- Different agencies in the region have established performance-monitoring programs that include performance measures and data collection methods to monitor their respective systems. These established performance monitoring programs can potentially be integrated into the MPO's CMP. This may require the following steps:
  - Categorization based on three-critical congestion criteria: intensity, duration, and extent.
  - Adoption of a common set of performance measures across agencies to enable system-wide tracking.
  - Adoption of a consistent data collection methodology.
  - Establishment of performance thresholds which could consist of facility- and area-types. The established thresholds will work as performance goals.
- Migrate from existing RCR, defined as the existing V/C ratio divided by the maximum allowed V/C ratio, to travel time based performance measures.
- Identify congestion by facility types: The following facility types are currently used in the MPO's approved travel demand model and therefore, could potentially be used for the CMP analysis:
  - Freeways and uninterrupted roadways
  - Tolled facilities
  - HOV facilities
  - Arterials
  - Collectors
  - Ramps
- Identify congestion based on area types: The following area types are currently used in the MPO's approved travel demand model and could potentially be used for the CMP analysis:
  - Central Business District (CBD) and Fringe CBD
  - Other Business Districts
  - Residential
  - Rural

Performance Monitoring Plan

- Develop a data collection program that focuses on data compatibility, maintenance, and continuous on-going coordination.
  - Identify data 'gaps' that facilitate implementation of potential performance measures.
  - Integrate data collection efforts with the MPO's LRTP and other planning efforts.
- Establishment of a performance monitoring and reporting system. Currently each agency has an established reporting mechanism.

Implementation and Management

- The CMP will be updated on a five-year cycle to coincide with the development of the LRTP. Congested spots and corridors identified through the CMP process are recommended to be evaluated in between LRTP cycle. Figure 1 illustrate potential implementation of CMP strategies. The MPO's 2035 LRTP identifies 120.9 million dollars for CMP related improvements (Table 2).

Table 2: Funding for CMP Improvements

	2015	2016-2020	2021-2025	2026-2030	2031-2035	TOTAL
Other Arterials & ROW	2.1	11.5	11.0	10.1	9.4	43.9
Transit	0.4	2.0	1.7	1.4	1.0	6.6
Gas Taxes	4.0	18.8	17.3	15.8	14.5	70.4
Total	**6.6**	**32.3**	**30.0**	**27.3**	**24.9**	**120.9**

Note: Amounts in 2008 dollars

EXECUTIVE SUMMARY:
The 2009 Congestion Management Process (CMP Update)

The purpose of the Congestion Management Process (CMP) update is to comply with the Safe, Accountable, Flexible, Efficient, Transportation Equity Act – A Legacy for Users (SAFETEA-LU) requirements. SAFETEA-LU requires a CMP to be an integral part of the metropolitan planning process in Transportation Management Areas (TMA) – urbanized areas with a population over 200,000, or any area where designation as a TMA has been requested. The CMP expands on requirements dating from the early 1990's for MPOs to address and manage congestion. With a population that exceeds the minimum threshold of 200,000 specified in federal planning regulations, the Miami-Dade County (County) Urbanized Area Metropolitan Planning Organization (MPO) is required to have a CMP.

The MPO has an established CMP, which was previously known as Congestion Management System or CMS, to monitor the transportation network in County. The 2009 CMP update includes the following four major elements:

1. A review of practices employed by other MPOs;
2. A description of the MPO's CMP and execution mechanism;
3. Identification of congested spots and corridors; and,
4. Recommendations to improve the CMP.

The CMP update report is divided into 11 sections. Section one, provides an introduction to the CMP. Section two, includes a review of CMPs of six agencies. Sections three through nine provide a step-by-step description of the MPO's CMP consistent with the checklist developed by Federal Highway Administration (FHWA) Florida Division. Section 10 includes analysis conducted to identify congested spots and corridors. Finally, Section 11 summarizes recommendations for future CMP updates.

