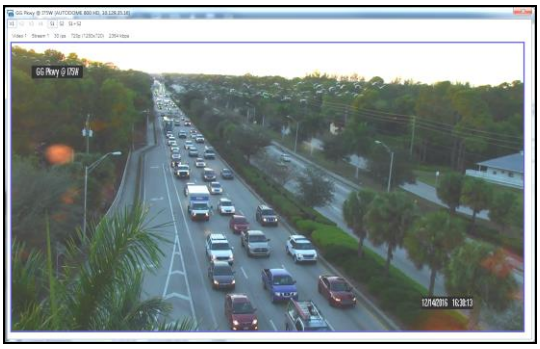
CONGESTION MANAGEMENT PROCESS 2017 Update

Adopted by the Collier MPO on October 13, 2017



Prepared by the Collier MPO

This document was prepared by the Collier Metropolitan Planning Organization (MPO) in Collier County, Florida in collaboration with the Florida Department of Transportation and the advisory committees of the MPO.

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Collier MPO Mission

Provide transportation planning leadership through a collaborative effort to maintain a safe, efficient, integrated and multi-modal transportation system.

Collier MPO Vision

The MPO strives to provide a fully, integrated and multi-modal transportation system that safely and efficiently moves people and goods while promoting economic development and protecting natural and man-made regional assets.

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EXECUTIVE SUMMARY

2017 Initiatives

The Congestion Management System/Intelligent Transportation System Stakeholders (CMS/ITS) Committee, through a year-long process of deliberation and reviewing draft updates to the 2008 CMP, ultimately concluded that the following initiatives are necessary to lay the foundation for a data-driven planning process to identify congestion hotspots, analyze alternative solutions, and prioritize projects for MPO Board adoption. The end result is the temporary suspension of business as usual, guided by the Board's decision to temporarily suspend its practice of dividing its annual allocation of Surface Transportation – Urban (SU) funds among CMS/ITS, Pathways and Bridge Projects for a period of 5 years..

Thinking Beyond the CMS/ITS Box

The 2017 Update expands beyond the Committee's focus beyond the more typical low cost projects such as signal timing adjustments and technology upgrades, constructing bus shelters and bicycle/pedestrian facilities. In order to do so, the 2017 Update and the Committee must consider the full range of funding available to address congestion by adding capacity to the existing road system and seeking ways to increase ridership in transit and ride-sharing, and more proactively link new bicycle/pedestrian facilities to providing access to transit stops, transit hubs and the "last mile" connectivity that transit users depend on.

Transportation System Performance Report

The 2017 Update calls for funding a Biennial Transportation System Performance Report (Performance Report) to provide accurate, up-to-date information on system performance and assess alternative strategies for congestion management that meet state and local needs. The Performance Report will assess problem areas and identify prioritized projects for implementation.

Performance Measures

Previous updates to the CMP identified various performance measures but stopped short of requiring their application. The 2017 Update identifies and adopts performance measures, thereby requiring project sponsors to establish baseline measures, project performance, measure and report on the results to the CMS/ITS Committee and the MPO Board.

Reoccurring Projects

The 2017 Update also identifies and commits funding towards a typology of reoccurring projects reflective of good business practices – maintaining ITS infrastructure that is consistent with the Florida Department of Transportation (FDOT) ITS architecture. This category of projects does not lend itself to measuring performance – it is simply a matter of remaining current with technology.

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INTRODUCTION

Previous Updates

The original Naples (Collier County) Congestion Management System Manual was created in 1997 to be consistent with the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and the 1995 National Highway System changes requiring the development and implementation of the Congestion Management System (CMS) and Traffic Monitoring System. This was an operational approach and it focused on both short-term and long-term congestion management and mobility strategies. A major update to the CMS was completed in December 2006 and was incorporated into the 2030 Long Range Transportation Plan (LRTP) to identify the prioritization process for the MPO's CMS funding annual set-aside of Federal Transportation dollars. The 2006 CMS Update incorporated some of the management process changes required with the federal transportation authorization of Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

In 2008, the Collier Metropolitan Planning Organization's (MPO) Congestion Management System / Intelligent Transportation System (CMS/ITS) Stakeholders Committee suggested revising the CMS Process to integrate the management and operations strategies required by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA). The CMS/ITS Stakeholders Committee was an essential part of this update. The 2008 Congestion Management Process (CMP) Update included a review of the original manual, analysis of congestion strategies, description of performance measures, monitoring and coordination with other plans and systems to best facilitate implementation and monitoring.

2017 Update

The 2017 Update brings the document current with the 2040 LRTP adopted in December 2015 and with new federal legislation. The Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed into law on July 6, 2012. The Fixing America's Surface Transportation (FAST) Act was signed into law on December 4, 2015. MAP-21 and the FAST Act require performance-based and data-driven planning. MPOs are required to actively engage stakeholders in developing plans and performance targets. The CMS/ITS Committee has once again been instrumental in the development of the scope and revisions to the narrative, strategies, performance measures and need for additional studies described in this update.

Federal Guidance

Congestion is understood to be the level at which the transportation system performance is no longer acceptable due to traffic interference. The 2040 LRTP measures congestion, for the purpose of identifying

network improvements, using the ratio of the forecasted traffic volume to the existing plus committed capacity of the roadway segment, referred to as the Volume/Capacity (v/c) ratio. A v/c ratio greater than 1.0 is considered "over capacity".

Federal legislation requires the transportation planning process to address congestion management through a system that provides for effective management and operation. Each MPO with a population exceeding 200,000, known as a Transportation Management Area (TMA), must have a CMP to manage congestion by identifying problem corridors and developing strategies to mitigate congestion. The CMP must be developed and implemented as an integrated part of the metropolitan planning process. In TMAs designated as ozone or carbon monoxide non-attainment areas, the CMP takes on a greater significance. Collier County is fortunate in being in attainment for ozone and carbon monoxide, and therefore is not faced with additional regulations.

The FAST Act and current FDOT and FHWA guidance stress the importance of identifying performance measures and targets in order to monitor network performance by evaluating the effect of implemented strategies. The CMP creates a structured process for incorporating congestion issues into the metropolitan planning process – addressing congestion by developing congestion management objectives, developing performance measures to support the objectives, collecting data, analyzing problems, identifying solutions and evaluating the effectiveness of implemented strategies. This Federal guidance is precisely what the Performance Report is intended to address.

