



# **Congestion Management System (CMS) up-date**

REVIEW AND EVALUATION OF POTENTIAL CONGESTED CORRIDORS

# **Executive Summary**

## **Project Overview**

The initial requirement to develop a Congestion Management System (CMS) came about as a result of the federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. ISTEA required that all urban areas with a population over 200,000 (referred to as Transportation Management Areas or TMAs) develop a CMS. Subsequent Florida Statutes were passed requiring that all MPOs develop a CMS and consider the results during the development of their individual



Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP). Florida Statutes also require that each MPO must prepare and consider the results of a CMS for the purpose of making recommendations for transportation improvements.

### **Project Objectvive**

The objective of this study was to update the Congestion Management System / Mobility Management Program (CMS/ MMP) that was developed for Miami-Dade County in 1996. To effectively update the program, it was necessary to develop an accurate and concise methodology based on previous work to analyze the current congested corridors within Miami-Dade County.

The steps included in this study utilized current available data on the County's roadways and projected the current demand into the future to determine locations where traffic congestion impacts the mobility of goods and people. The methodology implemented in the update of the CMS/MMP included the following steps.

- A literature review gathered nationwide information on projects completed in other cities to mitigate congestion considering methodologies used, CMS components, and strategies identified. In addition, federal, state, and local regulations for CMS procedures were examined.
- Modifications to the current CMS/MMP were recommended to enhance the implementation of CMS strategies developed under this process.
- Data needed to analyze where congestion problems exist in the County were identified and collected.
- The data collected were evaluated to determine congested corridors within the County.
- Strategies were identified to improve mobility for two selected congested corridors.
- Specific projects were identified to include in the Transportation Improvement Program (TIP) to address mobility along the most severely congested corridors.





The predominant focus of the updating process was to gather research from other CMS/MMP processes, obtain traffic and capacity data, locate high priority congested corridors, and to provide solutions to improve the mobility of goods and people along each high priority corridor while minimizing the excessive effort required to complete the analysis. The process proposed by the update focuses on the most important processes to easily and quickly identify highly congested corridors and solutions to improve them.

#### Recommendationso for the Existing Miami-Dade CMS/MMP Process:

- Obtain and utilize traffic counts/concurrency data from the Traffic Analysis Review Unit of the Miami-Dade County Public Works Department, as well as from Florida Department of Transportation (FDOT) count stations.
- Calculate the existing and future Relative Congestion Ratios (RCR) for each traffic count station.
- Develop a weighted RCR value for each count station based on a weighted average of existing (60 percent) and future (40 percent) RCR values.
- Sort out the count stations having weighted RCR values of 0.90 or greater.
- Develop a list of potential CMS corridors based on roadway segments of at least one mile having multiple count stations with weighted RCR values of 0.90 or greater.
- Eliminate the corridors that are categorized as freeways as well as roadways with programmed capacity improvements.
- Use the selection criteria, given in the next section of this report, to rank each potential CMS corridor.

#### **Determination of Congested Corridors**

The first step in the determination of congested corridors was to compile the state and county traffic count data into one database. This was done to analyze the maximum number of count stations in the county. Because congestion is a relative term, the next step was to use the relative congestion ratio (RCR) equation to identify congested locations around the county. The RCR was used in the previous Miami-Dade CMS/MMP and follows both state and local standards. The RCR is defined as the existing V/C Ratio divided by the maximum allowed V/C ratio for the count location. Similarly, the future RCR was determined for each count location by adding the vested trips to the existing traffic count and dividing by the maximum capacity allowed. The vested trips are expected to occur within a reasonable amount of time (approximately 5 years) and are calculated based on approved but not yet constructed developments within the area of each traffic count station.

The next step was to take the existing RCR and future RCR, and develop a weighted RCR to take into account the existing and future conditions at each count station. The weighted RCR was calculated by multiplying the existing RCR by 60 percent and future RCR by 40 percent and summing the results. By using 60 percent on the existing conditions and 40 percent on the future, adequate consideration could be given to both the existing and future conditions of the roadways in Miami-Dade County. Identifying the currently congested corridors is important, but it was also deemed necessary to look at the future conditions of the corridors as well, which is an important update to the current CMS procedure. Due to increased development in the western portion of the County, this methodology provides insight to future congestion expected from vested trips.

The next step in determining the congested corridors was to sort the weighted RCR values that were greater than or equal to 0.9.





