HRTPO
Heartland Regional
Transportation Planning Organization

CMP

Congestion Management Process

Policy and Procedures Handbook

Adopted: June 15, 2022

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CHAPTER 1

Introduction

Maintenance of a Congestion Management Process (CMP) is a requirement for all MPOs under Florida Statue 339.175 (6)(c)1 and for MPOs in Transportation Management Areas (TMAs) under federal law. Consistent with the guidance from the Final Rule on the CMP, the intent of the CMP process is to "address congestion management through a process that provides for safe and effective integrated management and operation of the multimodal transportation system." A vibrant congestion management process can serve a valuable role in addressing the region's transportation needs in light of the following:

- Funding levels limit the number of new large scale projects which can be planned and constructed
- Transportation safety is becoming an increasingly important planning consideration

Although the Heartland Regional Transportation Planning Organization (HRTPO) is not in a TMA, which is defined as "an urbanized area with a population over 200,000, the region must develop and implement a congestion management process to provide the information needed to make informed decisions regarding the proper allocation of transportation resources" as required by Florida law.

Following the release of data from the 2010 Census, Sebring-Avon Park was designated as an Urbanized Area, thus requiring the formation of a metropolitan planning organization. Subsequently, the HRTPO was formed with a Metropolitan Planning Area Boundary (MPAB) responsible for transportation planning for the six counties of DeSoto, Glades, Hardee, Hendry, Highlands and Okeechobee in 2014.

Typically, the Congestion Management Process Policy and Procedures Handbook will need to be updated every five years concurrent with or following the update of the HRTPO's Long Range Transportation Plan (LRTP) which is also updated on a five year cycle. This HRTPO Congestion Management Process Policy and Procedures Handbook addresses the following requirements:

1. Revises Goals to align with the 2045 HRTPO Long Range Transportaton Plan.

2. Addresses changes in Federal Transportation Legislation resulting from the passage of MAP-21 (June 2012) and the FAST Act (December 2015) and the subsequent rulemaking.

Congestion Management Process

The Congestion Management Process (CMP) is a management system and process conducted by metropolitan/transportation planning organizations (MPO/TPO), such as the HRTPO, to improve traffic operations and safety through the use of either strategies that reduce travel demand or the implementation of operational improvements. The HRTPO is required by Florida state law to implement a CMP as part of its routine planning efforts. The public will typically benefit from having a functional CMP in place because it can improve travel conditions through the use of low cost improvements or strategies. The improvements can be implemented in a relatively short time frame (within 5-10 years) compared to more traditional capacity improvements, such as adding additional travel lanes, which can take more than 10 years to implement and cost significantly more. Projects identified through the CMP process may also be added to future updates of the LRTP should they require additional funding or a longer time frame for implementation.

The Federal Highway Administration (FHWA) defines a CMP as "a systematic approach collaboratively developed and implemented throughout a metropolitan region, that provides for the safe and effective management and operation of new and existing transportation facilities through the use of demand reduction and operational management strategies."

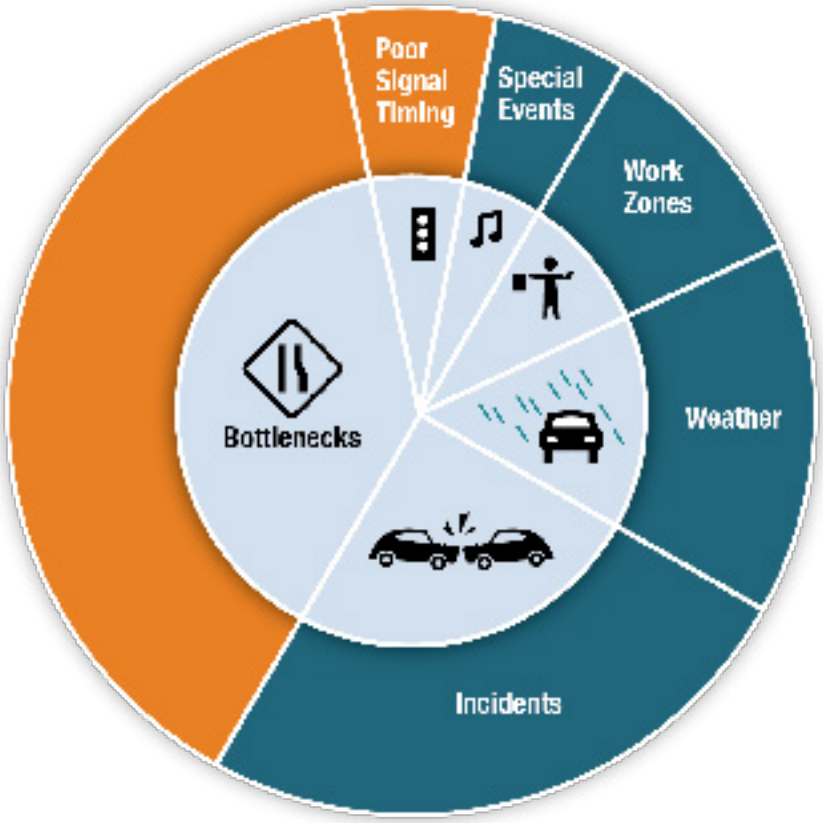
Causes of Congestion

The process of congestion management begins by understanding the cause of the problem. **Figure 1-1** illustrates the results of a national study presented by FHWA on the sources of congestion. Six major causes of congestion are identified:

- **Bottlenecks** – points where the roadway narrows or regular traffic demands (typically at traffic signals) cause traffic to back up; these are the largest source of congestion and typically cause a roadway to operate below its adopted level of service standards.
- **Traffic Incidents** – crashes, stalled vehicles, debris on the road; these incidents cause about one quarter of congestion problems.
- **Work Zones** – for new road building and maintenance activities, such as resurfacing roadways; caused by necessary activities, but the amount of congestion caused by these actions can be reduced through a variety of strategies.
- **Bad Weather** – cannot be controlled, but travelers can be notified of the potential for increased congestion and signal systems can adapt to improve safety.
- **Poor Traffic Signal Timing** – the faulty operation of traffic signals or green/red lights where the time allocation for a road does not match the volume on that road; poor signal timings are a source of congestion on major and minor streets.
- **Special Events** – cause "spikes" in traffic volumes and changes in traffic patterns; these irregularities either cause or increase delay on days, times, or locations where there usually is none.

As shown in **Figure 1-1**, bottlenecks are the largest cause of congestion nationally, followed by traffic incidents and bad weather. Adverse weather cannot be controlled, but policies and improvements can be implemented to control traffic incidents and bottlenecks. Due to the lack of comprehensive local studies on the causes of congestion, these national data are widely used in CMPs. The data suggest that local causes are likely to be similar, with bottlenecks and traffic incidents typically being the top two causes of congestion.

Figure 1-1: Causes of Congestion



Federal Requirements

Public Law 112-141, the Moving Ahead for Progress in the 21st Century Act (MAP-21), was signed into law on July 6, 2012 and provided federal transportation funding for fiscal years 2013 and 2014. MAP-21 was the first transportation legislation enacted since 2005 and provide an updated policy and programmatic framework for investments to guide the growth and development of the country's vital transportation infrastructure. It was the intent of MAP-21 to create a streamlined, performance-based, multi-modal program to address the needs of the national transportation system as outlined in the National Goals listed below. Fundamental aspects of this legislation extended to future fiscal years through continuing legislation and through a new transportation bill. On December 4, 2015, Public Law 114-94, the Fixing America's Surface Transportation Act (FAST Act) was signed into law. The FAST Act will likely fund transportation programs for fiscal years 2016 through 2020 and is the first long-term surface transportation authorization enacted in a decade that provides funding certainty for surface transportation. The FAST Act will support critical transportation projects to ease congestion and facilitate freight movement on major roads by establishing and funding new policies and programs.

National Goals

- **Safety –** to achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- **Infrastructure condition –** to maintain the highway infrastructure asset system in a state of good repair.
- **Congestion reduction –** to achieve a significant reduction in congestion on the National Highway System.
- **System reliability –** to improve the efficiency of the surface transportation system.
- **Freight movement and economic vitality –** to improve the National Highway Freight Network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- **Environmental sustainability –** to enhance the performance of the transportation system while protecting and enhancing the natural environment.
- **Reduced project delivery delays –** to reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

Federal Regulations

The following section summarizes the Federal requirements for a Congestion Management Process in Transportation Management Areas. This guidance is codified in the Code of Federal Regulations (CFR (Section 450.322) — Statewide Transportation Planning; Metropolitan Transportation Planning; Final Rule). *Note:* Federal regulations use the term "MPO", however these requirements extend to TPOs functioning as an MPO for their planning areas. (Note: HRTPO is not a TMA but guidance is used to meet State of Florida requirements).

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 (including intercity bus operators, employer-based commuting programs such as a carpool program, vanpool program, transit benefit program, parking cash-out program, shuttle program, or telework program), job access projects, and operational management strategies.

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, improve transportation system management and operations, and improve efficient service integration within and across modes, including highway, transit, 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. The congestion management process shall include:

    - 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 system 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. The following categories of strategies, or combinations of strategies, are some examples of what should be appropriately considered for each area:

I. Demand management measures, including growth management, and congestion pricing;
II. Traffic operational improvements;
III. Public transportation improvements;
IV. ITS technologies as related to the regional ITS architecture; and
V. Where necessary, additional system capacity.

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

» Implementation of a process for periodic assessment of the effectiveness of implemented strategies, in terms of the area's established performance measures. The results of this evaluation shall be provided to decision makers and the public to provide guidance on selection of effective strategies for future implementation.

e. In a TMA designated as nonattainment area for ozone or carbon monoxide pursuant to the Clean Air Act, Federal funds may not be programmed for any project that will result in a significant increase in the carrying capacity for SOVs (i.e., a new general purpose highway on a new location or adding general purpose lanes, with the exception of safety improvements or the elimination of bottlenecks), unless the project is addressed through a congestion management process meeting the requirements of this section.

f. In TMAs designated as nonattainment for ozone or carbon monoxide, the congestion management process shall provide an appropriate analysis of reasonable (including multimodal) travel demand reduction and operational management strategies for the corridor in which a project that will result in a significant increase in capacity for SOVs (as described in paragraph (d) of this section) is proposed to be advanced with Federal funds. If the analysis demonstrates that travel demand reduction and operational management strategies cannot fully satisfy the need for additional capacity in the corridor and additional SOV capacity is warranted, then the congestion management process shall identify all reasonable strategies to manage the SOV facility safely and effectively (or to facilitate its management in the future). Other travel demand reduction and operational management strategies appropriate for the corridor, but not appropriate for incorporation into the SOV facility itself, shall also be identified through the congestion management process. All identified reasonable travel demand reduction and operational management strategies shall be incorporated into the SOV project or committed to by the State and MPO for implementation.

g. State laws, rules, or regulations pertaining to congestion management systems or programs may constitute the congestion management process, if the FHWA and the FTA find that the State laws, rules, or regulations are consistent with, and fulfill the intent of, the purposes of 23 U.S.C. 134 and 49 U.S.C. 5303.

h. Congestion management plan. A MPO serving a TMA may develop a plan that includes projects and strategies that will be considered in the TIP of such MPO.

» Such plan shall:

I. Develop regional goals to reduce vehicle miles traveled during peak commuting hours and improve transportation connections between areas with high job concentration and areas with high concentrations of low-income households;
II. Identify existing public transportation services, employer based commuter programs, and other existing transportation services that support access to jobs in the region; and
III. Identify proposed projects and programs to reduce congestion and increase job access opportunities.

» In developing the congestion management plan, an MPO shall consult with employers, private and nonprofit providers of public transportation, transportation management organizations, and organizations that provide job access reverse commute projects or job-related services to low-income individuals.

Congestion Management Process: A Guidebook

Federal Eight-Step Congestion Management Process

In April 2011, the FHWA released the Congestion Management Process: A Guidebook document which provides additional detail and guidance to MPOs/TPOs in the development and implementation of a congestion management process. This guidebook includes an eight-step process that summarizes the key parts of an ongoing congestion management process. These steps are summarized in **Figure 1-2**.

Figure 1-2: Federal Eight Step Congestion Management Process

Incorporating Travel-Time Reliability in the CMP: A Primer

Travel-time reliability is defined as the consistency and dependability in travel times that are measured from day-to-day and/or across different times of the day. Travel-time reliability is significant to the CMP because it incorporates a systematic method to address the issue of traffic congestion caused by non-recurring events. Non-recurring events include:

Traffic Incidents

Road Work Zones

Weather

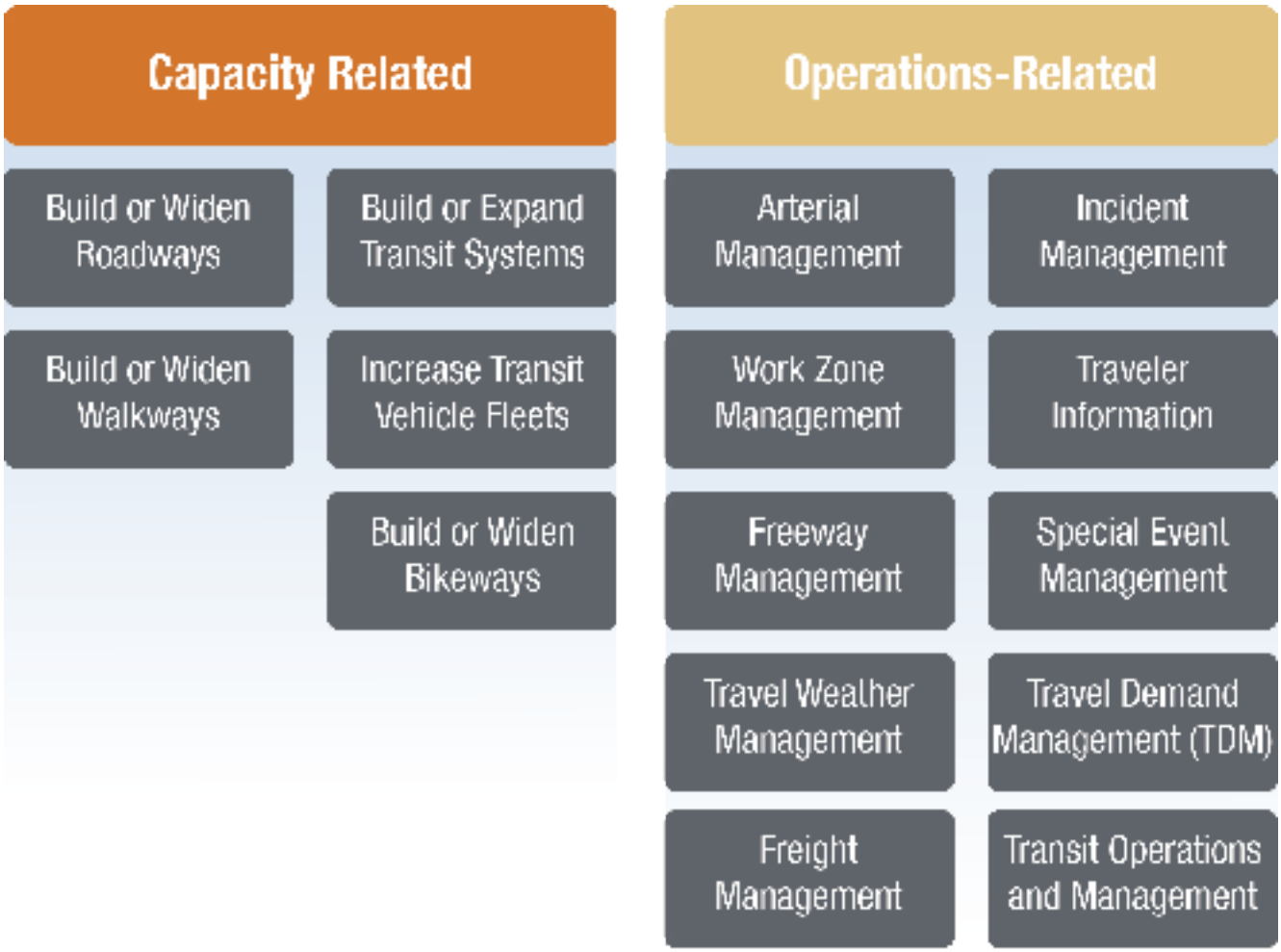
Special Events

Non-recurring events account for a majority of total traffic congestion-related delay in the United States and not until recently were there cost-effective data collection opportunities. In addition to more inexpensive travel-time monitoring technologies, there are three factors that have contributed to a greater focus on travel-time reliability in MPOs/TPOs. These factors include:

- **Constraints on Expansion of the Transportation System** – New roadway construction and roadway expansion has largely ended in the United States due to high costs, the built-out nature of urbanized areas, and the community desire for multimodal streets.
- **Expectations of the Traveling Public** – Surveys have shown that the traveling public often values travel-time reliability more than speed.
- **Federal Surface Transportation Reauthorization Law** – When MAP-21 was signed into law, a process that involved performance measurement, target setting, and transportation investment reporting was established and seven national goals were set. Three years later, the FAST Act was signed into law and included the same national goals. One of the seven goals is: System reliability – to improve the efficiency of the surface transportation system.

