WEST CENTRAL FLORIDA METROPOLITAN PLANNING ORGANIZATIONS
CHAIRS COORDINATING COMMITTEE

Regional Congestion Management Process

Policy & Procedures Handbook

August 2012

The Regional Congestion Management Process

Goal #1: Support the Region's Economy

Objective 1-A	Minimize Congestion
Objective 1-B	Optimize Goods Movement
Objective 1-C	Improve Access to Jobs

Goal #2: Support the Region's Quality of Life

Objective 2-A	Improve the Safety of Transportation Facilities
Objective 2-B	Expand Mode Choices

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Chapter 1: Introduction

Introduction

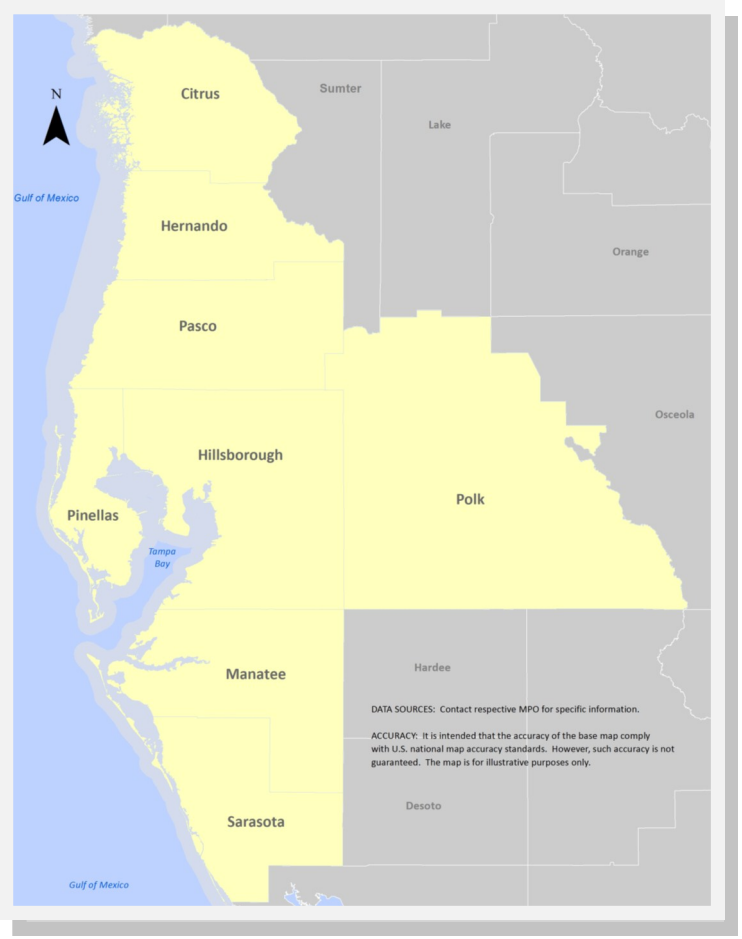
The Regional Congestion Management Process (CMP) is a systematic and regionally-accepted approach for managing congestion that provides accurate, current information on transportation system performance and assesses alternative strategies for congestion management that meet state and regional needs. The eight Metropolitan Planning Organizations (MPOs) of the region of the West Central Florida Chairs Coordinating Committee (CCC) are required by the federal government to implement a Regional CMP to address congestion of regional significance. This region includes the counties of Citrus, Hernando, Hillsborough, Manatee, Pasco, Pinellas, Polk, and Sarasota.

A functional CMP provides substantial benefits to the public, including improved travel conditions through the use of low-cost improvements or strategies that can be implemented within a relatively short timeframe (5–10 years) compared to more traditional capacity improvements, which can take over 10 years to implement and cost significantly more (such as adding additional travel lanes). Projects identified through the CMP process also may be added to future updates of the Long Range Transportation Plan (LRTP) should they require a longer timeframe to implement.

The CMP is federally-required to be developed and implemented as an essential part of the metropolitan planning process, which establishes the requirement for the CCC to implement a Regional CMP.

In this policy and procedures handbook, the CCC outlines policies and procedures for the Congestion Management Process.

Map 1-1: West Central Florida Region



CMP in the Metropolitan Planning Process

The CMP is a working tool that needs to be effectively integrated into both the Regional and each MPO's project prioritization processes, Transportation Improvement Plans (TIPs), and 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 congestion and safety 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 TIPs for funding and implementation. The implemented projects are then monitored to evaluate the strategies' effectiveness on a system-wide basis. In the region, CMP projects typically are funded using boxed funds identified in the member MPO LRTPs along with other local revenues. This allows each MPO to annually add the most important strategies for implementation and expand funding levels to address regional needs. Thus, the LRTPs can include regionally-coordinated projects and programs as identified in the Regional CMP.

The Causes of Congestion

The process of congestion management begins by understanding the causes of the problem. **Figure 1-1** shows the results of a national study presented by Federal Highway Administration (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 (LOS) standards.
- **Traffic incidents**—crashes, stalled vehicles, debris on the road; these incidents cause about one quarter of congestion problems. The focus of the Regional CMP will be reducing crashes that can cause congestion and expediting incident response to clear incidents where Intelligent Transportation Systems (ITS) surveillance is in place.
- **Work zones**—for new road building and maintenance activities such as filling potholes; caused by necessary activities, but the amount of congestion caused by these actions can be reduced by 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 both major and minor streets.
- **Special events**—cause "spikes" in traffic volumes and changes in traffic patterns; these irregularities either cause delay on days, times, or locations where there usually is none or add to regular congestion problems.

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

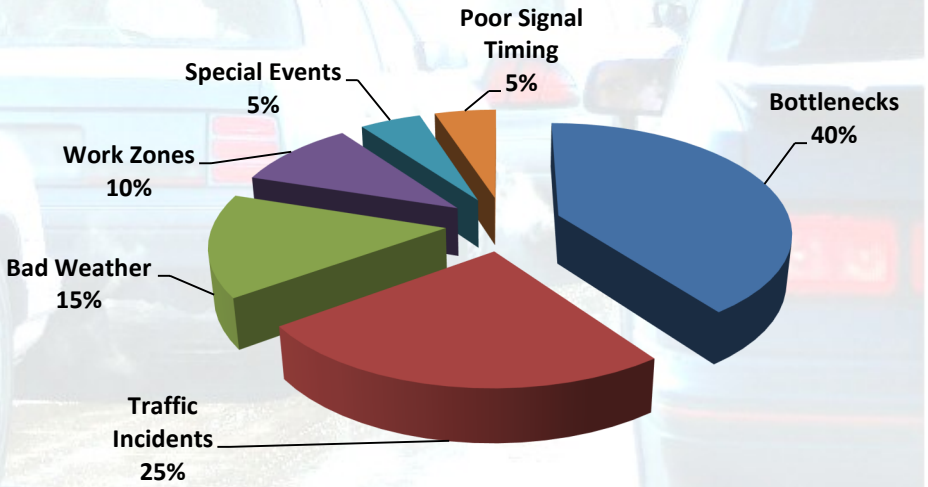
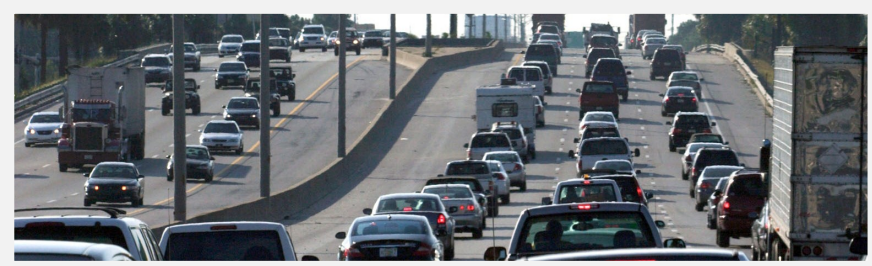


Figure 1-1 Causes of Congestion

Federal Requirements of the CMP

The initial federal requirements for congestion management were introduced by the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and were continued under the successor law, the Transportation Equity Act for the 21st Century (TEA-21). The requirements guiding congestion management further evolved under the most recent federal transportation act, the Safe, Accountable, Flexible, Efficient Transportation Equity Act–A Legacy for Users (SAFETEA-LU), passed into law in August 2005.

One of the significant changes included in SAFETEA-LU was the updated requirement for a "congestion management process" in Transportation Management Areas (TMAs), as opposed to a "congestion management system." According to FHWA, the change in name is intended to be a substantive change in perspective and practice to address congestion management through a process that provides for effective management and operations, an enhanced linkage to the planning process based on cooperatively-developed travel demand reduction and operational management strategies as well as capacity increases. Aside from the change in name, the CMP requirements are not expected to change substantially from the CMS requirements. The federal requirements for a CMP are summarized here.



CMP in Transportation Management Areas (Section 450.320) – Statewide Transportation Planning; Metropolitan Transportation Planning; Final Rule

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.
   - Cooperatively developed and implemented
   - Travel reduction strategies
   - Operational management strategies

b. The CMP should result in multimodal system performance measures and strategies.
   - Acceptable levels of service may vary from area to area
   - Consider strategies that:
     I. Manage demand
     II. Reduce single occupant vehicle travel
     III. Improve transportation system management and operations
   - Where general purpose lanes are determined to be appropriate, must give explicit consideration to features that facilitate future demand management strategies.

c. The CMP shall be developed, established, and implemented in coordination with Transportation Systems Management (TSM) and operations activities. The CMP shall include:
   - Methods to monitor and evaluate the performance of the multimodal transportation system
     I. Identify the causes of congestion
     II. Identify and evaluate alternative strategies
     III. Provide information supporting the implementation of actions

- Definitions of congestion management objectives and appropriate performance measures to assess the extent of congestion and support the evaluation of the effectiveness of strategies. Performance measures should be tailored to the specific needs of an area. Establishment of a coordinated program for data collection and system performance monitoring to define the extent and duration of congestion. To the extent possible, this program should be coordinated with existing sources.
- Identification and evaluation of the anticipated performance and expected benefits of congestion management strategies that will contribute to the more effective use and improved safety of the existing and future transportation system. Examples of strategies to consider include:
  I. Demand management measures, including growth management and congestion pricing
  II. Traffic operational improvements
  III. Public Transit improvements
  IV. Information Technology Services (ITS) technologies
  V. Where necessary, additional system capacity
- Identification of an implementation schedule, implementation responsibilities, and possible funding sources for each strategy.
- Implementation of a process for periodic assessment of the effectiveness of implemented strategies. Results of this assessment shall be provided to decision makers and the public to provide guidance on the selection of effective strategies for future implementation.
  - TMAs designated nonattainment for ozone or carbon monoxide may not program federal funds for any project that will result in a significant increase in the carrying capacity of Single Occupant Vehicles (SOVs), with the exception of safety improvements or the elimination of bottlenecks (within the limits of the appropriate projects that can be implemented).

