CONGESTION MANAGEMENT PROCESS 2019 STATUS UPDATE

Syracuse Metropolitan Planning Area

SMTC

PURPOSELY KEPT BLANK

Congestion Management Process 2019 Status Update

SMTC

Syracuse Metropolitan Transportation Council

Adopted by the SMTC Policy Committee on December 12, 2019.

The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

For additional information, contact:
Kevin Kosakowski, Transportation Planner
Syracuse Metropolitan Transportation Council
126 N. Salina Street, 100 Clinton Square, Suite 100
Syracuse, NY 13202
315.422.5716

Contents

List of Tables

List of Figures

List of Maps

List of Charts

List of Appendix

Executive Summary

Introduction

According to the Federal Highway Administration, a Congestion Management Process (CMP) is a *"systematic and regionally-accepted approach for managing congestion that provides accurate, up-to-date information on transportation system performance and assesses alternative strategies for congestion management that meet state and local needs. The CMP is intended to move these congestion management strategies into the funding and implementation stages."* A Congestion Management Process is required by federal legislation in metropolitan areas with populations greater than 200,000, also known as Transportation Management Areas (TMAs). As the state designated Metropolitan Planning Organization for a planning area with a population over 200,000, the Syracuse Metropolitan Transportation Council (SMTC) is required to maintain a CMP. This process aids in identifying locations that may need improvements to relieve congestion. The Syracuse Metropolitan Transportation Council will offer assistance to its member agencies by identifying strategies to help address congestion at identified locations. These strategies could be included in various municipal capital programs, the SMTC's Long Range Transportation Plan, Transportation Improvement Program, or the Unified Planning Work Program as necessitated through the metropolitan transportation planning process.

The Congestion Management Process has been developed to align with eight actions suggested by the FHWA for completing a CMP and is inclusive of multimodal data, analysis, objectives, performance measures and strategies:

- *Develop Regional Objectives for Congestion Management*
- *Define CMP Network*
- *Develop Multimodal Performance Measures*
- *Collect Data/Monitor System Performance*
- *Analyze Congestion Problems and Needs*
- *Identify and Assess Strategies*
- *Program and Implement Strategies*
- *Evaluate Strategy Effectiveness.*

The analysis is not as limited as it was in the 2015 report due to the additional availability of traffic count data and analytical tools that have recently been made available to the MPO. The network of interest for this 2019 update focuses exclusively on "primary commuter corridors" inside the adjusted urban area which consist of roadways that are part of the National Highway System (NHS) and arterials carrying 10,000 or more AADT. The 2015 corridors were originally identified with the assistance of several member agencies referencing available traffic counts and the SMTC's 2050 Long Range Transportation Plan. The 2019 identified "primary commuter corridors" have slightly altered the 2015 network and are now more inclusive of roadways that close the numerous disconnects between the identified corridors.

Analysis and Results

Adjustments to the multimodal performance measures used to analyze congestion in the 2015 report have been made in this update. The Volume to Capacity ratio (v/c) and Speed Index measures have both been eliminated. All traffic, freight and transit congestion are now mainly evaluated utilizing the Travel Time Index (TTI), Total Hours of Excessive Delay per mile (TED/mile) and Level of Travel Time Reliability (LOTTR) performance measures. In addition, the Truck Travel Time Reliability (TTTR) measure is being used solely for trucks traveling on a road segment. Intersection Level of Service (LOS) analysis, Crashes, Transit Ridership and, Bicycle and Pedestrian Facility Availability are being utilized supplementary to the performance measures to help round out a comprehensive multimodal congestion analysis review as it relates to recurring and non-recurring congestion.

"Congestion" was defined in this report as any road segment within the identified network that had a) a TTI value of 2.0 and above (meaning a trip along a segment was found to take twice as long compared to free-flow conditions); b) a TED value of 40,000 or more person hours/mile (excessive delay experienced by drivers in the 90^{th} percentile); c) a LOTTR value of 1.5 and above (meaning a level of unreliability determined by FHWA as too much for any vehicle to experience); d) a TTTR of 4.0 and above (meaning a level of unreliability determined by New York State as too much for trucks to experience). Analysis identified that 40.6 miles were found to be congested under the TTI measure, 18 miles under the TED measure; 78.3 miles under the LOTTR measure; and 3 miles under the TTTR measure. Further supplementary analysis within the study area or parts of, revealed 8 intersections experiencing a level of delay in the p.m. peak considered excessive and/or failing; nearly 4,000 crashes occurring over a four-year period along the top identified congested corridors; 90% average on time performance of all transit routes; nearly 9,000,000 transit riders; just under 10 miles of bike infrastructure; and just over 100 miles of sidewalk.

Conclusion

Various improvement strategies that will most likely benefit the identified congested locations have been included in this documentation. Planning for such, future improvements can take place through the SMTC Unified Planning Work Program and capital funding can be programmed through the Transportation Improvement Program. As congestion in the SMTC urban area typically takes place during peak commute times, strategies focused on the reduction of single occupancy vehicles are recommended for implementation prior to capacity expansion activities. Additionally, as development patterns expand outside of the urban core into the suburban and rural localities of the SMTC planning area, a greater emphasis should be created to promote more sustainable and efficient transportation and land use patterns.

The Congestion Management Process report is an ongoing project that should be completed in advance of a Long Range Transportation Plan. During the years when a complete report is not warranted, the SMTC may produce a performance monitoring document to present the status of various performance measure management, strategy implementation, or analysis into select primary commuter corridor segments and intersections.

The findings of this analysis are similar to all previous congestion management documents that identified only a very limited number of segments and intersections that are considered congested according to performance measure analysis. These localized, peak period segments are identified primarily during the morning and evening commute times along interstate segments in the City of Syracuse, and a few roadways to the east and north of the City where the majority of households exist.

1 Introduction and CMP Framework

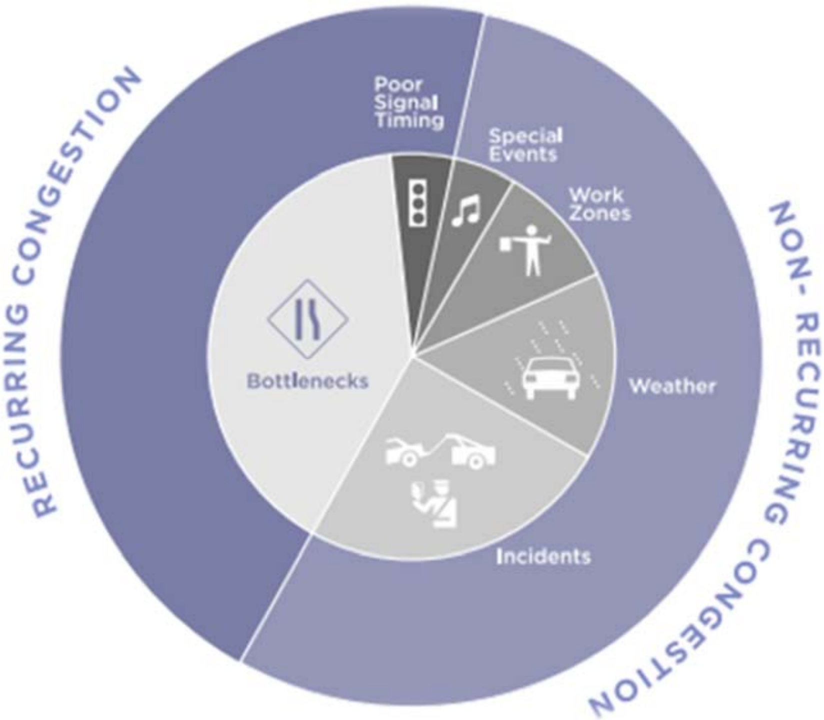
1.1 Overview

A Congestion Management Process (CMP) is required by federal legislation in metropolitan areas with populations greater than 200,000, also known as Transportation Management Areas (TMAs). As the Metropolitan Planning Organization (MPO) for a Metropolitan Planning Area (MPA) with a population over 200,000, the Syracuse Metropolitan Transportation Council (SMTC) is required therefore to maintain a CMP. According to the Federal Highway Administration (FHWA), a CMP is a "systematic and regionally-accepted approach for managing congestion that provides accurate, up-to-date information on transportation system performance and assesses alternative strategies for congestion management that meet state and local needs."[1] Through the CMP, the SMTC offers assistance to its member agencies by identifying strategies to help address congestion at identified locations. These strategies could be included in various municipal capital programs, the SMTC's Long Range Transportation Plan (LRTP), Transportation Improvement Program (TIP), or further analyzed in the Unified Planning Work Program (UPWP) as necessitated through the metropolitan transportation planning process.

The CMP incorporates two forms of congestion; recurring and non-recurring. Recurring congestion usually occurs daily along road segments or at intersections during the traditional work week morning (i.e., 7:00-9:00 a.m.) and evening (i.e., 4:00-6:00 p.m.) peak hours. Non-recurring congestion occurs primarily due to incident based occurrences such as vehicle crashes, special events, or weather related. In terms of factors that may cause congestion, the FHWA identifies six primary causes; 1) bottlenecks; 2) traffic incidents; 3) work zones; 4) bad weather; 5) poor traffic signal timing; and 6) special events. According to the FHWA, bottlenecks and traffic incidents account for over two-thirds of the causes, 40% and 25% respectively. See Figure 1.

[1] FHWA, Congestion Management Process: A Guidebook, April 2011

Figure 1: Causes of Congestion



SOURCE: FHWA

Similarly, congestion can be thought of by four distinct criteria[2]:

- **Intensity** - The relative severity of congestion that affects travel. Intensity has traditionally been measured through indicators such as Volume to Capacity (V/C) ratios or Level of Service (LOS) measures that consistently relate the different levels of congestion experienced on roadways.

- **Duration** - The amount of time the congested conditions persist before returning to an uncongested state.

- **Extent** - The number of system users or components (e.g. vehicles, pedestrians, transit routes, lane miles) affected by congestion, for example the proportion of system network components (roads, bus lines, etc.) that exceed a defined performance measure target.

- **Variability** - The changes in congestion that occur on different days or at different times of day. When congestion is highly variable due to non-recurring conditions, such as a roadway with a high number of traffic accidents causing delays, this has an impact on the ***reliability*** of the system.

[2] Ibid.

In September, 2015, a completely new CMP document was created with assistance from those member agencies noted below, and formally adopted by the SMTC.

- The Central New York Regional Transportation Authority (Centro);
- City of Syracuse (Department of Public Works and Engineering Department);
- New York State Department of Transportation (NYSDOT);
- Onondaga County Department of Transportation (OCDOT); and
- Syracuse-Onondaga County Planning Agency (SOCPA).

The CMP approach in 2015 was enhanced as required by FHWA to align with, at the time, 23 CFR Part 450.320 (now codified as 23 CFR Part 450.322 under the Statewide and Nonmetropolitan Transportation Planning; Metropolitan Transportation Planning Final Rule). The report established for the first time a performance-based planning and programming methodology through the identification of several multi-modal performance measures. This 2019 CMP update report maintains the structure and essentially all strategies and recommendations from the 2015 version. Although not mandated, developing a "new" CMP document every four years, in advance of a LRTP, provides limited time to implement and track progress of recommendations, particularly if a recommendation is implemented via a capital project. Capital projects generally require several years from project inception to construction. As such, updated analyses are provided in the proceeding sections.

The biggest "update" since the 2015 report is the utilization of 2018 data from the National Performance Management Research Data Set (NPMRDS). The NPMRDS is a FHWA procured and sponsored archived speed and travel time data set, and its associated location referencing data, covering the National Highway System.[3] In order to establish the Highway Performance Monitoring System (HPMS), the FHWA contracted with INRIX, a leading firm in the collection of vehicle-probe based data in 2017 to provide real time travel data to States and MPOs. The data is collected in 5-min epochs by GPS probes from commercial vehicles, connected cars, and mobile applications. [4] To make use of the extensive amount of available data on the National Highway System, and an expanded network that the NYSDOT has obtained from INRIX, the NYSDOT contracted with SUNY Albany's Avail Labs to assist in establishing performance measures per requirements set forth by the Federal government. Avail Labs created an online tool that allows users to measure and analyze regional and segment level congestion in a much more concise manner than in previous congestion reports.

1.2 BACKGROUND

The Syracuse Metropolitan Transportation Council's approach to congestion management reporting evolved over the past decade and a half. In 2005, the SAFETEA-LU legislation replaced the requirement for a congestion management system, otherwise referred to as a CMS, with a requirement for a congestion management process that placed emphasis on effective management and operation. In July 2012, President Obama signed into law the Moving Ahead for Progress in the 21st Century (MAP-21) surface transportation authorization and then in December 2015, signed the Fixing America's Surface Transportation (FAST) authorization. MAP-21 was the first national transportation bill that called for an outcome-based, performance driven process to metropolitan

[3] National Performance Management Research Data Set (NPMRDS) Descriptive Metadata Document 1.1, Page 4
[4] http://inrix.com/press-releases/npmrds/

and statewide planning and the FAST Act continues those same requirements, of which include consideration of congestion as a national goal and performance management measure. The federal regulations (23 CFR Part 450.322(d)) specify that a CMP should include the following:

- *Methods to monitor and evaluate the performance of the multimodal transportation system, identify the underlying causes of recurring and non-recurring congestion, identify and evaluate alternative strategies, provide information supporting the implementation of actions, and evaluate the effectiveness of implemented actions.*

- *Definition of congestion management objectives and appropriate performance measures to assess the extent of congestion and support the evaluation of the effectiveness of congestion reduction and mobility enhancement strategies for the movement of people and goods. Since levels of acceptable performance may vary among local communities, performance measures should be tailored to the specific needs of the area and established cooperatively by the State(s), affected MPO(s), and local officials in consultation with the operators of major modes of transportation in the coverage area, including providers of public transportation.*

- *Establishment of a coordinated program for data collection and system performance monitoring to define the extent and duration of congestion, to contribute in determining the causes of congestion, and evaluate the efficiency and effectiveness of implemented actions. To the extent possible, this data collection program should be coordinated with existing data sources (including archived operational/ITS data) and coordinated with operations managers in the metropolitan area.*

- *Identification and evaluation of the anticipated performance and expected benefits of appropriate congestion management strategies that will contribute to the more effective use and improved safety of existing and future transportation systems based on the established performance measures.*

- *Identification of an implementation schedule, implementation responsibilities, and possible funding sources for each strategy (or combination of strategies) proposed for implementation.*

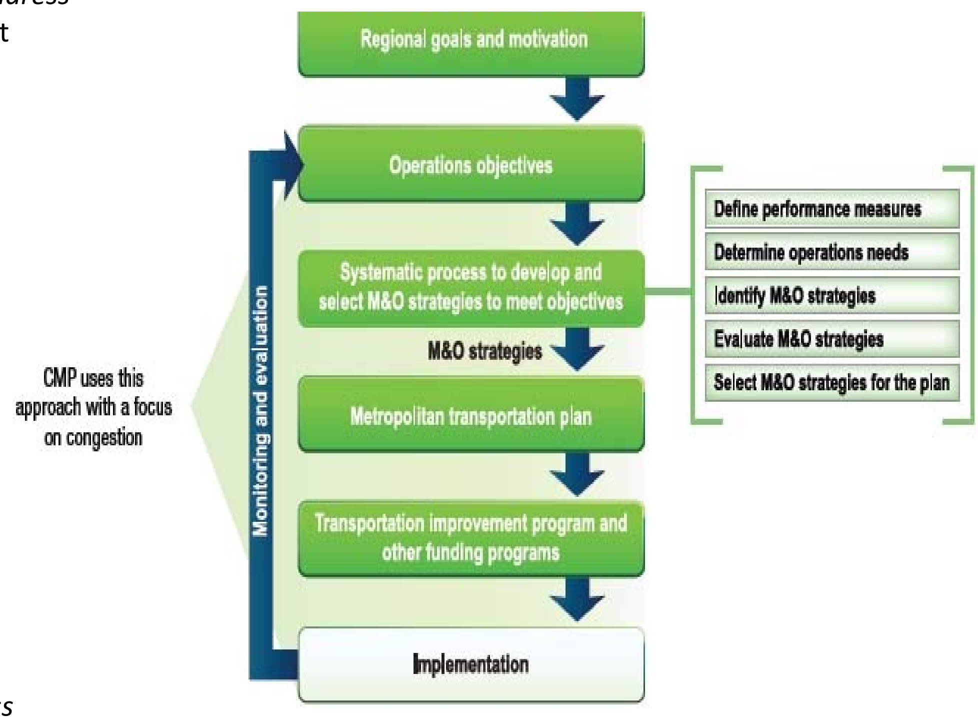
- *Implementation of a process for periodic assessment of the effectiveness of implemented strategies, in terms of the area's established performance measures.*

As an update to the 2015 CMP, this 2019 version identifies areas of likely congestion (recurring and non-recurring), and maintains the overall premise and structure of the adopted 2015 report that coordinates a process for monitoring, evaluating, and assessing the effectiveness of implemented multimodal strategies and projects.

The Congestion Management Process is integrated into the transportation planning process and is an example of an outcome-based, performance-driven approach to planning, including operations. The Statewide and Nonmetropolitan Transportation Planning; Metropolitan Transportation Planning Final Rule makes the connection between management and operations (M&O) strategies and the CMP, stating:

(a) The transportation planning process in a TMA shall address congestion management *through a process that provides for safe and effective* integrated management and operation *of the multimodal transportation system, based on a cooperatively developed and implemented metropolitan-wide strategy, of new and existing transportation facilities eligible for funding under title 23 U.S.C. and title 49 U.S.C. Chapter 53 through the use of travel demand reduction, job access projects, and operational management strategies.*

Figure 2: Transportation Planning Process



Source: FHWA

(b) The development of a congestion management process *should result in multimodal system performance measures and strategies that can be reflected in the metropolitan transportation plan and the TIP.*

(c) The level of system performance deemed acceptable by State and local transportation officials may vary by type of transportation facility, geographic location (metropolitan area or subarea), and/or time of day. In addition, consideration should be given to strategies that manage demand, reduce single occupant vehicle (SOV) travel, and improve transportation system management and operations and improve efficient service integration within and across modes, including highway, transit, and passenger and freight rail operations, and non-motorized transport*. Where the addition of general purpose lanes is determined to be an appropriate congestion management strategy, explicit consideration is to be given to the incorporation of appropriate features into the SOV project to facilitate future* demand management strategies and operational improvements *that will maintain the functional integrity and safety of those lanes.*

(d) The congestion management process shall be developed, established, and implemented as part of the metropolitan transportation planning process that includes coordination with transportation system management and operations activities.[5]

[5] 23 CFR 450.322 Congestion management process in transportation management areas.

1.3 OBJECTIVES

The Congestion Management Process is inclusive of, and an essential component of the overall transportation planning process depicted in Section 1.2 and one that is interwoven to the LRTP and TIP. As described in FHWA's Guidebook to the Congestion Management Process, "the development of regional objectives for the CMP responds to the goals and vision for the region established early in the transportation planning process."[6] The SMTC's 2050 LRTP contains several goals and objectives that either directly or indirectly, relate to congestion management in the metropolitan area.

Table 1: 2050 LRTP Goals and Objectives applicable to CMP

Goal: Increase the safety, security, and resiliency of the transportation system.
Objective - Reduce serious injuries and fatalities from vehicle crashes.
Goal: Provide a high degree of multi-modal accessibility and mobility for individuals. This should include better integration and connectivity between modes of travel.
Objective - Reduce congestion in primary commuter corridors.
Objective - Provide essential transit service to urban and suburban areas.
Objective - Provide more on-road bicycle facilities throughout the community.
Objective - Provide more trails to connect destinations.
Objective - Provide more pedestrian facilities
Goal: Protect and enhance the natural environment and support energy conservation and management.
Objective - Reduce VMT in the region.
Objective - Increase the percentage of commute trips made by bicycling or walking.
Objective - Increase the percentage of commute trips made by transit.
Goal: Improve the reliability of the transportation system and promote efficient system management and operations.
Objective - Maintain a high degree of reliability on primary commuter corridors.
Objective - Improve transit on-time performance.
Objective - Improve utilization of transit vehicles.
Objective - Increase the use of park-and-ride lots.
Objective - Implement TDM strategies

The relationship of the CMP to the overall planning process, particularly the LRTP, is one that aids in establishing objectives and potential strategies to promote efficient system management and operations for implementation in a given metropolitan area that are multimodal in context. New CMP

[6] FHWA, Congestion Management Process: A Guidebook, April 2011, Page 6 (PDF Page 14)

objectives were established by the CMP Working Group in 2015. The objectives have been modified to better correspond with the performance measures utilized in this updated report. See Table 2 below. The sections that follow discuss the various performance measures in detail.

Table 2: CMP Objectives

1	•Maintain or exceed 90% reliability on the CMP network over the lifespan of the LRTP.
2	•Limit congestion levels to 10% on CMP network segments.
3	•Increase the percentage of transit ridership by 5% in the next 10 years.
4	•Maintain or exceed 90% average on-time performance of transit buses over the next 10 years.
5	•Increase the percentage of commuting trips made by bicycling or walking by 5% in the next 10 years.

1.4 CMP Study Area (Area of Application and Network of Interest)

1.4.a Area of Application

The entire Syracuse MPA and the urban area were used as the geographic extents for the CMP. The metropolitan area consists of Onondaga County and small portions of Oswego and Madison counties. The entire road network within the planning area contains over 4,000 centerline miles of road, the majority of which are under the ownership of towns and villages. The CMP study area and a representative road network are shown in Map 1.

1.4.b Transportation Network

The specific network of interest focuses exclusively on roadways the SMTC categorize as a "primary commuter corridor" inside the adjusted urban area. These facilities were identified using a combination of qualitative and quantitative criteria; 1) on the National Highway System (NHS); 2) any arterials (principal or minor) with over 10,000 AADT; and 3) connecting roadways (arterials) between the facilities that met the above two criteria and choosing the ones with the highest volume. The decision to narrow the network of interest was made given the limited extent of congestion identified in all previous congestion management reports completed by the SMTC. Furthermore, the NHS, with emphasis placed on the interstate system is prioritized for national importance in the current surface transportation authorization (i.e., FAST Act). The principal arterial roadways, along with minor arterial roadways to a somewhat lesser extent, are examined first for funding consideration through the established capital improvement project evaluation and selection process and, these roadways carry the majority of traffic in the urban area. The principal and minor arterials collectively carry approximately 78% of all daily vehicle miles traveled in the urban area.[7] Two sub-networks in the SMTC area, transit and freight identified in Map 2 and Map 3 are discussed in this report if a respective sub-network traverses a "primary commuter corridor" to provide a more inclusive multi-modal transportation system analysis.

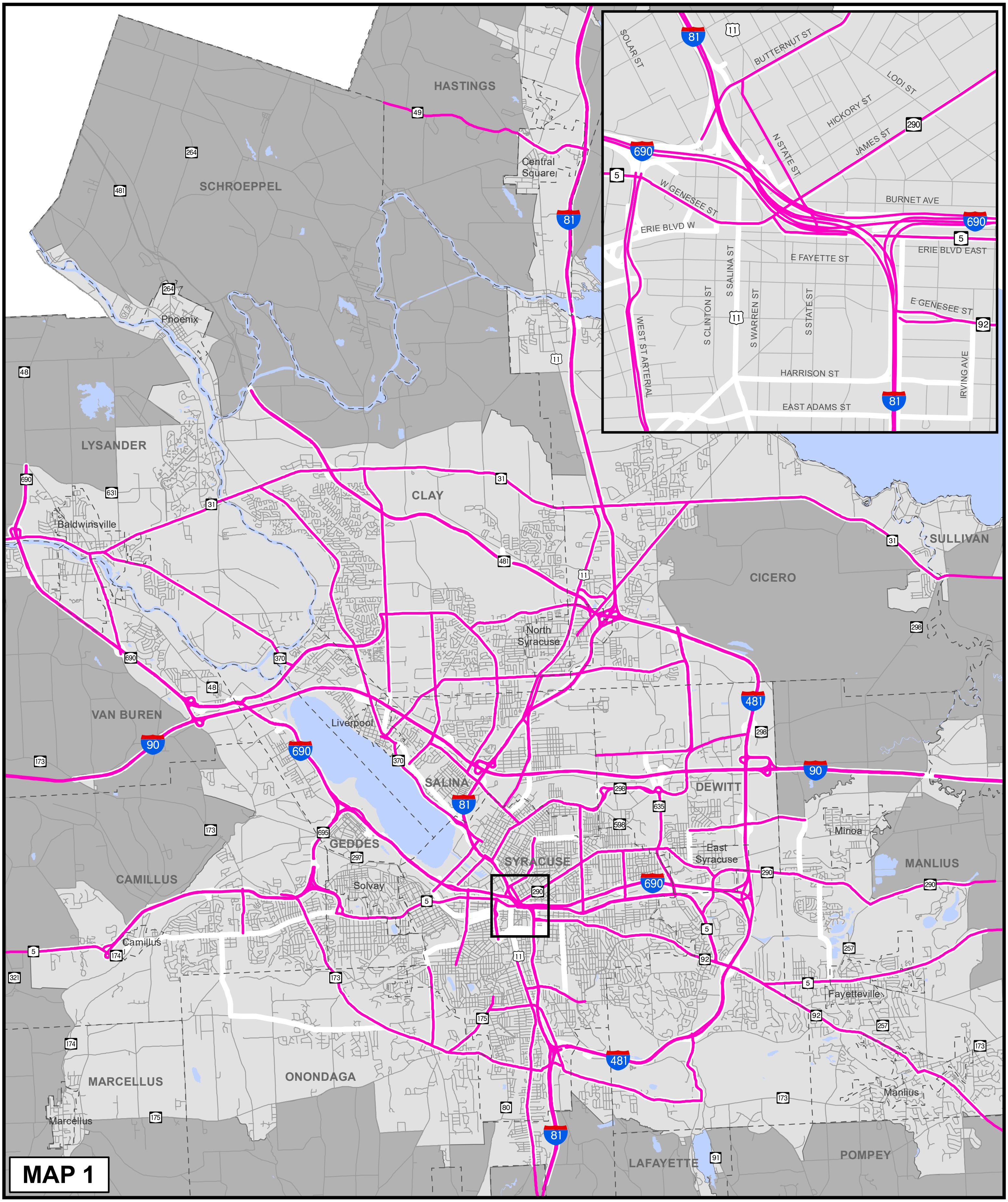
Collectively, the "primary commuter corridors" identified in the urban area for this CMP cover 374 centerline miles, representing 16% of all centerline miles in the urban area and, 9% of all centerline miles in the metropolitan area. As for the percent ownership of the defined CMP network, NYSDOT owns the most with 61%, followed by OCDOT with 19%, City of Syracuse with 11%, and NYSTA with 9%.

Regarding transit, public transit in the SMTC MPA is provided by Centro. The entire Centro service area consists of four counties (i.e., Cayuga, Oneida, Onondaga, and Oswego) and provides numerous transit routes and paratransit service throughout the area. Transit routes that overlap a "primary commuter corridor" are shown in Map 2. Lastly, the metropolitan area, particularly in the urban core (i.e., the City of Syracuse) contains a number of bicycle and pedestrian specific facilities (i.e., bicycle lanes, cycle tracks, or sharrows). Presently, there are over 17 miles of dedicated bicycle lanes or cycle tracks/bikeways in the City of Syracuse along with approximately 588 miles of sidewalks. Outside of the City of Syracuse, bicycle lanes known to the SMTC are found on Fly Road in the Town of DeWitt and on Milton Avenue in the Village of Solvay. However, numerous roadways contain wide shoulders

[7] Based on HPMS urban area VMT data

that are able to accommodate bicycle, and in many instances, pedestrian travel. Relative to sidewalks outside of the City of Syracuse, 255 miles of sidewalk are in place, which are generally located in village centers and several other population-dense areas.