Congestion Management Process

The CMP is "a systematic process for defining what levels of congestion are acceptable to communities; developing performance measures to monitor congestion levels; identifying alternative solutions to manage congestion; prioritizing funding for those strategies and assessing the effectiveness of those actions".[1]

The CMP is part of a comprehensive systematic approach to transportation improvements that is expected to support the MPO's transportation vision and goals, as described in the 2035 Long-Range Transportation Plan (LRTP).

CMP Steps

A step-by-step brief description of the MPO's CMP is provided below.

- **CMP Objectives:** The 2035 LRTP vision and goals provide the context for the CMP objectives and policy actions. The LRTP goals are broad statements of purpose. The CMP objectives, on the other hand, are specific statements of purpose, and CMP policy actions provide a bridge between general policies and actual implementation guidelines. The CMP objectives are:
  - Objective 1: Reduce vehicle trips and trip lengths
  - Objective 2: Shift Trips from Single-occupancy Vehicles to High-occupancy Vehicles and Other Modes
  - Objective 3: Maximize Effectiveness and Efficiency of Existing System
- **System Definition or Area of Application:** The area of application refers to various transportation networks in the geographic area for which CMP functions and analyses are applied. The CMP area of application consists of the following five networks in the urbanized Miami area:

County's Transit Network

1. CMP Roadway Network;
2. CMP Transit Network;
3. CMP Freight Network;
4. CMP Pedestrian Network; and,
5. CMP Bicycle Network.

- **Performance Measures:** The MPO's 2004 CMS update identified congestion based on Relative Congestion Ratio (RCR). The same measure is used for this update as well. The RCR is defined as the existing Volume to Capacity (VC) ratio divided by the adopted VC ratio for the traffic count location. The adopted VC ratio refers to acceptable level of service threshold established in the County's Comprehensive Development Master Plan (CDMP). The County has adopted congestion thresholds based on sev-

[1] U.S. Department of Transportation. An Interim Guidebook on the Congestion Management Process in Metropolitan Transportation Planning. February, 2008.

eral factors such as availability of mass or bus transit and geographic location.

The RCR used to identify congested spots and corridors, takes into account current and future conditions and is referred to as weighted RCR. The weighted RCR is calculated by multiplying the existing RCR by 60 percent and future RCR by 40 percent and summing the results. Roadway segments with weighted RCR values of 0.9 or greater are considered congested or nearly congested. The following categories are used for classification:

- Nearly Congested – 0.9 < weighted RCR ≤ 1.00
- Moderately Congested – 1.00 < weighted RCR ≤ 1.20
- Highly Congested - weighted RCR ≥ 1.20

The MPO's Transportation Planning Technical Advisory Committee (TPTAC) that acts as the CMP Steering Committee approved the criteria that a corridor should be at least two miles in length to be considered a CMP corridor. Roadway segments less than two miles in length are considered congested spots.

- **Performance Monitoring Plan:** The performance-monitoring plan consists of a data acquisition plan. Traffic count surveys conducted by Florida Department of Transportation (FDOT) and the Engineering Division of Miami-Dade Public Works Department (MDPWD) are used as input for calculating RCR. The monitoring plan also includes a description of agency involvement process.
- **Identification and Evaluation of Strategies:** A strategy "tool box" that includes a variety of congestion management strategies is provided (FIgure 1). Implementation of strategies is prioritized based on nature and scope of improvements. For example, solutions that reduce auto trips or improve traffic operations are prioritized over solutions such as adding roadway capacity.

Bicycle Mode as an Alternative to Auto Mode

- **Monitoring Strategy Effectiveness:** After appropriate strategies have been applied to a congested corridor, the RCR is used to identify effectiveness of implemented strategies. Strategies are evaluated for their effectiveness in achieving CMP objectives.
- **Implementation and Management:** The CMP will be updated on a five-year cycle to coincide with the development of the LRTP. Congested spots and corridors identified through the CMP process are recommended to be evaluated in between LRTP cycle.
- **Identification of Congested Spots and Corridors:** The congested spots and corridors, except minor spot operations improvements, are included in the MPO's 2035 LRTP as candidate projects (Table 1, Figure 2). Projects associated with congested spots that are likely to require minor operations improvements will be defined at a later date.