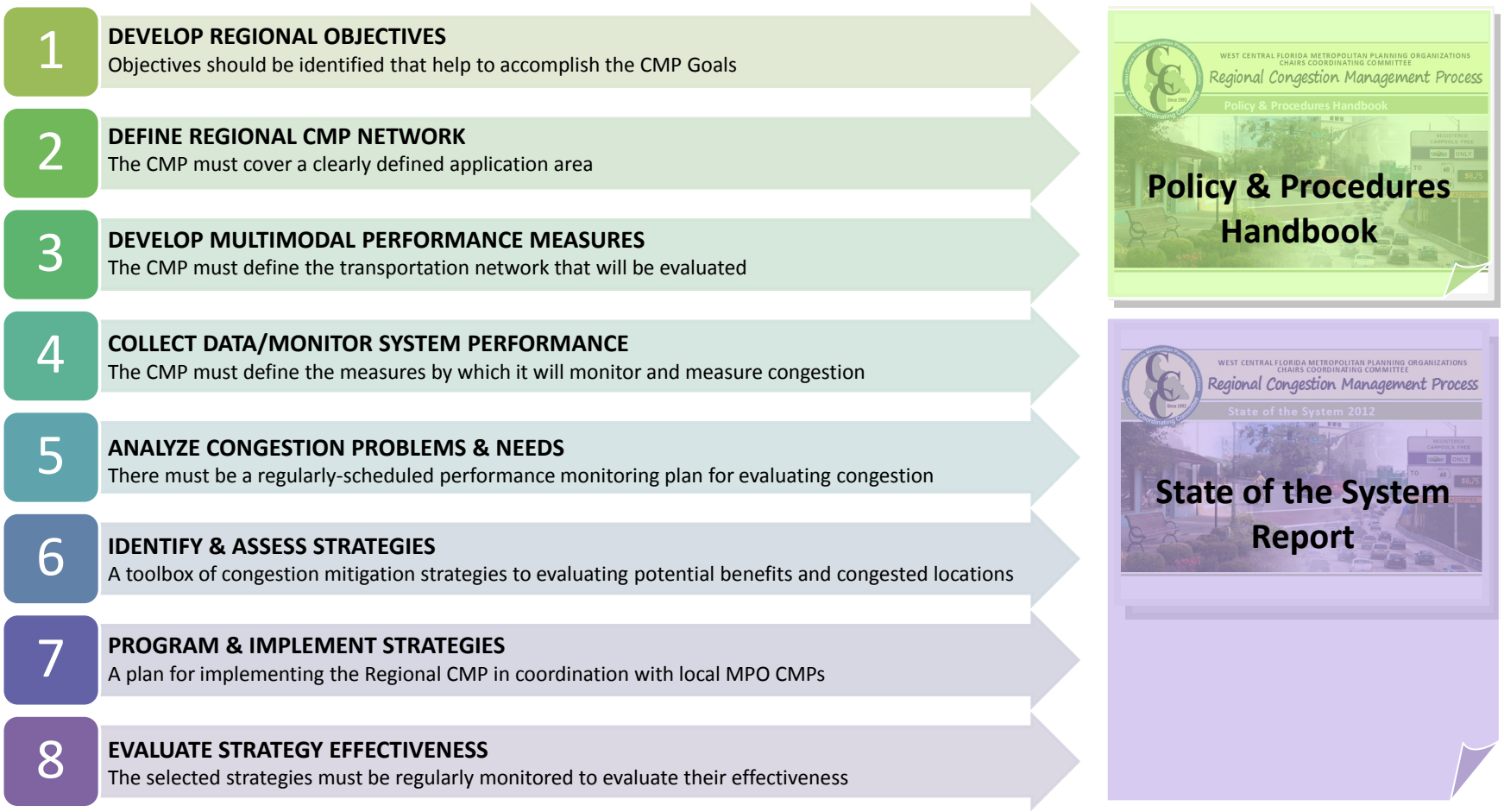
d. In TMAs designated nonattainment for ozone or carbon monoxide, the CMP shall provide an appropriate analysis of reasonable (including multimodal) travel demand reduction and operational management strategies for a corridor in which a project with a significant increase in SOV capacity is proposed to move forward with federal funds.

e. State laws, rules, and regulations pertaining to congestion management systems or programs may constitute the congestion management process, if FHWA and Federal Transit Administration (FTA) find that these are consistent with the intent of this process.

The Eight-Step Process

As presented earlier in this section, the intent of the Congestion Management Process (CMP) is to address congestion management through a process that provides for safe and effective integrated management and operation of the multimodal transportation system. Under the Federal guidelines, the CMP should address an eight-step process, as identified below. **Figure 1-2** illustrates the federal eight-step congestion management process. Steps 1–3 are part of this Policy & Procedures Handbook, and steps 4–8 are provided in the accompanying document, "State of the System Report."

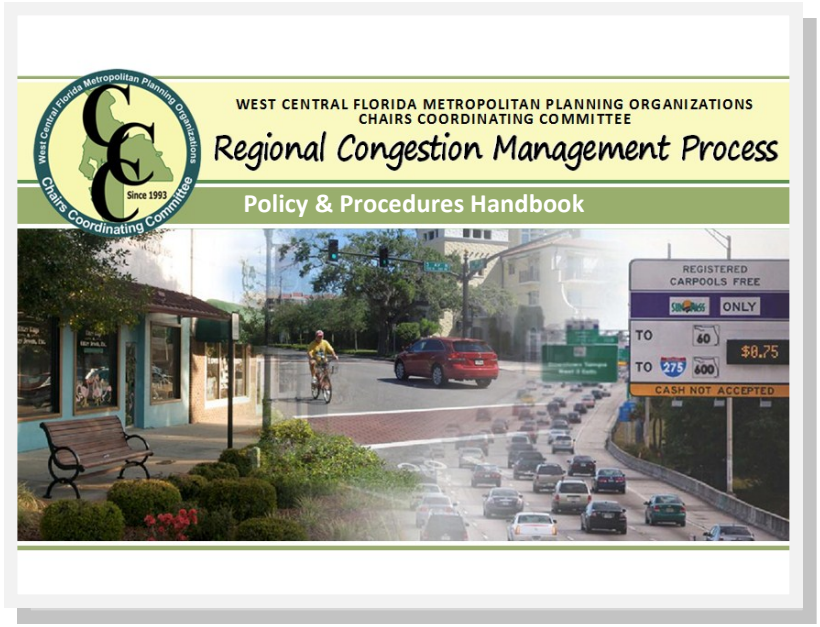
Figure 1-2: Federal Eight-Step CMP Process and its Relationship to the CCC Regional CMP



CMP Policy and Procedures Handbook

This handbook outlines the policies and procedures of the Regional CMP. It is outlined to follow the eight-step CMP process, based on federal guidelines. The main purpose of this handbook is to: (1) evaluate the transportation system and monitor progress, (2) identify congested corridors and select corridors for evaluation, (3) evaluate corridors and potential strategies, and (4) prioritize and program improvements.

The sections found in this handbook include the following:



Section 1: Introduction – This section describes the purpose of the CMP (based on federal requirements). It provides an introduction to the causes of congestion and an overview of the handbook. The eight-step CMP process is described, including a general overview of the process.

Section 2: Goals and Objectives – The remainder of the chapters in this handbook discuss specific steps from the eight-step CMP process. The Goals and Objectives of the CMP are provided in Section 2.

Section 3: Regional Performance Measures – This section provides a description of the area of application and transportation network used for the CMP process and also includes a brief summary of congestion-related measures that can be used to monitor the effectiveness of the CMP.

Section 4: Regional Coordination Process—This section presents the process for regional coordination in addressing congestion management issues and explains how the CCC can evaluate regional level policy issues.

Section 5: Congested Corridor Selection – This section describes how to: evaluate and monitor the system; identify congested corridors select corridors for evaluation; evaluate corridors and potential strategies to reduce congestion; and prioritize and program improvements.

Section 2: Regional Goals & Objectives

Regional Goals & Objectives

Introduction

A series of CMP goals and objectives was developed to guide the process of monitoring congestion and improving the mobility of persons and goods in the region. These were compiled based on CMP goals and objectives used by each of the member MPOs as well as other regions in Florida and other regions with similar characteristics across the nation.

The regional goals and objectives are presented to the right. They will be used as a tool for selecting strategies and performance measures for monitoring and evaluating. These are consistent with the goals and objectives of the CCC's Regional LRTP, which was updated and adopted in 2009.

Goal #1: Support the Region's Economy

Objective 1-A Minimize Congestion
Objective 1-B Optimize Goods Movement
Objective 1-C Improve Access to Jobs

Goal #2: Support the Region's Quality of Life

Objective 2-A Improve the Safety of the Transportation Facilities
Objective 2-B Expand Mode Choices

Section 3: Regional Performance Measures

Regional Performance Measures

Introduction

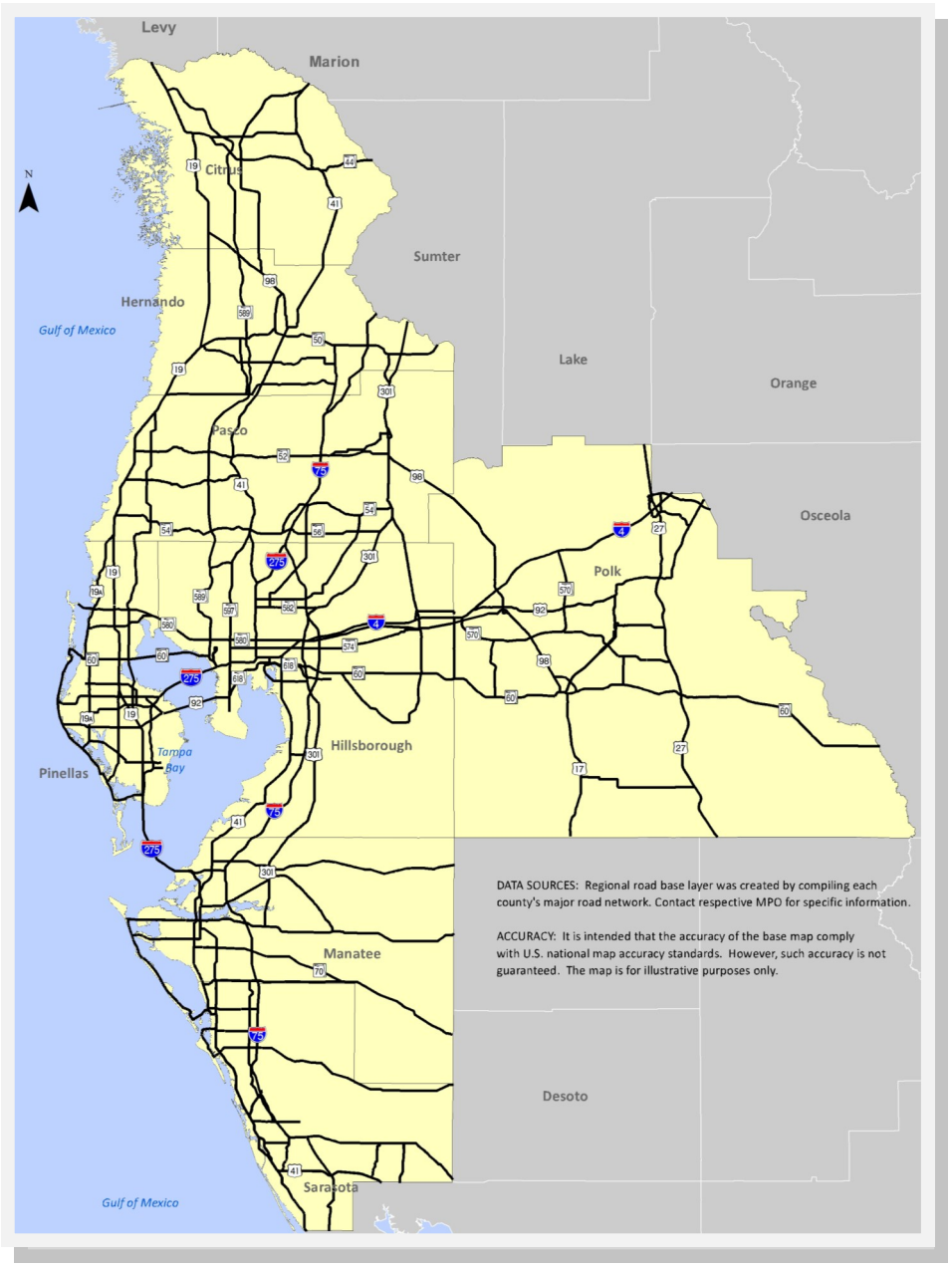
Performance measures are used as tools to measure and monitor the effectiveness of the transportation system in the CMP. They assist in identifying and tracking the extent and severity of congestion. They are also used to evaluate the effectiveness of the implemented strategies.