SOURCE: CENTRO



Study Area & CMP Network

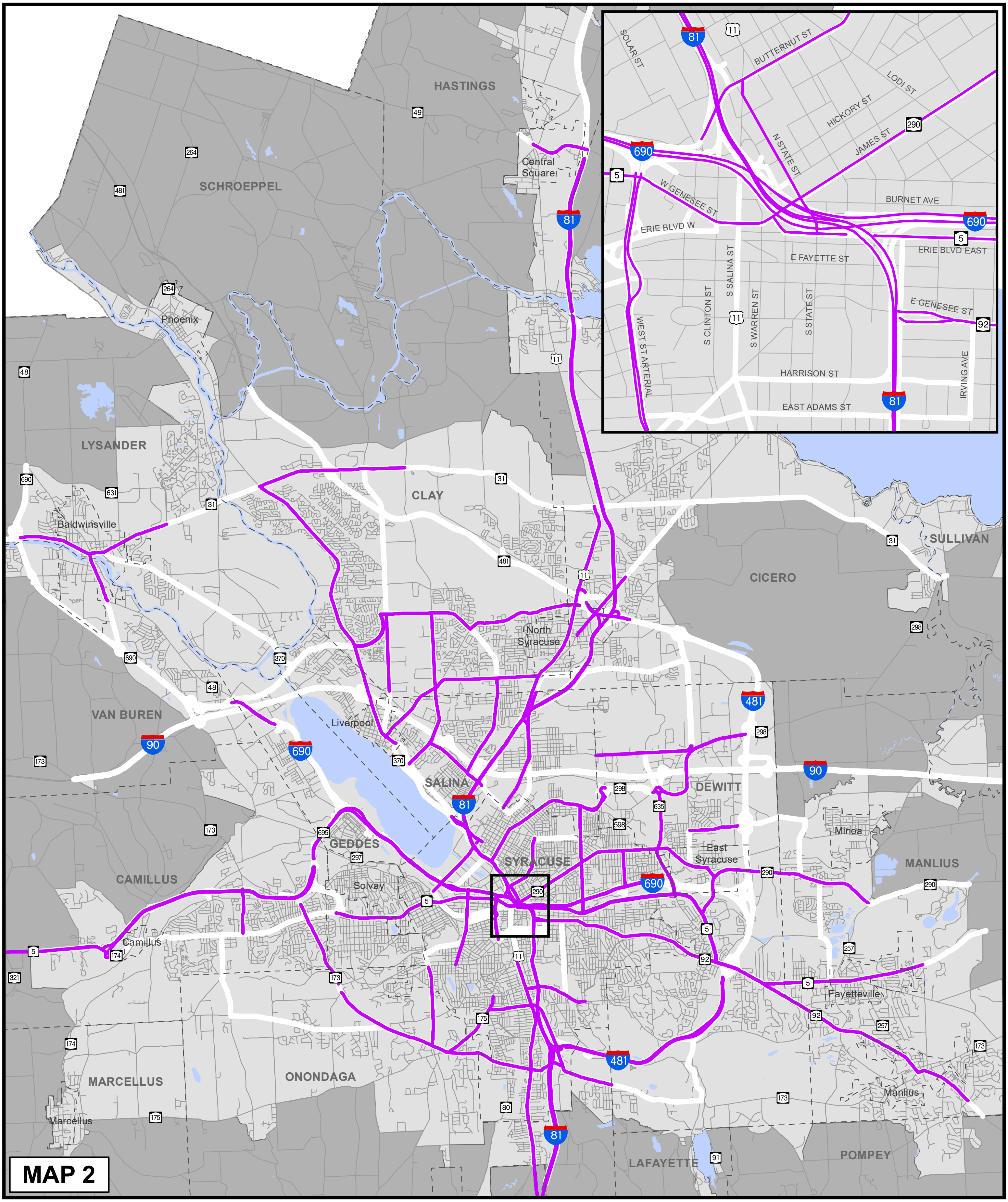
Syracuse Adjusted Urban Area

0 0.5 1 2 3 4 Miles

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).
Date: 10/30/19

CMP Network - NPMRDS data available
CMP Network - NPMRDS data not available
Adjusted Urban Area (Study Area)

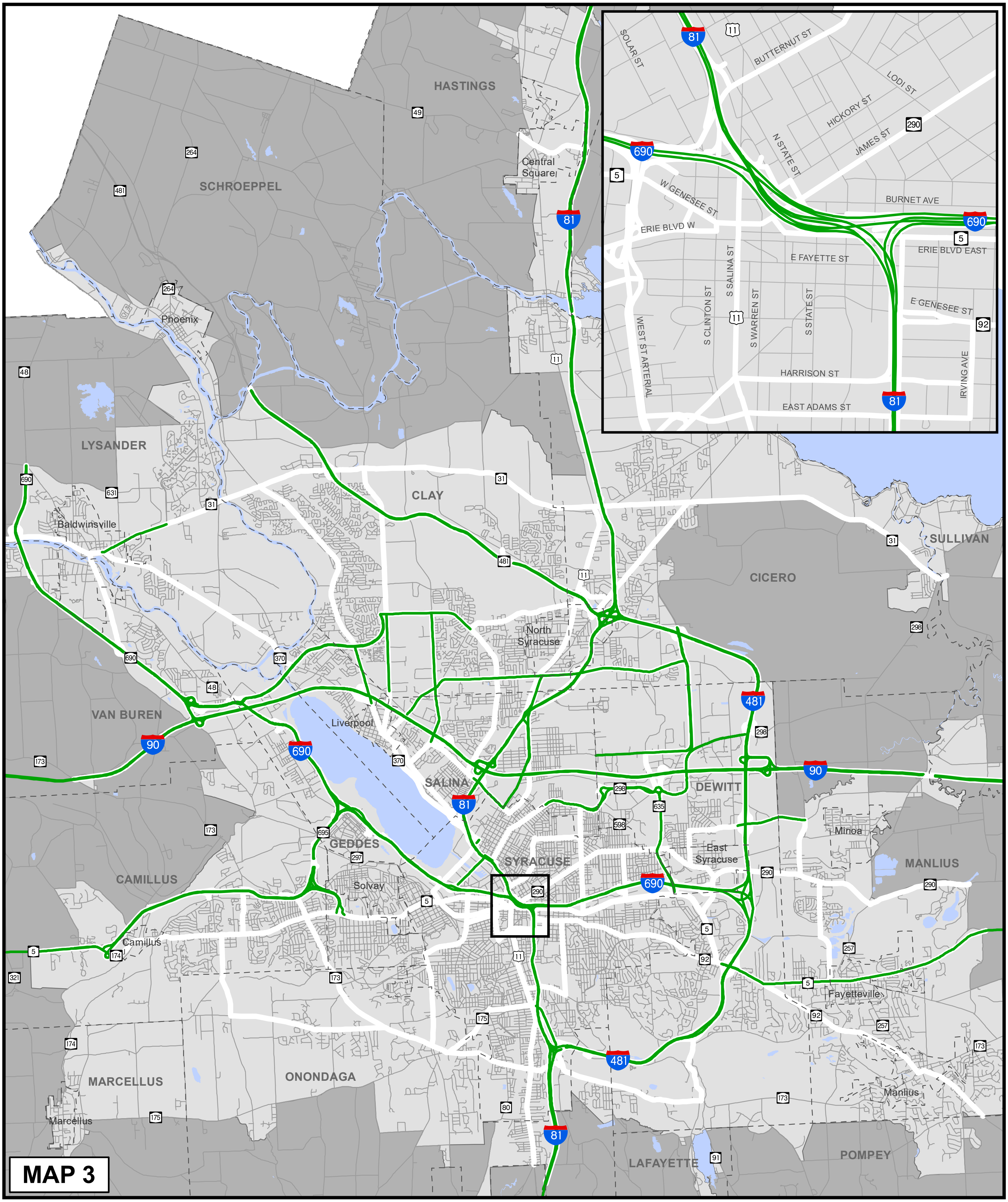
SMTC



CMP Transit Network

Syracuse Adjusted Urban Area

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).
Date: 10/30/19



CMP Freight Network

Syracuse Adjusted Urban Area

SMTC

0 0.5 1 2 3 4 Miles

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).
Date: 10/30/19

CMP Freight Network - NPMRDS available

CMP Network - NPMRDS data not available or not a freight segment

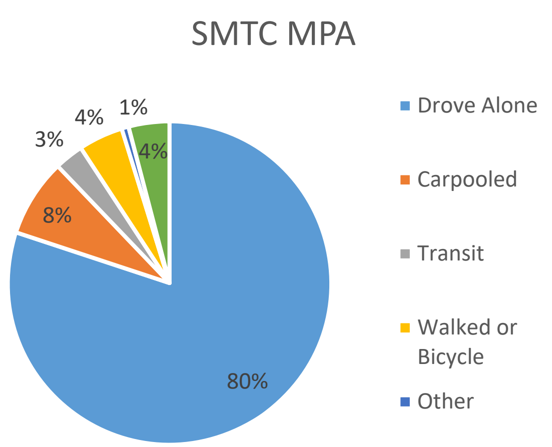
Adjusted Urban Area (Study Area)

1.5 COMMUTING

Consistent with the previous CMP report data, most commuters in the SMTC MPA continue to utilize single-occupancy vehicles for commuting. Based on information from the 2013-2017 American Community Survey (ACS), 80% of workers in the MPA drive alone to work. This percentage captures the large volume of drivers that contribute to the peak period-based congestion found. Fewer, but still a majority (64%) of people drive alone to work in the City of Syracuse.

In the SMTC MPA as a whole, 8% of workers carpooled, 3% took public transportation, 4% walked or took a bicycle to work, 4% worked at home, and 1% used some other mode of transportation (such as a motorcycle or a taxicab). Figures specific to the City of Syracuse illustrate a greater degree of transportation mode split, with 10% carpooling, 10% using transit, and 12% walking or bicycling. Chart 1 and Chart 2 display this data.

Chart 1: Transportation Mode Split in SMTC MPA



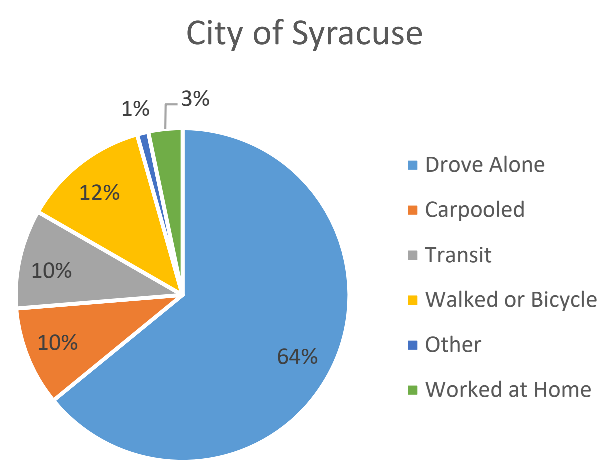
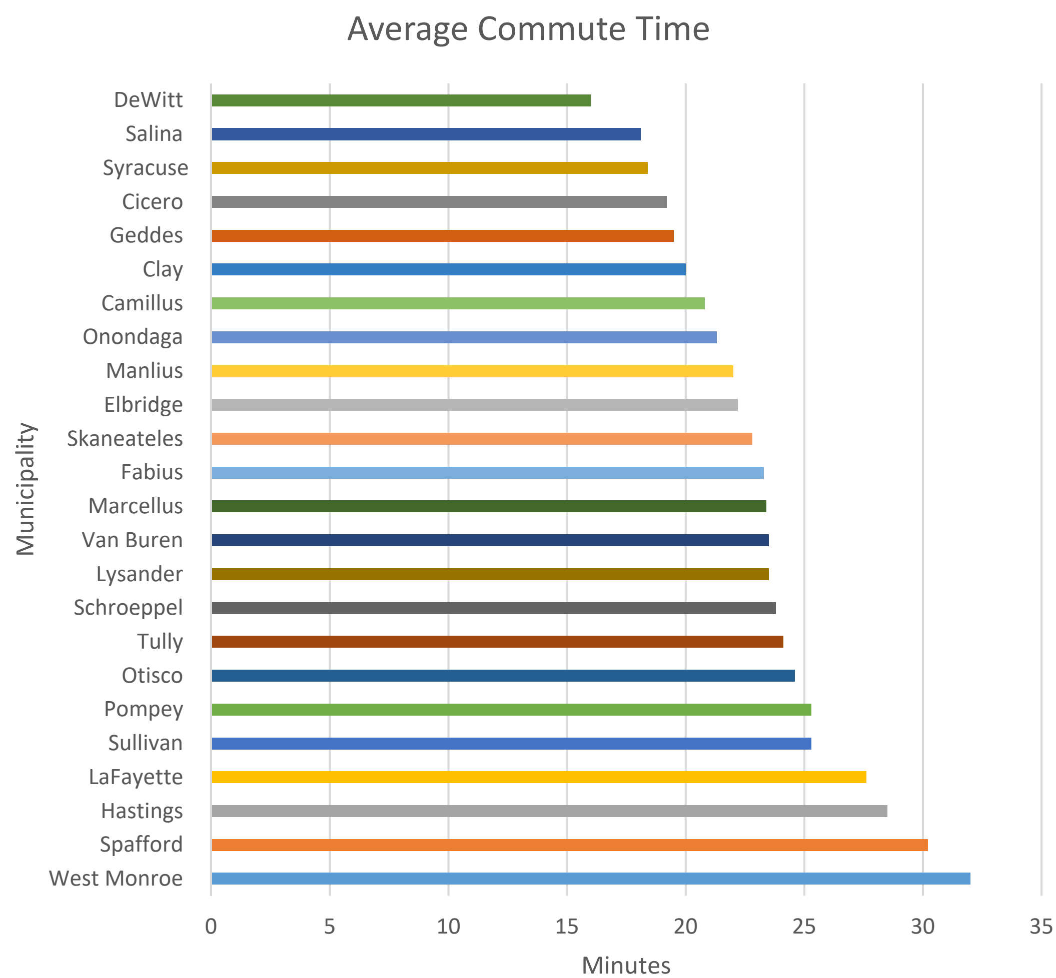


Chart 2: Transportation Mode Split in City of Syracuse

Commuting times in Onondaga County are lower than both New York and national averages. The average commute in Onondaga County is 20.1 minutes, below the State average of 33 and the national average of 26.4. Average commuting times are lowest in the City of Syracuse and its immediate, inner-ring suburbs such as DeWitt, Salina, and Geddes. Chart 3 illustrates average commute time by town of residence in the MPA, by workers 16 and older who did not work at home.

Chart 3: Average Commute Time in Minutes by Municipality



In addition to traditional ACS data, the Census Transportation Planning Products (CTPP) program produces special tabulations of data on workers by residence and workplace, as well as travel flows between home and work. The most recent CTPP data tabulation was released in conjunction with the 2012-2016 ACS data. The most substantial flow within the MPA is within the City of Syracuse itself, with approximately 35,000 commuters who both live and work in the City. The second largest concentration of commuters is from the northern towns of Clay, Cicero, and Salina, where approximately 19,600 people work in Syracuse. Another 10,000 come to Syracuse from the eastern towns of DeWitt and Manlius, and 12,000 from the western towns of Geddes, Camillus, and Onondaga. The City of Syracuse continues to dominate as the single most significant commuting destination. The Town of DeWitt is the second largest commuter destination, with notable flows from Syracuse and Clay, as well as from within DeWitt.

2 Congestion Performance Measures

2.1 Performance Measures

The Congestion Management Process will utilize the following bulleted performance measures to analyze multi-modal congestion within the overall CMP network, freight and transit sub-networks, as applicable.

CMP Network - Primary Commuter Corridors

- Travel Time Index (TTI)
- Total Hours of Excessive Delay per mile (TED)
- Level of Travel Time Reliability (LOTTR)

CMP Transit Network – Centro Transit Routes within the CMP Network

- Travel Time Index (TTI)
- Total Hours of Excessive Delay per mile (TED)
- Level of Travel Time Reliability (LOTTR)

CMP Freight Network – SMTC Freight Corridors within the CMP Network

- Travel Time Index (TTI)
- Total Hours of Excessive Delay per mile (TED)
- Level of Travel Time Reliability (LOTTR)
- Truck Travel Time Reliability (TTTR).

Additionally, analysis was undertaken amongst the following areas of interest to gain supplementary insight into the potential level of congestion within the overall CMP network.

All Vehicles

- Level of Service
- Crashes

Transit

- Transit Ridership
- Transit On-Time Performance

Bicycle/Pedestrian

- Facility Identification.

In this update, the performance measures relating to vehicles were selected based on readily available speed and travel time data from the NPMRDS and best practices utilizing the new AVAIL tool and its analytical capabilities. Tables and maps associated with these performance measures provided in the following pages quantify the performance of the transportation system within the relevant transportation networks.

Beyond analyzing the previous performance measures, Level of Service (LOS) analysis of the primary-to-primary corridor intersections identified in the 2015 report, as well as the identification of crashes at the congested sites identified in this update, provide additional supportive analysis into the identification of recurring and non-recurring congestion amongst the network corridors. The 2015 CMP identified at that time over 100 intersections for analysis and monitoring. Between 2016 and 2019, turning movement counts were gathered and associated LOS analyses were created using Synchro traffic analysis software. LOS analysis from the 2016-2019 intersection analyses are presented in Chapter 4 and Appendix 5. The Synchro analyses showed overwhelmingly that the majority of analyzed intersections are operating at highly acceptable levels with only a handful of intersections calculated with an overall failing LOS. As such, although the inclusion of LOS as an objective and performance measure in 2015 was useful to gauge the extent of delay at intersections over the past four years, the measure is removed from this 2019 update as a main performance measure. Additionally, crashes were assigned as an objective and performance measure in 2015 as a proxy to identify and discuss non-recurring congestion given available data at that time. Like LOS, crashes are no longer included as an objective and performance measure.

Analysis through other performance measures may point to roadway segments and/or intersection approaches that are unreliable or congested. At that time, should congested or unreliable sites be identified, staff will take under consideration if any land use, socioeconomic, or traffic volume changes necessitate a further review that could be aided by LOS analysis and/or review of crash data. This approach provides an opportunity for the MPO and facility owners to cross check and take a deeper look at the results. For example, if a segment is determined by the Level of Travel Time Reliability performance measure to be unreliable, can it be contributed to crashes reported or is it because of inadequate signal timing? Doing the additional supporting analysis may provide that answer and help in future strategizing to relieve congestion.

2.2 DEFINITIONS

Further explanation of the various performance measures are as follows:

2.2.A TRAVEL TIME INDEX (TTI)

Travel Time Index represents the average additional time required during peak times as compared to times of light traffic.[8] Stated otherwise, it's the ratio of travel time during the peak period to the time necessary to make the same trip at free-flow speeds. A TTI value of 1.3 indicates that a 20-minute trip in free-flow conditions requires 26 minutes during the peak period. The TTI is a useful measurement because it provides an easily calculated and understandable congestion measure that identifies recurring peak period bottlenecks.

Travel Time Index (TTI) = Peak Period Travel Time / Free Flow Travel Time

- Peak periods are defined as weekdays either 6am-9am or 4pm-7pm.
- Free flow travel time is defined as the 15th percentile of off-peak travel times (weekdays 9am-4pm and 7pm-10pm and weekends 6am-10pm).
- The highest TTI in any period will be used as the max TTI for each segment.

[8] https://ops.fhwa.dot.gov/publications/tt_reliability/TTR_Report.htm

2.2.B TOTAL EXCESSIVE DELAY (TED) PER MILE

The TED measure represents the total hours of delay resulting from traffic congestion on the network during the entire year. FHWA defines excessive delay as the extra amount of time spent in congested conditions defined by speed thresholds that are lower than a normal delay threshold. For this measure, the threshold is 20 miles per hour (mph), or 60% of the posted speed limit, whichever is greater, during all hours for the entire year. Excessive delay is totaled and is then weighted by vehicle volumes and occupancy to be expressed as the annual hours of excessive delay on a per capita basis, thus measuring person-hours of delay rather than vehicle-hours. The total is divided by the TMC segment length (in miles) to get TED/Mile for comparison across the network. This measure identifies regularly congested (a.k.a. recurring congestion) higher-volume road segments.

Total Hours of Excessive Delay per Mile (TED/mile) = (Time Spent Below Threshold Speed x (AADT x Average Vehicle Occupancy Rate)) / Length of TMC

- Threshold speed is defined as 20 mph or 60 percent of the free flow speed, whichever is greater, during all hours (weekdays and weekends).
- Average Vehicle Occupancy (1.5 for personal vehicles, 10.25 for buses, 1.11 for trucks)
- The total person hours of excessive delay was divided by the total segment length for comparison across the network.
- The result is total person hours of excessive delay per mile for each TMC.

2.2.C LEVEL OF TRAVEL TIME RELIABILITY (LOTTR)

Travel time reliability refers to the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day.[9] For example, if driving a certain route always takes about the same amount of time, that segment is reliable. It may be congested most of the time, not congested most of the time, or somewhere in between, but the conditions do not differ very much from time period to time period. On the other hand, if driving that route takes 20 minutes on some occasions but 45 minutes on other occasions, the route is not reliable. The LOTTR is defined as the ratio of the longer travel times (80th percentile) to a "normal" travel time (50th percentile), using the NPMRDS data. Data are collected during all time periods between 6:00 a.m. and 8:00 p.m. See Figure 3. This measure identifies road segments with highly variable (unreliable) and non-recurring congestion.

[9] https://ops.fhwa.dot.gov/publications/tt_reliability/TTR_Report.htm

Figure 3: LOTTR Calculation

$$\frac{\text{Longer Travel Time (80th)}}{\text{Normal Travel Time (50th)}} = \frac{\text{\# seconds}}{\text{\# seconds}} = \text{Level of Travel Time Reliability Ratio}$$

Level of Travel Time Reliability (LOTTR) *(Single Segment, Interstate Highway System)*		
Monday – Friday	6am – 10am	LOTTR = $\frac{44 \text{ sec}}{35 \text{ sec}}$ = 1.26
	10am – 4pm	LOTTR = 1.39
	4pm – 8pm	LOTTR = 1.54
Weekends	6am – 8pm	LOTTR = 1.31
Must exhibit LOTTR below 1.50 during **all** of the time periods		**Segment IS NOT reliable**

Source: FHWA

Level of Travel Time Reliability (LOTTR) = 80th Percentile Travel Time / 50th Percentile Travel Time

- LOTTR is calculated for various time periods including weekdays 6am-10am, 10am-4pm, and 4pm-8pm, and weekends 6am-8pm.
- The highest LOTTR in any period will be used as the max LOTTR for each segment.

2.2.D Truck Travel Time Reliability (TTTR)

The TTTR measure assesses travel time reliability for trucks traveling on a road segment. As stated in the LOTTR definition above, travel time reliability refers to the consistency or dependability in travel times. The TTTR ratio is generated by dividing the longer travel times (95th percentile) by the "normal time" (50th percentile) for each segment. Reporting is divided into five periods: the four periods used for the LOTTR measure are shown above plus overnights for all days (8:00 p.m.-6:00 a.m.). The time periods cover all hours of the day. This measure identifies road segments with highly variable (unreliable) and non-recurring congestion.

Truck Travel Time Reliability (TTTR) = 95th Percentile Travel Time / 50th Percentile Travel Time

- TTTR is calculated for various time periods including weekdays 6am-10am, 10am-4pm, 4pm-8pm, and 8pm-6am and weekends 6am-8pm.
- The highest TTTR in any period will be used as the max TTTR for each segment.

2.2.E Level of Service (LOS)

The Institute of Transportation Engineers (ITE) defines Level of Service as "the operational conditions within a traffic stream as perceived by users of the facility." Level of Service factors range from A - F. Level of Service A represents a free flow with individual vehicles unaffected by other vehicles, while a Level of Service E represents operating conditions at capacity, and a Level of Service F defines a breakdown in the flow of traffic. This analytical tool is applied to intersections, identified in the 2015 report, that include at least two primary commuter corridors in the urban area.

2.2.F CRASHES

Crash information, such as total number of crashes and collision type, along the segments identified in the top ten lists of the TTI, TED, LOTTR and TTTR measures are analyzed.

2.2.G TRANSIT RIDERSHIP

For this measure, ridership along all transit routes in the planning area serviced by Centro are examined. This may serve as a crucial measure when determining routes to possibly expand or reduce service on. Ridership is provided for the entire length of a route, which in many cases will extend beyond, and off of, the CMP primary commuter corridors.

2.2.H TRANSIT ON-TIME PERFORMANCE

The Federal Transit Administration (FTA) has indicated that the ultimate goal should be to perform all trips on time.[10] On-time performance is a measure of trips completed as scheduled. Centro maintains a Board adopted on-time performance standard of 90%.

2.2.I BICYCLE AND PEDESTRIAN FACILITIES

Bicycle and pedestrian facilities are currently available in the SMTC metropolitan area; particularly in the City of Syracuse and the immediate surrounding municipalities that comprise the "first ring" suburbs. This measure includes specific facility types such as sidewalks, bicycle lanes (or cycle tracks/bikeways), "sharrows" and, multi-use trails.

2.3 DEFINITION OF CONGESTION

Congestion in the metropolitan area is based on various thresholds of the following performance measures: TTI, TED, LOTTR and TTTR. Table 3 on the next page lists the established thresholds and the reasoning the threshold was chosen. Corridors or roadway segments rely on these thresholds and will be considered congested if they fall within one of them.

---

[10] https://dredf.org/ADAtg/OTP.shtml#transit : Letters by Cheryl Hershey, then ADA Team Leader, Office of Civil Rights, Federal Transit Administration, to Richard DeRock, then Access Services, Inc. Executive Director, Los Angeles, May 14 and 27, 1999.

Table 3: Congestion Thresholds

Performance Measure	Thresholds
TTI	Below 1.49 = not congested 1.49-1.99 = nearing congestion 2.0 and above = congested Reasoning: A threshold chosen by the SMTC. A TTI of 2.0 approximately represents the 90th percentile. A TTI of 2.0 is defined as a trip taking twice as long as free-flow conditions.
TED	40,000 or more person hours/mile Reasoning: A threshold chosen by the SMTC. 40,000 approximately represents the 90th percentile. Note: All TED values represent excessive delay.
LOTTR	Below 1.5 = reliable 1.5 and above = unreliable congestion Reasoning: 1.5 is the FHWA established threshold for this national performance measure. Any segment with a LOTTR of 1.5 or above in any time period is considered unreliable.
TTTR	Below 4.0 = reliable 4.0 and above = unreliable congestion Reasoning: A TTTR threshold of greater than 3.99 was utilized in the New York State's Freight Plan – August 2019 – for Upstate NY Area's.[11] SMTC chose to follow suit. Any segment with a TTTR of 4.0 or above in any time period is considered unreliable.

[11] https://www.dot.ny.gov/portal/page/portal/content/delivery/Main-Projects/projects/P11618881-Home/P11618881-repository/NYS%20Freight%20Plan%20September_2019.pdf

3 Data Collection and Management Plan

3.1 Data Collection

To analyze the performance measures discussed above, data availability and collection is essential. Table 4 lists the performance measure, data type, source of data (collector), and timeframe for data collection efforts (update cycle) for this report. Table 4 lists the same information for the supporting analysis. The Syracuse Metropolitan Transportation Council staff and member agencies will continue to work together in the assembly/collection of data, as applicable, to improve data collection efficiency and expenditure of resources. In the last CMP report, the data collection and management plan relied heavily on the gathering of traffic count data on a cyclical basis from SMTC and NYSDOT efforts. Since that time, the AVAIL's web tool has been released. This tool, as previously stated, utilizes vehicle probe-based datasets that contain a wealth of "observed" information useful to reporting on the performance measures noted and, all forms of congestion (i.e., recurring and non-recurring). As such, the NPMRDS will function as the sole data metric essential to those performance measures reliant on vehicle speed and travel time. Automatic Traffic Recorder counts will be gathered on an as-needed basis through either the SMTC's or NYSDOT's established traffic count program.

For those turning movement counts that were gathered over the past four years, an operational analysis of the p.m. peak period (4:00-6:00 p.m.) was completed utilizing Synchro software. In addition to counting motorized traffic, all turning movement counts completed for this effort included a count of bicyclist and pedestrian movements by intersection approach.

3.1.a Bicycle and Pedestrian Facilities

The Syracuse Metropolitan Transportation Council staff will periodically reach out to member agencies and other municipalities to update the in-house database of sidewalks, other pedestrian facilities, "sharrows", bicycle lanes/cycle tracks/bikeways, and off-road trails. This information is transposed for use in the agency's Geographic Information Systems (GIS) files.

3.1.b Transit Ridership & On Time Performance

On an annual basis, Centro provides various operating statistics to the FTA. These performance statistics, as well as additional data from the transit authority are used to monitor transit performance. Ridership and on time performance will be assembled for transit routes in the planning area, of which many overlap the "primary commuter corridors."

3.1.c Crashes

The New York State Department of Transportation's Accident Location Information System was used to gather accidents over a three to four-year time period.

3.2 MANAGEMENT PLAN

Table 4: Performance Measure(s) Management Plan

Performance Measure	Data Type	Collector	Analyst	Update Cycle
TTI	Corridor or segment travel time	INRIX	SMTC	Annually
TED	Corridor or segment travel time	INRIX	SMTC	Annually
LOTTR	Corridor or segment travel time	INRIX	SMTC	Annually
TTTR	Corridor or segment travel time	INRIX	SMTC	Annually

Table 5: Supplementary Analysis Management Plan

Data	Data Type	Collector	Analyst	Update Cycle
LOS (Level of Service)	Turning Movement Counts	SMTC	SMTC	As needed
Crashes	Crash records	Police Agencies, NYSDOT	SMTC	As needed
Transit On-Time Performance	Schedule time v. actual time	Centro	Centro	Annually
Ridership by Route	Ridership (may include boardings/alightings)	Centro, SMTC	Centro	Annually
Bicycle/Pedestrian Facilities	Facility type and location	Facility owners, SMTC	SMTC	Annually

3.3 CMP REPORTING

Once data is assembled and analyzed, tables and maps of corridors, segments, intersections or the entire SMTC metropolitan area multi-modal transportation system will be created to track changes, trends and performance of the system. This reporting may happen during those years when an update or new iteration of the CMP is not scheduled. The CMP report will provide information on the status and effectiveness of congestion mitigation strategies discussed in the following sections. Given the extensiveness of the primary commuter corridors and the effort to monitor the system, individual reports are unlikely to show significant differences from year to year. As more time elapses, performance reporting may be more likely to show change.

4 System Performance and Analysis

The sections that follow present analysis and findings for the various performance measures. As described earlier on, data analysis is reliant on the 2018 NPMRDS via the SUNY AVAIL web platform and Geographic Information Systems. "Segments" referred to in this chapter of the report are defined as those segments with available data and their "miles" are defined as directional centerline miles.

4.1 Identifying Congestion

4.1.a Travel Time Index

Travel Time Index is the ratio of travel time during the weekday peak period to the time necessary to make the same trip at free-flow speeds. As mentioned above, a corridor or road segment with a TTI between 1.49 and 1.99 is considered nearing congestion, while a TTI of 2.0 or greater is considered congested. The "top ten" TTI segments are listed in Table 6 through 8 along with their rank, road name, owner, direction, segment (from and to), length (in miles), max TTI period, max TTI value, a.m. TTI value and p.m. TTI value. Map 4 through 6 display this performance measure analysis for the CMP Network, the CMP freight network and the CMP transit network as established in Section 2.1.

