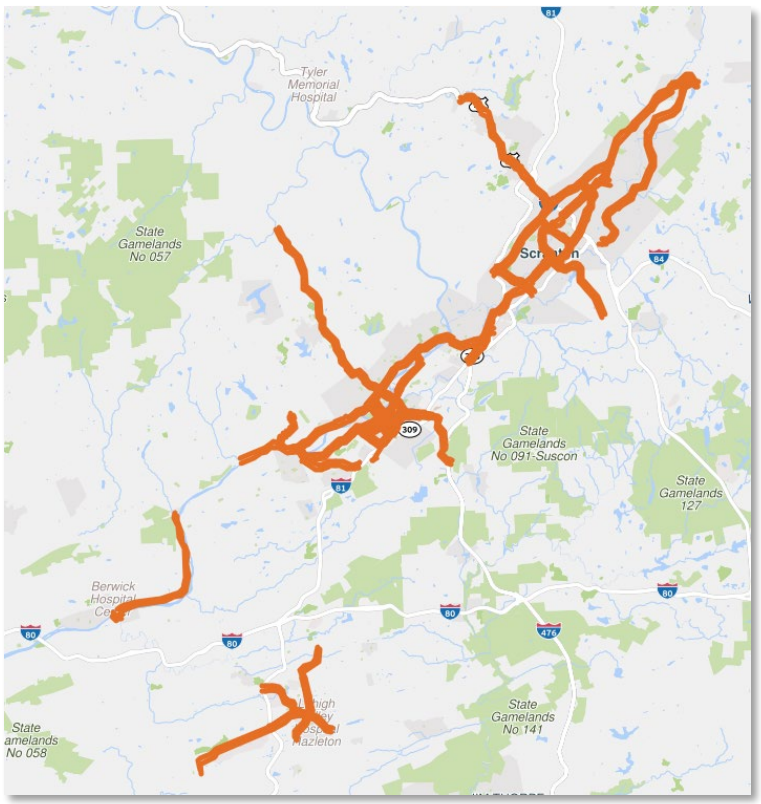
This section provides an overview of congestion trends in the region based on vehicle travel time data available through the INRIX provider and the National Performance Management Research Data Set (NPMRDS). The information serves as benchmark for evaluating and monitoring regional levels of congestion and provides context to the national performance measures related to travel time reliability.

National Reliability Performance Measures

The Federal Highway Administration (FHWA) has established a set of performance measures for State Departments of Transportation (State DOTs) and MPOs to use as required by the Moving Ahead for Progress in the 21st Century Act (MAP–21) and the Fixing America's Surface Transportation (FAST) Act. More information on the federal performance measures can be obtained at: *https://www.fhwa.dot.gov/tpm/rule.cfm*.

The national performance measures focus on travel time reliability on the interstate and non-interstate National Highway System (NHS). The NHS includes the following interstates in the region: I-81, I-84, I-80, I-476, I-380, and I-80. Non-interstates covered by the NHS include many of the key primary arterials that traverse the region including US 11, US 6, PA 93, PA 115, PA 247, PA 347, PA 309 and PA 924. **Figure 10** highlights the coverage of the NHS non-interstate roads.

Figure 10: NHS Non-Interstate Roads Covered by National Performance Measures



Reliability measures the consistency or dependability in travel times, as measured from day to day or across different times of day. For more information on traffic reliability measures, see **FHWA's Travel Time Reliability brochure**. The national reliability measures include:

- **Reliability Percentage** (for Interstates and Non-Interstates) - Based on the percent of person-miles traveled on the interstate or non-interstate system that are reliable (using a measure referred to as the Level of Travel Time Reliability or LOTTR). The higher the percentage, the better the reliability. For example, 100% means that travel times are very reliable for nearly all times of the year. The LOTTR measure is only used to track reliability on primary roads part of the NHS. It is calculated as the ratio of the longer travel times (80th percentile) to a "normal" travel time (50th percentile), using data from the NPMRDS.

- **Truck Travel Time Reliability (TTTR) Index** - The TTTR Index specifically measures the reliability of travel times for trucks on the Interstate System. It is defined as the ratio of longer truck travel times (95th percentile) to a normal truck travel time (50th percentile). The higher the index, the worse the reliability. For example, a value of 1.30 means truck travel times can be 30% higher than average times.

The key difference between these two metrics is the percentile used to represent longer travel times—80th for LOTTR and 95th for the TTTR Index—and the specific focus on trucks for the TTTR Index. While LOTTR provides a measure of reliability for all vehicles, the TTTR Index focuses on the higher impacts of delays on freight movement. Both are important for understanding and improving the performance of the transportation system.

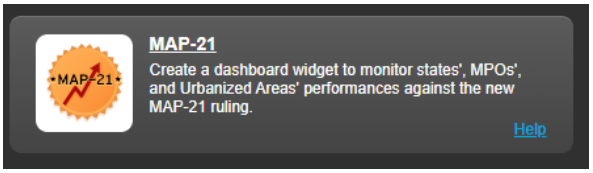
PennDOT has established 2025 statewide targets for the travel time reliability measures. The national measures provide a means to track overall progress in reducing or maintaining traffic congestion on NHS roads in support of PennDOT's statewide goals and targets. It is a required process that must be incorporated into the MPO's TIP and LRTP. **Figure 11** provides a summary of the regional LLTS metrics as compared to the current state targets.

Figure 11: Federal Reliability and Truck Travel Index Values for Lackawanna and Luzerne Counties

(As compared to 2025 PennDOT State Targets)

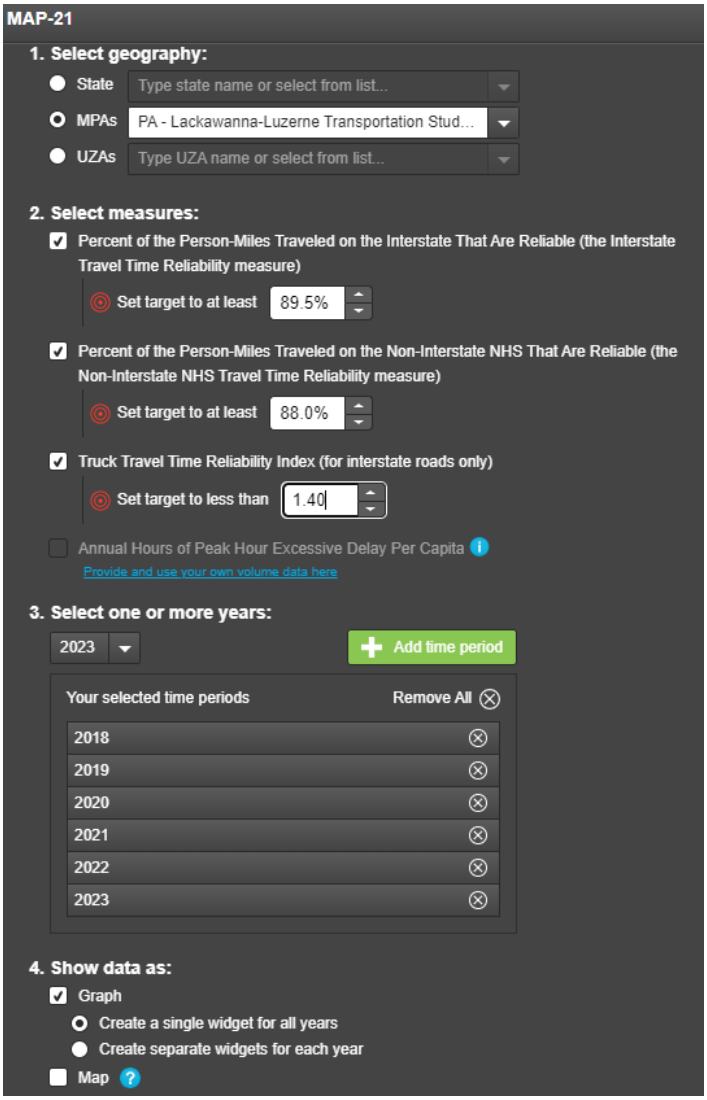
Interstate Reliability (State Target 89.5%)		Non-Interstate Reliability (State Target 88.0%)		Truck Reliability (State Target 1.40)	
Year's Performance		Year's Performance		Year's Performance	
2018	98.1%	2018	90.4%	2018	1.30
2019	98.2%	2019	90.1%	2019	1.33
2020	100.0%	2020	93.5%	2020	1.24
2021	100.0%	2021	92.1%	2021	1.24
2022	100.0%	2022	93.8%	2022	1.26
2023	100.0%	2023	92.9%	2023	1.44

The recent interstate construction in 2023 has created reliability issues that exceed state targets for the truck travel time reliability measure. Note, there are no planning, funding, or programming issues or penalties related to the LLTS region not meeting the statewide targets.



The RITIS website platform provides access to the data needed to assess regional values for the national reliability measures. The federal NPMRDS data is a subset of the travel times provided from the INRIX provider. The data can be accessed using tools available at the following web location: **https://npmrds.ritis.org/analytics/**. Similar to RITIS, access to this platform requires a user agreement to be signed. The system provides access to a series of MAP-21 summary tools and dashboards. **Figure 12** provides the input data within the NPMRDS tool set to generate the reliability measures for the LLTS MPO region.

Figure 12: NPMRDS Tool Inputs to Generate LLTS Reliability Measures

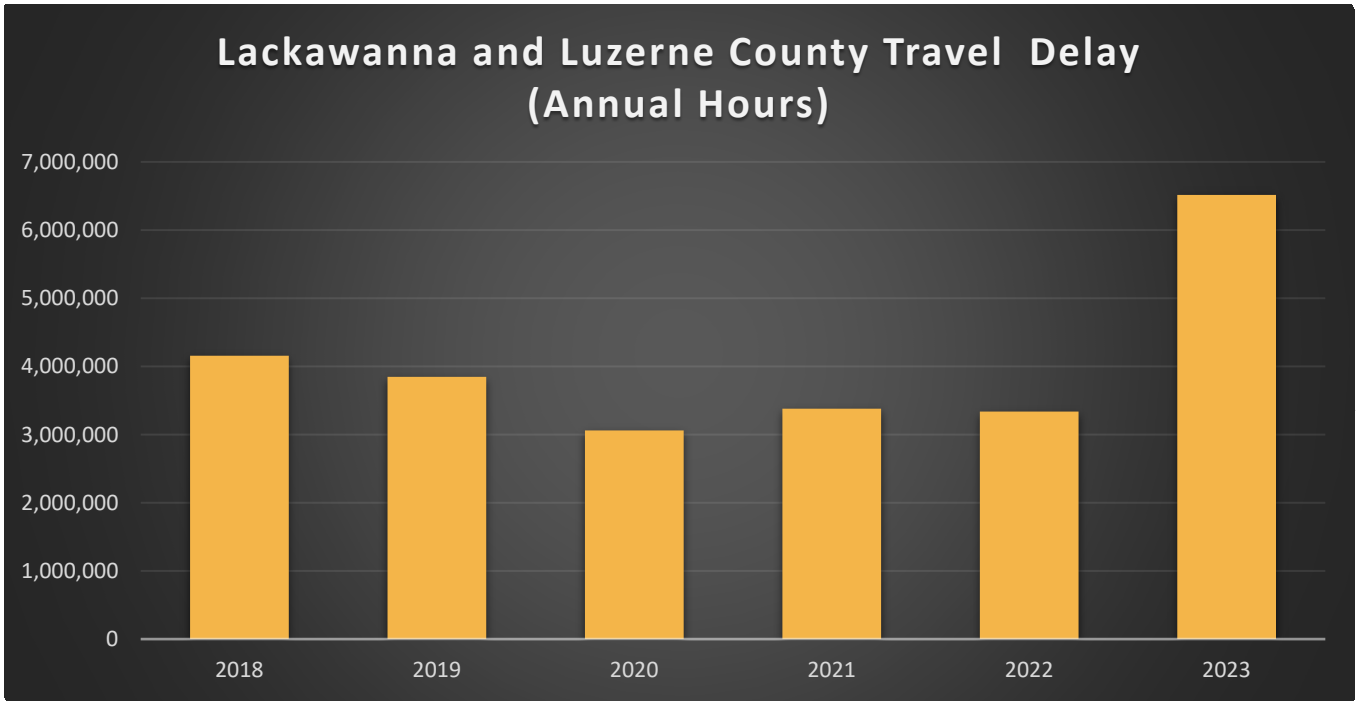


Regional Delay Trends

Traffic congestion occurs on many roads outside of the NHS system. The federal performance measures, alone, do not provide sufficient information to identify all regional issues and needs related to traffic congestion. To supplement the national measure trends and to provide context to a broader range of roadways including those outside of the NHS, an additional assessment of regional traffic delay (in hours) has been conducted using available INRIX travel time data. Delay measures the time difference between actual travel time and free-flow time (e.g., the travel time typically encountered during the night hours). Total delay integrates the number of vehicles experiencing these travel time values through the application of traffic volume data available from counts.

Figure 13 highlights the delay trend in the LLTS region (encompassing Lackawanna and Luzerne counties) from 2018-2023. Although representing a broader coverage than the national performance measures, the INRIX travel time data still does not reflect the trends on local or other minor roadways.