RCR values greater than or equal to 0.9 were also used in the previous Miami-Dade MMP/CMS study to identify congested corridors. By sorting the locations according to roadway name, a list of roadways with multiple count stations having weighted RCR values 0.9 or higher was identified. Count stations then were filtered to locate continuous sections of roadway with high weighted RCR values. The original database was then reduced to show only the roadways that have multiple count stations with weighted RCR values of 0.9 or higher.

A point system was developed in order to rank the corridors based on congestion, length of corridor, safety, access to hurricane evacuation routes, and access to port/industrial/intermodal facilities. The point system is based on a weighted number of maximum points given to each selection criteria, which provides a total of 50 possible points. The two corridors with the highest point value were selected as the highest priority corridors.

The point breakdown by selection criterion is as follows:

- ♦ Congestion 15 points
- ♦ Length of the Corridor 15 points
- ♦ Safety 10 Points
- Hurricane Evacuation Routes 5 Points
- Port/Industrial/Intermodal Access 5 Points

The following corridors were selected as the two priority corridors to be considered for further analysis.

#### SR 916 (NW/NE 135th Street)

NW/NE 135<sup>th</sup> Street from NW 2<sup>nd</sup> Avenue to US-1 (Biscayne Boulevard) has 26.3 total ranking points. This corridor along NW/NE 135<sup>th</sup> Street is a 2.5 mile, four-lane, divided state urban minor arterial with an average weighted RCR value of 0.95. A two-way left turn lane exists along the entire length of the corridor. Although the weighted RCR for the corridor is 0.95, the level of service of



the roadway between NW 2<sup>nd</sup> Avenue and Dixie Highway was listed as LOS F in the 2003 Florida Department of Transportation (FDOT) District 6 Level of Service Inventory.

#### SW 67th Avenue (Ludlam Road)

SW 67<sup>th</sup> Avenue from SW 8<sup>th</sup> Street (Tamiami Trail) to SW 72<sup>nd</sup> Street (Sunset Drive) has 25.0 total ranking points and was chosen as the priority corridor maintained by the County for further analysis. This corridor along SW 67<sup>th</sup> Avenue is a 4.0 mile, county urban minor arterial with an average weighted RCR value of 1.31. Between SW 8<sup>th</sup> Street and SW 40<sup>th</sup> Street the corridor has four lanes. The corridor transitions to a two-lane roadway at SW 40<sup>th</sup> Street and continues as a two-lane roadway southbound to SW 72<sup>nd</sup> Street.







A list of potential CMS strategies was developed to serve as a "toolbox" of potential strategies that can be applied in congested corridors and spots throughout Miami-Dade County. Recommended strategies were developed from the list of potential mobility strategies that addressed specific mobility deficiencies for the selected corridors. Projects such as intersection geometric modifications, signal timing enhancements, bus stop infrastructure improvements, sidewalk construction, and bike lanes were developed based on need and applicability within the two corridors.

<b>Opinion of Probable Costs for NW/NE 135th Street Corridor Recommendations</b>	
Recommendation	<b>Estimated Cost</b>
Construction of Sidewalks	\$150,000
Enhanced Pedestrian Facility	\$150,000
Install Bus Shelters	\$240,000
Install Trash Receptacles	\$1,200
Develop Transit Marketing Campaign	\$25,000
Median Improvements	\$1,500,000
Signal Timing Improvement - Miami Avenue	\$5,000
Intersection Geometric Improvements - Dixie Highway	\$500,000
Optimize Signal Timing and Progression	(A)
Total	\$2,571,200
Note: (A) – On an as needed basis.	

<b>Opinion of Probable Costs for Ludlam Road Corridor Recommendations</b>	
Recommendation	<b>Estimated</b> Cost
Construct Missing Sidewalk Links south of Bird Road	\$80,000
Construct Bike Lanes south of Bird Road	\$500,000
Develop Bicycling Marketing Campaign	\$25,000
Install Benches and Trash Recepatcles at Bus Stops	\$15,000
Coordinate with SFCS for TDM Improvements	(A)
Conduct a School Access and Traffic Circulation Plan	\$15,000
Access Management Improvements	\$500,000
Signal Timing Improvement – Tamiami Trail and Coral Way	\$1,000
Construct Northbound Lane – Bird Road Intersection	\$200,000
PM Peak Signal Timing Improvement – Sunset Drive	\$500
Total	\$1,336,500