The benefits of incorporating travel-time reliability into the CMP include an improved understanding of the regional transportation system that contains capacity expansion strategies. The inclusion of travel-time reliability will take the CMP a step further by also featuring a concentration of operation strategies, such as signal retiming or traveler information as appropriate by the area and type of transportation corridor.

Figure 1-3: Typical Capacity and Operations Related Strategies



CMP Policy and Procedures Handbook Overview

As mentioned previously, the HRTPO is required by Florida Statute to implement a CMP as part of its routine planning efforts. This handbook outlines the policies and procedures that will ensure that the federal and state requirements are addressed. Specific performance evaluation information on the six county CMP roadway network will be included in future Heartland Transportation Trends Reports.

This handbook is outlined to follow the eight-step CMP, based on federal guidelines. The main purpose of this handbook is to (1) Develop CMP Goals and Objectives; (2) Define the Regional CMP Network; (3) Develop Multimodal Performance Measures; (4) Identify the potential sources of data to monitor system performance; (5) identify policies and procedures for the update of the CMP. The report chapters found in this handbook are described in more detail below.

Chapter 1- Introduction – The purpose of the CMP (based on federal requirements), an introduction to the causes of congestion, and an overview of the handbook are provided.

Chapter 2 - CMP Overview – The eight-step CMP is described and a general overview of the process is provided as well as the update schedule for the Heartland Transportation Trends Report.

Chapter 3 - Goals and Objectives – The remainder of the chapters in this handbook discuss specific steps from the eight-step CMP. The Goals and Objectives of the CMP are documented in this chapter.

Chapter 4 - Network Identification – A description of the area of application and transportation network used for the CMP process is provided.

Chapter 5 - Development of Performance Measures – A brief summary is provided of congestion related measures that can be used to monitor the effectiveness of the CMP.

Chapter 6 - System Performance Monitoring Plan – The overview of the monitoring plan oversees the modal data to be collected in the region, the system performance monitoring of congestion, and the evaluation of the efficiency and effectiveness of implementation actions.

Chapter 7 - Congested Corridor Selection and CMP Strategies – This chapter describes how congested corridors and projects are typically identified; including a listing of various strategies that can be used to reduce that congestion.

Chapter 8 - Monitor and Strategy Effectiveness – This chapter describes monitoring of strategies implemented; as well as, information that can be found in the Heartland Transportation Trends report.

CHAPTER 2

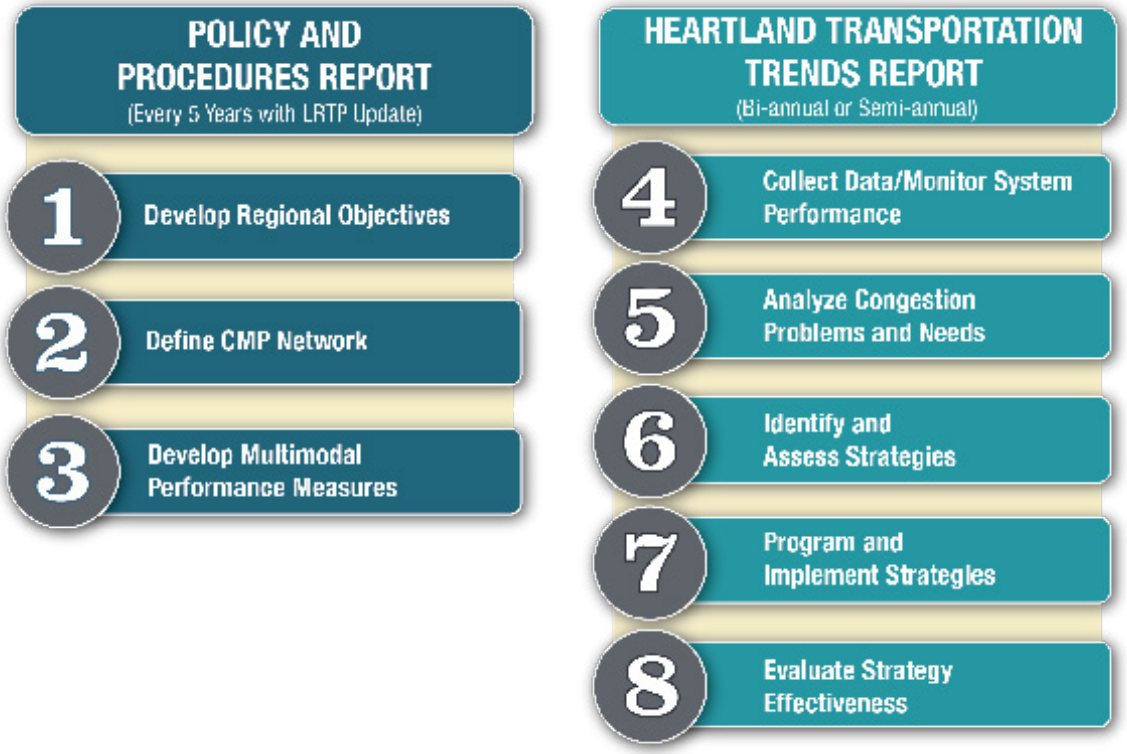
CMP Overview

HRTPO Eight-Step Congestion Management Process

This section documents the revised Congestion Management Process for the HRTPO that will be used to address the Federal requirements and unique local needs and opportunities of the communities in the region. This process closely matches the Federal Eight-Step Process and includes additional detail in specific sections where appropriate.

Figure 2-1 demonstrates the Eight-Step process that will be used by the HRTPO. As noted, the first three steps will typically be updated concurrent with each update of the Long Range Transportation Plan which takes place every five years. Steps 4 to 8 will potentially be updated on a more frequent basis. The remainder of this section details the Eight-Steps and how they will be implemented.

Figure 2-1: HRTPO's Approach to the Federal Eight Step Process



CMP in the Metropolitan Planning Process

The CMP is a working tool that needs to be effectively integrated into the TPO's project prioritization process, Transportation Improvement Plan (TIP), and Long Range Transportation Plan (LRTP). The objectives- driven, performance-based CMP starts with the monitoring and evaluation of current conditions to identify where congestion exists. Based on the identified goals and objectives and the established performance measures of the CMP, this evaluation leads to the identification of potential mitigation strategies, implementation of appropriate strategies, and the development of a monitoring plan.

The outputs of the CMP, such as identified congested corridors/ locations and their recommended mitigation measures, then proceed through the CMP process where they are evaluated and projects or programs are selected for implementation. The projects or programs that are identified for implementation through the CMP are then moved into project development and programmed into the TIP for funding and implementation. The implemented projects are then monitored to evaluate the strategy effectiveness on a system-wide basis. For the HRTPO, CMP projects typically are funded using boxed funds identified in the LRTP along with other local revenues. This allows the TPO to add annually the most important strategies for implementation and expand funding levels to address local needs.

Public Involvement Process

The purpose of CMP public involvement activities is to provide the public with information on congestion monitoring activities that are in place in the region as well as planned improvements to mitigate congestion.

As recent federal regulations warrant involvement of the public during all key stages of transportation projects, it is important to involve the public in all key stages of transportation improvement projects within and beyond the CMP. Otherwise, lack of public support and awareness may adversely impact the success of any potential transportation project. Therefore, the proposed CMP improvement projects/strategies will be presented to the citizens of the Heartland Region at various public involvement activities.

The TPO's TAC serves as the advisory group for the CMP and includes the following jurisdictions/agencies:

- Central Florida Regional Planning Council
- City of Arcadia
- City of Avon Park
- City of Clewiston
- City of LaBelle
- City of Moore Haven
- City of Okeechobee
- City of Sebring
- City of Wauchula
- DeSoto County
- Glades County
- Hardee County
- Hendry County
- Highlands County
- Okeechobee County
- Sebring Airport Authority
- School Board
- Southwest Florida Regional Planning Council
- Town of Lake Placid
- Florida Department of Transportation (Non-Voting Member)

Other stakeholders as the need merits, such as railroads, goods movement representatives, etc. Typically, these additional members would serve on an ad hoc basis to address specific issues.

The Technical Advisory Committee (TAC) will meet to discuss CMP related matters and make recommendations to the HRTPO Board. This ensures that CMP issues are addressed routinely as an ongoing activity of the TPO. A key contribution of the HRTPO TAC is to identify, track, and evaluate potential congestion- or safety-related issues on the CMP roadway network.

CMP Actions/Recommendations

A list of recommendations and actions is presented to enhance the CMP and become more efficient in the overall TPO planning process. The actions/recommendations presented below will be reviewed and considered by TPO staff and the HRTPO TAC for implementation as necessary.

- Update the CMP Policy and Procedures Handbook (CMP Steps 1-3) on a five-year cycle consistent with the update cycle of the LRTP. Timing of the completion of CMP updates in advance of finalizing LRTP updates would benefit integration of CMP strategies into the LRTP.
- On a biannual basis, develop the CMP Heartland Transportation Trends Report will include steps 4 through 8 of the CMP process:
  - Step 4: Collect Data/Monitor System Performance
  - Step 5: Analyze Congestion Problems & Needs
  - Step 6: Identify and Assess Strategies
  - Step 7: Implement Selected Strategies
  - Step 8: Monitor Strategy Effectiveness (combined with Step 4)
- Enhance coordination with agencies participating in the CMP by framing desirable strategy types and defining roles in implementation. This is essential, as most congestion and mobility strategies are formulated and implemented by other agencies.
- Projects from the CMP process may identify projects for inclusion in the LRTP either through the four-year update cycle or through plan amendments.
- Identify and implement data collection recommendations on collecting key congestion data; as well as, closing any data gaps identified in this CMP.
- Perform outreach and education efforts to inform interested parties and stakeholders. These may include:
  - Maintain a CMP page on the TPO Website.
  - Presentations to the HRTPO Board and Committees
- Continue monitoring changes to federal CMP regulations and modify/update CMP to reflect new requirements.

The general schedule for the development of the CMP Heartland Transportation Trends Report is provided on the next page if it were to be updated on an biannual basis.

Step 1

- Update roadway inventory data to support LOS analysis, travel time reliability, and safety evaluation.
- Calculate Non-Highway Systemwide Performance Monitoring (Public Transportation, Bicycle, Pedestrian, TDM, etc.).
- Produce growth rates on regional CMP network roadways using county traffic counts and perform initial LOS analysis (existing conditions +1 year and existing + 5 years).*
- Produce preliminary growth rates on state roadways using older state traffic counts and perform initial LOS analysis (existing conditions and existing +5 years).*

Step 2

- Hold TAC meeting to review and identify potential operational issues that would not be identified through the technical screening process.
- Coordinate with goods movement stakeholders and providers to identify related needs (may occur earlier).

Step 3

- Receive FDOT traffic counts.
- Produce updated growth rates on state roadways using state traffic counts and perform initial LOS analysis (existing conditions and existing + 5 years).
- Screen corridors (existing conditions and existing + 5 years).
- Select corridors for evaluation.

Step 4

- Report to TAC and CAC results of corridor screening and selection.
- Report to TAC and CAC results from Non-Highway Systemwide Performance Monitoring (Public Transportation, Bicycle, Pedestrian, TDM, etc.).

Step 5

- Identify strategies to be considered on selected corridors
- Evaluate strategies where appropriate and make improvement or program recommendations for implementation
- Report to the TAC and CAC recommended strategies for implementation

Step 6

- Finalize technical recommendations on strategy implementation.
- Program improvement recommendations and identify other priority projects or programs for the TIP.
- Finalize performance monitoring summary.
- Obtain endorsement from TAC and CAC on programmed projects and priorities for the TIP.
- Adopt CMP Project Priority List through Public Hearing of TPO Board.

Step 7

- Finalize CMP Heartland Transportation Trends Report.

CHAPTER 3

CMP Goals

Introduction

A series of CMP goals were developed to guide the process of monitoring congestion and improving the mobility of persons and goods for the area served by the HRTPO. These were compiled, in part, based on the previously adopted goals developed in the Long Range Transportation Plan.

The goals are presented below. They will be used as a tool for selecting strategies and performance measures for strategy monitoring and evaluation. Four of the 2045 LRTP Goals directly relate to Congestion Management and are carried though to the Congestion Management Process Policy Handbook.

Safe:

- Promote projects in high crash locations - (locations with the highest number of crashes)

Resilient:

- Enabling global competitiveness, productivity, and efficiency

Connected:

- Promote system reliability
- Plan for and design multimodal transportation systems providing mobility options which are accessible by all users

Accessible:

- Reduce traffic congestion and delay
- Coordinate transportation investments to maximize opportunities and benefits

CHAPTER 4

Network Identification

Introduction

This chapter of the CMP component presents an overview of the geographic area of application and the transportation network for the HRTPO CMP.

Area of Application

The CMP area of application includes the transportation system that needs to be evaluated and monitored and where congestion management policies and procedures need to be applied. The geographic area of application for this CMP consists of the major regional roadways in the six-county Heartland region.

Transportation Network

Consistent with federal guidelines, the HRTPO CMP covers a multimodal transportation network. In addition to evaluating congestion on the roadway network, the HRTPO CMP will evaluate transit, bicycle/pedestrian/trail, and freight movement networks within its designated area of application. The CMP roadway network is described below.

