Section 1: Introduction

Background

The Congestion Management Process (CMP), which has evolved from what was previously known as the Congestion Management System (CMS), is defined by the Federal Highway Administration (FHWA) as:

> ***A systematic approach, collaboratively developed and implemented throughout a metropolitan region, that provides for the safe and effective management and operation of new and existing transportation facilities through the use of demand reduction and operational management strategies.***

The CMP is required to be developed and implemented as an essential part of the metropolitan planning process in Transportation Management Areas (TMAs). TMAs are defined as urbanized areas with a population over 200,000, or any area where designation as a TMA has been requested.

As population and use of roadway facilities in the region continues to grow, congestion monitoring and management remains a primary goal of the Sarasota-Manatee MPO. Over the years, the MPO and other agencies have implemented numerous demand and operational management strategies to address congestion and/or provide mobility options.

In September 1997, the Sarasota-Manatee MPO published its first Congestion Management System Report. This report provided a tool for analyzing congestion and mobility conditions on the existing transportation network, identifying congested corridors, and evaluating possible improvement strategies. This 2009 CMP is an update to the 1997 Sarasota-Manatee County CMS Report. This CMP Update is developed in compliance with the most current federal requirements and is a working tool that needs to be effectively incorporated into the MPO's project prioritization process, Transportation Improvement Program (TIP), and Long Range Transportation Plan (LRTP).

Federal Requirements

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 the most recent reauthorization of the federal surface transportation program, SAFETEA-LU, was the updated requirement for a "congestion management process" in 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 and the environmental review 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 below.

Congestion Management Process 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 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.

Congestion Management Process in Transportation Management Areas (Section 450.320)

Statewide Transportation Planning; Metropolitan Transportation Planning; Final Rule

(Continued)

- 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. 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 decisionmakers and the public to provide guidance on the selection of effective strategies for future implementation

(g) TMA 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 SOVs, with the exception of safety improvements or the elimination of bottlenecks.*

(h) 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.*

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

*Not applicable to Sarasota-Manatee MPO.

Overview of the Report

This report is organized into eight sections, including this **Section 1**, which provides an overview of background and the federal requirements for the CMP.

Section 2 provides an overview of the CMP, including descriptions of the steps involved in a typical CMP and how the CMP is effectively integrated into the MPO planning process. In addition, a summary of public involvement activities for the CMP also is presented.

Section 3 presents the CMP goals and objectives. The goals and objectives established as part of the 1997 CMS are updated in this section of the report.

Section 4 presents the summary of congestion and monitoring efforts. This includes a description of the CMP study area and transportation network followed by an overview of the congested roadways in Sarasota and Manatee counties. Data collection and congestion monitoring activities currently undertaken for Sarasota and Manatee counties are summarized.

Section 5 provides an overview of the performance measures that help identify and track the region's progress in reducing and managing congestion. Performance measures are selected that are dependent upon the extent of the transportation network and the availability of data.

Section 6 presents the system performance monitoring plan, which helps to monitor and evaluate congestion on CMP roadways in Sarasota and Manatee counties. Sarasota and Manatee counties currently conduct a number of monitoring activities to collect a significant amount of valuable congestion management data throughout the two-county study area.

Section 7 identifies and evaluates potential congestion management strategies. A discussion of the impact and causes of congestion is also presented. The Toolbox of Congestion Management Strategies is summarized, including a tiered screening process to address current and future congestion on Sarasota and Manatee county roadways.

Section 8 summarizes the implementation and management of the CMP strategies. The section presents an implementation plan for each strategy currently proposed for implementation, followed by a process for selecting and implementing future projects. A process for periodic assessment of the effectiveness of implemented strategies is presented followed by a list of recommendations and actions.

Section 2: Congestion Management Process Overview

Maintenance of a CMP is a requirement for all MPOs under Florida law and for MPOs in TMAs under Federal law. Consistent with the guidance from the Final Rule on the CMP for Transportation Management Areas (Section 450.320), as presented earlier in this report, the intent of the CMP Update is to "address congestion management through a process that provides for safe and effective integrated management and operation of the multimodal transportation system." The CMP Update should consider strategies that:

- manage demand
- reduce single-occupant vehicle travel and encourage commuting alternatives
- improve transportation system management and operations

The ultimate objectives of the CMP are to identify, monitor, and address congestion and enhance mobility by establishing a local congestion management process that includes:

- identifying a coordinated process that uses existing transportation data to the maximum extent possible
- defining and evaluating multimodal transportation system congestion
- identifying alternative strategies and actions, their anticipated effectiveness, and an associated implementation plan
- identifying a process to periodically report on the effectiveness of implemented strategies
- documenting congestion management strategies and encouraging funding strategies

- identifying existing and ongoing efforts to help address congestion (e.g., Incident Management Systems, Intelligent Transportation Systems, transit, etc.)

Eight-Step Process

Under the federal guidelines, the CMS was described as a seven step process; with the addition of a new "first step," the CMS has evolved into a Congestion Management Process or CMP, an eight-step process, as summarized below.

FHWA identifies the following eight key components for a performance-based objective-driven CMP:

1. **Develop Congestion Management Objectives –** Objectives should be identified that help to accomplish the congestion management goals.

2. **Identify Area of Application –** The CMP must cover a well-defined application area.

3. **Define System/Network of Interest –** The CMP must define the transportation network that will be evaluated.

4. **Develop Performance Measures –** The CMP must define the measures by which it will monitor and measure congestion.

5. **Institute System Performance Monitoring Plan –** There must be a regularly-scheduled performance monitoring plan for assessing the state of the transportation network and evaluating the status of congestion.

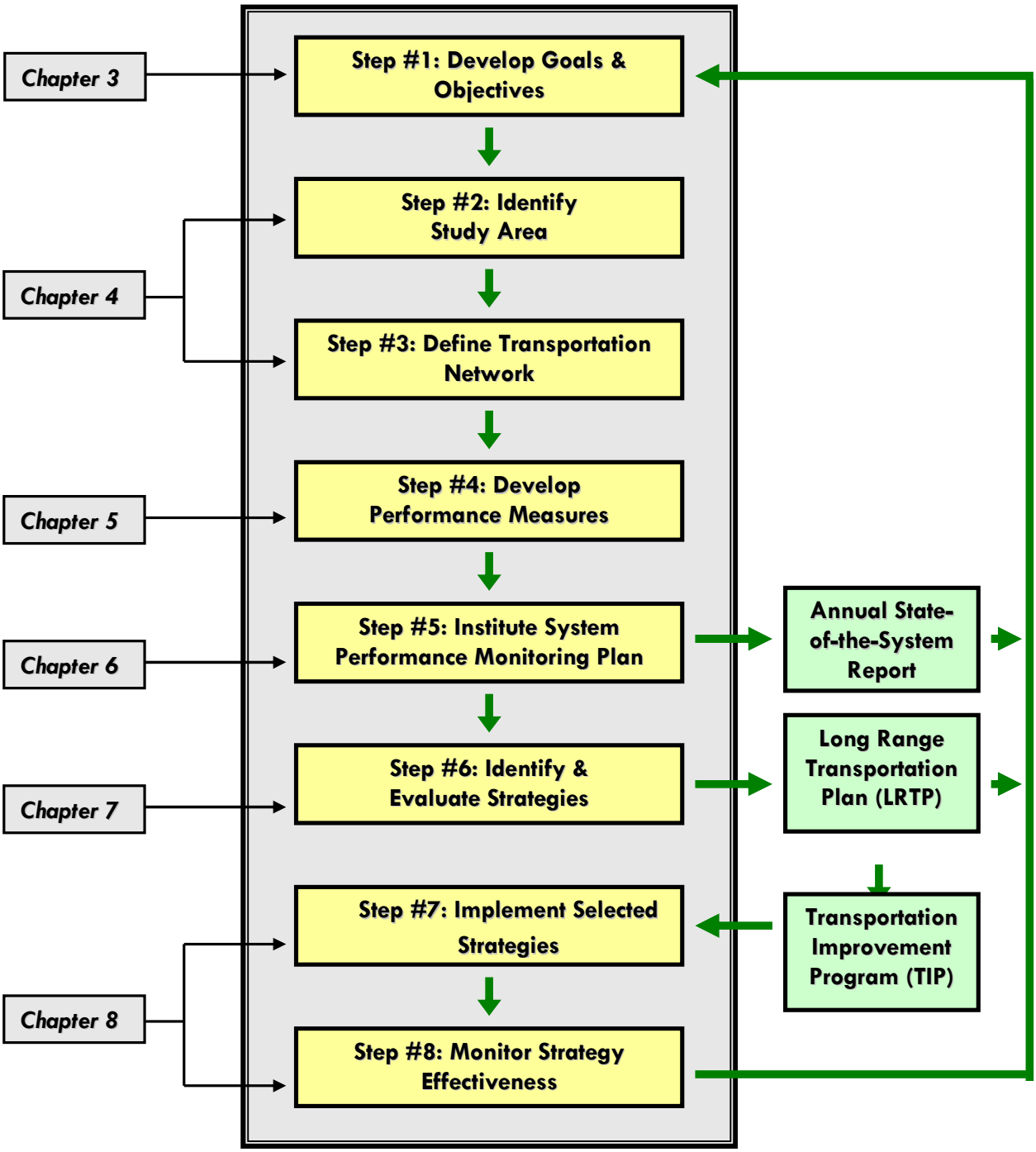
6. **Identify/Evaluate Strategies –** There must be a toolbox for selecting congestion mitigation strategies and evaluating potential benefits.

7. **Implement Selected Strategies/Manage System –** There must be a plan for implementing the CMP as part of the regional transportation planning process.

8. **Monitor Strategy Effectiveness –** The strategies must be regularly monitored to gauge the effectiveness.

Figure 2-1 illustrates the Sarasota-Manatee MPO's eight-step congestion management process. In addition, Figure 2-1 also shows the locations of each step in this CMP update report.

Figure 2-1
Sarasota-Manatee MPO's Eight-Step Congestion Management Process



CMP and Metropolitan Planning Process

The CMP is a working tool that needs to be effectively integrated into the MPO's project prioritization process, Transportation Improvement Plan (TIP), and Long Range Transportation Plan (LRTP). The objectives-driven, performance-based CMP starts with the monitoring and evaluation of current conditions, identifying 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 mitigation 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 into the long range planning process where they are evaluated and prioritized. The projects that are identified for implementation in the LRTP are then moved into project development and programmed into the TIP for funding and implementation. The implemented projects are then monitored to evaluate the strategy effectiveness.

Public Involvement Process

A CMP public involvement process was developed to be used throughout the completion of the Sarasota-Manatee CMP Update process. The key elements of the public involvement process include:

- meetings with the Technical Advisory Committee (TAC)
- meetings with the Citizens Advisory Committee (CAC)
- presentations to MPO Board
- information dissemination through various MPO public involvement opportunities such as websites and newsletters

The MPO's TAC serves as the advisory group for the CMP update. The public involvement process developed for the CMP Update is formulated to be consistent with the Sarasota-Manatee MPO's adopted Public Involvement Plan (PIP). Figure 2-2 reflects the member jurisdictions/agencies in the CMP advisory group.

Figure 2-2

CMP Advisory Group Members

- Manatee County
- Sarasota County
- City of Bradenton
- Town of Longboat Key
- City of Palmetto
- City of Sarasota
- City of Venice
- City of North Port
- Manatee County Area Transit (MCAT)
- Sarasota County Area Transit (SCAT)
- Island Transportation Planning Organization
- Sarasota-Bradenton Airport
- Manatee County Port Authority
- Southwest Florida Regional Planning Council
- Tampa Bay Regional Planning Council
- Florida DOT, District 1

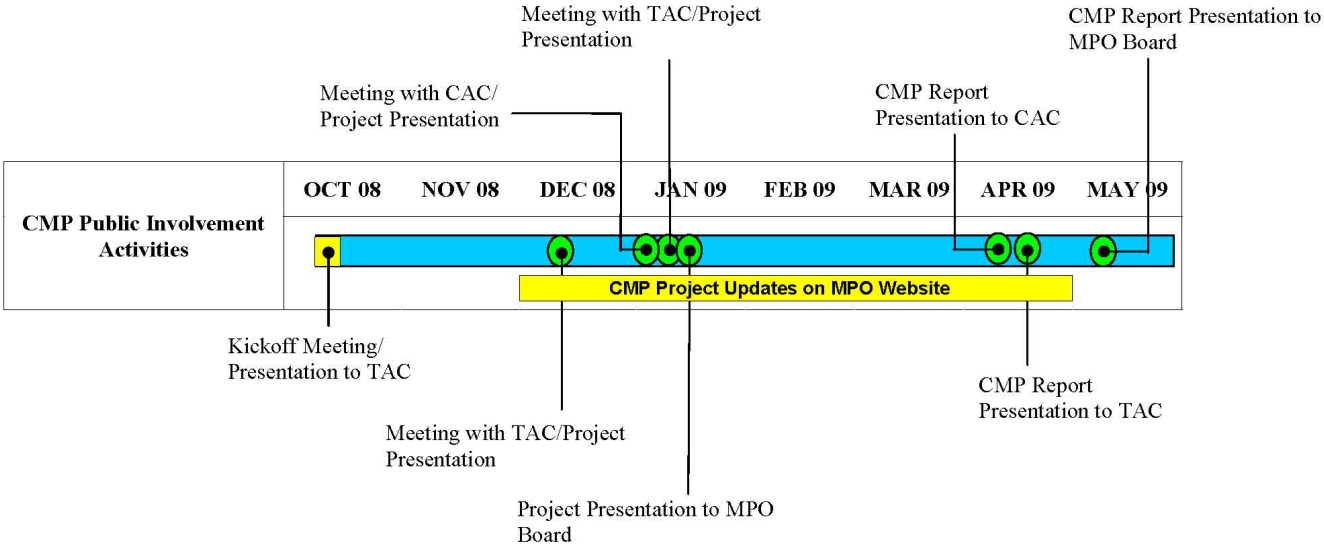
The purpose of the CMP public participation plan is to provide citizen groups with information on congestion monitoring activities that have been taking place in the Sarasota-Manatee MPO area since January 1995. Significant progress has been made toward identifying congested corridors and alternative transportation improvement strategies to alleviate congestion and enhance the mobility of persons and goods.

It is especially important to involve the public in planning, design, environmental impact assessment, and construction of transportation improvement projects within and beyond the CMP. Recent federal regulations warrant involvement of the public during all key stages of transportation projects, and lack of public support and awareness may adversely impact the success of any transportation project, especially new construction.

Therefore, the proposed CMP improvement projects/strategies will be presented to the citizens of Sarasota and Manatee counties at various public involvement activities, as presented in Figure 2-3.

These activities include TAC and CAC meetings, MPO Board meetings that are open to the public, and a public hearing at MPO Board meeting. In addition, CMP project information including draft and final reports will be available for public awareness and review on the MPO website during the CMP update process timeline.

Figure 2-3: CMP Public Involvement Activities



Section 3: Goals and Objectives

The 1997 CMS identified five goals and a series of objectives for the Sarasota-Manatee CMS to monitor congestion and improve the mobility of persons and goods. These previous goals and objectives were reviewed and updated for this CMP update, as presented below. These updated goals and objectives will be used as a tool for selecting strategies and performance measures for strategy monitoring and evaluation. The updated CMP goals and objectives are consistent with the MPO's adopted 2030 LRTP.

Updated Goals and Objectives

Goals

1. Expand, enhance, and increase use of transit services.
2. Provide adequate pedestrian and bicycle facilities, wherever appropriate, on identified congested corridors.
3. Provide congestion management strategies that improve the safety and mobility of people and goods and maintain the region's air quality.
4. Integrate CMP and its improvements into the LRTP and TIP and help guide changes to land use planning activities, land development plans, and zoning policy.
5. Evaluate the effectiveness of implemented CMS strategies.

GOAL #1:	**Expand, Enhance, and Increase Use of Transit Services**
Objective 1.1	Improve and increase transit service in congested corridors that have low levels of transit service.
Objective 1.2	Increase access to transit for passengers by increasing the number of transfer stations and system connections within and through congested corridors.
Objective 1.3	Expand transit service coverage and hours of operations to commercial centers, industrial facilities, institutional facilities, airports, ports, and recreational areas.
Objective 1.4	Develop multimodal strategies that reduce dependency on the single occupant vehicle (SOV).
Objective 1.5	Provide transit network with convenient connections to park-and-ride facilities and carpool lots.
Objective 1.6	Increase efficiency of transit system through the use of new and advanced technologies
GOAL #2:	**Provide Adequate Pedestrian and Bicycle Facilities, Wherever Appropriate, on Identified congested Corridors**
Objective 2.1	Encourage the use of low-cost alternative modes to corridor capacity improvements.
Objective 2.2	Coordinate transit services with bicycle, pedestrian, and multi-use trail improvement projects.
Objective 2.3	Create, maintain, and expand bicycle, pedestrian, and multi-use trail corridors for movement of people.
Objective 2.4	Provide for pedestrian, multi-use trail, transit, and bicycle facilities to encourage employees to use these facilities to get to work.
GOAL #3:	**Provide Congestion Management Strategies that Improve the Safety and Mobility of People and Goods and Maintain the Region's Air Quality**
Objective 3.1	Identify, prioritize, and implement congestion management strategies that maximize the use of the existing transportation system to relieve congestion, improve safety, and improve mobility of persons and goods.

Objective 3.2	Maintain or exceed the adopted level of service standards for each mode of transport contained in the local government comprehensive plan.
Objective 3.3	Solve congestion problems through demand management strategies and operations management strategies before adding capacity through general purpose lanes or new roadways.
Objective 3.4	Increase the efficiency of the transportation system through the use of low-cost Transportation Demand Management (TDM) alternatives such as carpooling, vanpooling, telecommuting, and flexible work hours.
Objective 3.5	Improve the mobility of people and goods by using Intelligent Transportation System (ITS) strategies according to local needs.
GOAL #4:	**Integrate CMP and its Improvements into the LRTP and TIP and Help Guide Changes to Land Use Planning Activities, Land Development Plans, and Zoning Policy**
Objective 4.1	Incorporate projects identified through the CMP in the Five-Year Transportation Improvement Program.
Objective 4.2	Develop land-use policies and land development regulations that support public transit, ridesharing, walking, and bicycling, especially for travel to work.
GOAL #5:	**Evaluate the Effectiveness of Implemented CMS Strategies**
Objective 5.1	Compare the level of congestion on congested corridors before and after improvements using the selected performance measures.
Objective 5.2	Monitor the performance of implemented congestion management strategies.
Objective 5.3	Report on the actual effectiveness of implemented strategies to the TAC.
Objective 5.4	Determine the impact of CMP improvements on adjacent facilities.

Section 4: Summary of Congestion & Monitoring Efforts

This section presents an overview of the geographic area of application and the transportation network for the Sarasota-Manatee CMP. This section also presents the congested corridors in the study area that were identified based on roadway level of service (LOS) analyses performed by various jurisdictions in Sarasota and Manatee counties. Finally, data collection and congestion monitoring activities currently undertaken for Sarasota and Manatee counties are summarized.

Study Area

The CMP area of application contains the transportation system that needs to be evaluated and monitored and where congestion management policies and procedures need to be applied. The geographic area of application for this CMP Update consists of Sarasota and Manatee counties in their entirety. Initially, the 1997 CMS area of application was limited to the urban areas in both counties; this was later expanded to include the entire area of both counties based on recommendations from the Sarasota-Manatee MPO staff. The expanded area provided the opportunity to monitor congestion in non-urban areas of both Sarasota and Manatee counties while continuing to pursue congestion mitigation measures in the urban areas.

Transportation Network

According to federal guidelines, a CMP should cover a multimodal transportation network. In addition to evaluating congestion on the roadway network, the Sarasota-Manatee CMP evaluates transit, bicycle/pedestrian/trail, and freight movement networks within its designated area of

application. The Sarasota-Manatee CMP roadway network is described below; alternative modes are addressed later in this section.

Roadway Network

The roadway network for the Sarasota-Manatee CMP includes all major roadways included in the adopted 2030 LRTP 2010 existing plus committed (E+C) road network. This road network was selected to account for the existing roadways at the time of LRTP development in 2005 as well as the roadway improvements identified as committed for capacity expansion through the year 2010. In addition, roadways that are not included in the 2010 E+C network but regularly monitored for level of service analysis in both Sarasota and Manatee counties are included.

This roadway network carries a majority of vehicle miles of travel in the area for both passengers and freight. The CMP road network represents the geographic coverage for most of the two-county region and has the greatest potential for the facility-level application of mitigation measures. In addition, bottlenecks and incident delays on these roadways have a significant impact on mobility of both passenger and freight vehicles in the two-county CMP application area.
The Sarasota-Manatee CMP study area and roadway network are shown in Figure 4-1.

Congested Corridors & Hot Spots

Roadway LOS was used to identify congested corridors within the CMP application area. The term LOS is used to describe the operating conditions on a given corridor when it is accommodating traffic volumes. The operating conditions may refer to speed, travel time, safety, traffic interruption, comfort, and convenience. Six levels of service have been defined and designated by letters "A" through "F," with LOS "A" indicating the best operating conditions and LOS "F" indicating the worst.

Using the concept of LOS, this section documents the steps and efforts towards developing and identifying the congested roadways for the Sarasota-Manatee CMP. As indicated earlier in this report, the CMP road network includes all existing and committed roadway segments as identified by the adopted LRTP and additional roadway segments that are regularly monitored for level of service analysis that are under the jurisdictional responsibilities of Manatee County, Sarasota County, and all the municipalities located within the MPO area.

Using the most recent LOS data available from both Sarasota and Manatee counties, any roadway segments that operate below the adopted LOS standards for that segment or any segment with current LOS "F" were identified and listed as a congested segment for the purposes of this CMP. This screening process provides the base list of congested corridors for the CMP Advisory Group's review and evaluation.

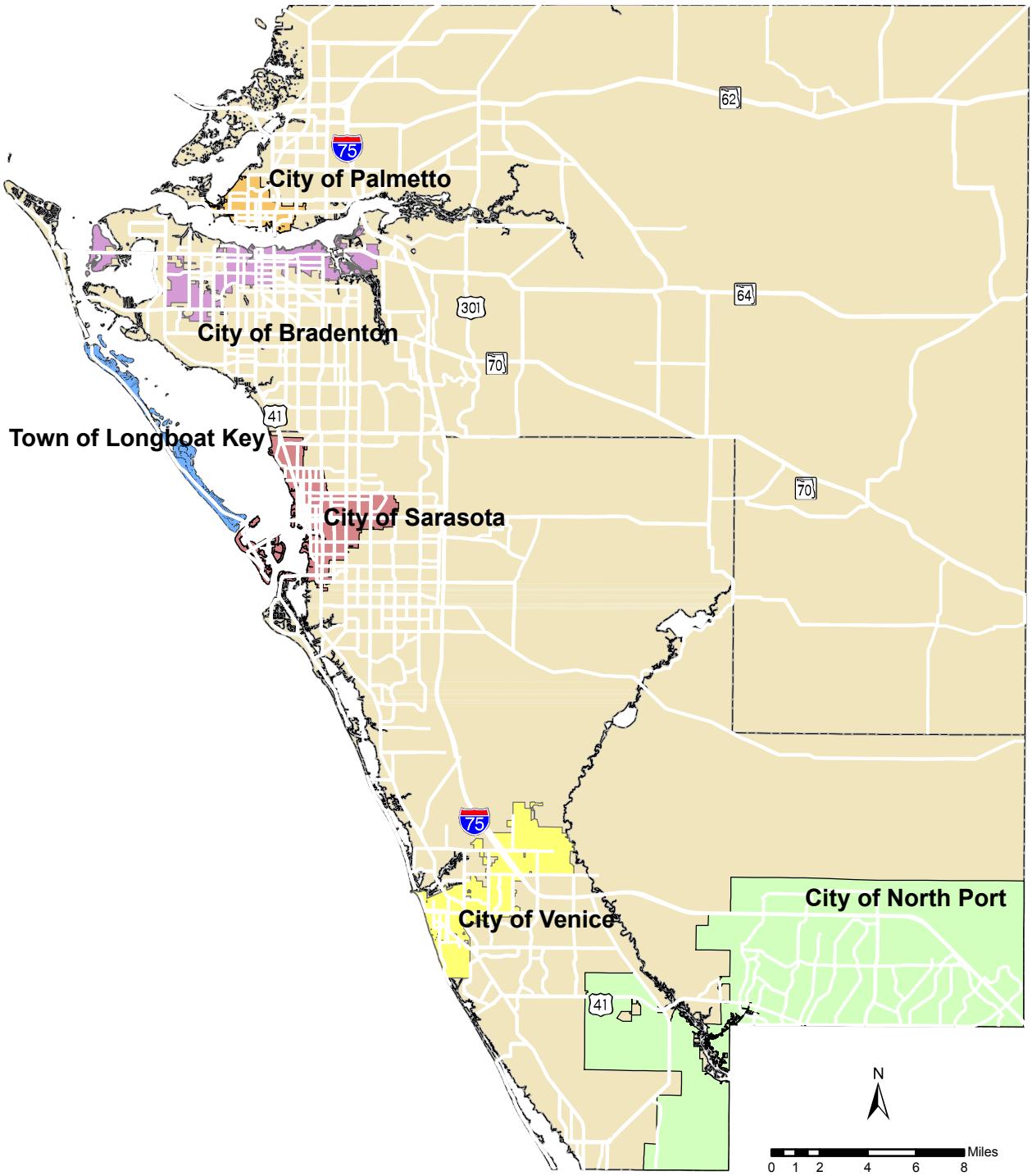


Figure 4-1: CMP Study Area & Roadway Network

Sarasota/Manatee MPO

CMP Road Network

Sources: Sarasota County,
Manatee County and adopted 2030 LRTP

In addition, group recommendations of congested intersections will be used to identify the congestion "Hot Spots."

Once the final list of congested roadways and hot spots is identified, an additional review will be conducted to identify those facilities currently congested but already programmed for improvements. Programmed/committed improvements are those facilities included in the five-year Transportation Improvement Program (TIP) or Capital Improvement Program (CIP) and scheduled for improvement within the upcoming five-year period. Any programmed improvement will be verified prior to recommending CMP strategies for the congested corridors and hot spots.

Tables 4-1 and 4-2 and Figures 4-2 and 4-3 present the list of congested corridors identified for the Sarasota-Manatee CMP. In addition to existing congestion, Figures 4-2 and 4-3 also show the congested corridors identified in the 1997 CMS. The corridors for this CMP update are identified based on the 2007 LOS data provided by Sarasota County, the City of Sarasota, and Manatee County. It should be noted that the LOS data for some of the E+C roadway segments were not available and therefore were not included in the screening process. The LOS data for Sarasota County, the City of North Port, and City of Palmetto were based on generalized LOS analysis, while City of Bradenton LOS is based on ARTPLAN analysis. Information on LOS analysis methodologies for the City of Sarasota and Manatee County were not available.

Table 4-1
Manatee County Congested Corridors

Corridor #*	On Street	From	To	Jurisdiction	Adopted LOS Standard	LOS (2007)
1	1st St	9th Ave	Manatee Ave	Bradenton	D	F
2	6th Ave W	15th St W	9th St W	Bradenton	D	E
3	9th St E	53rd Ave E	57th Ave E	County	D	F
4	9th St E	Manatee Ave	7th Ave	Bradenton	D	F
5	9th St E	7th Ave	9th Ave	Bradenton	D	E
6	9th St W	Manatee Ave	6th Ave	Bradenton	D	F
7	10th St W	10th Ave	US 41 Business	Palmetto	D	E
8	14th St W	Manatee Ave	9th Ave	Bradenton	D	F
9	14th St W	9th Ave	13th Ave	Bradenton	D	E
10	27th St E	Manatee Ave	13th Ave E	County	D	F
11	30th Ave W	9th St W	14th St W	County	D	F
12	57th Ave E	9th St E	301Blvd	County	D	F
13	59th St W	Cortez Rd	Manatee Ave	County	D	F
14	75th St W	Manatee Ave	18th Ave W	County	D	F
15	301 Blvd	44th Ave E	9th St E	County	F	F
16	301 Blvd	51st Ave E	53rd Ave E	County	F	F
17	301 Blvd	53rd Ave E	63rd Ave E	County	E	F
18	Cortez Rd	Gulf Dr	123rd St W	County	D	E
19	Cortez Rd	123rd St W	119th St W	County	D	F
20	Cortez Rd	75th St W	26th St W	County	D	F
21	Cortez Rd	26th St W	14th St W	County	D	E
22	Cortez Rd	US 41 Connector	1st St	County	D	F
23	Cortez Rd	US 41 Connector	41st Ave E	County	D	F
24	I-275	I-75	Gilette Rd	County	D	F
25	I-275	I-275 Ramp	S. of Rest Area	County	B	C
26	I-275	S. of Rest Area	Sunshine Skyway	County	B	D
27	I-75	US 301	SR 64	County	C	D
28	I-75	SR 64	Sarasota County	County	D	E
29	Manatee Ave	26th St W	15th St W	Bradenton	D	F
30	Manatee Ave	15th St W	9th St W	Bradenton	D	E
31	SR 64	Carlton Arms Blvd	60th St E	County	D	F

*Does not represent a ranking.
Note: Jurisdiction indicates location of corridor segment.
Sources: City of Bradenton, City of Palmetto, and Manatee County.