However, these measures are dependent upon the transportation network and the availability of data. For more detailed information on data limitations, see the State of the System Report.

According to "An Interim Guidebook on the Congestion Management Process in Metropolitan Transportation Planning," page 3-3, the Federal Highway Administration (FHWA) defines the following characteristics of good performance measures:

- ***Clarity and simplicity*** *(e.g., simple to present and interpret, unambiguous, quantifiable units, professional credibility)*
- ***Descriptive and predictive ability*** *(e.g., describes existing conditions, can be used to identify problems and to predict changes)*
- ***Analysis capability*** *(e.g., can be calculated easily and with existing field data, techniques available for estimating the measures, achieves consistent results)*
- ***Accuracy and precision*** *(e.g., sensitive to significant changes in assumptions, precision is consistent with planning applications and with an operational analysis)*
- ***Flexibility*** *(e.g., applies to multiple modes, meaningful at varying scales and settings)*

The performance measures in the Regional CMP were identified by member MPOs using the Tampa Bay Partnership's regional scorecard methodology as a foundation. The transportation safety performance measures were derived from the Florida Department of Transportation's (FDOT) Strategic Highway Safety Plan's safety emphasis areas. The comparable peer regions used in the regional analysis in the State of the System Report were also determined using the Tampa Bay Partnership's methodology in evaluating peer regions and were supplemented with recommendations from member MPO staff.



Map 3-1: Area of Application and Regional Road Network (2015)
The area depicted in this map displays the currently-adopted regional roadway network (through 2015).

PEER REGION PERFORMANCE

A sampling of peer regions should be identified prior to undertaking the performance evaluation process. These peer regions should be chosen with the intent of providing a range of comparable regions across the nation with similar characteristics to the Tampa Bay region.

Once the peer regions are selected, a preliminary evaluation of general demographic and employment information is necessary to set a foundation for the full performance measure evaluation process.

United States Census

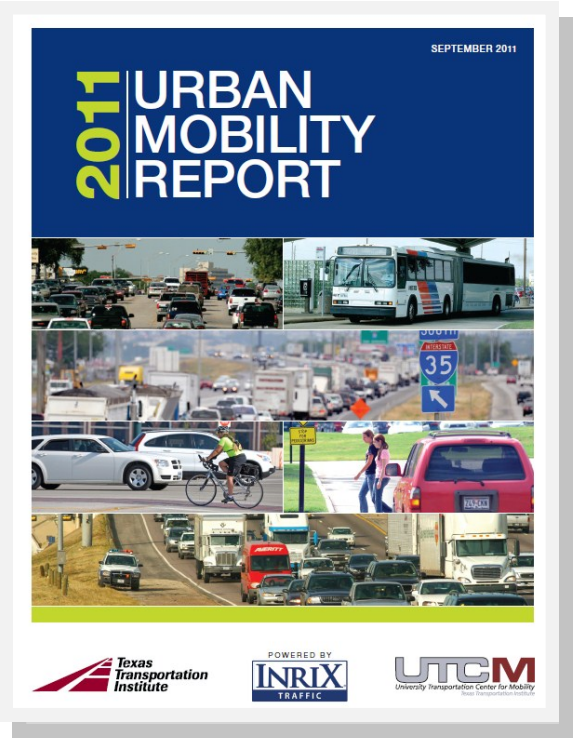
The United States Census Bureau releases counts and estimates on an annual basis for all of the nation's metropolitan statistical areas (MSAs). The following variables should be monitored on an annual basis for this region and the peer regions:

- **Total Population**
- **Employment**
- **Median Age**
- **Educational Attainment**
- **Median Income**
- **% Population Growth since 1960**

ROADWAY PERFORMANCE MEASURES

Texas Transportation Institute

The Texas Transportation Institute is the largest transportation research agency in the United States. In its annual *Urban Mobility Report*, the nation's 439 urban areas and compiled statistics are assessed on an annual basis. The following statistics will be monitored in this plan and used to measure performance of the region:



- **Congested Travel (% of Peak VMT):** This refers to the percentage of vehicle miles traveled during peak hours (sometimes referred to as "Rush Hour") that are functioning under congested conditions.
- **Congested System (% of Lane Miles):** This refers to the percentage of total lane miles in the region that function under congested conditions at any point throughout the day.
- **Annual Hours of Delay per Auto Commuter**
- **Truck Congestion Cost**
- **Annual Congestion Cost per Auto Commuter**
- **Roadway Congestion Index**

Tampa Bay Regional Planning Model

The Tampa Bay Regional Planning Model produces data measuring regional accessibility. The following statistics will be used to measure accessibility within the Tampa Bay Region:

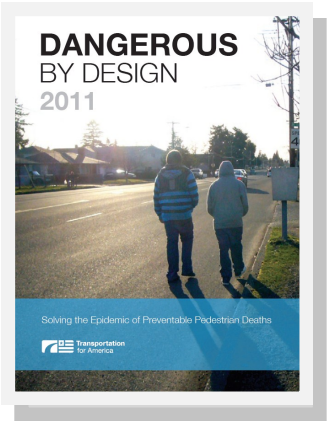
- **Average Trip Length by Purpose within Environmental Justice Areas (in minutes)**
- **Percentage of Environmental Justice population within one-quarter mile of a transit headway 30 minutes or less**

SAFETY PERFORMANCE MEASURES

Dangerous by Design

The *Dangerous by Design* report series provides insight into pedestrian safety on a national level. While this information is not annually updated on a regular basis, the 2011 report provides statistics that should be used to measure the performance of the region.

- **Average Annual Pedestrian Deaths per 100,000 Population (2000–2009)** This statistic provides a benchmark with which to compare this region on an annual basis. Because it is a 10-year average, these rates reflect a sustained and accurate account of the existing conditions.



Florida Highway Administration (FHWA) Statistics

FHWA maintains national information on traffic safety. This information is available on an annual basis, and can be used to compare the region's performance to other peer regions nationwide. The following data should be considered in the CMP process:

- **Fatality Rates by County**
- **Fatality Counts by County**

National Highway Transportation Safety Administration (NHTSA)/ Florida Department of Highway Safety and Motor Vehicles (FLHSMV)

The performance of the Florida State Highway Safety Plan is monitored by the NHTSA and the FLHSMV. This plan focuses on four key emphasis areas to reduce fatalities and serious injuries—which are considered to be common factors in Florida. These emphasis areas are measured regionally and considered in the CMP process:

- **Vulnerable Road Users**—addressed in *Dangerous by Design*
- **Intersection Crashes**
- **Aggressive Driving**
- **Lane Departure Crashes**

TRANSIT PERFORMANCE

National Transit Database

The National Transit Database (NTD) is the official repository for transit performance data for all transit agencies nationwide. This resource should be used to annually measure the following variables and evaluate the performance of this region with peer regions nationwide:

- **Passenger Trips**
- **Revenue Hours**
- **Passenger Trips per Revenue Hours**
- **Annual Vehicle Hours**
- **Vehicles Operated in Maximum Service**
- **5-Year Operations and Maintenance Costs**
- **5-Year Capital Costs**

Brookings

In May 2011, Brookings released a report entitled Missed Opportunity: Transit and Jobs in Metropolitan America as part of the Metropolitan Infrastructure Initiative Series and Metropolitan Opportunity Series. A key variable reported in this study is collected relating to access to jobs:

- **Share of jobs reachable via transit in 90 minutes**

Performance Measures: Satisfying Regional Goals & Objectives

The CMP goals and objectives relate directly to the Performance Measures of the Regional CMP. **Table 3-1** explains this relationship on the following page. The source of the performance measure is specified and each measure is related to a specific Goal and Objective. The purpose of this table is to illustrate how each of the CCC CMP Performance Measures relate directly to satisfying the Regional Goals & Objectives presented in **Section 2** of this report.

Regional Performance Measures

NOTE: The following table is considered a Draft and is subject to change.

Table 3-1: Relationship of Goals and Objectives to Performance Measures

Data Source	Performance Measures	Goal #1 Support the Region's Economy			Goal #2 Support the Region's Quality of Life	
		Objective 1-A Minimize Congestion	Objective 1-B Optimize Goods Movement	Objective 1-C Improve Access to Jobs	Objective 2-A Improve Safety of Transportation Facilities	Objective 2-B Expand Mode Choices
Texas Transportation Institute	Commuters			X		
	Daily VMT - Freeway	X				
	Congested Travel (% of Peak VMT)	X			X	
	Congested System (% of Lane Miles)	X			X	
	Annual Hours of Delay per Auto Commuter	X				
	Truck Congestion Cost	X	X			
	Annual Congestion Cost per Auto Commuter	X				
	Roadway Congestion Index	X	X			
Tampa Bay Regional Planning Model	Average Commute Times	X		X		
Dangerous by Design	Avg. Annual Pedestrian Fatalities per Population (Top 52 MSAs) 2000-2009				X	X
NCSA/FHWA National Safety Data	Fatality Rates by County				X	
	Fatality Counts by County				X	
NHTSA/DHSMV State Safety Emphasis Areas	Vulnerable Road User Crashes	X		X	X	X
	Intersection Crashes	X		X	X	
	Aggressive Driving Crashes	X		X	X	
	Lane Departure Crashes	X		X	X	
National Transit Database	Passenger Trips	X		X		X
	Passenger Trips per Revenue Hour			X		X
	Revenue Hours			X		X
	Annual Vehicle Hours			X		X
	Vehicles Operated in Maximum Service			X		X
	5-Year Operations & Maintenance Cost			X		X
	5-Year Capital Cost			X		X
United States Census	Total Population			X		
	Employment			X		
	Median Age			X		
	Educational Attainment			X		
	Median Income			X		
	% Population Growth since 1960			X		

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.