Congestion determined under this performance measure identifies the existence of recurring congestion as defined earlier in Chapter 1. The longer the time taken to traverse a segment during the peak period, the more recurring elements such as bottlenecks or poor signal timing may likely be the cause of that congestion. If for example a normal 20-minute free flow commute regularly takes 40 minutes during the peak period, a TTI value of 2.0 (40 min. divided by 20 min.), then congestion during that time is most likely due to the highway system exceeding available capacity.

CMP Network

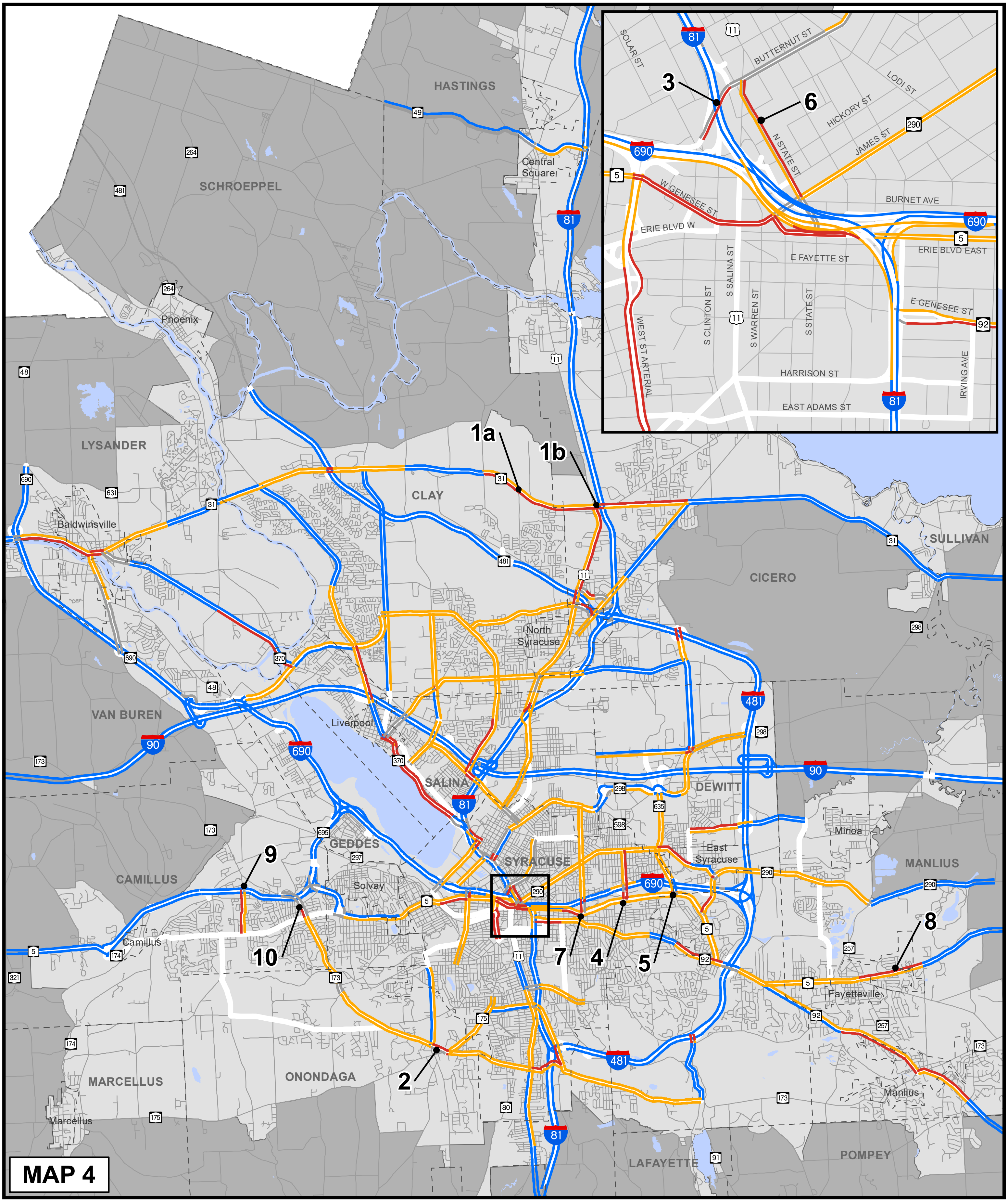
Overall, 40.6 miles, represented by 82 different segments (23 in the a.m. and 59 in the p.m. peak), have been identified as "congested." See Map 4 & Appendix 1. This represents 6.4% of the segments, leaving 93.6% of the CMP network segments uncongested. These uncongested segments are inclusive of the interstate system, in general, that perform very well under the TTI measure as do most of the primary commuter corridors in the City of Syracuse.

94%
passing

Four segments listed in Table 6 are identified as congested in both the a.m. and p.m. peaks under this measure. Locations include NY 31 near Interstate 81 in the Town of Cicero, segments of NY-5 on the Eastside of the network and Hinsdale Road to the West. Three of the ten segments do not have available data in the a.m. peak, but for those that do, only one segment shows the a.m. peak more congested than the p.m. peak.

Table 6: Top Ten "Congested" TTI Segments on the CMP Network

Rank	Road Name	Owner	Direction	From	To	Miles	TTI Max Period	TTI Max	TTI AM	TTI PM
1a	NY-31	NYSDOT	Eastbound	Caughdenoy Rd	I-81 SB ramps	2.707	PM	3.04	1.73	3.04
1b	NY-31	NYSDOT	Eastbound	I-81 SB ramps	Pardee Rd/I-81 NB off-ramp	0.065	PM	2.55	2.14	2.55
2	NY-173	NYSDOT	Westbound	South Ave	Onondaga Rd	0.038	PM	2.83	NA	2.83
3	Butternut St	SYR	Northbound	I-81 SB off-ramp	I-81 NB on-ramp	0.164	PM	2.83	NA	2.83
4	Erie Blvd East	NYSDOT	Eastbound	Left turn lane	South Midler Ave	0.087	PM	2.67	1.89	2.67
5	Thompson Rd	NYSDOT	Southbound	I-690 Service Rd off-ramp	Erie Blvd East	0.046	PM	2.67	1.96	2.67
6	N State St	SYR	Northbound	James St	Butternut St	0.417	PM	2.65	NA	2.65
7	Erie Blvd East	NYSDOT	Eastbound	Left turn lane	Columbus Ave/Teall Ave	0.041	PM	2.64	2.12	2.64
8	NY-5	NYSDOT	Westbound	Duguid Rd	NY-257	1.389	AM	2.57	2.57	2.43
9	Hinsdale Rd	OCDOT	Southbound	NY-5 WB off-ramp	NY-5 EB on-ramp	0.068	PM	2.57	2.17	2.57
10	NY-173	NYSDOT	Southbound	Milton Ave	W Genesee St	0.294	PM	2.53	1.63	2.53



Travel Time Index (TTI)

CMP Network (Primary Commuter Corridors)

CMP Network - NPMRDS data not available

TTI (Max of Peak Periods)

- Insufficient Data
- 1.00 - 1.49 (Below threshold)
- 1.50 - 1.99 (Below threshold)
- 2.00+ (Above threshold)

SMTC

0 0.5 1 2 3 4 Miles

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).
Date: 10/30/19

CMP Transit Network

This sub section applies the TTI performance measure to segments of the CMP Transit Network as established in Section 2.1. Overall, 27 miles, represented by 62 different segments (16 in the a.m. and 46 in the p.m. peak) have been identified as “congested.” See Map 5 and Appendix 1. This represents 8.1% of the segments, leaving 91.9% of the CMP transit network segments uncongested.

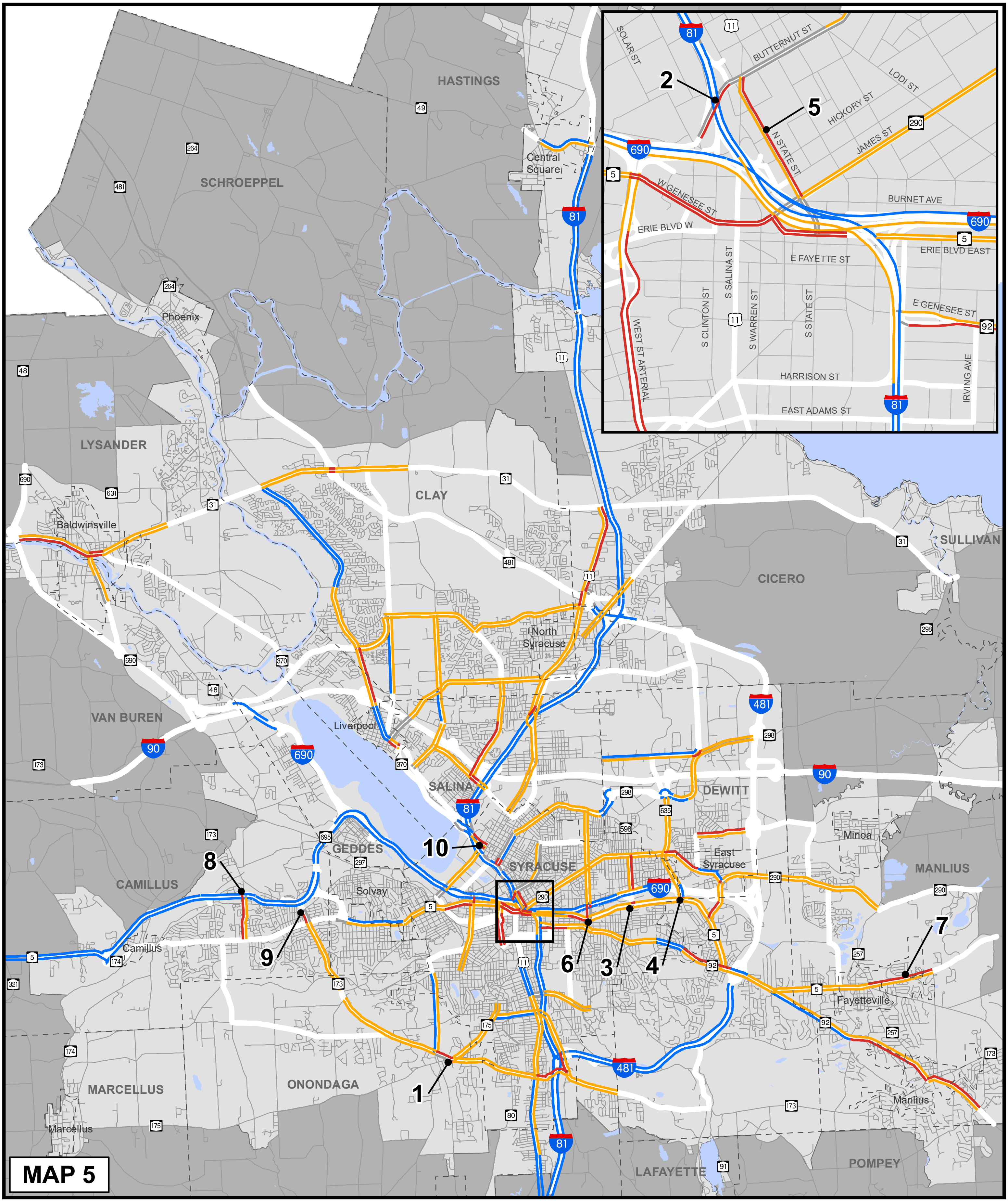
92%

passing

Three segments in Table 7 are identified as congested in both the a.m. and p.m. peaks. Locations include portions of NY-5 on the Eastside of the network and Hinsdale Road to the west. Three of the top ten segments do not have any available data in the a.m. peak, but for those that do, one of those seven segments show the a.m. peak is greater than the p.m. peak.

Table 7: Top Ten "Congested" TTI Segments on the CMP Transit Network

Rank	Road Name	Owner	Direction	From	To	Miles	TTI Max Period	TTI Max	TTI AM	TTI PM
1	NY-173	NYSDOT	Westbound	South Ave	Onondaga Rd	0.038	PM	2.83	NA	2.83
2	Butternut St	SYR	Northbound	I-81 SB off-ramp	I-81 NB on-ramp	0.164	PM	2.83	NA	2.83
3	Erie Blvd East	NYSDOT	Eastbound	Left turn lane	South Midler Ave	0.087	PM	2.67	1.89	2.67
4	Thompson Rd	NYSDOT	Southbound	I-690 Service Rd off-ramp	Erie Blvd East	0.046	PM	2.67	1.96	2.67
5	N State St	SYR	Northbound	James St	Butternut St	0.417	PM	2.65	NA	2.65
6	Erie Blvd East	NYSDOT	Eastbound	Left turn lane	Columbus Ave/ Teall Ave	0.041	PM	2.64	2.12	2.64
7	NY-5	NYSDOT	Westbound	Duguid Rd	NY-257	1.389	AM	2.57	2.57	2.43
8	Hinsdale Rd	OCDOT	Southbound	NY-5 WB off-ramp	NY-5 EB on-ramp	0.068	PM	2.57	2.17	2.57
9	NY-173	NYSDOT	Southbound	Milton Ave	W Genesee St	0.294	PM	2.53	1.63	2.53
10	Hiawatha Blvd	SYR	Northbound	I-81 overpass	Park St slip ramp	0.155	PM	2.52	1.82	2.52



Travel Time Index (TTI)

CMP Transit Network

CMP Network - NPMRDS data not available or not a transit segment

TTI (Max of Peak Periods)

- Insufficient Data
- 1.00 - 1.49 (Below threshold)
- 1.50 - 1.99 (Below threshold)
- 2.00+ (Above threshold)

SMTC

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).
Date: 10/30/19

CMP Freight Network

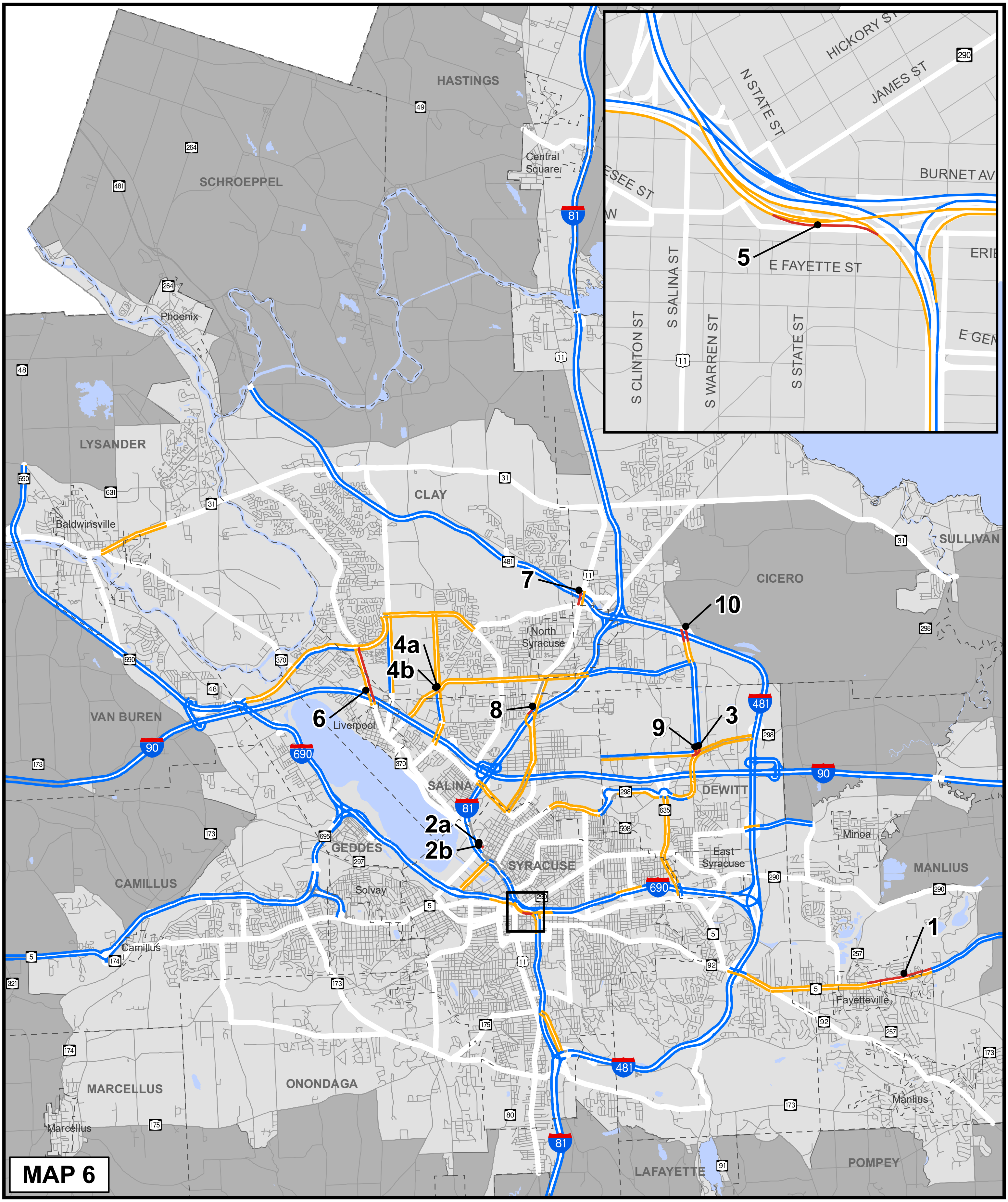
This sub section applies the TTI performance measure to segments of the CMP Freight Network as established in Section 2.1. Overall, 4.4 miles, represented by 13 different segments (5 in the a.m. and 8 in the p.m. peak) have been identified as “congested.” See Map 6 & Appendix 1. This represents 1.2% of the segments, leaving 98.8% of the CMP freight network segments uncongested.

99%
passing

Of the top 10 segments shown in Table 8, 2 are identified as congested in both the a.m. and p.m. peaks (i.e., NY-5 on the eastside of the network and Vine St in the Town of Salina). Only one interstate segment, the interchange ramp between I-690 eastbound and I-81 southbound was identified as congested (in the a.m. peak). Two segments do not have any available data in the p.m. peak, but for those that do; 70% of those remaining segments show the p.m. peak is more congested than the a.m. peak.

Table 8: Top Ten "Congested" TTI Segments on the CMP Freight Network

Rank	Road Name	Owner	Direction	From	To	Miles	TTI Max Period	TTI Max	TTI AM	TTI PM
1	NY-5	NYSDOT	Westbound	Duguid Rd	NY-257	1.389	AM	2.57	2.57	2.43
2a	Hiawatha Blvd	SYR	Northbound	I-81 overpass	Park St slip ramp	0.155	PM	2.52	1.82	2.52
2b	Hiawatha Blvd	SYR	Southbound	Park St slip ramp	I-81 overpass	0.152	PM	2.23	1.77	2.23
3	Northern Blvd	OCDOT	Southbound	Northern Blvd	Collamer Rd	0.035	PM	2.47	1.72	2.47
4a	Vine St	OCDOT	Eastbound	Right turn slip ramp	Henry Clay Blvd	0.072	AM	2.44	2.44	NA
4b	Vine St	OCDOT	Westbound	Henry Clay Blvd	EB right turn slip ramp	0.072	PM	2.19	2.03	2.19
5	I-690 ramp	NYSDOT	Eastbound	I-690 eastbound	I-81 SB	0.229	AM	2.38	2.38	1.35
6	Oswego Rd	OCDOT	Northbound	I-90 ramps	John Glenn Blvd	1.185	PM	2.27	1.69	2.27
7	US-11	NYSDOT	Southbound	East Circle Dr	Bear Rd	0.330	PM	2.22	1.82	2.22
8	South Bay Rd	NYSDOT	Southbound	South Bay Rd	US-11	0.036	AM	2.20	2.20	NA
9	East Molloy Rd	OCDOT	Eastbound	Kinne St	Northern Blvd	0.226	PM	2.16	1.69	2.16
10	Northern Blvd	OCDOT	Northbound	I-481 SB on-ramp	I-481 NB off-ramp	0.253	AM	2.15	2.15	1.97



Travel Time Index (TTI)

CMP Freight Network

CMP Network - NPMRDS data not available or not a freight segment

TTI (Max of Peak Periods)

- Insufficient Data
- 1.00 - 1.49 (Below threshold)
- 1.50 - 1.99 (Below threshold)
- 2.00+ (Above threshold)

0 0.5 1 2 3 4 Miles

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).
Date: 10/30/19

SMTC

4.1.b Total Excessive Delay

Total Excessive Delay is the amount of time traveling below 20 miles per hour or 60% of the posted speed limit travel time, whichever is greater, during all hours (weekdays and weekends). As previously stated, a corridor or road segment with 40,000 or more person hours/mile is the SMTC defined threshold for this measure. The "top ten" TED segments are listed in Table 9 through 11 along with their rank, road name, owner, direction, segment (from and to), length (in miles) and TED/mile. Map 7 through 9 display this performance measure analysis for the CMP network, the CMP freight network and CMP transit network. Please note that only the CMP network segments with available AADT data (as of the 2016 NYSDOT HPMS submittal) were analyzed for this measure.

While all TED values represent an amount of excessive delay on a segment, the SMTC is identifying anything that exceeds the 90th percentile of the resulting values as the worst-performing segments. As stated in Chapter 2, this measure identifies regularly congested higher-volume road segments.

CMP Network

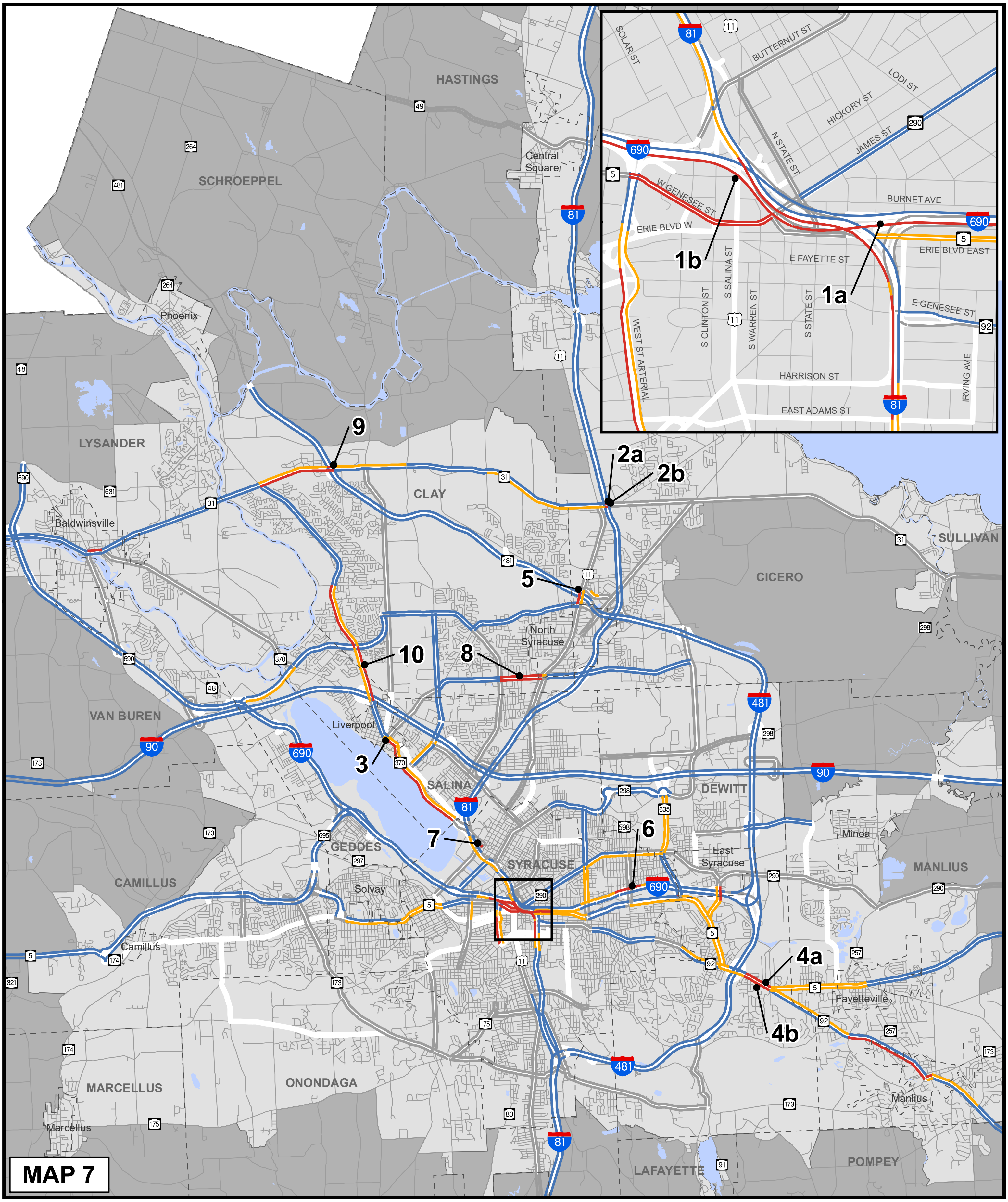
Overall, 18 miles, represented by 35 different segments, have been identified as exceeding the defined threshold. See Map 7 and Appendix 2. This represents 4.3% of the segments, leaving 95.7% of the CMP network segments below the defined threshold. The interstate system, particularly within downtown Syracuse, and a number of primary commuter corridors located within the northern and eastern portions of the network do not perform very well under the TED measure.

96%
passing

NY 31 near Interstate 81 in the Town of Cicero, along with I-690 in Downtown Syracuse, are the two most congested segments found under this measure. All but one segment identified under the top ten segments are under 1-mile long, as shown in Table 9. The only one not under a mile long is the Oswego Road segment, which measures 1.185 miles, signifying perhaps congestion over a much longer stretch of roadway.

Table 9: Top Ten TED Segments on the CMP Network

Rank	Road Name	Owner	Direction	From	To	Miles	TED/Mile
1a	I-690	NYSDOT	Eastbound	Off-ramp to I-81 southbound	On-ramp from I-81 northbound	0.646	118,655
1b	I-690	NYSDOT	Eastbound	On-ramp from West St	Off-ramp to I-81 southbound	0.346	67,930
2a	NY-31	NYSDOT	Eastbound	I-81 southbound ramps	Pardee Rd/I-81 northbound off-ramp	0.065	118,654
2b	NY-31	NYSDOT	Westbound	Pardee Rd/I-81 northbound off-ramp	I-81 southbound ramps	0.065	98,613
3	Oswego St	NYSDOT	Southbound	Vine St	Onondaga Lake Parkway	0.185	82,677
4a	NY-92 (E Genesee St)	NYSDOT	Westbound	Highbridge Rd	I-481 ramps	0.590	69,186
4b	NY-92 (E Genesee St)	NYSDOT	Eastbound	I-481 ramps	Highbridge Rd	0.590	62,013
5	US-11	NYSDOT	Southbound	East Circle Dr	Bear Rd	0.330	67,048
6	I-690	NYSDOT	Westbound	Thompson Rd ramps	Midler Ave ramps	0.551	66,948
7	West Hiawatha Blvd	SYR	Northbound	I-81 overpass	Park St slip ramp	0.155	64,093
8	West Taft Rd	OCDOT	Westbound	US-11 (Brewerton Rd)	Buckley Rd	0.888	63,451
9	NY-31	NYSDOT	Westbound	I-481 northbound ramps	I-481 southbound ramps	0.130	62,868
10	Oswego Rd (Old Rt 57)	OCDOT	Northbound	I-90 ramps	John Glenn Blvd	1.185	59,957



Total Hours of Excessive Delay (TED) per Mile

CMP Network (Primary Commuter Corridors)

CMP Network - NPMRDS data not available

TED per Mile (Person Hours)

- 0 - 20,000 (Below threshold)
- 20,001 - 40,000 (Below threshold)
- 40,001 + (Above threshold)
- Insufficient Data

SMTC

0 0.5 1 2 3 4 Miles

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).
Date: 10/30/19

CMP Transit Network

93%

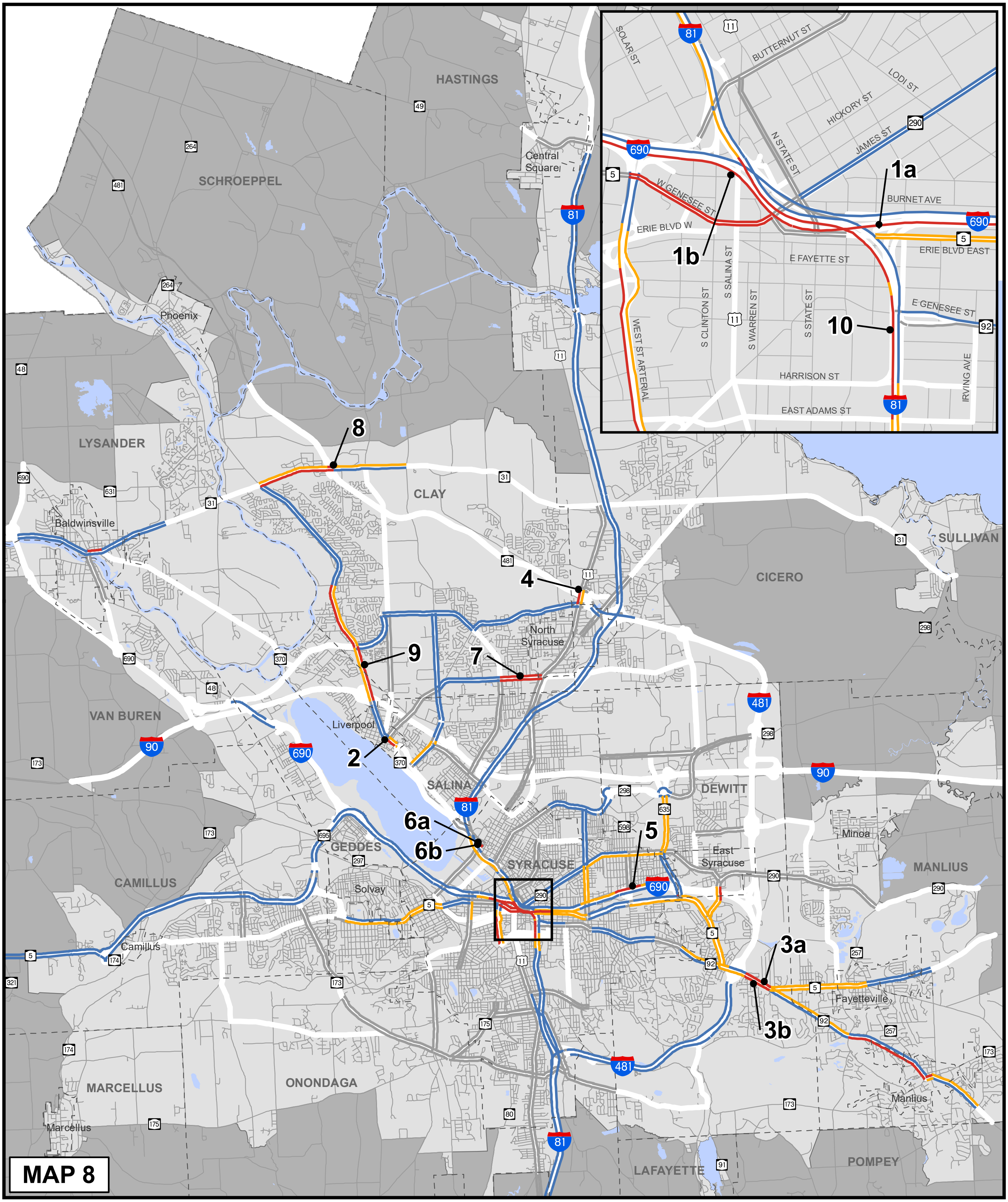
passing

This sub section applies the TED performance measure to segments of the CMP Transit Network. Overall, 15.6 miles, represented by 32 different segments, have been identified as exceeding the defined threshold. See Map 8 and Appendix 2. This represents 7.4% of the segments, leaving 92.6% of the CMP transit network segments below the defined threshold.