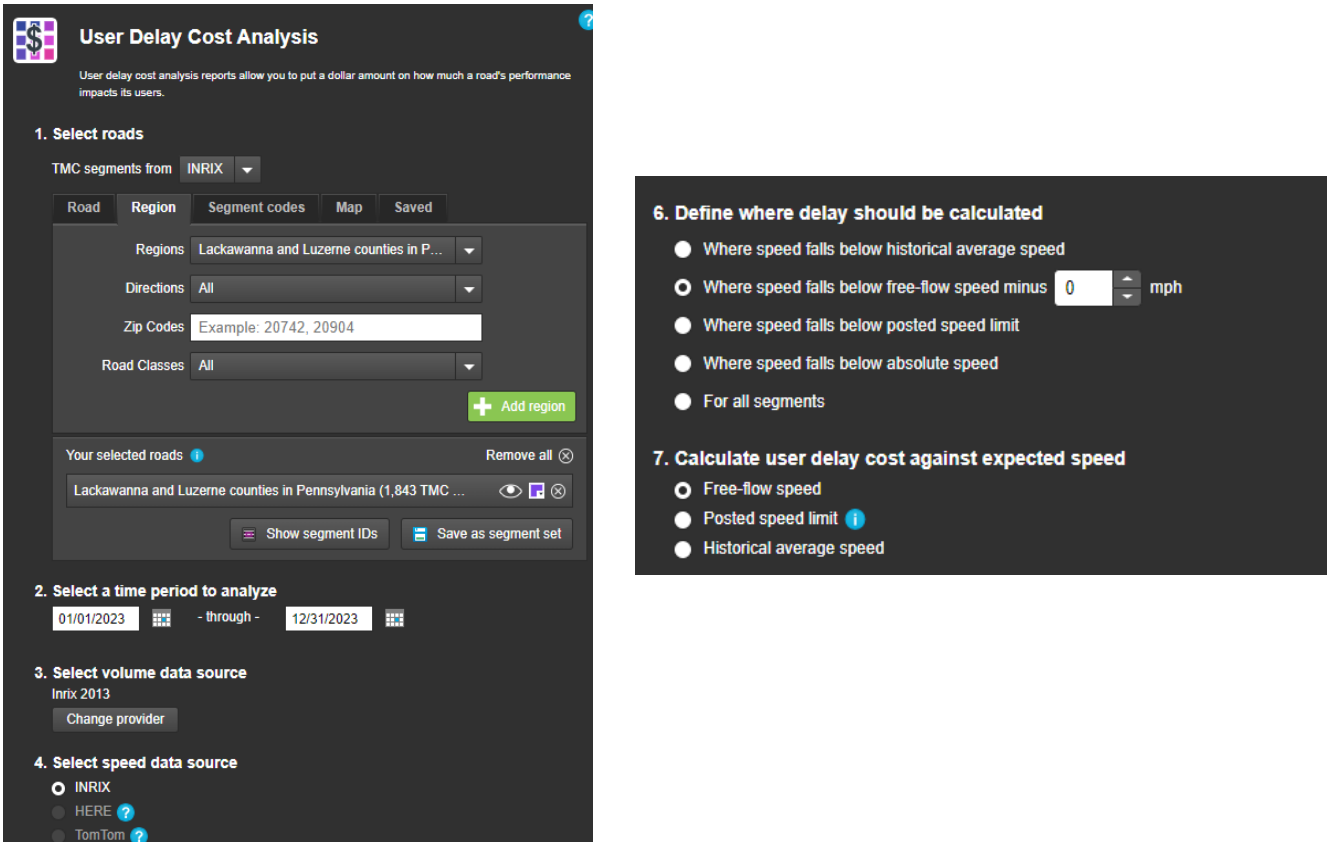
Figure 13: Lackawanna and Luzerne County Vehicle Travel Delay Trends (2018-2023)



The trend highlights the impacts of the COVID epidemic on regional travel in 2020, as delays were the lowest in that year. The year 2023 marks a significant increase in annual delay. This was impacted primarily from interstate roadway construction that had significant impacts on regional travel times.

Future updates to the CMP can track regional delay using the reports from the RITIS platform. The ***User Delay Cost Analysis*** tool provides hourly delay totals based on travel time data and available traffic count volumes extracted from the Highway Performance Monitoring System (HPMS). **Figure 14** provides a sample of the input parameters that are supplied to that tool to produce a delay summary table.

Figure 14: Sample Inputs to the User Delay Cost Analysis Tool for Reporting Regional Delay



DEFINING AND PRIORITIZING CMP LOCATIONS

Building off regional monitoring of traffic congestion, a key objective of the LLTS CMP is to identify priority congestion locations within the region using the most up-to-date data available. CMP locations encompass key roadway corridors and spot intersections that hold the highest priority for further assessment. These corridors are also the ones the LLTS closely monitors for detailed traffic congestion measures. Additional data is collected for these corridors, including traffic volumes, delays, travel times, crash statistics, signal characteristics and other relevant data. This comprehensive information helps LLTS understand the underlying causes of congestion and assists in prioritizing potential strategy categories.

Figure 15 provides the process used to identify the priority congestion locations for this CMP update. The process included integrating past information from the 2015 CMP, analyses using GPS travel time data, the over one thousand public map comments, visual observations of the corridor, and other insights and comments from the CMP stakeholder committee.

Based on the process outlined above, **Table 3** highlights the 45 CMP locations that were identified in Lackawanna and Luzerne counties, comprising either sections of roadway or spot intersections. Note the locations are not prioritized within the listing. The reference number is an identification number that links to subsequent maps.

Figure 15: Process for Determining CMP Priority Congestion Locations

The data analyses used to support corridor identification made use of the travel time index (TTI) values obtained from the RITIS platform for the 2023 year. The ***Trend Map*** tool provides hourly TTI values for each available roadway segment in the region. The report utilized the INRIX XD layer, which is the finest detail available. **Figure 16** provides a sample of the input parameters that are supplied to that tool to produce the trend map. The data was saved as a CSV (Excel) table and integrated into a GIS shapefile for visualization and overlay with other data layers. Key information summarized for each segment includes the maximum TTI and the number of hours above a 1.50 TTI ratio.

Table 3: Priority CMP Congestion Locations

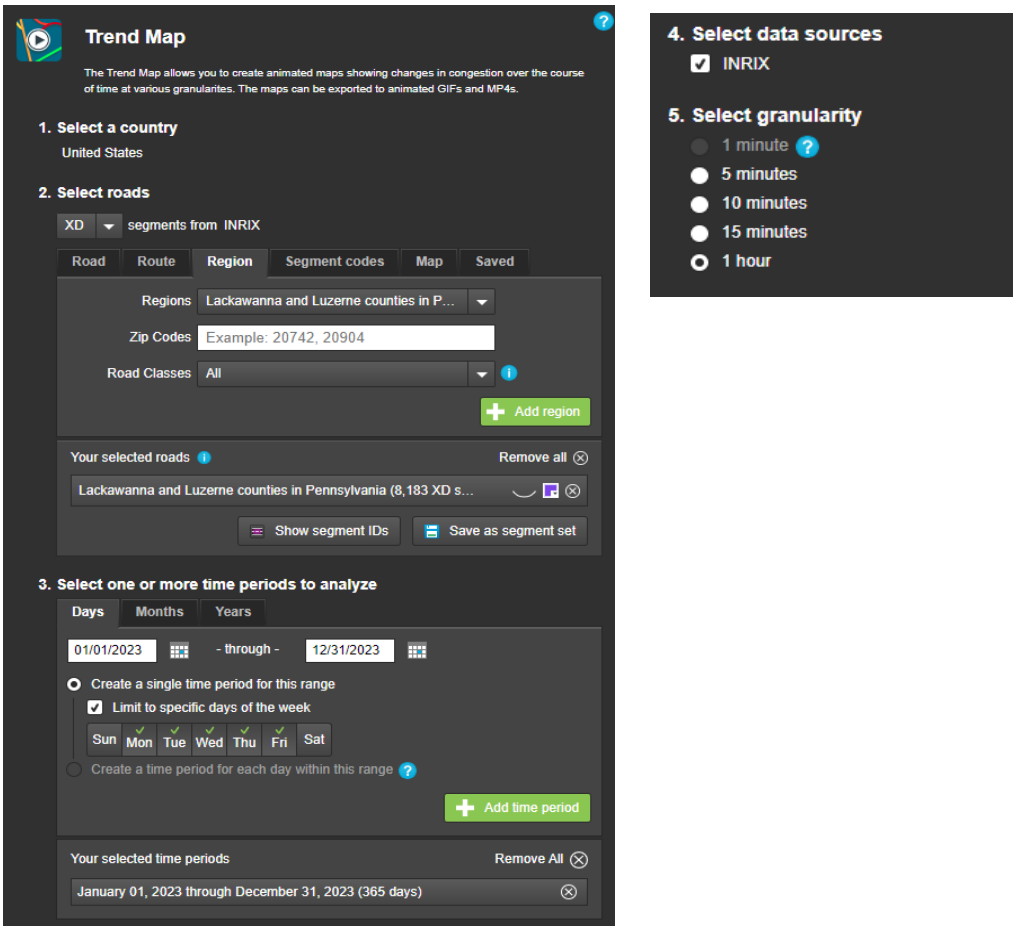
The listed location identification numbers link to mapping – they are not a priority ranking

1. S. Abington Rd (Clarks Green Boro)
2. S. State St – Northern Blvd (Clarks Summit Boro)
3. I-81 (South Abington Twp)
4. Constitution Ave (Jessup Boro)
5. W. Lackawanna Ave – S. Valley Ave (Olyphant Boro)
6. Scranton Carbondale Highway (Dickson City Boro)
7. Commerce Blvd – Ravine St Intersection (Dickson City Boro)
8. Viewmont Dr – Main St Intersection (Dickson City Boro)
9. Mount Cobb – Moosic Lake Intersection (Jefferson Twp)
10. S. Main St (Moscow Boro)
11. Blakely St – O'Neill Highway (Dunmore Boro)
12. N. Main Ave (Scranton City)
13. N. Keyser Ave (Scranton City)
14. N Main Ave (Taylor Boro)
15. Mulberry St – Jefferson Ave (Scranton City)
16. S. Washington Ave – East Elm St (Scranton City)
17. Moosic St – Meadow Ave (Scranton City)
18. I-81 (Moosic Boro)
19. Davis St (Scranton City)
20. Birney Avenue (Moosic Boro)
21. S. Main St (Old Forge Boro)
22. Fort Jenkins Br – Exeter Ave Intersection (West Pittston Boro)
23. S. Main St (Pittston City)
24. S. Township Blvd – William St Intersection (Pittston City)
25. Chestnut St – Oak St Intersection (Pittston Twp)
26. PA 309 – Hildebrandt Rd Intersection (Dallas Twp)
27. Memorial Highway (Dallas Boro)
28. Memorial Highway (Kingston Twp)
29. Wyoming Ave – Welles St Intersection (Forty Fort Boro)
30. Rutter Ave (Forty Fort Boro)
31. S. River St (Plains Twp)
32. Kidder St (Plains Twp)

Continued on Next Page

33. Wyoming Ave (Kingston Boro)
34. River Street (Wilkes-Barre City)
35. Wilkes-Barre Blvd (Wilkes-Barre City)
36. Wilkes-Barre Twp Blvd (Wilkes-Barre Twp)
37. Highland Park Blvd (Wilkes-Barre Twp)
38. I-81 (Wilkes-Barre Twp)
39. E. Main St (Larksville-Plymouth Boros)
40. Carey Ave (Hanover Twp – Wilkes-Barre City)
41. E. Main St (Nanticoke City)
42. PA 309 (Fairview Twp)
43. Can Do Expressway (Hazle Twp)
44. N. Church St (Hazleton City)
45. W. Broad St (Hazleton City)

Figure 16: Sample Inputs to the Trend Map Tool For Reporting Segment TTI Values



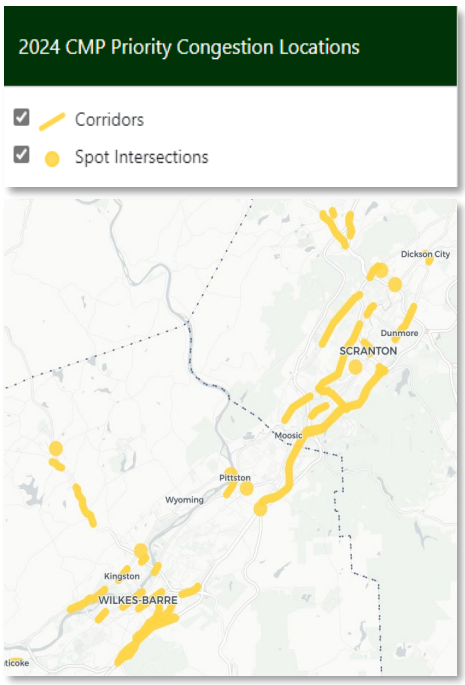
DATA MAPPING PRODUCTS

The CMP included the development of several online maps to store and visualize all collected data including the items provided in **Table 2** and the CMP priority congestion locations listed in **Table 3**. The data and corridor mapping will eventually be transitioned to the LLTS GIS system to support application to other planning products including the LRTP. The following maps are currently available online (select the section headings which are hyperlinked):

LLTS CMP Priority Congestion Location Summary Map

https://tmp-map.s3.amazonaws.com/lltsmpo/lackawanna-luzerne-corridor-summary.html

This mapping database will be hosted by Michael Baker International until such time as it may be transferred to LLTS staff. If this link is dead, the data can be sought by contacting the Luzerne County Planning & Zoning Department at 570-825-1564.