Roadway Network

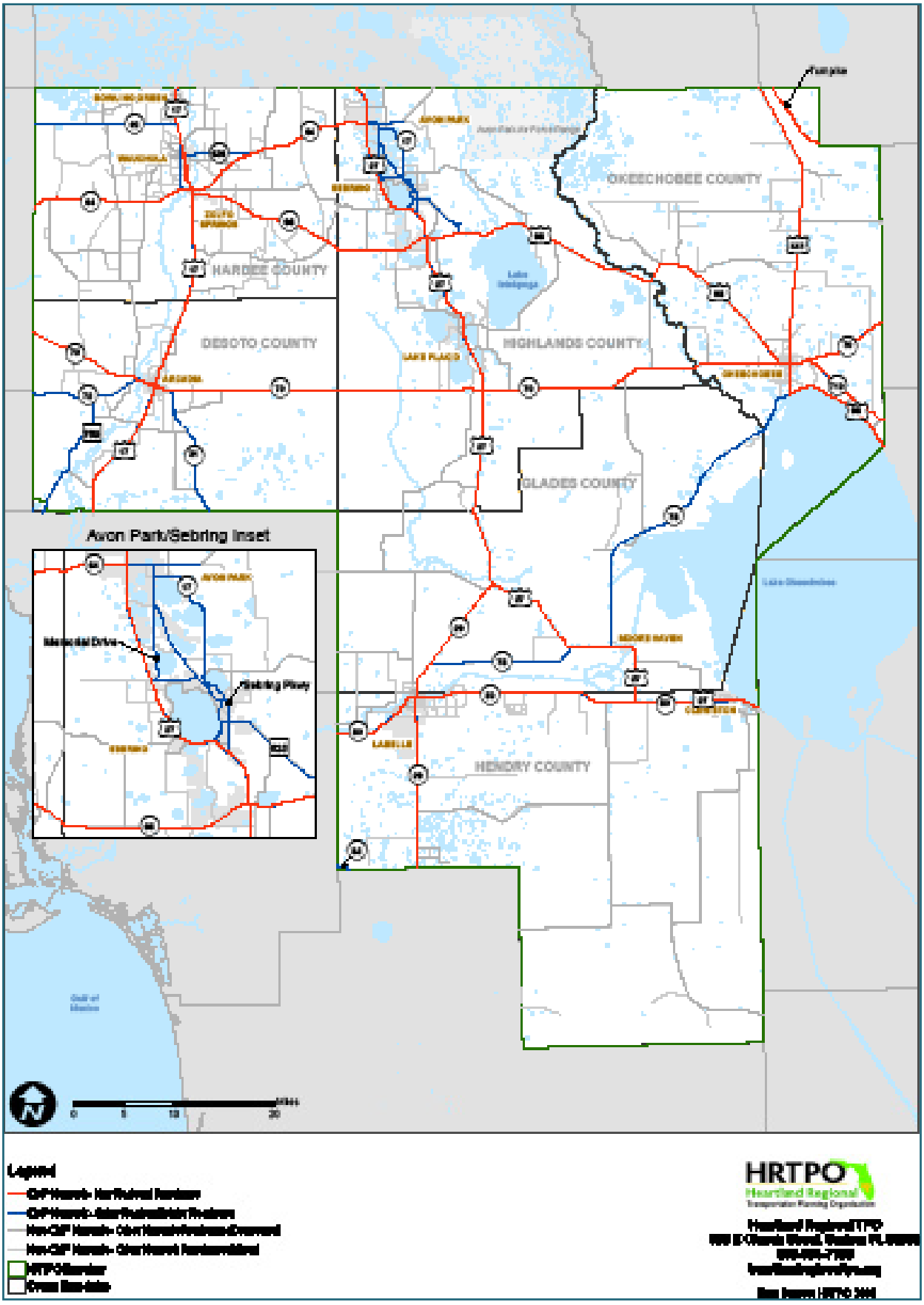
The HRTPO CMP roadway network includes two groups of roadways:

Tier 1 - Key Regional Roadways (National Highway System (NHS) Routes): The TPO will be required to frequently report performance statistics on the NHS routes and were separated into the first tier of CMP network roadways to facilitate the update of these statistics.

Tier 2 - Other Regional/Major Roadways: This represent other major regional roadways, including regional roadways forecasted to be potentially congested in the currently adopted 2045 Long Range Transportation Plan.

The map in **Figure 4-1** illustrates the HRTPO CMP Network. This represents the study area and network for the HRTPO CMP. Chapter 7 provides further information on congested corridors and strategies.

Figure 4-1: HRTPO CMP Network



CHAPTER 5

Development of Performance Measures

Introduction

Performance management is a strategic approach to connect investment and policy decisions to help achieve performance goals. Performance measures are quantitative criteria used to evaluate progress. Performance measure targets are the benchmarks against which progress is assessed using available data. The Moving Ahead for Progress in the 21st Century Act (MAP-21) requires state departments of transportation (DOT) and metropolitan planning organizations (MPO) or transportation planning organizations (TPO) to conduct performance-based planning by tracking performance measures and establishing data-driven targets to improve those measures. Performance-based planning ensures the most efficient investment of transportation funds by increasing accountability, providing transparency, and linking investment decisions to key outcomes related to seven national goals:

- Improving safety;
- Maintaining infrastructure condition;
- Reducing traffic congestion;
- Improving the efficiency of the system and freight movement;
- Protecting the environment; and
- Reducing delays in project delivery.

The Fixing America's Surface Transportation (FAST) Act supplements MAP-21 by establishing timelines for state DOTs and TPOs to comply with the requirements of MAP-21. The Florida Department of Transportation (FDOT) and TPOs must coordinate when selecting performance targets, and public transportation providers must coordinate with states and TPOs in the selection of state and TPO transit asset management and transit safety performance targets. FDOT and the MPOAC developed the TPM Consensus Planning Document to describe the processes through which FDOT, the TPOs, and the providers of public transportation in TPO planning areas will cooperatively develop and share information related to transportation performance management and target setting.

Performance Measures

- PM1: Highway Safety Measures
- Pavement & Bridge Condition Measures
- System Performance, Freight, & Congestion Mitigation Program Measures
- Transit Asset Management Measures

Safety Performance Measures (5-Year Rolling Average)

Crashes at intersections and roadway segments may be used as an indicator of congestion. Considered a measure of non-recurring congestion, this measure uses data that are widely available from local and state agencies collected by the State of Florida that track them on an ongoing basis throughout the CMP application area. All data is collected and summarized in the form of a 5-year rolling average.

Number of Fatalities

This is a summary of the number of fatalities from motor vehicle crashes. This is measured by the number of fatalities and not the number of fatality crashes.

Fatality Rate

This is a summary of the number of fatalities from motor vehicle crashes normalized by exposure in the form of vehicle miles of travel (fatalities per 100,000 vehicle miles of travel). This is measured by the number of fatalities and not the number of fatality crashes.

Serious Injuries

This is a summary of the number of incapacitating injuries from motor vehicle crashes. This is measured by the number of persons receiving incapacitating injuries and not the number of incapacitating injury crashes.

Serious Injury Rate

This is a summary of the number of incapacitating injuries from motor vehicle crashes normalized by exposure in the form of vehicle miles of travel (serious injuries per 100,000 vehicle miles of travel). This is measured by the number of persons receiving incapacitating injuries and not the number of incapacitating injury crashes.

Non-Motorized Safety (Fatalities and Serious Injuries)

This is a summary of the number of fatalities and incapacitating injuries from motor vehicle crashes that involve pedestrians or bicyclists. This is measured by the sum of the number of fatalities and incapacitating injuries and not the number of fatality or incapacitating injury crashes.

Data Collection/Availability - Crash data is collected through various law enforcement Agencies. The data for fatality and incapacitating injury crashes statewide are maintained by the FDOT.

Pavement & Bridge Condition Measures

Pavement and Bridge Condition Measures may be used as an indicator of congestion measures, as the condition of an infrastructure asset may contribute to congestion related to Traffic-Influencing Events including:

- **Traffic Incidents** – Are events that disrupt the normal flow of traffic, usually by physical impedance in the travel lanes. Events such as vehicular crashes, breakdowns, and debris in travel lanes are the most common form of incidents. In addition to blocking travel lanes physically, events that occur on the shoulder or roadside can also influence traffic flow by distracting drivers, leading to changes in driver behavior and ultimately degrading the quality of traffic flow. Even incidents off of the roadway (a fire in a building next to a highway) can be considered traffic incidents if they affect travel in the travel lanes.
- **Work Zones** – Are construction activities on the roadway that result in physical changes to the highway environment. These changes may include a reduction in the number or width of travel lanes, lane "shifts," lane diversions, reduction, or elimination of shoulders, and even temporary roadway closures. Delays caused by work zones have been cited by travelers as one of the most frustrating conditions they encounter on trips.
- **Weather** – Environmental conditions can lead to changes in driver behavior that affect traffic flow. Due to reduced visibility, drivers will usually lower their speeds and increase their headways when precipitation, bright sunlight on the horizon, fog, or smoke are present. Flooded roadway surface conditions will also lead to the same effect even after precipitation has ended.

The focus of the HRTPO's investments in bridge and pavement condition include the following four performance measures:

Percent of non-Interstate National Highway System (NHS) pavements in good condition

Percent of non-Interstate NHS pavements in poor condition

Percent of NHS bridges (by deck area) classified as in good condition

Percent of NHS bridges (by deck area) classified as in poor condition

For the pavement measures, five pavement metrics are used to assess condition:

- International Roughness Index (IRI) - an indicator of roughness; applicable to asphalt, jointed concrete, and continuous concrete pavements;
- Cracking percent - percentage of pavement surface exhibiting cracking; applicable to asphalt, jointed concrete, and continuous concrete pavements;
- Rutting - extent of surface depressions; applicable to asphalt pavements only;
- Faulting - vertical misalignment of pavement joints; applicable to jointed concrete pavements only; and
- Present Serviceability Rating (PSR) – a quality rating applicable only to NHS roads with posted speed limits of less than 40 miles per hour (e.g., toll plazas, border crossings). States may choose to collect and report PSR for applicable segments as an alternative to the other four metrics.

Data Collection/Availability – Pavement condition data for the Interstate and Non-Interstate National Highway System roadways will be provided by FDOT. Non-State NHS pavement condition data will need to be provided by the appropriate jurisdiction and data availability may be limited. Bridge condition information will be provided by the FDOT for all NHS bridges.

System Performance, Freight, & Congestion Mitigation Program Measures

Travel time reliability in Florida's Mobility Performance Measures Program is based on a benchmarking technique and is referred to as the "Florida Reliability Method." The Florida Reliability Method was derived from the Department's definition of reliability of a highway system as the percent of travel on a corridor that takes no longer than the expected travel time plus a certain acceptable additional time. In this context, it is necessary to define the three major components of reliability:

1. Travel time - The time it takes a typical commuter to move from the beginning to the end of a corridor. Since speed is determined along each segment as the traveler moves through the corridor, this travel time is a function of both time and distance. This is representative of the typical commuter's experience in the corridor.

2. Expected travel time - The median travel time across the corridor during the time period being analyzed. The median is used rather than the mean so that the value of the expected travel time is not influenced by any unusual major incidents that may have occurred during the sampling period. These major incidents will be accounted for in the percentage of how often the travel takes longer than expected, but will not change the baseline to which that unusually high travel time is being compared.

3. Acceptable additional time - The amount of additional time, beyond the expected travel time, that a commuter would find acceptable during a commute. The acceptable additional time is expressed as a percentage of the expected travel time during the period being analyzed.

Percent of the Interstate System providing for Reliable Travel Times (not required)

Percent of the Interstate System providing reliable travel times as reported in person-miles. The HRTPO region does not include any Interstate facilities and will not need to report on this measure but will need to document the absence of Interstate facilities.

Percent of the Non-Interstate NHS providing for Reliable Travel Times

Percent of the Non-Interstate National Highway System providing reliable travel times as reported in person-miles. This will typically only be measured on the State Highway system and a limited number of non-State Highway System facilities.

Data Collection/Availability – Travel Time Reliability Data will be summarized by FDOT for the State Highway System Data for non-state roadways will only be available on a limited number of roadway corridors.

Truck Travel Time Reliability Index

Percent of the NHS providing reliable truck travel times.

Data Collection/Availability – Truck Travel Time Reliability Data will be summarized by FDOT.

Public Transit Performance Measures

The rule defines the term "state of good repair," requires that public transportation providers develop and implement transit asset management (TAM) plans, and establishes state of good repair standards and performance measures for four asset categories: equipment, rolling stock, transit infrastructure, and facilities. Investment decisions for asset replacement in the FDOT Group TAM Plan inventory are made with the goal to maintain or improve the percentage of vehicles, equipment, and facilities in an adequate or better condition. FDOT and its subrecipient transit providers will monitor all assets for unsafe conditions.

Equipment

Percentage of non-revenue, support-service and maintenance vehicles that have met or exceeded their Useful Life Benchmark

Rolling Stock

Percentage of revenue vehicles within a particular asset class that have either met or exceeded their Useful Life Benchmark

Infrastructure

Percentage of track segments with performance restrictions

Facilities

Percentage of facilities within an asset class rated below condition 3 on the TERM scale

Data Collection/Availability – Public Transit Performance Data will be summarized by the HRTPO.

Relationship of Performance Measures to the CMP Goals

As part of the CMP process, the performance measures have been related to the CMP discussed earlier in the report. **Table 5-1** illustrates an example of the relationship between the performance measures identified above and the CMP Goals.

Figure 5-1: Relationship of Performance Measures to CMP Goals

	Goal 1: Safe	**Goal 2:** Resilient	**Goal 3:** Connected	**Goal 4:** Accessible
Safety Performance Measures (5 Year Rolling Average)				
Number of Fatalities	✓	✓		
Fatality Rate	✓	✓		
Serious Injuries	✓	✓		
Serious Injury Rate	✓	✓		
Non-Motorized Safety (Fatalities + Serious Injuries)	✓	✓	✓	✓
Pavement & Bridge Condition Measures				
Percent of non-Interstate NHS pavements in good condition	✓	✓		✓
Percent of non-Interstate NHS pavements in poor condition	✓	✓		✓
Percent of NHS bridges (by deck area) classified as in good condition	✓	✓		✓
Percent of NHS bridges (by deck area) classified as in poor condition	✓	✓		✓
System Performance, Freight, & Congestion Mitigation Program Measures				
Percent of the Non-Interstate NHS providing for Reliable Travel Times	✓	✓	✓	✓
Truck Travel Time Reliability Index	✓	✓	✓	✓
Public Transit Performance Measures				
Equipment	✓		✓	
Rolling Stock	✓		✓	
Infrastructure	✓		✓	
Facilities	✓		✓	

CHAPTER 6

System Performance Monitoring Plan

Overview of Monitoring Plan

FHWA identifies congestion monitoring as just one of the several aspects of transportation system performance that leads to more effective investment decisions for transportation improvements. Safety, physical condition, environmental quality, economic development, quality of life, and customer satisfaction are among the aspects of performance that also require monitoring.