Recommendations for Future CMP Updates

As the name suggests, the CMP is a dynamic effort designed to continually improve transportation systems and services. As a part of the 2009 CMP update, various methods and techniques were discussed and evaluated. The focus of this evaluation was to identify a set of methods that comprehensively conveys the state of the County's transportation system to both technical and non-technical audience. A summary of methods and procedures recommended for future CMP updates is provided below. These recommendations are categorized by CMP steps.

Performance Measures

- Consider adopting same or similar performance measures for both LRTP and CMP.
- Adopt system-level multimodal performance measures to evaluate changes on an aggregate basis for the entire transportation system over time. In 2008, the MPO conducted a "Transportation System Performance Monitoring Study" which identified system-level multimodal performance measures that can track state of the transportation system on an aggregate basis. The performance measures identified in the study should be considered for adoption as part of the CMP. It is also recommended that acceptable thresholds should be adopted for all system-level performance measures.
- Establish purpose for each performance measure. A performance measure can be used for two purposes: (1) to identify congestion; and, (2) to evaluate effectiveness of congestion management strategies.

Figure 2: Congested Spots And Corridors

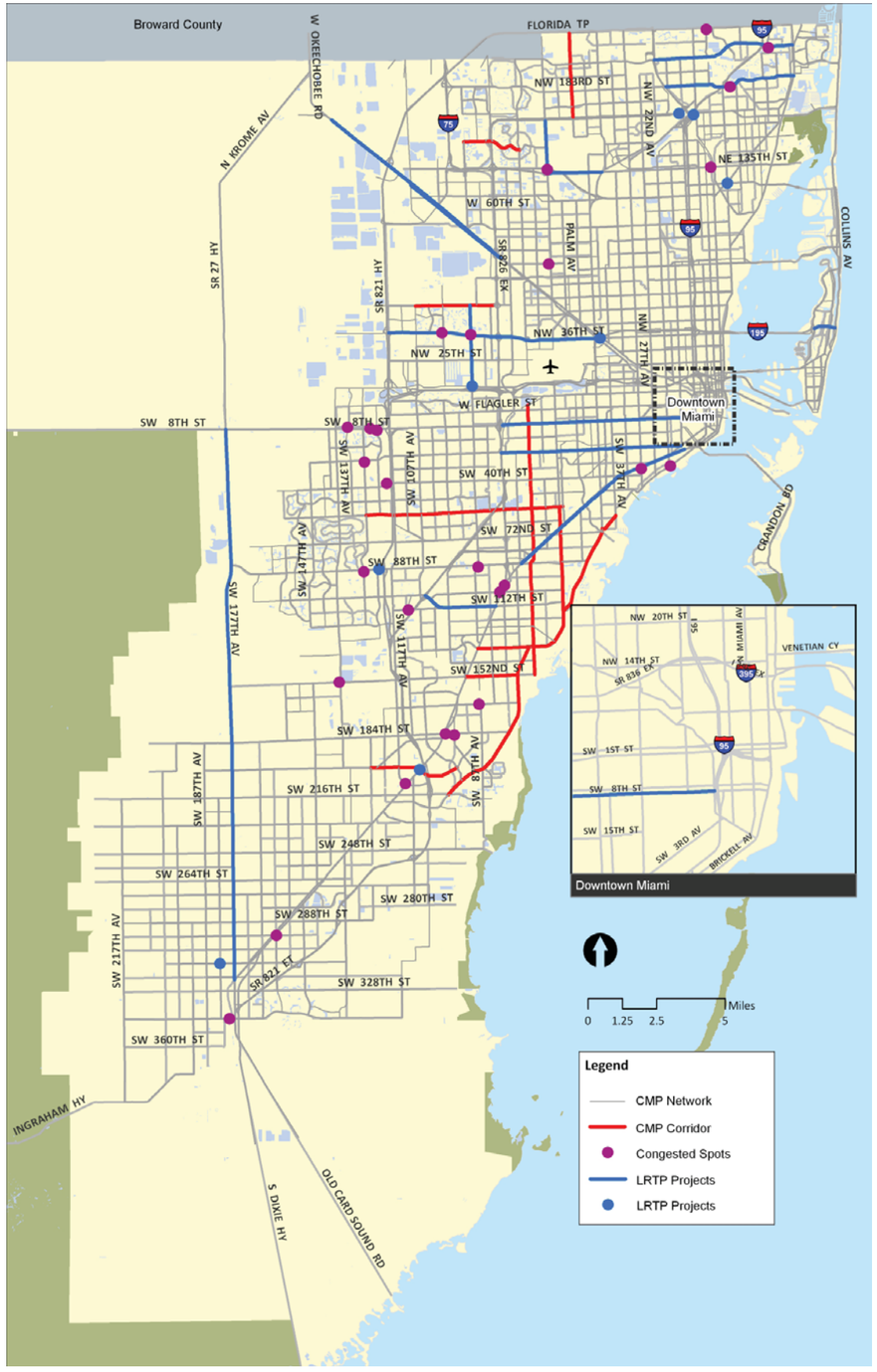

Table 1: Congested Corridors and Spots

FACILITY OR SPOTS	FROM	TO	DESCRIPTION
CONGESTED CORRIDORS AND SPOTS IDENTIFIED BASED ON RCR METHODOLOGY			
SW 136 St	US 1	SW 67 Ave	Congestion Management
SW 152 Ave	US 1	Old Cutler Rd	Congestion Management