This link provides access to a simplified data layer map containing a summary of the 2024 CMP priority congestion locations and key data used to support the identification of those locations. Categories on the left side of the map provide access to the following data:

2024 CMP Priority Congestion Locations

- Correlates with **Table 3** and allows visualization of the priority locations on an interactive map. The locations include both roadway corridors and spot intersections, each of which can be specified using the check boxes provided.

Previous 2015 CMP Segments

- Illustrates the priority CMP congestion segments from the 2015 CMP. The layer is provided to allow users to see updates and changes made to the locations.

INRIX XD Weekday Travel Time Index (TTI)

- Provides the travel time data metrics used to evaluate regional congestion and to support identification of the CMP priority congestion locations. The metric is Travel Time Index (TTI), which was defined in earlier sections of this report. Separate ranges of TTI can be checked to illustrate different congestion levels based on this measure. Generally TTI values greater than 1.30 indicate moderate and above levels of traffic congestion. Note this metric relates to the typical average congestion during weekday peak period like the evening commute.

MetroQuest Survey Results / STC 2023 Survey

- Provides the public responses to both the 2024 LLTS CMP survey and the 2023 State Transportation Commission (STC) survey. The survey responses were an integral component in defining priority congestion locations in the region.

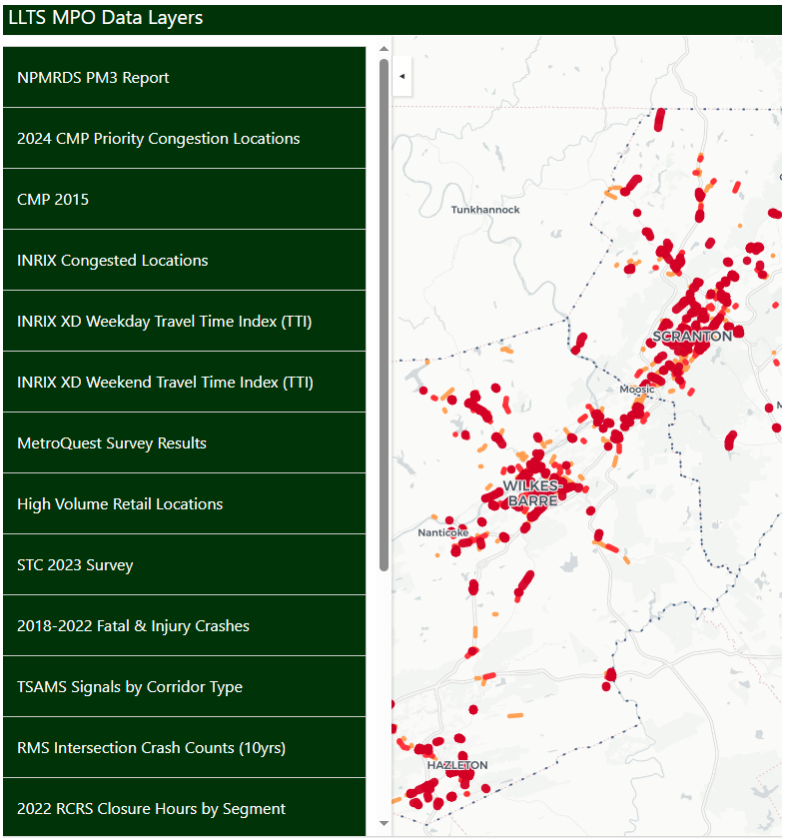
LLTS CMP Data Layers Map

https://tmp-map.s3.amazonaws.com/lltsmpo/lackawanna-luzerne-data-layers.html

This mapping database will be hosted by Michael Baker International until such time as it may be transferred to LLTS staff. If this link is dead, the data can be sought by contacting the Luzerne County Planning & Zoning Department at 570-825-1564.

This link provides access to a more detailed map of all the data layers assembled as part of the 2024 CMP development. Several layers are the same as those provided in the summary map from the previous section, including the 2024 and 2015 CMP locations.

The additional layers include:



NPMRDS PM3 Report

- Provides metrics related to the national reliability performance measure as described in a previous section of this report. In specific it includes the 2023 segment level of travel time reliability (LOTTR) values. Values greater than 1.50 indicate higher levels of traffic congestion and these segments are highlighted in red.

INRIX Congested Locations

- Provides additional metrics related to the INRIX TTI information. Traffic volumes have been integrated with the INRIX TTI to create a surrogate delay score referred to as the Max TTI Delay Score. This data layer assisted in defining priority congestion locations. The delay was also estimated for traffic signal locations and was used to identify intersections where there is significant total delay. Additional layers are provided on the INRIX bottleneck ranking report locations.

INRIX XD Weekend Travel Time Index (TTI)

- Similar to the Weekday TTI layers, this information provides the highest hourly TTI values on a weekend (Saturday or Sunday) day in 2023. Separate layers are provided for different TTI range levels with values greater than 1.50 being the highest congestion.

2018-2022 Fatal and Injury Crashes

- Based on the processing of PennDOT crash data, identified the top 20 crash road segment locations throughout the region. Layers are also provided for all the crash locations by year.

TSAMS Signals by Corridor Type

- Provides information from PennDOT's Traffic Signal Asset Management System (TSAMS) including the designation of critical and supercritical signals. Signal data was also conflated with traffic counts to create a layer of signal locations scaled by the average annual daily traffic (AADT) volume. An additional layer provides the conflated 2018-2022 crash counts near each signal.

RMS Intersection Crash Counts (10 Years)

- This data layers provides 10-year crash counts in the vicinity of stop and yield signs in the region. The top 10 and 50 locations are provided as separate layers.

2022 RCRS Closure Hours by Segment

- This data layers provides roadway closures reported in PennDOT's Road Condition Reporting System (RCRS) for 2022. Additional years can be added in future updates.

MPMS TIP Projects

- Provides the current draft TIP for projects classified as congestion and safety or bridge replacement project categories.

2018 Employment Totals by Census Block

- Provides information of Census Block employment based on information for the Department of Labor and Industry.

O/D Vehicle Probe Data

- Provides 2023 trip origins and destinations estimated by Michael Baker International using information from the Replica-HQ software platform. Information is provided for regional hex bin areas.

CMP LOCATION EVALUATIONS

For each of the CMP priority locations, additional corridor data has been summarized to support the evaluation of congestion causes, ranking or further prioritization of locations, and the identification of potential strategy categories applicable to each location. This additional information has been assembled into appendix tables indexed on the CMP location identification number provided in **Table 3** and included in the online maps.

This information includes:

Appendix B: CMP Location Programmed Project and Study Information

- Programmed projects for each CMP location based on projects from the TIP and LRTP.
- Provides past studies that address issues or needs related to the corridor. This includes information from the 2015 CMP, PennDOT's Regional Operations Plan (ROP), and the LLTS 2045 LRTP. Any referenced strategies that have been identified in these plans are highlighted for each location.
- For those corridors that overlap with the 2015 CMP, information on the deficiency, congestion cause and mitigation strategy are highlighted. This information may have some overlaps with Appendix B.

Appendix C: Additional Data Collected for CMP Locations

- Travel time metrics and volume data have been compiled for each CMP location. The data includes:
  - Maximum Travel Time Index (TTI) weekday values at or along CMP location
  - Average TTI values weighted by INRIX segment distances
  - The number of hours that TTI is greater than 1.5 (a defined threshold of higher congestion)
  - PennDOT total and truck traffic volumes
- Crash data by crash type has been compiled by CMP location to support evaluation of congestion causes. This information includes total crashes, total fatalities, injury crashes, truck crashes, and bike/pedestrian crashes or fatalities.
- Employment data abutting the CMP corridor or spot intersection location. Employment data has been extracted from PennDOT's 2018 employment data base obtained from the Department of Labor and Industry and aggregated by Census Block.
- Traffic signal information from PennDOT's Traffic Signal Asset Management System (TSAMs) has been compiled to support evaluation of potential operational strategies. This information includes relevant signal IDs, PennDOT's classification of "corridor" and "super critical" signals, and information on the coordinated signal system (e.g. what signals are shared in the system).

ASSESSING STRATEGIES FOR CMP LOCATIONS

The identification and assessment of appropriate congestion mitigation strategies is a component of the CMP but often requires more detailed assessments through other studies and outreach. **Figure 17** provides a toolbox of strategies for consideration by policy makers and planners in the region. These strategies include:

- Reducing demand (or demand management) – These strategies attempt to address congestion at the root of the problem by reducing the number of vehicles on the road.
- Managing capacity (or operational improvements) – These efforts are intended to enhance the operation of the transportation system and make it as efficient as possible. They may include signal technology and coordination projects or other Intelligent Transportation System (ITS) strategies like electronic message signs or incident response teams.
- Building capacity (or capacity enhancements) – These projects typically focus on the addition of lanes to existing roadways or the construction of new roads. While there is still an important need for the strategic addition of new capacity, the LLTS MPO acknowledges that it is not possible to solve all congestion issues through major additions of capacity due to environmental and land use sensitivity and limited funding. Strategic capacity enhancements, designed in the context of the community, may include interchange improvements, the implementation of turn lanes to improve congestion and safety at critical intersections, development of multimodal corridors and improved street connectivity.

All strategies should be consistent with regional and state LRTPs. Lower-cost solutions are emphasized as a primary congestion mitigation strategy and may include those provided in FHWA's ***Recurring Traffic Bottlenecks: A Primer Focus on Low-Cost Operational Improvements***.

Future Strategy Assessments

As part of the 2024 CMP update, LLTS has not formally developed recommended strategies for each CMP location. Information has been compiled to support future assessments. Techniques for evaluating and selecting strategies include the use of committees or group consensus, the refinement of strategies based on local characteristics, and staff-level technical analysis. Information collected through monitoring of implemented strategies can be helpful in evaluating the success of individual strategies and targeting specific strategies to applications where they have demonstrated success. This feedback loop provides a continuous refinement of the strategies considered for congestion management in different situations.

LLTS is focusing on enhancing and developing more formal procedures for project evaluation that draw on local insights and visions for each location and integrate important input from PennDOT on signal technology and other initiatives. **Figure 18** highlights a potential process for recommending CMP location strategies.