Table 4-1
Manatee County Congested Corridors (continued)

Corridor #*	On Street	From	To	Jurisdiction	Adopted LOS Standard	LOS (2007)
32	SR 64	60th St Ct E	Lena Rd	County	D	F
33	SR 64	Lena Rd	Rye Rd	County	D	F
34	SR 64	59th St W	34th St W	County	D	F
35	SR 64	34th St W	26th St W	County	D	F
36	SR 64	Gulf Dr	Flamingo Dr	County	D	F
37	SR 70	US 301	Lockwood Ridge	County	C	D
38	SR 70	Lorraine Rd	DeSoto Co.	County	B	C
39	University	Cooper Creek	I-75	County	D	F
40	University	Lakewood	Lorraine Rd	County	D	F
41	US 301	Victory Rd	Tara Siesta Blvd	County	D	E
42	US 301	Sarasota Co.	Whitfield Ave	County	C	F
43	US 41	63rd Ave E	SR 70	County	D	F
44	US 41	45th Ave Cir	Cortez Rd	County	D	F
45	US 41	Cortez Rd	44 Ave E	County	D	F
46	US 41	Haben Blvd	Manatee Ave	Bradenton	D	F
47	US 41	41st Ave E	301 Blvd	County	D	F
48	US 41	21st Ave E	9th Ave E	County	D	F
49	US 41	Haben Blvd	10th St E	Palmetto	D	F
50	US 41 Business	14th St W	13th St W	County	D	E
51	US 41 Business	10th St W	4th St W	County	D	F
52	US 41 Business	4th St	Manatee Ave	Bradenton	D	F
53	US 41 Business	US 41	N of US 41	County	D	F
54	Whitfield Ave E	301 Blvd	US 301	County	D	F

*Does not represent a ranking.
Note: Jurisdiction indicates location of corridor segment.
Sources: City of Bradenton, City of Palmetto, and Manatee County.

Figure 4-2: Congested Corridors (2007)

Manatee County

- Meets LOS Standard
- LOS "F" or Does Not Meet LOS Standard
- 1997 Congested CMS Corridors
- No LOS Data

Sources: Manatee County, City of Bradenton, City of Palmetto, FDOT and adopted 2030 LRTP

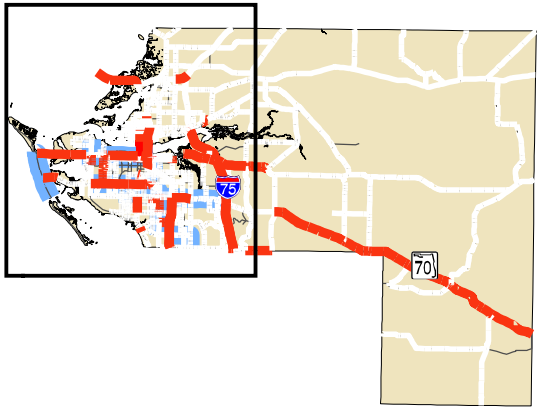


Table 4-2
Sarasota County Congested Corridors

Corridor #*	On Street	From	To	Jurisdiction	Adopted LOS Standard	LOS (2007)
1	10th St	US 41	Cocoanut Ave	Sarasota	D	F
2	12th St	Washington	East Ave	Sarasota	D	F
3	17th St	US 301	East Ave	Sarasota	C	F
4	Bahia Vista St	Lockwood Ridge	Beneva Rd	Sarasota	C	E
5	Bahia Vista St	US 41	Shade Ave	Sarasota	C	D
6	Bahia Vista St	Shade Ave	Euclid Ave	Sarasota	C	E
7	Bahia Vista St	Euclid Ave	Tuttle Ave	Sarasota	C	F
8	Bay Rd	Osprey Ave	US 41	Sarasota	D	F
9	Bee Ridge Rd	US 41	School Ave	Sarasota	D	F
10	Bee Ridge Rd	McIntosh Rd	I-75	County	D	F
11	Bee Ridge Rd	I-75	Sarasota Golf Club Rd	County	C	F
12	Bee Ridge Rd	Sarasota Golf	Bent Tree Blvd	County	C	D
13	Beneva Rd	Sarasota	12th St	Sarasota	C	D
14	Beneva Rd	Fruitville Rd	Circus Blvd	Sarasota	C	E
15	Beneva Rd	Kingston Blvd	Gulf Gate Dr	County	C	D
16	Beneva Rd	Webber St	Bee Ridge Rd	County	C	E
17	Beneva Rd	Bee Ridge Rd	Proctor Rd	County	C	D
18	Beneva Rd	City Limits	Fruitville Rd	Sarasota	C	D
19	Cattlemen Rd	Center Pointe Dr	Bee Ridge Rd	County	C	F
20	Cattlemen Rd	Colonial Oaks	Webber St	County	C	D
21	Cattlemen Rd	Webber St	Countrywood Dr	County	C	F
22	Cattlemen Rd	Countrywood Dr	Cattle Ridge Blvd	County	C	D
23	Cattlemen Rd	Palmer Blvd	Bahia Vista St	County	C	F
24	Cattlemen Rd	Palmer Blvd	Fruitville Rd	County	C	D
25	Center Rd	US 41	US 41 Bypass	County	C	D
26	Central Ave	Pineapple Ave	Fruitville Rd	Sarasota	D	E
27	Cocoanut Ave	2nd St	Fruitville Rd	Sarasota	D	F
28	Cocoanut Ave	Fruitville Ave	6th St	Sarasota	D	E
29	Fruitville Rd	US 41	Cocoanut Ave	Sarasota	D	E
30	Fruitville Rd	Lemon Ave	Orange Ave	Sarasota	D	E
31	Fruitville Rd	East Ave	School Ave	Sarasota	D	E
33	Fruitville Rd	Links Ave	US 301	Sarasota	D	F
34	Fruitville Rd	Honore Ave	I-75	County	D	F

* Does not represent a ranking.

Note: Jurisdiction indicates location of corridor segment.

Sources: City of Sarasota, City of North Port, and Sarasota County.

Table 4-2
Sarasota County Congested Corridors (continued)

Corridor #*	On Street	From	To	Jurisdiction	Adopted LOS Standard	LOS (2007)
35	Fruitville Rd	I-75	East Rd	County	C	F
36	Fruitville Rd	East Rd	Sarasota Center Blvd	County	C	E
37	Gantt Rd	Clark Rd	Proctor Rd	County	C	D
38	Gulfstream Ave	US 41	Cocoanut Ave	Sarasota	D	F
39	Gulf of Mexico	Westway Pl	Longboat Key Club Rd	Longboat Key	D	F
40	Honore Ave	Longmeadow	Taywood Meadow	County	C	D
41	Honore Ave	Taywood Meadow	17th St	County	C	F
42	Honore Ave	Fruitville Rd	17th St	County	F	F
43	Honore Ave	Fruitville Rd	Palmer Blvd	County	C	F
44	Honore Ave	Proctor Rd	Clark Rd	County	C	D
45	I-75	SR 72 (Clark Rd)	SR 681	County	B	C
46	I-75	SR 681 Ramp	SR 681	County	C	D
47	I-75	SR 681	Jacaranda Blvd	County	B	D
48	I-75	Bee Ridge Rd	University Pkwy	County	C	D
49	I-75	Jacaranda Blvd	Sumter Blvd	County	B	C
50	Jacaranda Blvd	Center Rd	Indian Hills Blvd	County	C	D
51	Jacaranda Blvd	Woodmere Park	US 41	County	C	D
52	Jacaranda Blvd	Border Rd	I-75	County	C	F
53	Laurel Rd	I-75	Knights Trail Rd	Venice	C	D
54	Lemon Ave	2nd St	Fruitville Rd	Sarasota	E	F
55	Lockwood	12th St	17th St	Sarasota	D	E
56	Lockwood	Gocio Rd	MLK Way	County	C	D
57	Lockwood	University Pkwy	61st St	County	D	E
58	McIntosh Rd	Ashton Rd	Clark Rd	County	C	D
59	McIntosh Rd	Linwood St	Bee Ridge Rd	County	E	F
60	McIntosh Rd	Bee Ridge Rd	Wilkinson Rd	County	C	F
61	McIntosh Rd	Wilkinson Rd	Proctor Rd	County	C	D
62	Midnight Pass	Beach Rd	Stickney Point Rd	County	D	E
63	MLK Way	Osprey Ave	Washington Blvd	Sarasota	D	E
64	Orange Ave	2nd St	Fruitville Rd	Sarasota	D	F
65	Orange Ave	US 41	Ringling Blvd	Sarasota	D	F
66	Osprey Ave	Main St	US 41	Sarasota	D	E
67	Osprey Ave	Siesta Dr	South Dr	Sarasota	D	F

* Does not represent a ranking.

Note: Jurisdiction indicates location of corridor segment.

Sources: City of Sarasota, City of North Port, and Sarasota County.

Table 4-2
Sarasota County Congested Corridors (continued)

Corridor #*	On Street	From	To	Jurisdiction	Adopted LOS Standard	LOS (2007)
68	Palmer Blvd	Cattlemen Rd	Packinghouse Rd	County	C	D
69	Palmer Blvd	Packinghouse Rd	Porter Rd	County	C	F
70	Price Blvd	Sumter Blvd	Cranberry Blvd	North Port	C	F
71	Price Blvd	Cranberry Blvd	Toledo Blade Blvd	North Port	C	D
72	Proctor Rd	Gantt Rd	Cattlemen Rd	County	C	D
73	Ringling Blvd	US 41	Pineapple Ave	Sarasota	D	E
74	Ringling Blvd	Osprey Ave	US 301	Sarasota	D	F
75	Ringling Cswy	Blvd of Presidents	Bird Key Dr	Sarasota	E	F
76	Ringling Cswy	Golden Gate Pt	US 41	Sarasota	E	F
77	River Rd	I-75	US 41	North Port	C	F
78	River Rd	US 41	Winchester Blvd	North Port	C	D
79	Salford Blvd	Wall Ln	US 41	North Port	C	D
80	Shamrock Blvd	US 41	Banyan Dr	County	C	D
81	Siesta Dr	City Limits	Osprey Ave	Sarasota	E	F
82	SR 72	I-75 Ramp	I-75	County	D	F
83	SR 758	N. Shell Rd	Midnight Pass Rd	Sarasota	D	F
84	Sumter Blvd	Price Blvd	US 41	North Port	C	D
85	Swift Rd	Wilkinson Rd	Proctor Rd	County	C	D
86	Toledo Blade	I-75	Price Blvd	North Port	C	E
87	Toledo Blade	Price Blvd	Woodhaven Dr	North Port	C	F
88	Toledo Blade	Woodhaven Dr	Hillsborough Ave	North Port	C	D
89	Tuttle Ave	Ringling Blvd	Fruitville Rd	County	C	F
90	Tuttle Ave	8th St	12th St	Sarasota	C	D
91	Tuttle Ave	12th St	17th St	Sarasota	C	E
92	University Pkwy	W. University Pkwy	US 301	County	C	D
93	University Pkwy	Old Bradenton Rd	DeSoto Rd	County	C	D
94	University Pkwy	Whitfield Ave	I-75	County	C	D
95	US 301	10th St	17th St	Sarasota	D	F
96	US 301	17th St	MLK Way	Sarasota	D	E
97	US 301	MLK Way	University Pkwy	County	D	F
98	US 301	Main St	Oak St	Sarasota	D	F
99	US 41	Biscayne Dr	Hillsborough Ave	North Port	C	E
100	US 41	County Line	General Spaatz Blvd	County	F	F

* Does not represent a ranking.
Note: Jurisdiction indicates location of corridor segment.
Sources: City of Sarasota, City of North Port, and Sarasota County.

Table 4-2
Sarasota County Congested Corridors (continued)

Corridor #*	On Street	From	To	Jurisdiction	Adopted LOS Standard	LOS (2007)
101	US 41	General Spaatz Blvd	University Pkwy	Sarasota	E	F
102	US 41	Myrtle St	University Pkwy	Sarasota	D	F
103	US 41	Bayshore Rd	Beneva Rd	County	D	F
104	US 41	Beneva Rd	Club Dr	County	D	F
105	US 41	Gulf Stream Ave	Fruitville Rd	Sarasota	D	E
106	US 41	US 301	Osprey Ave	Sarasota	D	E
107	US 41	Bahia Vista St	Bay Rd (Bee Ridge)	Sarasota	D	F
108	US 41	Baywood Dr	SR 72	County	D	F
109	US 41	Proctor Rd	Bay Rd	County	D	E
110	US 41	US 41 Business	Laurel Rd	County	D	F
111	US 41	Laurel Rd	Roberts Rd	County	D	E
112	US 41 Bypass	US 41 N	Venice Ave	Venice	E	F
113	US 41 Bypass	James St	Cypress Ave	Venice	D	F
114	Venice Ave	Grove St	US 41 Bypass	Venice	C	D

* Does not represent a ranking.

Note: Jurisdiction indicates location of corridor segment.

Sources: City of Sarasota, City of North Port, and Sarasota County.

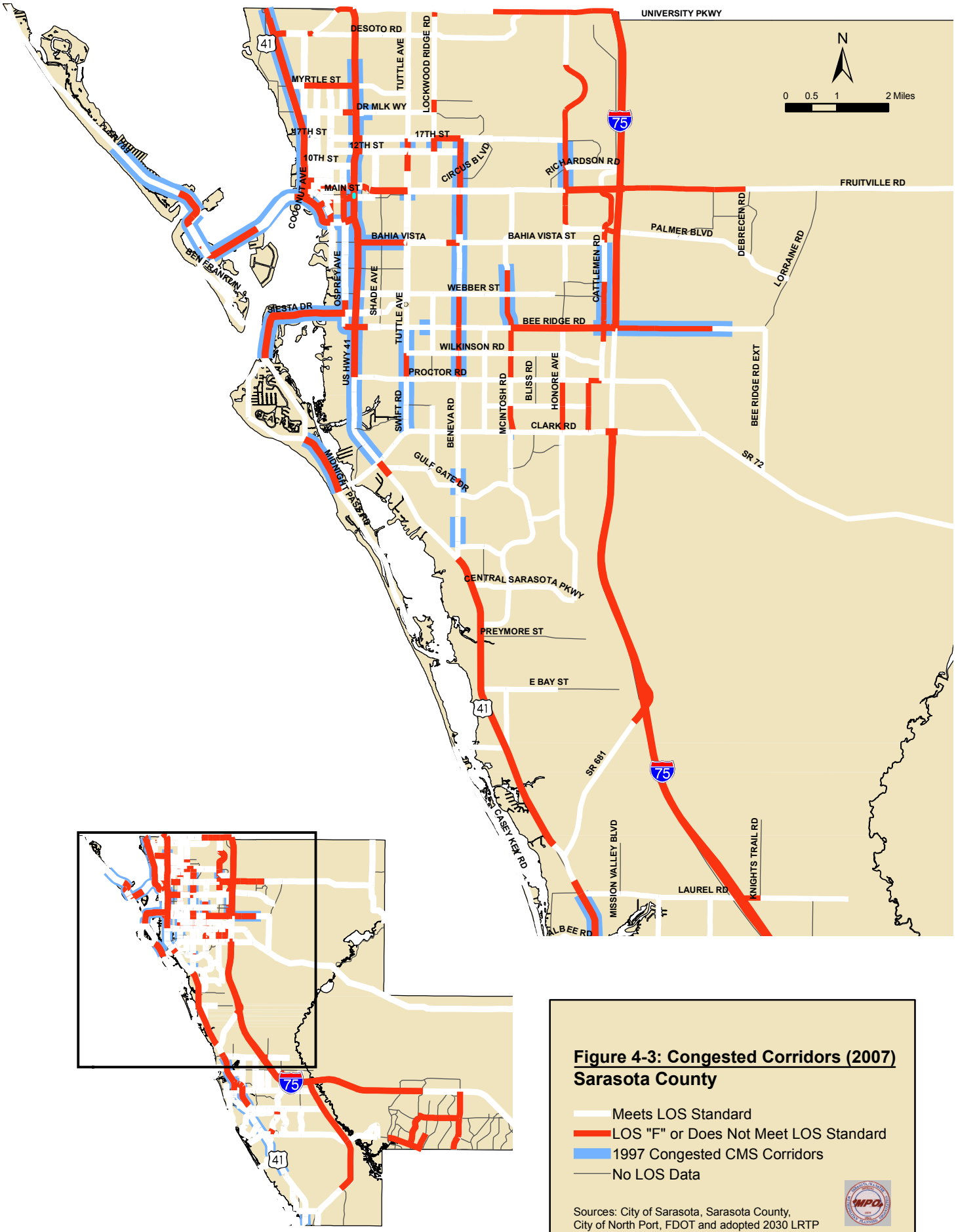


Figure 4-3: Congested Corridors (2007)
Sarasota County

- Meets LOS Standard
- LOS "F" or Does Not Meet LOS Standard
- 1997 Congested CMS Corridors
- No LOS Data

Sources: City of Sarasota, Sarasota County, City of North Port, FDOT and adopted 2030 LRTP

Inventory of Current Data Collection and Monitoring Efforts

Sarasota and Manatee counties have collected a significant amount of valuable congestion management data as part of various new and/or existing monitoring efforts throughout the two-county study area. An inventory of these congestion management data collection and monitoring efforts is listed below. These efforts are organized into five major categories:

- Intelligent Transportation Systems
- Transportation Systems Management and Operations
- Public Transit
- Bicycle/Pedestrian/Trail
- TDM

Activities within each category are listed in Table 4-3 and summarized in the remainder of this section.

Table 4-3: Current Data Collection and Monitoring Efforts

Type of Effort	Data Collection/Monitoring Activity	Area Monitored
Intelligent Transportation Systems	Sarasota-Manatee-Charlotte Traffic Incident Management Team	Sarasota & Manatee
	Southwest Florida 511 Advanced Traveler Information Systems	Sarasota & Manatee
	Manatee County Advanced Transportation Management System	Manatee
	Sarasota County Advanced Transportation Management System	Sarasota
Transportation Systems Management and Operations	Roadway Level of Service Analysis	Sarasota & Manatee
	Travel Time and Delay Studies	Sarasota & Manatee
	Traffic Counts Monitoring and Data Management	Sarasota & Manatee
	Traffic Crash Data Management	Sarasota & Manatee
	Regional Congestion Management System Performance Report	Sarasota & Manatee
	Bradenton/Palmetto & Venice Downtown Mobility Studies	Sarasota & Manatee
	Urban Mobility Study	Sarasota & Manatee
Public Transit	Transit Data Collection and Performance Monitoring	Sarasota & Manatee
	Transit Quality of Service Evaluation	Sarasota & Manatee
	Transit Development Plans	Sarasota & Manatee
	SCAT Comprehensive Operations Analysis	Sarasota
	Locally Coordinated Human Services Transportation Plan	Sarasota & Manatee
	SCAT North-South Corridor Bus Rapid Transit Alternatives	Sarasota
Bicycle/ Pedestrian Trail	Bicycle Route LOS Analysis	Sarasota
	Pedestrian Facility Plan	Sarasota
	Multi-use Trail Facility Plan	Sarasota
TDM	FDOT Commuter Services Program	Sarasota & Manatee

Intelligent Transportation Systems (ITS)

Sarasota-Manatee-Charlotte Traffic Incident Management (TIM) Team

The TIM Team Program, which was formalized by FDOT in 2001, brings together all agencies involved in clearing roadway crashes with the objective of improving detection, verification, response, and clearance times to remove a motor vehicle crash or incident from the roadway while providing real-time information to motorists.

The Sarasota-Manatee-Charlotte TIM Team, one of the three Southwest Florida TIM Teams, implements the Quick Clearance principles of Florida's Open Roads Policy through the implementation of the "3 Cs" of TIM: Communication, Cooperation, and Coordination. TIM Teams provide the public with real-time motorist information through ITS programs such as the 511 Traveler Information System, Highway Advisory Radio, and over-the-road Dynamic Message Signs. The Sarasota-Manatee-Charlotte TIM Team member agencies include state, regional, and local transportation agencies, public safety providers, emergency medical responders, emergency management agencies, professional wrecker and tow truck operators, and many others that service the traveling public. TIM Teams are sponsored by FDOT and meet to discuss related topics, develop improved processes, share lessons learned, and gain insight into other stakeholder perspectives.

Southwest Florida 511 Advanced Traveler Information Systems (ATIS)

Southwest Florida 511 ATIS was launched in early spring 2007. The Federal Communications Commission designated 511 as the single traffic information telephone number for use by states and local jurisdictions on July 21, 2000. Beginning in September 2004, the Tampa Bay region, including Hernando, Hillsborough, Manatee, Pasco, Pinellas, Polk, and Sarasota counties, implemented the 511 services to provide travelers with real-time traffic conditions and other information.

Through coordination with the TIM Team, 511 services are being provided in Manatee and Sarasota counties as part of the Tampa Bay SunGuide Program. Travelers in Sarasota and Manatee counties dial 511 to access current information for specific routes and roadway segments, including anticipated travel delays, traffic accidents, roadway blockages, and lane closures.

A website also incorporates motion images from traffic cameras, e-mail alerts, links to stakeholder websites, public transit information, and customer feedback. In addition, roadside sensors monitor traffic along portions of the interstate network using solar powered, wireless sensors to gather lane-by-lane data on speeds, lane occupancy, and vehicle counts that can be used to assist in congestion mitigation efforts.

Manatee County Advanced Transportation Management System (ATMS)

This recently-initiated design-build construction project is in the process of designing and constructing an upgrade to the existing signal system in Manatee County and the city of Bradenton. The ATMS upgrade includes new central hardware and software, new controllers and cabinets at 142 intersections, an updated communications plant, and video monitoring at 40 locations. This project also will deploy 40 new vehicle detection stations for monitoring traffic flow throughout the traffic management system. The Manatee ATMS project, scheduled for completion in 2010, also includes the construction of a video wall and the integration of central ATMS components into the Manatee County Public Safety and Traffic Management Center.

Sarasota County ATMS

The MPO has made significant progress in developing a well-established ATMS in Sarasota County with the recent addition of an ATMS control center. The County has already installed an ATMS on most regional roads throughout Sarasota County.

Transportation Systems Management and Operations

Level of Service Analysis

The LOS analysis is used regularly to monitor roadway traffic conditions for various study purposes and to monitor the effectiveness of congestion management strategies implemented in Sarasota and Manatee counties. Currently, LOS analyses are conducted in Sarasota County by the transportation divisions of both Sarasota County and the City of Sarasota on an annual basis.

In Manatee County, the County transportation division conducts annual LOS analysis to determine the LOS for the county roadways excluding roadways within the city of Bradenton. The City of Bradenton, as part of the Downtown Mobility Study (DMS), also has recently completed an LOS analysis of existing roadway conditions for the DMS study segments in downtown Bradenton. In addition, corridor-level LOS analyses are conducted as part of various corridor studies throughout the two-county CMP study area.

Travel Time and Delay Studies

As part of congestion management monitoring, the Sarasota County Public Works Department conducts an annual Travel Time and Delay Study to evaluate the quality of traffic movement along selected routes and determine the locations, types, the extent of traffic delays experienced by commuters that utilize the selected routes. In addition, data are collected to compare operational conditions before and after roadway or intersection improvements have been made. They studies are also used as a tool to assist in prioritizing projects by comparing the magnitude of the operational deficiencies (such as delays and stops) for each project under consideration.

In 2007, the study was conducted on nine major corridors in Sarasota County during the morning and afternoon peak-period traffic conditions. Field data were collected for each of the selected corridors, then analyzed and summarized in the 2007 Travel Time and Delay Study Report. Each corridor assessment contains detailed information on how Average Annual Daily Travel (AADT) increased or decreased and suggestions as to why the increase or decrease my have occurred. The 2007 report concluded that there has been a general increase in the average travel speeds through the corridors, except one, which was blamed on construction activities.

Traffic Count Monitoring and Data Management

Sarasota County continuously monitors traffic counts using a total of 412 count stations. The County provides a yearly report on traffic count data as well as detailed information about the sites. The report summarizes the data, including the count station location, the dates on which the data were gathered, direction of the traffic flow, and AADT count. These data are provided to the Sarasota-Manatee MPO and other planning agencies for data interpretation and use.

Manatee County maintains a total of 257 count stations to monitor traffic conditions on its roadways. Similar to Sarasota County, Manatee County maintains historical count data from 1986 to date for most of its count station locations throughout the county road network. These data are also provided in a GIS shape file for mapping purposes and analysis. Figures 4-4 and 4-5 show traffic count locations in Manatee and Sarasota counties.

Highway Crash Data Management

The Sarasota County Public Works Department's Traffic Engineering and Operations Division provides a yearly report summarizing roadway traffic crash data. The data are collected through coordination with various agencies including Florida Highway Patrol, Sarasota County Sheriff's Department, Sarasota Police Department, Longboat Key Police Department, North Port Police Department and the Venice Police Department and provide critical traffic-safety-related information that is vital, in part, for the congestion management process.