The Final Rule on Metropolitan Transportation Planning identifies the requirement for "a coordinated program for data collection and system performance monitoring to assess the extent of congestion, to contribute in determining the causes of congestion, and evaluate the efficiency and effectiveness of implemented actions." In addition, it also indicates that "to the extent possible, this data collection program should be coordinated with existing data sources and coordinated with operations managers in the metropolitan area."

As a result, the goal of the HRTPO CMP system monitoring plan is to develop an ongoing system of monitoring and reporting that relies primarily on data already collected or planned to be collected in the region. The components of the monitoring plan include roadways, public transit, bicycle/pedestrian/trail, TDM, and goods movement where:

- Roadways are monitored through annual LOS analysis using traffic counts and other related data constantly collected throughout the region.
- Crashes are monitored to identify potential non-recurring congestion.
- Transit performance is monitored continuously through various operating and capital plans (as available).
- Significant goods movement corridors are evaluated to address mobility needs of the goods movement providers.

The HRTPO CMP will make use of a routine Heartland Transportation Trends Report to document the performance of the transportation system as described in more detail in Chapter 8 of this report.

CHAPTER 7

Congested Corridor Selection and CMP Strategies

Implementation

This section summarizes the implementation and management of the CMP strategies. This includes the process for selecting corridors and projects for implementation in the future as well as an implementation schedule, implementation responsibilities, costs, and possible funding sources for each strategy currently proposed for implementation.

Congested Corridor Selection and Project Selection Process

The purpose of the CMP is to identify actual projects. The CMP process involves selecting congested corridors that will undergo detailed evaluation for identifying potential projects/programs that can be potentially implemented on the corridors. The process follows three phases (an overview illustration is provided in **Figure 7-1**):

Congested Corridor Network Identification (Phase 1)

Routine monitoring efforts are used to review the level of service on the roadway network to identify recurring congestion. Roadways that are congested today or forecasted to be congested in five years are considered for review through the CMP screening process. Corridors are identified as being "not congested," "approaching congestion or minimally congested," or "extremely congested," as summarized below (additional detail is provided in **Appendix A**).

- **Not Congested (currently or in five years with improvements):** Corridors that are not anticipated to operate below their adopted level of service standards in either the existing conditions or after committed improvements in the five-year program are implemented.
- **Approaching Congestion or Minimally Congested:** Corridors that are approaching congestion or are minimally congested based on one of the following three criteria (projects on these corridors may have the greatest impact):
  - » ***Approaching Congestion*** – Corridors that are not congested but have segments that have traffic volumes that consume more than 90% of the roadway's capacity at the adopted level of service standard with either the existing conditions or forecasted five-year condition without improvement.
  - » ***Congested Today*** – Existing corridors with traffic volumes that exceed the adopted level of service standard that do not exceed the physical capacity of the roadway.
  - » ***Congestion in 5 Years*** – Corridors forecasted in five years to have traffic volumes that exceed the adopted level of service standard that do not exceed the physical capacity of the roadway.

- **Extremely Congested:** Roadways in the Existing + Committed (E+C) five-year network that have forecast volumes that are greater than the physical capacity (typically occurs when using detailed analysis and the volume-to-capacity ratio is 1.08 or greater) of the roadway and are considered severely congested.

Crash data management systems also are used to identify corridors or intersections with a high frequency of crashes that result in non-recurring congestion. Safety improvements not only reduce the potential harm to persons in our communities but also can reduce congestion.

Generally, non-congested corridors do not need to be addressed by the CMP; however, the other two categories typically will require one or more congestion-relieving strategies (project, mobility improving program, etc.). Extremely congested corridors typically will require either capacity improvements or a shift to other mobility strategies that rely significantly on public transportation or reductions in travel demand. In some cases, extremely congested corridors may respond favorably to the implementation of operational improvements; these would be considered on a case-by-case basis where appropriate. The corridors approaching congested or minimally congested typically represent the corridors that will be most responsive to CMP improvement strategies.

After the congested network and corridors have been identified, a specific corridor can be selected for detailed analysis and project identification and implementation. The TAC reviews the selection of corridors. Once corridors are selected and evaluated, they will not need to be reevaluated for three to five years. Corridors typically are selected based on the following:

1. If they are not in the 5-year work program or identified as projects in the 10-year plan and the corridors are forecasted to operate below their adopted level of service standard.
2. The corridor(s) that would receive the greatest mobility or operational benefit from the CMP process.

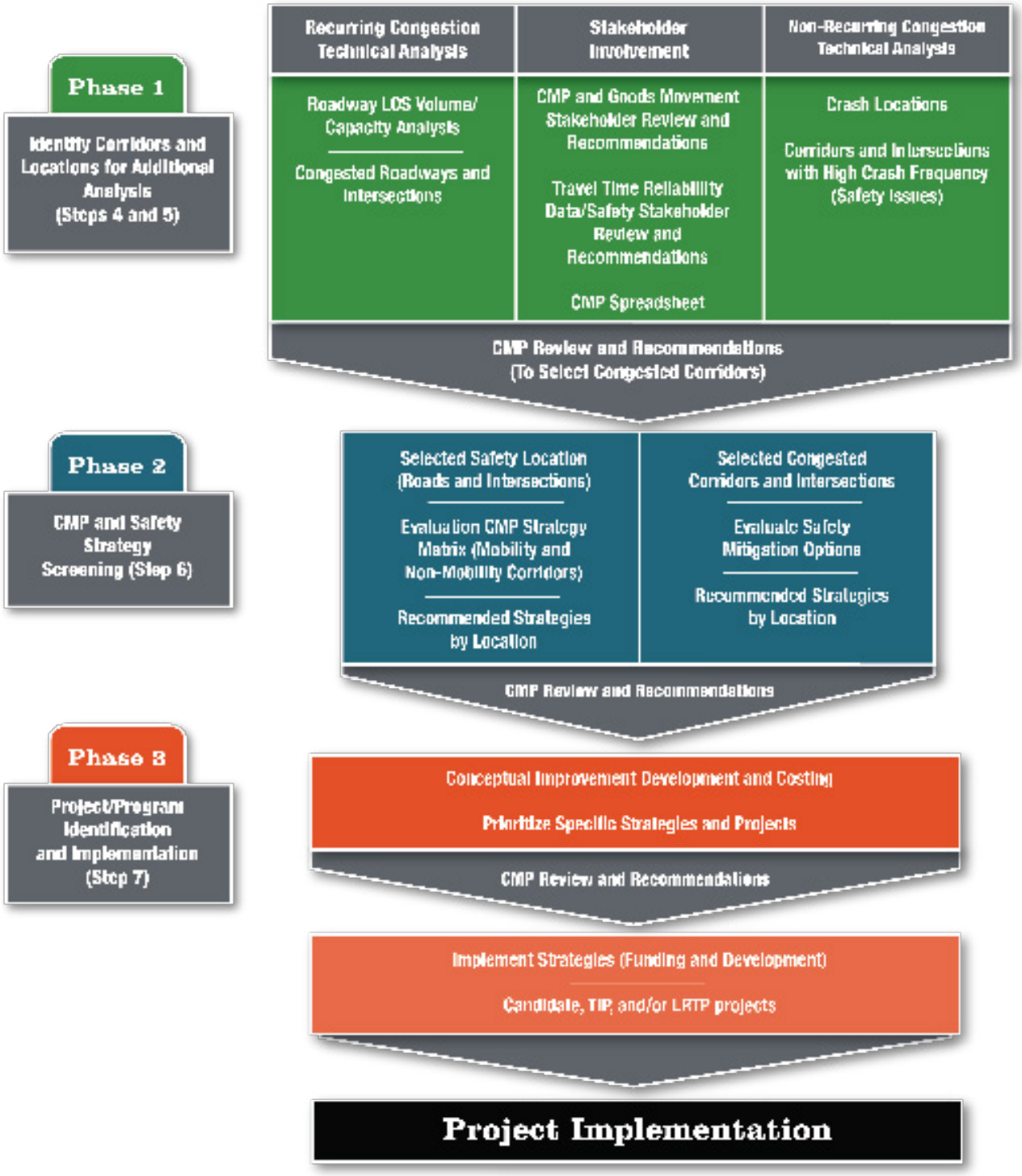
CMP and Safety Strategy Screening (Phase 2)

Once congested corridors are selected for review, they are selectively screened to identify mitigation strategies appropriate to reduce congestion or improve safety to reduce crashes. The CMP Strategy Matrix (found in **Appendix B**) is used to address recurring congestion, and the Safety Mitigation Strategy Matrix (found in **Appendix C**) is used to address nonrecurring congestion. The matrix includes strategies in five tiers as identified in the HRTPO CMP Strategy Toolbox. The CMP Strategy Matrix typically is used in a workshop setting to quickly review a corridor, and the Safety Mitigation Strategy Matrix is applied based on a review of crash data.

Project and Identification and Implementation (Phase 3)

The congestion or safety mitigation strategies that are identified as having the greatest potential benefit are then evaluated in greater detail based on committee or technical recommendations. During this phase, additional analysis of potential projects is undertaken to identify the specific improvement, implementation issues, and costs. "Programs" such as demand-reducing programs or policy changes are evaluated to identify recommended action items. Recommendations then are made for the projects or programs to be implemented. This may result in a near-immediate refocusing of existing resources, such as existing rideshare programs or local maintenance crews where possible, programming improvements in the local agency capital improvement programs, or using boxed funds controlled by the TPO, and finally may be identified as candidate projects for implementation in future LRTPs.

Figure 7-1: Corridor/Strategy Selection Process



Congestion Management Strategies

This section of the CMP Update identifies and evaluates the strategies intended for mitigating existing and future congestion in the regional CMP roadway network. A Toolbox of Strategies is presented to help policy makers and planners effectively use these congestion reduction strategies. ”

A full range of potential strategies has been identified for the HRTPO in its multimodal CMP network. These strategies can be grouped into the following broad categories as presented in **Figure 7-2.**

Figure 7-3 summarizes the demand and operational management strategies included in the HRTPO CMP toolbox of strategies, which is presented later in detail. A full range of demand and operational management strategies are identified in these tables for the TPO to assist in its efforts to mitigating existing and future congestion.

Figure 7-2: Congestion Management Strategies

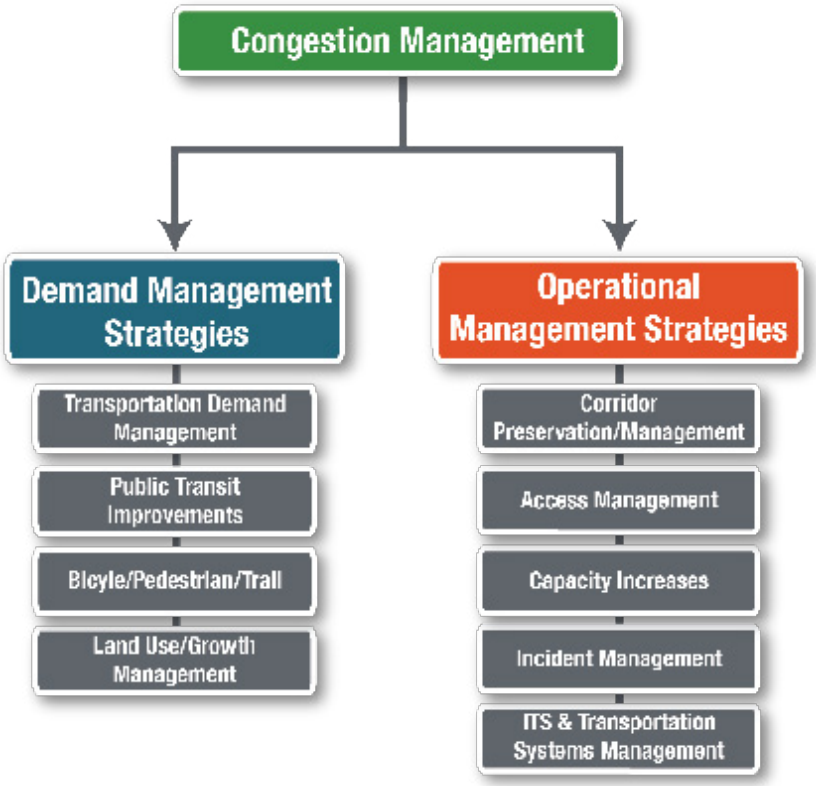
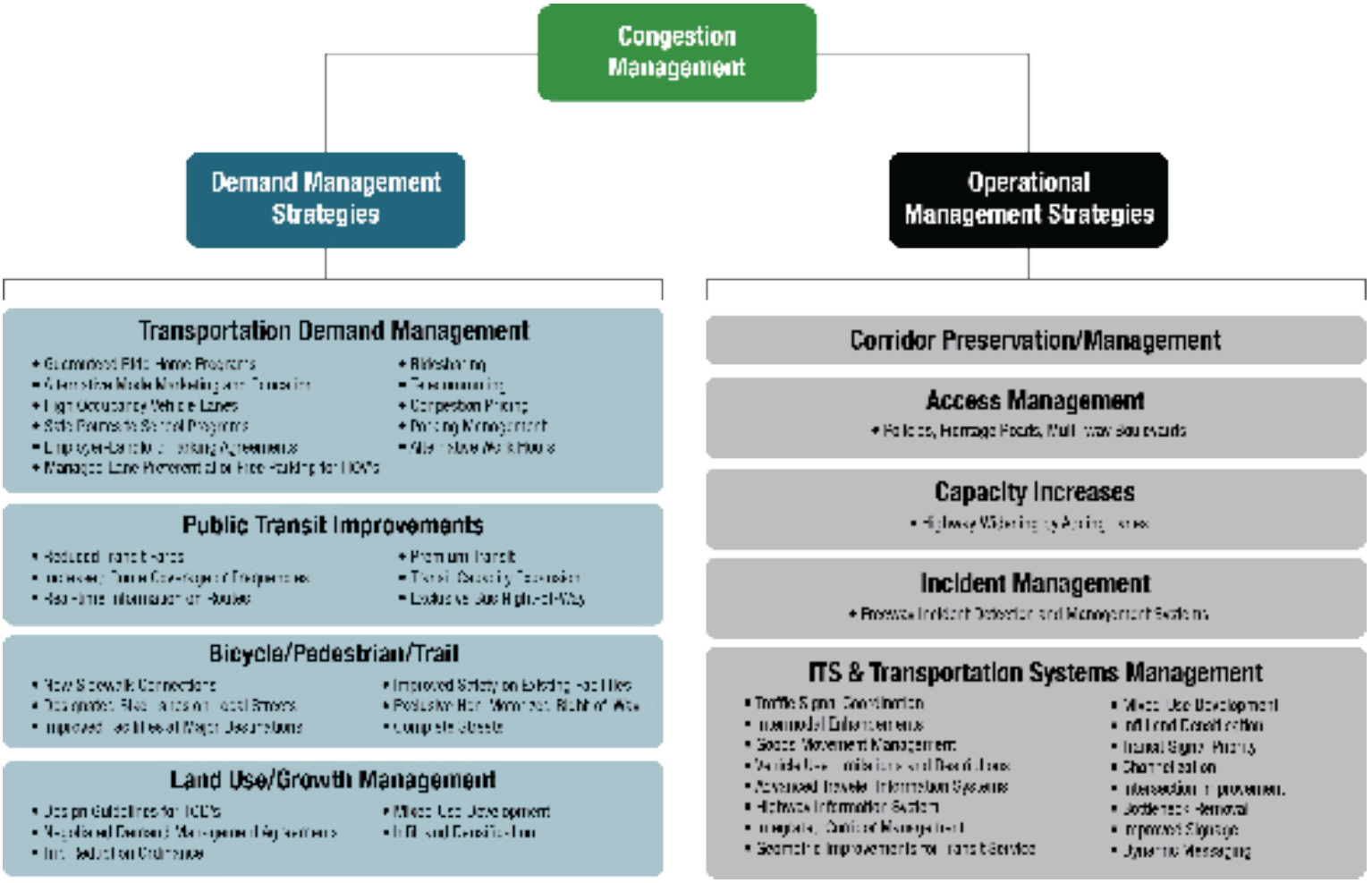