According to the Final Rule on Metropolitan Transportation Planning, metropolitan transportation planning agencies must establish "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." 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." (Source: 23 CFR Part 613, § 450.320)

The intent of the Regional CMP monitoring plan is to develop an ongoing system of monitoring and reporting that relies primarily on data already collected. The components of the monitoring plan include congestion, safety, transit and demographics, as described below:

- Congestion is monitored throughout the region and compared to peer regions across the nation. The intent is to measure recurring congestion and report how this region compares in relation to our peers.
- Crashes are monitored to help measure non-recurring congestion. Fatalities are monitored nationwide on a county level to determine where this region falls in relation to our peers.
- Transit performance is continuously monitored for this region and peer regions across the nation.
- Bicycle and pedestrian safety (crashes and injuries) are monitored on an annual basis for this region and peer regions within the state. When available, national data should be used to compare this region's performance to national peers.
- Significant goods movement corridors are evaluated to address mobility needs of the goods movement providers.

The CCC will make use of a State of the System report to document the performance of the transportation system as described in the Policy and Procedures Handbook. The State of the System report shall be updated on a regular basis.

Section 4: Regional Coordination Process

Regional Membership

The Tampa Bay area requires cross-jurisdictional coordination to solve the congestion problems faced by travelers today. As growth in the region continues, increased coordination is required in order for transportation plans to support planned and coordinated development patterns. Reducing transportation conflicts at jurisdictional boundaries requires coordinating local plans to ensure inter-county connectivity.

The West Central Florida Metropolitan Planning Organizations (MPOs) Chairs Coordinating Committee (CCC) is committed to a regional coordination process. The goal of the CCC is to prioritize and find ways to address the transportation needs of West Central Florida through the support and cooperation of its member agencies, partner entities, and advisory committees. Membership on the CCC includes the Citrus County Transportation Planning Organization (TPO), Hernando County Metropolitan Planning Organization (MPO), Hillsborough County MPO, Pasco County MPO, Pinellas County MPO, Polk County TPO, and Sarasota-Manatee MPO. Through the CCC members, Congestion Management Process (CMP) goals and objectives were identified that included supporting the region's economy and quality of life. Currently, the MPOs of Hillsborough, Pasco, and Pinellas counties are all part of the same Transportation Management Area (TMA). The three MPOs are accountable to the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) to ensure the coordination and planning activities completed by the CCC for annual certification.

The CCC is not only committed to the regional coordination between the MPOs within the TMA, but also provides support to the five other MPOs within the region. The commitment of the members extends to providing financial assistance for staffing meetings; developing the Regional Long Range Transportation Plan (RLRTP) and Regional CMP; and hiring part-time staffing assistance through an inter-local agreement to support the CCC activities. Currently, that staffing assistance is being provided by the Tampa Bay Area Regional Transportation Authority (TBARTA).

Regional Coordination

Regional coordination is instrumental in alleviating conflicts in local plans that may cause congestion on our regional roadways. The CCC convenes the member MPOs and planning staff to coordinate local plans at a regional level. Committees have been established to provide input from every jurisdiction, review plans, provide project oversight, and provide an opportunity for public and inter-agency involvement throughout the planning process. Early identification of potential conflicts is crucial to coordinating solutions. Working groups and committees provide the ability to identify conflicts early, and to evaluate and prioritize actions.

Committees

Chairs Coordinating Committee and Joint Citizens Advisory Committee

Regional coordination can alleviate conflicts between counties before they occur when local, regional and state entities engage with one another to follow a process for identifying the conflicts early. The West Central Florida Chairs Coordinating Committee (CCC) is made up of the chairpersons of the seven member MPOs. Non-voting members of the Committee include the Florida Department of Transportation (FDOT) District One and District Seven Secretaries, Florida's Turnpike Enterprise, the four Regional Planning Councils (RPCs), and TBARTA. The quarterly CCC meetings are to ensure consistency in the regional planning approach among members.

In addition to the quarterly CCC meetings, the Committee's Joint Citizens Advisory Committee (JCAC) also meets quarterly. The JCAC membership is composed of CAC members from each of the member MPOs. The Committee discusses inter-county commuting, major roadway projects, passenger transit service, freight mobility, and development of a system of multi-use trails.

Regional Congestion Management Process Steering Committee

The Regional CMP Steering Committee is made up representatives from the MPOs, FDOT and other stakeholder agencies within the region. For the most recent update to the Regional CMP, the Regional CMP Steering Committee provided concurrence on the Goals and Objectives before going to the CCC Board, agreed on a scope for the Policy and Procedures Manual, and agreed with producing the State of the Systems Report. With each update of the State of the System Report, a limited number of congested corridors will be selected by the Steering Committee and evaluated in detail to identify strategies for congestion or safety mitigation benefits.

Tampa Bay Regional Transportation Analysis

The Tampa Bay Regional Transportation Analysis (RTA) fosters regional coordination by providing a single transportation model, the Tampa Bay Regional Planning Model (TBRPM), for the FDOT District Seven area. The RTA is a forum to support the MPOs' plans through a discussion of regional issues, coordination of planning activities, resolution of conflicts, and sharing of resources. As a result, one consistent methodology is applied to all regional transportation data analysis. Partners in the RTA include FDOT District Seven, Hillsborough County MPO, Pinellas County MPO, Pasco County MPO, Hernando County MPO, and the Citrus County Planning Department. Development of the RTA is based on policy guidance from the CCC Staff Directors Coordination Team and technical guidance from the Technical Review Team (TRT).

Staff Directors Coordination Team

The CCC Staff Directors Coordination Team is comprised of the Directors and Managers of the MPOs, TPOs, FDOT, TBARTA and the RPCs. The team is responsible for carrying out the regional work programs and coordinating process as directed by the CCC.

Technical Review Team

Technical Review Team (TRT) The TRT is comprised of representatives from the MPOs, transit agencies, and the FDOT. While the RTA only encompasses the counties of FDOT District Seven, FDOT District One and County MPOs within the FDOT District One area are invited to attend meetings of the Technical Review Team (TRT).

Regional Partners

Partner entities are always encouraged to provide input on the CCC activities. Partners include FDOT (Districts One and Seven), Florida's Turnpike Enterprise, Southwest Florida Regional Planning Council (SWFRPC), Tampa Bay Regional Planning Council (TBRPC), Central Florida Regional Planning Council (CFRPC), Withlacoochee Regional Planning Council (WRPC), and the Tampa Bay Area Regional Transportation Authority (TBARTA). Local transit agencies within the region and Bay Area Commuter Services are key stakeholders as well. Coordination with partners can provide area reviews of plans to identify early conflicts.

Strategies to Enhance Regional Coordination

Different steps or phases of regional coordination can be utilized depending on the type of plans and coordination needs. The first strategy is communicating and coordinating plans early for transparent regional coordination. Other strategies, in addition to informal coordination, may also be needed to enhance regional coordination, such as adoption of an interlocal agreement. Forming an interlocal agreement between participating counties of the CCC can provide a consistent methodology for identifying issues, addressing the appropriate stakeholders, assigning responsibility for intergovernmental plan reviews that affect more than one jurisdiction, and determine how to reach a solution between local governments. Coordinating transportation improvements between neighboring counties can alleviate some of the congestion management problems that can arise when one county's projects and plans affects another's. **Figure 4-1** illustrates the recommended actions for individual member MPOs to provide for regional coordination. Consideration should be given to the type of roadway (regional or non-regional) and its location relative to other potentially affected jurisdictions.

Transportation Systems Management and Operations (TSM&O)

A new initiative of the FDOT is Transportation Systems Management and Operations (TSM&). TSM&O is an integrated program designed to optimize the performance of the existing infrastructure though implementation of multi-modal, cross-jurisdictional systems, services, and projects. These systems, services, and projects are designed to preserve capacity and improve security, safety, and reliability of transportation systems. As each MPO focuses more on maximizing the efficiency of a mature transportation system, planners should work with operations practitioners to implement effective TSM&O projects. Planners should be invited to participate in operations-oriented projects to develop a better understanding of operations processes. Regional TSM&O projects can also educate operations managers about broader regional planning and policy objectives that cut across modes and jurisdictions. Regional TSM&O projects include but are not limited to Arterial Management, Electronic Toll and Fare Collection, Emergency Preparedness and Security, Freight Management and Commercial Vehicle Operations, High-Occupancy Vehicle (HOV) Lane Development, Regional Signal Coordination, Regional Traffic Management Centers, Road Weather Management, Special Events Management, Traffic Incident Management, Traveler Information, and Work Zone Management.

Figure 4-1: Recommended Practice for Regional Coordination in Member MPO CMP Process

Facility Type	Adjacent to County Boundary	Not adjacent to County Boundary
Non-Regional Roadway	• Invite adjacent MPO(s) and/or local jurisdictions as stakeholder(s) in the corridor evaluation and planning process	• No recommended action
Regional Roadway	• Keep CCC informed • Highly recommend inviting adjacent MPO(s) as stakeholder(s) in corridor evaluation and planning process	• Keep CCC informed

Defining an Interlocal Review Process

A process for identifying, coordinating and resolving impacts to neighboring jurisdictions should be determined within a formal intergovernmental process. Each government should have the opportunity to address impacts that comprehensive plan amendments of major land development proposals may have on transportation facilities. The plan should indicate which jurisdictions will be included as stakeholders to review plans, what the review criteria will be, and how comments will be addressed. Members deciding to enter into an interlocal agreement would define a formal process to address transportation and land use or development plans that may affect congestion across county lines. A mechanism should be in place before issues arise. Having standards for cross-jurisdictional roadway level of service on regional roadways provides a more accurate way to determine potential impacts. Local government staff would meet with regional and local planning agencies to review the local Capital Improvement Programs, so that they are consistent with the adopted Regional CMP Goals and Objectives. When this interlocal review process is not successful in providing a common resolution, additional coordination efforts may be required to resolve conflicts.