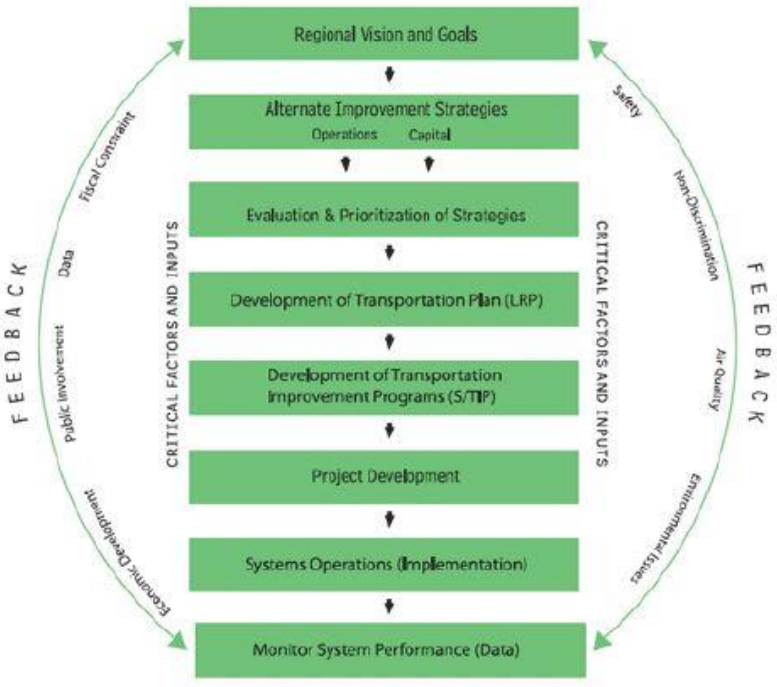
According to FHWA's "Congestion Management Process: A Guidebook", published in April 2011, a CMP is "a systematic and regionally-accepted approach for managing congestion that provides accurate, up-to-date information on transportation system performance and assesses alternative strategies for congestion management that meet state and local needs. The CMP is intended to move these congestion management strategies into the funding and implementation stages."

Refer to Figure 1 – The Transportation Planning Process, copied from the federal Guidebook on the following page.

State Requirements

In addition to the federal mandates for MPOs, Chapter 339.177, Florida Statutes, requires the FDOT to develop and implement a traffic congestion management process for managing programs and systems in cooperation with the twenty-seven MPOs in the state of Florida.

Figure 1. The Transportation Planning Process



Source: U.S Department of Transportation, FHWA and FTA "The Transportation Planning Process: Key Issues - A Briefing Book for Transportation Decisionmakers, Officials, and Staff," Updated September 2007, Publication Number: FHWA-HEP-07-039. Available at: http://www.planning.dot.gov/documents/BriefingBook/BBook.htm

The federal requirements identified in the Guidebook for preparing a CMP include:

1. Development of congestion management objectives
2. Establishment of measures of multimodal transportation system performance
3. Collection of data and system performance monitoring to define the extent and duration of congestion and determine the causes of congestion
4. Identification of congestion management strategies
5. Implementation activities, including identification of an implementation schedule and possible funding sources for each strategy
6. Evaluation of the effectiveness of implemented strategies

Coverage Area

The Collier CMP covers 2,025 square miles which is the entire physical area of Collier County (including of the City of Naples, Marco Island and Everglades City). The CMP coverage area is illustrated in Figure 2 (p23) and includes the roadway facilities addressed in the Collier County Annual Update and Inventory Report (AUIR). The

thoroughfare facilities of the City of Naples and Marco Island, and Everglades City are also addressed in the County's AUIR.

The population of Collier County increased nearly 28% from 2000 to 2010 and is expected to grow to 497,700 by 2040 per the Bureau of Economics and Business Research (BEBR) projections used for the 2040 LRTP. This represents an increase of 180,961, which amounts to a 57% increase over 2010. The County is also anticipated to see continued growth in employment with a total projected employment of more than 241,000 jobs in 2040, representing more than 41% growth over the 2010 total employment.

The CMP coverage areas for transit and bicycle/pedestrian purposes include the entire county. Transit and bicycle/pedestrian modes of travel can potentially be part of the solution for all other modes. In addition, all areas are directly served by these alternative modes. Potential transit improvements must be consistent the Transit Development Plan (TDP) FY 2016-2025 Major Update and the long range transit plan component of the 2040 LRTP. The TDP is an annually updated plan and report by Collier Area Transit (CAT) which provides system performance and annual ridership that can be used to evaluate the effectiveness of transit service in Collier County. Potential bicycle and pedestrian improvements are established through the MPO's Comprehensive Pathway Plan (CPP) adopted in December 2012. The CPP identifies on-and off-road bicycle and pedestrian project needs throughout Collier County, and is currently undergoing another update.

Freight and goods movement has been identified by FHWA as an integral component to current and future CMP activities. The MPO's "Freight and Goods Mobility Analysis" was adopted in June 2008. A freight component was updated and included in the 2040 LRTP.

The 2017 CMP Update is organized in sections based on federal guidance and the 2040 LRTP:

1. Congestion and Its Causes in Collier County
2. Congestion Management Goals and Objectives
3. Congestion Management Performance Measures
4. Congestion Management Strategies
5. Implementation
6. Evaluation and Monitoring the Effectiveness of Implemented Strategies

1. CONGESTION AND ITS CAUSES IN COLLIER COUNTY

The development of the 2040 LRTP System-wide Highway Needs Assessment began with an analysis of congestion within the highway network, freight needs, and safety to identify needed highway improvements. These improvements were then evaluated for environmental considerations to understand potential mitigation strategies. A key element of the System-Wide Highway Needs Assessment was the existing plus committed (E+C) transportation network, which is comprised of all existing facilities, plus those that have funding committed in the current Transportation Improvement Program (TIP) or other local capital improvement program. These are shown on Table 1 and Figure 2 copied below from the LRTP:

Table 1

Table 4-1 | 2014-2020 Transportation Improvement Program Capacity Improvements

Map ID	Improved Facility	Improvement
1	Intersection Improvement at Golden Gate Parkway at Livingston Road	Add Turn Lanes
2	Intersection Improvements at Various Locations on Pine Ridge between US 41 and I-75	Add Turn Lanes at Various Locations
3	Intersection Improvement at SR-82 at CR 850 (Corkscrew Road)	Add Turn Lanes
4	New Bridges in Golden Gate Estates at 8th St, 16th St, 47th Av	New Bridge Improvements
5	Intersection Improvement at Airport Pulling Road at Davis Boulevard	Add Turn Lanes
6	Roadway Improvement - Tree Farm Road from Davila Street to Massey Street	New Two Lane Collector Road
7	Roadway Improvement - Extension of City Gate Boulevard North	New Four Lane Collector Road
8	Roadway Improvement - Logan Boulevard from 1.5 mile N of Immokalee Rd to Lee Co Line	New Two Lane Collector Road
9	Roadway Improvement – Pristine Drive from Wolfe Road to Vanderbilt Beach Road	New Two Lane Collector Road
10	Roadway Improvement - Wilson Boulevard /Blackburn Road from +/-2 miles South of Existing End of Wilson Boulevard to Existing End of White Lake Boulevard	New Two Lane Haul Road
11	Roadway Improvement - Massey Street/Woodcrest Drive from Vanderbilt Beach Road Extension to Immokalee Road	Improve Existing Lanes/Extend Roadway
12	Roadway Improvement - Golden Gate Boulevard from Wilson Boulevard to 20th Street	Improve from Two Lanes to Four Lanes Minor Arterial
13	Roadway Improvement – Golden Gate Boulevard from 20th Street NE to Everglades Boulevard	Improve from Two Lanes to Four Lanes Minor Arterial