I-690 segments in Downtown Syracuse, followed by segments along East Genesee Street and Hiawatha Boulevard, make up the majority of the top ten segments listed, as shown in Table 10. I-81 under this measure only has one of its segments topping the list while Oswego Road remains the only segment that extends a length of more than a mile long.

Table 10: Top Ten TED Segments on the CMP Transit Network

Rank	Road Name	Owner	Direction	From	To	Miles	TED/Mile
1	I-690	NYSDOT	Eastbound	Off-ramp to I-81 southbound	On-ramp from I-81 northbound	0.646	118,655
1b	I-690	NYSDOT	Eastbound	On-ramp from West St	Off-ramp to I-81 southbound	0.346	67,930
2	Oswego St	NYSDOT	Southbound	Vine St	Onondaga Lake Parkway	0.185	82,677
3a	NY-92 (E Genesee St)	NYSDOT	Westbound	Highbridge Rd	I-481 ramps	0.590	69,186
3b	NY-92 (E Genesee St)	NYSDOT	Eastbound	I-481 ramps	Highbridge Rd	0.590	62,013
4	US-11	NYSDOT	Southbound	East Circle Dr	Bear Rd	0.330	67,048
5	I-690	NYSDOT	Westbound	Thompson Rd ramps	Midler Ave ramps	0.551	66,948
6a	West Hiawatha Blvd	SYR	Northbound	I-81 overpass	Park St slip ramp	0.155	64,093
6b	West Hiawatha Blvd	SYR	Southbound	Park St slip ramp	I-81 overpass	0.152	58,228
7	West Taft Rd	OCDOT	Westbound	US-11 (Brewerton Rd)	Buckley Rd	0.888	63,451
8	NY-31	NYSDOT	Westbound	I-481 northbound ramps	I-481 southbound ramps	0.130	62,868
9	Oswego Rd (Old Rt 57)	OCDOT	Northbound	I-90 ramps	John Glenn Blvd	1.185	59,957
10	I-81	NYSDOT	Southbound	On-ramp from I-690 westbound	Harrison Street	0.176	57,899



Total Hours of Excessive Delay (TED) per Mile

CMP Transit Network

CMP Network - NPMRDS data not available or not a transit segment

TED per Mile (Person Hours)

- 0 - 20,000 — Below threshold
- 20,001 - 40,000 — Below threshold
- 40,001 + — Above threshold
- Insufficient Data

0 0.5 1 2 3 4 Miles

SMTC

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).
Date: 10/30/19

CMP Freight Network

This sub section applies the TED performance measure to segments of the CMP Freight Network. Overall, 8.1 miles, represented by 17 different segments, have been identified as exceeding the defined threshold. See Map 9 & Appendix 2. This represents 2.6% of the segments, leaving 97.4% of the CMP freight network segments below the defined threshold.

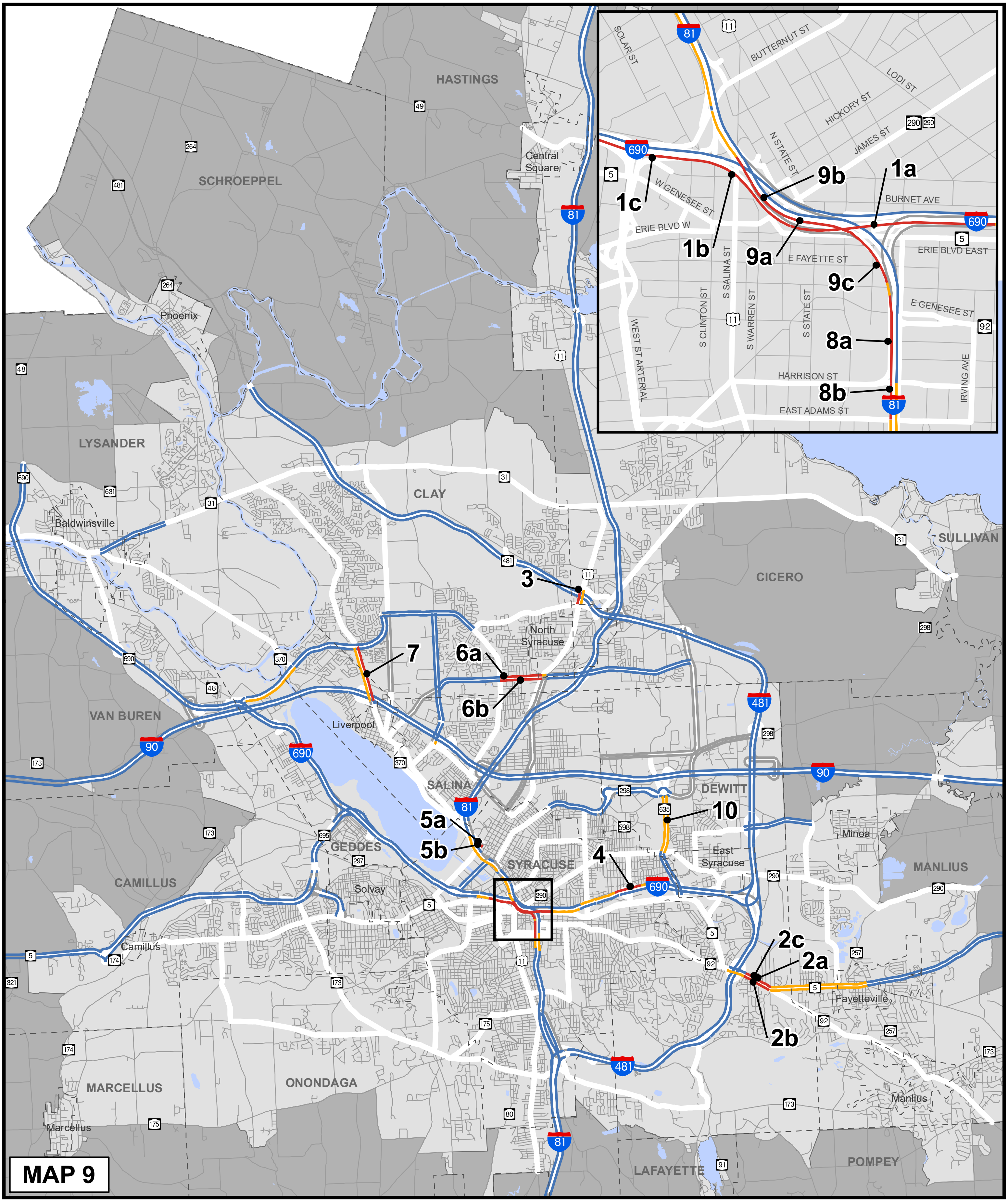
97% passing

High TED/mile results are found on the interstates in Downtown Syracuse. Both I-690 and I-81 have 8 segments combined that exceed the defined threshold, as shown in Table 11. One of the I-690 segments is the only segment with a TED/mile in excess of 100,000. Beyond the noted interstate congestion, three primary commuter corridors, East Genesee St, Hiawatha Boulevard and West Taft Road hold most of the remaining segments in the top ten.

Table 11: Top Ten TED Segments on the CMP Freight Network

Rank	Road Name	Owner	Direction	From	To	Miles	TED/Mile
1a	I-690	NYSDOT	Eastbound	Off-ramp to I-81 southbound	On-ramp from I-81 northbound	0.646	118,655
1b	I-690	NYSDOT	Eastbound	On-ramp from West St	Off-ramp to I-81 southbound	0.346	67,930
1c	I-690	NYSDOT	Eastbound	Off-ramp to West St	On-ramp from West St	0.431	55,061
2a	NY-92 (E Genesee St)	NYSDOT	Westbound	Lyndon Rd	I-481 ramps	0.590	69,186
2b	NY-92 (E Genesee St)	NYSDOT	Eastbound	I-481 ramps	Lyndon Rd	0.590	62,013
2c	NY-5 (E Genesee St)	NYSDOT	Westbound	Lyndon Rd	I-481 ramps	0.590	57,598
3	US-11	NYSDOT	Southbound	East Circle Dr	Bear Rd	0.330	67,048
4	I-690	NYSDOT	Westbound	Thompson Rd ramps	Midler Ave ramps	0.551	66,948
5a	West Hiawatha Blvd	SYR	Northbound	I-81 overpass	Park St slip ramp	0.155	64,093
5b	West Hiawatha Blvd	SYR	Southbound	Park St slip ramp	I-81 overpass	0.152	58,228
6a	West Taft Rd	OCDOT	Westbound	US-11 (Brewerton Rd)	Buckley Rd	0.888	63,451
6b	West Taft Rd	OCDOT	Eastbound	Buckley Rd	US-11 (Brewerton Rd)	0.864	49,400
7	Oswego Rd (Old Rt 57)	OCDOT	Northbound	I-90 ramps	John Glenn Blvd	1.185	59,957
8a	I-81	NYSDOT	Southbound	On-ramp from I-690 westbound	Harrison St underpass	0.176	57,899
8b	I-81	NYSDOT	Southbound	Harrison St underpass	Adams St underpass	0.067	44,595
9a	I-81	NYSDOT	Southbound	I-690 eastbound overpass	Ramp from I-690 eastbound	0.069	57,467
9b	I-81	NYSDOT	Southbound	Salina Street unperpass	I-690 eastbound overpass	0.490	44,840
9c	I-81	NYSDOT	Southbound	Ramp from I-690 eastbound	I-690 westbound ramp	0.291	39,273
10	Thompson Road	NYSDOT	Southbound	NY-298	NY-290 (James St)	1.245	39,218

*Note: The segments listed that are greyed out do not meet the established threshold.



Total Hours of Excessive Delay (TED) per Mile

CMP Freight Network

CMP Network - NPMRDS data not available or not a freight segment

TED per Mile (Person Hours)

- 0 - 20,000 (Below threshold)
- 20,001 - 40,000 (Below threshold)
- 40,001 + (Above threshold)
- Insufficient Data

0 0.5 1 2 3 4 Miles

SMTC

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).

Date: 10/30/19

4.1.c LOTTR

LOTTR represents the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day. As mentioned above, a corridor or road segment with a LOTTR at 1.5 and above represents unreliable congestion. Unreliable segments are classified as "congested" for purposes in this report. The "top ten" LOTTR results are listed in Table 12 through 14 along with their rank, road name, owner, direction, segment (from and to), length (in miles), max LOTTR period, max LOTTR value, a.m. LOTTR value, off peak LOTTR value and p.m. LOTTR value. Maps 10 through 12 display this performance measure analysis for the CMP network, the CMP freight network and CMP transit network as established in Section 2.1.

A "congested" segment identified by the LOTTR measure means that it experiences highly variable (unreliable) congestion throughout the year. This unreliability is due to non-recurring congestion causes such as work zones, weather or traffic incidents that are often a surprise to drivers. The higher the LOTTR, the less reliable the segment is from day-to-day and/or across different times of the day. These are the most unpredictable segments and may require drivers to build in extra travel time to stay on schedule.

CMP Network

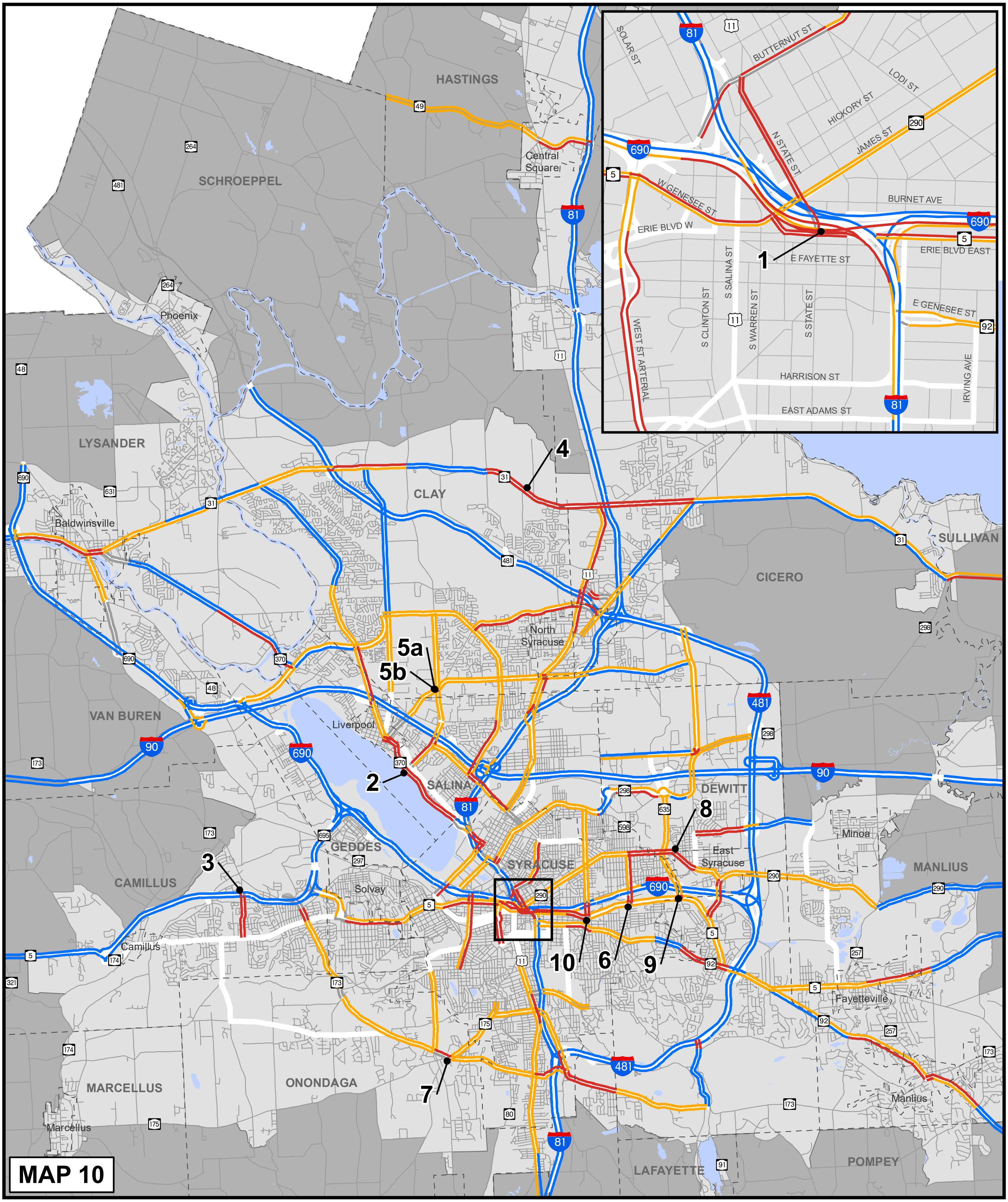
Overall, 78.3 miles, represented by 149 different segments (31 in the a.m. and 66 in the p.m. peak; 31 during off peak and 21 during weekend peak.) are identified as "congested". See Map 10 and Appendix 3. This represents 12.2% of the segments, leaving 87.8% of the CMP network segments as reliable.

88%
passing

The congested segments are spread throughout the network with no one particular road, except Vine Street, having more than one congested segment in the top ten, as shown in Table 12. There is a mixture of peak periods among the list. Though the p.m. peak period shows up the most, four of the top five congested segments take place during off-peak or weekend periods. The I-690 eastbound ramp to I-81 southbound in Downtown Syracuse stands out amongst the rest, because it is the only segment found to fall below the congestion threshold during all peak periods except during the a.m. weekday peak period. The a.m. weekday peak period value of 2.42 pushes it to the number one congested segment on the list. Whereas, in comparison, the Hinsdale Road segment is the only segment in the top ten where congestion exceeds a threshold of 2.0 across the board for all periods analyzed, yet falls to number three on the list.

Table 12: Top Ten "Congested" LOTTR Segments on the CMP Network

Rank	Road Name	Owner	Dir.	From	To	Miles	LOTTR Max Period	LOTTR Max	LOTTR AM	LOTTR Off Peak	LOTTR PM	LOTTR Week-end
1	I-690 to I-81 ramp	NYSDOT	EB	I-690 EB	I-81 SB	0.229	AM	2.42	2.42	1.08	1.11	1.11
2	NY-370 (Onondaga Lake Pkwy)	NYSDOT	SB	Tulip St	Old Liverpool Rd/Buckley Rd	2.268	OP	2.41	1.91	2.41	2.26	2.11
3	Hinsdale Road	OCDOT	SB	NY-5 WB off-ramp	NY-5 EB on-ramp	0.068	WE	2.36	2.00	2.00	2.04	2.36
4	NY-31	NYSDOT	EB	Caughdenoy Rd	I-81 SB ramps	2.707	WE	2.27	1.51	1.80	2.22	2.27
5a	Vine St	OCDOT	EB	Right turn slip ramp	Henry Clay Blvd/West Taft Rd	0.072	OP	2.20	2.10	2.20	NA	NA
5b	Vine St	OCDOT	WB	Henry Clay Blvd/West Taft Rd	EB right turn slip ramp	0.072	PM	2.17	1.79	1.69	2.17	NA
6	NY-5 (Erie Blvd East)	NYSDOT	EB	Left turn lane	Seeley Rd/South Midler Ave	0.087	PM	2.15	1.69	1.89	2.15	NA
7	NY-173 (West Seneca Tpk)	NYSDOT	WB	South Ave	Onondaga Rd	0.038	PM	2.11	NA	1.91	2.11	NA
8	NY-290 (Manlius St/James St)	NYSDOT	WB	Kinne St	Thompson Rd	0.815	PM	2.03	1.62	1.72	2.03	NA
9	Thompson Road	NYSDOT	SB	I-690 Service Rd off-ramp	Erie Blvd East	0.046	OP	1.95	1.91	1.95	1.93	NA
10	NY-5 (Erie Blvd East)	NYSDOT	EB	Left turn lane	Columbus Ave/Teall Ave	0.041	PM	1.95	1.66	1.70	1.95	NA



Level of Travel Time Reliability (LOTTR)

CMP Network (Primary Commuter Corridors)

CMP Network - NPMRDS data not available

LOTTR (Max of AM, PM, OP, WE)

- Insufficient Data
- 0 - 1.24 — Below threshold
- 1.25 - 1.49 — Below threshold
- 1.50 + — Above threshold

SMTC

0 0.5 1 2 3 4 Miles

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).
Date: 10/30/19

CMP Transit Network

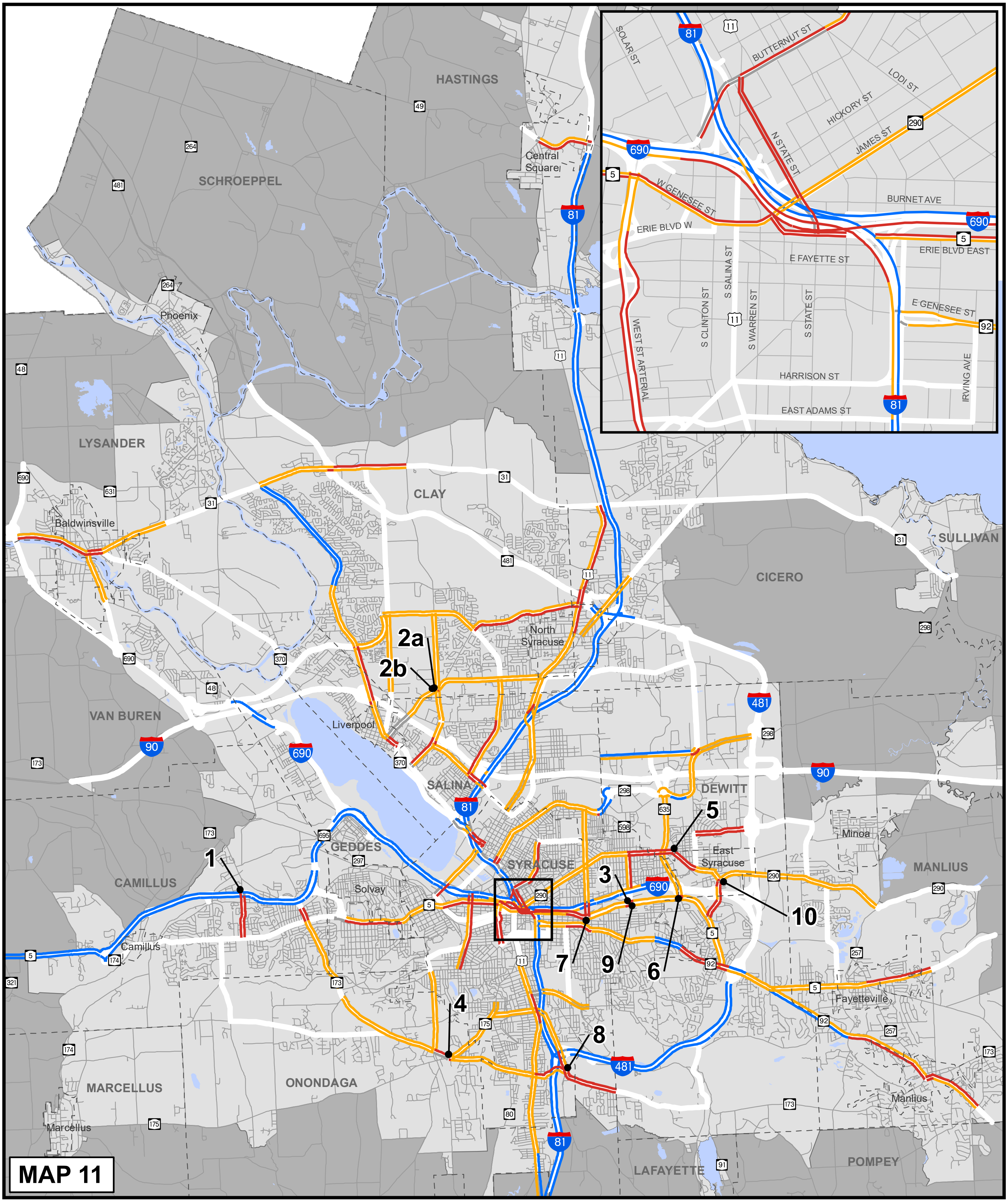
This sub section applies the LOTTR performance measure to segments of the CMP Transit Network. Overall, 53.1 miles, represented by 119 different segments (21 in the a.m. and 54 in the p.m. peak; 28 during off peak and 16 during weekend peak) are identified as "congested". See Map 11 and Appendix 3. This represents 15.7% of the segments, leaving 84.3% of the segments as uncongested or reliable.

84%
passing

A majority of the top ten congested segments are located in northern and eastern portions of the network and much of the congestion takes place during the p.m. peak period along these segments. However, the number one most unreliable segment is Hinsdale Road in the western portion of the network and it occurs during the weekend period. (See Table 13.) None of the top ten segments fall below the 1.5 congestion threshold established for this measure during any of the periods analyzed, where data was available. Hinsdale Road stands out as the only segment exceeding a 2.0 value overall for all four periods analyzed.

Table 13: Top Ten "Congested" LOTTR Segments on the CMP Transit Network

Rank	Road Name	Owner	Dir.	From	To	Miles	LOTTR Max Period	LOTTR Max	LOTTR AM	LOTTR Off Peak	LOTTR PM	LOTTR Week-end
1	Hinsdale Road	OCDOT	SB	NY-5 westbound off-ramp	NY-5 eastbound on-ramp	0.068	WE	2.36	2.00	2.00	2.04	2.36
2a	Vine St	OCDOT	EB	Right turn slip ramp	Henry Clay Blvd/West Taft Rd	0.072	OP	2.20	2.10	2.20	NA	NA
2b	Vine St	OCDOT	WB	Henry Clay Blvd/West Taft Rd	Eastbound right turn slip ramp	0.072	PM	2.17	1.79	1.69	2.17	NA
3	NY-5 (Erie Blvd East)	NYSDOT	EB	Left turn slip ramp	Seeley Rd/South Midler Ave	0.087	PM	2.15	1.69	1.89	2.15	NA
4	NY-173 (West Seneca Tpk)	NYSDOT	WB	South Ave	Onondaga Rd	0.038	PM	2.11	NA	1.91	2.11	NA
5	NY-290 (Manlius St/James St)	NYSDOT	WB	Kinne St	Thompson Rd	0.815	PM	2.03	1.62	1.72	2.03	NA
6	Thompson Road	NYSDOT	SB	I-690 Service Rd off-ramp	Erie Blvd East	0.046	OP	1.95	1.91	1.95	1.93	NA
7	NY-5 (Erie Blvd East)	NYSDOT	EB	Left turn slip ramp	Teall Ave	0.041	PM	1.95	1.66	1.70	1.95	NA
8	East Brighton Ave	SYR	SB	Right turn slip ramp	East Seneca Tpk	0.022	PM	1.90	NA	1.85	1.90	NA
9	NY-5 (Erie Blvd East)	NYSDOT	WB	Left turn lane slip ramp	Seeley Rd/South Midler Ave	0.059	PM	1.90	1.58	1.57	1.90	NA
10	Bridge St	NYSDOT	SB	NY-290 (Manlius Center Rd)	Lane addition	0.052	PM/WE	1.89	1.51	1.60	1.89	1.89



Level of Travel Time Reliability (LOTTR)

CMP Transit Network

CMP Network - NPMRDS data not available or not a transit segment

LOTTR (Max of AM, PM, OP, WE)

- Insufficient Data
- 0 - 1.24 — Below threshold
- 1.25 - 1.49 — Below threshold
- 1.50 + — Above threshold

SMTC

0 0.5 1 2 3 4 Miles

N

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).
Date: 10/30/19

CMP Freight Network

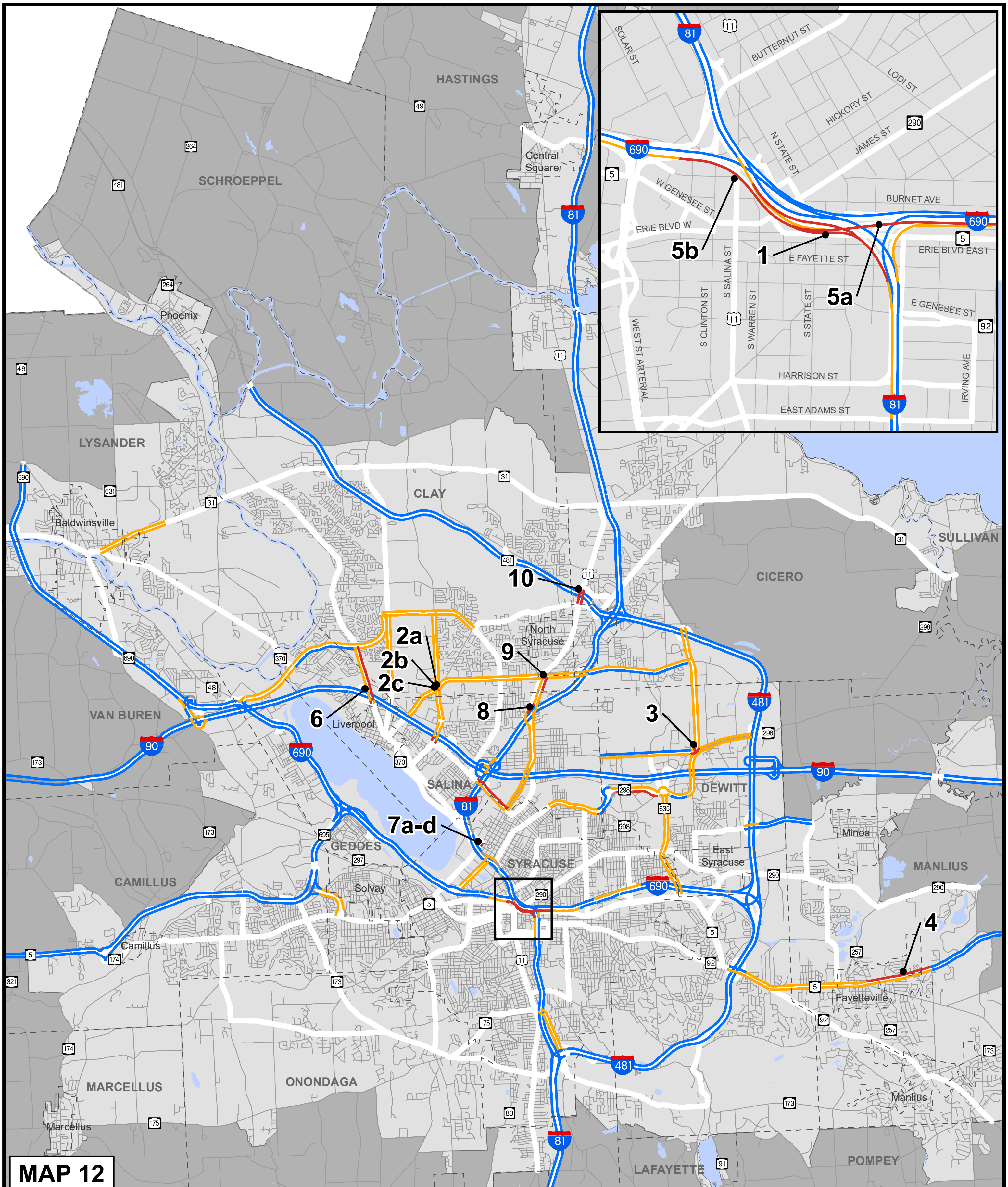
This sub section applies the LOTTR performance measure to segments of the CMP Freight Network. Overall, 8.0 miles, represented by 28 different segments (7 in the a.m. and 14 in the p.m. peak; 4 during off peak and 3 during weekend peak.) are identified as "congested". See Map 12 and Appendix 3. This represents 2.2% of the segments, leaving 97.8% of the CMP freight network segments as reliable or uncongested.