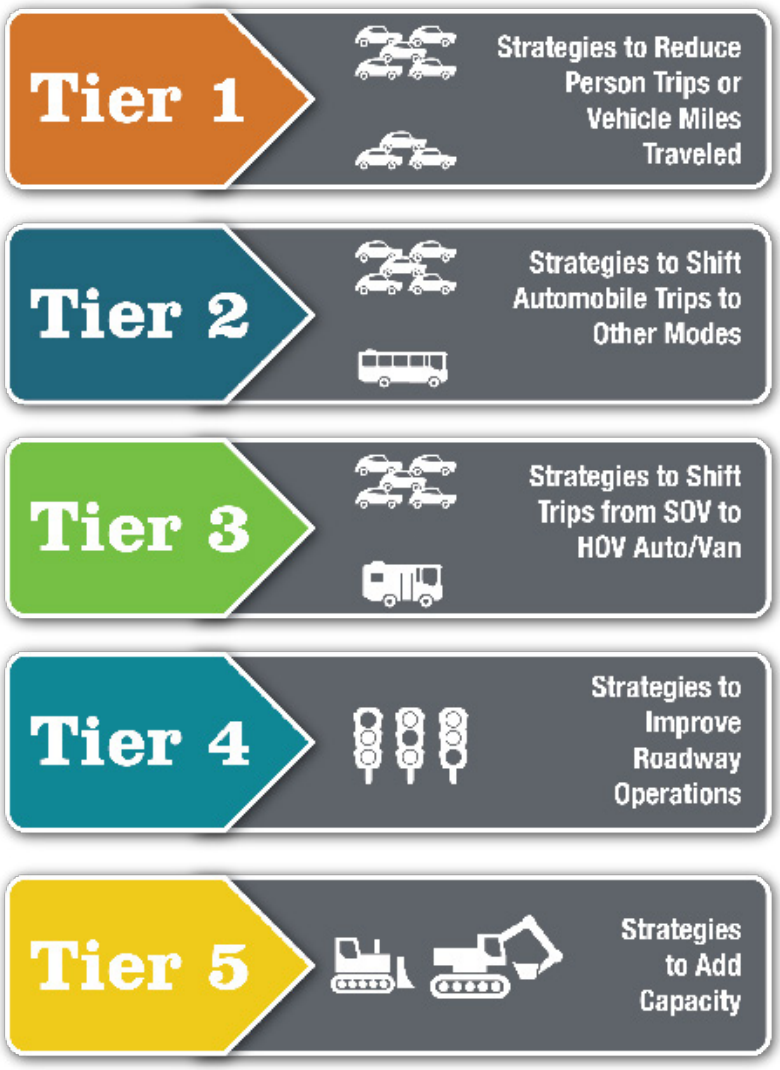
Figure 7-3: Demand and Operational Management Strategies



Toolbox of Strategies

The CMP uses a strategy toolbox with multiple tiers of strategies to support the congestion strategy or strategies for congested corridors. Following an approach used by other TPOs and promoted by FHWA, the toolbox of congestion mitigation strategies is arranged so that the measures at the top take precedence over those at the bottom. The toolbox is presented below.

Figure 7-4: Congestion Management Toolbox



The "top-down" approach promotes the growing sentiment in today's transportation planning arena and follows FHWA's clear direction to consider all available solutions before recommending additional roadway capacity. The HRTPO CMP toolbox of strategies is presented in detail in the remainder of this section.

Transportation Demand Management Strategies

These strategies are used to reduce the use of single occupant motor vehicles, as the overall objective of TDM is to reduce the miles traveled by automobile. The following TDM strategies, not in any particular order, are available for consideration in the toolbox to potentially reduce travel in the peak hours. Strategies include:

- **Congestion Pricing:** Congestion pricing can be implemented statically or dynamically. Static congestion pricing requires that tolls are higher during traditional peak periods. Dynamic congestion pricing allows toll rates to vary depending upon actual traffic conditions. The more congested the road, the higher the cost to travel on the road. Dynamic congestion pricing works best when coupled with real-time information on the availability of other routes.
- **Alternative Work Hours:** There are three main variations: staggered hours, flex-time, and compressed work weeks. Staggered hours require employees in different work groups to start at different times to spread out their arrival/departure times. Flex-time allows employees to arrive and leave outside of the traditional commute period. Compressed work weeks involve reducing the number of days per week worked while increasing the number of hours worked per day.
- **Telecommuting:** Telecommuting policies allow employees to work at home or a regional telecommute center instead of going into the office, all the time or only one or more days per week.
- **Guaranteed Ride Home Programs:** These programs provide a safety net to those people who carpool or use transit to work so that they can get to their destination if unexpected work demands or an emergency arises.
- **Alternative Mode Marketing and Education:** Providing education on alternative modes of transportation can be an effective way of increasing demand for alternative modes. This strategy can include mapping Websites that compute directions and travel times for multiple modes of travel.
- **Safe Routes to Schools Program:** This federally-funded program provides 100 percent funding to communities to invest in pedestrian and bicycle infrastructure surrounding schools.
- **Preferential or Free Parking for HOVs:** This program provides an incentive for employees to carpool with preferred of free-of-charge parking for HOVs.

Land Use/Growth Management Strategies

The strategies in this category include policies and regulations that would decrease the total number of auto trips and trip lengths while promoting transit and non-motorized transportation options. These strategies include the following:

- **Negotiated Demand Management Agreements:** As a condition of development approval, local governments require the private sector to contribute to traffic mitigation agreements. The agreements typically set a traffic reduction goal (often expressed as a minimum level of ridesharing participation or a stipulated reduction in the number of automobile trips).
- **Trip Reduction Ordinance:** These ordinances use a locality's regulatory authority to limit trip generation from a development. They spread the burden of reducing trip generation among existing and future developments better than Negotiated Demand Management Agreements.
- **Infill Developments:** This strategy takes advantage of infrastructure that already exists, rather than building new infrastructure on the fringes of the urban area.
- **Transit Oriented Developments:** This strategy clusters housing units and/or businesses near transit stations in walkable communities. By providing convenient access to alternative modes, auto dependence can be reduced.
- **Design Guidelines for Pedestrian-Oriented Development:** Maximum block lengths, building setback restrictions, and streetscape enhancements are examples of design guidelines that can be codified in zoning ordinances to encourage pedestrian activity.
- **Mixed-Use Development:** This strategy allows many trips to be made without automobiles. People can walk to restaurants and services rather than use their vehicles.

Public Transit Strategies

Two types of strategies, capital improvements and operating improvements, are used to enhance the attractiveness of public transit services to shift auto trips to transit. Transit capital improvements generally modernize the transit systems and improve their efficiency; operating improvements make transit more accessible and attractive. The following strategies are included in the toolbox for consideration:

- **Transit Capacity Expansion:** This strategy adds new vehicles to expand transit services.
- **Increasing Bus Route Coverage or Frequencies:** This strategy provides better accessibility to transit to a greater share of the population. Increasing frequency makes transit more attractive to use.
  Implementing Regional Premium Transit: Premium transit such as Bus Rapid Transit (BRT) best serves dense urban centers where travelers can walk to their destinations. Premium regional transit from suburban areas can sometimes be enhanced by providing park-and-ride lots.

- **Providing Real-Time Information on Transit Routes:** Providing real-time information on bus progress either at bus stops, terminals, and/or personal wireless devices makes bus travel more attractive.
- **Reducing Transit Fares:** This relatively easy-to-implement strategy encourages additional transit use, to the extent that high fares are a real barrier to transit. However, due to the direct financial impact on the transit system operating budgets, reductions in selected fare categories may be a more feasible strategy to implement.
- **Provide Exclusive Bus Right-Of-Way:** Exclusive right-of-way includes bus ways, bus-only lanes, and bus bypass ramps. This strategy is applied to freeways and major highways that have routes with high ridership.

Non-Motorized Transportation Strategies

Non-motorized strategies include bicycle, pedestrian, and trail facility improvements that encourage non-motorized modes of transportation instead of single-occupant vehicle trips. The following strategies are included:

- **New Sidewalk Connections:** Increasing sidewalk connectivity encourages pedestrian traffic for short trips.
- **Designated Bicycle Facilities on Local Streets:** Enhancing the visibility of bicycle facilities increases the perception of safety. In many cases, bicycle lanes can be added to existing roadways through restriping.
- **Improved Bicycle Facilities at Transit Stations and Other Trip Destinations:** Bicycle racks and bicycle lockers at transit stations and other trip destinations increase security. Additional amenities such as locker rooms with showers at workplaces provide further incentives for using bicycles.
- **Improved Safety of Existing Bicycle and Pedestrian Facilities:** Maintaining lighting, signage, striping, traffic control devices, and pavement quality and installing curb cuts, curb extensions, median refuges, and raised crosswalks can increase bicycle and pedestrian safety.
- **Exclusive Non-Motorized ROW:** Abandoned rail rights-of-way and existing parkland can be used for medium- to long-distance bicycle trails, improving safety and reducing travel times.
- **Complete Streets:** Routinely designing and operating the entire right-of-way can enable safe access for all users including pedestrians, bicyclists, motorists, and transit. Elements that may be found on a complete street include sidewalks, bike facilities, special bus lanes, comfortable and accessible transit stops, frequent crossing opportunities, median islands, accessible pedestrian signals, curb extensions, support for changing mobility technologies, and more.

Transportation Demand Management Strategies

The following TDM strategies are recommended to encourage HOV use:

- **Ridesharing (Carpools & Vanpools):** In ridesharing programs, participants are matched with potential candidates for sharing rides. This typically is arranged/encouraged through employers or transportation management agencies that provide ride-matching services. These programs are more effective if combined with HOV lanes, parking management, guaranteed ride home policies, and employer-based incentive programs.
- **High Occupancy Vehicle Lanes:** This increases corridor capacity while, at the same time, providing an incentive for single-occupant drivers to shift to ridesharing. These lanes are most effective as part of a comprehensive effort to encourage HOVs, including publicity, outreach, park-and-ride lots, rideshare matching services, and employer incentives.
- **Park-and-Ride Lots:** These lots can be used in conjunction with HOV lanes and/or express bus services. They are particularly helpful when coupled with other commute alternatives such as carpool/vanpool programs, transit, and/or HOV lanes.
- **Employer-Landlord Parking Agreements:** Employers can negotiate leases so that they pay for parking spaces used only by employees. In turn, employers can pass along parking savings by purchasing transit passes or reimbursing non-driving employees with the cash equivalent of a parking space.
- **Parking Management:** This strategy reduces the instance of free parking to encourage other modes of transportation. Options include reducing the minimum number of parking spaces required per development, increasing the share of parking spaces for HOVs, introducing or raising parking fees, providing cash-out options for employees not using subsidized parking spaces, and expanding parking at transit stations or park-and-ride lots.
- **Managed Lanes:** FHWA defines managed lanes as highway facilities or a set of lanes in which operational strategies are implemented and managed (in real time) in response to changing conditions. Examples of managed lanes may include High-Occupancy Toll (HOT) lanes with tolls that vary based on demand, exclusive bus-only lanes, HOV and clean air and/or energy-efficient vehicle lanes, and HOV lanes that could be changed into HOT lanes in response to changing levels of traffic and roadway conditions.

Intelligent Transportation Systems Strategies

The strategies in Intelligent Transportation Systems (ITS) use new and emerging technologies to mitigate congestion while improving safety and environmental impacts. Typically, these systems are made up of many components, including sensors, electronic signs, cameras, controls, and communication technologies. ITS strategies are sets of components working together to provide information and allow greater control of the operation of the transportation system. The following strategies are included in the toolbox.

- **Dynamic Messaging:** Dynamic messaging uses changeable message signs to warn motorists of downstream queues; it provides travel time estimates, alternate route information, and information on special events, weather, or accidents.
- **Advanced Traveler Information Systems (ATIS):** ATIS provide an extensive amount of data to travelers, such as real-time speed estimates on the Web or over wireless devices and transit vehicle schedule progress. It also provides information on alternative route options.
- **Integrated Corridor Management (ICM):** This strategy, built on an ITS platform, provides for the coordination of the individual network operations between parallel facilities creating an interconnected system. A coordinated effort between networks along a corridor can effectively manage the total capacity in a way that will result in reduced congestion.
- **Transit Signal Priority (TSP):** This strategy uses technology located onboard transit vehicles or at signalized intersections to temporarily extend green time, allowing the transit vehicle to proceed without stopping at a red light.

Transportation Systems Management Strategies

Transportation Systems Management (TSM) strategies identify operational improvements to enhance the capacity of the existing system. These strategies typically are used together with ITS technologies to better manage and operate existing transportation facilities. The following strategies are included in the toolbox.

- **Traffic Signal Coordination:** Signals can be pre-timed and isolated, pre-timed and synchronized, actuated by events (such as the arrival of a vehicle, pedestrian, bus or emergency vehicle), set to adopt one of several pre-defined phasing plans based on current traffic conditions, or set to calculate an optimal phasing plan based on current conditions.
- **Channelization:** This strategy is used to optimize the flow of traffic for making left or right turns usually using concrete islands or pavement markings.
- **Intersection Improvements:** Intersections can be widened and lanes restriped to increase intersection capacity and safety. This may include auxiliary turn lanes (right or left) and widened shoulders.

- **Bottleneck Removal:** This strategy removes or corrects short, isolated, and temporary lane reductions, substandard design elements, and other physical limitations that form a capacity constraint that results in a traffic bottleneck.
- **Vehicle Use Limitations and Restrictions:** This strategy includes all-day or selected time-of-day restrictions of vehicles, typically trucks, to increase roadway capacity.
- **Improved Signage:** Improving or removing signage to clearly communicate location and direction information can improve traffic flow.
- **Geometric Improvements for Transit:** This strategy includes providing for transit stop locations that do not affect the flow of traffic, improve sight lines, and improve merging and diverging of buses and cars.
- **Intermodal Enhancements:** Coordinating modes makes movement from one mode to the other easier. These enhancements typically include schedule modification to reduce layover time or increase the opportunity for transfers, creation of multimodal facilities, informational kiosks, and improved amenities at transfer locations.
- **Goods Movement Management:** This strategy restricts delivery or pickup of goods in certain areas to reduce congestion.