Figure 2

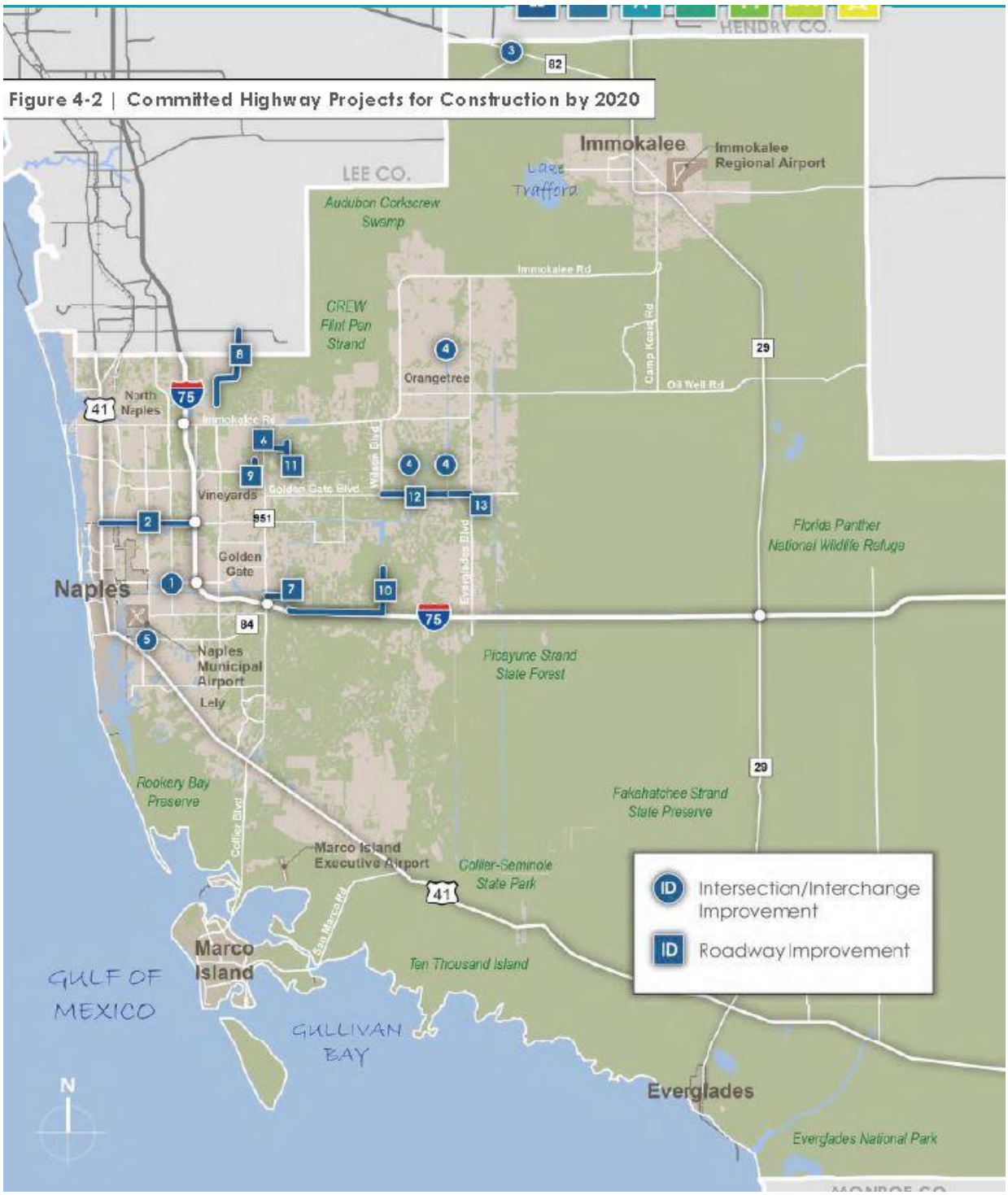
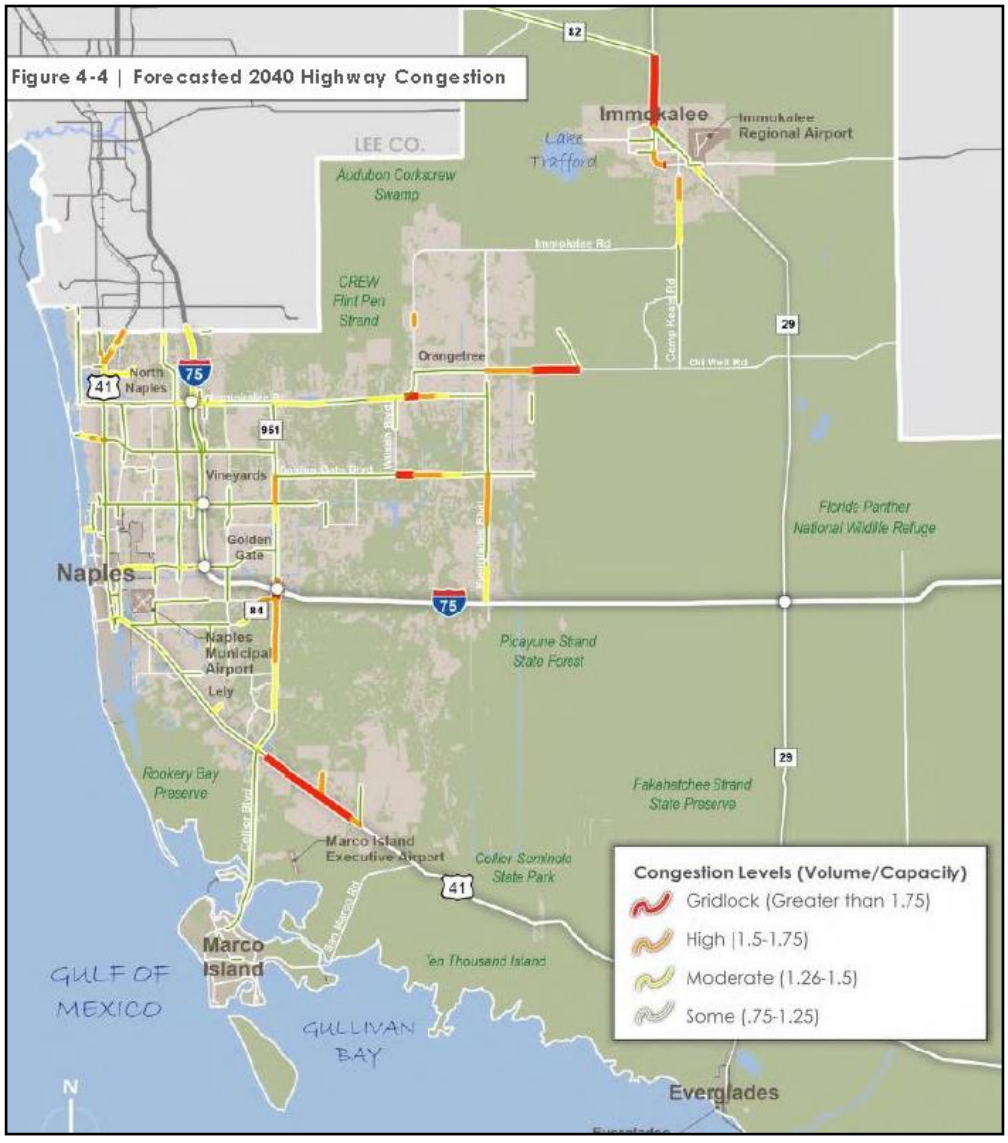