98%
passing

A majority of the top ten segments fall in the northern parts of the network. (See Table 14.) Per the table, Hiawatha Boulevard shows its highest congestion during the weekend and/or off-peak periods while the other segments on the list show congestion mainly during the a.m. or p.m. peak periods. NY 5 and Oswego Road are the only segments that are over a mile long while other segments are much shorter. East Genesee Street is the only segment to have available data showing unreliable congestion for all periods collected. The I-690 eastbound ramp to I-81 southbound stands out amongst the rest, because it is the only segment found to fall below the congestion threshold during all peak periods except during the a.m. weekday peak period. The a.m. weekday peak period value of 2.42 pushes it again to the number one congested segment on the list.

Table 14: Top Ten "Congested" LOTTR Segments on the CMP Freight Network

Rank	Road Name	Owner	Dir.	From	To	Miles	LOTTR Max Period	LOTTR Max	LOTTR AM	LOTTR Off Peak	LOTTR PM	LOTTR Week-end
1	I-690 to I-81 ramp	NYSDOT	EB	I-690 eastbound	I-81 southbound	0.229	AM	2.42	2.42	1.08	1.11	1.11
2a	Vine St	OCDOT	EB	Right turn slip ramp	Henry Clay Blvd/West Taft Rd	0.072	OP	2.20	2.10	2.20	NA	NA
2b	Vine St	OCDOT	WB	Henry Clay Blvd/West Taft Rd	Eastbound right turn slip ramp	0.072	PM	2.17	1.79	1.69	2.17	NA
2c	West Taft Rd	OCDOT	EB	Henry Clay Blvd	West Taft Rd slip ramp	0.030	OP	1.69	1.59	1.69	NA	NA
3	Northern Blvd	OCDOT	SB	East Molloy Rd/Northern Blvd	Collamer Rd	0.035	PM	1.93	1.39	1.50	1.93	NA
4	NY-5 (East Genesee St)	NYSDOT	WB	Duguid Rd	NY-257 (North Manlius St)	1.389	PM	1.87	1.85	1.76	1.87	1.75
5a	I-690	NYSDOT	EB	Off-ramp to I-81 southbound	On-ramp from I-81 northbound	0.646	PM	1.84	1.19	1.08	1.84	1.10
5b	I-690	NYSDOT	EB	On-ramp from West St	Off-ramp to I-81 southbound	0.346	AM	1.70	1.70	1.07	1.13	1.09
6	Oswego Rd (Old Rt 57)	OCDOT	NB	I-90 ramps	John Glenn Blvd	1.185	PM	1.77	1.44	1.45	1.77	1.65
7a	West Hiawatha Blvd	SYR	NB	I-81 overpass	Park St slip ramp	0.155	PM	1.75	1.42	1.45	1.75	1.55
7b	West Hiawatha Blvd	SYR	SB	Park St slip ramp	I-81 overpass	0.152	WE	1.70	1.38	1.48	1.59	1.70
7c	West Hiawatha Blvd	SYR	NB	Park St slip ramp	Park St	0.036	OP	1.70	NA	1.70	NA	NA
7d	West Hiawatha Blvd	SYR	SB	Park St	Park St slip ramp	0.036	OP	1.71	NA	1.71	NA	NA
8	South Bay Rd	NYSDOT	SB	South Bay Rd	US-11 (Brewerton Rd)	0.036	AM	1.71	1.71	1.64	NA	NA
9	South Bay Rd	OCDOT	NB	Col. Eileen Collins Blvd	East Taft Rd	0.291	AM	1.64	1.64	1.50	NA	NA
10	US-11	NYSDOT	SB	East Circle Dr	Bear Rd	0.330	PM	1.60	1.47	1.44	1.60	1.42



Level of Travel Time Reliability (LOTTR)

CMP Freight Network

CMP Network - NPMRDS data not available or not a freight segment

LOTTR (Max of AM, PM, OP, WE)

- Insufficient Data
- 0 - 1.24 — Below threshold
- 1.25 - 1.49 — Below threshold
- 1.50 + — Above threshold

SMTC

0 0.5 1 2 3 4 Miles

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).
Date: 10/30/19

4.1.D TTTR

TTTR, like LOTTR, represents the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day but along the identified CMP freight network corridors only. As mentioned above, a corridor or road segment with a TTTR at 4.0 and above represents unreliable congestion. Similar to LOTTR, segments identified above the SMTC established threshold are considered "congested" for CMP documentation. Also, like LOTTR, a "congested" segment identified by the TTTR measure means that it experiences highly variable (unreliable) congestion throughout the year. This unreliability is due to non-recurring congestion causes such as work zones, weather or traffic incidents that are often a surprise to drivers. The higher the TTTR the less reliable the segment is from day-to-day and/or across different times of the day. These segments are the most unpredictable and therefore could affect freight operations.

TTTR's are listed in Appendix 4 along with their rank, road name, owner, direction, segment (from and to), length (in miles), max TTTR period, max TTTR value, a.m. TTTR value, off peak TTTR value, p.m. TTTR value, overnight TTR value and weekend TTR value. Map 13 displays this performance measure analysis for the CMP freight network.

CMP Freight Network

Overall, only 3 miles, represented by 9 different segments (3 in the a.m. and 4 in the p.m. peak; 1 during off peak and 1 during weekend peak) are identified as "congested." See Map 13 and Table 15. This represents .8% of the segments, leaving 99.2% of the CMP freight network segments as uncongested or reliable.

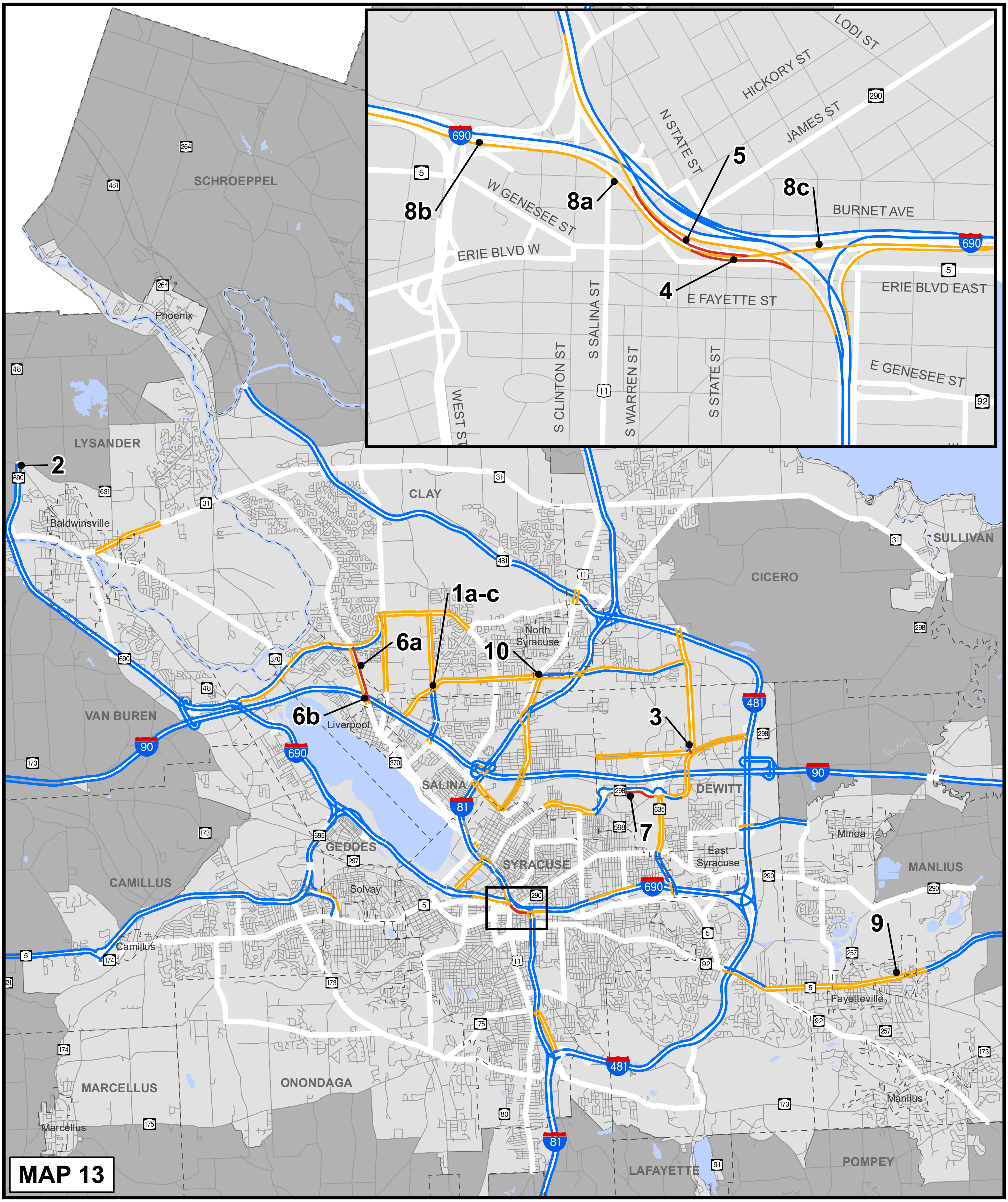
99%
passing

All but one of the top ten congested segments are located either in Downtown Syracuse or north/northeast of the City of Syracuse. (See Table 15.) The only one located elsewhere is East Genesee Street and it is not considered "congested" as its value does not exceed the established 4.0 threshold. One segment, Oswego Road (Old Rt. 57), is not only the longest and only segment above 1-mile long, it also is the only segment whose peak period is found to be on the weekend. All other segments, except the number one Vine Street segment, which is most congested during the off peak, is either congested during the a.m. or p.m. peak periods. The interstates, I-690 & I-81, have a.m. or p.m. peak congestion while all other peak periods analyzed were found to be not congested and not even rise above 2.0.

Table 15: Top Ten "Congested" TTTR Segments on the CMP Freight Network

Rank	Road Name	Owner	Dir.	From	To	Miles	TTTR Max Period	TTTR Max	TTTR AM	TTTR Off Peak	TTTR PM	TTTR Over-night	TTTR Week-end
1a	Vine St	OCDOT	EB	Right turn slip ramp	Henry Clay Blvd/W Taft Rd	0.072	OP	5.75	4.8	5.75	NA	NA	NA
1b	Vine St	OCDOT	WB	Henry Clay Blvd/W Taft Rd	EB right turn slip ramp	0.072	AM	4.33	4.33	3.86	4.33	NA	NA
1c	Wt Taft Rd	OCDOT	EB	Henry Clay Blvd	W Taft Rd slip ramp	0.030	AM	4	4	3.86	NA	NA	NA
2	NY-690	NYSDOT	NB	Left and right turn lanes	NY-48/NY-631 (Hencle Blvd)	0.053	PM	4.8	3.02	4.17	4.8	NA	NA
3	Northern Blvd	OCDOT	SB	East Molloy Rd/Northern Blvd	Collamer Rd	0.035	PM	4.5	2.65	3.71	4.5	NA	NA
4	I-690 to I-81 ramp	NYSDOT	EB	I-690 EB	I-81 SB	0.229	AM	4.33	4.33	1.27	1.52	1.29	1.33
5	I-81 to I-690 ramp	NYSDOT	SB	I-81 SB	I-690 EB	0.304	PM	4.13	1.92	1.53	4.13	NA	1.30
6a	Oswego Rd	OCDOT	NB	I-90 ramps	John Glenn Blvd	1.185	WE	4.00	2.75	2.94	3.29	NA	4
6b	Oswego Rd	OCDOT	NB	I-90 ramp to Oswego Rd SB	Oswego Rd SB to I-90 ramp	0.081	AM	3.43	3.43	2.38	2.38	NA	NA
7	NY-298	NYSDOT	EB	Military Circle (GM Circle) off-ramp	Carrier Circle on-ramp	0.989	PM	4.00	2.82	2.78	4	NA	1.74
8a	I-690	NYSDOT	EB	On-ramp from West St	Off-ramp to I-81 SB	0.346	AM	3.95	3.95	1.34	1.65	1.26	1.34
8b	I-690	NYSDOT	EB	Off-ramp to West St	On-ramp from West St	0.431	AM	3.78	3.78	1.26	1.42	1.22	1.24
8c	I-690	NYSDOT	EB	Off-ramp to I-81 SB	On-ramp from I-81 NB	0.646	PM	3.51	2.39	1.90	3.51	1.38	1.35
9	NY-5	NYSDOT	WB	Duguid Rd	NY-257 (North Manlius St)	1.389	PM	3.71	3.43	3.35	3.71	NA	3.22
10	E Taft Rd	OCDOT	EB	US-11 (Brewerton Rd)	South Bay Rd	0.052	PM	3.29	2.45	2.88	3.29	NA	NA

*Note: The segments listed that are greyed out do not meet the established threshold.



Truck Travel Time Reliability (TTTR)

CMP Freight Network

TTTR (Max of AM, OP, PM, OV, WE)

- Insufficient Data
- 0 - 1.99 (Below threshold)
- 2.00 - 3.99 (Below threshold)
- 4.00 + (Above threshold)

CMP Network - NPMRDS data not available or not a freight segment

0 0.05 0.1 0.2 0.3 0.4 Miles

SMTC

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).
Date: 10/30/19

4.1.E ALL PERFORMANCE MEASURES COMBINED

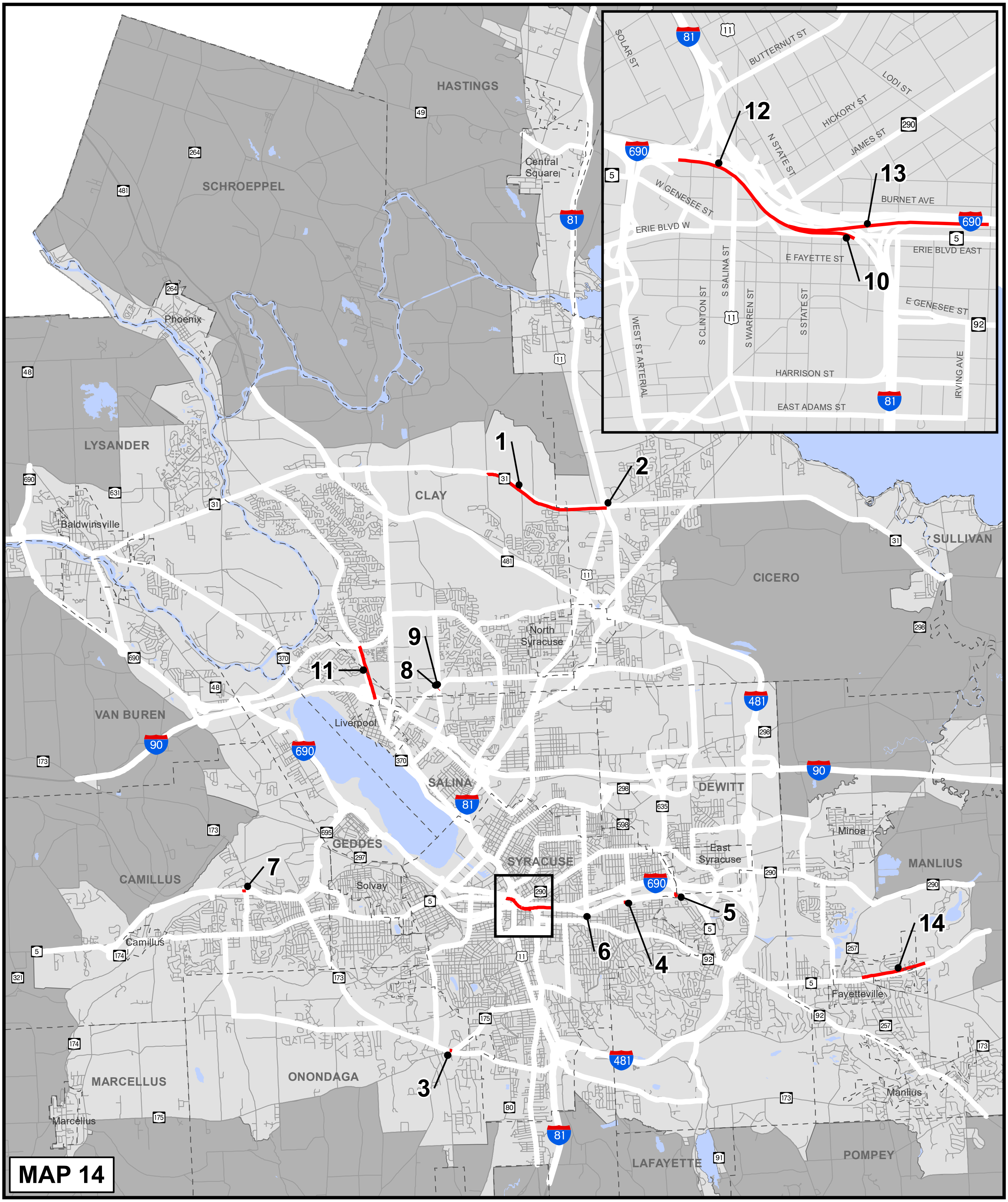
In an attempt to help identify those segments of concern in the overall network, the top ten segments for each performance measure were further analyzed and whittled down to those appearing on multiple top ten lists. Those segments are shown in Map 14 and in Table 16 below.

Table 16: Congested Segments on Multiple Top 10 lists

Road Name	Owner	Direction	From	To	Miles	Top 10 PM
NY-31	NYSDOT	Eastbound	Caughdenoy Rd	I-81 southbound ramps	2.707	TTI, LOTTR
NY-31	NYSDOT	Eastbound	I-81 southbound ramps	Pardee Rd/I-81 northbound off-ramp	0.065	TTI, TED
NY-173 (West Seneca Tpk)	NYSDOT	Westbound	South Ave	Onondaga Rd	0.038	TTI, LOTTR
NY-5 (Erie Blvd East)	NYSDOT	Eastbound	Left turn lane	Seeley Rd/South Midler Ave	0.087	TTI, LOTTR
Thompson Road	NYSDOT	Southbound	I-690 Service Rd off-ramp	Erie Blvd East	0.046	TTI, LOTTR
NY-5 (Erie Blvd East)	NYSDOT	Eastbound	Left turn lane	Columbus Ave/Teall Ave	0.041	TTI, LOTTR
Hinsdale Road	OCDOT	Southbound	NY-5 westbound off-ramp	NY-5 eastbound on-ramp	0.068	TTI, LOTTR
Vine St	OCDOT	Eastbound	Right turn slip ramp	Henry Clay Blvd/West Taft Rd	0.072	LOTTR, TTTR*
Vine St	OCDOT	Westbound	Henry Clay Blvd/West Taft Rd	Eastbound right turn slip ramp	0.072	LOTTR, TTTR*
I-690 to I-81 ramp	NYSDOT	Eastbound	I-690 eastbound	I-81 southbound	0.229	LOTTR, TTTR*
Oswego Rd (Old Rt 57)	OCDOT	Northbound	I-90 ramps	John Glenn Blvd	1.185	TED, TTTR*
I-690	NYSDOT	Eastbound	On-ramp from West St	Off-ramp to I-81 southbound	0.346	TED, TTTR**
I-690	NYSDOT	Eastbound	Off-ramp to I-81 southbound	On-ramp from I-81 northbound	0.646	TED, TTTR**
NY-5 (East Genesee St)	NYSDOT	Westbound	Duguid Rd	NY-257 (North Manlius St)	1.389	TTI, TTTR**

*TTTR was calculated on CMP freight network only
**TTTR was calculated on CMP freight network only and the value does not exceed the TTTR threshold of >3.99

Of the fourteen segments, no segment was found in all top ten lists, but all segments listed were found in at least two. A majority of the segments fall in the center of the city or the northern and eastern suburbs. There is still congestion as well to be noted on the western parts of the network (i.e. Hinsdale Road) and the southern parts of the network (i.e. West Seneca Turnpike). Ten out of the fourteen segments listed are owned by NYSDOT, many of which, like NY 31 and NY 5, are major east/west corridors.



All Performance Measures Combined

Syracuse Adjusted Urban Area

SMTC

0 0.5 1 2 3 4 Miles

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map. Data sources include SMTC, NYSDOT and NPMRDS (2018).
Date: 10/30/19

TMC Segments on Multiple Top 10 Lists
CMP Network
Adjusted Urban Area

4.2 SUPPLEMENTARY ANALYSIS

4.2.A LOS

For those intersections included in the CMP monitoring and evaluation, LOS was derived for the p.m. peak hours. The following information from ITE's Transportation Planning Handbook depicts each Level of Service and the corresponding average delay range for traffic signal controlled intersections:

A	Little or No Delay	(<= 10.0 sec)
B	Minor, Short Delay	(10.1 to 20.0 sec)
C	Average Delays	(20.1 to 35.0 sec)
D	Long, but Acceptable Delays	(35.1 to 55.0 sec)
E	Long, Approaching Unacceptable Delays	(55.1 to 80.0 sec)
F	Long, Unacceptable Delays	(> 80.0 sec.)

A LOS 'A' indicates good levels of operations with a motorist experiencing very little, if any delay. A LOS 'F' indicates that, on average, a motorist is experiencing delays in excess of 80 seconds. Since the 2015 report, traffic operations analyses have been completed throughout the planning area by the SMTC. The resulting output was used to identify intersections, along the formerly identified "primary commuter corridors", that had an overall Level of Service of E or F. Turning movement counts were gathered at the identified primary-to-primary intersections and were entered into Synchro traffic signal timing software to determine the existing LOS that each intersection was operating at for the p.m. peak hour, with the assumption that the p.m. peak hour was most likely the worst peak. Other data inputs if necessary were entered as well, such as lane geometrics and traffic signal timing and phasing. Of the intersections with LOS information available, there were 5 intersections in the p.m. peak with a LOS E and 3 intersections that had a LOS F. They are listed below.

<u>LOS E</u>

Buckley Rd/7th North St, Town of Salina
E. Genesee St/Almond St, City of Syracuse
James St/Thompson Rd, City of Syracuse
NY 31 & I-81NB/Pardee Rd, Town of Cicero
Morgan Rd/Buckley Rd, Town of Clay

<u>LOS F</u>

Harrison St/Almond St, City of Syracuse
NY 5/NY 92, Town of DeWitt
NY 370/John Glenn Blvd, Town of Salina

LOS information for all intersections analyzed since the 2015 report are shown in Appendix 5, along with the municipality they sit in.

4.2.B CRASHES

Crashes occurring along segments identified as a part of the CMP network can indicate instances of non-recurring congestion. Vehicle crashes can disrupt the normal flow of traffic, either by blocking travel lanes or causing distractions which alter driver behavior. As a part of this analysis, crashes were examined over the four-year period of 2015 – 2018.

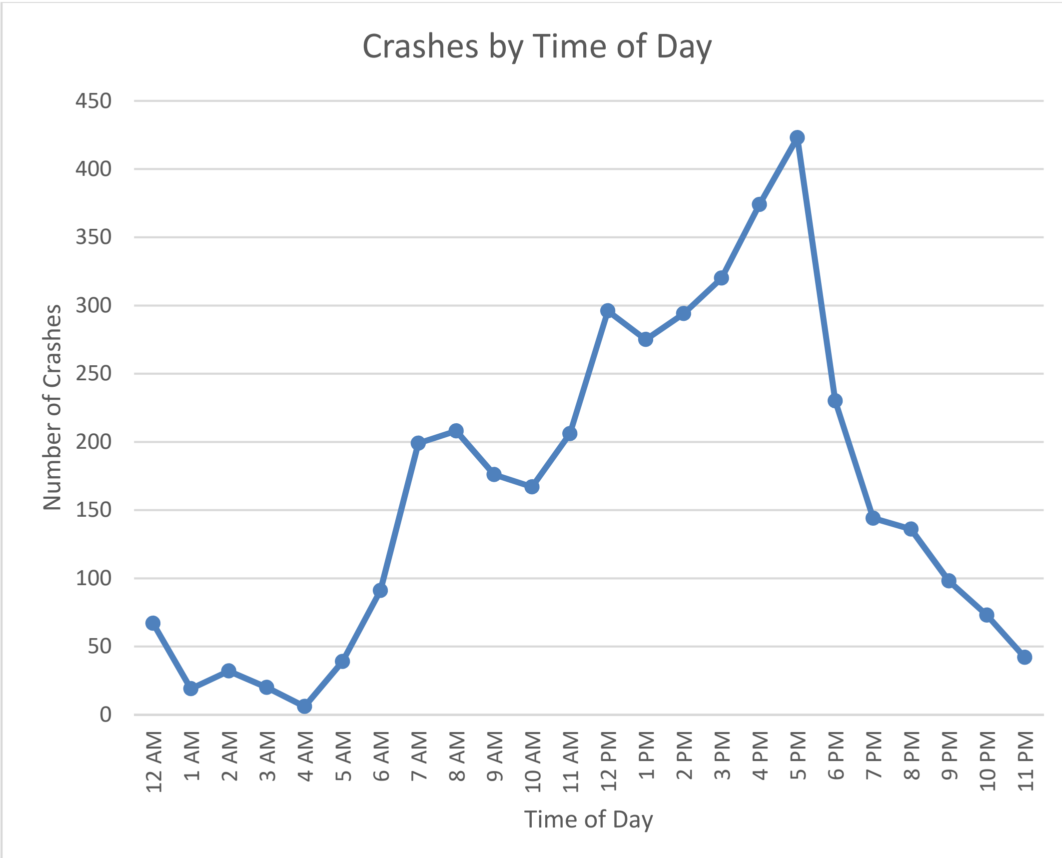
The New York State Department of Transportation maintains the Accident Location Information System (ALIS), which contains data about crashes occurring throughout the state. Focus was given to the corridors of the CMP network which fall into the top ten of the four performance measures (TTI, LOTTR, TED, and TTTR). See Appendix 6. As noted previously, several of these corridors appeared on multiple top ten lists.

A total of 3,935 crashes along these focus corridors were examined. For classification purposes, these crashes are classified as either "reportable" or "non-reportable". Reportable events include four sub categories by severity: fatal; injury; property damage (at least $1,000) and injury; and property damage only (at least $1,000). Crashes that do not meet these criteria are considered non-reportable. Along these corridors, 2,615 crashes (66%) were considered reportable and 1,320 (34%) were non reportable. Reportable crashes consisted of 5 Fatal, 252 Injury, 557 Property Damage and Injury, and 1,801 Property Damage Only. Note that the number of "Injury" crashes does not indicate the total number of injuries.

Crashes are also assigned at least one apparent human, vehicular, and/or environmental contributing factor. Collision types, such as rear-end or head-on collisions, are also documented. The top three contributing factors were "Following Too Closely" (27%), "Driver Inattention" (15%), and "Failure to Yield the Right-of-Way" (15%). "Collision with Motor Vehicle" was the overwhelming crash type, with 89% of the total, but "Collision with Guide Rail" and "Collision with Deer" both also accounted for approximately 1% of crashes each. Collision types were largely split between "Rear End" (41%), "Other," (18%), "Overtaking" (15%) and "Right Angle" (14%).