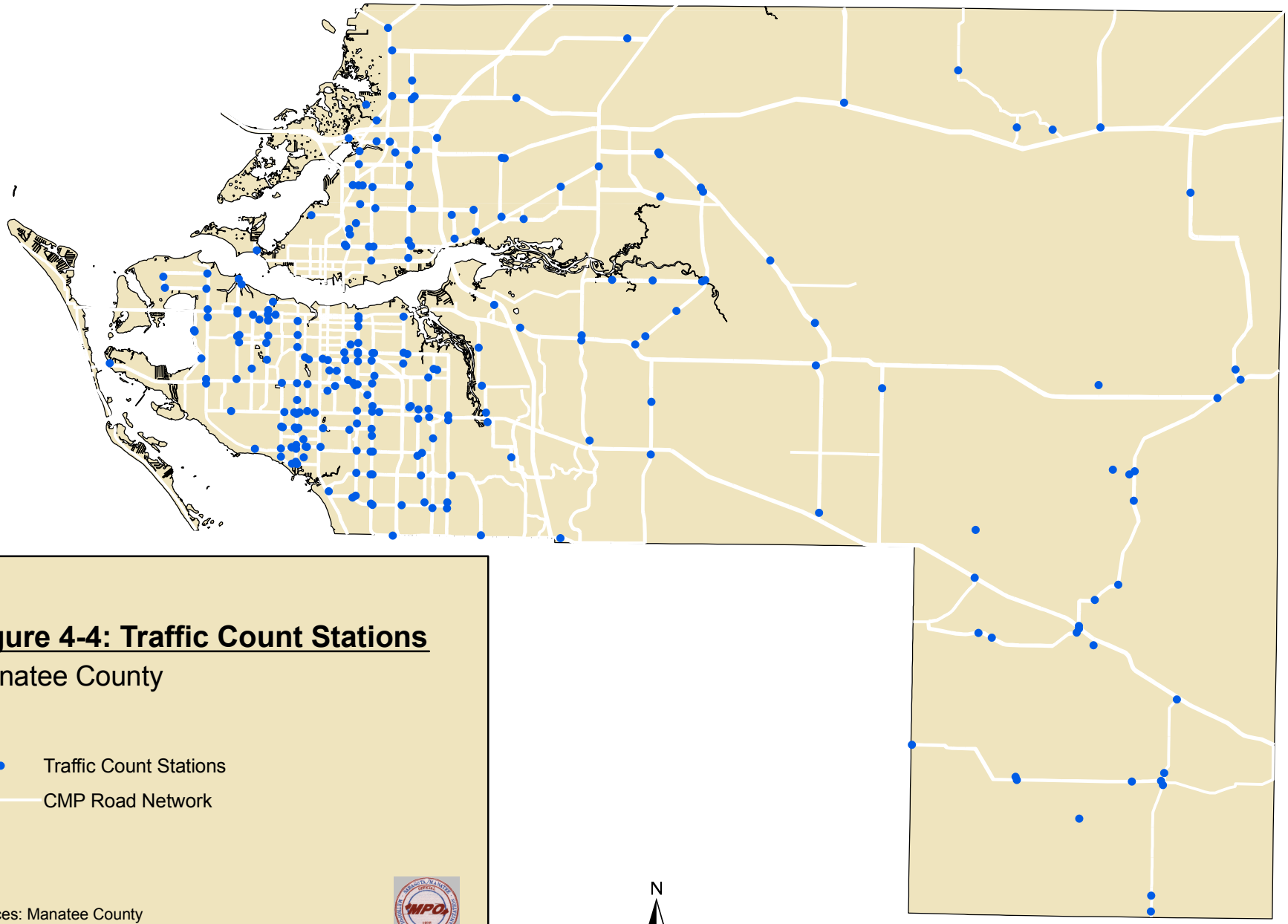


Figure 4-4: Traffic Count Stations

Manatee County

- Traffic Count Stations
- CMP Road Network

Sources: Manatee County
and adopted 2030 LRTP

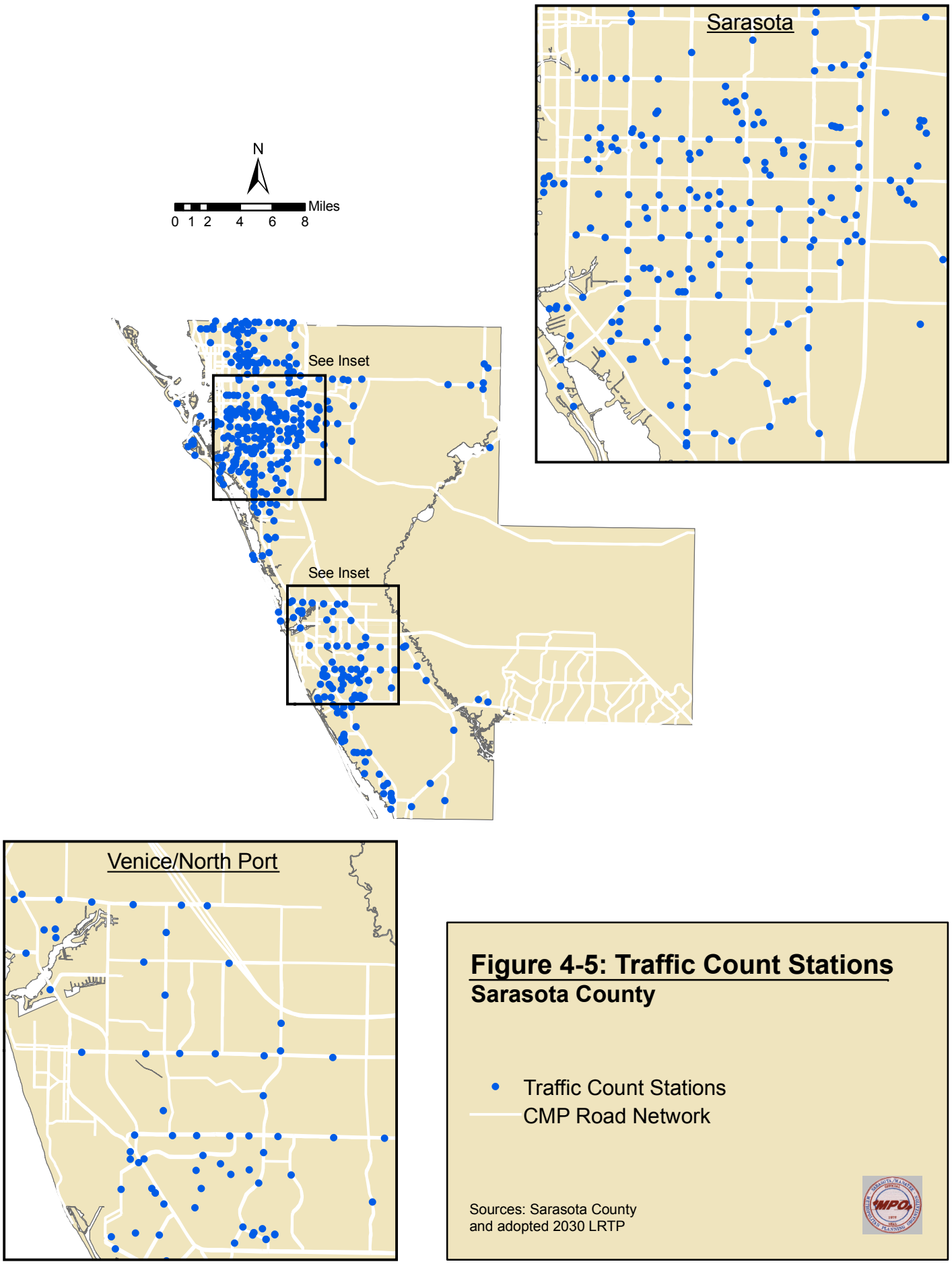


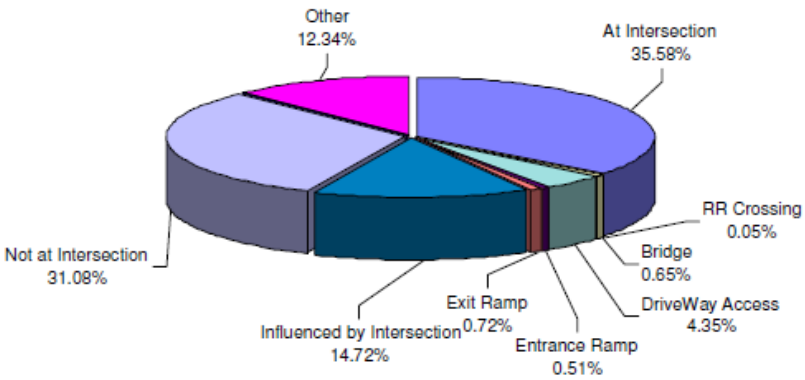
Figure 4-5: Traffic Count Stations
Sarasota County

- Traffic Count Stations
- CMP Road Network

Sources: Sarasota County
and adopted 2030 LRTP

The crash data are categorized and analyzed by many categories, such as crash analysis for motorcycles, bicycles, and pedestrians. The automobile crash data are categorized by signalized intersections, road segments, time of day, and month. Figure 4-6 shows crashes in Sarasota County categorized by the type of crash site.

Figure 4-6: Crashes by Site Type



Source: 2007 Sarasota County Crash Report

Manatee County provides a map of the top 10 crash locations from 2005 to 2007. These data are summarized in detail on a map that includes the number of accidents and fatalities at the locations.

Regional Congestion Management System Performance Report

The West Central Florida MPO Chairs Coordinating Committee's (CCC's) Regional Congestion Management System (RCMS) performance report documents mobility data and trends for transportation facilities and services in the West Central Florida region. The RCMS, defined as "a systematic process that provides information on transportation system performance and alternative strategies to alleviate congestion and enhance the mobility of persons and goods," uses existing data sources to evaluate the multimodal regional transportation network.

Bradenton/Palmetto & Venice Downtown Mobility Studies

Two downtown mobility studies are planned in Sarasota and Manatee counties. The Bradenton/Palmetto Downtown Mobility Study will be conducted in 2010, and the Venice Downtown Mobility Study is planned to begin in 2013. The studies will identify and evaluate transportation projects that improve circulation, access, and mobility in the downtown areas. The studies are intended to identify the feasibility of alternative traffic circulation and mobility strategies.

2007 Urban Mobility Study

The 2007 Urban Mobility Report, developed by the Texas Transportation Institute (TTI) at Texas A&M University, monitors and provides data on long-term congestion trends, the most recent congestion comparisons, and congestion improvement strategies for Sarasota-Bradenton and other urban areas in and outside of Florida. The report measures traffic congestion trends from 1982 to 2005, reflecting the most recent data available. The performance of the Sarasota-Bradenton urban area is shown in Appendix A and includes:

- comparison of several key mobility performance measures
- mobility data and operations study
- chart showing growth in delay per peak traveler
- chart showing growth in delay

Public Transit

Transit Data Collection and Performance Monitoring

The two transit agencies in the Sarasota-Manatee CMP study area, MCAT and SCAT, regularly collect a large volume of transit operating and capital data as part of their constant service monitoring/evaluation processes. These data are maintained in Geographic Information System (GIS) and other databases and used continuously to update systems maps, schedules, and evaluate route performances. Figure 4-7 shows the existing transit route network in the CMP study area.

Transit Quality of Service Evaluation

As requested by FDOT from all MPOs in Florida, the Sarasota-Manatee MPO conducts a Transit Quality of Service Evaluation to measure the quality of service of the fixed-route transit systems in the two-county MPO planning area. Six service measures are identified in the FDOT Agency Reporting Guide for evaluating the quality of service provided by transit agencies in Florida.

Data collected to evaluate the LOS measures include service frequency, span, hours of service, service area, passenger loading, on-time performance, and transit and auto travel times. The transit LOS measures that are evaluated include:

- Service frequency LOS
- Hours of service LOS
- Service area coverage LOS
- Passenger loading LOS
- Reliability LOS
- Transit versus auto travel time LOS

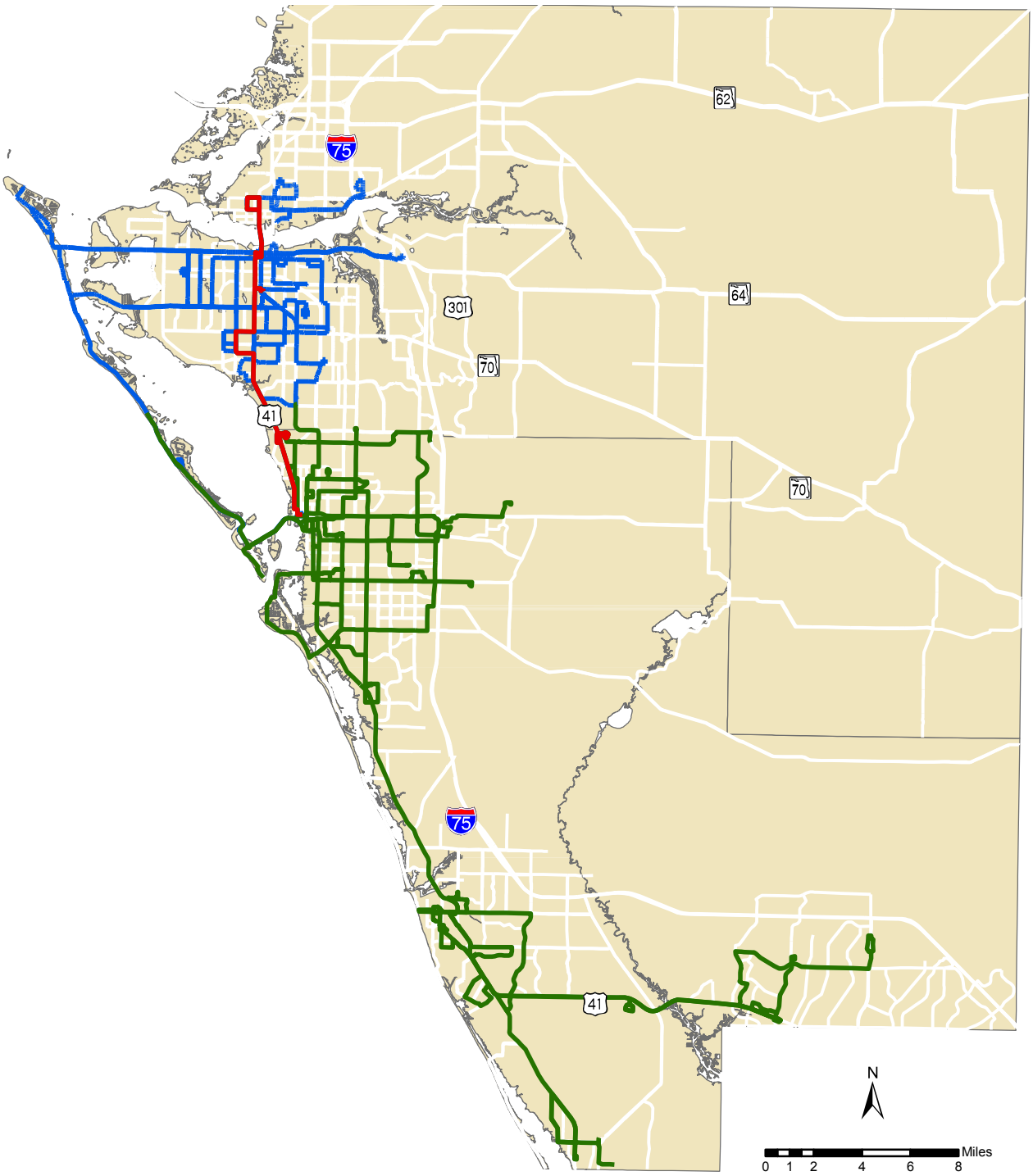


Figure 4-7: Existing Transit Service

Sarasota & Manatee County

- Shared Route 99
- SCAT Transit Service
- MCAT Transit Service
- CMP Road Network

Sources: SCAT and MCAT

Each of the service measures is assigned an LOS from A to F. It is important to note, however, that the LOS is based on the perspective of the transit rider. The 2005 Transit Quality of Service Evaluation performed for the Sarasota-Manatee MPO examines the transit systems in both counties, including SCAT and MCAT, with a strategic focus on intercounty connections along the US 41 travel corridor.

10-Year Transit Development Plans

The State of Florida Public Transit Block Grant Program, enacted by the Florida Legislature to provide a stable source of State funding for public transit, requires public transit service providers to develop and adopt a 10-year Transit Development Plan (TDP) per the requirements set forth in Chapter 14-73, Florida Administrative Code (FAC). Annual progress reports also must be submitted to FDOT by September 1 of each year. A major update is required every five years, and annual progress reports are required annually between major updates. The 10-year TDP is a strategic guide for public transit in the community and represents the transit agency's vision for public transit in its service area during this time period.

TDP processes in Sarasota and Manatee counties include analyses of various transit and transit-related data that were monitored by both SCAT and MCAT over the years to assess the overall transit-related needs in the community. The TDPs include the following major elements:

- public involvement plan and process
- base data compilation and analysis (review of demographic and travel behavior characteristics of the service area)
- performance evaluation of existing services
- situation appraisal (transit agency strengths and weaknesses; external barriers and opportunities; estimation of community demand for transit)
- goals and objectives
- transit demand and mobility needs
- development of proposed transit enhancements (funded and unfunded)
- 10-year implementation plan and financial plan (projected costs and revenues)
- annual farebox recovery ratio report

SCAT Comprehensive Operations Analysis

The 2008 SCAT Comprehensive Operations Analysis (COA) identifies opportunities for improving the productivity and efficiency of SCAT's public transit services. The COA collects various types of current and historical transit data and provides a more detailed look at specific existing operational characteristics of SCAT's transit service.

A COA analysis was completed for fixed-route services operated by SCAT and recommendations from the analysis were presented. The route-by-route analyses for each of SCAT's 24 routes completed for the COA are organized into six major components. Each component is described below with a brief description of the type of data collected/monitored.

- *Boardings by Segment* – Division of routes into segments was performed to better analyze boardings for the entire length of each route. In addition, tables were prepared that present boardings by time of day by segment.
- *Market Profile* – The market profile for each route was performed using population and demographic data.
- *Operating and Productivity Data* – Data tables were developed presenting boardings, revenue hours, revenue miles, and route efficiency information for each route.
- *Financial Data* – Tables were prepared that present route effectiveness parameters (e.g., cost per boarding, subsidy per boarding, and etc.).
- *Maximum Load* – Maximum load points are the location(s) along a route where the vehicle passenger load is the greatest.
- *Schedule Adherence* – Overall schedule adherence for major timepoints and route run-time summaries were developed for each route and presented in a series of tables.

Locally Coordinated Human Services Transportation Plan

The Locally Coordinated Human Services Transportation Plan (LCHSTP) is a requirement under the SAFETEA-LU legislation. Job Access and Reverse Commute (JARC), New Freedom (NF), and 5310 funding programs were developed to ensure public transit services and improvements that benefit elderly, disabled, low-income, and unemployed populations.

Under the interim FTA guidance for these programs, a public involvement process identifying stakeholders must be developed. Stakeholders representing the general public will develop the plan and then select "plan" projects for funding. Public, not-for-profit, and private entities are eligible to submit projects for funding under this planning process. The types of projects may include fixed-route, paratransit, vanpools, and other innovative approaches to addressing deficiencies in the existing transportation system.

During the project, a significant volume of transit-related data were collected and summarized:

- areas with deficient transit services or amenities (unmet needs)
- capabilities of existing transit providers, along with overlaps in services
- a framework for innovative project identification
- examples of innovative projects

- criteria definitions and a project prioritization process
- definition of a process for annual plan updates

SCAT North-South Corridor Bus Rapid Transit (BRT) Alternatives Analysis

SCAT's BRT alternatives analysis examines bus transit service improvements designed to connect major employment and activity centers in a congested north-south corridor. The BRT corridor begins in the north from the Sarasota Bradenton International Airport area, serves downtown Sarasota, and connects to Sarasota Memorial Hospital and other areas south of the hospital.

The BRT investment in this north-south corridor is aimed at managing growth and fostering sustainable economic and community development in and around the corridor. Various data are collected and summarized to evaluate potential improvements such as:

- roadway infrastructure enhancements to create a dedicated transit guideway
- traffic signal priority for buses at selected intersections
- increased bus service frequencies and passenger information systems
- improved passenger stations and shelters

Completed in late 2008, the alternatives analysis compared costs, benefits, and impacts of a range of potential transit improvements in this north-south corridor. Once the preferred set of transit investments is selected, federal funding through FTA's Small Starts program will be sought to fund the BRT project.

Bicycle/Pedestrian/Trail

Bicycle Facilities

The Sarasota-Manatee MPO promotes investing in non-motorized transport to encourage mobility alternatives, increase safety in a cost-effective manner, and provide an emissions-free alternative. Currently, both Sarasota and Manatee counties maintain bicycle facilities databases. The bicycle facilities maps, which are periodically developed based on information from these databases, provide useful data to transportation decision makers and assist in providing mobility options in congested areas. The Sarasota and Manatee County bicycle facilities are presented in Figure 4-8.

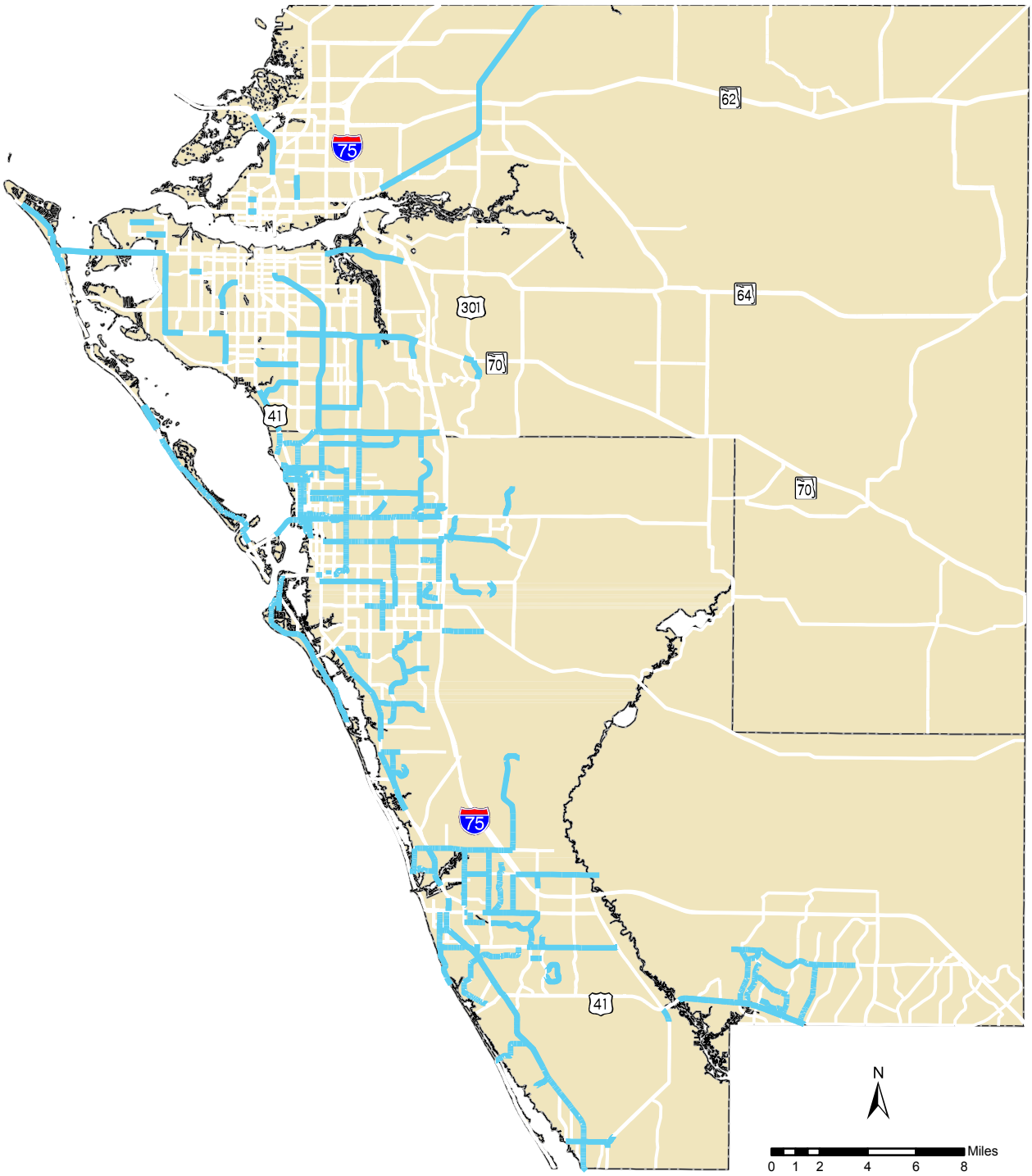


Figure 4-8: CMP Study Area Bicycle Facilities

Sarasota/Manatee MPO

Bicycle Lanes
CMP Road Network

Sources: Sarasota County,
Manatee County and adopted 2030 LRTP

Pedestrian Facilities

Sarasota and Manatee counties also monitor and maintain a database of sidewalks in each county. The map shown in Figure 4-9 is maintained and continuously updated and depicts thoroughfare road sidewalks and local road sidewalks.

Multi-Use Trail Facilities

Sarasota and Manatee counties monitor and maintain networks of multi-use trails throughout each county. The trail databases are maintained and updated to include detailed information on the type of trail, name, and length. The multi-use trail networks in Sarasota and Manatee counties are shown in Figure 4-10.

Transportation Demand Management

FDOT Commuter Services Program

The FDOT District 1 Commuter Services Program provides a range of assistance programs for commuters in Sarasota, Manatee, and 10 other counties in FDOT District 1. The goal of the project is to implement TDM strategies in District 1.

FDOT defines TDM as a set of measures designed to reduce the number of trips made by single occupant vehicles and enhance the regional mobility of all citizens. Examples include offering alternatives to single occupant vehicle use such as carpooling, vanpooling, transit, bike paths, and pedestrian walkways. It also includes strategies that reduce trip demand during peak commute times such as telecommuting and flextime. It can include strategies that increase the efficiency of the current transportation infrastructure such as transit signal prioritization and bus queue jumping.

Program development began with a strategic planning process that included two parts: data gathering and stakeholder interviews. The project team gathered demographic data for the region to ascertain the population and traffic conditions in the district. Then, various stakeholders from each of the 12 counties were interviewed, including public officials, transportation officials, and economic development groups. The interviews provided information on the state of transportation in each county and possible TDM strategies each stakeholder thought might be viable in the area.

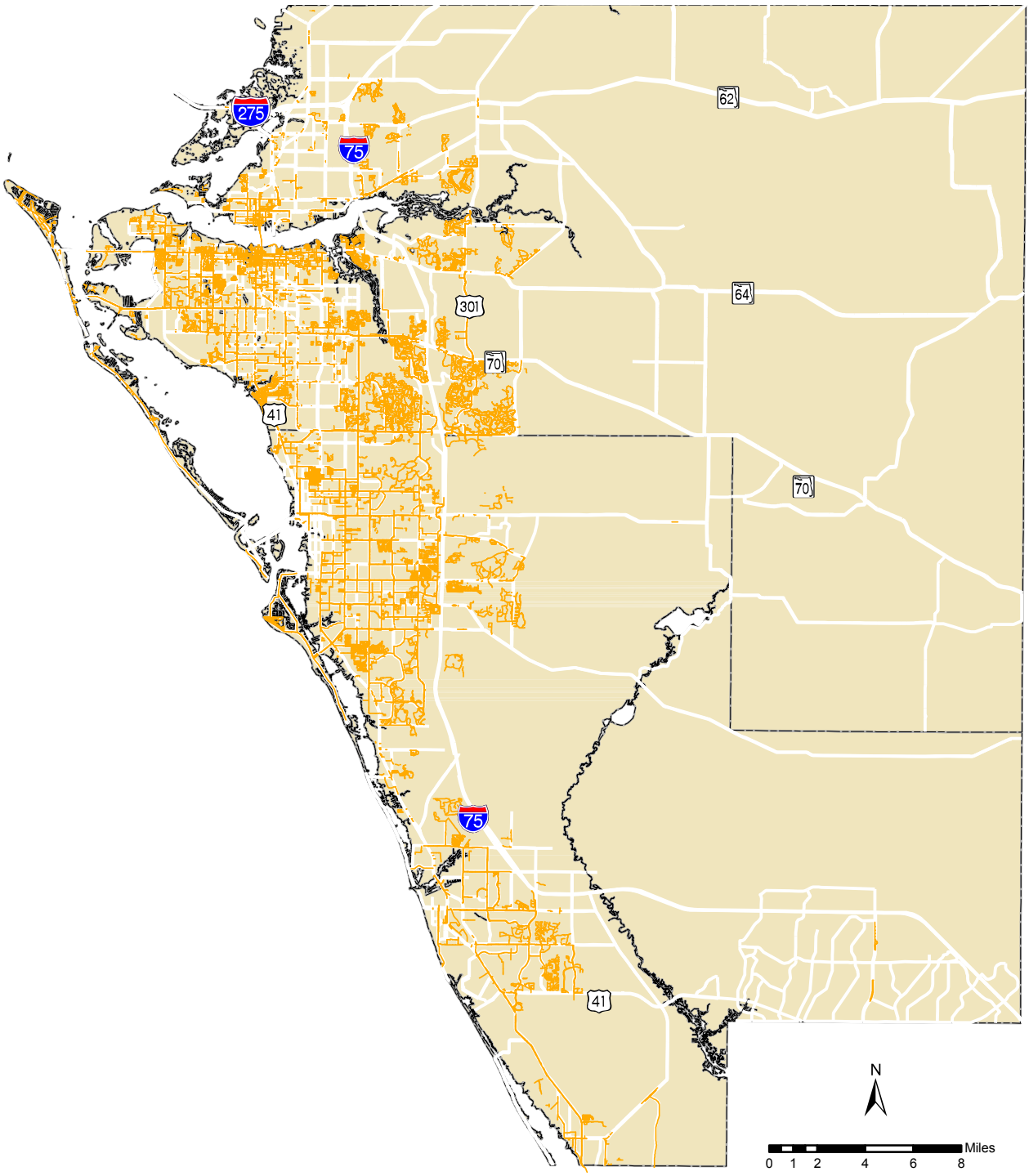


Figure 4-9: CMP Study Area Sidewalk Facilities

Sarasota/Manatee MPO

Sidewalks
CMP Road Network

Sources: Sarasota County,
Manatee County and adopted 2030 LRTP

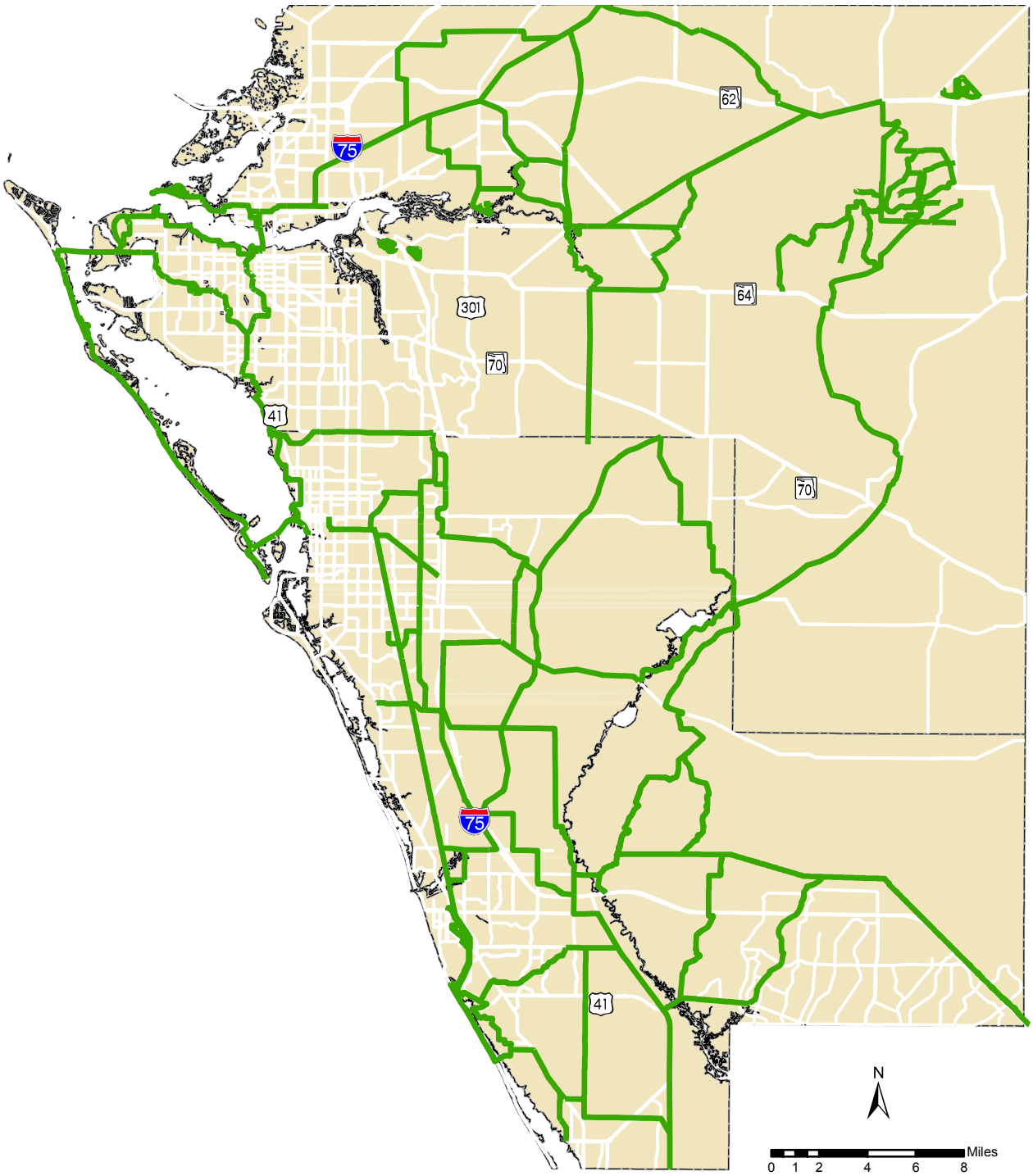


Figure 4-10: CMP Study Area Trail Facilities

Sarasota/Manatee MPO

Existing and Proposed Trails
CMP Road Network

Sources: Sarasota County,
Manatee County and adopted 2030 LRTP

The strategic planning process yielded a two-pronged approach to implementing a commuter services program in District 1. The first prong is the planning component, in which the project team works with County and municipal planners and leaders to strengthen TDM support in local policy and planning documents. Each county and municipality is examined individually to determine what TDM solutions make sense, given the transportation issues facing the area and the political climate.