Incident Management Strategies

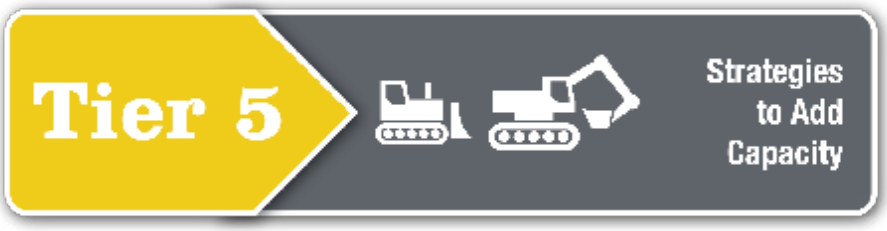
- **Freeway Incident Detection and Management Systems:** This strategy addresses primarily non-recurring congestion, typically includes video monitoring and dispatch systems, and may also include roving service patrol vehicles.

Access Management Strategies

- **Access Management Policies:** This strategy includes adoption of policies to regulate driveways and limit curb cuts and/or policies that require continuity of pedestrian, bicycle, and trail facilities.

Corridor Preservation/Management Strategies

- **Corridor Preservation:** This strategy includes implementing, where applicable, land acquisition techniques such as full title purchases of future rights-of-way and purchase of easements to plan proactively in anticipation of future roadway capacity demands.
- **Corridor Management:** This strategy is applicable primarily in moderate- to high-density areas and includes strategies to manage corridor rights-of-way. The strategies range from land-use regulations to landowner agreements such as subdivision reservations, which are mandatory dedications of portions of subdivided lots that lie in the future right-of-way.



Strategies to add capacity are the most costly and least desirable strategies and should be considered last resort methods for reducing congestion. Capacity-adding strategies should be applied after determining the demand and operational management strategies identified earlier are not feasible solutions. The key strategy is to increase the capacity of congested roadways through additional general purpose travel lanes (or passing lanes on rural two-lane facilities).

- **Increase the capacity of congested roadways through additional general purpose travel lanes (or passing lanes on rural two-lane facilities).**

Congestion Mitigation Matrix

The CMP Strategy Matrix is used to address recurring congestion. The first page of the matrix is shown in **Figure 7-5** and the complete matrix is included in **Appendix B**. The matrix includes strategies in five tiers as identified in the CMP Strategy Toolbox. The CMP Strategy Matrix typically is used in a workshop setting with agency stakeholders to quickly screen through the strategies in order to identify appropriate strategies that may provide a benefit within the corridor. Following the screening of a corridor using the matrix, strategies which were identified as having a high level of potential benefit or medium level of potential benefit are considered for additional analysis where appropriate. The CMP Strategy Matrix identifies the general level of applicability by mode given the different trip types as follows:

- **Regional Trips:** Long distance trips and/or pass-through trips through the county. Typically these trips are auto dependent unless served by premium transit modes.
- **Regional Access Trips:** Moderate distance trips that have at least one trip end (origin or destination) within the corridor. Typically, these trips are auto dependent.
- **Local Access Trips:** These are shorter trips with at least one trip end within the corridor. Typically the bicycle mode can compete favorably with the auto modes of travel relative to travel time.
- **Local Circulation Trips:** These are very short trips where both trip ends likely occur within close proximity to the corridor. Typically, walking and bicycling have travel times comparable to auto usage. Public transportation is typically not viable in the absence of frequent local circulator transit service since walking times are of relatively short duration.

Figure 7-5: Congestion Mitigation Matrix (Sample)

Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Applicability to HRTPO	Distribution of Trip Types: Regional Traffic	Regional Access	Local Access	Local Circulation	Potential Effectiveness	Recommendations/ Comments
Tier 1: Strategies to Reduce Person Trips or Vehicle Miles Traveled	LT	**1.01 Congestion Pricing:** Congestion pricing can be implemented statically or dynamically. Static congestion pricing requires that tolls are higher during traditional peak periods. Dynamic congestion pricing allows toll rates to vary depending upon actual traffic conditions. The more congested the road, the higher the cost to travel on the road. Dynamic congestion pricing works best when coupled with real-time information on the availability of other routes.	Low						
	ST/LT	**1.02 Alternative Work Hours:** There are three main variations: staggered hours, flex-time, and compressed work weeks. Staggered hours require employees in different work groups to start at different times to spread out their arrival/departure times. Flex-time allows employees to arrive and leave outside of the traditional commute period. Compressed work weeks involve reducing the number of days per week worked while increasing the number of hours worked per day.	Low						
	ST/LT	**1.03 Telecommuting:** Telecommuting policies allow employees to work at home or a regional telecommute center instead of going into the office, all the time or only one or more days per week.	Med						
	ST/LT	**1.04 Emergency Ride Home Programs:** These programs provide a safety net to those people who carpool or use transit to work so that they can get to their destination if unexpected work demands or an emergency arises.	Med						

CMP Safety Mitigation Matrix

The HRTPO CMP process also includes a "CMP Safety Mitigation Matrix" for use in streamlining the identification of potential safety issues identified in the identification of congested corridors by making use of crash data produced by the FDOT's Crash Data Management System. This system produces maps and reports by crash type or cause which can be used to identify safety issues on the major roadway network for both congested and non-congested roadways. Reducing the number of crashes that occur on major roadways can reduce nonrecurring congestion. While the delay incurred resulting from crashes cannot be determined easily, it is a significant contribution of delay on major roadways. To support the integration of crash reduction as a means to reduce non-reoccurring congestion, a CMP Safety Mitigation Matrix was developed.

The CMP Safety Migration Matrix is provided in **Appendix C**. This Matrix is similar to the CMP Strategy Matrix in that it should be used to screen and identify potential strategies that would reduce congestion caused by specific crash types. The Matrix identifies crash types and the typical strategies that could be implemented to improve safety and reduce these crashes for the Safety Emphasis Areas identified in the State of Florida Strategic Highway Safety Plan. In most cases, additional detailed study will be required to identify the specific safety strategy or strategies to be implemented for a specific location.

Figure 7-6: Safety Mitigation Matrix (Sample)

Key Safety Emphasis Areas for CMP Integration		
Community Traffic Safety Program	**Comprehensive Traffic Enforcement and Education Program**	**Motorcycle Safety Program**
Community Traffic Safety teams are multidisciplinary efforts (engineering, law enforcement, education, etc.) who work together to target community specific traffic safety issues.	The Comprehensive Traffic Enforcement and Education Program involves the aggressive enforcement of traffic laws in the following priority areas: Distracted Driving, Impaired Driving, Motorcycle Safety, Occupant Protection and Child Passenger Safety, Pedestrian and Bicycle Safety, Speed/ Aggressive Driving, and Teen Driving. Comprehensive projects are funded in communities with a significant number of serious injuries and fatalities that are linked to priority traffic safety areas. Focusing on enhanced enforcement and educational efforts that support critical traffic laws, these efforts will reduce crashes and save lives. Goals of the program are to increase awareness, education, and enforcement of key traffic safety laws that will contribute to a minimum 5 percent annual reduction in fatalities.	This program area addresses crashes involving motorcyclists which is a significant cause of traffic fatalities in Florida.
Potential Strategies	**Potential Strategies**	**Potential Strategies**
• Increase public awareness and highway traffic safety programs • Expand the network of concerned individuals to build recognition and awareness about traffic safety • Support initiatives that enhance traffic laws and regulations related to safe driving	• Increase public awareness of highway traffic safety programs • Expand the network of concerned stakeholders to build recognition and awareness of traffic safety • Support initiatives that enhance traffic safety laws and regulations related to safe driving • Support and promote effective law enforcement efforts related to safe driving	• Collect and analyze data on motorcycle crashes, injuries, and fatalities to provide local and state agencies with the best available data to make appropriate and timely decisions that improve motorcycle safety in Florida • Manage motorcycle safety activities in Florida as part of a comprehensive plan that includes centralized program planning, implementation, coordination, and evaluation to maximize the effectiveness of programs and reduce duplication of effort • Promote personal protective gear and its value in reducing motorcyclist injury levels and increasing rider conspicuity • Ensure persons operating a motorcycle on public roadways hold an endorsement specifically authorizing motorcycle operation • Promote adequate rider training and preparation to new and experienced motorcycle riders by qualified instructors at State-approved training centers • Reduce the number of alcohol, drug, and speed-related motorcycle crashes in Florida • Support legislative initiatives that promote motorcycle safety-related traffic laws and regulations • Ensure State and local motorcycle safety programs include law enforcement and

CHAPTER 8

Monitoring and Strategy Effectiveness

Introduction

The FHWA guidelines call for CMPs to include provisions to monitor the performance of strategies implemented to address congestion. Regulations require "a process for periodic assessment of the efficiency and effectiveness of implemented strategies, in terms of the area's established performance measures." This step of the process helps determine whether operational or policy adjustments are needed to make the current strategies work better and provides information about how various strategies work in order to implement future approaches within the CMP study area.

Data collection and performance monitoring are ongoing with the various periodic assessments of roadway, transit, bicycle/pedestrian/trail, freight network performance in the region. However, this CMP also identifies the need for a process that supports the routine tracking of the effectiveness of the implemented congestion mitigation strategies and the multimodal transportation system as a whole. This evaluation process is described in detail below.

Heartland Transportation Trends Report

As a key tool in the HRTPO CMP Heartland Transportation Trends Report will be developed in the interim years until the next CMP update. This report will track the effectiveness of the implemented strategies, to the extent possible with the available project level data, and conditions of the multimodal transportation system as a whole. The same set of quantifiable performance measures established for the CMP as described in Chapter 6 of this report will be used to measure system performance at corridor and system levels. T

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The commitment and schedule for preparing a routine Heartland Transportation Trends Report will be determined by the TPO's TAC and TPO Board.

Typically the Heartland Transportation Trends Report will be completed by the HRTPO during the years between LRTP updates and the report is contingent on available funding. In the future, the Heartland Transportation Trends Report is anticipated to support the requirement of the Transportation Improvement Program (TIP) to the maximum extent practicable, provide a description of the anticipated effect of the TIP toward achieving the performance targets established in the Plan, and how the TIP links investment priorities to those performance targets.

Appendix

APPENDIX A

Congested Corridors and Hot Spots

Various criteria that primarily use traffic volume and capacity are used to select and categorize the congested corridors in the region. The methodology using these criteria to select congested corridors within the CMP application area is presented below. Thereafter, criteria used to identify congestion hot spots, i.e. intersections with recurring or non-recurring congestion, are also summarized.

Selection Methodology

This methodology summarizes the steps used to identify the congested roadways for the HRTPO CMP. As indicated earlier, the CMP road network identified in Chapter 4.

The selection methodology consists of two main steps. First, five criteria are used to categorize the roadways into three sub-categories. The sub-categories and corresponding criteria are presented below.

Not Congested (currently or in five years without improvements) - The corridors in this category are selected based on applying the following criteria at road segment level:

$$\text{Not Congested Corridors} = \text{Existing or Existing + 5 Years Segments with } \left(\frac{\text{Segment}^i \text{ volume}}{\text{Segment}^i \text{ maximum service volume}} \right) < \text{Segment}^i \text{ maximum service volume x } 0.90$$

$$(i = 1, 2, 3, \ldots n)$$

Approaching Congestion or Minimally Congested – The corridors that are approaching congestion are analyzed at three levels. The criteria in each level of analysis are summarized below.

- **Approaching Congestion:** This includes corridors with segments that meet the following criteria, which are currently congested or congested in five years without improvements.

$$\text{Corridors Approaching Congestions} = \text{Existing or Existing + 5 Years Segments with } 1.00 > \left(\frac{\text{Segment}^i \text{ volume}}{\text{Segment}^i \text{ maximum service volume}} \right) > 0.90$$

$$(i = 1, 2, 3, \ldots n)$$

- **Congested Today**: As summarized below, this category uses two criteria to identify the corridors that are congested today.

$$\text{Corridors Congested Today} = \text{Existing Segments with } 1.08 > \left(\frac{\text{Segment}^i \text{ volume}}{\text{Segment}^i \text{ capacity}}\right) \& \left(\frac{\text{Segment}^i \text{ volume}}{\text{Segment}^i \text{ maximum service volume}}\right) > 1.00$$

$$(i = 1, 2, 3, \ldots n)$$

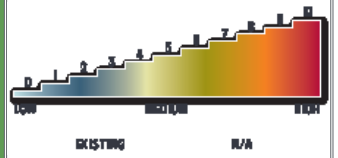
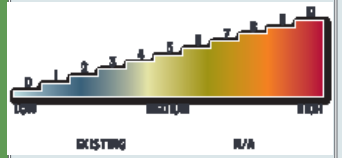
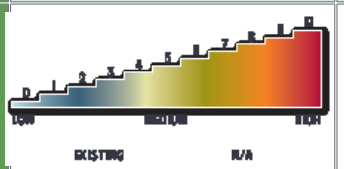
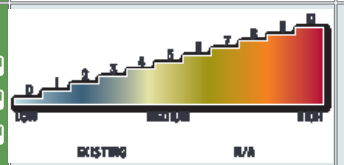
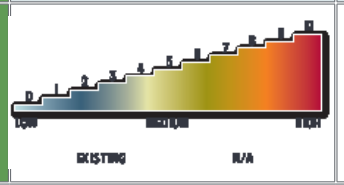
- **Extremely Congested:** This category includes roadways in the 2014 E+C network that meets the following criteria are considered severely congested.