Intersection crashes (56%) accounted for a higher proportion than non-intersection crashes (44%) along the corridors. Crashes with injuries occurred at similar rates in intersection (21%) and non-intersection (20%) crash totals. As shown in Chart 4 on the next page, crashes tend to occur most often during peak periods. However, during these peak periods there are also more cars on the road compared to the rest of the day.

Chart 4: Sum of the Number of Crashes by Time of Day along Top 10 CMP Network Segments



4.2.c Transit Ridership and Route Availability

To help further assess transit congestion, on time performance data was reviewed. The local transit authority (Centro), provided performance by line from an 11-month period between November 1, 2018 and September 30, 2019. In the SMTC planning area, there are 26 transit routes (many routes partially overlap the CMP network). The average on time performance of all the routes was 90%. See Table 17. There were 10 routes, mostly suburban, that fell below 90%, with the lowest route being punctual 76% of the time. This route runs in the northwestern portion of the network. In general, data during this 11-month period revealed that all routes were late at least some percentage of the time and that suburban routes rarely, if ever, were early.

Table 17: On Time Performance of Centro Routes (November 1, 2018 to September 30, 2019)

Route	%OnTime	%Late	%Early
SY80 - Grant Blvd	94	5	0
SY76 - Salt Springs	93	5	0
SY68 - East Fayette - Erie Blvd	93	6	0
SY58 - Parkhill	93	6	0
SY62 - Manlius	93	5	0
SY72 - Townsend - East Colvin	93	5	0
SY510 - Lafayette - Tully	93	6	0
SY64 - Western Lights & Grand Avenue	92	7	0
SY16 - North Salina - Buckley Rd	92	7	0
SY20 - James Street	92	5	1
SY84 - Mattydale	92	6	1
SY10 - South Salina - Nedrow	91	7	1
SY52 - Court Street	90	8	0
SY30 - Westcott - SU	90	9	0
SY323 - James Street - Minoa	90	9	0
SY74 - Solvay	90	8	1
SY26 - South Ave	89	10	0
SY40 - Drumlins - Nob Hill	88	8	3
SY36 - Camillus	88	6	5
SY50 - Destiny USA	87	11	0
SY46 - Liverpool - Route 57	87	9	3
SY86 - Henry Clay	87	5	6
SY54 - Midland - Valley Drive	86	13	0
SY48 - Liverpool - Morgan	86	9	4
SY88 - North Syracuse - Central Square	83	9	7
SY82 - Baldwinsville	76	8	15

To gain an understanding of the level of ridership, additional information was provided by Centro showing the boardings and alightings associated with each of the 26 routes shown previously. See Table 18. In all, ridership totaled 8,559,015 in 2018. The top route is located in the City of Syracuse on James Street in the central/eastern portion of the CMP transit network. This route alone services close to a half million riders. Conversely the least ridden route is located in the southwestern portion of the network in LaFayette servicing just shy of 3,000 riders.

Table 18: Centro's Boardings and Alightings in Year 2018

Route	Name	Board	Alight
SY20	James Street	485,293	483,459
SY10	South Salina - Nedrow	400,023	399,053
SY52	Court Street	354,184	353,561
SY40	Drumlins - Nob Hill	325,206	323,101
SY26	South Ave	287,265	287,966
SY64	Western Lights & Grand Ave	258,096	257,036
SY68	East Fayette - Erie Blvd	231,389	230,424
SY36	Camillus	229,237	228,083
SY16	North Salina - Buckley Rd	216,621	214,216
SY76	Salt Springs	210,943	209,862
SY80	Grant Blvd	210,096	205,963
SY74	Solvay	190,654	193,033
SY30	Westcott - SU	138,093	138,245
SY54	Midland - Valley Drive	119,047	116,955
SY50	Destiny USA	114,512	113,422
SY48	Liverpool - Morgan	75,620	74,970
SY88	N. Syracuse - Central Square	66,467	65,573
SY58	Parkhill	66,407	65,936
SY84	Mattydale	62,230	61,131
SY46	Liverpool - Route 57	60,669	60,845
SY62	Manlius	57,198	56,715
SY86	Henry Clay	38,729	38,485
SY72	Townsend - East Colvin	37,923	37,367
SY82	Baldwinsville	33,702	33,299
SY323	James St - Minoa	17,950	17,379
SY510	LaFayette - Tully	2,705	2,677
	Subtotal	4,290,259	4,268,756
	Total	8,559,015	

Lastly, Centro services 12 Park-N-Rides throughout Onondaga County. These facilities provide an opportunity to decrease the number of single occupant vehicles during the morning and evening peak commute times. Table 19 shows the number of daily boarding's at the shelters of these Park-N-Rides.

Table 19: Park-N-Ride Daily Boardings

Park-N-Ride Location	Boardings
Elbridge Mill St / Main	1
Brewerton Kathan Road	1
Tully Circle K	2
Airport Plaza N Syracuse	2
Wegmans Route 57	2
United Church Tully	3
Great Northern Mall	7
Fayetteville Town Center	8
Wegmans DeWitt	9
Wegmans Route 11	15
Fairmount Fair	17
Camillus Commons	21

4.2.D BICYCLE AND PEDESTRIAN FACILITY AVAILABILITY

Information gathered provides a look into the amenities and options on the CMP network that are available for bicyclists and walkers vs. drivers. With regards to bicycling, there is just under 10 miles (9.36 miles) of infrastructure available for use by bicyclists on the CMP primary commuter corridors including bike lanes, bikeways and/or sharrows. Most of these facilities are located inside the City of Syracuse. The transit authority also provides bicyclists the opportunity to bring along their bikes while riding the buses by providing bike racks on many of their buses. With regards to pedestrian infrastructure, there is just over 100 miles (118.87 miles) of sidewalk on the CMP network. Approximately 70 miles are within the City limits and 50 outside, which is due in large part to villages in the region having a robust sidewalk network. The bicycle and pedestrian numbers are specific to the CMP primary commuter corridors only. Off of the primary commuter corridors, various bicycle and pedestrian facilities are in close proximity, particularly in the City of Syracuse.

5 Identification of Strategies

5.1 Strategies

This section provides an overview of the potential strategies recommended for improving congestion in the SMTC metropolitan area. The following strategies are suggested where congestion has been identified via this analysis. The strategies are formulated in a CMP “toolbox” of five key areas. Within each area, specific measures are included.

Key Areas:[12]
Transportation Systems Management and Operations – Operational management strategies contribute to a more effective and efficient use of existing systems. Some of these operations type strategies can be supported by the use of enhanced technologies or Intelligent Transportation Systems (ITS).

Transportation Demand Management – the objective of demand management strategies is to influence travel behavior.

Transit – Strategies aimed at making transit more attractive and accessible can help to reduce the number of vehicles on the road.

Bicycle and Pedestrian – Strategies that promote non-motorized travel through installation of bicycle and pedestrian facilities and amenities.

Land Use – Policies to reduce sprawl, support mixed-use development and infill development.

The list of specific activities provides a broad overview of the potential congestion management strategies that could be implemented. Given the differences in application and even geographic location, not all activities are applicable at each location. Review of appropriateness should be undertaken and considered by the facility owner. From a top down approach, as congestion in the SMTC MPA generally occurs during the peak commute periods along select segments of road, strategies focused first on the reduction of single occupancy vehicles (SOV) are recommended for implementation, followed by management and operations of the existing system and lastly capacity measures.

Strategy Hierarchy:
Strategy 1 – Reduce automobile trips to other modes
Strategy 2 – Shift trips from SOV to HOV modes
Strategy 3 – Improve Roadway Operations
Strategy 4 – Add Capacity.

Specific CMP activities/strategies include the following. The recommendations are only a simplified listing of plausible approaches to congestion management.

[12] Key area descriptions derived from New York Metropolitan Transportation Council (NYMTC) 2013 CMP report.

Transportation Systems Management and Operations (TSMO)

Transportation Systems Management and Operations (TSMO) - is a set of strategies that focus on operational improvements that can maintain and even restore the performance of the existing transportation system before extra capacity is needed. [13] Some examples include but are not limited to the following.

- Traffic Incident Management;
    - Incident detection
    - Quick clearance/emergency response
- Access Control and Management;
    - Driveway closures
    - Median treatments
- Signalization and Control;
    - Signal coordination
    - Signal re-timing or optimization
    - New signal installation
- System Capacity and Intersection Improvements;
    - New travel lanes on interstates and other major roads
    - Intersection widening
    - Addition of turn lanes
- Bottleneck Removal;
    - Addition of lanes
    - Reduction of merging and weaving lanes
- Freight Operations;
    - Truck parking (loading/unloading).

Transportation Demand Management (TDM)[14]

TDM activities that could be implemented by varying employers, municipalities, member agencies and the public include, but are not limited to:

- Ride share (carpool/van pool);
- Flexible work schedules; and
- Guaranteed ride home.

[13] https://ops.fhwa.dot.gov/tsmo/index.htm#q1

[14] Victoria Transport Policy Institute Online TDM Encyclopedia; http://www.vtpi.org/tdm/

Transit

- Transit signal priority;
- Enhanced transit amenities; (i.e., shelters, bus pull-off areas, lighting, benches)
- Bus Rapid Transit (Mixed Traffic or Dedicated Right-of-Way);
- Increase usage of transit routes;
- Increase transit frequencies; and
- Increase usage and availability of park and ride facilities.

Bicycle and Pedestrian

- Increase availability of bicycle facilities (i.e., lanes, cycle-tracks, lockers, racks); and
- Increase the number of sidewalks and other pedestrian improvements.

Land Use

As development patterns continue to expand outside of the traditional urban core into the suburban and rural localities of the SMTC planning area, a greater emphasis should be created to promote more sustainable and efficient transportation and land use patterns. The Syracuse-Onondaga County Planning Agency development guide identifies and seeks to initiate these smart growth activities. The plan contains policy directives and strategies for County operations, planning principles and standards to be used in initiating and reviewing development and infrastructure projects, and educational materials to engage the municipalities and citizens of Onondaga County in implementing the vision.[15] Suggested strategies under the Land Use key area are:

- Mixed-use development;
- Infill development; and
- Development in urban area.

[15] Syracuse-Onondaga County Planning Agency; http://www.ongov.net/planning/plan.html

6 Implementing Strategies and Evaluating Strategy Effectiveness

6.1 Implementation

As the SMTC is not an implementing agency, it is the responsibility of member agencies, municipalities and others to implement the suggested strategies mentioned in the previous section should they be deemed appropriate as such by the facility owner. However, as the transportation planning agency responsible for the development and administration of the area's TIP, the SMTC, collectively, will review and select projects eligible for receipt of federal transportation funding assistance. All strategies outlined in the report are eligible for funding. Table 20 lists by strategy various benefits, applicable implementing agency, schedule and potential federal transportation fund source. Individual Federal sources are not listed. Federal fund sources applicable for programming and expenditure are current sources contained within the FAST Act and other federal discretionary programs such as BUILD (Better Utilizing Investments to Leverage Development) and INFRA (Infrastructure for Rebuilding America). Strategies can also be funded via local municipal or authority budgets. The suggested strategies are incorporated directly, or by reference, in the agency's LRTP.

Table 20: Strategy Implementation

Transportation System Management & Operations				
Strategy	Benefits	Implementing Agency	Schedule	Funding Source(s)
Traffic Incident Management Systems	• Decrease travel time • Decrease delay	NYSDOT	Ongoing	Federal, State
Access Control and Management	• Decrease incidents • Improve travel times • Decrease delay	OCDOT, NYSDOT, Syracuse	Ongoing	Federal, State, Local
Traffic signal coordination or optimization	• Improve travel time • Decrease delay	OCDOT, NYSDOT, Syracuse	Ongoing	Federal, State, Local
New travel lanes	• Increase capacity	OCDOT, NYSDOT	As needed	Federal, State, Local
Intersection widening (turn lanes)	• Improve travel time • Decrease delay	OCDOT, NYSDOT, Syracuse	As needed	Federal, State, Local
Reduce merging & weaving lanes	• Increase traffic flow	NYSDOT	As needed	Federal, State

Transportation Demand Management				
Strategy	Benefits	Implementing Agency	Schedule	Funding Source(s)
Ride share (carpool, van pool)	• Decrease SOV trips	Employers	Ongoing	Federal
Flexible work schedule	• Improve travel time	Employers	Ongoing	State, Local
Guaranteed ride home	• Decrease SOV trips	Centro, Employers	Ongoing	State, Local

Transit				
Strategy	Benefits	Implementing Agency	Schedule	Funding Source(s)
Transit signal priority	• Decrease travel time • Increase ridership	Centro, OCDOT, NYSDOT, Syracuse	Ongoing	Federal, Local
Enhanced transit amenities (bus stop amenities, real-time info signs)	• Increase ridership	Centro	Ongoing	Federal, Local
Dedicated right of way for transit	• Decrease travel time • Increase ridership	NYSDOT, Syracuse	Ongoing	Federal, Local
Increase transit frequencies	• Decrease travel time • Increase ridership	Centro	Ongoing	Federal, State, Local
Increase usage and availability of park and ride facilities	• Increase vehicle occupancy rate	Centro, Property owners	Ongoing	Federal, State, Local

Bicycle and Pedestrian				
Strategy	Benefits	Implementing Agency	Schedule	Funding Source(s)
Increase bicycle facilities	• Increase non-motorized mode share	OCDOT, NYSDOT, Syracuse	Ongoing	Federal, State, Local
Increase number of sidewalks and other pedestrian accommodations	• Increase non-motorized mode share	OCDOT, NYSDOT, Syracuse	Ongoing	Federal, State, Local
Land Use				
Strategy	Benefits	Implementing Agency	Schedule	Funding Source(s)
Mixed-use development	• Decrease SOV trips • Decrease short trips	Municipalities, Developers	Ongoing	State, Local
Infill development	• Decrease SOV trips • Increase transit, bicycle and pedestrian trips	Municipalities, Developers	Ongoing	Federal, State, Local
Development in urban area	• Increase transit, bicycle and pedestrian trips	Municipalities, Developers	Ongoing	Federal, State, Local

6.2 Evaluating Strategy Effectiveness

The Syracuse Metropolitan Transportation Council will monitor and track strategy implementation through such activities as its capital improvement program (i.e., TIP) and individual member agency or municipal capital programs, as applicable. The established TIP project evaluation criteria were revised as part of the 2015 CMP to include the relationship between the CMP, LRTP and the TIP. The effectiveness of implemented strategies may be documented in a CMP report completed four years commensurate with the five-year update cycle of the LRTP. This will ensure that suggested strategies for implementation, objectives and applicable multimodal performance measures are considered for inclusion in the LRTP. As previously mentioned, depending on the type of strategy, actual strategy implementation will take several years and will therefore very likely result in limited availability of new information. Based on implementation and strategy evaluation, performance measures and the various strategies discussed in the CMP will be reviewed and updated as appropriate.

In the past several years a number of strategies have been implemented within the Syracuse MPA. Strategies, grouped by key area, are noted below. The strategies cover planning activities completed by the SMTC, management and operations activities and, other capital projects completed by member agencies and others. Appendix 7 contains a general description for each implemented strategy.

Transportation System Management and Operations

Traffic Incident Management Systems

- *ITS planning*
- *Highway Emergency Local Patrol (HELP) Program*
- *Advanced Traffic Management System*
- *Freeway Incident Management*
- *Traffic Control Center (TCC)*
- *Transportation Management Center (TMC)*

Access Control and Management

- *New on-ramp to I-690 from State Fair*

Traffic signal coordination or optimization

- *Traffic signal optimization (Onondaga County and City of Syracuse)*

New travel lanes

- *Additional lanes along I-690 West to exit into Solvay*

Intersection widening (turn lanes)

- *Additional left turn lanes at John Glenn Blvd and Rt 370 intersection in the Town of Salina*

Transportation Demand Management

Ride share (carpool, van pool)

- *Transportation Network Company availability (Uber and Lyft)*
- *SMTC's Work Link planning effort (2017)*
- *Onondaga County partnership with Lyft*
- *Providence Services Shuttle to Work.*

Transit

Transit signal priority

Enhanced transit amenities (bus stop amenities, real-time info signs)

Dedicated right of way for transit
Increase transit frequencies

- *Syracuse Metropolitan Area Regional Transit Study Phase 1 (SMART 1) enhanced transit feasibility study (February 2018)*

- *Centro's expanded transit service (2018 TAP/CMAQ award).*

Bicycle and Pedestrian
Increase bicycle facilities

- *Syracuse Bikeshare*

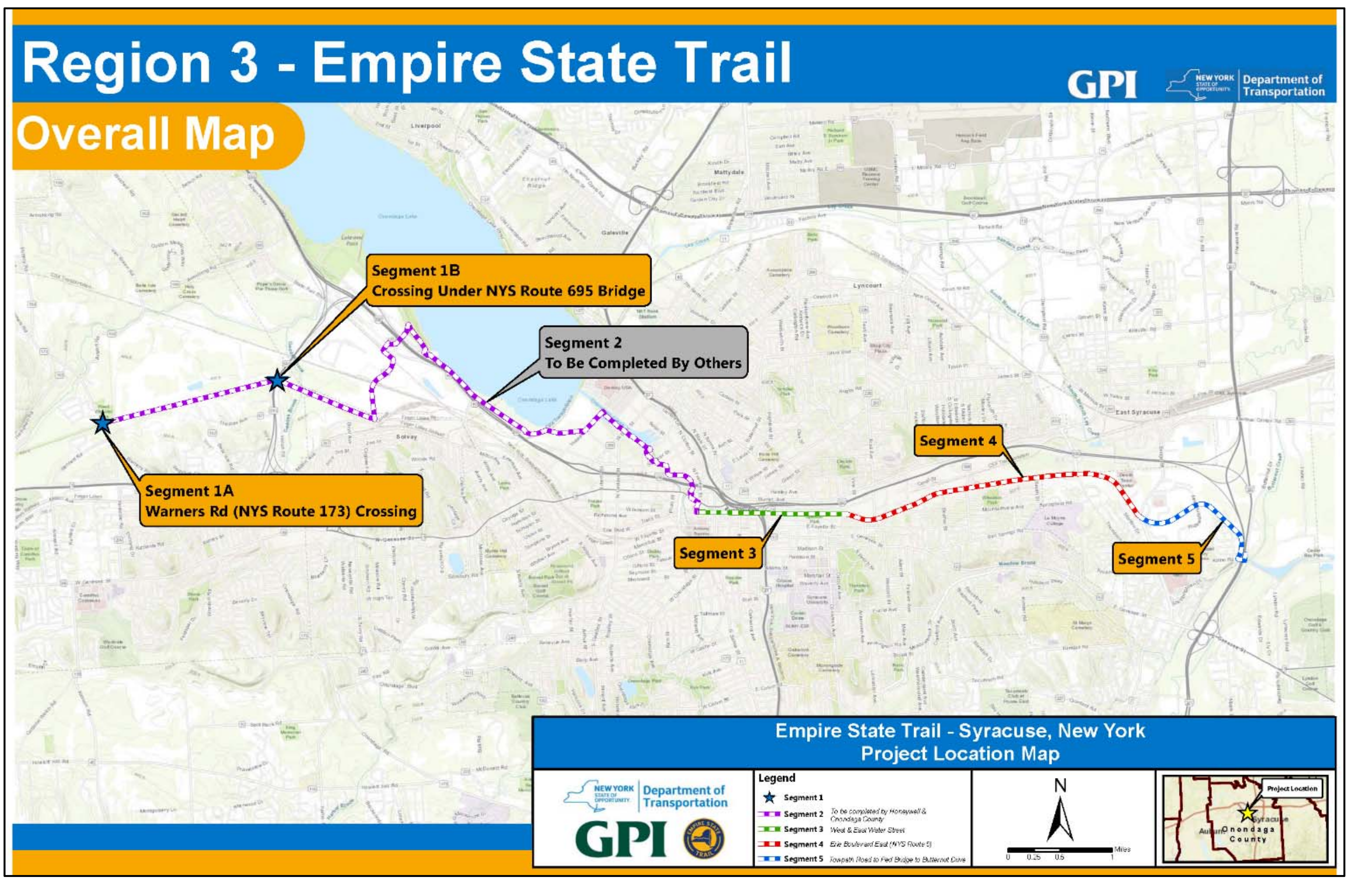
Increase number of sidewalks and other pedestrian accommodations

- *City of Syracuse Creekwalk*

- *Onondaga County Loop the Lake*

- *New York State Empire State Trail.*

Figure 4: Empire State Trail



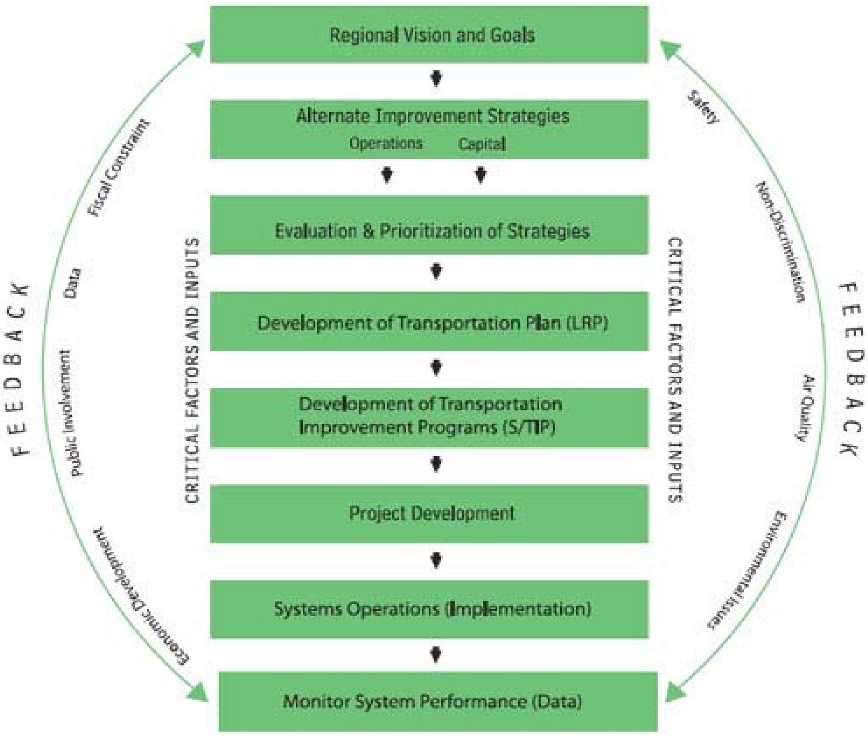
New York State Empire State Trail alignment; Source: NYSDOT

7 Conclusion

7.1 LRTP/TIP

CONNECTIONS

As previously mentioned, per federal guidelines the CMP plays an important role in metropolitan transportation planning. For urbanized areas with a population over 200,000, such as the Syracuse metropolitan area, a CMP is a task that should aid in the identification of congested sites within a community, provide strategies to improve traffic operations and efficiencies, and play an integral role in capital programming selection.



Source: FHWA

The implementation strategies listed in this document should be considered for implementation prior to any consideration of roadway expansion along the “primary commuter corridors.” Additional installation of lanes to increase carrying capacity, which includes installation of center turn lanes could potentially be achieved through non-traditional implementation activities. Furthermore, non-capacity expanding strategies should be given initial precedence for the allocation of federal transportation funds through the SMTC capital program process if these types of activities show a reduction in travel demand.

7.2 CONCLUSIONS

This 2019 update is the first time that SMTC staff utilized the now available NPMRDS online tool from SUNY Albany’s AVAIL. The web interface provides the ability for staff to not only perform network wide analyses but also more refined, segment specific data analysis. These “deeper dive investigations” may occur on select segments identified through the network analysis as congested and/or unreliable. Observed data, such as that available through the vehicle-probe based datasets will continue to be utilized in future CMP reporting. The vehicle-probe based data will be helpful in analyzing congestion duration, extent, and variability.

Efforts to date by the SMTC and member agencies have proven effective at taking under consideration management and operations of the existing transportation system through an objectives-driven and performance based transportation planning process. The planning activities completed by the SMTC that focused on updating and optimizing signal timings, reviewing and recommending bicycle/pedestrian improvements, and others are examples of assistance the metropolitan transportation planning agency can provide through the annual UPWP. The goals, objectives and performance measures included in in the CMP report are incorporated with the TIP project evaluation process.

The updated performance measure analyses, as applicable, continue to show a limited number of locations within the SMTC MPA that could be considered congested and/or unreliable. These locations are identified primarily during the morning and evening commute times along interstate segments in the City of Syracuse, notably the Interstate 81 and Interstate 690 interchange, and several roadways to the east and north of the City, such as NY Route 31 near Interstate 81 and Old Route 57 (Oswego Road) near John Glenn Boulevard. The density of suburban development in the first ring suburbs, coupled with the City of Syracuse as the primary employment location overall in the planning area, lends itself to commuting flows into and out of the City with most workers opting to drive alone to work, according to Census data.

As first referenced in the 2015 CMP, on the horizon are two regionally significant projects that could have a dramatic impact on the CMP network as well as the area's overall transportation system. The New York State Department of Transportation continues their examination of the future of Interstate 81 through the City of Syracuse. To date, the State has released a Preliminary Draft Design/Draft Environmental Impact Statement that identifies the community grid as their preferred alternative. The second project is the development of an enhanced transit system. The SMTC, in collaboration with Centro completed the SMART 1 transit feasibility study in 2018. The planning effort recommended that Bus Rapid Transit be implemented along the two study corridors, covering over 15 miles, in the City of Syracuse. It is envisioned that enhancements to the transit system will assist in decreasing the number of workers that commute to work in a car and could be a complimentary service should the community grid concept, or other alternative, be constructed in relation to Interstate 81.