The second prong is the employer-based component, in which the project team is reaching out to employers throughout the district. Starting with the larger employers first, the project team is asking employers to join as a partner in the commuter services program. To become a partner, employers pledge to work with the Commuter Services Program to assist employees in finding ways to reduce single occupancy vehicle trips during the peak commute periods.

For Sarasota, Manatee, and the other 10 counties, the Commuter Services Program offers commute alternatives/programs including:

- carpooling
- vanpooling
- transit
- bicycling or walking
- teleworking
- alternative work hours
- Emergency Ride Home programs

Section 5: Development of Performance Measures

Performance measures help identify and track the region's progress in monitoring congestion. In general, they are tools used to measure and monitor the effectiveness of the transportation system. Measures usually are dependent upon the transportation network and the availability of data. They can be used to measure the extent and duration of congestion and for the evaluation of the effectiveness of the implemented strategies.

Characteristics of "good" performance measures as identified by FHWA include:

- **Clarity and Simplicity** - Simple to present and interpret, unambiguous, quantifiable units, professional credibility.
- **Descriptive and Predictive Ability** - Describes existing conditions, can be used to identify problems and to predict changes.
- **Analysis Capability -** Can be calculated easily and with existing field data, techniques available for estimating the measure, achieves consistent results.
- **Accuracy and Precision** - Sensitive to significant changes in assumptions, precision is consistent with planning applications and with an operation analysis.
- **Flexibility** - Applies to multiple modes, meaningful at varying scales and settings.

The Sarasota-Manatee CMP uses two types of performance measures:

- **Corridor-Level Measures -** performance measures at corridor level such as roadway level of service, average travel time, delay, etc.

- **Systemwide Measures -** performance measures such as transit trips per hour, total miles of trails, incident delay, etc.

As part of the 1997 CMS development process, six performance measures were identified. These primarily included measures for highway and transit mode performances. According to federal guidelines, a CMP should cover a multimodal transportation network evaluating roadway network, transit, bicycle/pedestrian/trail, freight movement networks, and alternative options such as TDM within the designated area of application. In identifying additional performance measures for the Sarasota-Manatee CMP, an emphasis was placed on using effective tools to cover a multimodal transportation network and various performance related data already collected throughout the CMP study area.

The performance measures are organized into five major categories. These five categories are roadway, public transit, bicycle/pedestrian/multi-use trail facility, TDM, and goods movement. These measures are used for the performance analysis conducted on the road network.

Roadway Performance Measures

- Level of Service (LOS)
- Average Travel Time
- Total Delay
- Incident Delay
- Crash Rates

Public Transit Performance Measures

- Passenger Trips per Revenue Hour
- Average Service Frequency
- On-Time Performance
- Annual Ridership

Bicycle/Pedestrian/Trail Facility Performance Measures

- Percent of CMP Roadway Centerline Miles with Bicycle Facilities
- Percent of CMP Roadway Centerline Miles with Sidewalk Facilities
- Miles of Multi-Use Trails

TDM Performance Measures

- Number of Registered Carpools or Vanpools

Goods Movement Performance Measures

- Truck Vehicle Miles Traveled (VMT)

These performance measures were identified based on numerous monitoring activities currently conducted and/or planned by various local and state agencies for Sarasota and Manatee counties. Detailed descriptions of each of these measures, together with an explanation of how the required data are or will be collected, are presented below.

Roadway Performance Measures

Level of Service

Roadway LOS is calculated based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS is a quantitative measure that explains the operational conditions of a roadway segment or a facility during peak hours using six levels from LOS A to LOS F, with LOS A representing the best conditions and LOS F representing the worst.

Data Availability - Several agencies within the Sarasota-Manatee region collect LOS data, including the cities of Palmetto, Bradenton, and Sarasota, the counties of Manatee and Sarasota, and FDOT. These agencies usually collect LOS data on an annual basis within their respective jurisdictions. The respective agencies publish the data into GIS shape files, spreadsheets, and reports once the data are finalized.

Average Travel Time

Generally obtained from travel time/delay studies, average travel time is the total time a vehicle takes to pass through a given corridor segment under prevailing traffic conditions. The total travel time includes all stopped delays as well as the time the vehicle was in motion. Average travel time is a key measure that can be used to compare the quality of service on various CMP corridors from a point of origin to a point of destination.

Data Availability - The data are currently collected annually by Sarasota County Traffic Operations Division through travel time/delay studies for selected corridors in Sarasota County. Manatee County currently does not conduct travel time/delay studies.

Total Delay

Total delay, also obtained from travel time/delay studies, is considered as a key tool to measure impact of the recurring congestion. Total delay is the time that a vehicle is stopped in traffic or at an intersection and the time spent travelling at or below the speed of five miles per hour.

Data Availability - The data are currently collected annually through travel time/delay studies for selected corridors in Sarasota County. Manatee County currently does not conduct travel time/delay studies.

Incident Delay

Incident delay measures the median minutes from the time of a traffic incident to the time of clearance. This measure is selected as a tool to measure the non-recurring delays in the Sarasota-Manatee region.

Data Availability - The data will be collected by the Sarasota-Manatee Traffic Incident Management (TIM) Team with the assistance from the FDOT District 1 office.

Intersection and Segment Crash Rates

The crash rates at intersections and roadway segments are used as an indicator of congestion. Considered a useful measure of non-recurring congestion, crash rates use data that are widely available through the many local and state agencies that track these data on an ongoing basis throughout the CMP application area.

Data Availability - Crash data in Sarasota and Manatee counties are collected through various law enforcement agencies including the Florida Highway Patrol, Sarasota County Sheriff's Department, Sarasota Police Department, Longboat Key Police Department, North Port Police Department, and Venice Police Department. The Sarasota County Traffic Engineering and Operations Division provides a yearly report summarizing roadway traffic crash data. Manatee County summarizes crash data on a detailed map including the number of accidents and fatalities at the locations.

Public Transit Performance Measures

Passenger Trips per Revenue Hour

With this measure, the number of passengers who board transit vehicles during one revenue service hour on the CMP roadway network is calculated.

Data Availability - The data are collected continuously by both Manatee County Area Transit (MCAT) and Sarasota County Area Transit (SCAT) and reported in various day-to-day operations reports and annual reports such as the National Transit Database (NTD).

Average Service Frequency

The average service frequency for all the fixed-route transit services bus routes operated on the CMP roadway network is measured. This measure identifies average frequencies by transit system, along with the region-wide average.

Data Availability - The data are collected continuously by both MCAT and SCAT as part of their day-to-day activities and as annual reports such as NTD reports.

On-Time Performance

FDOT's "Transit Capacity and Quality of Service Manual" (TCQSM) defines on-time performance for a transit bus as being on-time or up to five minutes after the scheduled arrival time. This criterion is used to measure the systemwide on-time performance for SCAT and MCAT in the CMP application area.

Data Availability - The data are collected by the Sarasota-Manatee MPO as part of the Transit Capacity and Quality Service Evaluation, which is prepared and provided to FDOT every four to five years. On–time performance is one of the six measures evaluated in Transit Quality Level of Service (TQLOS) evaluations.

Annual Ridership

Annual ridership measures the number of passenger boardings for all bus transit routes that operates on the CMP roadway network in Sarasota and Manatee counties. Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination. This measure identifies ridership by transit system, along with region-wide totals.

Data Availability - Both MCAT and SCAT regularly collect and document ridership data.

Bicycle/Pedestrian/Trail Facility Performance Measures

Percent of CMP Roadway Centerline Miles with Bicycle Facilities

For bicycle facilities, this measure identifies the proportion of CMP centerline miles where some type of bicycle facility exists, as defined by the respective planning agencies. Some communities consider paved shoulders and wide curb lanes to be bicycle facilities, with the exception of interstates and toll facilities.

Data Availability - The data are currently collected in both Sarasota and Manatee counties and summarized in various bicycle plans.

Percent of CMP Roadway Centerline Miles with Sidewalk Facilities

The proportion of CMP roadway network centerline miles on which a sidewalk is available is measured.

Data Availability - The data are currently collected together with bicycle facility data in both Sarasota and Manatee counties and summarized in various plans.

Miles of Multi-Use Trails

Total number of miles of multi-use trail facilities in each county in the CMP application area is summarized as another performance measure. Multi-use trail facilities usually are off-street facilities designated for the exclusive use of non-motorized travel. They may be used by pedestrians, cyclists, wheelchair users, joggers, and other non-motorized users.

Data Availability - The data usually are collected together with bicycle and sidewalk facility data in both Sarasota and Manatee counties and summarized in various plans.

TDM Performance Measures

Number of Registered Carpools or Vanpools

A carpool is defined as a group of two or more people who commute to work or other destinations together in a private vehicle, while a vanpool is typically a prearranged group of 5 to 15 people who share their commute to work. This measure summarizes the annual number of registered carpools and vanpools in CMP application area.

Data Availability – The FDOT District 1 Commuter Services program maintains a ridematch database for registered users to see what carpools and vanpools are available to them.

Goods Movement Performance Measures

Truck Vehicle Miles Traveled

This performance measure reflects the total number of miles traveled by trucks within a specific geographic location for a period of one year. VMT for a roadway segment is calculated by multiplying the AADT of that segment by the length of the segment in miles.

Data Availability - The data are collected and provided by FDOT for State roads only. Data for non-state roads are not currently collected.

Section 6: Monitoring & Evaluation of System Performance

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.

In addition to facilitating better investments, FHWA identifies several other key positive outcomes due to improved monitoring of congestion:

- **Improved Performance** - The information gathered through congestion monitoring of various operating systems can be used by the local and state operating agencies to alter hours or methods of operation to improve the system. Performance measures can target "before and after" conditions of implemented programs or the amount of productivity lost from congested conditions.

- **Improved Communication** - Performance measures that include travel time, delay, or other easily-understood concepts can provide better ways to communicate system conditions.

- **Program Justification** - Performance measures and "before and after" data collection programs can be effective at identifying the effect of a range of freeway and arterial management actions. Many of these actions cannot be easily assessed using typical travel demand models such as the Florida Standard Urban Transportation Model Structure (FSUTMS).

- **Funding Enhancements** – In most recent campaigns for funding increases or increased funding flexibility, performance measures have played two key roles. They can be used to demonstrate improved conditions or use of existing funds to show that current agency actions are appropriate and beneficial. The measures and data also can be used in public accountability pledges to demonstrate the effect of the proposed programs.

Sarasota and Manatee counties currently conduct a number of monitoring activities to collect a significant amount of valuable congestion management data throughout the two-county study area. These efforts are categorized into five major types:

- Intelligent Transportation Systems
- Transportation Systems Management and Operations
- Public Transit
- Bicycle/Pedestrian/Trail
- Transportation Demand Management

A detailed inventory of the congestion management data collection and monitoring efforts currently undertaken by Sarasota and Manatee counties was presented in Section 4 of this report.

System Performance Monitoring Plan

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

As a result, the goal of the Sarasota-Manatee CMP system monitoring plan, as presented in Table 6-1, is to develop an ongoing system of monitoring and reporting that relies primarily on data already collected or planned to be collected in the two-county study region.

The components of the monitoring plan include roadways, public transit, bicycle/pedestrian/trail, TDM, and goods movement where:

- Roadways are monitored through annual LOS analysis using traffic counts and other related data constantly collected throughout the region.

Table 6-1
System Performance Monitoring Plan

Performance Measure	Monitoring Activity	Responsible Agency	Frequency of Evaluation	Current Status	Geographic Area Covered
Level of Service	Level of Service Analysis	Sarasota County/Manatee County/Cities/FDOT	Annually	Ongoing	Sarasota & Manatee
Average Travel Time	Travel time/Delay Studies	Sarasota County Public Works	Annually	Ongoing	Sarasota
Total Delay	Travel time/Delay Studies	Sarasota County Public Works	Annually	Ongoing	Sarasota
Incident Delay	TIM Team Reports	FDOT	Annually	Currently Not Collected*	Sarasota & Manatee
Crash Rate per Mile	Crash data Analysis	Sarasota & Manatee County Public Works	Annually	Ongoing	Sarasota & Manatee
Passenger Trips per Revenue Hour, Average Service Frequency, Annual Ridership	NTD Report/Transit Development Plan	SCAT/ MCAT	Annually	Ongoing	Sarasota & Manatee
Transit On-time Performance	Transit Quality of Service Evaluation	SCAT/ MCAT	Annually	Ongoing	Sarasota & Manatee
Miles of Bicycle, Pedestrian, and Trail Facilities	Bicycle/Pedestrian/Trail Plans and Databases	MPO/Sarasota County/Manatee County	Annually	Ongoing	Sarasota & Manatee
Number of Registered Carpools or Vanpools	FDOT Commuter Services Program Rideshare Databases	FDOT	Annually	Ongoing	Sarasota & Manatee
Truck VMT	Roadway Databases and LRTP	FDOT	Annually	Ongoing	Sarasota & Manatee

*Based on discussions with TIM Team staff, these data will be collected in the near future.

- Travel time/delay monitoring is conducted to help measure recurring congestion on roadways.
- Incidents are monitored to help measure non-recurring congestion.
- Transit performance is monitored continuously through various operating and capital plans.
- Bicycle/pedestrian/trail data are also monitored and updated in various city and county databases.
- TDM-related data monitoring is done primarily by the newly-formed Commuter Services program spearheaded by FDOT District 1, which maintains an array of databases and coordinates programs to find alternatives for single occupant vehicle (SOV) trips in Sarasota and Manatee counties and the 10 other counties in District 1.

System Trends & Conditions

This section evaluates the multi-modal transportation network in the Sarasota-Manatee CMP study area. A detailed assessment of factors related to multi-modal transportation network performance is an integral component of a complete congestion management process. In combination with the other components of the CMP, it helps to provide decision makers with a better understanding of the performance of various modes and to prioritize congestion mitigation and mobility strategies to maintain an efficient and safe transportation system.

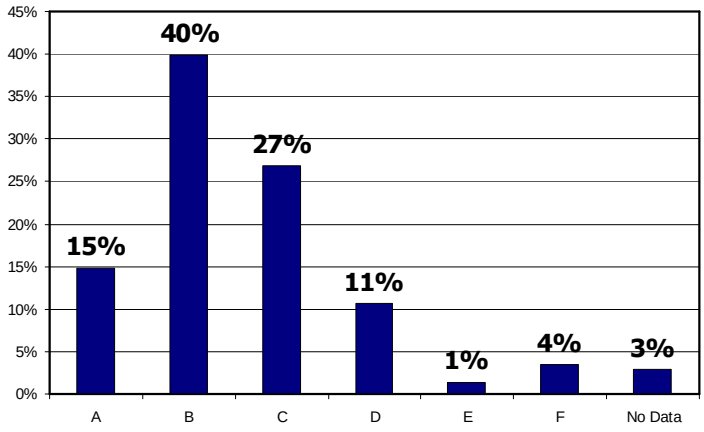
Using performance measures established for the Sarasota-Manatee CMP process, the multi-modal transportation network performance is assessed for roadway facilities, public transit, bicycle and pedestrian facilities, multi-use trail facilities, TDM, and truck routes. Some performance measures, however, are slightly modified due to the unavailability of required data. A summary of trends and conditions for each component of the multi-modal system is presented below, followed by an explanation of methodologies used in assessing the performance. In addition, current gaps in data are identified together with a number of recommendations for future data collection efforts.

Roadway System Trends

Roadway Level of Service

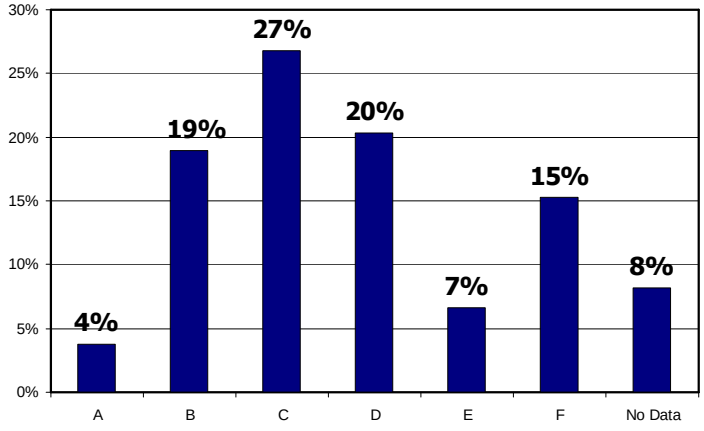
Figures 6-1 through 6-4 present LOS conditions for Sarasota and Manatee roadways. In Sarasota County, over 90 percent of the roadways operated at or better then LOS D, while approximately 5 percent operated at LOS E or LOS F. In Sarasota, however, 22 percent roads operated at LOS E or LOS F. This was expected due to the relatively high congestion on urban area roadways in Sarasota. In Manatee County, over 40 percent of Bradenton roadways operated at LOS E or LOS F, while over 97 percent of the Manatee County roadways operated at LOS D or better conditions.

Figure 6-1
Percent of Roadway Miles by LOS Type- Sarasota County (2007)



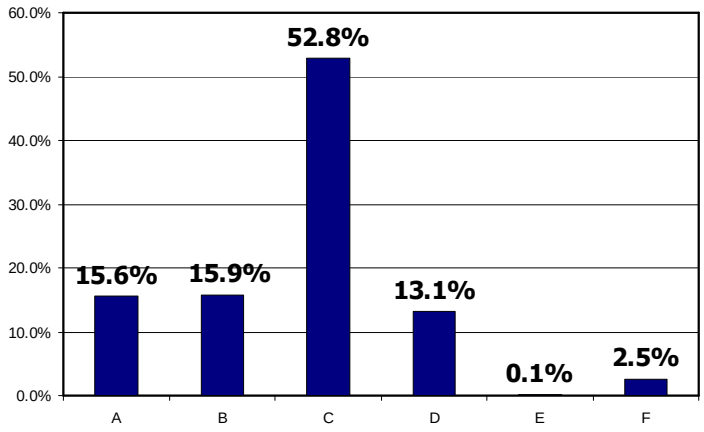
Source: Sarasota County

Figure 6-2
Percent of Roadway Miles by LOS Type - City of Sarasota (2007)



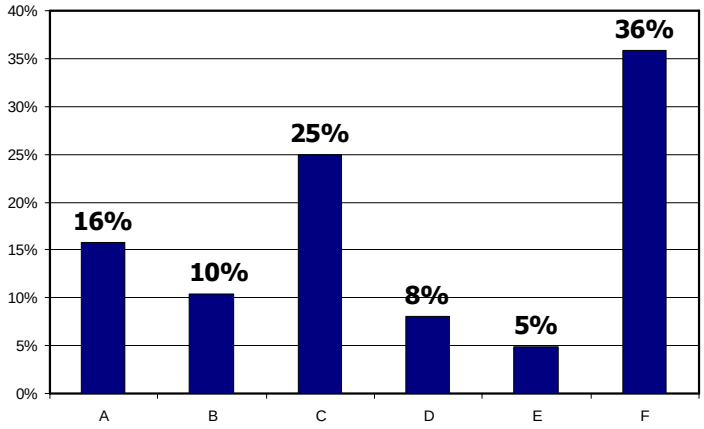
Source: City of Sarasota

Figure 6-3
Percent of Roadway Miles by LOS Type - Manatee County (2007)



Source: Manatee County

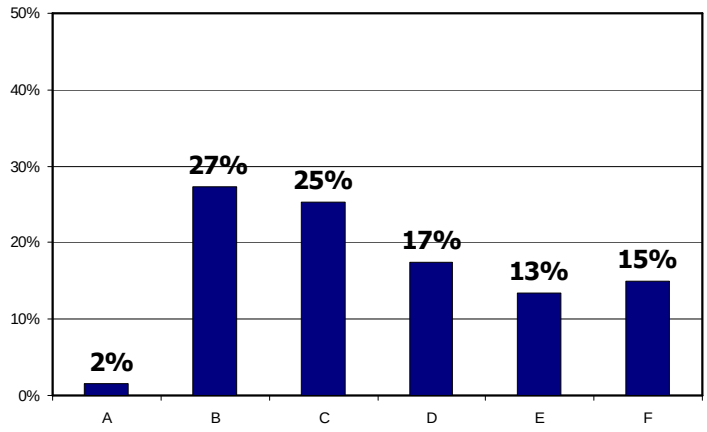
Figure 6-4
Percent of Roadway Miles by LOS Type - City of Bradenton (2007)



Source: City of Bradenton

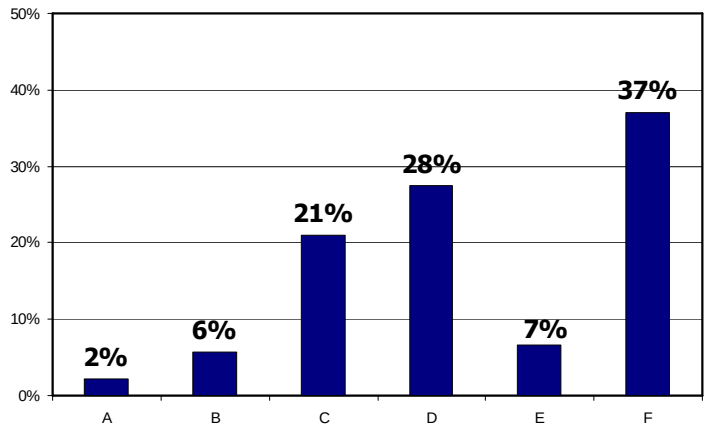
Figures 6-5 and 6-6 present the percent of vehicle miles travelled (VMT) by each LOS condition on state roads in Sarasota and Manatee counties in 2007. A total of 28 percent of the vehicle miles traveled on Manatee County state roadways were at LOS E or LOS F. However, in Sarasota County, state roadways were more congested with 44 percent of the VMT at LOS E or LOS F.

Figure 6-5
Percent VMT by Roadway LOS Type - State Roads in Manatee County (2007)



Source: FDOT District 1

Figure 6-6
Percent VMT by Roadway LOS Type - State Roads in Sarasota County (2007)



Source: FDOT District 1

Data Analysis Methodology

Road segments from the four major jurisdictions in the study area, Sarasota County, City of Sarasota, Manatee County, and the City of Bradenton were categorized and summarized by each LOS grade. In addition, FDOT District 1 VMT data was used to summarize VMT by LOS type for state roads in each county in the study area.

Data Collection Recommendations

The incompatible configurations of LOS databases from various agencies have presented the greatest challenge in analyzing LOS data for the CMP. Road segmentation unique to each jurisdiction and overlapping segments with LOS grades that vary by the performing agency have resulted in hurdles to effectively analyzing the roadway network. It is recommended that MPO explore the possibility of coordinating the development of a single major road network database for the two-county area for the use of all agencies performing LOS analyses.

Average Travel Time and Delay

Corridor-Level Trends

The annual travel time and delay studies for selected major arterials within Sarasota County are performed by the staff of Traffic Engineering and Operations of Sarasota County Public Works. The purpose of the study is to evaluate the quality of traffic movement along selected routes and determine the locations, types, and the extent of traffic delays experienced by commuters that use these routes. The study can also be used as a baseline to compare operational conditions before and after roadway or intersection improvements are constructed.

There has been a general reduction in the average travel times for the corridors compared to the travel times in 2006. Except the average travel time for University Parkway, which increased by approximately 6.9 percent over the previous year, all other corridors have shown travel time decreases ranging from 5 to as much as 42 percent. Given that there were construction activities at three major intersections on University Parkway, namely I-75, Tuttle Avenue, and US 301, an increase in the travel time was expected. The reductions in the average travel time for eighth of the nine facilities studied may indicate that the congestion mitigation strategies used on these facilities or on facilities have been successful. In all cases where an increase in the average travel time was realized, there was a corresponding decrease in the average travel speed through the corridors. Except for the University Parkway, average travel speeds on all other corridors have increased. The

results of the study, conducted on nine major corridors in Sarasota County in 2007, are presented in Tables 6-2 and 6-3.

Table 6-2
Travel Time Trends on Selected Corridors - Sarasota County

Corridor	From	To	Length (mi)	Average Travel Time (min)		% Change in Average Travel Time
				2006	2007	
University Pkwy	US 301	I-75 E	5.31	10.6	11.3	6.9%
Fruitville Rd	Tuttle Ave	Tatum Rd	6.14	12.7	11.7	-8.1%
Bee Ridge Rd	Shade Ave	Sarasota Golf Club	5.47	11.4	10.4	-6.1%
Clark Rd	US 41	I-75 E	5.00	10.2	9.7	-4.6%
US 301	12th St	University Pkwy	2.84	8.7	6.9	-21.0%
US 41 (Beneva)	Beneva Rd	Blackburn St	2.98	N/A	6.3	N/A
US 41 (Sarasota)	Upper Beechwood	Glengary St	2.16	4.1	3.7	-10.4%
US 41 By-Pass	Venice Ave	Colonia Ln	1.63	6.4	3.7	-41.8%
US 41 (Venice)	Woodmere Park Blvd	Center Rd	3.62	8.5	7.3	-14.6%

Source: Sarasota County Traffic Engineering and Operations Division

Table 6-3
Travel Speed/Delay Trends on Selected Corridors - Sarasota County

Corridor	From	To	Length (mi)	Average Travel Speed (mph)		% Change in Average Travel Speed
				2006	2007	
University Pkwy	US 301	I-75 E	5.31	30.43	28.30	-7.0%
Fruitville Rd	Tuttle Ave	Tatum Rd	6.14	29.10	31.80	9.3%
Bee Ridge Rd	Shade Ave	Sarasota Golf Club	5.47	29.15	29.60	0.2%
Clark Rd	US 41	I-75 E	5.00	29.45	30.83	4.7%
US 301	12th St	University Pkwy	2.84	20.35	25.03	23.0%
US 41 (Beneva)	Beneva Rd	Blackburn St	2.98	N/A	38.48	N/A
US 41	Upper Beechwood	Glengary St	2.16	31.85	35.95	12.9%
US 41 By-Pass	Venice Ave	Colonia Ln	1.63	20.70	27.68	33.7%
US 41 (Venice)	Woodmere Park Blvd	Center Rd	3.62	25.80	30.10	16.7%

Source: Sarasota County Traffic Engineering and Operations Division

Data Analysis Methodology

Sarasota County Traffic Operations staff used an automated process to collect real-time travel time data using a GPS Receiver, traffic engineering software, and a laptop mounted in the test vehicle.