Figure 4-2 | Committed Highway Projects for Construction by 2020
HENDRY CO.
Immokalee
Immokalee Regional Airport
LEE CO.
Lake Trafford
Audubon Corkscrew Swamp
Immokalee Rd
CREW Flint Pen Strand
Orangetree
Camp Keais Rd
Oil Well Rd
North Naples
Vineyards
Golden Gate Blvd
Wilson Blvd
Everglades Blvd
Golden Gate
Naples
Naples Municipal Airport
Lely
Florida Panther National Wildlife Refuge
Picayune Strand State Forest
Rookery Bay Preserve
Collier Blvd
Fakahatchee Strand State Preserve
Marco Island Executive Airport
Collier-Seminole State Park
San Marco Rd
Marco Island
Ten Thousand Island
GULF OF MEXICO
GULLIVAN BAY
Everglades
Everglades National Park
ID Intersection/Interchange Improvement
ID Roadway Improvement
N

System-Wide Highway Needs were identified by using a travel demand model to assign future year traffic volumes to the E+C network. The modeling result helped to identify those existing or committed facilities that are expected to be congested by 2040 if no further improvements were made to the network. Network improvements were then identified to form the basis of the Needs Assessment. Congestion was measured using the ratio of the forecasted traffic volume to the existing plus committed capacity of the roadway segment, referred to as the Volume/Capacity (v/c) ratio. A v/c ratio of greater than 1.0 is considered "over capacity". Figure 3 (Figure 4-4 from the 2040 LRTP) illustrates the levels of congestion obtained by assigning the forecasted 2040 traffic to the E+C network. The facilities predicted to experience high and significant levels of congestion by 2040 are shown below.

Figure 3



2. CONGESTION MANAGEMENT GOALS AND OBJECTIVES

The CMP, in order to maintain consistency with the 2040 LRTP, hereby adopts the 2040 LRTP goals pertaining to congestion management. The 2040 LRTP goals address Federal transportation **planning factors.**

The CMP adopts the following goals, consistent with the 2040 LRTP:

- Increase the **safety** of the transportation system for motorized and non-motorized users – increased safety results in fewer crashes and fewer delays due to congestion
- Increase the **accessibility** and **mobility** of people and for freight – enhanced system capacity for private and commercial vehicles, transit and nonmotorized transportation reduces congestion
- Enhance the **integration** and **connectivity** of the transportation system across and between modes, people and freight – increased integration and connectivity among all modes will lesson congestion by providing alternative routes and modes of travel
- Promote **efficient system management** and **operations** – the 2040 LRTP allocates significant resources to congestion management and ITS programs
- Support the **economic vitality** of the metropolitan area – addressing and alleviating congestion supports economic vitality by reducing costs associated with delay

The CMP adopts the following objective from the 2040 LRTP specifically pertaining to reducing roadway congestion:

Reduce the aggregate lane miles with volume to capacity ratio (v/c) exceeding 1.0 based on the 2040 traffic assignment to the existing plus committed (E+C) network.

The project selection criteria listed under this objective in the 2040 LRTP include a number of performance measures for improvements to an existing deficient facility or to a new or neighboring facility intended to relieve an existing deficient facility.

The 2017 Update includes a survey of current practices, culminating with the identification and adoption of performance measures specific to addressing congestion management over the next 5 to 10 years.

3. CONGESTION MANAGEMENT PERFORMANCE MEASURES

Research

The CMS/ITS committee reviewed a wide variety of performance measures prior to making a selection for this update.

The following overview is provided for informational purposes. The listing of formal, adopted performance measures begins on page 13.

FDOT reports on the following Statewide Intelligent Transportation Systems (ITS) Performance Measures on an annual basis:

1. Total Annual 511 Calls
2. Road Ranger Stops
3. ITS Miles Managed
4. Incident Duration
5. Travel Time Reliability
6. Customer Satisfaction

Of these six performance measures, two are most applicable for inclusion at the MPO level: ITS Miles Managed and Travel Time Reliability.

ITS Miles Managed: According to the FDOT report, "Managing Congestion Problems with Intelligent Transportation Systems (2012), Florida's advanced traffic management systems (ATMS) use a variety of ITS technologies to manage vehicles on existing roadways and to maximize the value derived from, and capacity of, the State's transportation system. Florida's ITS devices are connected to FDOT's fiber optic network and managed by SunGuide® software.

Within Collier MPO's jurisdiction, both the City of Naples and Collier County manage Traffic Operation Centers (TOCs) in close coordination with each other and with FDOT to remain in full compliance with the FDOT Statewide ITS architecture.

Travel Time Reliability: FDOT identified two metrics for measuring travel time reliability and congestion. The planning time index (PTI) is also called the 95^{th} percentile travel time index and is the 95^{th} percentile travel time divided by free flow travel time. For example, PTI of 1.60 means that for a trip that takes 15 minutes in light traffic, a traveler should budget a total of 24 minutes to ensure on-time arrival 95% of the time. A secondary metric is the travel time index (TTI), which is a measure of traffic congestion. TTI is calculated as the ratio of average peak travel time to an off-peak (free-flow) standard, in this case 60 miles per hour (mph) for freeways. For example, a value of 1.20 means that average peak travel times are 20% longer than off-peak travel times. Travel time, travel speed, and volume data are the basis of these measures. Volume data are used

to compute vehicles miles traveled (VMT) which are then used as weights to compute an area-wide or corridor-wide measure average. Only non-holiday weekdays select periods are used in index calculations. The periods are: morning (AM) peak: 6 a.m. to 9.a.m. and evening (PM) peak: 4 p.m. to 7 p.m.

Examples of transit and nonmotorized transportation performance measures drawn from other Florida MPOs include:

- On-time performance: % of transit service that is on time, and
- Load factor: passengers per available seat
- Extent of transit network
- Population % within ½ miles of a facility

MAP-21 requires evidence-based targets based on projections made for specific projects in terms of the mitigation or reduction in congestion anticipated as a result of implementing the project. FHWA's guidance on developing a CMP includes the following table showing examples selected by FHWA to reflect a range of local and regional performance measures. Refer to Table 2 on the following page.