Figure 17: CMP Corridor Strategy Toolbox

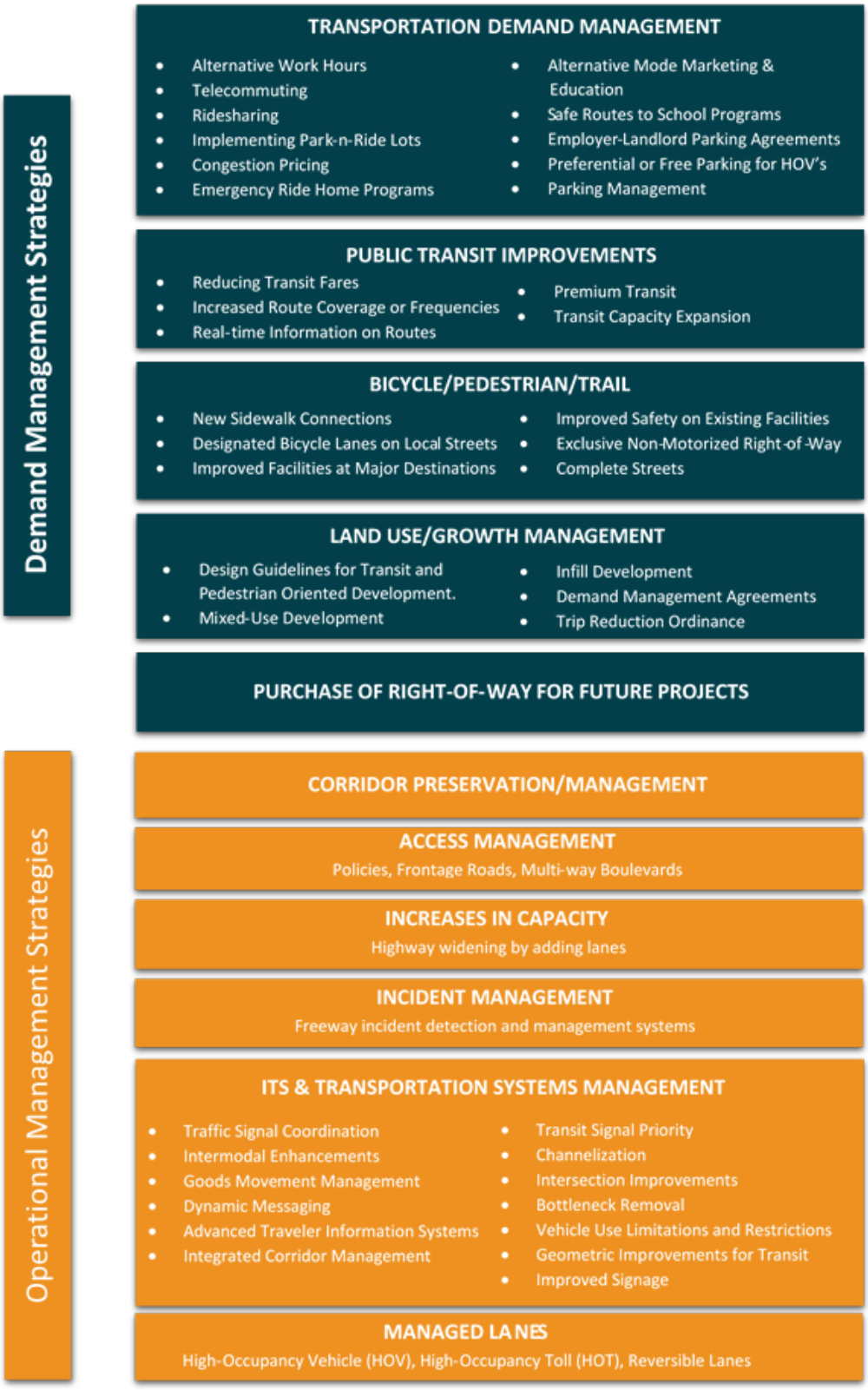
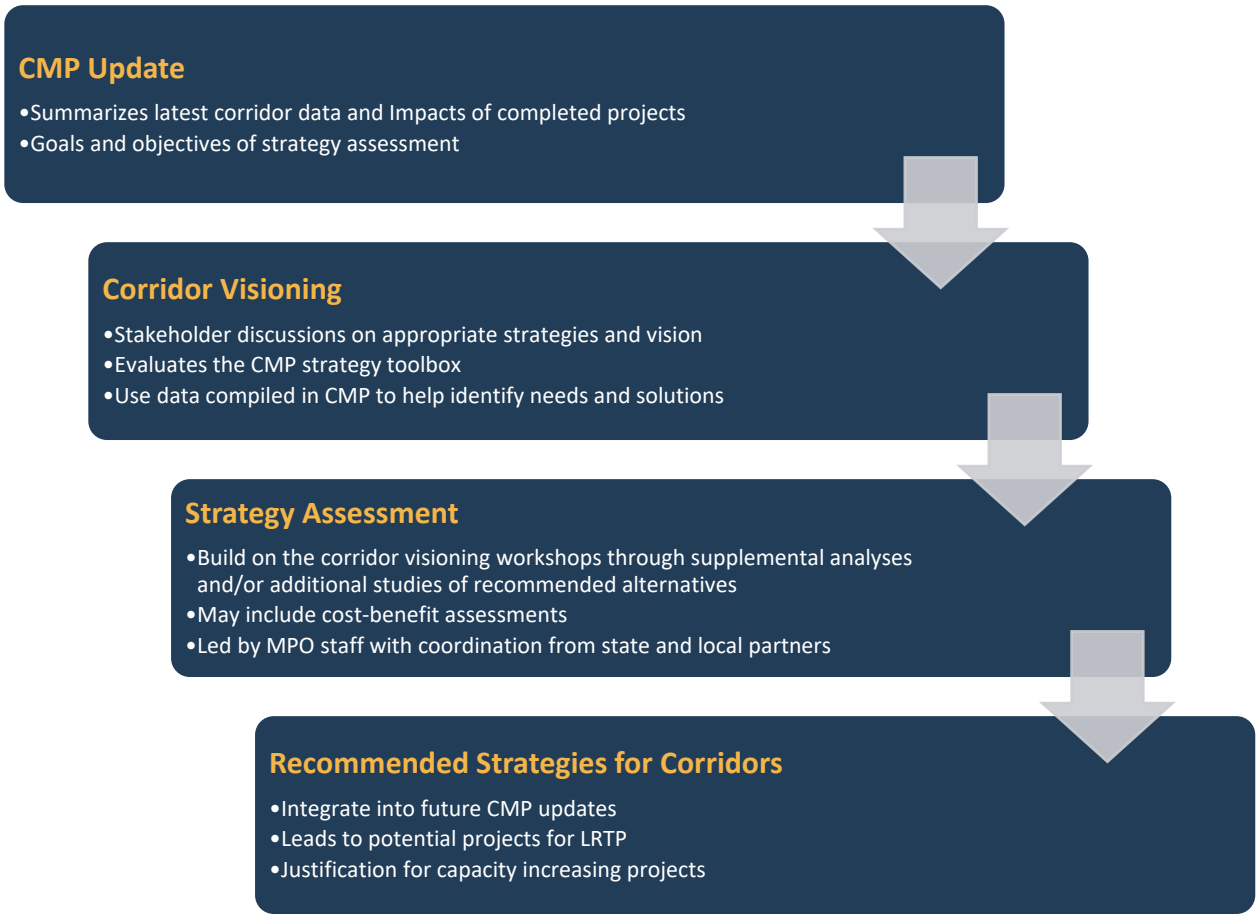


Figure 18: Process for Recommending CMP Strategies



The CMP strategy evaluation process is designed to assess the effectiveness of various congestion management strategies. A key aspect of this evaluation will be to pinpoint specific locations where the implementation of capacity enhancement projects is imperative. This determination is based on a comprehensive analysis that considers the ineffectiveness of alternative strategies in alleviating congestion at these critical points. Such an analysis may be conducted under a supporting corridor or project study. The process is instrumental in guiding future strategy selection and ensuring that resources are allocated to strategies that demonstrably improve traffic flow and reduce congestion.

FUTURE ENHANCEMENTS & INTEGRATION

Within the overall transportation planning process, the CMP provides quantitative congestion information that can be used by decision-makers at the MPO, local government, and PennDOT levels. The CMP is a critical element of an objectives-driven, performance-based planning approach, and the integration of the CMP data with the TIP and LRTP is an important part of project decision making.

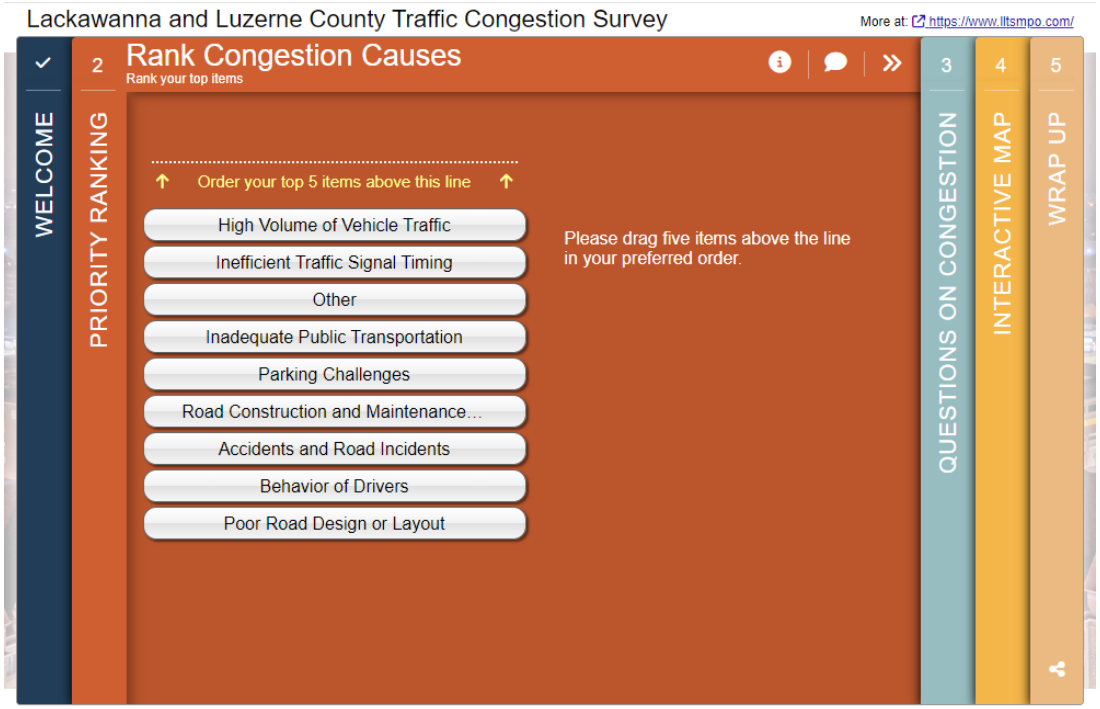
Across the country, MPOs have developed unique methods of implementing the CMP. Some have integrated the CMP with the long-range planning process to the extent that the CMP is not identifiable as a standalone process. In many cases, the CMP data and performance measures directly influence project prioritization. The LLTS will directly integrate the CMP priority congestion locations into the TIP and LRTP process. These locations will also be key locations that support additional studies and strategy assessment coordination.

The LLTS MPO is always looking for ways to make the CMP better. This includes learning from what other communities are doing across the nation and using new data sources as they become more readily available. Future CMP updates will be coordinated with PennDOT's Regional Operations Plan (ROP), ongoing efforts to develop better data for assessing congestion causes, and local and regional efforts related to corridor visioning and strategy assessments. The CMP is to be updated every 4 years to support coordination with the TIP and LRTP.