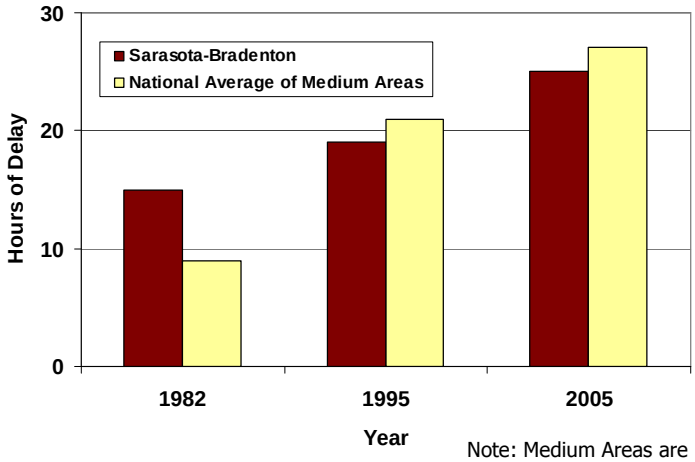
Data Collection Recommendations

Currently, annual travel time/delay studies are performed only in Sarasota County. Travel time and delay data are considered as key indicators of congestion and therefore provide useful information to decision makers working in mitigating congestion. It is recommended that Manatee County also consider performing periodic travel time and delay studies on its most congested corridors. In addition, efforts should be made to include congested corridors that are identified in this CMP but not included in the travel time studies in the CMP study area.

Area-Wide Trends

In addition, delay due to congestion on Sarasota-Manatee urban area roadways also was analyzed using the 2007 Urban Mobility Study, prepared by TTI. Figure 6-7 shows growth in delay per peak traveler showing the yearly sum of all the per-trip delays from 1982 to 2005. In addition, Figure 6-8 shows the total travel delay representing the overall size of the congestion problem in Sarasota-Manatee urban area. The total delay is measured by the total travel time above that is needed to complete a trip at free-flow speeds. The data suggest that the travel delays in the study area have increased but at a rate much lower than the national average of medium size areas.

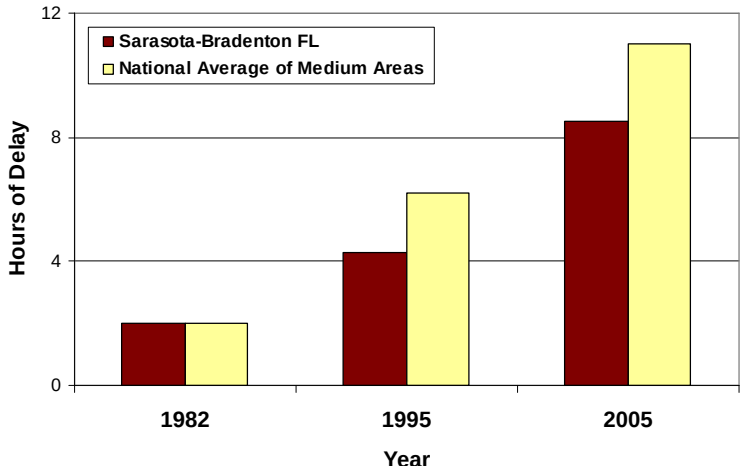
Figure 6-7
Growth in Delay per Peak Traveler - Sarasota-Bradenton Urban Area



Source: 2007 Urban Mobility Study, TTI

Note: Medium Areas are urban areas with over 500,000 and less than 1 million population.

Figure 6-8
Total Hours of Delay - Sarasota-Bradenton Urban Area



Source: 2007 Urban Mobility Study, TTI

Note: Medium Areas are urban areas with over 500,000 and less than 1 million population.

Crash Frequency

Crash frequency trends are reviewed based on the high crash intersections in Sarasota and Manatee counties for 2005, 2006, and 2007. The 20 intersections with the highest number of crashes are presented in Tables 6-4 and 6-5. In addition, Figures 6-9 and 6-10 show the top 5 crash locations in Manatee and Sarasota counties from 2004 through 2007.

Data Analysis Methodology

Crash data are analyzed and summarized annually by Sarasota and Manatee counties. The Sarasota County Traffic Engineering and Operations Division provides a yearly report summarizing roadway traffic crash data. Manatee County summarizes crash data on a detailed map including the number of crashes and fatalities at the locations.

Data Collection Recommendations

Due to the unavailability of crash rates for Manatee County roadways, crash frequency data for Sarasota and Manatee counties were used to analyze high crash locations. However, crash rates are the preferred performance measure for the Sarasota-Manatee CMP as it provides a more accurate framework for studying crash trends than the absolute number of crashes at an intersection or a mid-block, as crash rate compares the number of crashes relative to a segment or intersection traffic volume. It is recommended that future effort pursue the use of crash rates instead of crash frequency to identify high crash intersections and road segments once such data are available for the whole CMP study area.

Table 6-4
Crashes by Intersection - Manatee County (2005-2007)

2007 Rank	Location	2005 Crashes	2006 Crashes	2007 Crashes
1	Cortez Rd & 14th St W	102	130	108
2	53rd Ave W & 14 St W	95	110	88
3	53rd Ave E & 15th St E	87	99	73
4	53rd Ave E and US 301	54	55	54
5	57th Ave W & 14th St W	55	56	54
6	26th St W & Cortez Rd W	66	63	53
7	26th St W & 53rd Ave W	48	43	38
8	60th Ave W & 14th St W	45	46	38
9	63rd Ave E & US 301	48	49	37
10	Bayshore Gardens Pkwy & 14th St W	64	53	37
11	57th St W & Cortez Rd	N/A	N/A	33
12	37th St W & Cortez Rd	38	N/A	30
13	Lockwood Ridge Rd & University Pkwy	53	62	30
14	63rd Ave E & 15th St E	N/A	N/A	29
15	Lakewood Ranch Blvd & SR 64 E	N/A	N/A	29
16	34th St W & Cortez Rd	N/A	46	29
17	28th Ave E & US 301	N/A	N/A	28
18	9th St W & Cortez Rd	N/A	N/A	28
19	34th St W & 53rd Ave W	46	38	28
20	Morgan Johnson Rd & SR 64 E	N/A	N/A	27

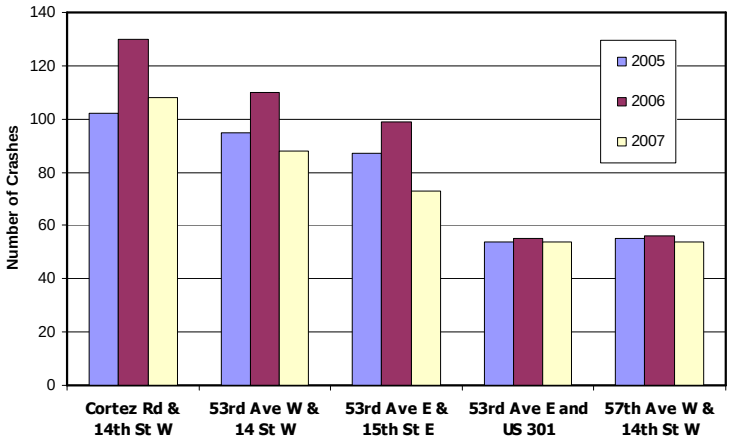
Source: Manatee County Transportation Department – Traffic Division

Table 6-5
Crashes by Intersection - Sarasota County (2004-2006)

2006 Rank	Location	2004	2005	2006
1	Fruitville Rd & Beneva Rd	N/A	N/A	75
2	Bee Ridge Rd & Beneva Rd	49	77	69
3	US 41 & Bee Ride Rd	N/A	N/A	59
4	US 41 & Sumter Blvd	N/A	N/A	58
5	US 41 & Stickney Point Rd	55	55	58
6	Bee Ridge Rd & Tuttle Ave	40	39	48
7	US 301 & University Pkwy	46	42	46
8	Beneva Rd & Bahia Vista St	29	25	45
9	Fruitville Rd & Honore Ave	42	39	43
10	Bee Ridge Rd & McIntosh Rd	44	41	42
11	US 41 & University Pkwy	39	40	40
12	Clark Rd & Beneva Rd	54	36	40
13	US 41 & Gulfstream Ave	N/A	N/A	39
14	Fruitville Rd & Cattlemen Rd	37	52	39
15	US 41 & River Rd	31	39	38
16	US 301 & 17th St	N/A	N/A	38
17	US 41 & Laurel Rd	30	41	37
18	Lockwood Ridge Rd & 17th St	37	43	36
19	US 41 & Waldemere St	N/A	N/A	36
20	Beneva Rd & Webber St	21	18	34

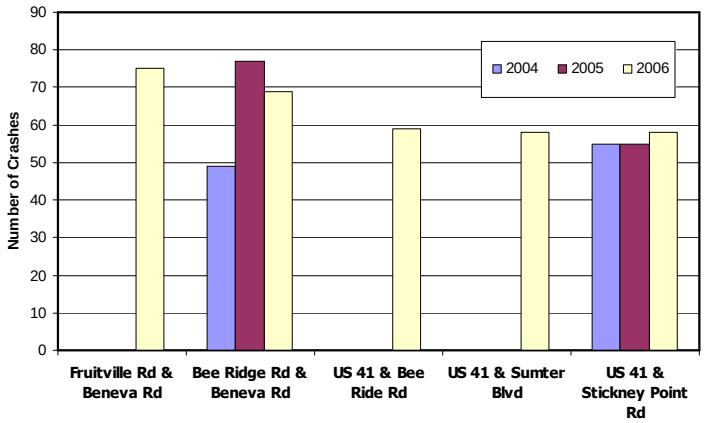
Source: Sarasota County Traffic Engineering & Operations Division

Figure 6-9
Five Highest Crash Locations - Manatee County (2007)



Source: Manatee County Transportation Department – Traffic Division

Figure 6-10
Five Highest Crash Locations - Sarasota County (2006)



Source: Sarasota County Traffic Engineering & Operations Division, Note: Data not available for all years.

Public Transit Trends

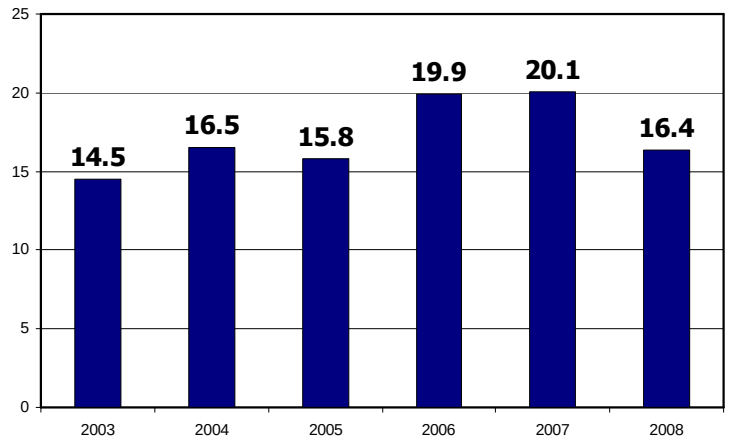
Passenger Trips per Revenue Hour

Figures 6-11 and 6-12 show the trend in the number of passengers who boarded MCAT and SCAT buses per hour of service from 2003 through 2008. As shown in Figure 6-11, MCAT has shown a 38 percent increase from 2003 to 2007 and an 18 percent decrease from 2007 to 2008. According to Figure 6-12, SCAT's passenger trips per revenue hour showed more than 9 percent increase from 2003 to 2005 but decreased by 35 percent from 2005 to 2008. These reductions may be due to the recent service expansions in both transit systems including adding evening and weekend service, which generally produce fewer riders per hour.

Average Service Frequency

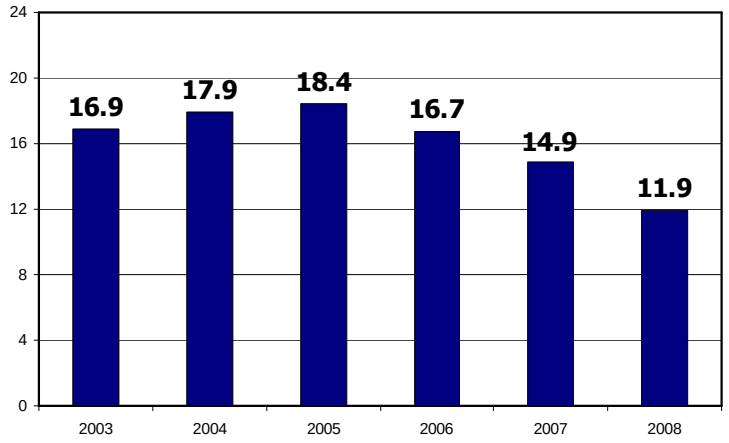
This measure identifies average frequencies by transit system in the CMP study area. Figure 6-13 shows SCAT and MCAT average service frequency, calculated by based on frequencies for all currently operating routes for each of the two systems in CMP study area. It should be noted that MCAT has significantly fewer routes than SCAT; therefore, its average number will be lower due to having primarily 60- and 30-minute frequency routes.

Figure 6-11
MCAT Passenger Trips per Revenue Hour



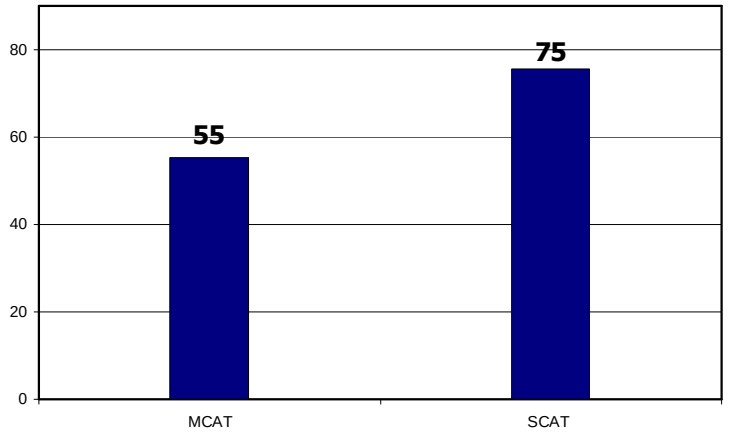
Source: MCAT, Florida Transit Information System (FTIS) & NTD

Figure 6-12
SCAT Passenger Trips per Revenue Hour



Source: SCAT, FTIS & NTD

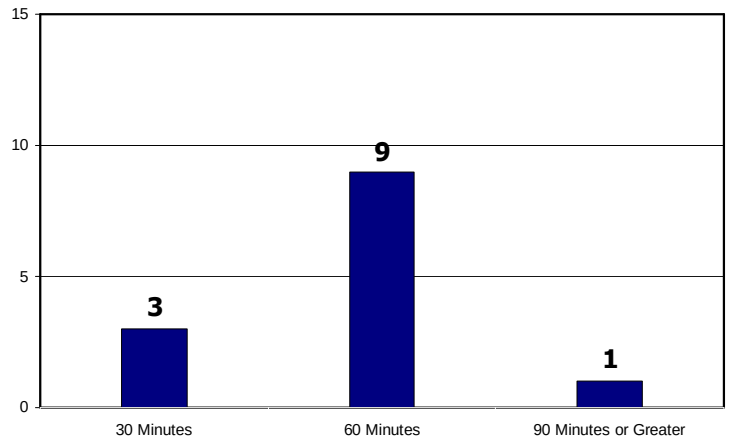
Figure 6-13
Average Peak Service Frequency



Source: MCAT and SCAT

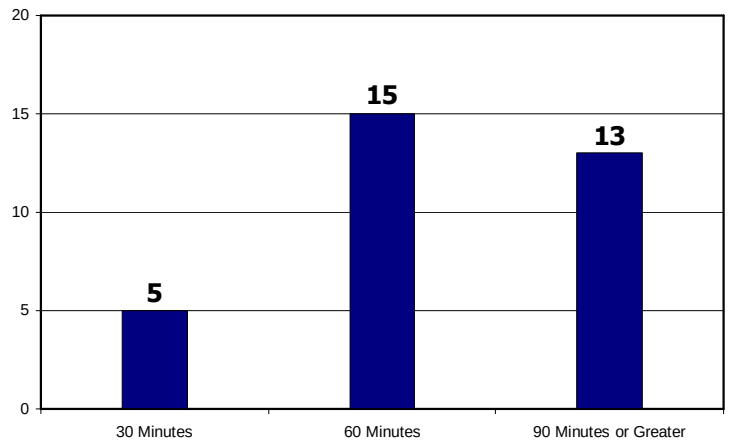
Figures 6-14 and 6-15 show the distributions or route frequencies for MCAT and SCAT. MCAT currently operates 13 bus routes, including 9 routes with 60-minute frequency and 3 routes with 30-minute frequency; only 1 route has frequency of 90 minute or more. SCAT operates 33 bus routes, including 15 routes with 60-minute frequency and 5 routes with 30-minute frequency; 13 more routes operate with 90-minute or more frequencies.

Figure 6-14
Number of Routes by Peak Service Frequency - MCAT (2009)



Source: MCAT

Figure 6-15
Number of Routes by Peak Service Frequency - SCAT (2009)



Source: SCAT

On-Time Performance

The systemwide on-time performance for SCAT and MCAT is calculated by analyzing data from the TQLOS prepared for Sarasota-Manatee MPO in 2005. FDOT's "Transit Capacity and Quality of Service Manual" defines on-time performance for a transit bus as being on-time or up to five minutes after the scheduled arrival time. The FDOT on-time performance LOS standards and a description of each standard is presented in Table 6-6. Calculated based on a survey of route performances between 10 activity centers selected by the Sarasota-Manatee MPO staff, Table 6-7 shows the LOS grade developed for the SCAT/MCAT systems based on the results from the TQLOS on-time performance evaluation. The overall on-time performance of the SCAT and MCAT systems was a LOS B.

Annual Ridership

The trend in annual number of passengers boarding buses that operate on the CMP roadway network in Sarasota and Manatee counties is presented below. Ridership by transit system and CMP study area ridership are presented in Figures 6-16 and 6-17 for the years from 2003 to 2008. SCAT ridership has steadily increased more than 33 percent from 2003 to 2008. However, ridership for MCAT has shown a steady 42 percent increase from 2003 to 2006 and then a 12 percent decrease thereafter.

Table 6-6
FDOT On-Time Performance LOS Standards

LOS	On-Time Percentage	Comments
A	95.0-100.0%	1 late transit vehicle every 2 weeks (no transfer)
B	90.0-94.9%	1 late transit vehicle every week (no transfer)
C	85.0-89.9%	
D	80.0-84.9%	2 late transit vehicles every week (no transfer)
E	75.0-79.9%	1 late transit vehicle every day (with a transfer)
F	<75.0%	

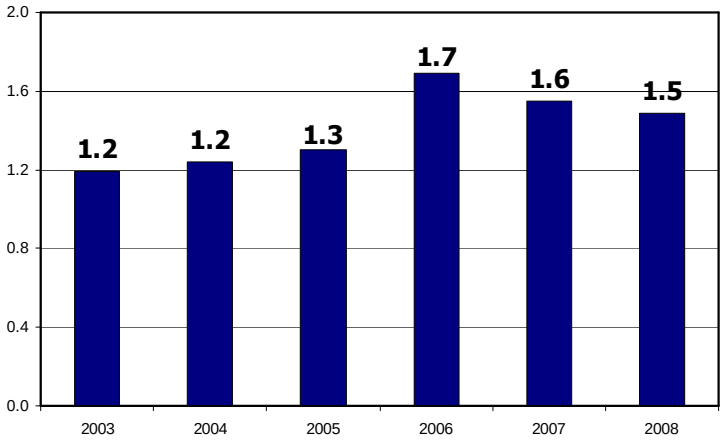
Source: FDOT Transit Capacity and Quality of Service Manual

Table 6-6
SCAT & MCAT On-Time Performance - 2005

From	To	On-Time Percentage	LOS
Southgate Plaza	Memorial Hospital	95.0-100.0%	A
Memorial Hospital	Southgate Plaza	95.0-100.0%	A
Sarasota Square Mall	Memorial Hospital	95.0-100.0%	A
Memorial Hospital	Sarasota Square Mall	95.0-100.0%	A
Travelers Oasis	Ellenton Mall	95.0-100.0%	A
1st St & Lemon St	Memorial Hospital	95.0-100.0%	A
Memorial Hospital	1st St & Lemon St	95.0-100.0%	A
Airport	Memorial Hospital	95.0-100.0%	A
Sarasota Square Mall	Southgate Plaza	95.0-100.0%	A
Travelers Oasis	Court House (CBD)	95.0-100.0%	A
Court House (CBD)	Ellenton Mall	<75.0%	F
Court House (CBD)	Memorial Hospital	95.0-100.0%	A
Ellenton Mall	Travelers Oasis	<75.0%	F
Southgate Plaza	1st St & Lemon St	95.0-100.0%	A
Travelers Oasis	Memorial Hospital	95.0-100.0%	A
Venice Train Depot	Sarasota Square Mall	95.0-100.0%	A
Cortez Plaza	Court House (CBD)	95.0-100.0%	A
Court House (CBD)	Cortez Plaza	95.0-100.0%	A
1st St & Lemon St	Southgate Plaza	95.0-100.0%	A
Travelers Oasis	Glens Hospital	95.0-100.0%	A
Total System On-Time Performance LOS		**90.0-94.9%**	**B**

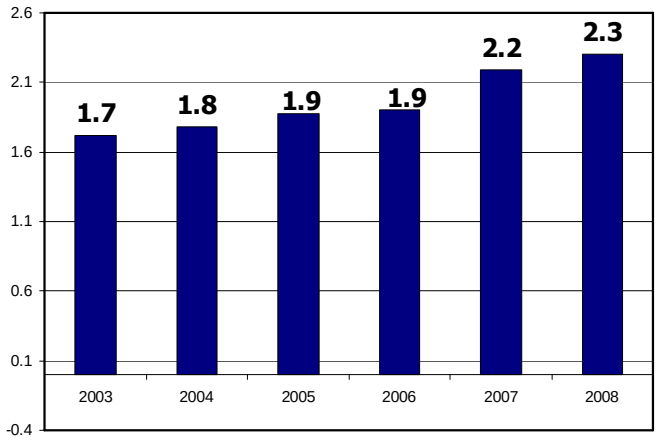
Source: SCAT

Figure 6-16
MCAT Passenger Trips (in Millions)



Source: MCAT, FTIS & NTD

Figure 6-17
SCAT Passenger Trips (in Millions)



Source: SCAT, FTIS & NTD

Data Analysis Methodology

Transit operating and capital data for the two transit agencies in the Sarasota-Manatee CMP study area, MCAT and SCAT, were summarized and analyzed.

Data Collection Recommendations

The data collection methods and reporting currently in use on service frequency, ridership, and revenue hours should be continued. In addition, TQLOS evaluations should be conducted at least every five years to have on-time performance data available for the periodic CMP updates.

Bicycle/Pedestrian/Trail Trends

Bicycle Facilities as Percent of CMP Roadway Centerline Miles

Bicycle facility data for Manatee and Sarasota Counties are summarized in Table 6-7. Calculated based on the most recent bicycle facility data for the study area, there are 237 miles of bicycle facilities or 36 percent of the total centerline miles of the CMP roadways in Sarasota County and 138 miles of bicycle facilities or 23 percent of CMP roadway centerline miles of bicycle facilities in Manatee County. Almost all of these bicycle facilities are located on or adjacent to a CMP roadway.

Table 6-7
Bicycle Facilities as Percent of
CMP Roadway Centerline Miles - Sarasota & Manatee Counties

Measure	Sarasota	Manatee
Total Miles of Bicycle Facilities	237	138
Total Centerline Miles of CMP Roadway	654	601
Bicycle Facilities as % of CMP Roadway Centerline Miles	**36%**	**23%**

Source: Manatee and Sarasota counties and 2030 LRTP

Sidewalk Facilities as Percent of CMP Roadway Centerline Miles

Table 6-8 shows the total length of sidewalks within 180 feet of CMP roadway centerlines in Manatee and Sarasota counties. The data is shown as a percent of CMP roadway centerline miles in both counties. As shown in Table 6-8, there are 418 miles of sidewalks in Sarasota County and 438 miles of sidewalks in Manatee County within 180 feet of the CMP roadways.

Table 6-8
Sidewalk Facilities as Percent of
CMP Roadway Centerline Miles - Sarasota & Manatee Counties

Measure	Sarasota	Manatee
Total Miles of Sidewalk Facilities*	418	438
Total Centerline Miles of CMP Roadway	654	601
Sidewalk Facilities as % of CMP Roadway Centerline Miles	**64%**	**73%**

Source: Manatee County and 2030 LRTP
* Denotes sidewalk facility within 180-foot buffer area along CMP roadways

Data Analysis Methodology

For Sarasota County sidewalks, the total length of sidewalks within a 180-foot buffer of the CMP roadway network was summarized. After reviewing the sidewalk data, it was determined that a minimum 180-foot buffer was required to capture the sidewalks not aligned with the roadways. For Manatee County, an average sidewalk width was calculated by using a random sample of sidewalk widths. This was done to convert the available data, which were in an area configuration, to a linear configuration. Each sidewalk segment area within a 180-foot buffer of the CMP roadways in Manatee County was then divided by the average sidewalk width to calculate an approximate sidewalk length of 438 miles in Manatee County.

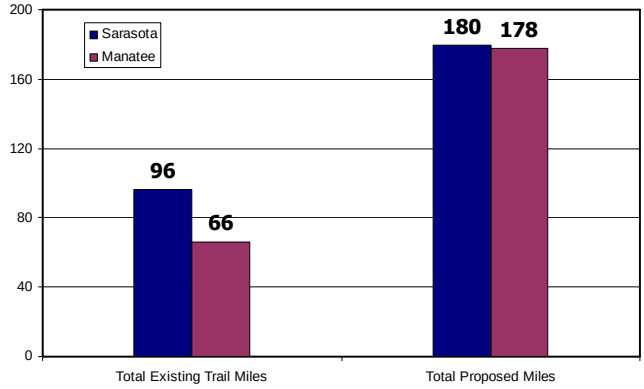
Data Collection Recommendations

For the purposes of the CMP, it is recommended that a single roadway database, as also indicated earlier in roadway LOS trends, is maintained with information on bicycle and sidewalk facility availability for each CMP roadway segment. This would support a monitoring effort for the complete study area.

Miles of Multi-Use Trails

Multi-use trail facilities usually are off-street facilities designated for the exclusive use of non-motorized travel used by pedestrians, cyclists, wheelchair users, joggers, and other non-motorized users. Figure 6-18 presents by existing and proposed the multi-use trails in Sarasota and Manatee Counties.

Figure 6-18
Miles of Multi-Use Trails - Sarasota & Manatee Counties



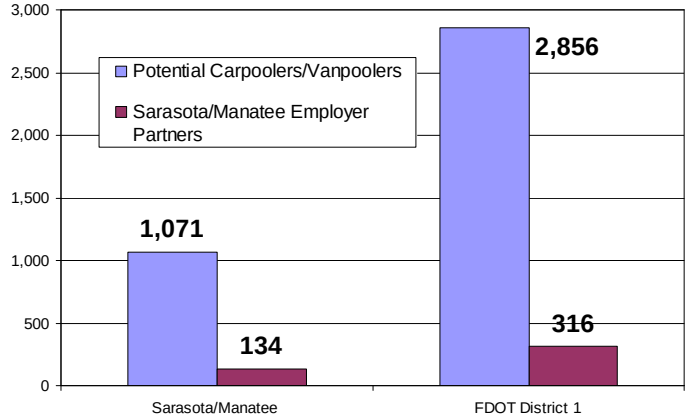
Source: Sarasota and Manatee counties

TDM

Carpools and Vanpools

The number of potential carpoolers/vanpoolers and the total employer partners were summarized using the commuter database maintained by the FDOT District 1 Commuter Services program. As shown in Figure 6-19, there are a total of 1,071 potential carpoolers/vanpoolers and 134 employer partners within the CMP study area while the total program has 2,856 potential carpoolers/vanpoolers and 316 employer partners for all 12 counties in FDOT District 1 counties including Sarasota and Manatee. No data for actual number of carpools/carpools is available at this time.