Appendix 1: Congested Segments of CMP Network under the TTI Measure

Congested Segments of CMP Network under the TTI Measure

Ranking by Performance Measure							Network Identification					Excludes data with < 10% TMC bins reporting			
TTI	LOTTR	TED/Mi	TMC	Road Name	Cross Street	Miles	CMP	Transit	Freight	NHS	Interstate Highway	When Max?	TTI Max	TTI AM	TTI PM
1	4	45	104-09773	NY-31	I-81	2.707	Y			Y		PM	3.04	1.73	3.04
2	9	486	104N10803	NY-173	SOUTH AVE	0.038	Y	Y				PM	2.83	-	2.83
3	28	534	104P11357	BUTTERNUT ST	I-81	0.164	Y	Y				PM	2.83	-	2.83
4	8	4	104P10899	OSWEGO RD	JOHN GLENN BLVD	0.013	Y	Y		Y		PM	2.69	1.70	2.69
5	7	491	104P09719	NY-5	SEELEY RD	0.087	Y	Y		Y		PM	2.67	1.89	2.67
6	13	499	104N10995	THOMPSON RD	ERIE BLVD	0.046	Y	Y		Y		PM	2.67	1.96	2.67
7	29	493	104+09922	US-11	BUTTERNUT ST	0.417	Y	Y		Y		PM	2.65	-	2.65
8	14	485	104P09718	NY-5	TEALL AVE	0.041	Y	Y		Y		PM	2.64	2.12	2.64
9	22	100	104-09724	NY-5	NY-257	1.389	Y	Y	Y	Y		AM	2.57	2.57	2.43
10	3	481	104N11002	HINSDALE RD	NY-5	0.068	Y	Y				PM	2.57	2.17	2.57
11	19	2	104N09773	NY-31	I-81	0.065	Y			Y		PM	2.55	2.14	2.55
12	60	557	104+10800	NY-173	CR-98/W GENESEE ST	0.294	Y	Y				PM	2.53	1.63	2.53
13	37	11	104+11461	HIAWATHA BLVD W	PARK ST	0.155	Y	Y	Y	Y		PM	2.52	1.82	2.52
14	76	28	104-07616	S WEST ST	W ONONDAGA ST	0.606	Y	Y		Y		PM	2.52	2.15	2.52
15	38	495	104P10817	NY-175	ONONDAGA RD	0.033	Y	Y				AM	2.49	2.49	-
16	31	520	104P10943	S MIDLER AVE	I-690	0.046	Y					PM	2.48	2.28	2.48
17	15	482	104N10887	NORTHERN BLVD	COLLAMER RD	0.035	Y		Y			PM	2.47	1.72	2.47
18	23	496	104+09773	NY-31	I-81	1.814	Y					PM	2.45	2.06	2.45
19	61	5	104-10896	OSWEGO ST	1ST ST/S WILLOW ST	0.185	Y	Y		Y		PM	2.45	1.74	2.45
20	5	478	104P11386	VINE ST	HENRY CLAY BLVD	0.072	Y	Y	Y	Y		AM	2.44	2.44	-
21	93	549	104P11460	HIAWATHA BLVD	I-81/N SALINA ST	0.007	Y					PM	2.42	1.84	2.42
22	20	505	104N10959	BRIDGE ST	NY-290	0.052	Y	Y				PM	2.41	1.61	2.41
23	16	3	104P09773	NY-31	I-81	0.065	Y			Y		PM	2.41	2.35	2.41
24	24	515	104P10948	TEALL AVE	I-690	0.100	Y	Y		Y		AM	2.41	2.41	2.36
25	34	564	104-10942	S MIDLER AVE	ERIE BLVD	0.187	Y					AM	2.40	2.40	-
26	10	488	104-10824	NY-290	THOMPSON RD	0.815	Y	Y				PM	2.39	1.75	2.39
27	17	502	104N11440	E BRIGHTON AVE	E SENECA TPKE	0.022	Y	Y				PM	2.39	-	2.39
28	1	483	104P11855	I-690 TO I-81 RAMP	I-690 EB/I-81 SB	0.229	Y		Y	Y	Y	AM	2.38	2.38	1.35
29	11	8	104N10899	OSWEGO RD	JOHN GLENN BLVD	0.013	Y	Y		Y		PM	2.37	2.06	2.37
30	75	577	104-09715	NY-5	JAMES ST	0.250	Y	Y		Y		AM	2.36	2.36	-
31	39	535	104N11451	JAMESVILLE RD	I-481	0.108	Y					AM	2.31	2.31	2.02
32	77	578	104+10943	S MIDLER AVE	I-690	0.187	Y					PM	2.31	2.26	2.31
33	32	25	104-05957	NY-370	NY-48/OSWEGO ST	0.298	Y	Y		Y		PM	2.31	1.84	2.31
34	110	588	104-10840	NY-298	I-81/GENANT DR	0.241	Y	Y		Y		PM	2.30	-	2.30
35	18	500	104N09719	NY-5	SEELEY RD	0.059	Y	Y		Y		PM	2.29	1.87	2.29
36	35	15	104+10899	OSWEGO RD	JOHN GLENN BLVD	1.185	Y	Y	Y	Y		PM	2.27	1.69	2.27
37	30	507	104-11397	BEAR RD	US-11/NY-481/N MAIN ST	0.372	Y					AM	2.26	2.26	1.71
38	108	544	104+10841	NY-298	US-11/N SALINA ST	0.418	Y	Y				PM	2.26	1.87	2.26
39	100	162	104-09780	NY-31	NY-370	1.860	Y	Y		Y		PM	2.25	1.86	2.25
40	40	511	104-10802	NY-173	VELASKO RD	0.393	Y	Y				PM	2.25	1.80	2.25
41	50	16	104-11460	HIAWATHA BLVD W	I-81/N SALINA ST	0.152	Y	Y	Y	Y		PM	2.23	1.77	2.23
42	83	9	104N09929	US-11	NY-481	0.330	Y	Y	Y	Y		PM	2.22	1.82	2.22
43	62	53	104+09718	NY-5	TEALL AVE	0.434	Y	Y		Y		AM	2.22	2.22	1.86
44	196	20	104+09715	NY-5	JAMES ST	0.452	Y	Y		Y		AM	2.21	2.21	1.94
45	43	513	104N11387	S BAY RD	I-81/US-11	0.036	Y	Y	Y			AM	2.20	2.20	-
46	21	506	104-06949	NY-370	I-81	0.408	Y	Y		Y		PM	2.19	-	2.19
47	6	484	104N11386	VINE ST	HENRY CLAY BLVD	0.072	Y	Y	Y	Y		PM	2.19	2.03	2.19
48	63	31	104-09714	NY-5	I-690	0.452	Y	Y		Y		PM	2.19	1.98	2.19
49	94	29	104N09776	NY-31	NY-481	0.130	Y	Y		Y		PM	2.19	1.47	2.19
50	111	72	104+05521	S WEST ST	ERIE BLVD	0.725	Y	Y		Y		AM	2.18	2.18	1.86
51	84	572	104+11365	N GEDDES ST	NY-690	0.135	Y	Y				PM	2.17	1.90	2.17
52	56	560	104P11451	JAMESVILLE RD	I-481	0.140	Y					PM	2.16	2.15	2.16
53	64	30	104-10995	THOMPSON RD	ERIE BLVD	0.026	Y	Y		Y		PM	2.16	1.43	2.16

Congested Segments of CMP Network under the TTI Measure

Ranking by Performance Measure							Network Identification					Excludes data with < 10% TMC bins reporting			
TTI	**LOTTR**	**TED/Mi**	**TMC**	**Road Name**	**Cross Street**	**Miles**	**CMP**	**Transit**	**Freight**	**NHS**	**Interstate Highway**	**When Max?**	**TTI Max**	**TTI AM**	**TTI PM**
54	**95**	538	104P11342	E MOLLOY RD	NORTHERN BLVD/KINNE ST	0.226	Y	Y	Y			PM	2.16	1.69	2.16
55	197	648	104P10889	NORTHERN BLVD	I-481	0.253	Y		Y	Y		AM	2.15	2.15	1.97
56	**85**	**32**	104-09754	NY-92	NY-173	1.938	Y	Y		Y		PM	2.12	1.56	2.12
57	**96**	567	104-10893	7TH NORTH ST	I-81	0.191	Y	Y				PM	2.12	1.99	2.12
58	**97**	527	104-11440	E BRIGHTON AVE	E SENECA TPKE	0.305	Y	Y				PM	2.12	1.71	2.12
59	150	**13**	104P09776	NY-31	NY-481	0.130	Y	Y		Y		PM	2.12	1.57	2.12
60	**44**	530	104-10804	NY-173	S SALINA ST	0.726	Y	Y				PM	2.11	1.48	2.11
61	**69**	536	104P10896	OSWEGO ST	1ST ST/S WILLOW ST	0.022	Y	Y		Y		PM	2.11	1.55	2.11
62	**89**	508	104-11001	HINSDALE RD	W GENESEE ST	0.900	Y	Y				PM	2.10	1.93	2.10
63	**57**	44	104-10957	BRIDGE ST	ERIE BLVD	0.502	Y	Y		Y		PM	2.09	1.64	2.09
64	**65**	52	104+09754	NY-92	NY-173	1.301	Y	Y		Y		AM	2.09	2.09	1.92
65	**27**	541	104+10944	S MIDLER AVE	JAMES ST	0.813	Y	Y				PM	2.08	1.78	2.08
66	**51**	494	104-10877	BUCKLEY RD	7TH NORTH ST	1.312	Y	Y				PM	2.07	1.89	2.07
67	**59**	37	104-06869	NY-370	TULIP ST	2.277	Y			Y		PM	2.07	2.05	2.07
68	**116**	613	104+09716	NY-5	N TOWNSEND ST	0.250	Y	Y		Y		AM	2.07	2.07	-
69	**66**	501	104-10832	KIRKVILLE RD	KINNE ST	1.025	Y	Y				AM	2.06	2.06	1.90
70	**86**	551	104N10948	TEALL AVE	I-690	0.100	Y	Y		Y		AM	2.05	2.05	-
71	**78**	490	104+10996	THOMPSON RD	I-690	0.043	Y	Y		Y		PM	2.05	1.68	2.05
72	**2**	**22**	104+06870	NY-370	CR-137/CR-48	2.268	Y			Y		PM	2.05	1.89	2.05
73	**67**	139	104+09713	NY-5	N GEDDES ST	0.603	Y	Y		Y		PM	2.05	1.62	2.05
74	162	610	104N10889	NORTHERN BLVD	I-481	0.257	Y		Y	Y		PM	2.05	1.77	2.05
75	**45**	529	104-11450	JAMESVILLE RD	WOODCHUCK HILL RD	0.093	Y					AM	2.04	2.04	1.94
76	**112**	63	104-11399	E CIRCLE DR	US-11/NY-481/BREWERTON RD	0.364	Y					PM	2.04	1.57	2.04
77	**70**	514	104+09930	US-11	NY-31	1.841	Y	Y				PM	2.04	1.57	2.04
78	**87**	71	104+09758	NY-92	MANOR DR	1.137	Y	Y		Y		PM	2.03	1.58	2.03
79	**98**	629	104+10894	7TH NORTH ST	BUCKLEY RD	0.189	Y	Y				AM	2.03	2.03	1.90
80	**101**	498	104+06867	NY-370	CR-81/JOHN GLENN BLVD	2.054	Y					AM	2.02	2.02	1.88
81	**127**	631	104-10947	TEALL AVE	ERIE BLVD	0.217	Y	Y		Y		AM	2.02	2.02	-
82	187	626	104-09761	NY-92	COMSTOCK AVE	0.592	Y	Y		Y		AM	2.02	2.02	1.88

BOLD = exceed threshold for that measure

Appendix 2: Congested Segments of CMP Network under the TED Measure

Congested Segments of CMP Network under the TED Measure

Ranking by Performance Measure								Network Identification					Total Hours of Excessive Delay per Mile Freeflow-based (person hours)	
TED/Mi	**TTI**	**LOTTR**	**TMC**	**Road Name**	**Cross Street**	**Miles**	**AADT**	**CMP**	**Transit**	**Freight**	**NHS**	**Interstate Highway**	**TED**	**TED/Mile**
1	96	**25**	104N04151	I-690	I-81	0.646	104,319	Y	Y	Y	Y	Y	76,604	118,655
2	**11**	**19**	104N09773	NY-31	I-81	0.065	27,547	Y			Y		7,764	118,654
3	**23**	**16**	104P09773	NY-31	I-81	0.065	27,547	Y			Y		6,453	98,613
4	**4**	**8**	104P10899	OSWEGO RD	JOHN GLENN BLVD	0.013	26,105	Y	Y		Y		1,263	95,039
5	**19**	**61**	104-10896	OSWEGO ST	1ST ST/S WILLOW ST	0.185	24,697	Y	Y		Y		15,314	82,677
6	189	284	104+09757	NY-92	I-481	0.59	49,764	Y	Y	Y	Y		40,842	69,186
7	141	**52**	104-04151	I-690	I-81	0.346	76,816	Y	Y	Y	Y	Y	23,517	67,930
8	**29**	**11**	104N10899	OSWEGO RD	JOHN GLENN BLVD	0.013	26,105	Y	Y		Y		898	67,560
9	**42**	**83**	104N09929	US-11	NY-481	0.33	27,570	Y	Y	Y	Y		22,099	67,048
10	214	354	104P04149	I-690	MIDLER AVE/EXIT 15	0.551	86,230	Y	Y	Y	Y	Y	36,905	66,948
11	**13**	**37**	104+11461	HIAWATHA BLVD W	PARK ST	0.155	16,180	Y	Y	Y	Y		9,932	64,093
12	137	190	104-11377	W TAFT RD	BUCKLEY RD	0.888	52,752	Y	Y	Y	Y		56,331	63,451
13	**59**	150	104P09776	NY-31	NY-481	0.13	22,252	Y	Y		Y		8,156	62,868
14	128	253	104-09756	NY-92	NY-5	0.59	49,764	Y	Y	Y	Y		36,607	62,013
15	**36**	**35**	104+10899	OSWEGO RD	JOHN GLENN BLVD	1.185	26,105	Y	Y	Y	Y		71,030	59,957
16	**41**	**50**	104-11460	HIAWATHA BLVD W	I-81/N SALINA ST	0.152	16,180	Y	Y	Y	Y		8,839	58,228
17	294	260	104N04108	I-81	HARRISON ST/EXIT 18	0.176	90,251	Y	Y	Y	Y	Y	10,193	57,899
18	231	302	104-09722	NY-5	I-481	0.59	49,931	Y	Y	Y	Y		34,001	57,598
19	212	**147**	104N04109	I-81	I-690	0.069	90,251	Y	Y	Y	Y	Y	3,973	57,467
20	**44**	196	104+09715	NY-5	JAMES ST	0.452	11,156	Y	Y		Y		25,737	56,971
21	213	289	104N04152	I-690	GENESEE ST/WEST ST/EXIT 11-12	0.431	73,316	Y	Y	Y	Y	Y	23,704	55,061
22	**72**	**2**	104+06870	NY-370	CR-137/CR-48	2.268	22,223	Y			Y		112,922	49,798
23	246	292	104+11378	W TAFT RD	S MAIN ST	0.864	52,752	Y	Y	Y	Y		42,706	49,400
24	173	**54**	104-10810	NY-173	NY-92/FAYETTE ST	0.146	25,008	Y	Y		Y		7,011	48,164
25	**33**	**32**	104-05957	NY-370	NY-48/OSWEGO ST	0.298	17,050	Y	Y		Y		14,263	47,810
26	278	287	104-04109	I-81	I-690	0.49	90,251	Y	Y	Y	Y	Y	21,989	44,840
27	365	315	104-04107	I-81	ADAMS ST/EXIT 18	0.067	90,251	Y	Y	Y	Y	Y	2,994	44,595
28	**14**	**76**	104-07616	S WEST ST	W ONONDAGA ST	0.606	16,420	Y	Y		Y		26,663	44,022
29	**49**	**94**	104N09776	NY-31	NY-481	0.13	22,252	Y	Y		Y		5,703	43,964
30	**53**	**64**	104-10995	THOMPSON RD	ERIE BLVD	0.026	21,159	Y	Y		Y		1,161	43,941
31	**48**	**63**	104-09714	NY-5	I-690	0.452	11,156	Y	Y		Y		19,766	43,754
32	**56**	**85**	104-09754	NY-92	NY-173	1.938	19,833	Y	Y		Y		84,096	43,394
33	166	160	104-09776	NY-31	NY-481	1.49	24,271	Y	Y		Y		64,283	43,147
34	151	**120**	104P10958	BRIDGE ST	NY-690	0.184	24,978	Y	Y		Y		7,492	40,764
35	126	176	104-10899	OSWEGO RD	JOHN GLENN BLVD	1.424	26,105	Y	Y		Y		57,885	40,653

BOLD = exceed threshold for that measure

Appendix 3: Congested Segments of CMP Network under the LOTTR Measure

Congested Segments of CMP Network under the LOTTR Measure

Ranking by Performance Measure							Network Identification					Excludes data with < 10% TMC bins reporting					
LOTTR	TTI	TED/Mi	TMC	Road Name	Cross Street	Miles	CMP	Transit	Freight	NHS	Interstate Highway	When Max?	LOTTR Max	LOTTR AM	LOTTR Off Peak	LOTTR PM	LOTTR Weekend
1	28	483	104P11855	I-690 TO I-81 RAMP	I-690 EB/I-81 SB	0.229	Y		Y	Y	Y	AM	2.42	2.42	1.08	1.11	1.11
2	72	22	104+06870	NY-370	CR-137/CR-48	2.268	Y			Y		OP	2.41	1.91	2.41	2.26	2.11
3	10	481	104N11002	HINSDALE RD	NY-5	0.068	Y	Y				WE	2.36	2.00	2.00	2.04	2.36
4	1	45	104-09773	NY-31	I-81	2.707	Y			Y		WE	2.27	1.51	1.80	2.22	2.27
5	20	478	104P11386	VINE ST	HENRY CLAY BLVD	0.072	Y	Y	Y	Y		OP	2.20	2.10	2.20	-	-
6	47	484	104N11386	VINE ST	HENRY CLAY BLVD	0.072	Y	Y	Y	Y		PM	2.17	1.79	1.69	2.17	-
7	5	491	104P09719	NY-5	SEELEY RD	0.087	Y	Y		Y		PM	2.15	1.69	1.89	2.15	-
8	4	4	104P10899	OSWEGO RD	JOHN GLENN BLVD	0.013	Y	Y		Y		PM	2.14	1.60	1.73	2.14	-
9	2	486	104N10803	NY-173	SOUTH AVE	0.038	Y	Y				PM	2.11	-	1.91	2.11	-
10	26	488	104-10824	NY-290	THOMPSON RD	0.815	Y	Y				PM	2.03	1.62	1.72	2.03	-
11	29	8	104N10899	OSWEGO RD	JOHN GLENN BLVD	0.013	Y	Y		Y		WE	2.00	1.73	1.75	1.71	2.00
12	746	480	104P10995	THOMPSON RD	ERIE BLVD	0.011	Y	Y		Y		OP	1.99	-	1.99	-	-
13	6	499	104N10995	THOMPSON RD	ERIE BLVD	0.046	Y	Y		Y		OP	1.95	1.91	1.95	1.93	-
14	8	485	104P09718	NY-5	TEALL AVE	0.041	Y	Y		Y		PM	1.95	1.66	1.70	1.95	-
15	17	482	104N10887	NORTHERN BLVD	COLLAMER RD	0.035	Y		Y			PM	1.93	1.39	1.50	1.93	-
16	23	3	104P09773	NY-31	I-81	0.065	Y			Y		AM	1.90	1.90	1.61	1.70	1.82
17	27	502	104N11440	E BRIGHTON AVE	E SENECA TPKE	0.022	Y	Y				PM	1.90	-	1.85	1.90	-
18	35	500	104N09719	NY-5	SEELEY RD	0.059	Y	Y		Y		PM	1.90	1.58	1.57	1.90	-
19	11	2	104N09773	NY-31	I-81	0.065	Y			Y		OP	1.89	1.80	1.89	1.78	-
20	22	505	104N10959	BRIDGE ST	NY-290	0.052	Y	Y				PM	1.89	1.51	1.60	1.89	1.89
21	46	506	104-06949	NY-370	I-81	0.408	Y	Y		Y		WE	1.88	-	1.64	1.70	1.88
22	9	100	104-09724	NY-5	NY-257	1.389	Y	Y	Y	Y		PM	1.87	1.85	1.76	1.87	1.75
23	18	496	104+09773	NY-31	I-81	1.814	Y					PM	1.87	1.79	1.53	1.87	1.68
24	24	515	104P10948	TEALL AVE	I-690	0.100	Y	Y		Y		PM	1.86	1.71	1.57	1.86	-
25	96	1	104N04151	I-690	I-81	0.646	Y	Y	Y	Y	Y	PM	1.84	1.19	1.08	1.84	1.10
26	105	112	104+09774	NY-31	CR-49	2.707	Y			Y		WE	1.84	1.31	1.42	1.68	1.84
27	65	541	104+10944	S MIDLER AVE	JAMES ST	0.813	Y	Y				WE	1.82	1.57	1.57	1.70	1.82
28	3	534	104P11357	BUTTERNUT ST	I-81	0.164	Y	Y				PM	1.81	-	1.64	1.81	-
29	7	493	104+09922	US-11	BUTTERNUT ST	0.417	Y	Y		Y		PM	1.81	-	1.63	1.81	-
30	37	507	104-11397	BEAR RD	US-11/NY-481/N MAIN ST	0.372	Y					AM	1.80	1.80	1.50	1.40	-
31	16	520	104P10943	S MIDLER AVE	I-690	0.046	Y					PM	1.78	1.69	1.56	1.78	-
32	33	25	104-05957	NY-370	NY-48/OSWEGO ST	0.298	Y	Y		Y		PM	1.78	1.58	1.69	1.78	-
33	95	521	104N09718	NY-5	TEALL AVE	0.032	Y	Y		Y		OP	1.78	1.66	1.78	-	-
34	25	564	104-10942	S MIDLER AVE	ERIE BLVD	0.187	Y					AM	1.77	1.77	1.67	-	-
35	36	15	104+10899	OSWEGO RD	JOHN GLENN BLVD	1.185	Y	Y	Y	Y		PM	1.77	1.44	1.45	1.77	1.65
36	154	479	104-10805	NY-173	E BRIGHTON AVE	1.174	Y	Y				WE	1.76	1.44	1.50	1.50	1.76
37	13	11	104+11461	HIAWATHA BLVD W	PARK ST	0.155	Y	Y	Y	Y		PM	1.75	1.42	1.45	1.75	1.55
38	15	495	104P10817	NY-175	ONONDAGA RD	0.033	Y	Y				AM	1.75	1.75	1.56	-	-
39	31	535	104N11451	JAMESVILLE RD	I-481	0.108	Y					AM	1.75	1.75	1.71	1.64	-
40	40	511	104-10802	NY-173	VELASKO RD	0.393	Y	Y				PM	1.75	1.50	1.64	1.75	-
41	117	531	104+10959	BRIDGE ST	NY-290	0.173	Y	Y				WE	1.75	1.53	1.53	1.59	1.75
42	749	523	104+11459	HIAWATHA BLVD	NY-690/STATE FAIR BLVD/SPENCER ST	0.228	Y	Y				OP	1.73	-	1.73	-	-
43	45	513	104N11387	S BAY RD	I-81/US-11	0.036	Y	Y	Y			AM	1.71	1.71	1.64	-	-
44	60	530	104-10804	NY-173	S SALINA ST	0.726	Y	Y				PM	1.71	1.28	1.31	1.71	-
45	75	529	104-11450	JAMESVILLE RD	WOODCHUCK HILL RD	0.093	Y					AM	1.71	1.71	1.46	1.60	-
46	116	49	104N10896	OSWEGO ST	1ST ST/S WILLOW ST	0.020	Y	Y		Y		OP	1.71	1.56	1.71	1.56	1.67
47	169	503	104P11459	HIAWATHA BLVD	NY-690/STATE FAIR BLVD/SPENCER ST	0.037	Y	Y				AM	1.71	1.71	1.69	-	-
48	747	504	104N09720	NY-5	NY-635	0.035	Y	Y		Y		OP	1.71	-	1.71	-	-
49	750	524	104N11461	HIAWATHA BLVD W	PARK ST	0.036	Y	Y	Y	Y		OP	1.71	-	1.71	-	-
50	41	16	104-11460	HIAWATHA BLVD W	I-81/N SALINA ST	0.152	Y	Y	Y	Y		WE	1.70	1.38	1.48	1.59	1.70
51	66	494	104-10877	BUCKLEY RD	7TH NORTH ST	1.312	Y	Y				PM	1.70	1.45	1.43	1.70	-
52	141	7	104-04151	I-690	I-81	0.346	Y	Y	Y	Y	Y	AM	1.70	1.70	1.07	1.13	1.09
53	148	542	104-09921	US-11	NY-290	0.417	Y	Y		Y		OP	1.70	1.46	1.70	-	-
54	173	24	104-10810	NY-173	NY-92/FAYETTE ST	0.146	Y	Y		Y		AM	1.70	1.70	1.59	1.63	1.57
55	748	522	104P11461	HIAWATHA BLVD W	PARK ST	0.036	Y	Y	Y	Y		OP	1.70	-	1.70	-	-
56	52	560	104P11451	JAMESVILLE RD	I-481	0.140	Y					OP	1.69	1.53	1.69	1.69	-
57	63	44	104-10957	BRIDGE ST	ERIE BLVD	0.502	Y	Y		Y		WE	1.69	1.50	1.57	1.57	1.69
58	111	489	104P11376	W TAFT RD	HENRY CLAY BLVD	0.030	Y	Y	Y	Y		OP	1.69	1.59	1.69	-	-
59	67	37	104-06869	NY-370	TULIP ST	2.277	Y			Y		WE	1.68	1.54	1.62	1.67	1.68
60	12	557	104+10800	NY-173	CR-98/W GENESEE ST	0.294	Y	Y				PM	1.67	1.50	1.55	1.67	-
61	19	5	104-10896	OSWEGO ST	1ST ST/S WILLOW ST	0.185	Y	Y		Y		PM	1.67	1.54	1.64	1.67	1.67
62	43	53	104+09718	NY-5	TEALL AVE	0.434	Y	Y		Y		AM	1.67	1.67	1.50	1.47	-
63	48	31	104-09714	NY-5	I-690	0.452	Y	Y		Y		PM	1.67	1.50	1.56	1.67	-
64	53	30	104-10995	THOMPSON RD	ERIE BLVD	0.026	Y	Y		Y		PM	1.67	1.31	1.53	1.67	1.56
65	64	52	104+09754	NY-92	NY-173	1.301	Y	Y		Y		AM	1.67	1.67	1.37	1.57	1.49
66	69	501	104-10832	KIRKVILLE RD	KINNE ST	1.025	Y	Y				PM	1.67	1.61	1.53	1.67	-
67	73	139	104+09713	NY-5	N GEDDES ST	0.603	Y	Y		Y		PM	1.67	1.51	1.44	1.67	-
68	87	510	104+11002	HINSDALE RD	NY-5	0.900	Y	Y				OP	1.67	1.57	1.67	1.56	-

Congested Segments of CMP Network under the LOTTR Measure

Ranking by Performance Measure							Network Identification					Excludes data with < 10% TMC bins reporting					
LOTTR	TTI	TED/Mi	TMC	Road Name	Cross Street	Miles	CMP	Transit	Freight	NHS	Interstate Highway	When Max?	LOTTR Max	LOTTR AM	LOTTR Off Peak	LOTTR PM	LOTTR Weekend
69	61	536	104P10896	OSWEGO ST	1ST ST/S WILLOW ST	0.022	Y	Y		Y		PM	1.64	1.47	1.54	1.64	-
70	77	514	104+09930	US-11	NY-31	1.841	Y	Y				WE	1.64	1.39	1.50	1.53	1.64
71	83	543	104+11389	S BAY RD	E TAFT RD	0.291	Y		Y			AM	1.64	1.64	1.50	-	-
72	200	48	104+10811	NY-173	NY-92/WASHINGTON ST	0.146	Y	Y		Y		AM	1.64	1.64	1.47	1.50	1.47
73	751	545	104+11360	BUTTERNUT ST	GRANT BLVD	0.910	Y	Y				OP	1.64	-	1.64	-	-
74	752	548	104+09921	US-11	NY-290	0.126	Y	Y				OP	1.64	-	1.64	-	-
75	30	577	104-09715	NY-5	JAMES ST	0.250	Y	Y		Y		OP	1.63	1.43	1.63	-	-
76	14	28	104-07616	S WEST ST	W ONONDAGA ST	0.606	Y	Y		Y		WE	1.62	1.52	1.52	1.54	1.62
77	32	578	104+10943	S MIDLER AVE	I-690	0.187	Y					AM	1.62	1.62	1.50	1.62	-
78	71	490	104+10996	THOMPSON RD	I-690	0.043	Y	Y		Y		OP	1.62	1.48	1.62	1.53	-
79	85	497	104-05397	NY-49	I-81	1.094	Y	Y				AM	1.62	1.62	1.29	1.35	-
80	140	537	104+06957	NY-370	NY-31/E GENESEE ST	0.298	Y	Y		Y		PM	1.62	1.41	1.54	1.62	-
81	227	517	104P05397	NY-49	I-81	0.099	Y	Y				OP	1.62	1.53	1.62	-	-
82	138	55	104+10897	OSWEGO ST	VINE ST	0.198	Y	Y		Y		PM	1.61	1.38	1.44	1.61	-
83	42	9	104N09929	US-11	NY-481	0.330	Y	Y	Y	Y		PM	1.60	1.47	1.44	1.60	1.42
84	51	572	104+11365	N GEDDES ST	NY-690	0.135	Y	Y				AM	1.60	1.60	1.50	1.56	-
85	56	32	104-09754	NY-92	NY-173	1.938	Y	Y		Y		WE	1.60	1.51	1.57	1.59	1.60
86	70	551	104N10948	TEALL AVE	I-690	0.100	Y	Y		Y		OP	1.60	1.56	1.60	-	-
87	78	71	104+09758	NY-92	MANOR DR	1.137	Y	Y		Y		PM	1.60	1.33	1.42	1.60	1.50
88	104	116	104+11397	BEAR RD	US-11/NY-481/N MAIN ST	2.433	Y	Y		Y		AM	1.60	1.60	1.44	1.50	1.44
89	62	508	104-11001	HINSDALE RD	W GENESEE ST	0.900	Y	Y				AM	1.59	1.59	1.50	1.56	1.44
90	109	546	104P10893	7TH NORTH ST	I-81	0.307	Y	Y	Y			WE	1.59	1.44	1.39	1.43	1.59
91	160	65	104+09711	NY-5	FAY RD	1.367	Y	Y		Y		PM	1.59	1.32	1.49	1.59	1.56
92	241	569	104P10959	BRIDGE ST	NY-290	0.067	Y	Y				OP	1.59	1.45	1.59	1.56	-
93	21	549	104P11460	HIAWATHA BLVD	I-81/N SALINA ST	0.007	Y					PM	1.58	1.39	1.43	1.58	1.56
94	49	29	104N09776	NY-31	NY-481	0.130	Y	Y		Y		PM	1.58	1.39	1.51	1.58	1.57
95	54	538	104P11342	E MOLLOY RD	NORTHERN BLVD/KINNE ST	0.226	Y	Y	Y			PM	1.58	1.51	1.54	1.58	-
96	57	567	104-10893	7TH NORTH ST	I-81	0.191	Y	Y				OP	1.58	1.50	1.58	1.55	-
97	58	527	104-11440	E BRIGHTON AVE	E SENECA TPKE	0.305	Y	Y				PM	1.58	1.50	1.44	1.58	-
98	79	629	104+10894	7TH NORTH ST	BUCKLEY RD	0.189	Y	Y				PM	1.58	1.52	1.42	1.58	-
99	89	525	104-10823	NY-290	MIDLER AVE	0.741	Y	Y		Y		PM	1.58	1.46	1.55	1.58	-
100	39	162	104-09780	NY-31	NY-370	1.860	Y	Y		Y		PM	1.57	1.39	1.50	1.57	1.37
101	80	498	104+06867	NY-370	CR-81/JOHN GLENN BLVD	2.054	Y					AM	1.57	1.57	1.28	1.44	1.30
102	88	518	104+10833	KIRKVILLE RD	I-481	1.025	Y	Y				PM	1.57	1.34	1.38	1.57	-
103	90	79	104-11378	E TAFT RD	S MAIN ST	0.065	Y		Y	Y		PM	1.57	1.45	1.48	1.57	-
104	93	580	104-09760	NY-92	WESTCOTT ST	0.587	Y	Y		Y		AM	1.57	1.57	1.29	1.39	-
105	98	561	104+11400	E CIRCLE DR	S HOGAN DR	0.389	Y					PM	1.57	1.44	1.47	1.57	-
106	754	562	104+10948	TEALL AVE	I-690	0.217	Y	Y		Y		OP	1.57	-	1.57	-	-
107	755	603	104-12293	NY-173	MILTON AVE	0.294	Y	Y				OP	1.57	-	1.57	-	-
108	38	544	104+10841	NY-298	US-11/N SALINA ST	0.418	Y	Y				PM	1.56	1.36	1.41	1.56	-
109	760	630	104P11365	GEDDES ST	NY-690	0.048	Y	Y				OP	1.56	-	1.56	-	-
110	34	588	104-10840	NY-298	I-81/GENANT DR	0.241	Y	Y		Y		PM	1.55	-	1.47	1.55	-
111	50	72	104+05521	S WEST ST	ERIE BLVD	0.725	Y	Y		Y		PM	1.55	1.51	1.47	1.55	1.49
112	76	63	104-11399	E CIRCLE DR	US-11/NY-481/BREWERTON RD	0.364	Y					WE	1.55	1.41	1.48	1.54	1.55
113	144	528	104+09929	US-11	NY-481	0.608	Y	Y				AM	1.55	1.55	1.45	1.40	-
114	208	103	104-09757	NY-92	I-481	1.070	Y	Y		Y		WE	1.55	1.36	1.40	1.44	1.55
115	756	607	104-11364	N GEDDES ST	W GENESEE ST	0.135	Y	Y				OP	1.55	-	1.55	-	-
116	68	613	104+09716	NY-5	N TOWNSEND ST	0.250	Y	Y		Y		OP	1.54	1.50	1.54	-	-
117	112	554	104P11440	E BRIGHTON AVE	E SENECA TPKE	0.022	Y	Y				OP	1.54	1.50	1.54	-	-
118	142	67	104-09717	NY-5	LODI ST	0.469	Y	Y		Y		AM	1.54	1.54	1.50	1.47	-
119	145	119	104+09916	US-11	E COLVIN ST	0.679	Y	Y		Y		PM	1.54	1.41	1.43	1.54	-
120	151	34	104P10958	BRIDGE ST	NY-690	0.184	Y	Y		Y		WE	1.54	1.45	1.41	1.50	1.54
121	92	532	104+11363	GEDDES ST	ERIE BLVD	1.084	Y	Y				PM	1.53	1.36	1.38	1.53	1.35
122	94	95	104-10873	ELECTRONICS PKWY	OLD LIVERPOOL RD	0.651	Y	Y		Y		PM	1.53	1.41	1.44	1.53	-
123	120	512	104+11379	E TAFT RD	S BAY RD	0.052	Y		Y	Y		PM	1.53	1.39	1.47	1.53	-
124	149	602	104-10958	BRIDGE ST	NY-690	0.142	Y	Y				PM	1.53	1.34	1.40	1.53	1.50
125	185	597	104P09779	NY-31	NY-631	0.012	Y			Y		PM	1.53	1.28	1.29	1.53	-
126	204	492	104+10806	NY-173	BARKER HILL RD	1.174	Y	Y				PM	1.53	1.39	1.48	1.53	-
127	81	631	104-10947	TEALL AVE	ERIE BLVD	0.217	Y	Y		Y		OP	1.52	1.51	1.52	-	-
128	103	142	104+10846	NY-298	THOMPSON RD	0.989	Y		Y	Y		PM	1.52	1.33	1.28	1.52	1.22
129	134	558	104-09772	NY-31	CR-208 (EAST)	1.814	Y					PM	1.52	1.37	1.31	1.52	1.36
130	84	632	104N11460	HIAWATHA BLVD	I-81/N SALINA ST	0.007	Y					PM	1.50	1.38	1.47	1.50	-
131	86	87	104P10874	ELECTRONICS PKWY	I-90	0.069	Y	Y	Y	Y		AM	1.50	1.50	1.39	1.47	-
132	91	573	104N10874	ELECTRONICS PKWY	I-90	0.070	Y	Y	Y	Y		PM	1.50	1.41	1.44	1.50	-
133	99	90	104+09776	NY-31	NY-481	1.539	Y	Y		Y		WE	1.50	1.27	1.31	1.44	1.50
134	114	41	104P09929	US-11	NY-481	0.361	Y	Y	Y	Y		WE	1.50	1.47	1.40	1.41	1.50
135	115	586	104N10817	NY-175	ONONDAGA RD	0.033	Y	Y				PM	1.50	1.47	1.47	1.50	-
136	118	56	104-09716	NY-5	N TOWNSEND ST	0.757	Y	Y		Y		PM	1.50	1.43	1.36	1.50	-