SW 67 Ave/Ludlam Rd	SR 992/SW 152 St	SR 968/Flagler St	Congestion Management
SR 959/SW 57 Ave/Red Rd	Old Cutler Rd	SW 56 St	Congestion Management
SW 200 St/Caribbean Blvd	SW 127 Ave	Coral Sea Rd	Congestion Management
Old Cutler Rd	SW 216 Street	SW 37 Ave	Congestion Management
NW 58 St	SR 985/NW 107 Ave	SR 826/ Palmetto Expwy	Congestion Management
NW 154 St/Miami Lakes Blvd	SR 973/NW 87 Ave	NW 67 Ave	Congestion Management
SR 847/NW 47 Ave	SR 826/Palmetto Expwy	SR 852/NW 215 St	Congestion Management
SW 56 St\Miller Dr	SW 127 Ave	SR 959/SW 57 Ave	Congestion Management
SR 973/SW 87 AV & SR 94/Kendall Dr			Congestion Management
Highland Lakes Blvd & SR854/NE 203 St/Ives Dairy Rd			Congestion Management
NE 2 AV & NE 215 St			Congestion Management
SR 973/NW 87 AV & SR 948/NW 36 St			Congestion Management
S Bayshore Dr & SW 17 AV			Congestion Management
SR 9/SW 27 AV & US 1			Congestion Management
SW 97 AV & SW 184 St			Congestion Management
SR 990/SW 104 St & US 1			Congestion Management
SW 112 St & SW 112 AV			Congestion Management
SW 117 AV & US 1			Congestion Management
SW 122 AV & Tamiami Trail			Congestion Management
SW 127 AV & Coral Way			Congestion Management
SW 127 AV & SR 94/Kendall Dr			Congestion Management
SR 992/SW 152 St & SW 137 AV			Congestion Management
SW 184 St & US 1			Congestion Management
SW 296 St & US 1			Congestion Management
W 29 St & SR 959/SW 57 Ave/Red Rd			Congestion Management
SW 127 AV & SW 26 St			Congestion Management
NW 41 St & NW 97 AV			Congestion Management
SW 168 St & SR 973/SW 87 AV			Congestion Management
SR 976/SW 40 St & SR 821/Florida's Tpke			Congestion Management
E/O SW 187 Ave	SW 192 Ave	US 1	Congestion Management
S/O SR 826/Palmetto Expwy	SW 98 St	SR 990/SW 112 St	Congestion Management