Table 2

Table 1. Examples of Performance Measures: Local and Regional

Type of Measure	Sample Localized/Corridor-level Measures	Sample Regional/System-level Measures
Congestion intensity: volume/capacity measures	▪ Volume-to-capacity ratio (V/C), for segment ▪ Level of Service (LOS), for a segment or intersection	▪ Number or share of roadway miles operating at V/C ratio over 1.0 ▪ Number/share of roadway miles at LOS E or worse ▪ Number of intersections at LOS E or worse
Congestion intensity: travel time measures	▪ Travel speed (miles per hour) ▪ Average delay time (the difference between travel time and acceptable or free-flow travel time) ▪ Travel time index (ratio of peak-period to non-peak-period travel time)	▪ Average regional commute time (by mode) ▪ Total excess delay time (wasted travel time) ▪ Share of roads experiencing travel time index over 2.0
Congestion duration	▪ Hours of travel per day at V/C ratio over 1.0 ▪ Hours of travel per day at LOS E or worse	▪ Number or share of roadway miles experiencing more than 3 hours of congestion per day on average
Congestion extent: vehicle measures	▪ Number of vehicles experiencing LOS E or worse, for a segment	▪ Number or share of vehicle miles traveled at LOS E or worse, regionally
Congestion extent: delay measures	▪ Total delay on roadway (average delay time per vehicle x number of vehicles)	▪ Total excess delay time (wasted travel time)
Reliability	▪ Planning time index – ratio of 95th percentile travel time to free flow travel time ▪ Buffer index – ratio of difference between 95th percentile travel time and average travel time, divided by average travel time ▪ Crash rate by route or intersection ▪ Number of incidents	▪ Share of freeway segments with planning time index over a certain threshold ▪ Average buffer index for commute trips ▪ Crash rate regionally
Transit travel conditions	▪ Transit crowding ▪ Transit on-time performance (by route)	▪ Percentage of buses/trains exceeding a certain crowding level. ▪ Percentage of buses arriving on-time regionally
Availability or service level of modes	▪ Existence of sidewalks ▪ Existence of bicycle lanes or paths ▪ Existence of pedestrian features (countdown pedestrian signals, painted crosswalks, etc.) ▪ Existence of high-frequency bus services	▪ Miles of sidewalks or share of roads with sidewalks regionally ▪ Miles of bicycle lanes or paths or share of roads designated as bicycle routes regionally ▪ Number of intersections with pedestrian features
Accessibility	▪ Number of jobs/households within a defined distance or travel time from location	▪ Share of regional jobs within ¼ mile of transit ▪ Share of regional households within ¼ mile of transit
Land use	▪ Jobs-housing balance (ratio) within area/zone	▪ Jobs-housing balance (ratio) across each area

2017 Update Adopts the Following Performance Measures

The 2017 Update expressly adopts the following performance measures representing a compilation from the 2040 LRTP and applicable measures identified in the foregoing research. Sponsoring agencies are responsible for evaluating and reporting on the following performance measures to the CMS/ITS Committee and to the MPO Board as part of the Biennial Transportation System Performance Report.

Following establishment of baseline measures in the first iteration of the Transportation System Performance Report, the CMS/ITS Committee will propose targets for the MPO Board to consider and adopt for these and, if called for, additional performance measures

CMS/ITS Operations:

- Maintaining concurrency with FDOT Regional ITS Architecture and technological advances in TOC equipment and operations
- Increased number of signalized intersections connected to ITS
- Improved Travel Time Reliability

Capacity Enhancement

- Identify current benchmark thresholds of current Level of Service (LOS) on arterial road segments and at intersections in the biennial Transportation System Performance Report
- Establish post-construction LOS performance during the peak season for completed projects; include analysis of new developments that may have come on-line during the same time period; report on whether LOS improved or declined post-construction; comment on results

Transit:

- Increased ridership on existing routes, and
- Increased number of riders identified at specific transit stops before/after installation of shelters
- Improved bicycle/pedestrian connections to bus shelters, inclusive of meeting ADA requirements

Nonmotorized Transportation:

- Reduction in the miles of gaps in the cycling network identified in the Comprehensive Pathways Plan (CPP) 2017/18 Update (to be incorporated by reference upon adoption)
- Address problem areas specifically identified for bicycle/pedestrian network connections in recent and future Bicycle/Pedestrian Safety Studies, Community Walkability Studies and Bicycle/Pedestrian Safety Audits

Customer Service

- Report on nature of comments/responses and whether numbers indicate an increase in customer satisfaction - comments/responses to County congestion management website.

4. CONGESTION MANAGEMENT STRATEGIES

The 2017 Update continues the application of the following congestion management strategies identified in previous updates.

Transportation System Management (TSM)

The TSM approach to congestion mitigation seeks to identify improvements to enhance the capacity of the operational systems deployed to manage existing transportation facilities. The techniques are designed to improve traffic flow, air quality and movement of vehicles and goods, as well as enhance system accessibility and safety. The following transportation systems management strategies are low-cost but effective in nature:

- Intersection and signal improvements
- Special events management strategies
- Incident management

Intelligent Transportation System (ITS)

ITS technologies support the activities of transportation operators and emergency response personnel as they monitor traffic, detect and respond to incidents, and inform the public of traffic conditions via the Internet, roadway devices, and the media. ITS projects are effective in maximizing a transportation system's efficiency. Candidate ITS projects in Collier County include:

- Those which are consistent with the FDOT's current ITS Regional Architecture
- Updates to existing equipment and software deployed in the region
- Improved Incident management;
- Enhancements to City of Naples, Collier County Traffic Operations/Management Centers, including studies and implementing their recommendations
- Improved use of social media and public information technologies

Strategies and Projects Identified in the 2040 LRTP

The 2017 Update maintains consistency with the 2040 LRTP by incorporating strategies and projects identified in the Cost Feasible Plan. These are identified in the CMP Implementation Matrix on page 23. The 2040 LRTP lists the following strategies/project types as eligible for CMS/ITS funding:

- Construction of turn lanes
- Adjustments to traffic signal timings
- Highway median modifications
- Development/implementation of access management plans
- Bicycle/pedestrian pathways projects
- Transit projects
- Computerized motorist advisory system enhancements

The 2017 Update identifies the following strategies as requiring additional study to determine their efficacy for the Collier MPO.

Travel Demand Management (TDM)

TDM markets alternative forms of transportation to commuters. TDM efforts are being implemented in urban areas across the country in order to reduce traffic congestion and air pollution and to increase efficiency of the transportation system.

Examples of TDM programs include:

- Carpooling
- Vanpooling
- Telecommuting
- Compressed work weeks and flexible work hours
- Park-and-ride facilities
- Growth management/land use polices

New Network Connections

Collier County is actively seeking funding to install new vehicular bridges in the Golden Gates Estates area. New bridges are a highly effective, but expensive, method of creating new network connections. Other opportunities may prove less expensive – such as providing relatively short pedestrian and bicycle connecting links between residential areas and destinations such as schools, shops and parks. Other high cost methods include retrofitting or planning new development with more frequent arterial spacing and expanding transit routes.