Congested Segments of CMP Network under the LOTTR Measure

Ranking by Performance Measure							Network Identification					Excludes data with < 10% TMC bins reporting					
LOTTR	TTI	TED/Mi	TMC	Road Name	Cross Street	Miles	CMP	Transit	Freight	NHS	Interstate Highway	When Max?	LOTTR Max	LOTTR AM	LOTTR Off Peak	LOTTR PM	LOTTR Weekend
137	122	570	104N10898	OSWEGO ST	I-90	0.081	Y	Y	Y	Y		AM	1.50	1.50	1.26	-	-
138	123	575	104+11451	JAMESVILLE RD	I-481	0.065	Y					AM	1.50	1.50	1.42	1.48	-
139	124	59	104+10958	BRIDGE ST	NY-690	0.509	Y	Y		Y		PM	1.50	1.42	1.35	1.50	1.44
140	127	80	104+11364	N GEDDES ST	W GENESEE ST	0.384	Y	Y				AM	1.50	1.50	1.38	1.42	-
141	132	539	104+10893	7TH NORTH ST	I-81	0.588	Y		Y			PM	1.50	1.40	1.38	1.50	-
142	163	93	104+10824	NY-290	THOMPSON RD	0.741	Y	Y		Y		AM	1.50	1.50	1.40	1.43	-
143	164	587	104+06871	NY-370	US-11/WOLF ST	0.408	Y	Y		Y		PM	1.50	1.46	1.42	1.50	-
144	179	568	104+10825	NY-290	KINNE ST	0.815	Y	Y				PM	1.50	1.37	1.37	1.50	-
145	181	540	104+09714	NY-5	I-690	0.598	Y	Y		Y		AM	1.50	1.50	1.31	-	-
146	196	581	104P10844	NY-298	NEW COURT AVE	0.066	Y	Y	Y	Y		PM	1.50	1.32	1.41	1.50	-
147	212	**19**	104N04109	I-81	I-690	0.069	Y	Y	Y	Y	Y	AM	1.50	1.50	1.08	1.10	1.10
148	337	584	104-09770	NY-31	CR-3	5.192	Y					WE	1.50	1.20	1.34	1.44	1.50
149	761	641	104-11358	BUTTERNUT ST	N SALINA ST	0.298	Y	Y				OP	1.50	-	1.50	-	-

BOLD = exceed threshold for that measure

Appendix 4: Congested Segments of CMP Network under the TTTR Measure

Congested Segments of CMP Network under the TTTR Measure

Ranking by Performance Measure								Network Identification					Excludes data with < 10% TMC bins reporting						
TTTR	**TTI**	**LOTTR**	**TED/Mi**	**TMC**	**Road Name**	**Cross Street**	**Miles**	**CMP**	**Transit**	**Freight**	**NHS**	**Interstate Highway**	**TTTR Max Period**	**TTTR Max**	**TTTR AM**	**TTTR Off Peak**	**TTTR PM**	**TTTR Over-night**	**TTTR Week-end**
1	**20**	**5**	478	104P11386	VINE ST	HENRY CLAY BLVD	0.072	Y	Y	Y	Y		OP	5.75	4.80	5.75	-	-	-
2	147	215	111	104P09983	NY-690	NY-48	0.053	Y		Y	Y		PM	4.80	3.02	4.17	4.80	-	-
3	**17**	**15**	482	104N10887	NORTHERN BLVD	COLLAMER RD	0.035	Y		Y			PM	4.50	2.65	3.71	4.50	-	-
4	**28**	**1**	483	104P11855	I-690 ramp to I-81	I-690 EB/I-81 SB	0.229	Y		Y	Y	Y	AM	4.33	4.33	1.27	1.52	1.29	1.33
5	**47**	**6**	484	104N11386	VINE ST	HENRY CLAY BLVD	0.072	Y	Y	Y	Y		AM	4.33	4.33	3.86	4.33	-	-
6	130	301	487	104P11909	I-81 TO I-690 RAMP	I-81 SB/I-690 EB	0.304	Y		Y	Y	Y	PM	4.13	1.92	1.53	4.13	-	1.30
7	**36**	**35**	**15**	104+10899	OSWEGO RD	JOHN GLENN BLVD	1.185	Y	Y	Y	Y		WE	4.00	2.75	2.94	3.29	-	4.00
8	111	**58**	489	104P11376	W TAFT RD	HENRY CLAY BLVD	0.03	Y	Y	Y	Y		AM	4.00	4.00	3.86	-	-	-
9	103	**128**	142	104+10846	NY-298	THOMPSON RD	0.989	Y		Y	Y		PM	4.00	2.82	2.78	4.00	-	1.74

BOLD = exceed threshold for that measure

Appendix 5: LOS of Primary-to-Primary Corridor Intersections Identified in 2015 CMP

LOS of Primary-to-Primary Corridor Intersections Identified in 2015 CMP

Intersection	Municipality	LOS
NY 31 & NY 48	Baldwinsville	C
NY 31 & NY 370 & Mechanics	Baldwinsville	C
NY 48 & Van Buren Road	Van Buren	B
Bear Road and Buckley Road	Clay	D
East Brighton Avenue & Seneca Tnpk.	Syracuse	C
Adams St & Almond St	Syracuse	C
Buckley Rd & 7th North St	Salina	E
East Genesee Street and Almond Street	Syracuse	E
Erie Boulevard & Almond Street	Syracuse	B
Harrison Street & Almond Street	Syracuse	F
Hiawatha & Erie Boulevard	Syracuse	B
Hiawatha & I-690	Syracuse	B
Hinsdale Road & NY 5 (EB Entrance Ramp)	Camillus	A
Hinsdale Road & NY 5 (WB Exit Ramp)	Camillus	C
NY 5 (Off-Ramp) & West Genesee Street	Geddes	D
NY 5 (On-Ramp) & West Genesee Street	Geddes	B
Bear St. & I-81	Syracuse	B
I-81 (Ramps)/Gray Avenue & 7th N St	Salina	B
I-81 (Ramps)/Luther Avenue & 7th N St	Salina	B
I-81 & Buckley/Old Liverpool Rd	Salina	B
James Street & Oswego Boulevard	Syracuse	B
NY 92 & NY 173 (East Intersection)	Manlius	D
NY 92 & NY 173 (West Intersection)	Manlius	C
James Street & State Street	Syracuse	B
NY 31 & NY 481 NB Ramp	Clay	C
Bear St & I-690	Syracuse	C
Columbus Ave & E Genesee St	Syracuse	C
Electronics Pkwy & 7th N St	Salina	B

LOS of Primary-to-Primary Corridor Intersections Identified in 2015 CMP

Electronics Pkwy & I-90	Salina	C
Erie Blvd & Clinton St	Syracuse	A
James St & Thompson Rd	Syracuse	E
Northern Blvd. & NY 298 (a.k.a. Collamer Rd.)	DeWitt	D
NY 31 & I-81 NB off & Pardee Road	Cicero	E
NY 31 & I-81 SB on/off	Cicero	C
NY 31 & US 11	Cicero	C
NY 31 & South Bay Road	Cicero	D
NY 370 & Old Liverpool Rd	Salina	C
Old Liverpool Rd & Electronics Pkwy	Salina	C
Oswego St & NY 370	Liverpool	B
NY 31 & Old Rt 57	Clay	C
Oswego Blvd & Erie Blvd	Syracuse	B
NY 298 & I-481 (East Intersection)	Geddes	C
Salina St & Seneca Tnpk	Syracuse	D
Soule Rd & NY 481 SB Ramp	Clay	B
Soule Rd & NY 31	Clay	C
State St & Erie Blvd	Syracuse	D
State Street & Willow Street	Syracuse	C
NY 5 (W Genesee St) & Erie Blvd	Syracuse	B
NY 298 & I-481 (West Intersection)	DeWitt	B
Morgan Rd & Buckley Rd	Clay	E
Henry Clay Blvd & Buckley Rd	Clay	D
Henry Clay Blvd & Taft Rd	Clay	C
John Glenn Blvd & Buckley Rd	Clay	B
Old Rt. 57 & John Glenn Boulevard	Clay	D
Taft Rd. & Buckley Rd.	Clay	C
Salina St & W Onondaga/Harrison St	Syracuse	C
Salina St & Adams St	Syracuse	C

LOS of Primary-to-Primary Corridor Intersections Identified in 2015 CMP

W. Onondaga St. & Shonnard/Adams St.	Syracuse	C
Old Rt. 57 & I-90	Salina	B
Oswego St & Tulip St	Liverpool	B
US 11 & Taft Rd	N. Syracuse	D
South Bay Rd & E Circle Dr	Cicero	B
South Bay Road & Thompson Road	Cicero	B
South Bay Road and Bear Road	N. Syracuse	C
East Circle Drive and Rt. 11	Cicero	C
Salina St & Castle St (MLK Jr)	Syracuse	B
Salina St & E Brighton Ave	Syracuse	C
Salina St & E Colvin St	Syracuse	B
State St. & Castle St.	Syracuse	B
Teall Ave & I-690 (EB)	Syracuse	C
Teall Ave & I-690 (WB)	Syracuse	A
Teall Ave. & Erie Blvd.	Syracuse	C
Teall Avenue & James Street	Syracuse	C
Erie Blvd. & Bridge St.	DeWitt	C
Erie Blvd. & Thompson Rd.	Syracuse	D
Erie Blvd. & E. Genesee St.	DeWitt	C
East Circle Drive and NY 481 Ramps	Cicero	C
Northern Boulevard & I-481 (SB) Ramps	Cicero	B
Northern Boulevard & I-481 (NB) Ramps	Cicero	C
NY 31 & Morgan Road	Clay	D
NY 5 & NY 92	DeWitt	F
Taft Rd & I-81 NB ramps	Cicero	B
Taft Rd & I-81 SB ramps	Cicero	B
Taft Rd & Northern Blvd	Cicero	C
I-690 EB & Bridge Street (S. Intersection)	E. Syracuse	C
I-690 WB & Bridge Street (N. Intersection)	E. Syracuse	B

LOS of Primary-to-Primary Corridor Intersections Identified in 2015 CMP

US 11 & Bear Road	N. Syracuse	D
Bear Road and NY 481 Ramps	N. Syracuse	D
NY 173 & NY 175 & Grolier Rd.	Onondaga	C
NY 173 & NY 175 & Castlebar Circle	Onondaga	C
Hiawatha Boulevard & I-81	Syracuse	D
W Genesee St & Geddes St	Syracuse	C
Thompson Rd & Exeter St	DeWitt	B
W Genesee St & Clinton St	Syracuse	C
West Street and Gifford Street	Syracuse	B
W Onondaga St & South Ave	Syracuse	C
West Genesee Street & Hinsdale Road	Camillus	C
West St & W Genesee St	Syracuse	B
Willow Street & Pearl Street	Syracuse	A
NY 370 & John Glenn Blvd	Salina	F
I-81 & US 11 SB (Northern Lights Plaza area)	Salina	B
I-81 & US 11 NB (Northern Lights Plaza area)	Salina	B
West Street and Shonnard Street	Syracuse	B
East Brighton Avenue & I-481 & I-81	Syracuse	B
Teall Avenue & Court Street	Syracuse	A
West Genesee Street & NY 173	Camillus	D
West Street & Erie Boulevard	Syracuse	A

Appendix 6: Crash Data of Top Ten CMP Network Segments

Crash Data of Top Ten CMP Network Segments

Corridor Number	Corridor Description	Total Crashes	Intersection			Non-Intersection		
			Injury Crashes	Property Damage Only Crashes	Fatal Crashes	Injury Crashes	Property Damage Only Crashes	Fatal Crashes
1	NY-31, from Caughdenoy Rd to I-81 southbound ramps	278	22	75	0	20	85	0
2	NY-31, from I-81 southbound ramps to Pardee Rd/I-81 northbound off-ramp	89	13	41	1	3	8	0
3	NY-173 (West Seneca Tpk), from South Ave to Onondaga Rd	32	9	8	0	0	6	0
4	Butternut Street, from I-81 southbound off-ramp to I-81 northbound on-ramp	52	6	9	0	5	9	0
5	NY-5 (Erie Blvd East), from Left turn lane to Seeley Rd/South Midler Ave	52	7	11	0	4	0	0
6	Thompson Road, from I-690 Service Rd off-ramp to Erie Blvd East	94	7	48	0	5	1	0
7	US-11 (North State St), from James St to Butternut St	189	40	50	0	4	7	0
8	NY-5 (Erie Blvd East), from Left turn lane to Columbus Ave	16	1	4	0	0	1	0
9	NY-5 (East Genesee St), from Duguid Rd to NY-257 (North Manlius St)	102	15	20	0	12	29	0
10	Hinsdale Road, from NY-5 westbound off-ramp to NY-5 eastbound on-ramp	36	8	16	0	1	3	0
11	NY-173 (Onondaga Rd), from Milton Ave to CR-98 (West Genesee St)	111	23	24	0	9	8	0
12	West Hiawatha Blvd, from I-81 overpass to Park St slip ramp	78	10	23	0	4	6	0
14	Northern Blvd, from East Molloy Rd/Northern Blvd to Collamer Rd	10	0	5	0	1	0	0
15	Vine St, from Right turn slip ramp to Henry Clay Blvd/West Taft Rd	33	7	13	0	0	5	0
16	I-690 ramp, from I-690 eastbound to I-81 southbound	7	1	0	0	1	1	0
17	Oswego Rd (Old Rt 57), from I-90 ramps to John Glenn Blvd	303	52	81	0	39	61	0
18	US-11, from East Circle Dr to Bear Rd	220	20	49	1	26	57	0
19	South Bay Rd, from South Bay Rd to US-11 (Brewerton Rd)	87	14	26	0	6	9	0
20	East Molloy Rd, from Kinne St to Northern Blvd	8	3	2	0	0	0	0
21	Northern Blvd, from I-481 southbound on-ramp to I-481 northbound off-ramp	29	2	7	1	5	10	0
22	NY-370 (Onondaga Lake Pkwy), from Tulip St to Old Liverpool Rd/Buckley Rd	235	25	64	0	21	55	1
23	NY-290 (Manlius St/James St), from Kinne St to Thompson Rd	103	12	32	0	2	15	0
24	East Brighton Ave, from Right turn slip ramp to East Seneca Tpk	47	8	19	0	2	6	0
25	Bridge St, from NY-290 (Manlius Center Rd) to Lane addition	30	3	7	0	2	3	0
26	I-690, from West St on-ramp to I-81 southbound off-ramp	34	1	1	0	5	12	0
27	I-690, from Off-ramp to I-81 southbound to On-ramp from I-81 northbound	71	2	4	0	11	27	0
28	West Taft Rd, from Henry Clay Blvd to West Taft Rd slip ramp	33	7	14	0	1	1	0
29	South Bay Rd, from Col. Eileen Collins Blvd to East Taft Rd	57	8	16	0	2	9	0
30	NY-92 (E Genesee St), from Highbridge Rd to I-481 ramps	286	24	69	0	37	70	0
31	I-690, from Thompson Rd ramps to Midler Ave ramps	34	1	0	0	4	21	0
32	West Taft Rd, from US-11 (Brewerton Rd) to Buckley Rd	252	33	75	0	25	50	1
33	NY-31, from I-481 northbound ramps to I-481 southbound ramps	103	15	29	0	11	19	0
34	I-81, from I-690 westbound ramp to Harrison Street	28	0	1	0	4	9	0
35	I-690, from West St off-ramp to West St on-ramp	35	3	4	0	0	7	0
36	I-81, from I-690 eastbound overpass to Ramp from I-690 eastbound	28	0	0	0	5	15	0
37	I-81, from Salina Street unperpass to I-690 eastbound overpass	144	1	3	0	24	63	0
38	Thompson Road, from NY-298 to NY-290 (James St)	289	29	70	0	26	60	0
39	I-81, from Ramp from I-690 eastbound to I-690 westbound ramp	48	2	5	0	3	22	0
40	Oswego St, from Vine St to Onondaga Lake Parkway	64	8	16	0	2	8	0
41	I-81, from Harrison St underpass to Adams St underpass	32	0	0	0	5	10	0
42	NY-690, from Left and right turn lanes to NY-48/NY-631 (Hencle Blvd)	17	2	8	0	1	3	0
43	I-81 to I-690 ramp, from I-81 southbound to I-690 eastbound	13	1	5	0	1	2	0
44	NY-298, from Military Circle (GM Circle) off-ramp to Carrier Circle on-ramp	40	7	8	0	3	7	0
45	East Taft Rd, from US-11 (Brewerton Rd) to South Bay Rd	86	15	34	0	0	5	0
Grand Total		**3935**	**467**	**996**	**3**	**342**	**805**	**2**

Appendix 7: Implemented Strategies

Transportation System Management and Operations

Traffic Incident Management Systems

- *ITS planning* – The Syracuse area is included in a Regional ITS Strategic Plan developed by the NYSDOT in cooperation with SMTC member agencies. The ITS Strategic Plan contains a multitude of recommended actionable items for Centro, City of Syracuse, Onondaga County, and State implementation. The ITS Strategic Plan project listing, along with several other Plan components, was updated in 2015. The updated project listings provide numerous project specific activities that could have a tangible benefit in minimizing localized congestion concerns.

- *Highway Emergency Local Patrol (HELP) Program* – The HELP program provides trucks with operators that patrol high volume, limited access highways in Onondaga County during peak volume hours and special events looking for non-recurring events or incidents such as disabled vehicles and accidents. Currently, 2 trucks are in operation in Onondaga County with an additional vehicle coming online.

- *Advanced Traffic Management System (ATMS)* – The regional office of NYSDOT has implemented an Advanced Traffic Management System, referred to as the Foundation III ATMS "to manage VMS signs via both direct user interaction and automatically. It is also used to monitor and control CCTV cameras, create response plans for adverse road conditions, and generate reports on information historically archived by the system."[1] The plan is to have all regions using the same system. Additionally, the system will be able to provide backup or "take over" functionality for other regions throughout the state during an emergency.

- *Freeway Incident Management* – This NYSDOT initiated project (currently in existence with future phases on the way) enhances the operational efficiency and assists with incident response through the utilization of ITS equipment at high accident locations on the interstate and associated highways within Onondaga County. Cameras monitor traffic conditions and gather information to be displayed on variable message boards. Through the use of these cameras and message boards it is able to minimize traffic congestion and increase traffic flow on the highways by providing accurate, real time information to the motorists.

- *Traffic Control Center (TCC)* – Housed by the City of Syracuse this center is in charge of monitoring transportation system inefficiencies remotely by monitoring traffic incidents and adjusting traffic signal timings as necessary to reduce clearance times and travel time delay, with the goal of improving traffic flow and overall mobility on City owned roads.

- *Transportation Management Center (TMC)* – Housed by the NYSDOT Region 3 office since 2004, this center is in charge of monitoring traffic on NYSDOT owned roads and is the central point of contact for all counties within the region servicing NYSDOT staff, emergency call centers, law enforcement officials, emergency responders, and the public. It is also responsible for the internal and public notification of transportation related issues via the 511NY.org system. The center is operational year round, 24/7 and also monitors and activates the freeway management system

[1] http://www.covalsystems.com/latest/foundation/news.html

via intelligent Transportation System (ITS) elements such as cameras and dynamic message signs along the highway.

Access Control and Management

- *New on-ramp to I-690 from State Fair* – in 2019, a new on-ramp from the New York State Fair's Orange Lot to I-690 westbound was operational. A new on-ramp from the Orange Lot to I-690 eastbound is under development with an anticipated opening date in 2020.

Traffic signal coordination or optimization

- *Traffic Signal Optimization* – Following the completion of the SMTC's signal optimization analysis for all traffic signals under Onondaga County ownership (2014), the County implemented the optimized timings suggestions. In addition, the City of Syracuse has completed and is actively engaged in several signal interconnect and/or optimization projects. Like the County's project, optimized timing plans are being developed to improve travel time and reduce delays. By updating signal timings and related equipment, as needed, benefits can be achieved at a relatively low cost. These benefits include reducing delay, idling time at intersections, and improving air quality. It is anticipated that future performance monitoring will show travel improvements to the movement of people and goods through the implementation of various congestion management measures.

New travel lanes

- *Additional lanes along I-690 West to exit into Solvay* – an additional lane was constructed along I-690 west to exit 7 as part of the Lakeview Amphitheater and New York State Fair enhancements/development.

Intersection widening (turn lanes)

- *Additional left turn lanes at John Glenn Blvd and Rt 370 intersection in the Town of Salina* – as an outcome of a safety capital project, the New York State Department of Transportation added additional left turn lanes to the John Glenn Blvd and Rt 370 intersection.

Transportation Demand Management

Ride share (carpool, van pool)

- *Transportation Network Company (TNC) availability (Uber and Lyft*) – in 2017, New York State approved a law allowing TNCs, such as Uber and Lyft, to operate throughout the state.

- *SMTC's Work Link planning effort* **–** in 2017, the SMTC completed an examination into the feasibility of various transportation services to improve transportation to work for low-income residents. The Work Link document recommended a) partnership with TNCs to be provide subsidized rides; b) support for Providence Services existing transportation service; c) continue to investigate cooperative vehicle sharing; and d) test ideas with pilot projects.

- *Onondaga County partnership with Lyft* – Recently Onondaga County has teamed up with Lyft to provide free transportation to work for those on welfare. Filling the gap that existed for many that had the inability to get to work either because of their location, means, or availability of transit.[2]

- *Providence Services* – Providence Services has developed a Shuttle To Work program to provide transportation for City of Syracuse residents to employers in Syracuse and East Syracuse and more.[3] The transportation service has been operating for several years.

Transit

Transit signal priority

Enhanced transit amenities (bus stop amenities, real-time info signs)

Dedicated right of way for transit

Increase transit frequencies

- *Syracuse Metropolitan Area Regional Transit Study Phase 1 (SMART 1) enhanced transit feasibility study (February 2018)* – In 2015, on behalf of Centro, the SMTC initiated an examination into the feasibility of enhanced transit for the Syracuse area, particularly the City of Syracuse. The analysis identified Bus Rapid Transit (in Mixed Traffic) as the Locally Preferred Alternative along the Eastwood to Onondaga Community College and Regional Transportation Center to Syracuse University study corridors. Transit Signal Priority, stop amenities and increases in transit frequencies are included in the Locally Preferred Alternative. The planning effort was finalized in 2018.

- *Centro's expanded transit service (2018 TAP/CMAQ award)* – Centro was awarded CMAQ dollars in 2019 to expand transit service along various existing routes with a concentration of employers. Funds will be used over the next five years.

Bicycle and Pedestrian

Increase bicycle facilities

- *Syracuse Bikeshare* – In summer 2019, the Syracuse bikeshare launched. The program is a collaboration between the city and Gotcha, a nation-wide mobility service company that allows customers to rent electronic bikes and scooters from one location and return them to another site. [4] Using the Gotcha app, users pay for their bicycle rental by the minute or through a monthly or annual plan. As of fall 2019, over 30 stations are located throughout the City of Syracuse with plans to expand.

Increase number of sidewalks and other pedestrian accommodations

- *City of Syracuse Creekwalk* – The City of Syracuse Onondaga Creekwalk multi-use trail provides transportation and recreation opportunities. It currently extends from the north of the city to central city and is currently extending southward, with the goal of creating a north to south trail that will connect to other projects either completed or underway such as the "Loop the Lake"

---

[2] https://www.syracuse.com/news/2019/09/job-seekers-leaving-welfare-can-get-a-free-lyft-to-work-new-county-program-starts.html

[3] http://www.providenceservicessyracuse.org/transportation-to-work-program-coming-in-soon

[4] http://dailyorange.com/2019/08/electronic-bike-share-program-begin-operating-su/

trail around Onondaga Lake and the Empire State Trail. Once all connection points are established, an extensive bicycle and pedestrian trail network will be available in the community.

- *Onondaga County Loop the Lake* – The Onondaga Lake Trail is now currently about ten miles long, extending from Onondaga Lake Park to just north of Harbor Brook. The latest extension just completed in 2019 added approximately 2 of those ten miles of trail from the Visitors Center southeast to Harbor Brook. An additional half-mile segment from Harbor Brook to Hiawatha Boulevard will cross over the CSX railroad tracks and onto the former Roth Steel site and is expected to be complete by the end of 2020. Once complete it will bring the trail to 80% completion leaving only the section along the east side of Onondaga Lake Park to be constructed.

- *New York State Empire State Trail* – the Empire State Trail (EST) is a 750-mile bicycle and walking trail that will span New York State, from Buffalo to Albany, and from New York City through the Hudson and Champlain Valleys to Canada. Some portions of the trail already exist; over the next three years an additional 350 miles will be constructed or improved, with the entire route completed by the end of 2020.[5] In Onondaga County, as of August 2019, the pedestrian crossing at Warners Road, the crossing under Rt 695, the on-road improvements to Water Street, and the Towpath Road connection are under construction. The EST construction will also include a trail on the north side of Erie Boulevard East from Beech Street to Teall Avenue, along with a trail down the center median of Erie Boulevard East from Teall Avenue to Bridge Street (construction is anticipated to begin fall 2019). As part of the EST project, sidewalks are being added to Erie Boulevard East in this same section where they do not currently exist.

[5] https://www.ny.gov/sites/ny.gov/files/atoms/files/EST_Final_Plan_June_2018.pdf