Figure 6-19
Potential Carpoolers/Vanpoolers and Employer Partners - 2008



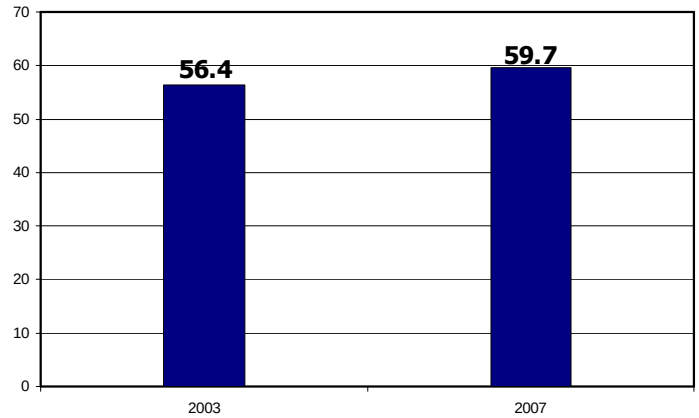
Source: FDOT District 1

Goods Movement Trends

Truck Vehicle Miles Traveled

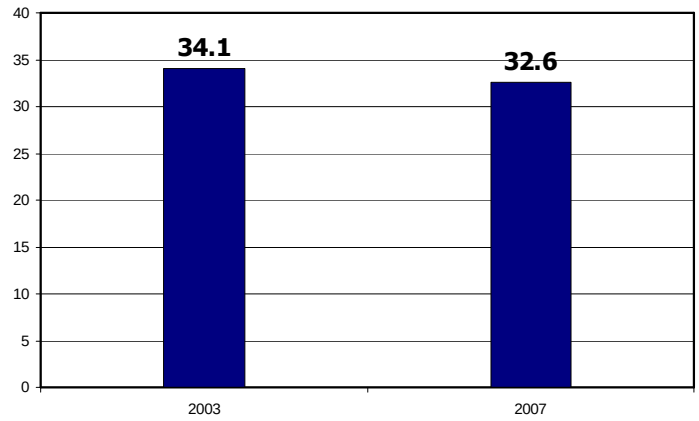
This performance measure reflects the total number of miles traveled by trucks within a specific geographic location for a period of one year. VMT for a roadway segment is calculated by multiplying the Average Annual Daily Travel (AADT) of that segment by the length of the segment in miles. Figures 6-20 and 6-21 show Truck VMT on state roadways for Sarasota and Manatee Counties.

Figure 6-20
Truck VMT (in millions) - Manatee County (2003 and 2007)



Source: FDOT District 1

Figure 6-21
Truck VMT (in millions) - Sarasota County (2003 and 2007)



Source: FDOT District 1

Summary of Trends & Conditions

The summary of multi-modal transportation network trends and conditions in the Sarasota-Manatee CMP study area is presented below. As mentioned earlier, this evaluation, together with the other components of the CMP, is intended to provide decision makers with a better understanding of the performance of various transportation modes in the study area towards selecting and implementing congestion mitigation and mobility strategies.

- ***Roadway Level of Service:*** In Sarasota County, only 5 percent of the roadways operated at LOS E or LOS F; 22 percent of the roads in Sarasota operated at LOS E or LOS F. In the Bradenton, however, over 40 percent of the roadways operated at at LOS E or LOS F. The percentage of roadways at LOS E or LOS F was much lower for the rest of the Manatee County. The percent of VMT by each LOS condition provides a more accurate indication of the traffic congestion. Based on data for FDOT-maintained roadways (state roadways only), a total of 28 percent of the VMT in Manatee County operating on state roads was at LOS E or LOS F. However, in Sarasota County, state roadways were more congested, with 44 percent of the VMT operating on state roads at LOS E or LOS F.

- ***Average Travel Time and Delay:*** At the corridor level, there has been a general reduction in average travel times since 2006. The reduction in average travel time for eight of the nine facilities studied may indicate that the congestion mitigation strategies used on these facilities or on facilities have been successful. Area wide data, however, suggest that the travel delays in the study area have increased but at a rate much lower than the national average of medium-size areas (population over 500,000 and less than 1 million).

- ***Crash Frequency:*** Crash frequency trends show that most of the high crash intersections in both counties have remained in the list of top 20 crash locations. Based on the available data, 2007 has shown fewer crashes than the other years analyzed.

- ***Passenger Trips per Revenue Hour:*** MCAT and SCAT have shown recent declines in this performance measure. These trends may be due to recent service expansions in both transit systems, including adding evening and weekend service, which generally produces fewer riders per hour.

- ***Average Peak Service Frequency:*** The average peak service frequencies by transit system in the CMP study area range from 55 minutes in Manatee County to 75 minutes in Sarasota County. Overall, 70 percent of the routes in the CMP study area operate at frequencies of 60-minute or less. In total, 8 of 46 routes currently operating in the CMP study area have 30-minute headways, while 24 operate with 60-minute headways.

- ***On-Time Performance:*** In the systemwide on-time performance for SCAT and MCAT, data shows that the overall on-time performance was at LOS B (one late transit vehicle every week).

- ***Annual Ridership:*** Transit ridership has generally increased over the last five years in the CMP study area. SCAT ridership has steadily increased from 1.7 million in 2003 to 2.3 million in 2008, while ridership for MCAT has shown a steady increase from 1.2 million in 2003 to 1.7 million 2006 and then a decline to 1.5 million in 2008.

- ***Bicycle and Sidewalk Facilities:*** In Sarasota County, there are 237 miles of bicycle facilities (36 percent of the total centerline miles of the CMP roadways), most of which are located on or adjacent to a CMP roadway. Within Manatee County there are 138 miles of existing bicycle facilities which have either a shoulder or bicycle-specific lane that cover 23 percent of the CMP roadways within Manatee County. In addition, there are 418 miles of sidewalks (64 percent of the total centerline miles of the CMP roadways) in Sarasota County and 438 miles of sidewalks (73 percent of the total centerline miles of the CMP roadways) in Manatee County within 180 feet of the CMP roadways.

- ***Miles of Multi-Use Trails:*** In Sarasota County, there are 96 miles of existing multi-use trail facilities; another 180 miles of trails are planned for construction. For Manatee County, there are currently 66 miles of existing multi-use trail facilities and 178 miles are planned for construction.

- **TDM *Carpools and Vanpools:*** The number of potential carpoolers/vanpoolers and total employer partners summarized using data from the FDOT District 1 Commuter Services program show that nearly 38 percent of the potential carpoolers/vanpoolers live within Sarasota and Manatee counties while 42 percent of the employer partners of the program are also located in the same area.

- ***Truck Vehicle Miles Traveled:*** The miles traveled by trucks have changed significantly on Sarasota and Manatee County state roadways. The truck VMT in Manatee County has increased by 6 percent; it has decreased by 4 percent in Sarasota County.

Section 7: Identification & Evaluation of Strategies

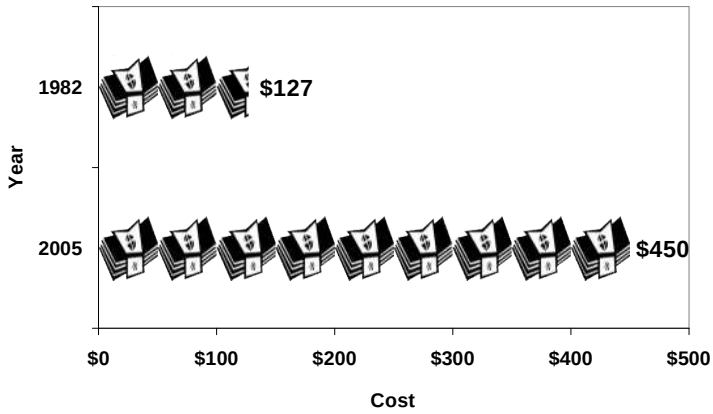
This section identifies and evaluates the strategies intended for mitigating existing and future congestion in the Sarasota and Manatee county CMP roadway network. A Toolbox of Strategies is presented to help policy makers and planners in effectively using these congestion reduction strategies.

Impacts of Congestion

Prior to identifying and evaluating the potential solutions, a brief study of the congestion problem and the possible causes for the congestion was conducted. Congestion cost and delay data available from the 2007 Urban Mobility Study prepared by the Texas Transportation Institute were analyzed to gauge the congestion problem in for the Sarasota-Bradenton metropolitan area, where most of the congestion exists.

Figure 7-1 shows the cost increase per peak traveler in the Sarasota-Manatee metropolitan area in 2005 compared to 1982. A peak traveler is defined as a traveler who begins a trip during the morning or evening peak travel periods (6 to 9 am and 4 to 7 pm) using any travel mode. The cost has increased from $127 in 1982 to $450 in 2005, a 254 percent increase.

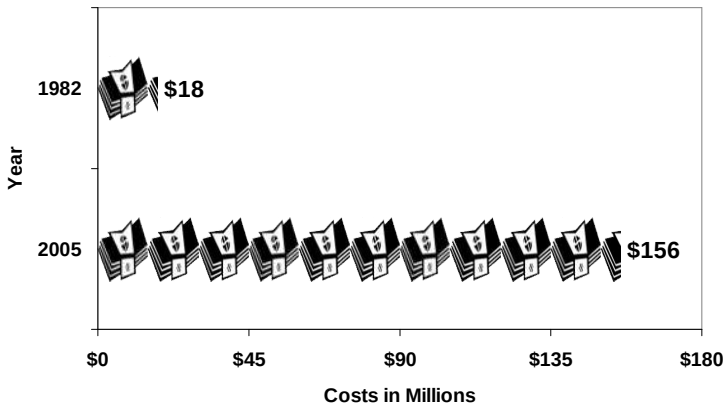
Figure 7-1
Cost per Peak Traveler - Sarasota-Bradenton Urban Area



Source: 2007 Urban Mobility Study, TTI

Figure 7-2 shows the total cost increase due to increased congestion in the Sarasota-Manatee metropolitan area in 2005 compared to 1982. Total congestion cost is determined based on the cost of travel delay and excess fuel consumption (estimated using state average cost per gallon). The cost has increased from $18 million in 1982 to $156 million in 2005, a 767 percent increase.

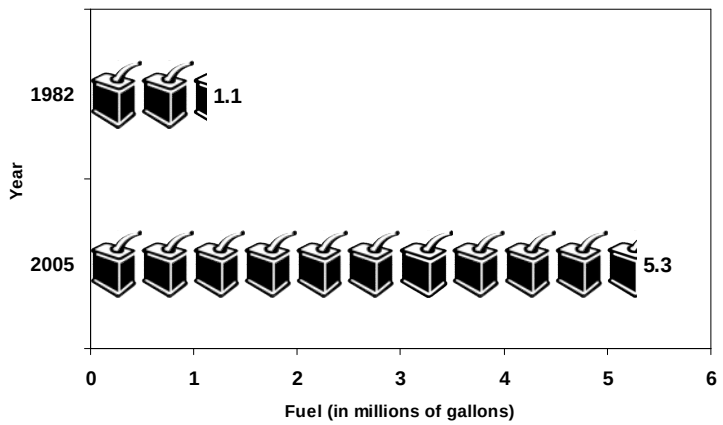
Figure 7-2
Total Congestion Cost (in millions) - Sarasota-Bradenton Urban Area



Source: 2007 Urban Mobility Study, TTI

Based on the 2007 Urban Mobility Study, Figure 7-3 shows the gallons of fuel wasted due to congestion in Sarasota-Bradenton urban area in 2005 compared to 1982. The excess fuel consumed (fuel wasted) is based on the increased fuel consumption due to travel in congested conditions rather than free-flow conditions. The number of gallons of fuel wasted has increased from more than 1 million in 1982 to more than 5 million in 2005, a 382 percent increase.

Figure 7-3
Gallons of Fuel Wasted (in millions) - Sarasota-Bradenton Urban Area



Source: 2007 Urban Mobility Study, TTI

Causes of Congestion

The process of congestion management begins by understanding the causes of the problem. Figure 7-6 shows the results of a national study presented by FHWA on the sources of congestion. Six major causes of congestion are identified:

- **Bottlenecks** - points where the roadway narrows or regular traffic demands cause traffic to back up; these are the largest source of congestion.

- **Traffic incidents -** crashes, stalled vehicles, debris on the road; these incidents cause about one quarter of congestion problems.

- **Work zones -** for new road building and maintenance activities like filling potholes; caused by necessary activities, but the amount of congestion caused by these actions can be reduced by a variety of strategies.

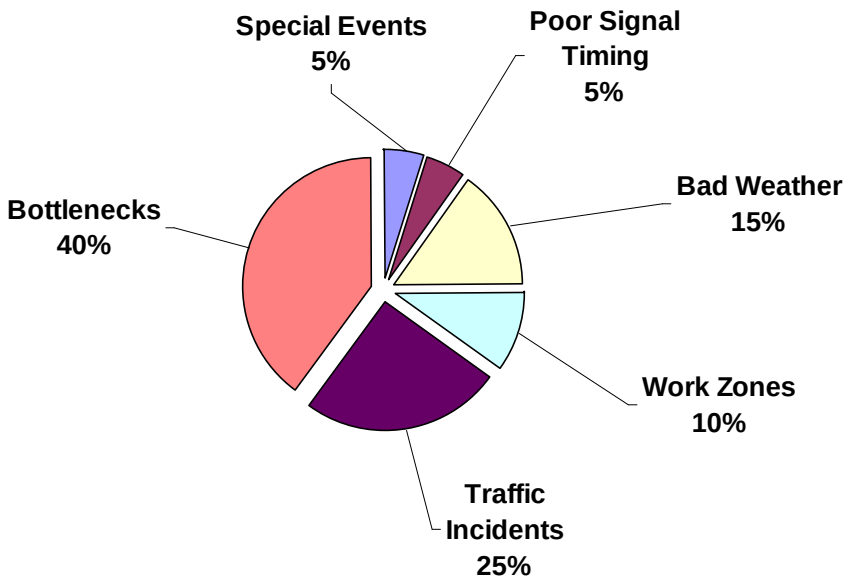
- **Bad weather -** cannot be controlled, but travelers can be notified of the potential for increased congestion.

- **Poor traffic signal timing** - the faulty operation of traffic signals or green/red lights where the time allocation for a road does not match the volume on that road; poor signal timings are a source of congestion on major and minor streets.

- **Special events -** cause "spikes" in traffic volumes and changes in traffic patterns; these irregularities either cause delay on days, times, or locations where there usually is none or add to regular congestion problems.

As shown in Figure 7-4, 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. This national data are widely used in CMP updates due to the lack of comprehensive local studies on the causes of congestion. The data suggest that local causes are likely to be similar, with bottlenecks and traffic incidents typically being the top two causes of congestion.

Figure 7-4
Causes of Congestion



Source: FHWA

Congestion Management Strategies

For MPOs with more than 200,000 people within their planning areas, SAFETEA-LU requires that the MPO "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)."

The Sarasota-Manatee CMP has identified a full range of potential strategies for use in its multimodal CMP network. These strategies can be grouped into the following broad categories:

- **Demand Management Strategies -** These strategies are used to influence behavior of the traveler for the purpose of redistributing or reducing travel demand:
    - Transportation Demand Management
    - Public Transit Improvements
    - Bicycle/Pedestrian/Trail Facility Improvements
    - Land Use/Growth Management
- **Operational Management Strategies -** These strategies typically include improvements made to the existing transportation system to keep it functioning effectively and efficiently:
    - ITS and Transportation Systems Management
    - Incident Management
    - Access Management
    - Corridor Preservation/Management
    - Capacity Increases (where and when necessary)

Table 7-1 summarizes the demand and operational management strategies included in the Sarasota-Manatee CMP toolbox of strategies, which is presented later in detail. A full range of demand and operational management strategies are identified in Table 7-1 and evaluated in Appendix B. In Appendix B, a description of each strategy is presented, followed by an evaluation of the impact on congestion, potential implementation costs, implementation time frame, and practicality of implementation in Sarasota and Manatee counties. A characterization of "very practical," "practical," or "not practical" assists in evaluating the broad range of strategies for use in the Sarasota-Manatee CMP.

Table 7-1
Congestion Management Strategies

Strategy	In Sarasota-Manatee CMP Strategy Toolbox?
Demand Management Strategies	
Transportation Demand Management	
Alternative Work Hours	✓
Telecommuting	✓
Ridesharing	✓
Implementing Park-and-Ride Lots	✓
Congestion Pricing	✓
Guaranteed Ride Home Programs	✓
High Occupancy Vehicle Lanes	✓
Alternative Mode Marketing and Education	✓
Safe Routes to Schools Program	✓
Employer-Landlord Parking Agreements	✓
Preferential or Free Parking for High Occupancy Vehicles (HOVs)	✓
Parking Management	✓
Managed Lanes	✓
Public Transit Improvements	
Reduced Transit Fares	✓
Increased Bus Route Coverage or Frequencies	✓
Real-Time Information on Transit Routes	✓
Premium Transit	✓
Transit Capacity Expansion	✓
Provide Exclusive Bus Right-Of-Way	✓

Table 7-1 (continued)
Congestion Management Strategies

Strategy	In Sarasota-Manatee CMP Strategy Toolbox?
Demand Management Strategies	
Bicycle/Pedestrian/Trail	
New Sidewalk Connections	✓
Designated Bicycle Lanes on Local Streets	✓
Improved Bicycle Facilities at Transit Stations and Other Trip Destinations	✓
Improved Safety of Existing Bicycle and Pedestrian Facilities	✓
Exclusive Non-Motorized ROW	✓
Land Use/Growth Management	
Design Guidelines for Pedestrian-Oriented Development	✓
Mixed-Use Development	✓
Infill and Densification	✓
Transit-Oriented Development	✓
Negotiated Demand Management Agreements	✓
Trip Reduction Ordinance	✓
Operational Management Strategies	
ITS & Transportation Systems Management	
Traffic Signal Coordination	✓
Intermodal Enhancements	✓
Goods Movement Management	✓
Dynamic Messaging	✓
Highway Information System	✓
Advanced Traveler Information Systems	✓
Integrated Corridor Management	✓
Transit Signal Priority	✓

Table 7-1 (continued)
Congestion Management Strategies

Strategy	In Sarasota-Manatee CMP Strategy Toolbox?
Operational Management Strategies	
ITS & Transportation Systems Management	
Channelization	☑
Intersection Improvements	☑
Bottleneck Removal	☑
Vehicle Use Limitations and Restrictions	☑
Geometric Improvements for Transit Service	☑
Improved Signage	☑
Incident Management	
Freeway Incident Detection and Management Systems	☑
Access Management	
Access Management Policies	☑
Corridor Preservation/Management	
Corridor Preservation	☑
Corridor Management	☑
Capacity Increases	
Highway Widening by Adding Lanes	☑

Toolbox of Strategies

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

Sarasota-Manatee CMP Toolbox of Strategies

Tier 1: Strategies to **Reduce Person Trips or Vehicle Miles Traveled**

Tier 2: Strategies to **Shift Automobile Trips to Other Modes**

Tier 3: Strategies to **Shift Trips from SOV to HOV Auto/Van**

Tier 4: Strategies to **Improve Roadway Operations**

Tier 5: Strategies to **Add Capacity**

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 Sarasota-Manatee CMP toolbox of strategies is presented in detail in the remainder of this section.

Tier 1: Strategies to Reduce Person Trips or Vehicle Miles Traveled (VMT)

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 total number of automobile trips. The following TDM strategies, not in any particular order, are recommended for more efficient use of local transportation resources and reducing the levels of traffic at peak hours.

Strategy T1.1 - 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.

Strategy T1.2 - 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.

Strategy T1.3 - 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.

Strategy T1.4 - Guaranteed Ride Home Programs: These programs provide a safety net to those people who carpool or use transit to work so that they can get to their destination if unexpected work demands or an emergency arises.

Strategy T1.5 - 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.

Strategy T1.6 - Safe Routes to Schools Program: This federally-funded program provides 100 percent funding to communities to invest in pedestrian and bicycle infrastructure surrounding schools.

Strategy T1.7 - Preferential or Free Parking for HOVs: This program provides an incentive for employees to carpool with preferred of free-of-charge parking for HOVs.

Land Use/Growth Management Strategies

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

Strategy T1.8 - 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).

Strategy T1.9 - 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.

Strategy T1.10 - Infill developments: This strategy takes advantage of infrastructure that already exists, rather than building new infrastructure on the fringes of the urban area.

Strategy T1.11 - Transit Oriented Developments: This strategy clusters housing units and/or businesses near transit stations in walkable communities. By providing convenient access to alternative modes, auto dependence can be reduced.

Strategy T1.12 - Design Guidelines for Pedestrian-Oriented Development: Maximum block lengths, building setback restrictions, and streetscape enhancements are examples of design guidelines that can be codified in zoning ordinances to encourage pedestrian activity.

Strategy T1.13 - 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

Public Transit Strategies

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

Strategy T2.1 - Transit Capacity Expansion: This strategy adds new vehicles to expand transit services.

Strategy T2.2 - Increasing Bus Route Coverage or Frequencies: This strategy provides better accessibility to transit to a greater share of the population. Increasing frequency makes transit more attractive to use.

Strategy T2.3 - 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.

Strategy T2.4 - 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.

Strategy T2.5 - Reducing Transit Fares: This relatively easy-to-implement strategy encourages additional transit use, to the extent that high fares are a real barrier to transit. However, due to the direct financial impact on the transit system operating budgets, reductions in selected fare categories may be a more feasible strategy to implement.

Strategy T2.6 - Provide Exclusive Bus Right-Of-Way: Exclusive right-of-way includes bus ways, bus-only lanes, and bus bypass ramps. This strategy is applied to freeways and major highways that have routes with high ridership.

Non-Motorized Transportation Strategies

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

Strategy T2.7 - New Sidewalk Connections: Increasing sidewalk connectivity encourages pedestrian traffic for short trips.

Strategy T2.8 - 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.

Strategy T2.9 - 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.

Strategy T2.10 - 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.

Strategy T2.11 - 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.

Tier 3: Strategies to Shift Trips from SOV to High Occupancy Vehicles (HOV)

TDM Strategies

The following TDM strategies are recommended to encourage HOV use.

Strategy T3.1 - 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.

Strategy T3.2 - High Occupancy Vehicle Lanes: This increases corridor capacity while at the same time providing an incentive for single-occupant drivers to shift to ridesharing. These lanes are most effective as part of a comprehensive effort to encourage HOVs, including publicity, outreach, park-and-ride lots, rideshare matching services, and employer incentives.

Strategy T3.3 - 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.

Strategy T3.4 - 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.

Strategy T3.5 - 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.

Strategy T3.6 - 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.

Tier 4: Strategies to Improve Roadway Operations

Intelligent transportation Systems (ITS) Strategies

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

Strategy T4.1 - 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.

Strategy T4.2 - 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.

Strategy T4.3 - 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.

Strategy T4.4 - Transit Signal Priority (TSP): This strategy uses technology located onboard transit vehicles or at signalized intersections to temporarily extend green time, allowing the transit vehicle to proceed without stopping at a red light.

Transportation Systems Management Strategies

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

Strategy T4.5 - 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.

Strategy T4.6 - Channelization: This strategy is used to optimize the flow of traffic for making left or right turns usually using concrete islands or pavement markings.

Strategy T4.7 - 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.

Strategy T4.8 - 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.

Strategy T4.9 - Vehicle Use Limitations and Restrictions: This strategy includes all-day or selected time-of-day restrictions of vehicles, typically trucks, to increase roadway capacity.

Strategy T4.10 - Improved Signage: Improving or removing signage to clearly communicate location and direction information can improve traffic flow.

Strategy T4.11 - 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.

Strategy T4.12 - Intermodal Enhancements: Coordinating modes makes movement from one mode to the other easier. These enhancements typically includes schedule modification to reduce layover time or increase the opportunity for transfers, creation of multi-modal facilities, informational kiosks, and improved amenities at transfer locations.

Strategy T4.13 - Goods Movement Management: This strategy restricts delivery or pickup of goods in certain areas to reduce congestion.

Incident Management Strategies

Strategy T4.14 - Freeway Incident Detection and Management Systems: This strategy addresses primarily non-recurring congestion, typically includes video monitoring and dispatch systems, and may also include roving service patrol vehicles.

Access Management Strategies

Strategy T4.15 - Access Management Policies: This strategy includes adoption of policies to regulate driveways and limit curb cuts and/or policies that require continuity of sidewalk, bicycle, and trail networks.

Corridor Preservation/Management Strategies

Strategy T4.16 - Corridor Preservation: This strategy includes implementing, where applicable, land acquisition techniques such as full title purchases of future rights-of-way and purchase of easements to plan proactively in anticipation of future roadway capacity demands.

Strategy T4.17 - Corridor Management: This strategy is applicable primarily in moderate- to high-density areas and includes strategies to manage corridor rights-of-way. The strategies range from land-use regulations to landowner agreements such as subdivision reservations, which are mandatory dedications of portions of subdivided lots that lie in the future right-of-way.

Tier 5: Strategies that Add Capacity

The most costly and least desirable capacity-adding strategies should be considered as last resort methods for reducing congestion. As the strategy of cities trying to "build" themselves out of congestion has not provided the intended results, capacity-adding strategies should be applied after determining the demand and operational management strategies identified earlier are not feasible solutions. Capacity-adding strategies include:

Strategy T5.1 - Increase the capacity of congested roadways through additional general purpose travel lanes

Strategy Screening Process

The CMP congested corridors can be screened for the application of strategies identified in order from Tier 1 through Tier 5, as presented above. The strategies selected were reviewed for the general applicability and practicality in Sarasota and Manatee counties. However, new strategies may be added and/or selected strategies may be removed based on the prevailing conditions and local decisions. Additional strategies are identified and presented in Appendix B.

This process recommends that capacity improvement projects for the Sarasota-Manatee CMP roadway network provide documentation that the applicability of strategies in Tier 1 through Tier 4 have been evaluated and used. Once all the appropriated strategies have been tried on the corridor, then adding capacity may be considered as the only applicable congestion management strategy for the corridor.

Section 8: Implementation & Monitoring Strategy Effectiveness

This section summarizes the implementation and management of the CMP strategies. The section presents an implementation schedule, implementation responsibilities, costs, and possible funding sources for each strategy currently proposed for implementation. In addition, the process for selecting and implementing future projects is also summarized. A process for periodic assessment of the effectiveness of implemented strategies in terms of the established performance measures for Sarasota-Manatee CMP is also outlined. The results of this evaluation will be provided to decision makers and the public to provide feedback on the selection of effective strategies for potential implementation in the future. A list of recommendations and actions is presented for review and consideration.

Project Selection and Implementation

Congestion mitigation strategies are implemented through various transportation projects and programs. They are included in Sarasota-Manatee MPO's list of Congestion Management System (CMS) projects and programmed into the Transportation Improvement Program (TIP) annually. The TIP reflects state and local agency decisions for funding transportation projects and programs, including congestion management.

Each year, a number of operational and travel demand reduction projects are included in the Sarasota-Manatee TIP. The selection of these projects is usually based on the type of strategies that yield the largest benefit-cost ratio. For example, traffic signal improvements and minor intersection improvements have typically shown the most congestion benefits for their expenditure. These strategies can be implemented quickly, so results can be determined much more quickly than other capacity projects. However, this may change once the traffic volume at the intersection exceeds the capacity of that intersection. At that point, improvements will be needed to add capacity to that intersection to complement the traffic signal improvements. In addition to these operational strategies, travel demand reduction strategies such as transit, vanpools, ridematching, and telecommuting also can be implemented in congested locations at relatively low cost and effort.

Implementation of Programmed CMP Strategies

The Sarasota-Manatee TIP and FDOT District 1 Tentative Work Program include various active congestion management projects that include various strategies identified in the strategy toolbox presented earlier in this report. The projects currently programmed for implementation include demand reduction and operational management strategies in:

- Intelligent transportation systems
- Freeway management
- Traffic signal improvements
- Public transit
- Bicycle/pedestrian/trails
- Capacity expansion

Table 8-1 presents the implementation plan for the congestion mitigation projects that are programmed in 2009-2013 Sarasota-Manatee MPO's Five-Year TIP and 2010-2014 FDOT District 1 Tentative Work Program. Table 8-1 also shows the expected year of implementation, responsible party, total cost, and source of funding for each project. It should be noted that Table 8-1 does not include projects currently planned by County and City CIPs. These projects, if any, will be added as more project information becomes available.