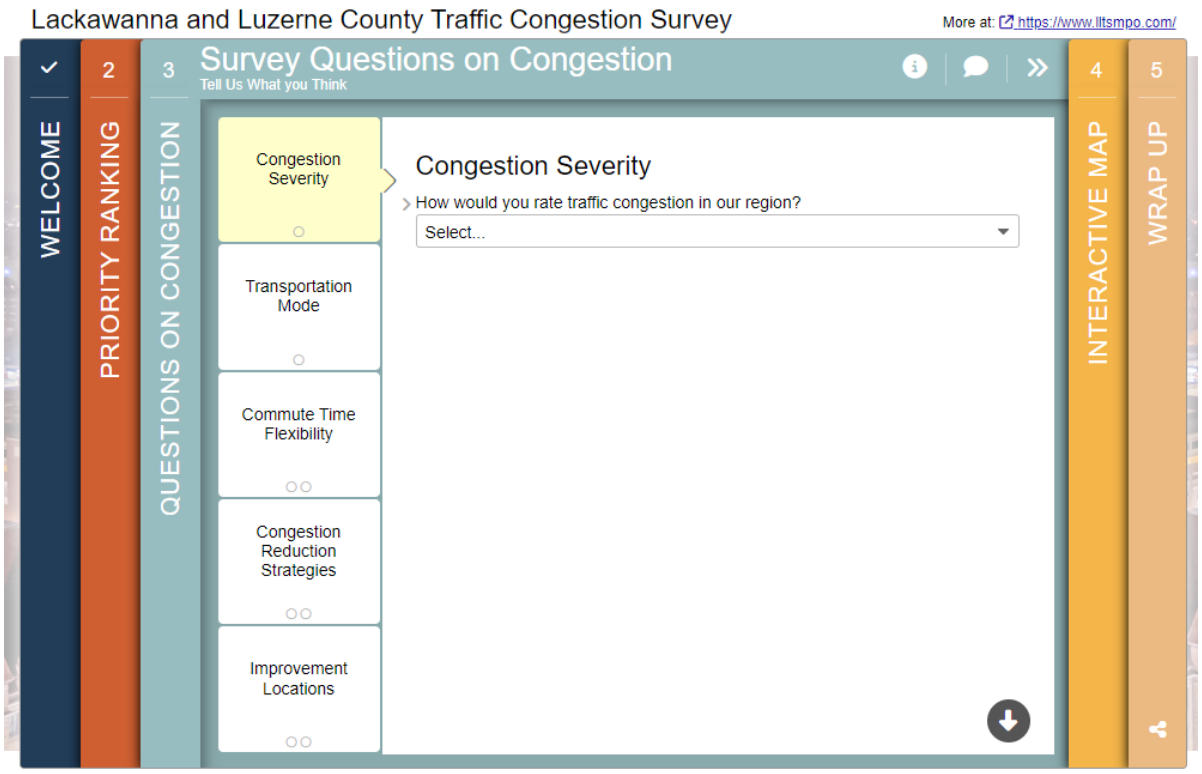
APPENDIX A: ONLINE CMP PUBLIC SURVEY CONTENT SCREENS

LLTS CMP Public Survey Screen 1

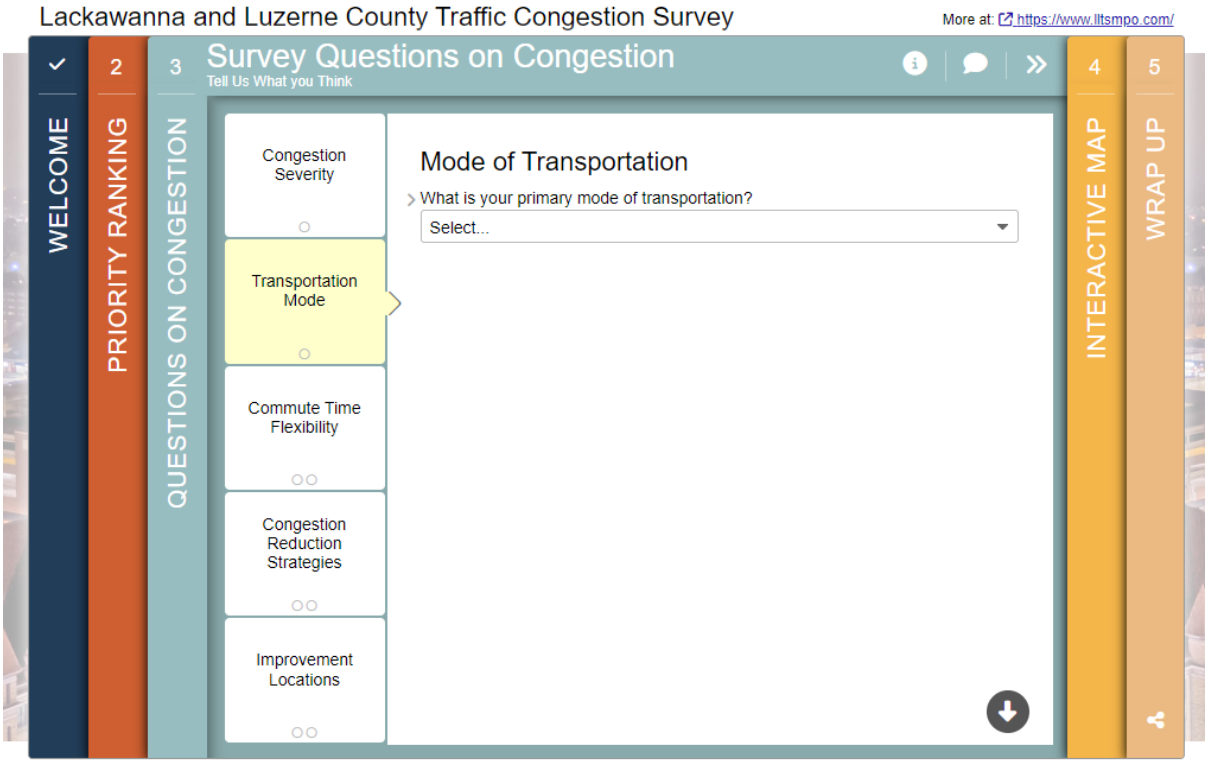
LLTS CMP Public Survey Screen 2



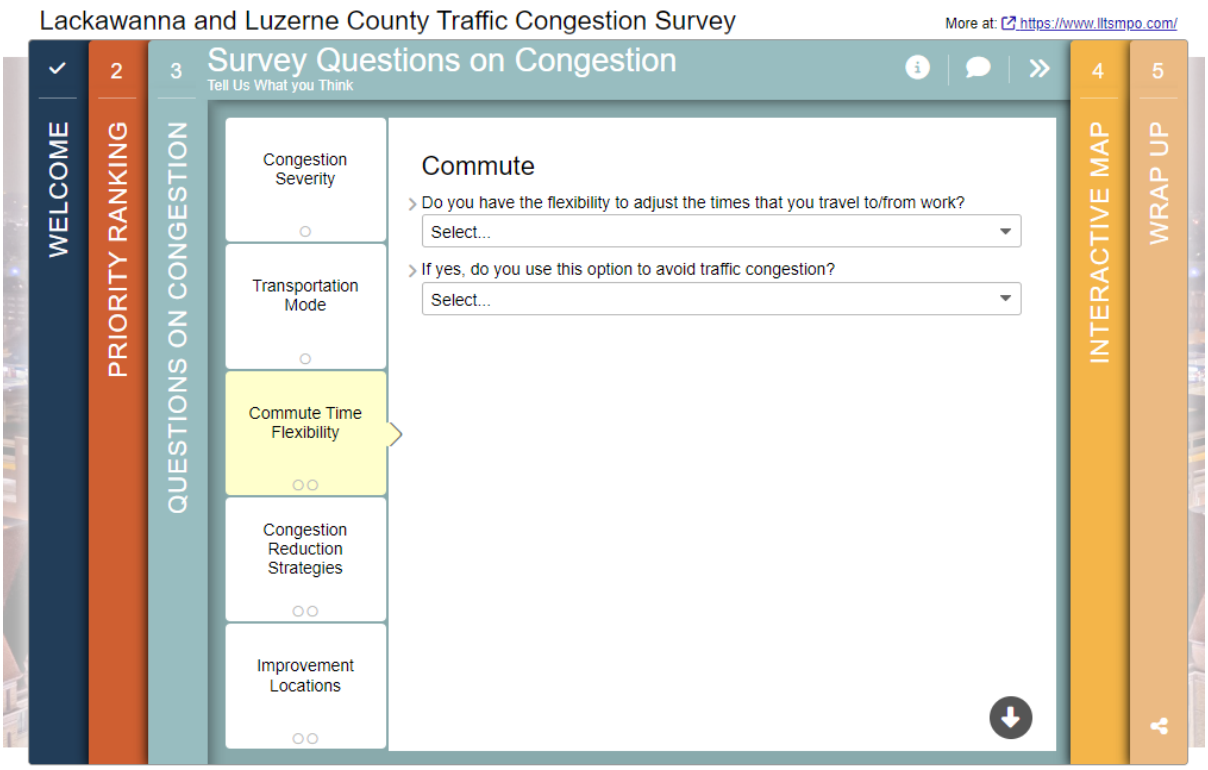
LLTS CMP Public Survey Screen 3, Part 1



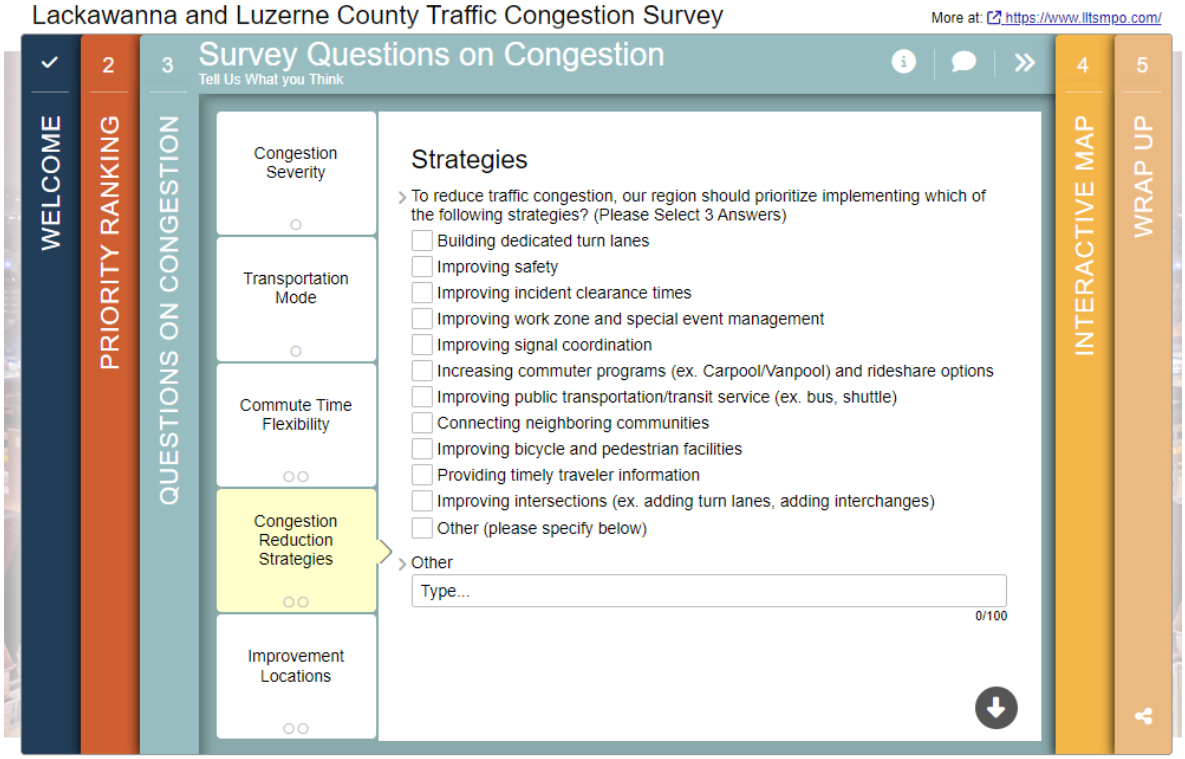
LLTS CMP Public Survey Screen 3, Part 2



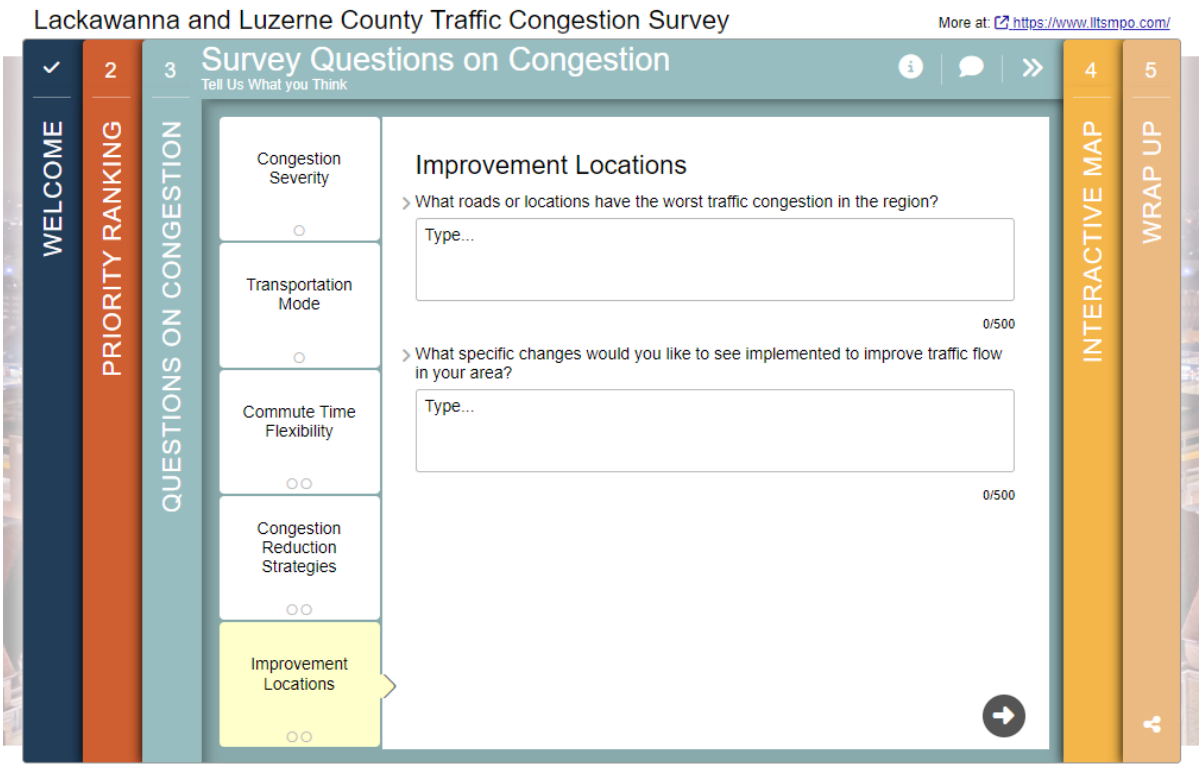
LLTS CMP Public Survey Screen 3, Part 3



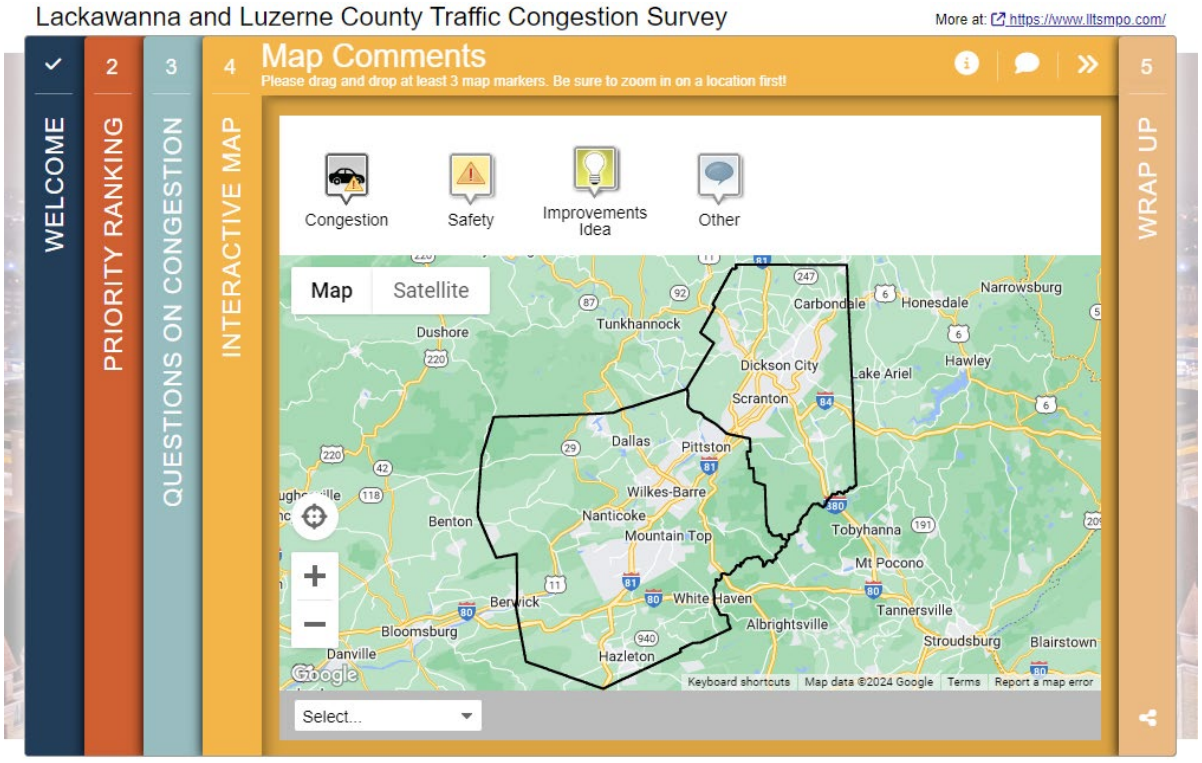
LLTS CMP Public Survey Screen 3, Part 4



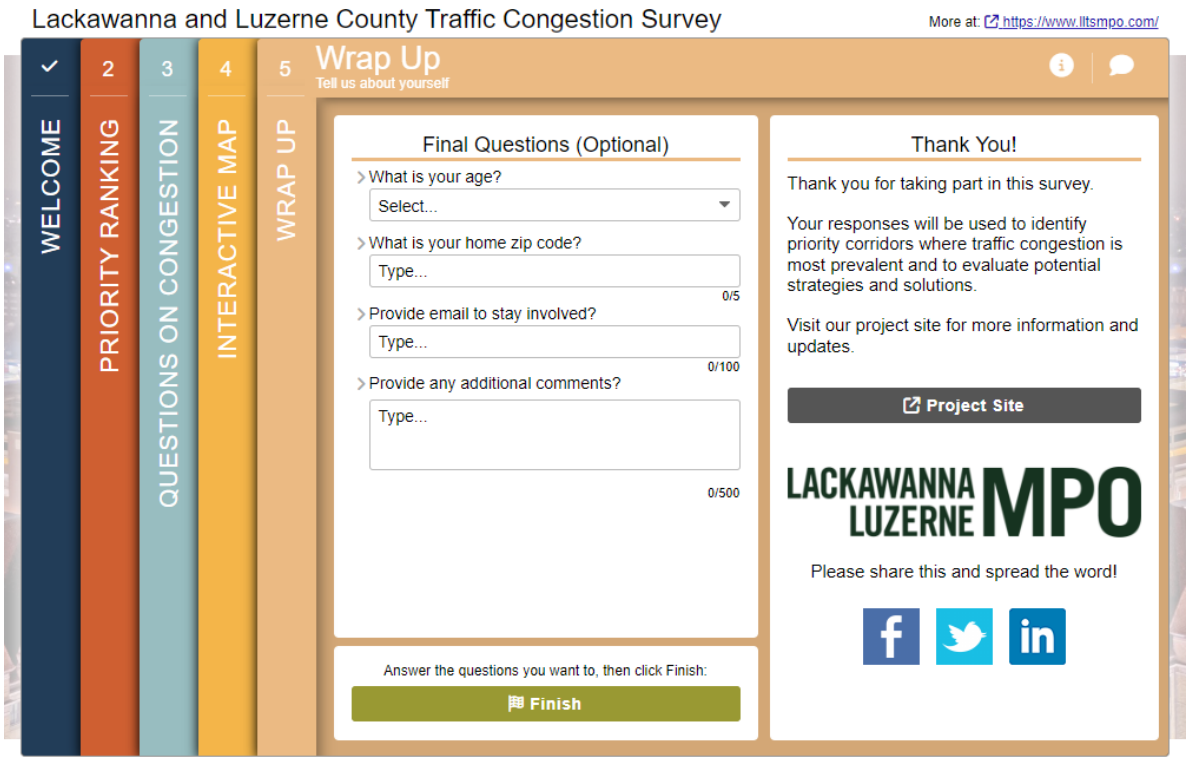
LLTS CMP Public Survey Screen 3, Part 5



LLTS CMP Public Survey Screen 4



LLTS CMP Public Survey Screen 5



APPENDIX B: CMP LOCATION PROGRAMMED PROJECT AND STUDY INFORMATION

Programmed Projects for each CMP Priority Congestion Location

Location			Programmed Projects on Corridor			
Corridor ID	Corridor Name	Municipality	MPMS ID	Project Name	Improvement Type	Est. Let Date
1	S. Abington Road	Clarks Green Borough	N/A			
2	S. State Street - Northern Blvd	Clarks Summit Borough	114268	SR 6 Drainage	Drainage Improvements (Multiple Locations)	2027
			116797	SR 8041 Ramps	Bridge Replacement/Rehabilitation	2031
			69172	SR 8041 over SR 11	Bridge Preservation Activities	2026
3	I-81	South Abington Twp	113869	SR 8015 over I-81 Ramp	Bridge Replacement	2034
4	Constitution Ave	Jessup Borough	N/A			
5	W. Lackawanna Ave - S. Valley Ave	Olyphant Borough	116484	SR 347 over Lackawanna Ri	Bridge Preservation Activities	2024
6	Scranton-Carbondale Highway	Dickson City Borough	N/A			
7	Commerce Blvd - Ravine St Intersection	Dickson City Borough	N/A			
8	Viewmont Dr - Main St Intersection	Dickson City Borough	N/A			
9	Mount Cobb - Moosic Lake Intersection	Jefferson Township	N/A			
10	S. Main St	Moscow Borough	116762	SR 435 over Van Brunt Cre	Bridge Replacement/Rehabilitation	2035
			85812	SR 435 over Van Brunt Ck	Bridge Rehabilitation	2024

Location			Programmed Projects on Corridor			
Corridor ID	Corridor Name	Municipality	MPMS ID	Project Name	Improvement Type	Est. Let Date
11	Blakely St - O'Neill Highway	Dunmore Borough	N/A			
12	N. Main Ave	Scranton City	116551	SR 3013 Main Street Signals	Congestion Reduction - Existing Signal Improvement	2024
13	N. Keyser Ave	Scranton City	115883	SR 3011 Keyser Avenue Wal	Retaining Wall Replacement/Restoration	2024
14	N. Main Ave	Taylor Borough	116551	SR 3013 Main Street Signals	Congestion Reduction - Existing Signal Improvement	2024
			117896	SR 8029 Ramp from Main Ave	Bridge Preservation Activities	2026
			117890	SR 11 over North Main Ave	Bridge Preservation Activities	2026
			8129	SR 3013 over Keyser Creek	Bridge Replacement/Rehabilitation	2027
15	Mulberry St - Jefferson Ave	Scranton City	118217	City of Scranton Corridor	RR Warning Devices	2024
			106664	SR 8025 over Roaring Brook	Bridge Rehabilitation	2024
16	S. Washington Ave - East Elm St	Scranton City	N/A			
17	Moosic St - Meadow Ave	Scranton City	N/A			
18	I-81	Moosic Borough	N/A			
19	Davis St	Scranton City	N/A			
20	Birney Ave	Moosic Borough	N/A			
21	S. Main St	Old Forge Borough	N/A			

Location			Programmed Projects on Corridor			
Corridor ID	Corridor Name	Municipality	MPMS ID	Project Name	Improvement Type	Est. Let Date
22	Fort Jenkins Br - Exeter Ave Intersection	West Pittston	93931	SR 11 over SR 2037, Susquehanna River	Bridge Replacement/Rehabilitation	2026
			Luzerne County has made funds available to further study traffic congestion around the Fort Jenkins Bridge in Pittston as it has seen increased traffic congestion due to the closure of the nearby Water Street bridge, the closure of which will last at least 5 years until that bridge is completely replaced. PennDOT has agreed to fund implementation of the better signage or signalization recommendations that come out of the study.			
23	S. Main St	Pittston	93931	SR 11 over SR 2037, Susquehanna River	Bridge Replacement/Rehabilitation	2026
24	S. Township Blvd – William St Intersection	Pittston	N/A			
25	Chestnut St – Oak St Intersection	Pittston	69001	SR 2019 over Interstate 8	Bridge Preservation - Federal	2025
26	PA 309 – Hildebrandt Rd Intersection	Dallas	N/A			
27	Memorial Highway	Dallas	114269	SR 415 over Toby Creek	Bridge Replacement	2025
28	Memorial Highway	Kingston	56623	SR 309 over Toby Creek	Bridge Replacement	2025
			68943	SR 309 over Toby Creek #2	Bridge Restoration	2031
			116835	SR 309 over Toby Creek #1	Bridge Restoration	2031
			68947	SR 309 over Toby Creek #3	Bridge Restoration	2031
29	Wyoming Ave – Welles St Intersection	Forty Fort	N/A			
30	Rutter Ave	Forty Fort	N/A			
31	S. River St	Plains	114271	SR 309 over Susquehanna R	Bridge Restoration	2026
32	Kidder St	Plains	N/A			

Location			Programmed Projects on Corridor			
Corridor ID	Corridor Name	Municipality	MPMS ID	Project Name	Improvement Type	Est. Let Date
33	Wyoming Ave	Kingston	N/A			
34	River Street	Wilkes-Barre	119492	South River Street	Transportation Enhancement	NULL
35	Wilkes-Barre Blvd	Wilkes-Barre	N/A			
36	Wilkes-Barre Twp Blvd	Wilkes-Barre	N/A			
37	Highland Park Blvd	Wilkes-Barre	N/A			
38	I-81	Wilkes-Barre	115097	I-81 Luzerne County Ashley	Bridge Replacement and Highway Realignment	2027
39	E. Main St	Larksville and Plymouth	N/A			