Intermodal Hubs

An intermodal hub exists wherever it is possible to efficiently transfer from one mode of travel to another. Providing bike racks on busses make each transit stop a potential, albeit informal, intermodal hub. Conscientiously planning intermodal hubs to maximize efficient transfers between modes is another matter, one that requires careful study and planning prior to implementation. The Collier County Government Center is one such example where it is possible to efficiently move from transit to bicycle, private vehicle or pedestrian modes of travel within a dense complex housing government services that is surrounded by related for- and nonprofit services. Others may be feasible and may merit further study.

5. IMPLEMENTATION

The CMP Implementation Matrix located at the conclusion of this section (page 23) summarizes the CMS/ITS projects identified in the 2040 LRTP; projects prioritized by the CMS/ITS Committee in 2016; and the following studies.

Studies

The following studies will be considered for inclusion in the next update of the MPO's Unified Planning Work Program (UPWP). Potential funding sources include Planning (PL) funds, CMS/ITS "Box" funds, and Transit Planning Funds. Other funding sources for planning studies will be considered as they become available to the MPO.

1) Transportation System Performance Report

The Biennial Transportation System Performance Report (Performance Report) will lay the foundation for project identification and prioritization in accordance with Federal guidelines. The Performance Report will provide a thorough system assessment to identify where priority investments should be made. The Performance Report will include an analysis of newly implemented CMS/ITS projects based on the performance measures identified in the CMP as specifically assigned to each funded project.

The Performance Report will recommend both short- and long-term projects to address congestion. The CMS/ITS committee will use the report as a basis for recommending project priorities that in all likelihood, will have associated costs that are beyond the reach of the MPO's limited TMA funds allocated to the CMS/ITS "Box". The CMS/ITS committee will use the Performance Report to develop projects for the timeframe that covers the next five-to-ten years out, to propose studies and solutions that go beyond the MPO's current 5-year TIP.

The first iteration of the Biennial Performance Report is expected to identify and prioritize projects for the CMS/ITS Committee to develop in more detail and submit for future funding. It is likely that the first Performance Report will indicate procedural changes that may require amending the 2017 CMP Update. Amendments, if required, will be brought to the MPO Board for adoption.

2) Regional Park and Ride Study

Collier Area Transit (CAT) plans to update the Park-and-Ride (P&R) Study that was prepared for the community in 2005 to identify potential central nodes that are within close access to the Florida Strategic Intermodal System and areas of high concentration

of residential and commercial businesses. By identifying and developing nodes as designated Park-and-Ride facilities throughout the County, commuters will be encouraged to carpool, vanpool, and/or take public transportation. The deliverables for this study should identify potential locations for P&R facility; establish criteria for the required thresholds to build P&R facilities, including dimensions and applicable FDOT guidelines to support the cost of design and constructions of such facilities. The intent of park-and-ride facilities is to provide a common location for individuals to transfer from a low- to a high-occupancy travel mode; as such, they can be classified as intermodal facilities. While most commonly considered as a staging location for individuals to transfer between auto and transit or other high-occupancy vehicle (HOV) modes, park-and-ride lots can serve a wider range of intermodal transfers, providing better integration with the surrounding environment. Some of these other modes include pedestrian, bicycles, paratransit, carpool/vanpool, airport service, and rail.

3) Full Build-Out Land Use & Transportation Scenario Testing

In order to understand the magnitude of the congestion that could occur under current land use policies and the efficacy of densification and mixed-use to increase transit ridership and alleviate congestion to a measurable degree, the next update to the MPO LRTP should include full build-out scenario testing that goes well beyond the Federally-mandated 20-year planning horizon. This would be highly advantageous to projecting future roadway congestion and assessing the range of management strategies that would prove most effective for this region. Among the scenarios to be tested are:

- Land Use Alternatives – high density, mixed-use centers and corridors as infill, new development or redevelopment joined with alternative transportation scenarios such as,
- Bus Rapid Transit Corridors
- New Multi and Intermodal Hubs
- Enhanced Travel Demand Management
- Designing arterials to freeway standards, including overpasses and other, potentially less costly intersection treatments such as continuous flow intersections

SCHEDULE

The Implementation Matrix located at the conclusion of this section, (page 23) reflects the project schedule found in the 2040 LRTP, the FDOT draft tentative Work Program and MPO-adopted CMS/ITS project priorities. The schedule includes the new studies identified in the 2017 Update.

FUNDING SOURCES

TMA SU Funds – CMS/ITS Box Funds

The 2040 LRTP continues the MPO policy of allocating 40% of the urban area's dedicated Transportation Management Area (TMA) funds to implement CMS and ITS improvements. The typical annual funding allotment and the cumulative programmable amounts under the 5-yr TIP are shown in the table below:

Table 3 TMA SU Allocation Formula

Typical annual TMA SU Allocation	**$ 4,134,000**		
CMS/ITS formula		**Annual**	**5-Yr**
New Bridges	0.2	$ 826,800	$ 4,134,000
Pathways	0.4	$1,653,600	$ 8,268,000
CMS/ITS Improvements	0.4	$1,653,600	$ 8,268,000
		$4,134,000	**$20,670,000**

The CMS/ITS Improvements category, in keeping with federal guidance, includes CMS/ITS operational system improvements, roadway capacity improvements, bicycle/pedestrian facility improvements and transit projects. Dividing the limited amount of funding among five different types of projects inevitably results in limited funding availability for any one project type, thus limiting the MPO's ability to address systemic problems in any of these key areas.

To illustrate this point, the range of project costs over recent years for projects funded using CMS/ITS "Box" funds is provided on the following page. Cost estimates are derived from 2040 LRTP Cost Feasible Plan, the Transportation Disadvantaged Plan, and the MPO's FY16/17 – 20/21 TIP. The ability to achieve the programming targets is further complicated by the typical process by which projects move from preliminary to final design, Right of Way (ROW) acquisition over one to two years, followed by a one year gap prior to programming the construction phase.

Illustrative CMS/ITS Eligible Projects and Their Costs

New Bridges	$3 - $10 million/per bridge
Sidewalk	$0.4 - $5.2 million/mile
Shared Use Path	$0.8 to $1.0 million/mile
Ped Safety Improvements	$5.2 million/mile
Bus Shelters	$0.5 million/shelter
Park & Ride Facility	$0.3 million/facility
CMS/ITS Operations	$0.4 million annually/per entity TOC
Intersection Improvement	$0.5 - $10 million/per intersection
Grade Separated Intersection	$40 - $50 million/per intersection
Roadway Capacity Improvement	$3.5 - $15 million/per mile
New Road Construction	$20.0 million/per mile 2-lane

Given the magnitude of the costs associated with a single project, the 2017 Update clarifies that the MPO Board intends the 40/40/20 funding split (Table 3 on page 19) to serve as a guide rather than a hard and fast rule, and represents a target to be achieved over the life of a 5-year TIP.

Based on the outcome of the first Biennial Transportation System Performance Report, the CMS/ITS Committee will propose additional long range studies if needed, to identify projected congested conditions beyond the 2040/2045 horizon line established for the Long Range Transportation Plan (LRTP) and propose projects that in all likelihood will require funding from sources other than the CMS/ITS "Box" funds, for consideration by the MPO Board and for inclusion in LRTP updates.