FACILITY OR SPOTS	FROM	TO	DESCRIPTION
CONGESTED CORRIDORS AND SPOTS AND ASSOCIATED PROJECTS IDENTIFIED BY THE LRTP STEERING COMMITTEE			
Miami Ave/2 Ave/NW 5 St/Flagler (1 St)	Bridge over Miami River		ITS/Advance Warning Signals
SR 9/SW/NW 27 Ave	SR 90/SW 8 St	SR 25/NW 36 St	Median / access improvements
NW 20 St	SR 9/NW 27 Ave	I 95	Roadway Infrastructure Improvements
SR 112/Airport Expwy (WB)		SR 25/NW 36 St / Okeechobee Rd	Reconstruct Intersection
Golden Glades Interchange			Ramp and /or operational improvements. Series of low cost operational improvements within the Golden Glades
NE 125 St/NE 6 Ave/W Dixie Hwy			Intersection Improvements
SR 823/Red Road/NW 57 Ave	SR 826/Palmetto Expwy	SR 916/NW 135 St	Congestion management
SR 990/SW 104 St/SW 112th St	SR 821/Florida's Tpke	US1	Congestion management
SR 973/NW 87 Ave	SR 836/Dolphin Expwy	NW 58 St	Improve SR 836/NW 12 St/NW 87 Ave Interconnections; improve intersections to accommodate truck movements
SR 997/Krome Ave	SR 90/SW 8 St/ Tamiami Trail	US 1	Improve intersections to accommodate truck movements
SR 826/SR 9/I-95 Interchange			Congestion Improvements; improve turning radius/speeds on ramp from Turnpike to WB SR 826
NW 12 St		SR 973/NW 87 Ave	Signal Improvements
North River Dr	SR 985/NW 107 Ave	NW 74 Ave	Widen North River Dr to include shoulders and improved access management
Integration of Truck Route System and Regional ITS Network			Implementation of ITS improvements specifically geared toward trucks
Medley Freight Hub Streetlight and local roadway Improvements			Improve the local infrastructure to and from businesses in the Medley area-Pavement, turning radii. 15 miles of roadway
Way-Finding Sign Improvement Program			Improve county-wide for movements to/from regional freight hub
Port of Miami Operations			PierPass Feasibility Study to examine the impact of implementing congestion mitigation incentives for off-peak operations

FACILITY OR SPOTS	FROM	TO	DESCRIPTION
Freight Rail Landside Access			Projects that enhance landside access, including intermodal ramps and truck access to railroad terminals
SR 25/Okeechobee Rd Operations/ Access Improvements	NW 138 Ave	NW 79 Ave	Signal timing improvements, improve access and improve signing to provide better flow along Okeechobee and access from side roads and access by trucks to and from Medley
Medley Gateway Establishment			Provide business and wayfinding signing, including a Medley area business inventory
SR 997/Krome Ave		SW 312 St	Intersection Improvements
41 St	Alton Rd	Collins Ave	Corridor Improvements
One-waying of South Beach Local Streets			Capacity improvements
Park and Ride Lot Program			MDT program to identify potential sites and construct park & ride lots
SR 90/SW 8 St/Tamiami Trail	SR 826/Palmetto Expwy	I 95	Congestion management
SR 872/SW 22 St/Coral Way	SR 826/Palmetto Expwy	US 1	Congestion management
US 1	SW 88 St. (Kendall Dr)	I 95	Congestion management
SR 916/NW 135 St	SR 959/NW 57 Ave/Red Rd	SW 37 Ave/Douglas Rd	Congestion management
SW 200 Street / US 1 (South Dixie Highway)			Multimodal Terminal
SR 94/SW 88 St / HEFT			Multimodal Terminal
SR 860/Miami Gardens Drive	SR 821/Florida's Tpke	Biscayne Blvd.	Congestion Management
SR 854/Ives Dairy Rd	SR 821/Florida's Tpke	Biscayne Blvd.	Congestion Management
Expand Shipping/Freight Industry hours of operation			
SR 25/NW 36 St/41 St	SR 953/NW 42 Ave/Le Jeune Rd	HEFT	Express Street (ITS, Grade Separations, Etc.)
Granada Blvd and SR 976/SW 40 St/ Bird Rd			Intersection improvement

Figure 1: Potential application of CMP strategies