Section 5: Congested Corridor Review Process

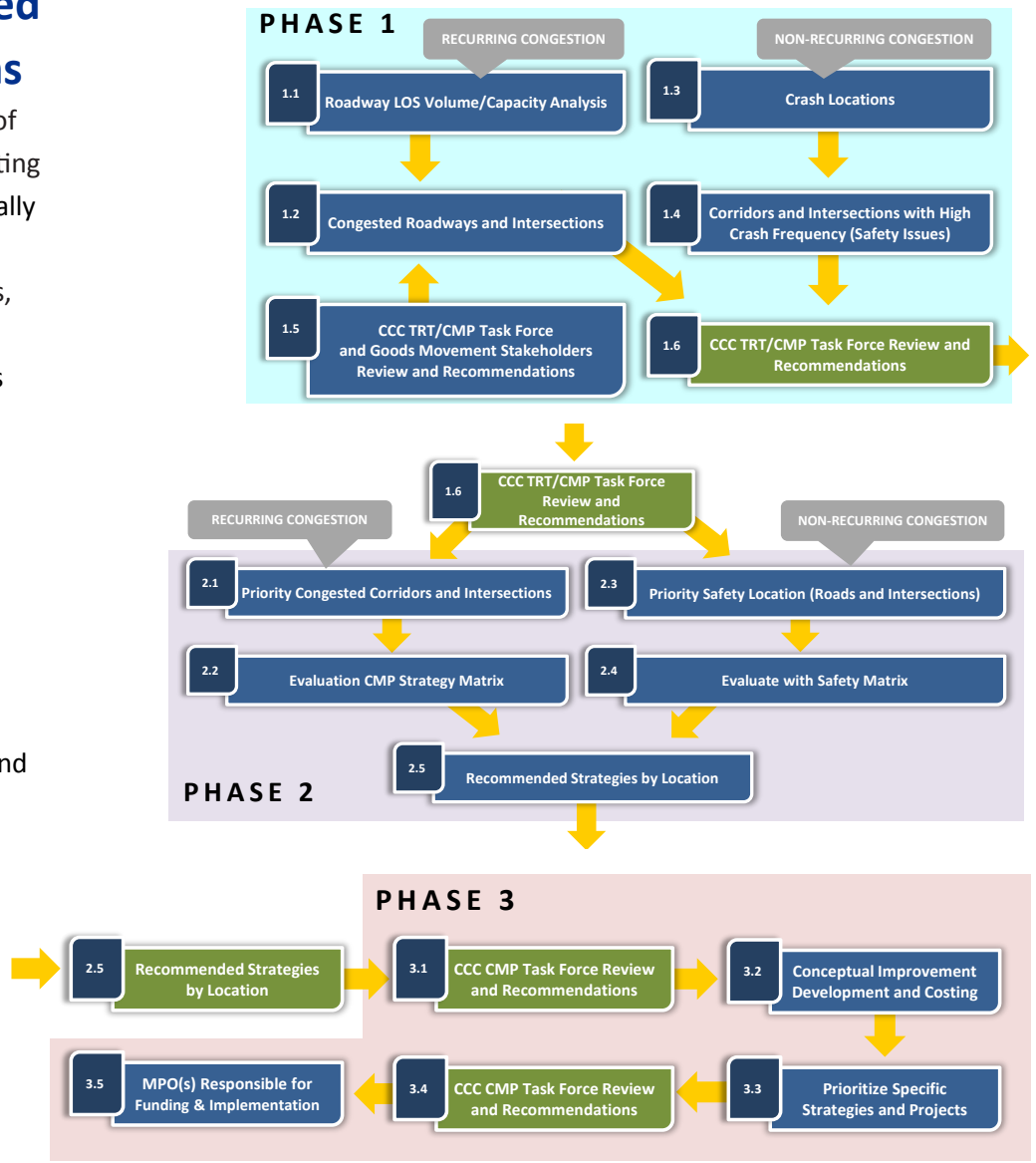
Strategy Selection Process for Congested Corridors and Safety Recommendations

This section summarizes the implementation and management of the Regional CMP strategies. This includes the process for selecting corridors and potential projects/programs that could be potentially implemented on the corridors. This effort shall include an implementation schedule, implementation responsibilities, costs, and possible funding sources for each strategy proposed for implementation. Additionally, technical safety mitigation efforts shall be undertaken to identify projects/programs at the stakeholder level that require technical expertise. The process follows three phases:

Phase 1—Congested Corridor Network Identification
Phase 2—CMP and Safety Strategy Screening
Phase 3—Project Identification and Implementation

The three phase process is presented in **Figure 5-1** to the right and each phase is explained in detail on the following pages.

Figure 5-1: Three Phase Corridor/Strategy Selection Process



Phase 1 Congested Corridor Network Identification

Annual monitoring efforts are used to review the LOS on the roadway network to identify recurring congestion. This process is undertaken at the local MPO level. It is the responsibility of the individual MPOs to determine the congested roadways in their jurisdiction. Roadways that are congested today or forecasted to be congested within five years are considered for review through the CMP screening process.

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 individuals 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 (improvement projects, 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. Congested corridors typically represent the corridors that will be most responsive to CMP improvement strategies.

The CCC shall establish a CMP Task Force composed of the existing CCC Technical Review Team (TRT) and other technical stakeholders. This Task Force shall review recommendations at each phase of the CMP. An overview illustration of Phase 1 is provided in **Figure 5-1a**. The green boxes in **Figure 5-1** indicate a specific CMP Task Force milestone.

After the congested network has been identified, two to three corridors are selected for detailed analysis and project identification and implementation. Corridors typically selected are:

1. Corridors forecasted to operate below their adopted LOS standard that are not in the 5-year work program or identified as projects in the 10-year plan.
2. Two or three corridors that would receive the greatest mobility or operational benefit from the CMP process.
3. Roadways of regional significance that would be strengthened through the implementation of regional mobility improvements.

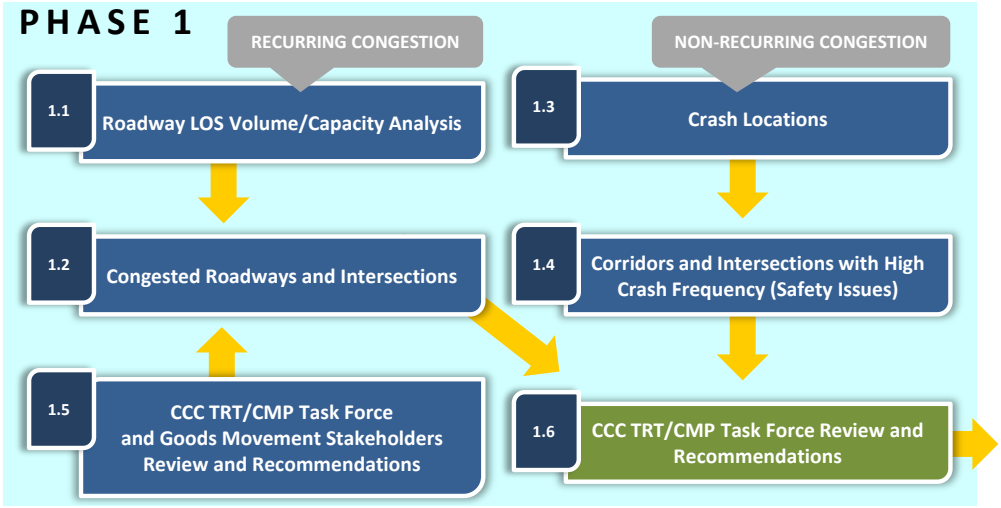


Figure 5-1a: Phase 1 of the Corridor/Strategy Selection Process

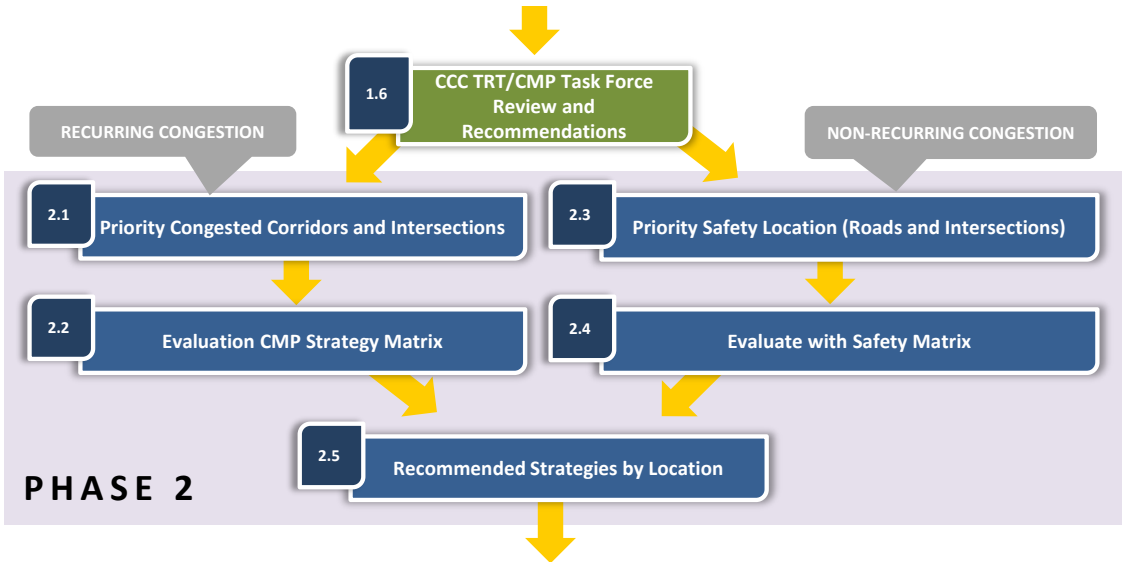
Phase 2 CMP and Safety Strategy Screening

Once congested corridors are selected for review, they are screened to identify mitigation strategies appropriate to reduce congestion or improve safety to reduce crashes. The CMP Corridor Solution Matrix (found in **Appendix B**) is used to address recurring congestion, and the Safety Mitigation Strategies Matrix (found in **Appendix C**) is used to address non-recurring congestion. The matrix includes strategies in five tiers as identified in the CCC 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.

After the roadways are categorized based on the three previous criteria (Approaching Congestion, Minimally Congested, and Extremely Congested), they are further grouped into two different types of corridors:

- **Enhanced Mobility Corridors** – These include corridors that are identified as Transit Corridors in either the Comprehensive Plan or the adopted LRTP. These corridors represent locations where public transportation is a key factor in addressing mobility needs.
- **Non-Designated Corridors** – These include all other major roadways included in the existing plus committed (E+C) five-year road network.

Figure 5-1b: Phase 2 of the Corridor/Strategy Selection Process



Phase 3 Project Identification and Implementation

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, or programming improvements in the local agency capital improvement programs, or using boxed funds controlled by the CCC. The recommendation finally may be to identify candidate projects for implementation in future LRTPs.