40	Carey Ave – West End Rd Intersection	Hanover	102030	SR 2002 (San Souci Parkway	Highway Reconstruction	2025
			102116	I-81 Luzerne County Ashley	Highway Reconstruction	2029
41	E. Main St	Nanticoke	102030	SR 2002 (San Souci Parkway	Highway Reconstruction	2025
42	PA 309	Fairview	67442	SR 309 over Wapwallopen Creek	Bridge Restoration	2032
43	Can Do Expressway	Hazle	9084	SR 924 over SR 81	Bridge Restoration	2029
44	N. Church St	Hazleton	N/A			
45	W. Broad St	Hazleton	N/A			

Past Studies for each CMP Priority Congestion Location

Location			Past Studies		Potential Strategies
Corridor ID	Corridor Name	Municipality	Plan/Study	Project/Strategy	
1	S. Abington Road	Clarks Green Borough	2015 CMP	**Vernard Road to Cook Street**: Signal retiming	Signal retiming
2	S. State Street - Northern Blvd	Clarks Summit Borough			
3	I-81	South Abington Twp	2045 LRTP, Illustrative Project Listing	**I-81 ITS Camera - Exit 194:** (Carryover from 2016 LRTP)	
			2015 CMP	**I-81 Countywide**: Additional lanes to address capacity deficiencies	
4	Constitution Ave	Jessup Borough	2015 CMP	**Stop intersections at Hill and Main Streets** have created long queues. Identified mitigation measures include studying alternative intersections (possible roundabout at Hill Street) or installing alternate intersection at Hill Street and signalizing Main Street.	
5	W. Lackawanna Ave - S. Valley Ave	Olyphant Borough			
6	Scranton-Carbondale Highway	Dickson City Borough			
7	Commerce Blvd - Ravine St Intersection	Dickson City Borough			
8	Viewmont Dr - Main St Intersection	Dickson City Borough			
9	Mount Cobb - Moosic Lake Intersection	Jefferson Township	2045 LRTP, Illustrative Project Listing	**PA 247 and PA 348 Interchange:** Four-way connection to I-84 ramps (Carryover from 2016 LRTP)	

Location			Past Studies		Potential Strategies
Corridor ID	Corridor Name	Municipality	Plan/Study	Project/Strategy	
			2022 Road Safety Reviews	**Suggested Remedies:** Add bike path accommodations, install sidewalks to allow safe travel for pedestrians, add sharrows, widen shoulders, add right hand turn lanes.	
10	S. Main St	Moscow Borough			
11	Blakely St - O'Neill Highway	Dunmore Borough	2045 LRTP, Illustrative Project Listing	**PA 347 VMS Installation** (Blakely Street, Carryover from 2016 LRTP)	
			2015 CMP	**Drinker Street to Jessup Street:** Signal retiming, signal upgrades/auxiliary lanes to address left turns blocking through movements.	
				Cherry Street to Potter Street: Signal retiming, signal upgrades/auxiliary lanes to address left turns blocking through movements	
			Scranton-Abingtons Planning Association Comprehensive Plan	**Drinker Street Intersection**: "Substantive improvements to capacity [at the Drinker Street intersection] would require additional through lanes, which would have a significant effect on adjacent land uses. As an alternative more modest improvements could be obtained through upgrades to the existing traffic signal equipment. Field observations indicate that existing equipment (post-mounted controller, span wire signals, limited actuation) could be enhanced to maximize the throughput with the current geometry. Enhanced equipment could also be utilized to implement modified timings during peak periods to clear excessive queues along Blakely Street." (p. 126-27, Chapter 3: Growth Management Plan).	
12	N. Main Ave	Scranton City	2015 CMP	**Eynon Street to Lackawanna Avenue**: Signal retiming, signal upgrades/auxiliary lanes to address left turns blocking through movements	Signal retiming & Signal upgrades, auxiliary lanes
				Providence Road to Market Street: Signal retiming, signal upgrades/auxiliary lanes to address left turns blocking through movements	

Location			Past Studies		Potential Strategies
Corridor ID	Corridor Name	Municipality	Plan/Study	Project/Strategy	
13	N. Keyser Ave	Scranton City	2015 CMP	**Dalton Street to Morgan Highway**: Signal retiming, signal upgrades/auxiliary lanes to address left turns blocking through movements	Signal retiming & Signal upgrades, auxiliary lanes
14	N. Main Ave	Taylor Borough			
15	Mulberry St - Jefferson Ave	Scranton City			
16	S. Washington Ave - East Elm St	Scranton City			
17	Moosic St - Meadow Ave	Scranton City			
18	I-81	Moosic Borough	Eastern Region ROP (2023 Interim Update)	**I-81 (Wilkes-Barre/Scranton) ICM**: Integrated Corridor Management of I-81 and parallel corridors (US 11, PA 315). Installation of CCTV cameras and DMS at strategic locations. Possible deployment of queue detection, signal improvements, transit improvements. Possible ramp metering for River Street on-ramps. Possible flex lanes in Moosic.	Widen I-81
				District 4-0 ITS Gaps: Installation of Type A DMS on PA 309 near Mountain Top (Luzerne County) and on Montage Mountain near I-81 (Lackawanna County). The ROP notes that partial progress has been made on this project.	
				Wilkes-Barre/Scranton Freeway Service Patrols: Develop Freeway Service Patrol to cover I-81 and parallel corridors in Luzerne and Lackawanna Counties.	
				Wilkes-Barre/Scranton TIM Team: Develop a TIM Team to cover I-81 and parallel corridors, I-84, I-380, US 6, and Northeast Extension in Wilkes-Barre/Scranton area (Luzerne/Lackawanna Counties).	
			2015 CMP	**I-81 Countywide**: Additional lanes to address capacity deficiencies	