Other Funds Available to Address Congestion

There is a wide variety of funding sources available to address congestion. What follows is a representative sampling of the types of funds that FDOT has programmed in recent years to support congestion relief, capacity enhancement projects prioritized by Collier MPO:

Federal

- ACNP – Advance Construction NHPP (National Highway Performance Program)
- SA – Surface Transportation Program – Any Area –
- SU – Surface Transportation Program – Urban
- TRIP – Transportation Regional Incentive Program funds: projects are jointly prioritized by Lee County and Collier MPOs based on a jointly adopted Regional Roadway Network map.

State

- DDR – District-Dedicated Revenue
- DI – State Intra/Interstate Highway (prioritized in FDOT's Strategic Intermodal System (SIS) Plan, congestion relief on I-75 including interchange improvements
- DIH – District In-House Support
- DS – State Primary Highways

6. EVALUATION AND MONITORING THE EFFECTIVNESS OF IMPLEMENTED STRATEGIES AND PROJECTS

Monitoring the effectiveness of CMP strategies by evaluating the results of projects that have been fully implemented is a key responsibility shared between sponsoring agencies and the MPO.

The application submittal form will be adjusted to require each sponsoring agency to identify and measure the "before" condition that is applicable to the project based on the performance measures in Section 3. (Certain project types do not require measuring performance, as has been noted in Section 3.) The sponsoring agency is also responsible for measuring the "after" condition for completed projects.

MPO staff is charged with compiling a summary report assessing the efficiency and effectiveness of implemented strategies prior to the development of a Major Update to the LRTP. The CMP will be updated based on the updated LRTP. Therefore, the evaluation of fully implemented projects prior to updating the LRTP enables decision-makers, the CMS/ITS Committee and the public the opportunity to identify the most effective strategies for future implementation. The results also provide feedback that will allow the MPO to make necessary changes or modifications to the CMP.

The effectiveness of the CMP strategy or project will be monitored and provided to the CMS/ITS Stakeholders Committee in coordination with MPO staff by the project sponsoring agency. It is anticipated that the sponsoring agency will be responsible for compiling the necessary data, conducting the performance evaluations and producing a use-friendly performance-based report easily understood by the public. The report will be presented to the CMS/ITS Committee within one year of the CMP project becoming fully operational.

The CMP will be reviewed annually and updated on an as needed basis; at a minimum, the CMP will be updated to maintain consistency with updates to the Performance Report and the LRTP. As congestion management projects are implemented, their impact will be reviewed and accounted for in the MPO's planning process.

Public Input Always Welcome

Regular feedback is received regarding roadway segment operation throughout the metropolitan transportation system planning process. This manifests itself in the on-going activities of MPO staff and from interaction with the public and local officials. The website www.colliermpo.com describes the CMP to the public and accepts public comment. Written public comment may also be submitted to:

Collier Metropolitan Planning Organization
Attention: Executive Director

2885 South Horseshoe Drive
Naples, FL 34104

Feedback may indicate that an additional segment is, or has the potential to develop, a congestion problem. Such a segment should be added to the CMP coverage area to ensure an increased level of scrutiny. The segment will then automatically be reviewed during the CMP monitoring for further evaluation.

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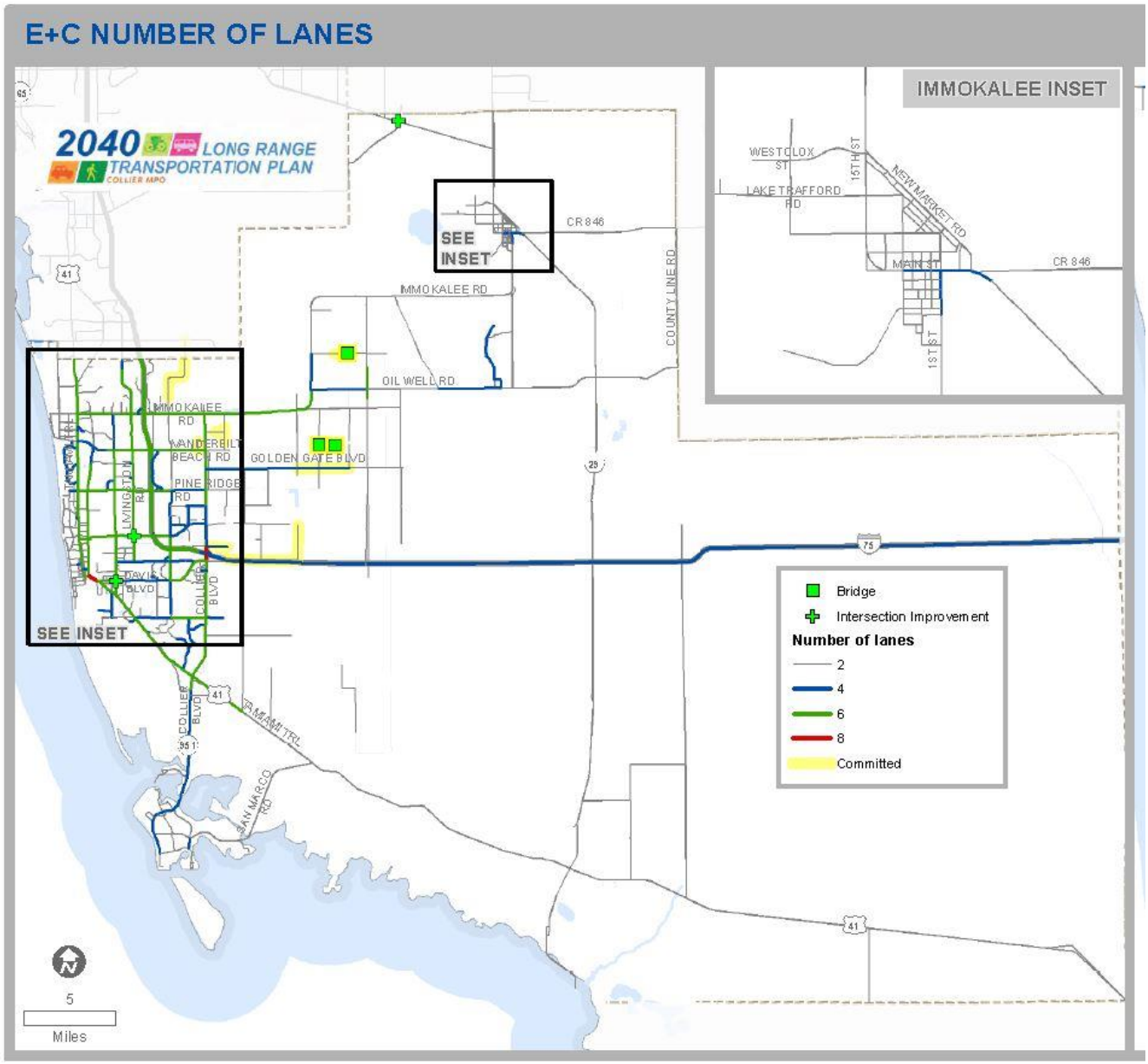
FIGURE 4

CMP Coverage Area

(Base Consistent with Existing + Committed Network in the 2040 LRTP)



APPENDIX A

FDOT/FHWA Congestion Management Process (CMP) Checklist

Introduction

The questions are grouped according to seven key components of an established CMP. As the CMP is intended to be integrated into the overall metropolitan planning process, many of these questions could be asked as sub-parts of a LRTP agenda item on a typical certification review agenda. Others may fit well into a TIP agenda item or National Environmental Policy Act (NEPA) discussion, as well. By asking these questions as part of other certification review agenda topics, FHWA/FTA will be solidifying the message that we intend the CMP to not be a standalone process (as was the CMP in many cases), but a fully integrated element of the overall transportation planning process.