In addition, FDOT's Commuter Services program also has been working with local governments and transportation partners in Southwest Florida to reduce traffic congestion and improve air quality by offering a wider range of transportation choices such as bicycling and walking, better accessibility for carpools and vanpools, and transit services. The program is working throughout the FDOT's District 1 to provide employers with turnkey solutions, including program development, on-site events, marketing tools, and program incentives. In Sarasota and Manatee counties,

Table 8-1
Implementation Plan for Congestion Management Strategies - Manatee County

County	Project Name	Project Type	Implementation Schedule	Total Project Cost	Funding Source
Manatee	MPO Priority # 1	Miscellaneous - CMS BOX	2009 - 2013	$2,354,292	XU
Manatee	SR 64 at 67th Street, City of Bradenton	Intersection Improvements	2009	$633,345	XU
Manatee	I-275 from I-75 to South Sunshine Skyway Bridge	ITS Freeway Management	2013 – 2014	$5,342,942	FDOT Work Program
Manatee	MCAT Park-and-Ride Lots	Transit	2009 – 2010	$470,000	FDOT Work Program
Manatee	US 41 at 8th, 9th and 17th Avenue, City of Bradenton	Traffic Signal Updates	2009 – 2010	$833,476	SA, XU, DIH
Manatee	Bradenton and Palmetto Downtown Mobility Study	Downtown Mobility Study	2009-2010	$303,991	ACSU
Manatee	MCAT Capital for Fixed Route	Transit	2009 – 2012	$500,000	LF, FTA
Manatee	MCAT Anna Maria Island Trolley Service	Transit	2009 – 2013	$3,783,699	FL, DPTO
Manatee	MCAT Operating and Administrative assistance	Transit	2009 – 2013	$835, 806	LF, DU
Manatee	MCAT State Block Grant for Operating Fixed Route	Transit	2009 – 2013	$6,712,323	DPTO, DDR, DS, LF
Manatee	MCAT Capital for Fixed Route	Transit	2009 – 2012	$5,675,000	LF, FTA
Manatee	US 41 at 12th Avenue, City of Bradenton	Traffic Signal Update	2009 - 2010	$412,144	XU, DIH
Manatee	Haben Boulevard at Riviera Runes, City of Palmetto	Roundabout	2010	$367,000	SA
Manatee	10th Street West at 14th Avenue West, City of Palmetto	Add Turn Lanes	2010	$400,000	SA
Manatee	15th Street East at 9th Avenue East and 7th Avenue East, City of Bradenton	Traffic Signal Updates	2009 - 2010	$840,579	CM, DIH, XU
Manatee	Downtown Mobility Study, Cities of Bradenton and Palmetto	Mobility Study	2010	$303,991	ACSU

Table 8-1 (continued)
Implementation Plan for Congestion Management Strategies - Manatee County

County	Project Name	Project Type	Implementation Schedule	Total Project Cost	Funding Source
Manatee	SR 789 at Broadway and Lyons, Longboat Key	Add Turn Lanes	2009	$341,250	XU
Manatee	10th Street West at 10th Avenue West, Palmetto	Add Left Turn Lanes	2011	$800,000	LFF, DDRF, XU
Manatee	2007 CMS Priority # 1 - Neal Preserve Pathway & Boardwalk	Pathway & Boardwalk Construction	2013	$300,000	STP, State Enhancement Funds
Manatee	2006 CMS Priority # 1 - Sidewalks to Schools	Sidewalk Construction	2012	$300,000	STP, State Enhancement Funds

Source: Sarasota Manatee adopted 2009-2013 TIP.
Notes: ACSU: Advance Construction SU; DB: Urban Areas over 200k; DDRF: District Dedicated Revenue; DIH: District In-House Support; DPTO: State Public Transportation Operations; DS: 100% State Funds/Primary for Special Projects; DU: 100% State Funds/Federal Reimbursement; EB: Not Defined; FTA: Federal Transit Administration; LF: Local Funds; LFF: Local Funds for Matching Federal Aid; SA: Surface Transportation Project (STP), any area; SU: Not defined; XU: Surface Transportation Project, Minimum Allocation Urban Areas over 200k.

Table 8-2
Implementation Plan for Congestion Management Strategies - Sarasota County

County	Project Name	Project Type	Implementation Schedule	Total Project Cost	Funding Source
Sarasota	MPO Priority # 1	Miscellaneous - CMS BOX	2009 - 2013	$2,264,600	XU
Sarasota	US 41 at Bahia Vista Street	Extend Westbound to Northbound Turn Lane	2009	$25,000	LFF, DDRF, XU
Sarasota	Dynamic Message Signs for US 41 at 2nd Street and Fruitville Road	Dynamic Message Sign	2010 – 2011	$621,079	FDOT Work Program
Sarasota	I-75 from Charlotte County Line to Manatee County Line	ITS Freeway Management	2011 – 2012	$23,779,148	FDOT Work Program
Sarasota	I-75 TMC/System	TMC Software and System Integration	2011 – 20125	$5,095,681	FDOT Work Program
Sarasota	West Price Boulevard at Palm Avenue, City of North Port	Add Turn Lanes	2009	$775,000	EB
Sarasota	Venice Downtown Mobility Study	Downtown Mobility Study	2012 – 2013	$240,000	DDRF, LFF, LFP, XU

Table 8-2 (continued)
Implementation Plan for Congestion Management Strategies - Sarasota County

County	Project Name	Project Type	Implementation Schedule	Total Project Cost	Funding Source
Sarasota	Ringling Boulevard at Palm Avenue, City of Sarasota	Roundabout Construction	2010	$800,000	LFF, DDRF, XU
Sarasota	SR 789 (Gulfstream) at US 41, City of Sarasota	Add Eastbound to Southbound Turn Lanes	2011- 2012	$865,219	XU, DIH, XU
Sarasota	2007 CMS Priority # 1- Midnight Pass Road	Pedestrian Refuge Islands	2011 - 2013	$865,220	SE
Sarasota	Relocation of SCAT Bus Transfer Facility	Transit	2010	$670,000	LF, DPTO
Sarasota	SCAT Operating and Administrative Assistance	Transit	2009 – 2013	$628,558	LF, DU
Sarasota	SCAT State Block Grant	Transit	2009 – 2011	$8,561,396	DPTO, DDR, LF
Sarasota	SCAT Capital for Fixed Route	Transit	2009 – 2012	$9,678,500	LF, FTA
Sarasota	SCAT Park-and-Ride Lots	Transit	2009	$100,000	DPTO
Sarasota	Sarasota-Manatee MPO Modal Systems Planning	Transit	2009 – 2013	$1,097,918	LF, DPTO, DU
Sarasota	Sarasota-Manatee MPO Transportation Planning	Transit	2009 – 2013	$4,161,032	PL

Source: Sarasota Manatee adopted 2009-2013 TIP.
Notes: CST: Not defined; DB: Urban Areas over 200k; DDR: District Dedicated Revenue; DDRF: District Dedicated Revenue; DIH: District In-House Support; DPTO: State Public Transportation Operations; DU: 100% State Funds/Federal Reimbursement; EB: Not defined; LF: Local Funds; LFF: Local Funds for Matching Federal Aid; LFP: Not defined; PE: Not defined; PL: Metropolitan Planning; SA: Surface Transportation project, any area; SE: Not defined; XU: Surface Transportation Project, Minimum Allocation Urban Areas over 200k.

Commuter Services has secured partnerships with more than 30 different employer and stakeholder agencies who are now working to develop transportation programs at their individual worksites. From among these Partners, more than 1,200 employees/commuters are registered in the regional ridematch-database, to find someone with whom to carpool or vanpool.

Selection and Implementation of Potential Strategies

The CMP provides a toolbox of strategies for consideration by the various agencies in Sarasota and Manatee counties to help address congestion or provide mobility options on congested corridors

identified in this CMP. The agencies may propose mitigation projects utilizing the potential strategies identified in the CMP. This process of selecting CMP projects for implementation is repeated annually, or as needed by the agencies participating in the CMP. Using the MPO Project Prioritization Process, CMP projects are programmed into the TIP. Funding for these projects is identified, and the projects are placed in a separate category for congestion management to avoid competition with capacity expansion projects. In addition, projects are also prioritized in county and municipal government Capital Improvement Plans (CIPs) for potential implementation. Table 8-3 shows the congestion management projects identified and prioritized by the MPO in 2008 for potential implementation in Sarasota and Manatee counties.

Table 8-3
2008 CMS Project Priorities - Sarasota-Manatee MPO

Priority	Project Name	Project Type	Implementation Schedule	Cost
Manatee County				
1	Cortez Road @ 5th Street West, Manatee County	Intersection Improvements	Realignment and Extend WB to SB Turn Lane	$485,500
2	Cortez Road @ 59th Street West, Manatee County	Intersection Improvements	Mast Arms, Pedestrian Features, Lit Street Signs	$308,216
3	Cortez Road @ 43rd Street West, Manatee County	Intersection Improvements	Mast Arms, Pedestrian Features, Lit Street Signs	$403,504
4	Cortez Road @ 26th Street West, Manatee County	Intersection Improvements	Mast Arms, Pedestrian Features, Lit Street Signs	$403,504
Sarasota County				
1	Dynamic Message Signs	at US 41, Fruitville Road, Saint Armands Circle, City of Sarasota	Construct Dynamic Message Signs	$800,000
2	Ringling Boulevard @ Pineapple Avenue	Intersection Improvements, City of Sarasota	Build Roundabout	$800,000
3	Siesta Drive @ Southgate Mall Entrance	Intersection Improvements, City of Sarasota	Build Roundabout	$800,000
4	Haberland Boulevard @ Price Boulevard	Haberland Boulevard @ Price Boulevard, City of North Port	New Signal and Turn Lanes in all Directions	$1,000,000
5	Tuttle Avenue @ DeSoto Road	Intersection Improvements, Sarasota County	NB to WB and SB to EB Left Turn Lanes	$800,000
6	US 41 @ Lychee Road	Intersection Improvements, Sarasota County	SB to WB Right Turn Lane	$800,000

Source: Sarasota-Manatee MPO

Monitoring Strategy Effectiveness

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

Data collection and performance monitoring are ongoing with the various periodic assessments of roadway, transit, bicycle/pedestrian/trail, freight network performance in Sarasota and Manatee counties. However, this CMP also identifies the need for a process that support an annual tracking of the effectiveness of the implemented congestion mitigation strategies and the multi-modal transportation system as a whole. This annual process is described in detail below.

Annual State-of-the-System Report

As a key tool in the Sarasota-Manatee CMP, an Annual State-of-the-System Report will be developed in the interim years until the next CMP update. This report will track the effectiveness of the implemented strategies, to the extent possible with the available project level data, and conditions of the multi-modal transportation system as a whole. The same set of quantifiable performance measures established for the Sarasota-Manatee CMP will be used to measure system performance at corridor and system levels. The measures that will be utilized in the Annual State-of-the-System Report on Sarasota-Manatee CMP include:

- **Roadway Performance Measures** including LOS, average travel time and delay, incident delay, and crash rates
- **Public Transit Performance Measures** including passenger trips per revenue hour, average peak service frequency, on-time performance, and annual ridership
- **Bicycle/Pedestrian/Trail Facility Performance Measures** including percent of CMP roadway centerline miles with bicycle facilities, percent of CMP roadway centerline miles with sidewalk facilities, and miles of multi-use trails
- **TDM Performance Measures** including the number of registered carpools or vanpools in the CMP study area

- **Goods Movement Performance Measures** including the total truck vehicle miles traveled (VMT) in the study area

The commitment and schedule for preparing an Annual State-of-the-System Report will be determined by the Sarasota-Manatee MPO CMP Advisory Group.

CMP Actions/Recommendations

The following list of recommendations and actions was developed to enhance the congestion management process and become more efficient in the overall MPO planning process. The actions/recommendations presented below will be reviewed and considered by MPO staff and the Sarasota-Manatee CMP Advisory Group for implementation as necessary.

- Update CMP on a five-year cycle and coincide the CMP update cycle with the LRTP five-year update cycle. Timing of the completion of CMP updates in advance of finalizing the LRTP updates would benefit integration of CMP strategies into the LRTP.

- Develop an Annual 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 Sarasota-Manatee CMP study area.

- 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.

- Establish how the CMP will be integrated into the LRTP process by defining its role in the Sarasota-Manatee MPO's local planning process. The CMP may serve as a generator of specific projects and strategies to be evaluated in the LRTP or as a pre-screening step to narrow the list of strategies to be considered in the LRTP.

- Work with various agencies in Sarasota and Manatee counties and FDOT to implement data collection recommendations and close the data gaps identified in this CMP. A brief summary of these recommendations is presented below.

    - The Sarasota-Manatee MPO should explore the possibility of coordinating the development of a single major road network database for the two-county area for the use of all agencies performing LOS analyses.

- Manatee County should consider performing periodic travel time and delay studies on its most congested corridors. In addition, efforts should be made to include congested corridors that are identified in this CMP but not included in the travel time studies in the CMP study area.

- The future crash data analysis effort should pursue the use of crash rates in addition to crash frequencies to identify high crash intersections and roadways in the context of travel volumes.

- The transit data collection methods and reporting procedures should continue to include frequency, ridership, and revenue hours. In addition, on-time performance data should be integrated into the CMP as available.

- A single roadway database, as indicated earlier for roadway LOS analysis, should be maintained with information on bicycle and sidewalk facility availability for each CMP roadway segment. This would support a monitoring effort for the complete study area.

- Perform outreach and education efforts to inform interested parties and stakeholders. These may include:
  - Maintain a CMP website on the MPO web site.
  - Develop a brochure and/or newsletter on the CMP and its benefits.
  - Conduct outreach events to coincide with the LRTP public involvement efforts to educate the public and various stakeholders about the CMP toolbox of strategies.

- Continue monitoring changes to federal CMP regulations and modify/update CMP to reflect new requirements.

Appendix A

2007 Mobility Study

Sarasota-Bradenton Urban Area Data

(Source: Texas Transportation Institute)

Performance Measure Summary

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2005. There is no single performance measure that experts agree "says it all." The best comparison of congestion levels and trends is done between regions of similar size, over several years, and with a few measures of congestion aspects. Examining a few measures over many years reduces the chance that data variations or the estimating procedures may have caused a "spike" in any single year. A few key points should be recognized by users of the Urban Mobility Report data.

Use the Trends – The multi-year performance measures are better indicators, in most cases, than any single year. (*5 years is 5 times better than 1 year*).

Use several measures – Each performance measure illustrates a different element of congestion. (*The view is more interesting from the top of a few measures*).

Compare to similar regions – Congestion analyses that compare areas with similar characteristics (for example population, growth rate, road and public transportation system design) are usually more insightful than comparisons of different regions. (*Los Angeles is not Peoria*).

Compare ranking changes <u>and</u> performance measure values – In some performance measures a small change in the value may cause a significant change in rank from one year to the next. This is the case when there are several regions with nearly the same value. (*15 hours is only 1 hour more than 14 hours*).

Consider the scope of improvement options – Any improvement project in a corridor within most of the regions will only have a modest effect on the regional congestion level. (*To have an effect on areawide congestion, there must be significant change in the system or service*).

Comparison of Several Key Mobility Performance Measures
Medium Group – 500,000 to 1 million population urban areas

Urban Area	Delay per Traveler	Travel Time Index	Total Delay	1982 to 2005	
				Delay per Traveler	Total Delay
Jacksonville, FL	H+	H+	H+	F	F+
Nashville-Davidson, TN	H+	0	H+	0	F+
Salt Lake City, UT	0	H	H	0	F+
Raleigh-Durham, NC	H+	H	H+	F+	F+
Richmond, VA	L-	L-	0	S-	S
Louisville, KY-IN	H+	H+	H+	F+	F+
Hartford, CT	L-	L-	L	S	S-
Bridgeport-Stamford, CT-NY	H	H+	H+	F	F+
Charlotte, NC-SC	H+	H+	H+	F+	F+
Austin, TX	H+	H+	H+	F+	F+
Oklahoma City, OK	L-	L-	L	S	S-
Tulsa, OK	L-	L-	L	S-	S-
Tucson, AZ	H+	H+	H+	0	F+
Dayton, OH	L-	L-	L-	S-	S-
Honolulu, HI	L	H+	L	S-	S-
Birmingham, AL	H+	0	H	F+	F+
El Paso, TX-NM	L	0	L	F	S-
Rochester, NY	L-	L-	L-	S-	S-
Springfield, MA-CT	L-	L-	L-	S-	S-
Omaha, NE-IA	L	0	L	0	S-
Sarasota-Bradenton, FL	**L**	**H**	**L**	**S-**	**S-**
Allentown-Bethlehem, PA-NJ	L-	L	L-	S-	S-
Akron, OH	L-	L-	L-	S-	S-
Fresno, CA	L-	L	L-	S-	S-
Grand Rapids, MI	L	L-	L-	0	S-
Oxnard-Ventura, CA	H+	H+	0	F+	F+
Albuquerque, NM	H+	0	0	F	S
New Haven, CT	L-	L-	L-	S-	S-
Albany-Schenectady, NY	L-	L-	L-	S-	S-
Toledo, OH-MI	L-	L-	L-	S-	S-

0 – Average congestion levels or average congestion growth
H Higher congestion; H+ Much higher congestion; F Faster congestion growth; F+ Much faster growth
L Lower congestion; L- Much lower congestion; S Slower congestion growth; S- Much slower growth

Performance Measures and Definition of Terms

Travel Time Index – A measure of congestion that focuses on each trip and each mile of travel. The ratio of travel time in the peak period to travel time in free-flow. A value of 1.30 indicates a 20-minute free-flow trip takes 26 minutes in the peak.

Peak Travelers – Number of travelers (using any travel mode) who begin a trip during the morning or evening peak travel periods (6 to 9 a.m. and 4 to 7 p.m.).

Annual Delay per Traveler – A yearly sum of all the per-trip delays. This measure illustrates the effect of the per-mile congestion as well as the length of each trip. The extra time required to travel in the peak period is divided by the number of travelers who begin a trip during the peak period (6 to 9 a.m. and 4 to 7 p.m.).

Total Delay – The overall size of the congestion problem. Measured by the total travel time above that needed to complete a trip at free-flow speeds. The ranking of total delay usually follows the population ranking (larger regions usually have more delay).

Free-Flow Speeds (60 mph on freeways and 35 mph on arterials) – These values are used as the national comparison thresholds. Other speed values may be appropriate for urban areas or sub-regions.

Excess Fuel Consumed – Increased fuel consumption due to travel in congested conditions rather than free-flow conditions.

Public Transportation – Regular route service from all public transportation providers in an urban area.

Operations Treatments – Freeway incident management, freeway ramp metering, arterial street signal coordination and arterial street access management.

Congestion Cost – Value of travel delay for 2005 (estimated at $14.60 per hour of person travel and $77.10 per hour of truck time) and excess fuel consumption (estimated using state average cost per gallon).

Annual Increase Needed to Maintain Constant Congestion Level – Number of lane-miles that must be added to the road system each year – or – the number of new transit riders or carpoolers that must be added to keep congestion levels the same as the previous year.

Urban Area – The developed area (population density more than 1,000 persons per square mile) within a metropolitan region. The urban area boundaries change frequently (every year for most growing areas). The annual change in miles traveled, therefore, includes both new travel due to growth and travel that previously occurred in areas designated as rural.

Number of Rush Hours – Time when system might have congestion

Key Mobility Performance Measure Labels

Note: Designation of an urban area congestion problem as “Much higher”, “Much faster growth”, etc. is determined using a general indicator of the accuracy of the congestion estimates. For regions with the same indicator label, there may be no difference in congestion levels. Different values are used for the indicators in regions over 1 million population and below 1 million population.

Measures	**Differences Within These Values May Not Indicate a Difference in Congestion Level**	
2005 Values	**Above 1M Population**	**Below 1M Population**
Delay per Traveler -	5 Hours	3 Hours
Travel Time Index -	5 Index Points	3 Index Points
Total Delay -	5 Hours x Average Population	3 Hours x Average Population
1982 to 2005 Trends		
Delay per Traveler -	5 Hours	3 Hours
Total Delay -	5 Hours x Average Population	3 Hours x Average Population

The Mobility Data for Sarasota-Bradenton, FL

Inventory Measures	2005	2004	2003	2002	2001	2000
Urban Area Information						
Population (1000s)	640	620	590	570	550	535
Rank	59	60	62	63	66	66
Urban Area (square miles)	500	500	495	490	485	480
Popn Density (persons/sq mile)	1,280	1,240	1,192	1,163	1,134	1,115
Peak Travelers (1000s)	348	335	317	303	288	277
Freeway						
Daily Vehicle-Miles of Travel (1000s)	2,510	2,325	2,100	1,900	1,700	1,500
Lane Miles	165	160	145	130	115	100
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	6,575	6,400	6,110	5,815	5,525	5,385
Lane Miles	940	925	920	915	915	910
Public Transportation						
Annual Psgr-Miles of Travel (millions)	13	14	17	18	16	15
Annual Unlinked Psgr Trips (millions)	3	3	3	3	3	2
Cost Components						
Value of Time ($/hour)	14.60	14.10	13.75	13.45	13.25	12.85
Commercial Cost ($/hour)	77.10	74.60	72.65	71.05	69.95	68.00
Fuel Cost ($/gallon)	2.34	1.99	1.53	1.41	1.51	1.54
System Performance						
Congested Travel (% of peak VMT)	48	48	47	46	46	46
Congested System (% of lane-miles)	44	44	44	44	45	45
Congested Time (number of "Rush Hours")	7.6	7.4	7.4	7.4	7.2	7.2
Annual Increase Needed To Maintain Constant Congestion Level:						
Lane-Miles	63	66	65	65	63	62
Transit Riders or Carpoolers (millions)	18	18	17	17	15	15
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	5,293	5,099	4,702	4,420	4,158	3,972
Rank	57	57	58	58	62	61
Fuel per Peak Traveler (gallons)	15	15	15	15	14	14
Rank	50	48	48	49	52	49
Annual Delay						
Total Delay (1000s of person-hours)	8,840	8,572	7,924	7,536	7,060	6,770
Rank	55	55	58	56	59	60
Delay per Peak Traveler (person-hrs)	25	26	25	25	24	24
Rank	48	47	48	47	48	47
Delay due to Incidents (percent)	53	53	53	53	53	52
Travel Time Index	1.19	1.19	1.18	1.18	1.18	1.18
Rank	36	38	38	37	34	35
Congestion Cost						
Total Cost ($ millions)	156	145	128	118	110	102
Rank	56	56	58	57	60	62
Cost per Peak Traveler ($)	450	434	405	391	380	368
Rank	48	47	48	50	47	49

Note: System Performance statistics for 2000 through 2005 data reflect the effects of operational treatments.

Note: Zeroes in the table reflect values less than 0.5.

The Mobility Data for Sarasota-Bradenton, FL, Continued

Inventory Measures	1999	1998	1997	1996	1995	1994
Urban Area Information						
Population (1000s)	525	515	505	505	500	490
Rank	65	65	65	65	65	66
Urban Area (square miles)	480	475	495	470	470	460
Popn Density (persons/sq mile)	1,094	1,084	1,020	1,074	1,064	1,065
Peak Travelers (1000s)	268	260	251	248	243	235
Freeway						
Daily Vehicle-Miles of Travel (1000s)	1,300	1,100	850	650	500	400
Lane Miles	90	89	70	60	55	50
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	5,200	5,000	4,850	4,710	4,600	4,450
Lane Miles	905	900	895	890	890	885
Public Transportation						
Annual Psgr-Miles of Travel (millions)	14	13	14	12	11	10
Annual Unlinked Psgr Trips (millions)	3	2	3	3	2	2
Cost Components						
Value of Time ($/hour)	12.40	12.15	12.00	11.70	11.40	11.05
Commercial Cost ($/hour)	65.80	64.35	63.40	61.95	60.20	58.50
Fuel Cost ($/gallon)	1.14	1.07	1.17	1.30	1.20	1.08
System Performance						
Congested Travel (% of peak VMT)	47	44	45	45	40	43
Congested System (% of lane-miles)	45	46	46	47	42	47
Congested Time (number of "Rush Hours")	7.2	6.4	6.2	5.8	5.6	5.2
Annual Increase Needed To Maintain Constant Congestion Level:						
Lane-Miles	60	51	40	29	28	31
Transit Riders or Carpoolers (millions)	14	11	8	6	5	5
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	4,076	3,488	3,360	3,115	2,580	2,683
Rank	61	62	59	60	62	60
Fuel per Peak Traveler (gallons)	15	13	13	13	11	11
Rank	47	53	51	52	57	51
Annual Delay						
Total Delay (1000s of person-hours)	7,073	6,057	5,863	5,443	4,505	4,725
Rank	58	62	57	60	60	59
Delay per Peak Traveler (person-hrs)	26	23	23	22	19	20
Rank	44	48	47	49	56	48
Delay due to Incidents (percent)	52	52	52	52	52	52
Travel Time Index	1.20	1.18	1.18	1.18	1.15	1.17
Rank	31	36	35	33	38	26
Congestion Cost						
Total Cost ($ millions)	101	85	82	74	60	61
Rank	61	62	59	60	62	59
Cost per Peak Traveler ($)	377	327	324	299	247	258
Rank	45	52	49	51	57	51

Note: System Performance statistics for 2000 through 2005 data reflect the effects of operational treatments.

Note: Zeroes in the table reflect values less than 0.5.

The Mobility Data for Sarasota-Bradenton, FL, Continued

Inventory Measures	1993	1992	1991	1990	1989	1988
Urban Area Information						
Population (1000s)	475	465	455	430	405	390
Rank	67	67	67	69	69	69
Urban Area (square miles)	460	430	420	405	395	385
Popn Density (persons/sq mile)	1,033	1,081	1,083	1,062	1,025	1,013
Peak Travelers (1000s)	225	218	210	196	183	175
Freeway						
Daily Vehicle-Miles of Travel (1000s)	370	345	350	340	320	300
Lane Miles	50	50	50	50	50	45
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	4,385	4,300	4,275	4,085	3,815	3,650
Lane Miles	880	880	875	855	825	800
Public Transportation						
Annual Psgr-Miles of Travel (millions)	9	9	9	8	8	7
Annual Unlinked Psgr Trips (millions)	2	2	2	2	2	2
Cost Components						
Value of Time ($/hour)	10.75	10.50	10.25	10.00	9.25	8.80
Commercial Cost ($/hour)	57.05	55.40	53.80	51.60	48.95	46.70
Fuel Cost ($/gallon)	1.13	1.12	1.10	1.05	1.08	1.00
System Performance						
Congested Travel (% of peak VMT)	42	38	38	36	34	34
Congested System (% of lane-miles)	47	43	43	43	42	43
Congested Time (number of "Rush Hours")	5.2	5.0	5.0	4.6	4.2	4.2
Annual Increase Needed To Maintain Constant Congestion Level:						
Lane-Miles	35	37	43	28	18	17
Transit Riders or Carpoolers (millions)	6	6	8	5	3	3
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	2,594	2,274	2,253	1,997	1,731	1,607
Rank	60	60	55	57	59	58
Fuel per Peak Traveler (gallons)	12	10	11	10	9	9
Rank	47	48	45	47	44	42
Annual Delay						
Total Delay (1000s of person-hours)	4,584	4,055	4,013	3,506	3,046	2,808
Rank	55	57	53	54	56	55
Delay per Peak Traveler (person-hrs)	20	19	19	18	17	16
Rank	45	46	41	42	41	41
Delay due to Incidents (percent)	52	52	52	52	52	52
Travel Time Index	1.17	1.15	1.15	1.14	1.13	1.12
Rank	26	28	26	26	25	26
Congestion Cost						
Total Cost ($ millions)	58	50	48	41	33	29
Rank	56	58	54	56	57	57
Cost per Peak Traveler ($)	256	229	229	208	181	166
Rank	47	47	42	44	43	41

Note: System Performance statistics for 2000 through 2005 data reflect the effects of operational treatments.

Note: Zeroes in the table reflect values less than 0.5.