Location			Past Studies		Potential Strategies
Corridor ID	Corridor Name	Municipality	Plan/Study	Project/Strategy	
				(both counties); reconfiguration of Exit 178 to a cloverleaf to remove weaving condition	
19	Davis St	Scranton City	Eastern Region ROP (2023 Interim Update)	**Davis Street Signal Improvements:** Upgrading signal timing and coordination on SR 3016 in Scranton (Lackawanna County). This would include approximately 4 signalized intersections ($500k-$2M)	Signal retiming & Signal upgrades, auxiliary lanes
			2015 CMP	**Between N. Main Street and Montage Mountain Road**: Signal retiming, signal upgrades/auxiliary lanes to address left turns blocking through movements.	
20	Birney Ave	Moosic Borough			
21	S. Main St	Old Forge Borough	2015 CMP	**Between Drakes Lane and Taylor Lane**: Signal retiming, signal upgrades/auxiliary lanes to address left turns blocking through movements.	Signal retiming & Signal upgrades, auxiliary lanes
22	Fort Jenkins Br - Exeter Ave Intersection	West Pittston	2045 LRTP, Illustrative Project Listing	**Fort Jenkins Bridge** - Bridge rehabilitation on SR 11 (Exeter Ave) over SR 2037, Susquehanna River and railroad in West Pittston Borough and Pittston City. (Carryover project from 2016 LRTP)	
23	S. Main St	Pittston	2015 CMP	**Plank Street to Fort Jenkins Bridge**: Signal retiming, signal upgrades/auxiliary lanes to address left turns blocking through movements	Signal retiming & Signal upgrades, auxiliary lanes
24	S. Township Blvd – William St Intersection	Pittston			Signal retiming
25	Chestnut St – Oak St Intersection	Pittston	Eastern Region ROP (2023 Interim Update)	**I-81:** Integrated Corridor Management of I-81 and parallel corridors (US 11, PA-315). Installation of CCTV cameras and DMS at strategic locations. Possible deployment of Queue Detection. Possible Ramp Metering for River St. on-ramps. Possible Flex Lanes in Moos	Signal retiming

Location			Past Studies		Potential Strategies
Corridor ID	Corridor Name	Municipality	Plan/Study	Project/Strategy	
26	PA 309 – Hildebrandt Rd Intersection	Dallas			
27	Memorial Highway	Dallas			Improved signage at the roundabout on the west end of the corridor.
28	Memorial Highway	Kingston	CMP 2015	**Between Carverton Road and Center Street:** Outdated signal timing.	Signal retiming, coordination, and turn lane
			Project Completion August 2024	Signal project along SR 309	
29	Wyoming Ave – Welles St Intersection	Forty Fort			Signal retiming
30	Rutter Ave	Forty Fort			Signal retiming around peak hours
31	S. River St	Plains	CMP 2015	**Between North Street and River Street:** Excessive delay and lack of left-turn capacity at the five-legged intersection of North River Street and the S.R. 309 Northbound Ramps/Maffett Street.	Signal retiming and lane reconfiguration
32	Kidder St	Plains	Eastern Region ROP (2023 Interim Update)	**I-81:** Integrated Corridor Management of I-81 and parallel corridors (US 11, PA-315). Installation of CCTV cameras and DMS at strategic locations. Possible deployment of Queue Detection. Possible Ramp Metering for River St. on-ramps. Possible Flex Lanes in Moos	Signal retiming
33	Wyoming Ave	Kingston			Signal upgrades
34	River Street	Wilkes-Barre	CMP 2015	**Between Academy Street and North Street:** Southbound right-turn lane at the intersection with Market street is underutilized.	Signal timing and lane reconfigurations
35	Wilkes-Barre Blvd	Wilkes-Barre	CMP 2015	**Between Northampton Street and Conyngham Street:** Outdated signal timing.	Signal retiming

Location			Past Studies		Potential Strategies
Corridor ID	Corridor Name	Municipality	Plan/Study	Project/Strategy	
			Eastern Region ROP (2023 Interim Update)	**Wilkes-Barre Signal Improvements:** Upgrade signal controllers to allow for Automated Traffic Signal Performance Measures functionality on Pennsylvania Avenue and Wilkes-Barre Boulevard (Luzerne County). This would include approximately 9 signalized intersections.	
36	Wilkes-Barre Twp Blvd	Wilkes-Barre	CMP 2015	**Between Blackman Street and Mundy Street:** Volume of left-turning vehicles blocking through movements.	Signal retiming and signal upgrades
37	Highland Park Blvd	Wilkes-Barre			Signal retiming
38	I-81	Wilkes-Barre	2045 LRTP, Illustrative Project Listing	**I-81/Northampton St:** There should be a dedicated route from I-81 to downtown Wilkes-Barre, instead of using the residential/local road (Northampton Street) as a thoroughfare.	Additional lanes, reconfigure to remove weaving condition, and on-ramp merge lanes
			2024 PennDOT Project	Widen I-81 from 2 lanes into 3.	
39	E. Main St	Larksville and Plymouth	CMP 2015	**Between Gaylord Avenue and Woodward Hill Road:** Volume of left-turning vehicles blocking through movements.	Signal retiming & Signal upgrades, auxiliary lanes
40	Carey Ave – West End Rd Intersection	Hanover			
41	E. Main St	Nanticoke	CMP 2015	**Between Market Street and Loomis Street:** Volume of left-turning vehicles blocking through movements.	Signal retiming, signal upgrades, and auxiliary lanes
42	PA 309	Fairview			
43	Can Do Expressway	Hazle	2045 LRTP, Illustrative Project Listing	**I-81/SR 924 Interchange**	
44	N. Church St	Hazleton	CMP 2015	**Between PA 309 and W 22nd Street:** Volume of left-turning vehicles blocking through movements. & Inadequate capacity noticed between Diamond Street and Broad Street.	Signal retiming, signal upgrades, auxiliary lanes, removal of signs, evaluation of o

Location			Past Studies		Potential Strategies
Corridor ID	Corridor Name	Municipality	Plan/Study	Project/Strategy	
			Eastern Region ROP (2023 Interim Update)	**Church St. Signal Improvements:** Upgrade signal timing and coordination on PA-309 in Hazelton (Luzerne County). This would include approximately 10 signalized intersections.	ne-way flow
45	W. Broad St	Hazleton	CMP 2015	**Between Diamond and Poplar Street:** Underutilized roadway capacity & Inadequate capacity noticed between Diamond Street and Broad St reet.	Signal retiming and lane re-assignment

CMP Priority Congestion Location Information from 2015 CMP

2024 CMP		2015 CMP			
ID	**Corridor Name**	**2015 CMP**	**Deficiency**	**Cause of Congestion**	**Congestion Mitigation**
1	1. S. Abington Rd (Clarks Green Boro)	Yes	None	Outdated signal timing	Signal retiming
2	2. S. State St – Northern Blvd (Clarks Summit Boro)	No			
3	3. I-81 (South Abington Township)	No			
4	4. Constitution Ave (Jessup Boro)	Yes	Stop-controlled intersections at Hill Streets and at Main Street create excessive queuing and driver confusion.	Stop Intersections at Hill and Main Sts create long queues	Study alternate intersections (possible roundabout at Hill St) Alternate intersection at Hill St and signalization at Main St
5	5. W. Lackawanna Ave – S. Valley Ave (Olyphant Boro)	Partial	Significant amount of lost time is experienced at the signalized intersection of S Valley Avenue and Burke By-Pass/Garfield St/E Scott St due to large number of signalized approaches. Proximity of highway-railroad grade crossing to signalized intersection of S Valley Avenue and Burke By-Pass/Garfield St/E Scott St may warrant additional traffic control measures to avoid or clear queuing on tracks	Intersection configuration and highway-railroad grade crossing	Signal retiming Study for signal upgrade or roundabout
6	6. Scranton Carbondale Highway (Dickson City Boro)	No			
7	7. Commerce Blvd - Ravine St Intersection (Dickson City Boro)	No			

2024 CMP		2015 CMP			
ID	**Corridor Name**	**2015 CMP**	**Deficiency**	**Cause of Congestion**	**Congestion Mitigation**
8	8. Viewmont Dr - Main St Intersection (Dickson City Boro)	No			
9	9. Mount Cobb - Moosic Lake Intersection (Jefferson Township)	No			
10	10. S. Main St (Moscow Boro)	No			
11	11. Blakely St – O'Neill Highway (Dunmore Boro)	Partial	Volume of left-turning vehicles blocking through movements.	Left turn blocking through movements	Signal retiming Signal upgrades, auxiliary lanes
12	12. N. Main Ave (Scranton City)	Yes	Volume of left-turning vehicles blocking through movements.	Left turn blocking through movements	Signal retiming Signal upgrades, auxiliary lanes
13	13. N. Keyser Ave (Scranton City)	Partial	Volume of left-turning vehicles blocking through movements.	Left turn blocking through movements	Signal retiming Signal upgrades, auxiliary lanes
14	14. N. Main Ave (Taylor Boro)	Partial	Volume of left-turning vehicles blocking through movements.	Left turn blocking through movements	Signal retiming Signal upgrades, auxiliary lanes
15	15. Mulberry St – Jefferson Ave (Scranton City)	No			
16	16. S. Washington Ave - East Elm St Intersection (Scranton City)	No			
17	17. Moosic St – Meadow Ave (Scranton City)	No			
18	18. I-81 (Moosic Boro)	No			
19	19. Davis St (Scranton City)	Yes	Volume of left-turning vehicles blocking through movements.	Left turn blocking through movements	Signal retiming Signal upgrades, auxiliary lanes
20	20. Birney Avenue (Moosic Boro)	No			
21	21. S. Main St (Old Forge Boro)	Yes	Volume of left-turning vehicles blocking through movements.	Left turn blocking through movements	Signal retiming Signal upgrades, auxiliary lanes
22	22. Fort Jenkins Br – Exeter Ave Intersection (West Pittston Boro)	No			

2024 CMP		2015 CMP			
ID	**Corridor Name**	**2015 CMP**	**Deficiency**	**Cause of Congestion**	**Congestion Mitigation**
23	23. S. Main St (Pittston City)	Yes	Volume of left-turning vehicles blocking through movements.	Left turn blocking through movements	Signal retiming Signal upgrades, auxiliary lanes
24	24. S. Township Blvd - William St Intersection (Pittston City)	No			
25	25. Chestnut St - Oak St Intersection (Pittston Township)	No			
26	26. PA 309 - Hildebrandt Rd Intersection (Dallas Township)	No			
27	27. Memorial Highway (Dallas Boro)	No			
28	28. Memorial Highway (Kingston Township)	Partial	Outdated signal timing.	Outdated signal timing	Signal retiming
29	29. Wyoming Ave - Welles St Intersection (Forty Fort Boro)	No			
30	30. Rutter Ave (Forty Fort Boro)	No			
31	31. S. River St (Plains Township)	Yes	Excessive delay and lack of left turn capacity at the five-legged intersection of North River Street and the S.R. 309 Northbound Ramps/Maffett Street.	5 legged intersection and lack of capacity at ramps	Signal retiming Alt intersection configurations for ramps
32	32. Kidder St (Plains Township)	No			
33	33. Wyoming Ave (Kingston Boro)	No			
34	34. River Street (Wilkes-Barre City)	Yes	Southbound right-turn lane at the intersection with Market street is underutilized.	Underutilized SB right lane and signal timing	Signal timing and lane reconfigurations

2024 CMP		2015 CMP			
ID	**Corridor Name**	**2015 CMP**	**Deficiency**	**Cause of Congestion**	**Congestion Mitigation**
35	35. Wilkes-Barre Blvd (Wilkes-Barre City)	No			
36	36. Wilkes-Barre Twp Blvd (Wilkes-Barre Township)	Yes	Volume of left-turning vehicles blocking through movements.	Left turn blocking through movements	Signal retiming Signal upgrades, alternate configuration at Pine/Sherman, auxiliary lanes
37	37. Highland Park Blvd (Wilkes-Barre Township)	No			
38	38. I-81 (Wilkes-Barre Township)	No			
39	39. E. Main St (Larksville-Plymouth Boros)	Yes	Volume of left-turning vehicles blocking through movements.	Left turn blocking through movements	Signal retiming Signal upgrades, auxiliary lanes
40	40. Carey Ave (Hanover Twp – Wilkes-Barre City)	No			
41	41. E. Main St (Nanticoke City)	Yes	Volume of left-turning vehicles blocking through movements.	Left turn blocking through movements	Signal retiming Signal upgrades, auxiliary lanes
42	42. PA 309 (Fairview Township)	No			
43	43. Can Do Expressway (Hazle Township)	No			
44	44. N. Church St (Hazleton City)	Yes	Volume of left-turning vehicles blocking through movements.	Left turn blocking through movements	Signal retiming Signal upgrades, auxiliary lanes, removal of signs, evaluation of one-way flow
45	45. W. Broad St (Hazleton City)	Yes	Underutilized roadway capacity. Transit Blockages.	Lanes underutilized, transit blockages	Lane re-assignment