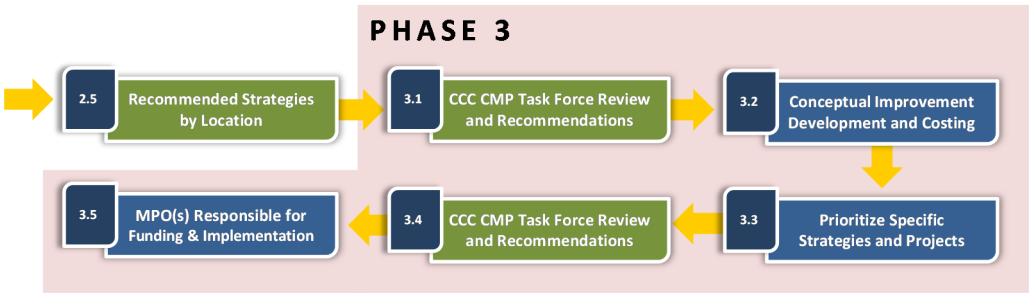


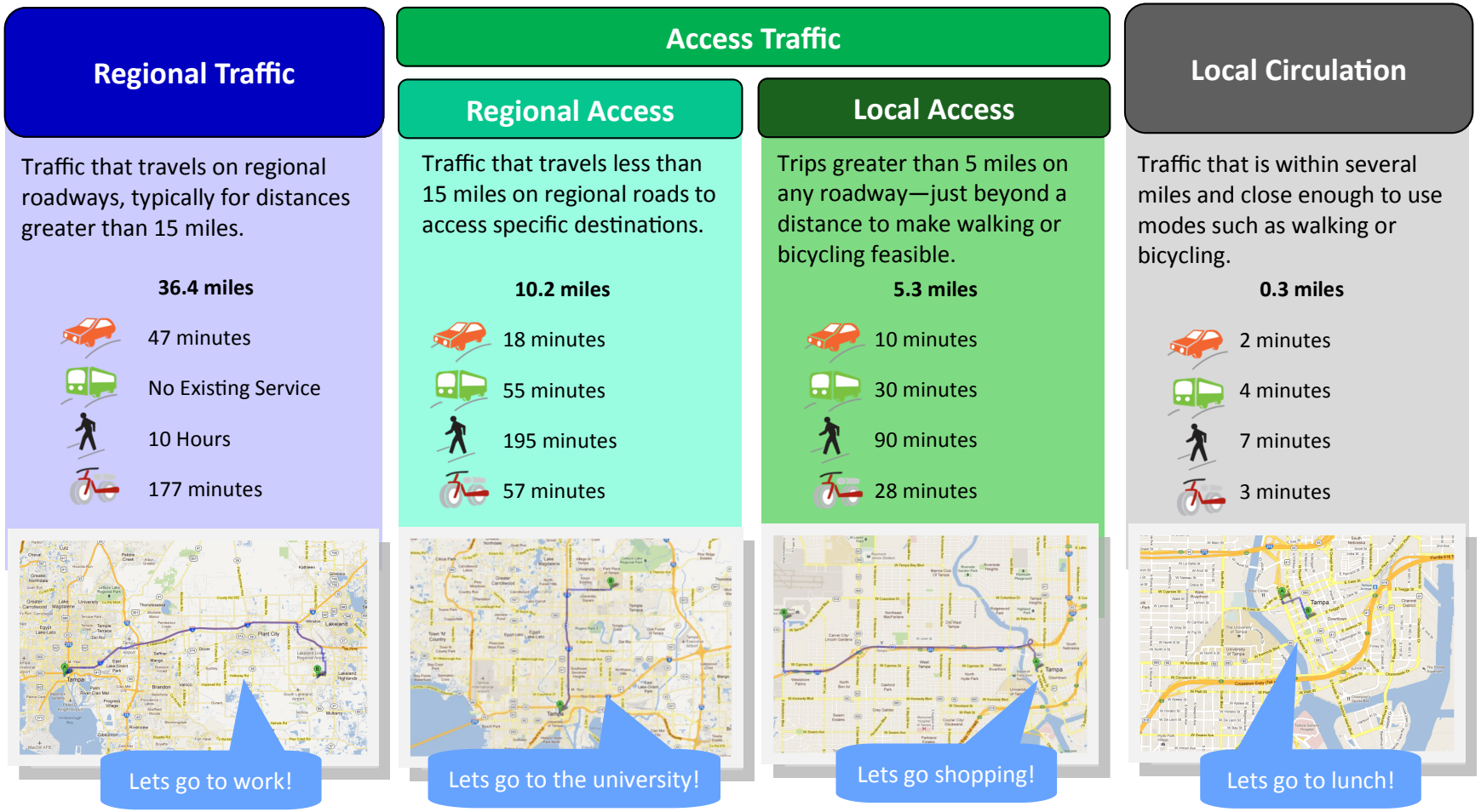
Figure 5-1c: Phase 3 of the Corridor/Strategy Selection Process

The Four Types of Traffic

Selecting congestion mitigation strategies requires an understanding of where congestion occurs and why. Generally, there are four types of traffic that impact the transportation system: Regional Traffic, Regional Access, Local Access, and Local Circulation.

Understanding the intent of trips is key in understanding which strategies will have the largest impact on a particular corridor. An example of each type of traffic is presented below.

Figure 5-2: The Four Types of Traffic



Note: The examples shown above are based on existing HART service and Google calculations on April 9, 2012 at approximately 5:00 PM.

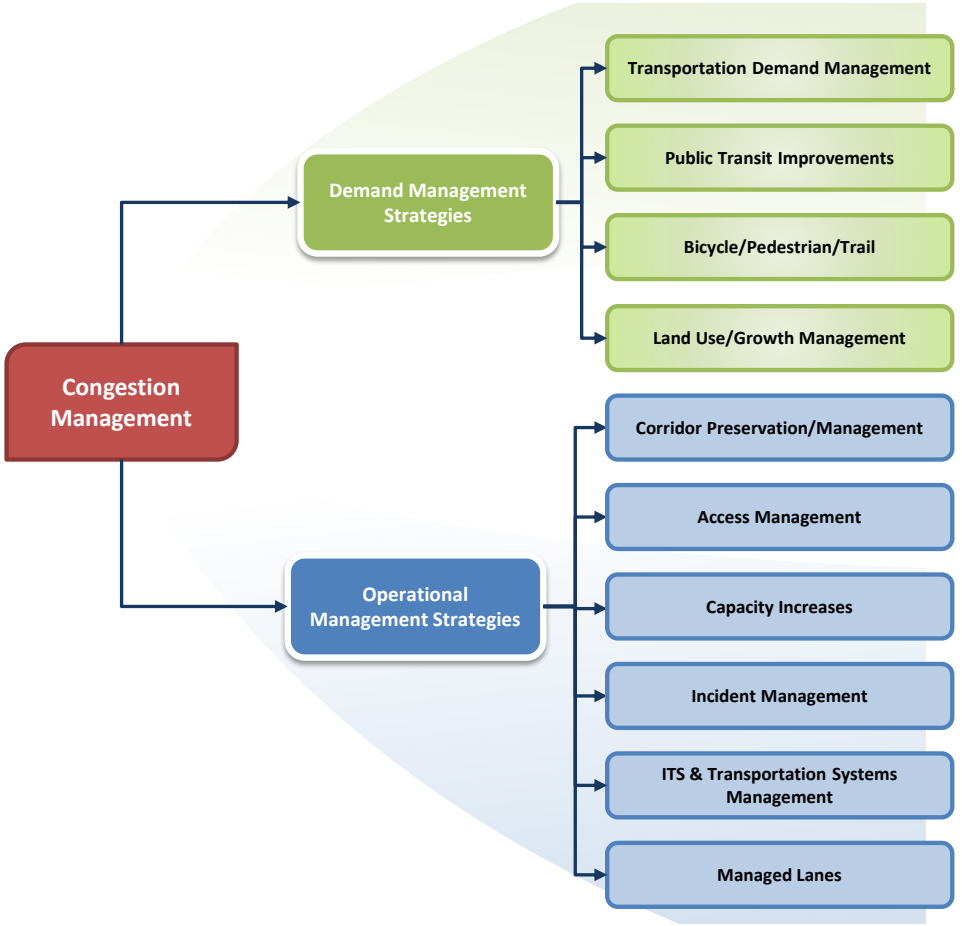
Congestion Management Strategies

This section of the Regional CMP identifies and evaluates the strategies intended for mitigating existing and future congestion in the regional roadway network. A toolbox of strategies is presented to help policy makers and planners effectively use these congestion reduction strategies. SAFETEA-LU requires that MPOs with more than 200,000 people within their planning areas "shall address congestion management … through the use of travel demand reduction and operational management strategies." In addition, the Final Rule on Statewide and Metropolitan Transportation Planning published on February 14, 2007, states that "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 Transportation Improvement Program (TIP)."

A full range of potential congestion management strategies has been identified for the consideration by the CCC. These strategies are grouped into demand management and operational management categories, as presented in **Figure 5-2**.

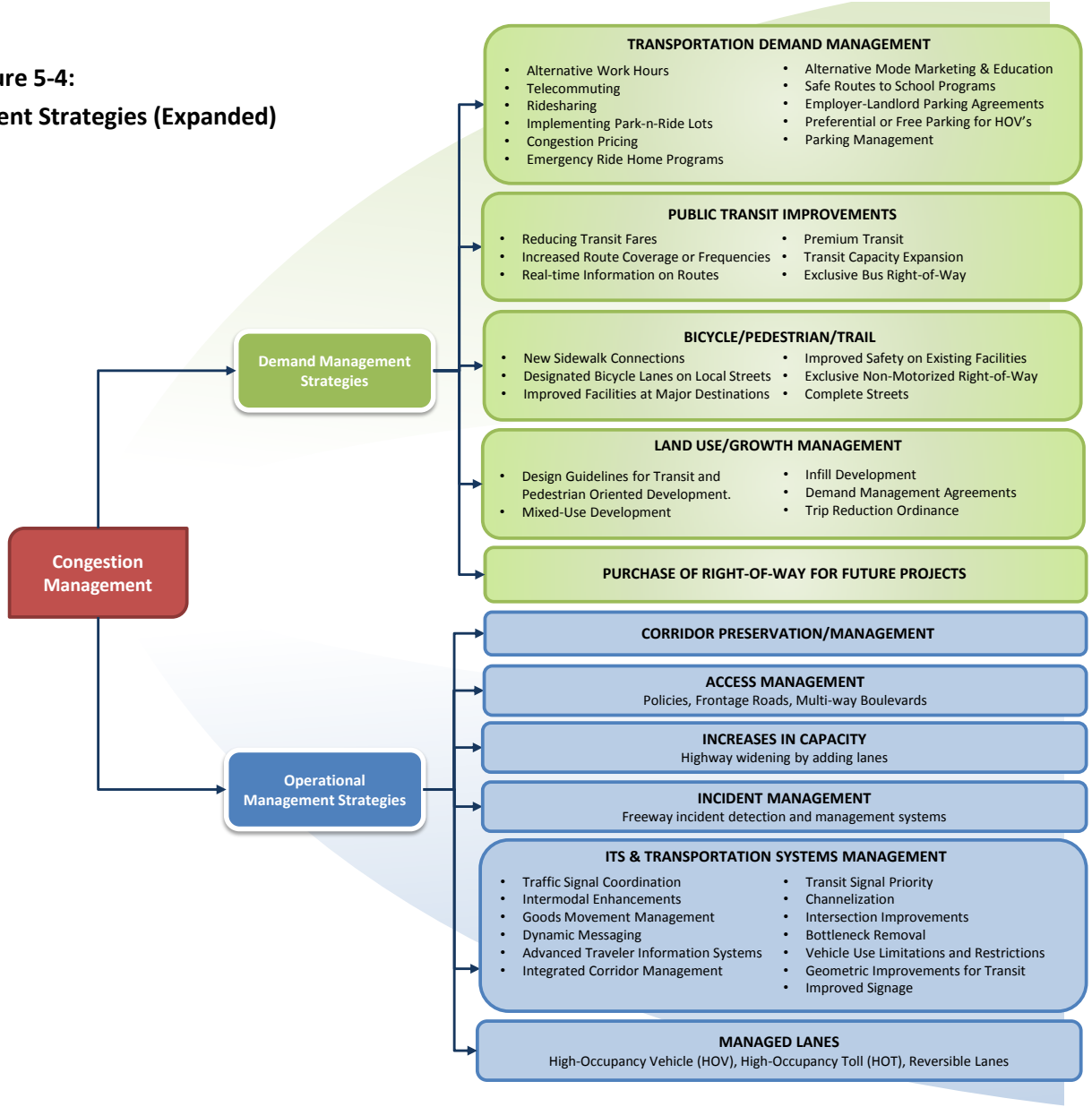
Figure 5-3 summarizes the demand and operational management strategies included in the CCC CMP toolbox of strategies, which is presented later in detail. A full range of demand and operational management strategies are identified in these tables for the CCC to assist in local efforts to mitigate existing and future congestion.