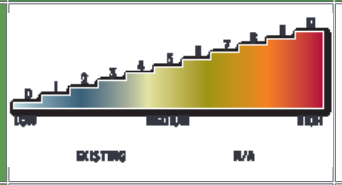
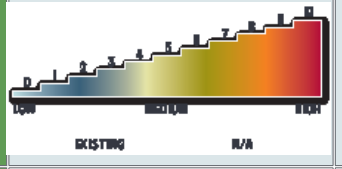
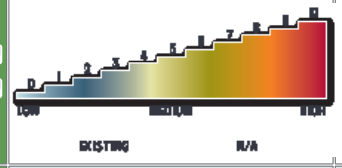
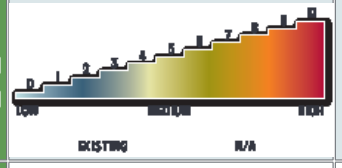
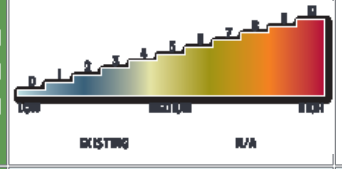
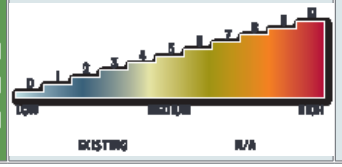
$$\text{Extremely Congested Corridors} = \text{Existing or Existing + 5 Years Segments with } \left(\frac{\text{Segment}^i \text{ volume}}{\text{Segment}^i \text{ capacity}}\right) > 1.08$$

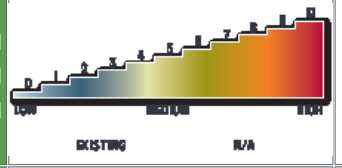
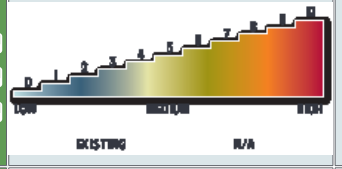
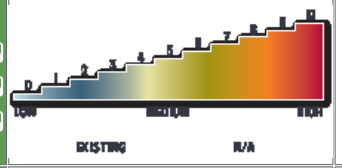
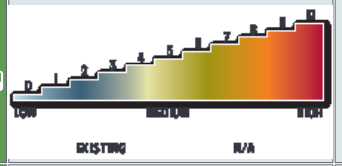
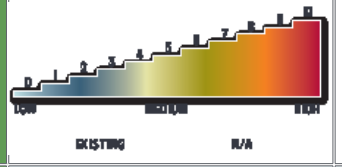
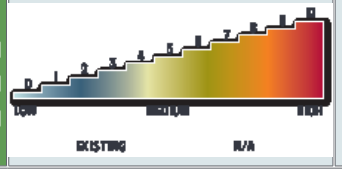
$$(i = 1, 2, 3, \ldots n)$$

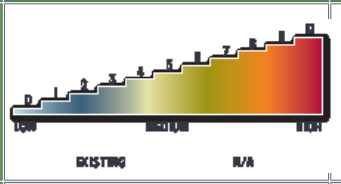
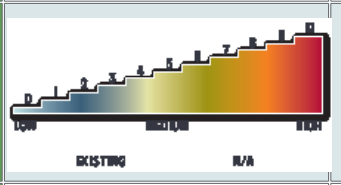
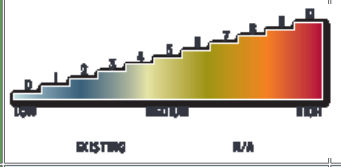
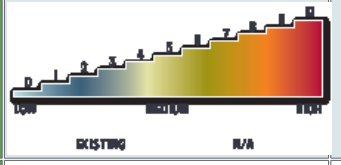
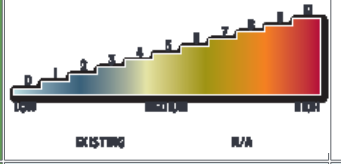
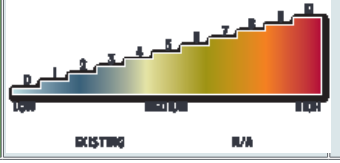
In addition to the congested roadways selected using the criteria presented above, high crash locations identified in crash data analysis reports and TAC recommendations of congested intersections are used to identify the congestion "Hot Spots."

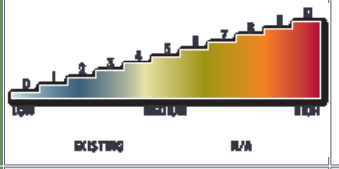
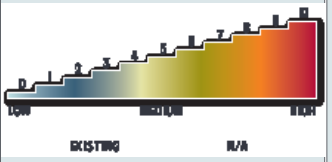
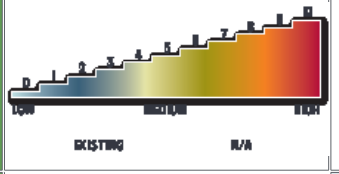
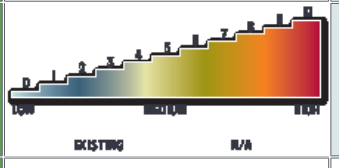
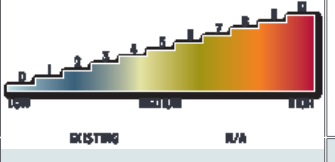
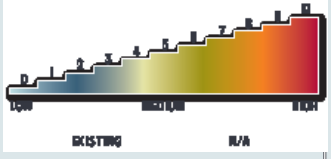
Corridor _____ From _____ To _____ Analyst _____ Date _____

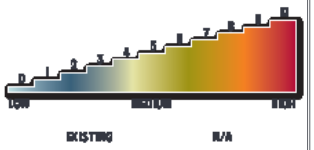
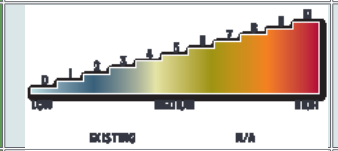
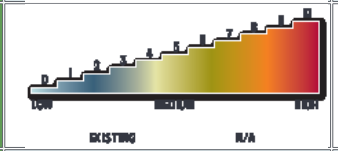
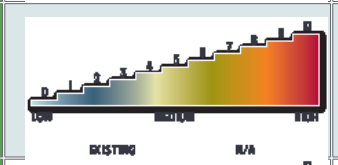
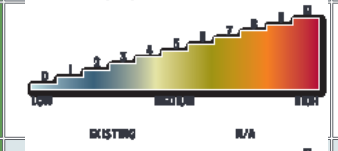
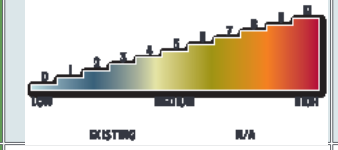
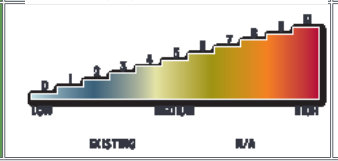
Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Applicability to HRTPO	Distribution of Trip Types								Potential Effectiveness	Recommendations/ Comments
				Regional Traffic		Regional Access		Local Access		Local Circulation			
Tier 1: Strategies to Reduce Person Trips or Vehicle Miles Traveled	**LT**	**1.01 Congestion Pricing:** Congestion pricing can be implemented statically or dynamically. Static congestion pricing requires that tolls are higher during traditional peak periods. Dynamic congestion pricing allows toll rates to vary depending upon actual traffic conditions. The more congested the road, the higher the cost to travel on the road. Dynamic congestion pricing works best when coupled with real-time information on the availability of other routes.	**Low**										
	ST/LT	**1.02 Alternative Work Hours:** There are three main variations: staggered hours, flex-time, and compressed work weeks. Staggered hours require employees in different work groups to start at different times to spread out their arrival/departure times. Flex-time allows employees to arrive and leave outside of the traditional commute period. Compressed work weeks involve reducing the number of days per week worked while increasing the number of hours worked per day.	**Low**										
	ST/LT	**1.03 Telecommuting:** Telecommuting policies allow employees to work at home or a regional telecommute center instead of going into the office, all the time or only one or more days per week.	**Med**										
	ST/LT	**1.04 Emergency Ride Home Programs:** These programs provide a safety net to those people who carpool or use transit to work so that they can get to their destination if unexpected work demands or an emergency arises.	**Med**										
	ST/LT	**1.05 Alternative Mode Marketing and Education:** Providing education on alternative modes of transportation can be an effective way of increasing demand for alternative modes. This strategy can include mapping websites that compute directions and travel times for multiple modes of travel.	**Med**										

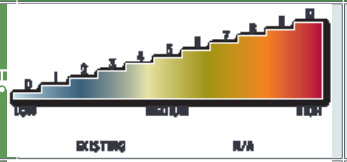
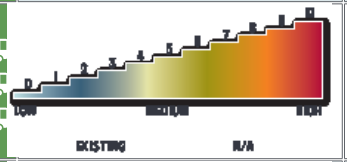
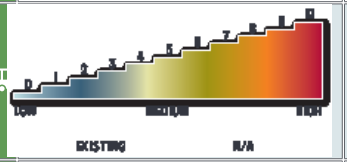
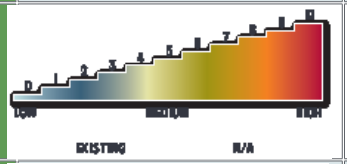
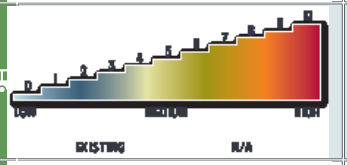
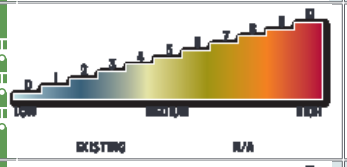
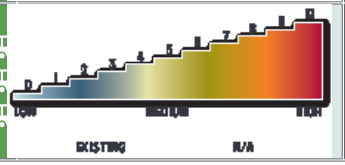
Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Applicability to HRTPO	Distribution of Trip Types								Potential Effectiveness	Recommendations/ Comments
				Regional Traffic		Regional Access		Local Access		Local Circulation			
Tier 1: Strategies to Reduce Person Trips or Vehicle Miles Traveled	**ST/LT**	**1.06 Safe Routes to Schools Program:** This program provides funding to communities to invest in pedestrian and bicycle infrastructure surrounding schools.	**High**										
	ST/LT	**1.07 Preferential for Free Parking for HOVs:** This program provides an incentive for employees to carpool with preferred of free-of-charge parking for HOVs.	**Low**										
	ST/LT	**1.08 Negotiated Demand Management Agreements:** As a condition of development approval, local governments require the private sector to contribute to traffic mitigation agreements. The agreements typically set a traffic reduction goal (often expressed as a minimum level of ridesharing participation or a stipulated reduction in the number of automobile trips).	**Low**										
	ST/LT	**1.09 Trip Reduction Ordinance:** These ordinances use a locality's regulatory authority to limit trip generation from a development. They spread the burden of reducing trip generation among existing and future developments better than Negotiated Demand Management Agreements.	**Low**										
	ST	**1.10 Infill developments:** This strategy takes advantage of infrastructure that already exists, rather than building new infrastructure on the fringes of the urban area.	**High**										
	ST/LT	**1.11 Design Guidelines for Pedestrian-Oriented Development:** Maximum block lengths, building setback restrictions, and streetscape enhancements are examples of design guidelines that can be codified in zoning ordinances to encourage pedestrian activity.	**High**										

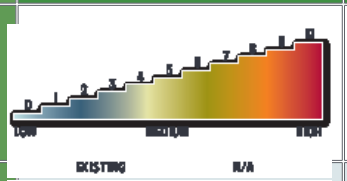
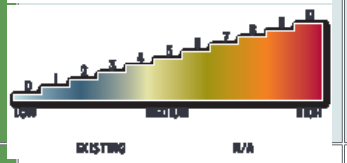
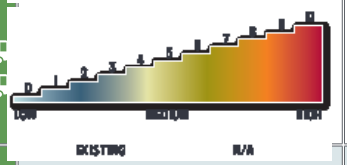
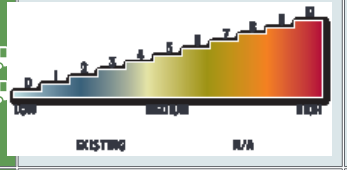
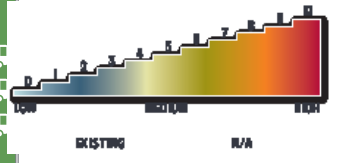
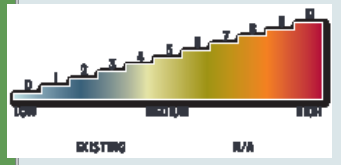
Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Applicability to HRTPO	Distribution of Trip Types								Potential Effectiveness	Recommendations/ Comments
				Regional Traffic		Regional Access		Local Access		Local Circulation			
Tier One	**ST/LT**	1.12 Mixed-Use Development: This strategy allows many trips to be made without automobiles. People can walk to restaurants and services rather than use their vehicles.	**High**										
Tier 2: Strategies to Shift Automobile Trips to Other Modes	**ST/LT**	2.01 Transit Capacity Expansion: This strategy adds new vehicles to expand transit services.	**Med**										
	ST/LT	2.02 Increasing Bus Route Coverage or Frequencies: This strategy provides better accessibility to transit to a greater share of the population. Increasing frequency makes transit more attractive to use.	**Med**										
	LT	2.03 Implementing Regional Premium Transit: Premium transit such as Bus Rapid Transit (BRT) best serves dense urban centers where travelers can walk to their destinations. Premium transit from suburban areas can sometimes be enhanced by providing park-and-ride lots.	**Low**										
	ST/LT	2.04 Providing Real-Time Information on Transit Routes: Providing real-time information on bus progress either at bus stops, terminals, and/or personal wireless devices makes bus travel more attractive.	**Low**										
	ST	2.05 Reducing Transit Fares: This relatively easy-to-implement strategy encourages additional transit use, to the extent that high fares are a real barrier to transit. However, due to the direct financial impact on the transit system operating budgets, reductions in selected fare categories may be a more feasible strategy to implement.	**Low**										

Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Applicability to HRTPO	Distribution of Trip Types								Potential Effectiveness	Recommendations/ Comments
				Regional Traffic		Regional Access		Local Access		Local Circulation			
Tier 2: Strategies to Shift Automobile Trips to Other Modes	**LT**	**2.06 Provide Exclusive Bus Right-Of-Way:** Exclusive right-of-way includes bus ways, bus-only lanes, and bus bypass ramps. This strategy is applied to freeways and major highways that have routes with high ridership.	**Low**										
	ST/LT	**2.07 New Sidewalk Connections:** Increasing sidewalk connectivity encourages pedestrian traffic for short trips.	**Med**										
	ST/LT	**2.08 Designated Bicycle Lanes on Facilities or Routes:** Enhancing the visibility of bicycle facilities increases the perception of safety. In many cases, bicycle lanes can be added to existing roadways through restriping.	**Med**										
	ST	**2.09 Improved Bicycle Facilities at Transit Stations and Other Trip Destinations:** Bicycle racks and bicycle lockers at transit stations and other trip destinations increase security. Additional amenities such as locker rooms with showers at workplaces provide further incentives for using bicycles.	**Low**										
	ST	**2.10 Improved Safety of Existing Bicycle and Pedestrian Facilities:** Maintaining lighting, signage, striping, traffic control devices, and pavement quality and installing curb cuts, curb extensions, median refuges, and raised crosswalks can increase bicycle and pedestrian safety.	**High**										
	LT	**2.11 Exclusive Non-Motorized ROW:** Abandoned rail rights-of-way and existing parkland can be used for medium- to long-distance bicycle trails, improving safety and reducing travel times.	**Med**										

Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Applicability to HRTPO	Distribution of Trip Types								Potential Effectiveness	Recommendations/ Comments
				Regional Traffic		Regional Access		Local Access		Local Circulation			
Tier 2	**ST/LT**	**2.12 Intermodal Enhancements:** Coordinating modes makes movement from one mode to the other easier. These enhancements typically includes schedule modification to reduce layover time or increase the opportunity for transfers, creation of multi-modal facilities, informational kiosks, and improved amenities at transfer locations.	**Med**										
Tier 3: Strategies to Increase Vehicle Occupancy	**LT**	**3.01 Ridesharing (Carpools, Vanpools, Lyft, Uber):** In ridesharing programs, participants are matched with potential candidates for sharing rides. This is typically arranged/ encouraged through employers or transportation management agencies, which provide ride-matching services. These programs are more effective if combined with HOV lanes, parking management, guaranteed ride home policies, and employer-based incentive programs.	**Med**										
	ST/LT	**3.02 High Occupancy Vehicle Lanes:** This increases corridor capacity while at the same time providing an incentive for single-occupant drivers to shift to ridesharing. These lanes are most effective as part of a comprehensive effort to encourage HOVs, including publicity, outreach, park-and-ride lots, rideshare matching services, and employer incentives.	**Low**										
	ST/LT	**3.03 Park-and-Ride Lots:** These lots can be used in conjunction with HOV lanes and/or express bus services. They are particularly helpful when coupled with other commute alternatives such as carpool/vanpool programs, transit, and/or HOV lanes.	**Low**										
	ST/LT	**3.04 Employer-Landlord Parking Agreements:** Employers can negotiate leases so that they pay only for parking spaces used by employees. In turn, employers can pass along parking savings by purchasing transit passes or reimbursing non-driving employees with the cash equivalent of a parking space.	**Low**										
	ST/LT	**3.05 Parking Management:** This strategy reduces the instance of free parking to encourage other modes of transportation. Options include reducing the minimum number of parking spaces required per development, increasing the share of parking spaces for HOVs, introducing or raising parking fees, providing cash-out options for employees not using subsidized parking spaces, and expanding parking at transit stations or park-and-ride lots.	**Low**										

Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Applicability to HRTPO	Distribution of Trip Types								Potential Effectiveness	Recommendations/ Comments
				Regional Traffic		Regional Access		Local Access		Local Circulation			
Tier 3	**LT**	**3.06 Managed Lanes:** The Federal Highway Administration (FHWA) defines managed lanes as highway facilities or a set of lanes in which operational strategies are implemented and managed (in real time) in response to changing conditions. Examples of managed lanes may include the following: high-occupancy toll (HOT) lanes with tolls that vary based on demand; exclusive bus-only lanes; HOV and clean air and/or energy-efficient vehicle lanes; and HOV lanes that could be changed into HOT lanes in response to changing levels of traffic and roadway conditions.	Low										
Tier 4: Strategies to Improve Roadway Operations	**ST/LT**	**4.01 Dynamic Messaging:** Dynamic messaging uses changeable message signs to warn motorists of downstream queues; it provides travel time estimates, alternate route information, and information on special events, weather, or accidents.	High										
	ST/LT	**4.02 Advanced Traveler Information Systems (ATIS):** ATIS provide an extensive amount of data to travelers, such as real-time speed estimates on the web or over wireless devices and transit vehicle schedule progress. It also provides information on alternative route options.	High										
	ST/LT	**4.03 Integrated Corridor Management (ICM):** This strategy, built on an ITS platform, provides for the coordination of the individual network operations between parallel facilities creating an interconnected system. A coordinated effort between networks along a corridor can effectively manage the total capacity in a way that will result in reduced congestion.	High										
	ST	**4.04 Transit Signal Priority (TSP):** This strategy uses technology located onboard transit vehicles or at signalized intersections to temporarily extend green time, allowing the transit vehicle to proceed without stopping at a red light.	Low										
	ST	**4.05 Truck Signal Priority:** This strategy gives priority to a traffic signal approach when trucks are detected. This can reduce truck travel times and potentially increases safety by reducing the number of trucks arriving at the end of the green phase, which may reduce red light running.	Med										
	ST	**4.06 Traffic Signal Coordination:** Signals can be pre-timed and isolated, pre-timed and synchronized, actuated by events (such as the arrival of a vehicle, pedestrian, bus or emergency vehicle), set to adopt one of several pre-defined phasing plans based on current traffic conditions, or set to calculate an optimal phasing plan based on current conditions.	High										

Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Applicability to HRTPO	Distribution of Trip Types								Potential Effectiveness	Recommendations/ Comments
				Regional Traffic		Regional Access		Local Access		Local Circulation			
Tier 4: Strategies to Improve Roadway Operations	**ST/LT**	**4.07 Channelization:** This strategy is used to optimize the flow of traffic for making left or right turns usually using concrete islands or pavement markings.	**High**										
	ST/LT	**4.08 Intersection Improvements:** Intersections can be widened and lanes restriped to increase intersection capacity and safety. This may include auxiliary turn lanes (right or left) and widened shoulders.	**High**										
	ST/LT	**4.09 Bottleneck Removal:** This strategy removes or corrects short, isolated, and temporary lane reductions, substandard design elements, and other physical limitations that form a capacity constraint that results in a traffic bottleneck.	**High**										
	LT	**4.10 Vehicle Use Limitations and Restrictions:** This strategy includes all-day or selected time-of-day restrictions of vehicles, typically trucks, to increase roadway capacity.	**Low**										
	ST	**4.11 Improved Signage:** Improving or removing signage to clearly communicate location and direction information can improve traffic flow.	**Med**										
	ST/LT	**4.12 Geometric Improvements for Transit:** This strategy includes providing for transit stop locations that do not affect the flow of traffic, improve sight lines, and improve merging and diverging of buses and cars.	**Low**										
	ST/LT	**4.13 Goods Movement Management:** This strategy restricts delivery or pickup of goods in certain areas to reduce congestion.	**Low**										

Tier	Short-Term/ Long-Term	Congestion Mitigation Strategy	Applicability to HRTPO	Distribution of Trip Types				Potential Effectiveness	Recommendations/ Comments
				Regional Traffic	Regional Access	Local Access	Local Circulation		
Tier 4: Strategies to Improve Roadway Operations	**ST/LT**	**4.14 Freeway Incident Detection and Management Systems:** This strategy addresses primarily non-recurring congestion, typically includes video monitoring and dispatch systems, and may also include roving service patrol vehicles.	**N/A**						
	ST/LT	**4.15 Access Management Policies:** This strategy includes adoption of policies to regulate driveways and limit curb cuts and/or policies that require continuity of sidewalk, bicycle, and trail networks.	**High**						
	ST/LT	**4.16 Corridor Preservation:** This strategy includes implementing, where applicable, land acquisition techniques such as full title purchases of future rights-of-way and purchase of easements to plan proactively in anticipation of future roadway capacity demands.	**Med**						
	ST/LT	**4.17 Corridor Management:** This strategy is applicable primarily in moderate- to high-density areas and includes strategies to manage corridor rights-of-way. The strategies range from land-use regulations to landowner agreements such as subdivision reservations, which are mandatory dedications of portions of subdivided lots that lie in the future right-of-way.	**Med**						-
	ST/LT	**4.18 Complete Streets:** Routinely design and operate the entire right of way to enable safe access for all users including pedestrians, bicyclists, motorists, and transit Element that may be found on a complete street include sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible transit stops, frequent crossing opportunities, median islands, accessible pedestrian signals, curb extensions, and more.	**High**						
Tier 5: Strategies to Add Capacity	**LT**	**5.01 Add General Purpose Travel Lanes:** Increase the capacity of congested roadways through additional general purpose travel lanes (or passing lanes on rural two-lane facilities).	**High**						

Key Safety Emphasis Areas for CMP Integration		
Community Traffic Safety Program	**Comprehensive Traffic Enforcement and Education Program**	**Motorcycle Safety Program**
Community Traffic Safety teams are multidisciplinary efforts (engineering, law enforcement, education, etc.) who work together to target community specific traffic safety issues.	The Comprehensive Traffic Enforcement and Education Program involves the aggressive enforcement of traffic laws in the following priority areas: Distracted Driving, Impaired Driving, Motorcycle Safety, Occupant Protection and Child Passenger Safety, Pedestrian and Bicycle Safety, Speed/ Aggressive Driving, and Teen Driving. Comprehensive projects are funded in communities with a significant number of serious injuries and fatalities that are linked to priority traffic safety areas. Focusing on enhanced enforcement and educational efforts that support critical traffic laws, these efforts will reduce crashes and save lives. Goals of the program are to increase awareness, education, and enforcement of key traffic safety laws that will contribute to a minimum 5 percent annual reduction in fatalities.	This program area addresses crashes involving motorcyclists which is a significant cause of traffic fatalities in Florida.
Potential Strategies	**Potential Strategies**	**Potential Strategies**
• Increase public awareness and highway traffic safety programs • Expand the network of concerned individuals to build recognition and awareness about traffic safety • Support initiatives that enhance traffic laws and regulations related to safe driving	• Increase public awareness of highway traffic safety programs • Expand the network of concerned stakeholders to build recognition and awareness of traffic safety • Support initiatives that enhance traffic safety laws and regulations related to safe driving • Support and promote effective law enforcement efforts related to safe driving	• Collect and analyze data on motorcycle crashes, injuries, and fatalities to provide local and state agencies with the best available data to make appropriate and timely decisions that improve motorcycle safety in Florida • Manage motorcycle safety activities in Florida as part of a comprehensive plan that includes centralized program planning, implementation, coordination, and evaluation to maximize the effectiveness of programs and reduce duplication of effort • Promote personal protective gear and its value in reducing motorcyclist injury levels and increasing rider conspicuity • Ensure persons operating a motorcycle on public roadways hold an endorsement specifically authorizing motorcycle operation • Promote adequate rider training and preparation to new and experienced motorcycle riders by qualified instructors at State-approved training centers • Reduce the number of alcohol, drug, and speed-related motorcycle crashes in Florida • Support legislative initiatives that promote motorcycle safety-related traffic laws and regulations • Ensure State and local motorcycle safety programs include law enforcement and emergency services components • Incorporate motorcycle-friendly policies and practices into roadway design, traffic control, construction, operation, and maintenance • Increase the visibility of motorcyclists by emphasizing rider conspicuity and motorist awareness of motorcycles • Develop and implement communications strategies that target high-risk populations and improve public awareness of motorcycle crash problems and programs

Key Safety Emphasis Areas for CMP Integration (continued)		
Pedestrian and Bicycle Safety Program	**Public Traffic Safety Professionals Training**	**Speed/Aggressive Driving Program**
This program area addresses bicycle and pedestrian crashes which represent a disproportionate share of fatal crashes.	This program area seeks to improve the ability of law enforcement to implement effective traffic enforcement and accident investigation techniques.	Aggressive driving, as defined by State Statute, requires inclusion of at least two of the following contributing causes: speeding, unsafe or improper lane change, following too closely, failure to yield right-of-way, improper passing, and failure to obey traffic control devices.
Potential Strategies	**Potential Strategies**	**Potential Strategies**
• Increase awareness and understanding of safety issues related to vulnerable road users • Increase compliance with traffic laws and regulations related to pedestrian and bicycle safety through education and enforcement • Develop and use a systemic approach to identify locations and behaviors prone to pedestrian and bicycle crashes and implement multidisciplinary countermeasures • Promote, plan, and implement built environments (urban, suburban, and rural) which encourage safe bicycling and walking • Support national, state, and local legislative initiatives and policies that promote bicycle and pedestrian safety	• Increase traffic safety professionals' awareness of highway safety issues • Improve traffic enforcement and detection skills • Improve crash investigation and prosecution skills • Improve detection, prosecution, and adjudication of impaired driving cases • Increase understanding of the importance of accurate data collection and analysis	• Support and promote effective law enforcement efforts to reduce aggressive driving • Support and promote effective law enforcement efforts to reduce speed-related crashes • Increase training and education on the problems of speed/aggressive driving • Identify and support initiatives that reduce instances of speeding and aggressive driving

Other Safety Emphasis Areas for CMP Integration			
Aging Road Users Program	**Distracted Driving Program**	**Impaired Driving Program**	**Occupant Protection and Child Passenger Safety Program**
At-risk aging road users addresses all modes of transportation. For data purposes in this emphasis area, aging road users are defined as 65-year-olds and older.	Distracted driving occurs when a driver allows any mental or physical activity to take the driver's focus off the task of driving. There are three main types of distraction: manual – taking your hands off the wheel; visual – taking your eyes off the road; and cognitive – taking your mind off driving. .	Originally focused on alcohol impaired driving only, the state has expanded the focus to include drug impaired driving due to its prevalence and close association to alcohol impairment.	The goal of Florida's Occupant Protection and Child Passenger Safety Program is to improve the use of age-appropriate safety restraints to reduce traffic fatalities and serious injuries.
Potential Strategies	**Potential Strategies**	**Potential Strategies**	**Potential Strategies**
• Manage and evaluate aging road user safety, access, and mobility activities to maximize the effectiveness of programs and resources • Provide the best available data to assist with decisions that improve aging road user safety, access, and mobility • Provide information and resources regarding aging road user safety, access, and mobility • Inform public officials about the importance and need to support national, State, regional, and local policy and program initiatives which promote and sustain aging road user safety, access, and mobility • Promote and encourage practices that support and enhance aging in place (i.e., improve the environment to better accommodate the safety, access, and mobility of aging road users) • Enhance aging road user safety and mobility through assessment, remediation, and rehabilitation • Promote safe driving and mobility for aging road users through licensing and enforcement • Promote the safe mobility of aging vulnerable road users (pedestrians, transit riders, bicyclists, and other non-motorized vehicles) • Promote the value of prevention strategies and early recognition of at-risk drivers to aging road users and stakeholders • Bridge the gap between driving retirement and mobility independence (i.e., alternative transportation mobility options, public transportation, and dementia-friendly transportation)	• Increase public awareness and outreach programs on distracted driving • Encourage companies, state agencies, and local governments to adopt and enforce policies to reduce distracted driving in company and government vehicles • Support legislative initiatives that enhance distracted driving-related traffic laws and regulations • Support Graduated Driver's License (GDL) restrictions to reduce distracted driving behaviors in teen drivers • Increase law enforcement officer understanding of Florida traffic crash reporting and distracted driving data collection • Educate law enforcement, judges, and magistrates on the existing laws that can be applied to distracted driving • Deploy high-visibility enforcement mobilizations on distracted driving subject to appropriate/future legislation	• Improve DUI enforcement • Improve prosecution and adjudication of impaired driving cases • Improve the DUI administrative suspension process • Improve prevention, public education, and training • Improve the treatment system (i.e., DUI programs, treatment providers, and health care providers) • Improve data collection and analysis	• Support the Occupant Protection Resource Center which provides stakeholders with occupant protection public information and education materials, information regarding child passenger safety inspection stations, and child passenger safety technician and instructor training • Promote safety belt and child restraint use to high-risk groups through the Florida Occupant Protection Task Force • Support the national Click It or Ticket mobilization through overtime enforcement efforts targeting safety belt and child restraint use during day and nighttime hours

Other Safety Emphasis Areas for CMP Integration (continued)		
Paid Media Program	**Teen Driver Safety Program**	**Traffic Records Program**
Florida's paid media plan is designed to heighten traffic safety awareness and support enforcement efforts by aggressively marketing State and national traffic safety campaigns. Each media purchase is program-specific and location and medium are selected based on the number of expected impressions, geographic location of high risk, statewide exposure benefits, available funding, and in-kind match. This focused approach to media supports education and enforcement activities around the State.	At-risk drivers, comprised of teen drivers who represent a disproportionate number of traffic crashes. For data purposes in this emphasis area, teen drivers are 15- to 19-year-olds.	This addresses Federal requirements and funding for traffic records. This emphasis area was meant to ensure traffic records aligned with the overall SHSP where possible and appropriate.
Potential Strategies	**Potential Strategies**	**Potential Strategies**
• Increase public awareness of highway traffic safety programs and enforcement • Expand the network of concerned individuals to build recognition and awareness	• Expand the network of concerned individuals to build recognition and awareness as it relates to teen driver safety and support for the Florida Teen Safe Driving Coalition • Create a safe driving culture for teen drivers through outreach and education • Support initiatives that enhance safe teen driving-related traffic laws and regulations related to safe teen driving	• Develop and maintain complete, accurate, uniform, and timely traffic records data • Provide the ability to link traffic records data together • Facilitate access to traffic records data • Promote the use of traffic records data

Congestion Management Process

Policy and Procedures Handbook

HRTPO
Heartland Regional
Transportation Planning Organization

For additional information

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