The Mobility Data for Sarasota-Bradenton, FL, Continued

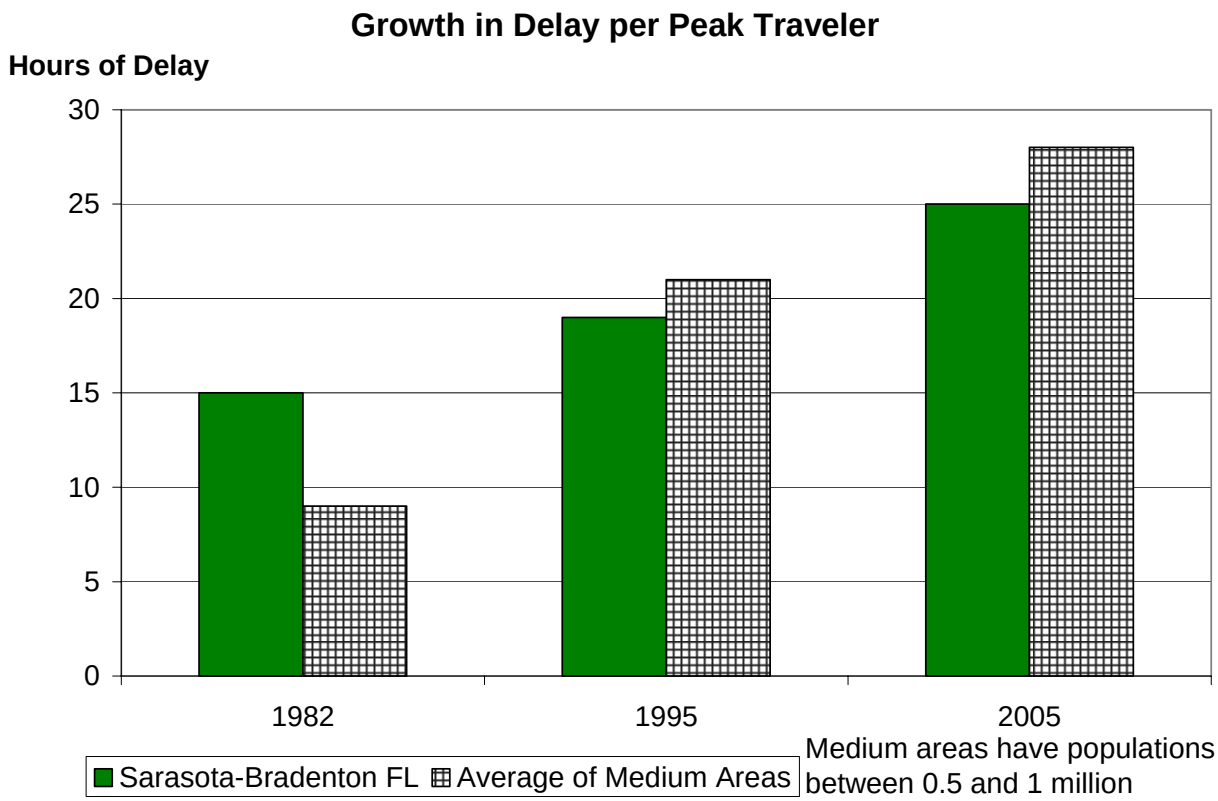
Inventory Measures	1987	1986	1985	1984	1983	1982
Urban Area Information						
Population (1000s)	380	370	360	350	340	325
Rank	69	69	69	70	70	70
Urban Area (square miles)	380	365	350	340	330	320
Popn Density (persons/sq mile)	1,000	1,014	1,029	1,029	1,030	1,016
Peak Travelers (1000s)	169	164	158	152	147	139
Freeway						
Daily Vehicle-Miles of Travel (1000s)	270	260	250	240	240	240
Lane Miles	45	45	45	45	45	45
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	3,545	3,420	3,550	3,485	3,345	3,000
Lane Miles	780	760	745	735	715	700
Public Transportation						
Annual Psgr-Miles of Travel (millions)	7	5	7	13	13	13
Annual Unlinked Psgr Trips (millions)	1	2	2	2	2	2
Cost Components						
Value of Time ($/hour)	8.50	8.20	8.00	7.75	7.45	7.20
Commercial Cost ($/hour)	44.85	43.30	42.50	41.05	39.35	38.10
Fuel Cost ($/gallon)	1.00	0.98	1.28	1.29	1.32	1.38
System Performance						
Congested Travel (% of peak VMT)	36	35	39	39	38	29
Congested System (% of lane-miles)	47	42	42	42	42	42
Congested Time (number of "Rush Hours")	4.0	4.0	4.6	4.6	4.4	3.4
Annual Increase Needed To Maintain Constant Congestion Level:						
Lane-Miles	27	- -	- -	- -	- -	- -
Transit Riders or Carpoolers (millions)	4	- -	- -	- -	- -	- -
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	1,672	1,583	1,848	1,789	1,659	1,129
Rank	54	51	42	41	40	46
Fuel per Peak Traveler (gallons)	10	10	12	12	11	8
Rank	36	34	21	17	13	26
Annual Delay						
Total Delay (1000s of person-hours)	2,918	2,773	3,220	3,110	2,899	2,013
Rank	52	50	42	40	37	44
Delay per Peak Traveler (person-hrs)	17	17	20	20	20	15
Rank	34	31	17	14	13	22
Delay due to Incidents (percent)	52	52	52	52	52	52
Travel Time Index	1.13	1.13	1.15	1.15	1.14	1.10
Rank	19	17	10	9	7	16
Congestion Cost						
Total Cost ($ millions)	29	27	31	29	26	18
Rank	52	50	42	41	38	45
Cost per Peak Traveler ($)	173	164	196	191	179	127
Rank	37	32	18	17	15	22

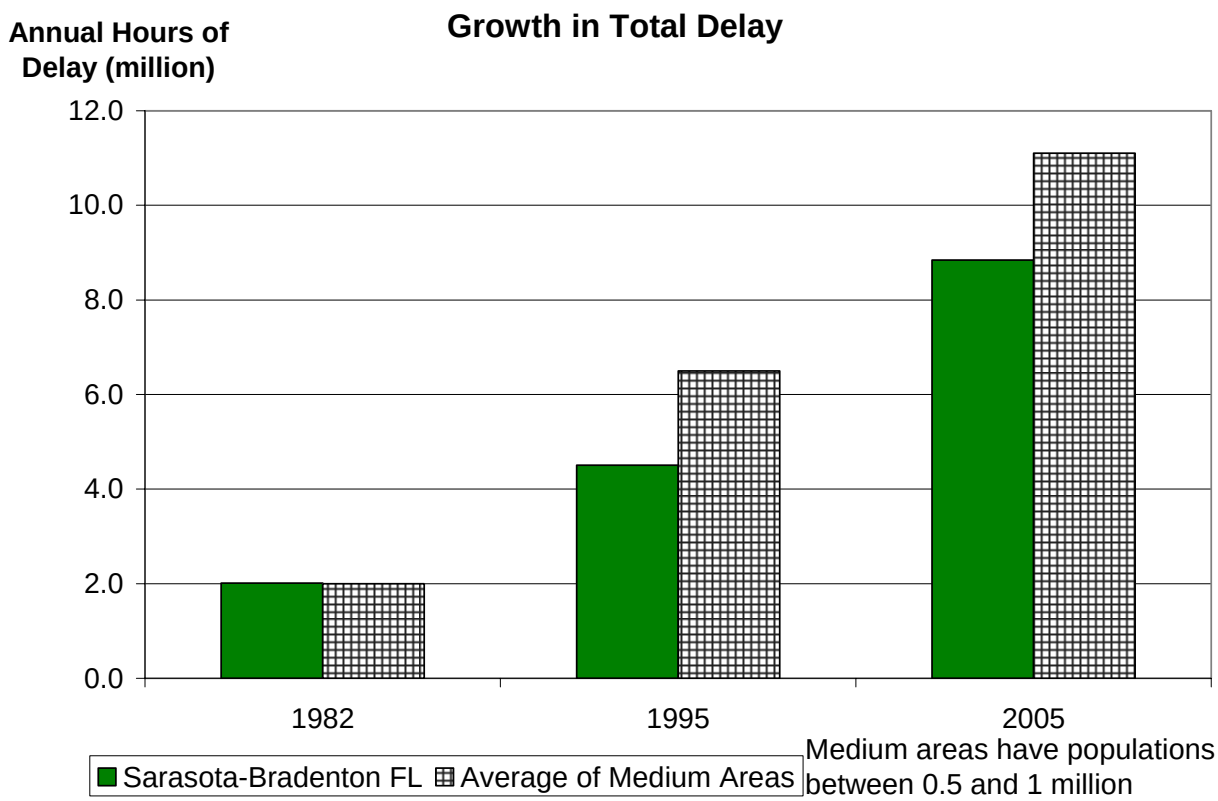
Note: System Performance statistics for 2000 through 2005 data reflect the effects of operational treatments.

Note: Zeroes in the table reflect values less than 0.5.

Benefits From Public Transportation Service and Operations Strategies for Sarasota-Bradenton, FL

Operations Strategies	2005	2004	2003	2002	2001	2000
Freeway Ramp Metering						
Percent of Roadway Miles	--	--	--	--	--	--
Annual Delay Reduction (1000 hours)	--	--	--	--	--	--
Freeway Incident Management						
Cameras						
Percent of Roadway Miles	--	--	--	--	--	--
Service Patrols						
Percent of Roadway Miles	47	47	34	38	--	--
Annual Delay Reduction (1000 hours)	12	10	3	2	--	--
Arterial Signal Coordination						
Percent of Roadway Miles	68	67	51	44	40	40
Annual Delay Reduction (1000 hours)	73	77	87	78	45	44
Arterial Access Management						
Percent of Roadway Miles	60	56	40	40	40	40
Annual Delay Reduction (1000 hours)	422	427	349	347	360	352
HOV Lanes						
Daily Passenger-miles of Travel (1000s)	--	--	--	--	--	--
HOV User Delay Savings	--	--	--	--	--	--
Total Effect of Operations Treatments						
Annual Delay Reduction (1000 hours)	506	514	440	427	404	396
Annual Delay Saved per Peak Traveler (hours)	1	2	1	1	1	1
Annual Congestion Cost Savings ($million)	8.9	8.7	7.1	6.7	6.2	5.9
Travel Time Index with Strategies	1.185	1.186	1.182	1.182	1.182	1.182
Travel Time Index (Base)	1.195	1.196	1.191	1.191	1.191	1.192
Public Transportation Service						
Existing Service						
Annual Passenger-miles of Travel (million)	13	14	17	18	16	15
Unlinked Passenger Trips (million)	3	3	3	3	3	2
Travel Time Index (combined road and transit)	1.183	1.183	1.178	1.178	1.178	1.179
Condition if Public Transportation Service were Discontinued						
Travel Time Index	1.195	1.196	1.191	1.192	1.191	1.192
Annual Delay Increase (1000 hours)	82	79	111	117	93	94
Annual Delay Increase per Peak Traveler (hours)	0	0	0	0	0	0
Annual Congestion Cost Increase ($million)	1.4	1.3	1.8	1.8	1.4	1.4


Growth in Delay per Peak Traveler
Hours of Delay
30
25
20
15
10
5
0
1982
1995
2005
Sarasota-Bradenton FL
Average of Medium Areas
Medium areas have populations between 0.5 and 1 million


Growth in Total Delay
Annual Hours of Delay (million)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
1982
1995
2005
Sarasota-Bradenton FL
Average of Medium Areas
Medium areas have populations between 0.5 and 1 million

Appendix B

Congestion Management Strategies

Table B-1: Demand Management Strategies

Strategy	Congestion Impact	Implementation Costs	Implementation Time Frame	Local Practicality
Transportation Demand Management				
Alternative Work Hours Three main variations: staggered hours, flex-time, and compressed work weeks. Staggered hours require employees in different work groups to start at different times in order 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.	• Reduce peak-period VMT • Improve travel time among participants	• No capital costs • Agency costs for outreach and publicity • Employer costs associated with accommodating alternative work schedules	• Short-term: 1 to 5 years	Very Practical
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.	• Reduce VMT	• First-year implementation costs for private-sector (per employee for equipment) • Second-year costs tend to decline	• Short-term: 1 to 5 years	Very Practical
Ridesharing Participants are matched with potential candidates for sharing rides, typically arranged/encouraged through employers or transportation management agencies (TMAs), which provide ride-matching services. More effective if combined with HOV lanes, parking management, guaranteed ride home policies, and employer-based incentive programs.	• Reduce work VMT • Reduce SOV trips	• Savings per carpool and vanpool riders • Costs per year per free parking space provided • Administrative costs	• Short-term: 1 to 5 years	Very Practical
Implementing Park-and-Ride Lots Used in conjunction with HOV lanes and/or express bus services. Particularly helpful when coupled with other commute alternatives such as carpool/vanpool programs, transit, and/or HOV lanes.	• Reduce regional VMT (up to 0.1 percent) • Increase mobility and transit efficiency	• Structure costs for parking area • If investing in a transit connection, transit costs such as bus bays and shelters • Amenities such as lighting, trash cans, emergency phones, and bike racks/lockers	• Medium-term: 5 to 10 years	Practical

Table B-1: Demand Management Strategies (continued)

Strategy	Congestion Impact	Implementation Costs	Implementation Time Frame	Local Practicality
Transportation Demand Management				
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.	• Decrease demand during peak periods	• Capital costs for electronic toll collectors, booths, software, and cameras • Operating and maintenance costs • Road pricing is revenue generating so the costs can be covered by the revenue accrued	• Medium-Term: 5 to 10 years	Practical
Guaranteed Ride Home 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.	• Increase transit and carpool participation	• Administrative costs • Operations cost of providing a ride to those who need it	• Short-term: 1 to 5 years	Very Practical
Car Sharing Programs These programs and station cars allow a large group of people to share a pool of vehicles, usually owned by an implementing agency or private company, and split the associated costs. Cars are parked in neighborhoods, at transit stations, or at employers for quick access. Users generally pay per use fee or an annual/monthly fee.	• Encourages people to use transit as primary form of transport as they can use the shared car to supplement transit use	• Costs vary but program generates revenue, so it can pay for itself • Donated or reduced priced parking spaces usually assist with making these programs viable	• Short-term: 1 to 5 years	Practical

Table B-1: Demand Management Strategies (continued)

Strategy	Congestion Impact	Implementation Costs	Implementation Time Frame	Local Practicality
Transportation Demand Management				
High Occupancy Vehicle Lanes Increases corridor capacity while at the same time provides an incentive for single-occupant drivers to shift to ridesharing. Most effective as part of a comprehensive effort to encourage HOVs, including publicity, outreach, park-and-ride lots, rideshare matching services, and employer services.	• Reduce VMT • Reduce regional trips • Increase vehicle occupancy • Decrease travel times • Increase transit use and improve bus travel times	• Capital costs vary depending on whether a new land is added or an old lane is redesignated • Annual operations and enforcement • Can create environmental and community impacts • Managed Lanes have additional costs for various technology devices	• Medium-term: 5 to 10 years (includes planning, engineering, and implementation)	Practical
Managed Lanes 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.			• Assumes medium to long-term: 5 to over 10 years	Practical
Auto Restricted Zones Areas where vehicular travel is regulated, controlled, or restricted in some manner. Generally used in urban areas.	• Increase walking, biking, or transit trips	• Design and implementation costs variable • Operating and maintenance costs variable	• Short-term: 1 to 5 years	Practical
Live Near Your Work Campaign Strives to educate individuals on the true cost of transportation so that they can make better decisions regarding where to live.	• Decrease vehicle miles traveled	• Marketing costs • Employer/employee outreach	• Medium-term: 5 to 10 years	Very Practical
Alternative Mode Marketing and Education Providing education on alternative modes of transportation can be an effective way of increasing demand for alternative modes. Can include mapping websites that compute directions and travel times for multiple modes of travel.	• Increase walking, biking, or transit trips	• Varies depending on extent of educational or marketing campaign	• Short-term: 1 to 5 years	Very Practical
Safe Routes to Schools Program Federally-funded program, provides 100 percent funding to communities to invest in pedestrian and bicycle infrastructure surrounding schools.	• Increase walking and/or biking	• Federally funded program	• Short-term: 1 to 5 years	Very Practical
Employer-Landlord Parking Agreements Employers can negotiate leases so that they pay only for 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.	• Encourage employees to walk, bike, or take transit	• Economic incentives used to encourage employer and landlord buy-in	• Short-term: 1 to 5 years	Practical

Table B-1: Demand Management Strategies (continued)

Strategy	Congestion Impact	Implementation Costs	Implementation Time Frame	Local Practicality
Transportation Demand Management				
Preferential or Free Parking for HOVs Provides an incentive for employees to carpool.	• Increase carpooling and vanpooling	• Relatively low costs, primarily borne by private sector, including signing, striping, and administrative costs	• Short-term: 1 to 5 years	Practical
Location-Specific Parking Ordinances Parking requirements can be adjusted for factors such as availability of transit, a mix of land uses, or pedestrian-oriented development that may reduce the need for on-site parking. Encourages transit-oriented and mixed-use development.	• Increase walking, biking, or transit trips	• Economic incentives used to encourage developer buy-in	• Long-term: 10 or more years	Practical
Parking Management Reduces the instance of free parking so as to encourage other modes of transportation. Options include reducing the minimum number of spaces required per development, increasing the share of parking spaces for HOVs, introducing or raising parking fees, providing cash-out options for employees not utilizing subsidized parking spaces, and expanding parking at transit stations or park-and-ride lots.	• Increase walking, biking, or transit trips • Decrease congestion	• Administrative costs	• Short-term: 1 to 5 years	Practical
Public Transit Improvements				
Reduced Transit Fares Encourages additional transit use, to the extent that high fares are a real barrier to transit.	• Reduce daily VMT • Reduce congestion • Increase ridership	• Loss in revenue per rider • Capital costs per passenger trip • Operating costs per passenger trip • Operating subsidies needed to replace lost fare revenue if increased ridership does not offset loss • Alternative financial arrangements need to be negotiated with donor agencies	• Short-term: Less than 1 year	Practical

Table B-1: Demand Management Strategies (continued)

Strategy	Congestion Impact	Implementation Costs	Implementation Time Frame	Local Practicality
Public Transit Improvements				
Increased Bus Route Coverage or Frequencies Provides better accessibility to transit to a greater share of the population. Increasing frequency makes transit more attractive to use.	• Increase ridership • Decrease travel times • Reduce VMT	• Capital costs per passenger trip • Operating costs per passenger trip • New bus purchase likely	• Short-term: 1 to 5 years (includes planning, engineering, and implementation)	Very Practical
Real-Time Information on Transit Routes Provides real-time information on bus progress either at bus stops, terminals, and/or personal wireless devices.	• Increase ridership • Decrease travel times	• Design and implementation costs vary • Operating and maintenance costs vary	• Short-term: 1 to 5 years	Very Practical
Premium Transit 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.	• Reduce VMT	• New systems require large up-front capital outlays and ongoing sources of operating subsidies	• Long-term: 10 or more years (includes planning, engineering, and construction)	Practical
Hard Shoulder Running for Transit Vehicles Allows the use of the shoulder for transit vehicles during congested periods. By coupling this strategy with others that encourage transit use, the strategy can encourage drivers to switch to transit use.	• Increase transit trips • Decrease congestion	• May require shoulder paving, signage, striping, and construction of refuge spots	• Short-term: 1 to 5 years	Practical
Transit Capacity Expansion: This strategy adds new vehicles to expand transit services.	• Increase ridership • Decrease single occupancy vehicle trips	• Capital costs for new bus purchases	• Short-term: 1 to 5 years	Very Practical
Provide Exclusive Bus Right-Of-Way Exclusive right-of-way includes bus ways, bus-only lanes, and bus bypass ramps. This strategy is applied to freeways and major highways that have routes with high ridership.	• Increase mobility • Reduce congestion by improving bottlenecks • Increase traffic flow	• Capital costs vary depending on whether a new land is added or an old lane is redesignated	• Short-term: 1 to 5 years	Practical

Table B-1: Demand Management Strategies (continued)

Strategy	Congestion Impact	Implementation Costs	Implementation Time Frame	Local Practicality
Bicycle/Pedestrian/Trail				
New Sidewalk Connections Encourages pedestrian traffic for short trips.	• Increase mobility and access •Discourage motor vehicle use for short trips • Increase non-motorized mode share	• Construction costs for sidewalks	• Short-term: 1 to 5 years (includes planning, engineering, and implementation)	Very Practical
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.	• Increase mobility and access • Increase non-motorized mode share • Separate slow-moving bicycles from motorized vehicles • Reduce vehicle and bicycle accidents	• Design and construction costs for paving, striping, signals, and signage • ROW costs if widening necessary • Bicycle lanes may require improvements to roadway shoulders to ensure acceptable pavement quality	• Short-term: 1 to 5 years (includes planning, engineering, and implementation)	Very Practical
Improved Bicycle Facilities at Transit Stations and Other Trip Destinations Bicycle racks and bike 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.	• Increase non-motorized mode share	• Capital and maintenance costs for bicycle racks, lockers, and locker rooms	• Short-term: 1 to 5 years (includes planning, engineering, and implementation)	Very Practical
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.	• Increase non-motorized mode share • Reduce vehicle and bicycle/pedestrian accidents	• Increased monitoring and maintenance costs • Capital costs of sidewalk improvements and additional traffic control devices	• Short-term: 1 to 5 years	Very Practical

Table B-1: Demand Management Strategies (continued)

Strategy	Congestion Impact	Implementation Costs	Implementation Time Frame	Local Practicality
Bicycle/Pedestrian/Trail				
Exclusive Non-Motorized ROW Abandoned rail rights-of-way and existing parkland can be used for medium- to long-distance bike trails, improving safety, and reducing travel times.	• Improve mobility • Increase non-motorized mode share • Reduce VMT • Separate slow-moving bicycles from motorized vehicles • Reduce vehicle and bicycle accidents	• ROW costs • Construction and engineering costs • Maintenance costs	• Medium-term: 5 to 10 years (includes planning, engineering, and implementation)	Practical
Land Use/Growth Management				
Design Guidelines for Pedestrian-Oriented Development Maximum block lengths, building setback restrictions, and streetscape enhancements are examples of design guidelines that can be codified in zoning ordinances to encourage pedestrian activity	• Increase non-motorized mode share • Decrease SOV trips • Reduce VMT	• Capital costs largely borne by private sector; developer incentives may be necessary • Public sector may be responsible for some capital and/or maintenance costs associated with ROW improvements	• Short-term: 1 to 5 years	Practical
Mixed-Use Development Allows many trips to be made without automobiles. People can walk to restaurants and services rather than use their vehicles.	• Increase walking, biking, or transit trips • Decrease SOV trips • Decrease in VMT	• Public costs to set up and monitor appropriate ordinances • Economic incentives used to encourage developer buy-in	• Long-term: 10 or more years	Practical

Table B-1: Demand Management Strategies (continued)

Strategy	Congestion Impact	Implementation Costs	Implementation Time Frame	Local Practicality
Land Use/Growth Management				
Infill and Densification Takes advantage of infrastructure that already exists, rather than building new infrastructure on the fringes of the urban area.	• Increase walking, biking, or transit trips • Decrease SOV trips • Decrease in VMT	• Public costs to set up and monitor appropriate ordinances • Economic incentives used to encourage developer buy-in	• Long-term: 10 or more years	Practical
Transit-Oriented Development Clusters housing units and/or businesses near transit stations in walkable communities.	• Increase walking, biking, or transit trips • Decrease SOV trips • Decrease in VMT	• Public costs to set up and monitor appropriate ordinances • Economic incentives used to encourage developer buy-in	• Long-term: 10 or more years	Practical
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).	• Decrease vehicle trips • Increase carpooling and vanpooling	• Implementation costs vary depending upon level of reduction required and are primarily borne by private sector	• Short-term: 1 to 5 years	Practical
Trip Reduction Ordinance Use a locality's regulatory authority to limit trip generation from a development. Spread the burden of reducing trip generation among existing and future developments better than Negotiated Demand Management Agreements.	• Decrease vehicle trips • Increase carpooling and vanpooling	• Implementation costs vary depending upon level of reduction required and are primarily borne by private sector	• Short-term: 1 to 5 years	Practical

Table B-2: Operational Management Strategies

Strategy	Congestion Impact	Implementation Costs	Implementation Time Frame	Local Practicality
ITS & Transportation Systems Management				
Ramp Metering Uses a signal at the point where the ramp meets the freeway, which regulates the rate and spacing of traffic entering the freeway based on actual conditions; allows freeways to operate at their optimal flow rates, thereby speeding travel and reducing accidents.	• Decrease travel times • Reduce accidents • Improve traffic flow on major facilities	• Operating and maintenance costs • Significant costs associated with enhancements to centralized control system • Capital costs include up to $50,000 per meter, costs for sensors, and communication equipment	• Medium-term: 5 to 10 years	Not Practical
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.	• Improve travel time • Reduce number of stops • Reduce VMT	• Capital investment can vary from $2,000 to over $100,000 per signal • Operating and maintenance costs per signal	• Short-term: 1 to 5 years	Very Practical
Intermodal Enhancements Coordinating modes to make movement from one mode to the other easier. Can 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.	• Improve travel time • Increase the use of alternative mode split	• Capital investment can vary depending upon improvement	• Short-term: 1 to 5 years	Practical
Reversible Traffic Lanes Lane traffic changes direction depending upon time or day or special events. Direction of flow may be established using signals, signage, or pavement markings. Appropriate where traffic flow is highly directional. This type of routing is often used on bridges and tunnels where adding lanes can be expensive or impossible.	• Increase peak direction capacity • Decrease peak travel times • Improve mobility	• Capital costs can be relatively small when compared to adding lanes. • Barrier separated costs • Maintenance costs vary	• Short-term: 1 to 5 years	Not Practical
Goods Movement Management Restricts delivery or pickup of goods in certain areas so as to reduce congestion.	• Decrease congestion	• Administrative costs	• Short-term: 1 to 5 years	Practical

Table B-2: Operational Management Strategies (continued)

Strategy	Congestion Impact	Implementation Costs	Implementation Time Frame	Local Practicality
ITS & Transportation Systems Management				
Dynamic Messaging Uses changeable message signs to warn motorists of downstream queues, provides travel time estimates, provides alternate route information, and provides information on special events, weather, or accidents.	• Effective at decreasing non-recurrent congestion	• Dynamic signs can run between $75,000 and $250,000 each plus wiring, sensors, and cameras	• Short-term: 1 to 5 years	Very Practical
Highway Information System Provide travelers with real-time information that can be used to make trip and route choice decisions.	• Reduce travel times and delay • Some peak-period travel shift	• Design and implementation costs variable • Operating and maintenance costs variable	• Medium-term: 5 to 10 years	Very Practical
Advanced Traveler Information Systems Provides 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.	• Reduce travel times and delay • Some peak-period travel shift	• Design and implementation costs variable • Operating and maintenance costs variable	• Medium-term: 5 to 10 years	Very Practical
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.	• Very effective at decreasing recurrent congestion	• Design and implementation costs variable	• Short-term: 1 to 5 years	Practical
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.	• Significantly reduce transit travel times and delay	• Cost of technology improvements	• Short-term: 1 to 5 years	Practical
Multilingual Communication Implementing the use of multilingual marketing materials will help reach populations that might not otherwise get the message.	• Increase walking, biking, or transit trips	• Varies depending on extent of educational or marketing campaign	• Short-term: 1 to 5 years	Practical
Channelization This strategy is used to optimize the flow of traffic for making left or right turns usually using concrete islands or pavement markings.	• Reduce travel times and delay	• Design/construction costs variable • Maintenance costs variable	• Short-term: 1 to 5 years	Practical
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.		• Design and construction costs variable	• Short-term: 1 to 5 years	Practical

Table B-2: Operational Management Strategies (continued)

Strategy	Congestion Impact	Implementation Costs	Implementation Time Frame	Local Practicality
ITS & Transportation Systems Management				
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.	• Reduce travel time • Very effective at decreasing recurrent congestion	• Capital costs variable and may be substantial	• Short-term: 1 to 5 years	Practical
Vehicle Use Limitations and Restrictions This strategy includes all-day or selected time-of-day restrictions of vehicles, typically trucks, to increase roadway capacity.	• Reduce travel time • Reduce accidents • Improve traffic flow on major facilities	• Administrative costs	• Short-term: 1 to 5 years	Practical
Geometric Improvements for Transit Service Includes providing for transit sites that do not affect the flow of traffic but improved sight lines, and improve merging and diverging of buses and cars.	• Increase mobility • Reduce congestion by improving bottlenecks • Increase traffic flow • Improve safety	• Costs vary by type of design	• Short-term: 1 to 5 years	Practical
Improved Signage Improving or removing signage to clearly communicate location and direction information can improve traffic flow.	• Reduce travel time • Improve traffic flow on major facilities	• Capital and maintenance costs	• Short-term: 1 to 5 years	Practical

Table B-2: Operational Management Strategies (continued)

Strategy	Congestion Impact	Implementation Costs	Implementation Time Frame	Local Practicality
Incident Management				
Freeway Incident Detection and Management Systems Effective way to alleviate non-recurring congestion. Systems typically include video monitoring, dispatch systems, and sometimes roving service patrol vehicles.	• Reduce accident delay • Reduce travel time • Reduce VHT and PHT	• Capital costs variable and substantial • Annual operating and maintenance costs	• Medium-term: 5 to 10 years	Very Practical
Access Management				
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.	• Increase walking, biking, or transit trips	• Administrative costs	• Short-term: 1 to 5 years	Very Practical
Corridor Preservation/Management				
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.	• Significant benefits to reduce future congestion through careful planning	• Significant land acquisition costs	• Short-term: 1 to 5 years	Practical
Corridor Management Applicable mostly in moderate to high density areas, this 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.	• Significant benefits to reduce future congestion through careful planning	• Mostly administrative costs	• Short-term: 1 to 5 years	Practical
Capacity Increases				
Highway Widening by Adding Lanes Increase the capacity of congested roadways through additional general purpose travel lanes	• Increase capacity, reducing congestion in the short term • Long-term effects on congestion depend on local conditions	• Costs vary by type of highway constructed; dense urban areas can be very expensive • Can create environmental and community impacts	• Long-term: 10 or more years (includes planning, engineering, and construction)	Practical