Figure 5-3
Congestion Management Strategies



What can be done on a congested corridor?

Figure 5-4:
Congestion Management Strategies (Expanded)



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 regions and MPOs 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 in **Figure 5-5**.

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 CCC Regional CMP toolbox of strategies is presented in detail in the remainder of this section.

The Regional Toolbox of Strategies directly addresses the Regional CMP Goals & Objectives identified earlier in this report. This relationship is expressed in **Figure 5-5**.

Figure 5-5: Regional CMP Strategies: Relation to Regional CMP Goals & Objectives

Tiers of Strategies		Goal #1 Support the Region's Economy			Goal #2 Support the Region's Quality of Life	
		Objective 1-A Minimize Congestion	Objective 1-B Optimize Goods Movement	Objective 1-C Improve Access to Jobs	Objective 2-A Improve Safety of Transportation Facilities	Objective 2-B Expand Mode Choices
Tier 1	Reduce Person Trips or Vehicle Miles Traveled					
Tier 2	Shift Vehicle Trips to Alternative Modes					
Tier 3	Increase Vehicle Occupancy					
Tier 4	Improve Roadway Operations					
Tier 5	Increase Roadway Capacity					

Tier 1 Strategies to Reduce Person Trips or Vehicle Miles Traveled

Transportation Demand Management (TDM) 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, in no 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.
- ***Emergency Ride Home Programs (ERH):*** ERH 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 High Occupancy Vehicles (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.
- ***Mixed-Use Development:*** This strategy allows many trips to be made without automobiles. People can walk and bike to housing, jobs, restaurants, services and recreational opportunities.
- ***Transit Oriented Developments:*** This strategy promotes compact mixed-used development within easy walking distance (1/4-mile to 1/2 mile) of transit stations. Bicycle and pedestrian access to stations is emphasized. 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 movement.

Tier 2 Strategies to Shift Vehicle Trips to Alternative Modes

Public Transit Improvements

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 including additional cross-county service. Increasing frequency makes transit more attractive to use.
- ***Implementing 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.
- ***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 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 busways, bus-only lanes, and bus bypass ramps. This strategy is applied to freeways and major highways that have routes with high ridership. (See Managed Lanes Summary on page 5-16.)

What can be done on a congested corridor?

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 motor vehicle trips. The following strategies are suggested:

- ***New Sidewalk Connections:*** Increasing sidewalk connectivity encourages pedestrian traffic for short trips.
- ***Designated Bicycle Lanes 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:*** Racks, lockers, and shelters for bicycles at transit stations and other trip destinations help protect bicycles and encourage their use. 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 improve bicycle and pedestrian safety.
- ***Exclusive Non-Motorized ROW:*** Abandoned rail rights-of-way and existing parkland can be used for medium- distance-to long-distance bicycle trails, improving safety and reducing travel times.
- ***Complete Streets:*** Routinely designing and operating the entire ROW 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 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.

Tier 3 Strategies to Increase Vehicle Occupancy

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 TMAs 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 (HOV) Lanes:*** Corridor capacity is increased while, at the same time, providing an incentive for single-occupant motor vehicle 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. Also referred to as "Parking Cash Out" programs.
- ***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. (See Managed Lanes Summary on page 5-16.)

Intelligent Transportation Systems (ITS) Strategies

The strategies in 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 traffic 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.

Tier 4 Strategies to Improve Roadway Operations

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 multi-modal 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.

What can be done on a congested corridor?

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 sidewalk, bicycle, and trail networks.

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 transportation projects.

- ***Corridor Management:*** This strategy is applicable primarily in moderate-density to high-density areas and includes strategies to manage corridor ROW. The strategies range from land development regulations to landowner agreements such as subdivision reservations, which are mandatory dedications of portions of subdivided lots that lie in the future ROW.

Tier 5 Strategies to Add Capacity

- ***Add General Purpose Travel Lanes****:* Strategies to add capacity are the most costly and least desirable strategies. They should only be considered after exhausting all feasible demand and operational management strategies. The strategy entails the adding of additional general purpose travel lanes to a roadway to relieve congestion.

Managed Lanes

Managed lanes may include lanes that accommodate both highway travel and public transportation or that are primarily oriented toward public transportation. The eight varieties of managed lanes are presented in **Figure 5-6**.

Figure 5-6: Managed Lanes

HOT (High Occupancy Toll) Lanes

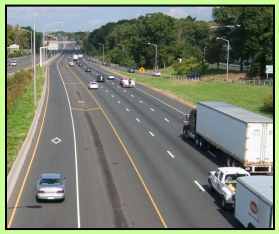
Copy-
At-grade without physical separation

Elevated: Reduce merging and weaving of traffic

At-grade with physical separation

- Generally limited access toll lanes
- Lower tolls for high-occupant motor vehicles
- Varying costs for single-occupant motor vehicles
- Congestion pricing can be used
- Can accommodate transit in mixed traffic

HOV (High Occupancy Vehicle) Lanes



- "Carpool" or "Commuter" lanes
- Generally limited access
- Generally a vehicle with 2 or more people
- Can accommodate transit in mixed traffic

Reversible Lanes

Elevated

At-Grade

- Allows for added peak direction capacity
- "Express" lanes
- Elevated or at-grade
- Can accommodate transit in mixed traffic

What can be done on a congested corridor?

Exclusive Bus (Limited Access)

- Typically shared with HOV/HOT Lanes

Exclusive Bus (Separate ROW)

- Generally within median or along shoulder
- Separated from other traffic modes

Exclusive Bus (On Arterial)

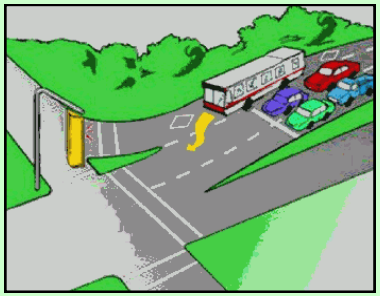
- Typically dedicated bus lanes
- Queue jump when mixed with traffic

Exclusive Bus (Collector/Distributor)

Dave Wilton

- Dedicated lanes and roadways
- Time-of-day restrictions

Bus Rapid Transit (BRT) Queue Jump



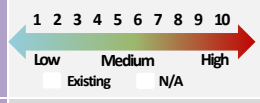
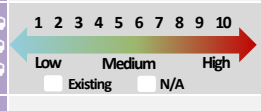
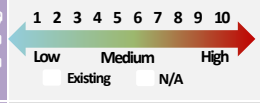
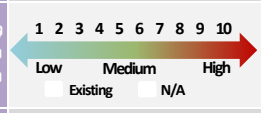
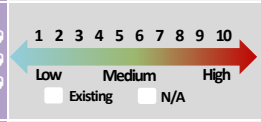
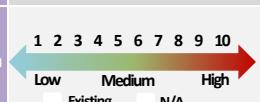
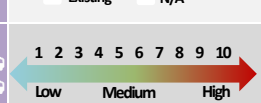
- Lane found in BRT systems
- Additional travel lane on the approach to a signalized intersection
- Transit vehicles receive signal priority at the beginning of each cycle.

Corridor Solution Matrix

Corridor_____ From_____ To_____ Analyst_____ Date_____

Tier	Strategy #	Congestion Mitigation Strategy	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 (VMT)	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	1.03	***Telecommuting:*** *Telecommuting policies allow employees to work at home or a regional telecommute center instead of going into the office, all of the time or for a certain number of days per week.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	1.06	***Safe Routes to Schools Program:*** *This federally-funded program provides 100 percent funding to communities to invest in pedestrian and bicycle infrastructure surrounding schools.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	1.07	***Preferential for Free Parking for High-Occupancy Vehicles (HOV):*** *This program provides an incentive for employees to carpool with preferred or free-of-charge parking for HOVs.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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).*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	

Figure 5-7: Congested Corridor Strategies Matrix (to address recurring congestion)

Tier	Strategy #	Congestion Mitigation Strategy	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 (VMT)	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.*						
	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.*						
	1.11	***Design Guidelines for Pedestrian-Oriented Development and Transit-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.*						
	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.*						
TIER 2: Strategies to Shift Automobile Trips to Other Modes	2.01	***Transit Capacity Expansion:*** *This strategy adds new vehicles or increase service hours to expand transit services.*						
	2.02	***Increasing Bus Route Coverage:*** *This strategy provides better accessibility to transit to a greater share of the population.*						
	2.03	***Implementing 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.*						
	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.*						

Tier	Strategy #	Congestion Mitigation Strategy	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	2.05	***Reducing Transit Fares:*** *This 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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	2.06	***Transit-Oriented Managed Lanes:*** *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.* ***See Managed Lanes Matrix***					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	2.07	***New Sidewalk Connections:*** *Increasing sidewalk connectivity encourages pedestrian traffic for short trips.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	2.12	***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 multi-modal facilities, informational kiosks, and improved amenities at transfer locations.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	

Tier	Strategy #	Congestion Mitigation Strategy	Distribution of Trip Types				Potential Effectiveness	Recommendations/Comments
			Regional Traffic	Regional Access	Local Access	Local Circulation		
TIER 3: Strategies to Increase Vehicle Occupancy	3.01	***Ridesharing (Carpools & Vanpools):*** *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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	3.02	***High Occupancy Vehicle (HOV) Lanes:*** *This strategy 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.* ***See Managed Lanes Matrix***					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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.* ***See Managed Lanes Matrix***					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	

Tier	Strategy #	Congestion Mitigation Strategy	Distribution of Trip Types				Potential Effectiveness	Recommendations/Comments
			Regional Traffic	Regional Access	Local Access	Local Circulation		
TIER 4: Strategies to Improve Roadway Operations	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	4.02	***Advanced Traveler Information Systems (ATIS):*** *This technology provides access to an extensive amount of data to travelers, such as real-time speed estimates and transit vehicle schedule progress for personal mobile devices with wireless internet capability. It also provides information on alternative route options.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	4.05	***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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	4.06	***Channelization:*** *This strategy is used to optimize the flow of traffic for making left or right turns usually using concrete islands or pavement markings.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	4.07	***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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	4.08	***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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	

Tier	Strategy #	Congestion Mitigation Strategy	Distribution of Trip Types				Potential Effectiveness	Recommendations/Comments
			Regional Traffic	Regional Access	Local Access	Local Circulation		
TIER 4: Strategies to Improve Roadway Operations	4.09	***Vehicle Use Limitations and Restrictions:*** *This strategy includes all-day or selected time-of-day restrictions of vehicles, typically trucks, to increase roadway capacity.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	4.10	***Improved Signage:*** *Improving or removing signage to clearly communicate location and direction information can improve traffic flow.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	4.11	***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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	4.12	***Goods Movement Management:*** *This strategy restricts delivery or pickup of goods in certain areas to reduce congestion.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	4.13	***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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	4.14	***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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	4.15	***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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	4.16	***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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	4.17	***Complete Streets:*** *Routinely design and operate the entire right-of-way to enable safe access for all users including pedestrians, bicyclists, motorists, and transit. Elements 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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
TIER 5: Strategies to Add Capacity	5.01	***Add General Purpose Travel Lanes:*** *Increase the capacity of congested roadways through additional general purpose travel lanes.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	