APPENDIX C: ADDITIONAL DATA COLLECTED FOR CMP PRIORITY LOCATIONS

Travel Time and Traffic Volume Data by CMP Priority Congestion Location

ID	Segment Mileage	Greatest TTI Value	Average Max TTI	Weighted Average Max TTI	Average Hourly TTI Over 1.5	PennDOT Traffic Volume	PennDOT Truck Volume
1	1.83	1.67	1.33	1.32	1.25	7319	155
2	4.09	2.09	1.44	1.46	2.36	10644	391
3	2.24	2.96	1.76	1.39	2.8	12577	3787
4	1.02	1.58	1.19	1.19	0.33	7189	136
5	1.5	1.76	1.42	1.29	1.83	7473	176
6	1.4	1.55	1.25	1.33	0.1	12462	360
7	1.8	1.2	1.14	1.12	0	300	0
8	2.53	2.01	1.4	1.29	2.57	6782	251
9	3.49	1.62	1.23	1.17	1.63	5914	335
10	0.14	1.54	1.51	1.52	1	7344	321
11	3.51	2.21	1.35	1.42	0.77	12775	640
12	1.23	1.7	1.44	1.4	2.3	10858	266
13	7.16	2.06	1.37	1.34	1.19	17580	1132
14	9.71	1.98	1.35	1.23	1.03	12730	457
15	1.41	1.76	1.39	1.39	1.44	6103	168
16	2.34	1.63	1.13	1.21	0.2	300	0
17	2.88	1.83	1.36	1.35	1.65	10733	1457
18	21.96	1.72	1.23	1.21	0.3	21705	4106
19	6.47	2.61	1.32	1.2	2.52	15286	1332
20	2.05	1.83	1.45	1.31	2.29	13977	505
21	3.44	1.45	1.2	1.15	0	10425	584
22	1.67	2.57	1.4	1.23	1.67	10532	399
23	3.05	1.79	1.32	1.24	0.87	12539	426

ID	Segment Mileage	Greatest TTI Value	Average Max TTI	Weighted Average Max TTI	Average Hourly TTI Over 1.5	PennDOT Traffic Volume	PennDOT Truck Volume
24	3.9	2.04	1.3	1.12	3.58	5254	231
25	2.82	1.84	1.35	1.15	3.5	16024	2526
26	2.7	1.66	1.4	1.24	1.25	8416	624
27	3.21	2.77	1.42	1.26	2.65	10050	513
28	4.33	1.83	1.44	1.28	2	14208	497
29	2.99	1.79	1.36	1.23	1.8	7944	316
30	0.57	1.81	1.42	1.42	1.83	9699	485
31	2.83	1.63	1.17	1.2	0.4	14731	454
32	1.78	2.77	1.63	1.42	3.69	8457	385
33	1.3	1.61	1.48	1.48	0.8	10841	287
34	2.34	1.46	1.3	1.28	0	8400	202
35	2.72	1.66	1.2	1.17	0.4	21349	834
36	8.3	1.75	1.27	1.24	0.73	10699	877
37	4.33	1.5	1.21	1.18	0	8081	243
38	9.02	1.67	1.18	1.16	0.14	23814	4674
39	4.09	1.89	1.41	1.28	1.9	12088	336
40	0.89	1.73	1.37	1.5	1	13946	358
41	1.18	1.3	1.29	1.29	0	16854	336
42	2.02	1.59	1.39	1.36	0.25	15450	779
43	3.04	2.06	1.4	1.29	0.88	8377	790
44	5.1	2.1	1.48	1.36	2.75	8956	235
45	4.06	1.76	1.35	1.25	1.36	8914	238

Crash Data by CMP Priority Congestion Location

ID	Total Crashes	Total Fatalities	Total Injury	Heavy Truck Crashes	Bicycle Crashes	Bicycle Fatalities	Pedestrian Crashes	Pedestrian Fatalities
1	27	0	19	0	0	0	1	0
2	214	0	151	19	0	0	1	0
3	33	1	22	3	0	0	0	0
4	22	0	12	1	0	0	1	0
5	64	0	30	2	0	0	5	0
6	209	0	112	19	0	0	0	0
7	24	0	14	0	0	0	0	0
8	30	0	18	1	0	0	0	0
9	16	0	11	2	0	0	0	0
10	11	0	3	0	0	0	0	0
11	235	1	144	8	1	0	9	1
12	102	0	67	1	1	0	12	0
13	299	3	202	24	0	0	4	1
14	540	2	380	23	7	0	35	1
15	240	1	196	12	3	0	37	1
16	40	0	40	0	0	0	2	0
17	117	0	85	4	0	0	2	0
18	681	8	400	116	0	0	4	0
19	184	1	148	11	0	0	6	0
20	94	2	70	5	1	0	4	2
21	140	2	114	5	1	0	2	0
22	13	0	7	1	0	0	2	0
23	119	1	64	5	1	0	12	1
24	36	0	26	1	0	0	0	0
25	62	0	37	13	0	0	0	0
26	20	0	15	1	0	0	0	0
27	76	0	36	10	1	0	1	0

ID	Total Crashes	Total Fatalities	Total Injury	Heavy Truck Crashes	Bicycle Crashes	Bicycle Fatalities	Pedestrian Crashes	Pedestrian Fatalities
28	195	0	128	11	0	0	0	0
29	19	0	12	0	1	0	1	0
30	51	1	16	1	0	0	0	0
31	42	0	27	0	0	0	0	0
32	161	0	137	11	0	0	3	0
33	114	2	67	2	3	0	11	0
34	173	0	115	1	3	0	11	0
35	187	1	137	1	1	0	9	0
36	339	2	244	9	1	0	13	1
37	224	2	158	7	1	0	4	1
38	276	2	174	43	0	0	3	0
39	113	3	73	3	1	0	6	2
40	80	1	47	3	0	0	2	1
41	67	0	41	1	2	0	3	0
42	99	0	62	3	0	0	0	0
43	117	1	96	34	0	0	0	0
44	524	3	389	5	0	0	18	1
45	265	1	196	6	0	0	15	0

Abutting Employment Totals by CMP Priority Congestion Location

CMP Corridor ID	Employment by Block	Business Count by Block	Number of Census Blocks
1	176	22	5
2	3247	243	33
3	26	10	5
4	101	22	12
5	486	52	13
6	3214	144	8
7	3316	140	3
8	495	20	3
9	61	7	3
10	133	25	6
11	4322	178	35
12	430	51	15
13	1991	106	30
14	1595	151	58
15	2898	157	28
16	169	18	4
17	482	34	6
18	5030	124	34
19	1065	63	26
20	2245	81	12
21	1156	107	34
22	58	5	2
23	1190	116	26
24	91	13	4
25	752	13	3
26	143	11	2
27	855	86	13
28	480	44	19
29	255	31	5

CMP Corridor ID	Employment by Block	Business Count by Block	Number of Census Blocks
30	861	56	8
31	454	28	4
32	3938	131	8
33	1765	175	16
34	3403	47	11
35	2421	68	15
36	4368	199	27
37	5576	229	11
38	1319	47	17
39	623	56	14
40	759	50	13
41	160	20	12
42	469	56	9
43	1798	36	6
44	894	85	32
45	1670	141	25

Traffic Signal Information for each CMP Priority Congestion Location

ID	Signal Count	TSAMS Signal ID	Corridor Type	System Name
1	1	{6554}	{"Designated Corridor"}	{Isolated}
2	8	{102,103,104,3237,6556,6558,6559,8413}	{"Supercritical Corridor"}	{Isolated,"State St (Rt. 6 & 11)"}
5	4	{101,3245,6584,6585}	{"Designated Corridor"}	{Isolated,"Lackawanna Ave. (SR 347)","Main, 347 and Sunset"}
6	2	{6561,6565}	{"Critical Corridor","Supercritical Corridor"}	{"Rt 6 (Dickson City)"}
7	1	{10396}	{"Local Corridor"}	{"Commerce Boulevard Corridor"}
8	1	{10397}	{"Critical Corridor"}	{"Main Ave, Schiffs Drive, I-81"}
9	1	{3191}	{"Critical Corridor"}	{Isolated}
10	2	{3241,8990}	{"Designated Corridor"}	{Isolated}
11	9	{105,106,107,108,6569,6571,6574,6575,6577}	{"Supercritical Corridor"}	{"Blakely St (SR 347/6011/2020)"}
12	4	{3204,3209,3211,6526}	{"Critical Corridor"}	{"Green Ridge St. (SR 0011)",Isolated}
13	7	{3201,3218,6521,6522,6523,6524,6591}	{"Supercritical Corridor"}	{"Keyser Ave. (SR 0307)","Keyser Ave. (SR 3011) Scranton"}
14	11	{3202,3203,3247,3248,6529,6530,6535,6537,6538,6540,6586}	{"Critical Corridor","Supercritical Corridor"}	{Isolated,"S. & N. Main St. (SR 3013)","S. Main St. (SR 3013)"}
15	9	{10412,1049,3206,3215,3216,6511,6512,6514,6515}	{"Critical Corridor","Local Corridor","Supercritical Corridor"}	{"Mulberry St. (Scranton)","Spruce St. (Scranton)"}
16	1	{10410}	{"Local Corridor"}	{Isolated}
17	2	{11280,3217}	{"Critical Corridor","Local Corridor"}	{Isolated}
18	1	{10428}	{"Local Corridor"}	{Isolated}
19	5	{100,1051,3248,6502,6580}	{"Supercritical Corridor"}	{"Davis St. / Montage Mtn Rd","Davis Street",Isolated}
20	2	{15676,6579}	{"Critical Corridor","Supercritical Corridor"}	{Isolated}
21	4	{3242,3243,3244,6583}	{"Critical Corridor","Designated Corridor"}	{Isolated}
23	10	{16728,16776,16777,16778,16779,3660,3662,3713,7080,8426}	{"Critical Corridor","Designated Corridor","Local Corridor",NULL}	{Isolated,"Main St/Kennedy Bl (Pittston)"}
24	1	{7129}	{"Critical Corridor"}	{Isolated}

ID	Signal Count	TSAMS Signal ID	Corridor Type	System Name
25	1	{3646}	{"Critical Corridor"}	{"Rt 315 I-81 Emerg. Detour"}
26	1	{7022}	{"Critical Corridor"}	{Isolated}
27	1	{3681}	{"Supercritical Corridor"}	{"SR 309 (Dallas Boro)"}
28	5	{3644,7043,7044,7046,8416}	{"Supercritical Corridor"}	{"Dallas Hwy(309)(Kingston Twp)","SR 309 (Dallas Boro)"}
29	1	{7131}	{"Critical Corridor"}	{"Wyoming Ave (Forty Fort Boro)"}
30	2	{3699,7132}	{"Critical Corridor"}	{"Rutter Ave. (SR 1006)"}
31	1	{7000}	{"Supercritical Corridor"}	{Isolated}
32	5	{3629,3671,3676,7002,7003}	{"Supercritical Corridor"}	{"Kidder Street (SR 6309)","Rt 315 I-81 Emerg. Detour","Rt. 315 daily (Plains Twp)"}
33	5	{3690,3696,3697,3698,7133}	{"Supercritical Corridor"}	{Isolated,"Wyoming Ave (SR 11) Edwardsvil","Wyoming Ave (SR 11) Kingston"}
34	7	{3663,3664,3665,3668,7089,7090,7110}	{"Supercritical Corridor"}	{"Academy Street (W-B)","River Street (SR 2004)"}
35	6	{10443,10445,10453,10476,10479,10480}	{"Local Corridor"}	{"Wilkes-Barre Boulevard"}
36	9	{16763,3632,3634,3672,7014,7018,7097,7098,8420}	{"Critical Corridor","Supercritical Corridor"}	{Isolated,"Rt 309 (Spring St)"}
37	6	{16670,3631,7011,7014,7015,7016}	{"Critical Corridor","Supercritical Corridor"}	{"Highland Park Blvd.",Isolated,"Rt 309 (Spring St)"}
39	5	{3707,3708,7142,7146,7147}	{"Critical Corridor","Supercritical Corridor"}	{"Main St. (Rt 11) Larksville","Main St. (Rt. 11) Plymouth"}
40	4	{3624,7082,7105,7106}	{"Critical Corridor"}	{Isolated}
	2	{3658,7078}	{"Supercritical Corridor"}	{Isolated}
42	2	{7023,7024}	{"Critical Corridor"}	{"Mntain Blvd. Mt. Top (SR 0309)"}
43	6	{7027,7028,7029,7032,8433,8434}	{"Critical Corridor","Designated Corridor"}	{"PA Route 924 (CAN DO Exp)"}
44	6	{3651,3652,3653,3657,7072,7073}	{"Critical Corridor","Supercritical Corridor"}	{"Broad Street (SR 93)","Diamond Ave. (Hazleton)",Isolated}
	9	{3641,3651,7064,7065,7066,7067,7069,7070,7076}	{"Critical Corridor"}	{"Broad Street (SR 93)"}

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