This checklist was developed by Tamara Christion of the FHWA Florida Division and is offered as a resource. Comments may be directed to her at 850-942-9650 ext.3032.

1). Area of Application

This section refers to the geographic area to which CMP functions and the analysis will be applied. It is the area where congestion levels will be monitored and congestion management strategies evaluated and implemented.

Questions:

How is the CMP a systematic process for managing congestion? (500.109)
_____Does the MPO have a CMP in place?
Does the CMP address and/or include?
___A description of the area, network, and modes covered by the CMP?
___Include highways, transit, and the movement of people and goods?
___New and existing facilities eligible for federal funding;
___Travel demand reduction strategies (reduce SOV travel); and
___Operational and management strategies (improve existing system efficiency)
(23 USC 134(i)(3) and 23 CFR 450.320(c) and 23 CFR 500.109)

2). System Definitions (modes & network)

The transportation "system" defined to be included in the CMP functions and analysis. It includes the modes and network to be monitored in the CMP.

Questions:

Does the CMP provide the following types of information?

___Methods to monitor and evaluate the transportation and multimodal system performance based on defined parameters. This monitoring and evaluation includes a program for data collection and system performance monitoring to define the extent and duration of congestion, to help determine the causes of congestion, and to evaluate the efficiency and effectiveness of implemented actions (500.109(3));
___Alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet State and local needs, including the following (500.109(4)):

- ___Transportation demand management measures;
- ___Growth Management;
- ___Congestion Pricing * (See definition below);
- ___Traffic Operational Improvements;
- ___Public Transportation Improvements;
- ___ITS Technologies; and
- ___Additional System Capacity (where necessary)

3). Performance Measures

This section provides the basis for evaluating the transportation system operating conditions and identifying the location and severity of congestion. The performance measures provide the mechanism for quantifying the level of congestion on the transportation system. These measures may also be used to evaluate the effectiveness of implemented congestion management strategies.

Questions:

___Has the region established performance measures for measuring and monitoring congestion as part of the CMP? What are they and how are they used?

How does Transportation System Management and Operations and the ITS architecture link to the CMP?

How is the CMP process documented? How are the results of the CMP documented?

What is the role of decision makers and elected officials in the CMP process? How are they kept informed and what is their involvement?

*Congestion Pricing is the practice of charging motorists more to use a roadway, bridge or tunnel during periods of the heaviest use. Its purpose is to reduce automobile use during periods of peak congestion, thereby easing traffic and encouraging commuters to walk, bike or take mass transit as an alternative.

4). Performance Monitoring Plan

This section is the mechanism for collecting the data needed to quantify the performance measures and track congestion over time. The monitoring plan specifies such things as: data to be collected, frequency of data collection, data collection locations, data collection responsibilities, data analysis techniques, database management requirements and performance reporting.

Questions:

How is the CMP process carried out? Is there a CMP committee or other coordinating group? Who is involved in the CMP process?

To what extent has the CMP been integrated into the metropolitan transportation planning process, including the Metropolitan Transportation Plan and the Transportation Improvement Program? (23 CFR 450.320(a))

How are agencies/persons responsible for transportation operations and public transit involved in the CMP? What is the role of the public transit agency and persons/agencies responsible for operations in the CMP?

How does the CMP link to the NEPA process?

5). Identification & Evaluation of Strategies

This section is the process within CMP for screening and evaluating congestion management strategies for potential effectiveness in addressing the identified congestion problems. This component can function at either a system-wide or corridor/sublevel of analysis and provide guidance in selecting strategies, actions and policies required to manage congestion. In essence, this component answers questions on how effective specific strategies could be and at what cost.

Questions:

Where the addition of general purpose lanes is determined to be an appropriate strategy, how is explicit consideration given to incorporating appropriate features to facilitate future demand management and operational improvement strategies that will maintain the functional integrity of those lanes? (500.109)

In TMAs designated as nonattainment for ozone or carbon monoxide, does the CMP provide an appropriate analysis of reasonable travel demand reduction and operational management strategies for the corridor in which a project that will result in a significant increase in capacity for SOV's is proposed to be implemented with Federal funds? How is this analysis documented?

Does the CMP include the following evaluation mechanisms of the efficiency and effectiveness of implemented strategies based on the established performance measures (500.109(6)):

___Documented Process for periodic assessment;
___Results provided to decision makers to provide guidance on selection of effective strategies for future improvement.

6). Monitoring Strategy Effectiveness

This component will gathers data, evaluate and report on the effectiveness of the strategies that have been implemented. This component should provide valuable feedback on the effectiveness of the specific strategies/actions to alleviate congestion.

Questions:

Does the CMP include the identification and evaluation of the anticipated performance and expected benefits of appropriate congestion management strategies?

How is the CMP effective in enhancing transportation investment decisions and improving the overall efficiency of the metropolitan area's transportation systems and facilities? (23 CFR 450.320(d))

Is the CMPs' effectiveness evaluated periodically as part of the metropolitan planning process? (23 CFR 450.320(d)) (Is there an evaluation of the effectiveness of implemented strategies/projects, in terms of the area's established performance measures?)

7). Implementation and Management

The entire CMP process requires an implementation plan to coordinate CMP activities, ensure timely development and delivery of CMP products and maintain a high level of quality control. Coordination and cooperation among multiple agencies is required to ensure that the CMP functions properly and provides the desired information. This component can also function to periodically review CMP activities, procedures and techniques and update the CMP process as new technologies become available.

Questions:

To implement the CMP, are the following things identified (500.109(5)):

___Implementation Schedule;
___Implementation Responsibilities; and
___Possible Funding Sources for each strategy or combination of strategies

APPENDIX B

Collier MPO CMS-ITS PROJECT CONCEPT SHEET

[The CMS/ITS Committee anticipates updating this form for consistency with MPO Board policy upon MPO Board acceptance/adoption of the first Biennial Transportation System Performance Report and acceptance of the Performance Report by the MPO Board; the form may require modifications upon subsequent updates to the Performance Report without triggering a CMP amendment]

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APPENDIX C

FDOT DISTRICT-1 PROJECT CONSTRUCTABILITY REVIEW APPLICATION FORM

[At any point that FDOT updates this form, the new version will be incorporated into the CMP without requiring a formal amendment]