Tier	Strategy #	Congestion Mitigation Strategy	Distribution of Trip Types				Potential Effectiveness	Recommendations/Comments
			Regional Traffic	Regional Access	Local Access	Local Circulation		
TIER 5: Strategies to Add Capacity	5.01	***Add General Purpose Travel Lanes:*** *Increase the capacity of congested roadways through additional general purpose travel lanes.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	5.02	***Roundabouts:*** *Roundabouts are used to ipmrove traffic operations at an intersections. They do not require a complete stop by all vehicles, which minimizes both individual delay and delays resulting from vehicle queues. Roundabouts typically produce less severe traffic crashes than a convential signalized intersection, however they may not be an appropriate treatment at all intersections.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	5.03	***Arterial Managed Lanes with Tolled Grade Separation:*** *Arterial management seeks to alleviate the capacity constraints at major intersections. Tolled Grade Separation provides the option to pay a toll and bypass the signal using the grade separated managed lanes.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
	5.04	***Parallel Capacity Expansion:*** *This can include developing a parallel corridor to provide an alternative route, and/or increasing the degree of connectivity in the surrounding roadway network. Various methods exist to measure network connectivity, but the general concept emphasizes that increasing the number of alternate routes in a network will disperse congestion that would otherwise be forced onto only one major corridor.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	

Managed Lanes Matrix

Corridor_____ From_____ To_____ Analyst_____ Date_____

Managed Lanes	Distribution of Trip Types: Regional Traffic	Regional Access	Local Access	Local Circulation	Potential Effectiveness	Recommendations/Comments
High Occupancy Toll (HOT) Lanes: *Generally limited access toll lanes, lower tolls for high-occupancy vehicles, varying costs for single-occupancy vehicles, congestion pricing can be used.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
High-Occpancy Vehicle (HOV) Lanes: *This increases corridor capacity while at the same time providing an incentive for single-occupant motor vehicle 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.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
Reversible Lanes: *Allows for added peak direction capacity, express lanes, elevated or at-grade.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
Exclusive Bus (Limited Access) *: Typically shared with HOT/HOT lanes.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
Exclusive Bus (Separate Right-of-Way): *Generally within median or along shoulder.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
Exclusive Bus (On Arterial) *: Typically dedicated bus lanes, signal priority when mixed with traffic.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
Exclusive Bus (Collector/Distributor): *Dedicated lanes and roadways, time of day restrictions.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	
Bus Rapid Transit (BRT) with Queue Jump *: Lane found in Bus Rapid Transit (BRT) systems, additional travel lane on the approach to a signalized intersection, busses receive a "head start" at every cycle.*					1 2 3 4 5 6 7 8 9 10 Low Medium High Existing N/A	

Figure 5-8: CMP Corridor Solution Managed Lanes Matrix

CMP Safety Mitigation Strategies Matrix

The CCC Regional CMP process also includes a "CMP Safety Mitigation Strategies 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 County's Crash Data Management System (CDMS). 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 non-recurring 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 Strategies Matrix was developed.

The CMP Safety Migration Matrix is provided in **Figure 5-4**. 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 the most common crash types and the typical strategies that could be implemented to improve safety and reduce these crashes. Special consideration also is given to relating these crashes to the four 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 at a specific location.

Safety Mitigation Strategies Matrix

Corridor_____ From_____ To_____ Analyst_____ Date_____

	Related Crash Types	Strategic Highway Safety Plan: Aggressive Driving	Strategic Highway Safety Plan: Intersection	Strategic Highway Safety Plan: Lane Departure	Strategic Highway Safety Plan: Vulnerable Road User	Crash Frequency along the Corridor (circle one)	Standard Mitigation	Recommended Follow-up
ENGINEERING	**Angle and left turn** crashes occurring at **stop-controlled** intersections	SLOW DOWN!	+			N/A LOW MED HIGH	Provide advance warning sign on approach to intersection. Double up on traffic control signs. Provide warning flashers. Evaluate for possible signalization.	
	Crashes that occur during **slippery or wet** conditions	SLOW DOWN!	+			N/A LOW MED HIGH	Improve pavement friction through resurfacing or high-friction overlays.	
	Angle and left turn crashes occurring **away** from signalized intersections	SLOW DOWN!	+			N/A LOW MED HIGH	Channelize to prohibit a specific movement. Close median to prohibit all movements.	
	Left turn crashes occurring at **signalized** intersections	SLOW DOWN!	+			N/A LOW MED HIGH	Install of protected left turn phasing at signalized intersections. Consider protected only left turn phasing.	
	Crashes that occur during **night-time** hours	SLOW DOWN!	+			N/A LOW MED HIGH	Provide street lighting to increase road visibility at nighttime.	
	Rear end crashes with injuries.	SLOW DOWN!	+			N/A LOW MED HIGH	Provide advance signal warning sign at signalized intersections. Provide advance street name signs.	
	Crashes that involve a **u-turning** vehicle.	SLOW DOWN!	+			N/A LOW MED HIGH	Prohibit U-turns at signalized intersection where there are conflicts with channelized right turns. Prohibit U-turns along corridors where sight distance is inadequate or there are conflicts.	
	Crashes that occur at **driveways** away from signalized intersections	SLOW DOWN!				N/A LOW MED HIGH	Consolidate driveways to decrease vehicular conflict points. Provide raised medians.	
	Crashes that occurred along a **curved** section of roadway.	SLOW DOWN!				N/A LOW MED HIGH	Provide advance warning sign on approach to turns, particularly along rural roadways. Enhance signage. Provide solar flashing beacons on signs.	
	Crashes that involve vehicles **leaving the roadway**, including single vehicle collisions with **fixed objects**	SLOW DOWN!				N/A LOW MED HIGH	Provide guardrail. Provide delineation along the curve and inverted profile pavement markings (or RPMs). Provide advance warning sign on approach to turns, particularly along rural roadways.	
	Crashes that involve **left turning** vehicles		+			N/A LOW MED HIGH	Provide turn lanes, increase left turn storage, provide positive offset.	
	Crashes that involve **right turning** vehicles		+			N/A LOW MED HIGH	Provide turn lanes, prohibit right turn on red, provide receiving lane for channelized right turn.	
	Crashes that involve **motorcycles**		+			N/A LOW MED HIGH	Evaluate pavement friction. Evaluate shoulders to ensure proper drainage. Increase speed enforcement.	
	Crashes that occur at **intersections** that involve **parked cars**		+			N/A LOW MED HIGH	Prohibit parking near major intersections to increase driver/pedestrian visibility.	
	Crashes that involve **pedestrians**		+			N/A LOW MED HIGH	Provide countdown heads for signalized intersections, refuge islands for unsignalized crossings, sidewalks along roadways, consolidate driveways to decrease vehicle/pedestrian conflict points.	
	Crashes that involve **bicyclists**		+			N/A LOW MED HIGH	Provide countdown heads for signalized intersections, refuge islands for unsignalized crossings, bike lanes along roadways, consolidate driveways to decrease vehicle/bicyclist conflict points.	
	Rear end and **angle** crashes at **signalized** intersections **along east west corridors**		+			N/A LOW MED HIGH	Install back plates or high visibility back plates on signalized intersections to increase signal head conspicuity (particularly along east-west corridors).	
	Crashes involving a **heavy trucks**		+			N/A LOW MED HIGH	Provide adequate clearance for heavy truck's reduced stopping distance at signals or provide dilemma zone detection at signals. Provide passing lanes, and acceleration / deceleration lanes. Increase turn radius.	
ENFORCEMENT	Crashes that cite **disregard of traffic control** as a contributing cause.	SLOW DOWN!	+			N/A LOW MED HIGH	Increase red light running enforcement.	
	Crashes that involve a **speeding** vehicle (cited by officer)	SLOW DOWN!	+			N/A LOW MED HIGH	Increase speed enforcement. Install post mounted speed feedback signs.	
	Crashes where **drugs** and/or **alcohol** was involved.	SLOW DOWN!	+			N/A LOW MED HIGH	Increase DUI enforcement.	

Figure 5-9: CMP Safety Mitigation Strategies Matrix

CMP Actions/Recommendations

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

- Update the CMP Policy and Procedures Handbook (CMP Steps 1–3) on a four- year to 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 help integrate CMP strategies into the LRTP.
- Develop a routine State of the System report to track effectiveness of the implemented strategies, to the extent possible and to evaluate trends and conditions for the multi-modal transportation system in the CMP study area. The State of the System report will include steps 4 through 8 of the CMP process.
- 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.
- Mitigation strategies in the CMP process to identify projects for inclusion in the member MPO LRTPs either through the regular 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 CCC website.
  - Develop a brochure and/or newsletter on the CMP and its benefits.
- Continue monitoring changes to federal CMP regulations and modify/update CMP to reflect new requirements.

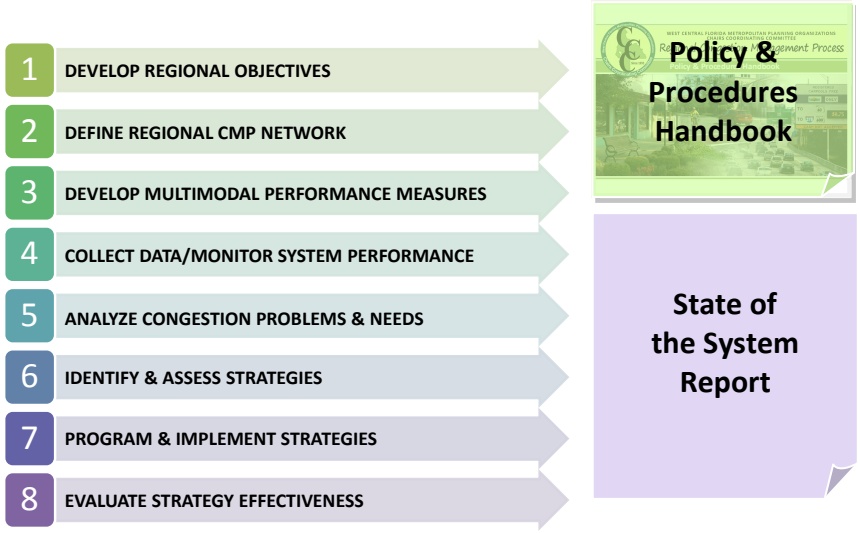


Figure 5-10: CCC Regional CMP Process

West Central Florida Metropolitan Planning Organizations Chairs Coordinating Committee

Regional Congestion Management Process

For additional information on the Regional CMP, contact
Beth Alden at the Hillsborough MPO, (813)273-3774, aldenb@plancom.org.

www.RegionalTransportation.org