Congestion Management Process

The Mobility Management Process





What is a CMP?

A CMP is a systematic process for managing congestion that provides information on transportation system performance and assesses alternative strategies for alleviating congestion and enhancing the mobility of people and goods.

What is a CMP?



What is a CMP?

The Congestion Management System was first introduced by ISTEA Act of 1991 and continued under successor laws.
SAFETEA-LU brought in a semantics change from CMS to CMP.
CMS is a stand alone exercise whereas CMP is fully integrated into the metropolitan planning process.

CMP is an "8 Step" process

- 1. Develop Congestion Management Objectives;
- 2. Identify Area of Application;
- 3. Define System or Network of Interest;
- 4. Develop Performance Measures;
- 5. Institute System Performance Monitoring Plan;
- 6. Identify and Evaluate Strategies;
- 7. Implement Selected Strategies; and
- 8. Monitor Strategy Effectiveness.

CMP in Palm Beach

- The CMP structure was created in 1995 by the Congestion Management System Task Force, a subcommittee of the MPO's Technical Advisory Committee.
- After extensive coordination with local governments and public, the CMS Task Force recommended the CMP process for Palm Beach County.
- In 2005 the MPO Board adopted 'Project Prioritization Evaluation Process' to help evaluate and rank projects for prioritization.
- The CMP requires an 'Annual Performance Report' that monitors and evaluates the transportation system in Palm Beach County.

Federal Regulations

In Transportation Management Areas (metro areas with a population > 200,000), the MPO's transportation planning process must include a CMS.

- 23 CFR 500.105

Federal Regulations – Contd.

"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, based on a cooperatively developed and implemented metropolitan-wide strategy, of new and existing transportation facilities...through the use of travel demand reduction and operational management strategies.

The 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 TIP."

> 23 CFR 450.320(a) and (b). Metropolitan Transportation Planning, Final Rule, February 14, 2007.

State Planning Requirements

Each metropolitan planning organization within the state must develop and implement a traffic congestion management system.

- Chapter 339.177 Florida Statutes

CMP Cycle



CMP Cycle

Choose Performance Measures Performance measures set the barometer by which congestion and mobility are measured. Different modes of travel require distinct performance measures.

In 1995, the then CMS Task Force selected these measures for Palm Beach County:

ROADWAY

- The LOS adopted is 'D'
- Volume to Capacity Ratio:
 - -Both Daily and Peak Hour/Direction
- Intersection Critical Sum

TRANSIT

- •On-Time Performance: % of transit service that is on time
- •Load factor: passengers per available seat

BICYCLE

• 'Bicycle Level of Service' is subjectively evaluated using a letter grade A to F scale, based on how well roadways accommodate bicyclist's needs.

Before we further discuss the CMP Process, let's see some examples of the Tier process that leads up to the corridor selection.

In Palm Beach County, congested locations are identified using a three tier system of analysis

- Initially all the roadway segments where traffic counts are available are analyzed to determine the existing LOS. The adopted LOS is 'D' for Palm Beach County.
- 2. The roadways that have a volume to capacity ratio greater than one are initially identified.
- 3. Of these roadways, only those that are in the LRTP but not in the TIP are shortlisted to be included in Tier 1.

- 4. Tier 2 involves analyzing the shortlisted roadways in Tier 1 for significance and duration of congestion.
- 5. In Tier 2, the peak season, peak hour, peak direction, LOS for Tier 1 roadways are determined.
- 6. The roadways that have v/c > 1 are further analyzed by determining the intersection LOS at either ends.
- If either of the intersections of a roadway segment has a critical sum greater than 1400, then those roadways are moved to Tier 2C.
- 8. The roadways in Tier 2C are further analyzed and prioritized using the 'Project Prioritization Evaluation Process' ranking system guidelines.

CMP Roadway Analysis Process



CMP Roadways Tier 1



CMP Roadways Tier 1



	List of Failing Roadways for CMP 2012									
S. No.	Roadway	From	То	Lanes	2011 Count	LOS D	V/C 2035 LRTP	Status		
-	6TH AVE S	Sunset Ave	-95	4D	34338	33200	1.03No			
2	10TH AVE N	Congress Ave	1-95	5	41960	33200	1.26No			
3	45TH ST	Village Blvd	1-95	6D	58408	50300	1.16No			
4	45TH ST	I-95	Congress Ave	6D	53760	50300	1.07No			
5	A1A	Worth Ave	Royal Palm Way	2	16700	15200	1.1No			
6	A1A	Lost Tree Village	US 1	2	15364	15200	1.01No			
7	ATLANTIC AVE	I-95	8th Ave SW	4D	39184	33200	1.18No			
8	BOCA RATON BLVD	Yamato Rd	Clint Moore Rd	2	18211	15200	1.2No			
9	BOCA RIO RD	Palmetto Park Rd	Glades Rd	2	15974	15200	1.05No	4 lanes in model is wrong		
10	BOYNTON BEACH BLVD	I-95	Seacrest Blvd	5	33392	33200	1.01No			
11	CAIN BLVD	W Kimberly Blvd	Glades Rd	2	15551	15200	1.02No			
12	CENTER ST	Loxahatchee River Rd	Alt. A1A	2	16042	15200	1.06No			
13	COMMUNITY DR	Military Tr	Village Blvd	3	15336	15200	1.01No	Shown as 4 lanes in model		
14	GLADES RD	Turnpike Entrance	Jog/Powerline Rd	6D	51915	50300	1.03Yes			
15	GLADES RD	Jog/Powerline Rd	St. Andrews Blvd	6D	51325	50300	1.02Yes			
16	GLADES RD	St. Andrews Blvd	I-95	6D	67794	50300	1.35Yes			
17	GLADES RD	I-95	Perimeter Rd	6D	69419	50300	1.38Yes			
18	GLADES RD	Perimeter Rd	FAU Entrance(10th Ave NW)	6D	61703	50300	1.23Yes			
19	1-95	Broward County Line	Palmetto Park Rd	8X	191500	146500	1.31Yes			
20	1-95	Palmetto Park Rd	Glades Rd	10X	191500	184000	1.04Yes			
21	1-95	Glades Rd	Yamato Rd	8X	190500	146500	1.3Yes			
22	1-95	Yamato Rd	Congress Ave Interchange	8X	173000	146500	1.18Yes			
23	1-95	Linton Blvd	Atlantic Ave	10X	192500	184000	1.05No			
24	I-95	Boynton Beach Blvd	Gateway Blvd	10X	200000	184000	1.09No			
25	-95	Hypoluxo Rd	Lantana Rd	10X	224500	184000	1.22No			
26	1-95	Lantana Rd	6th Ave N	10X	204500	184000	1.11No			
27	1-95	6th Ave N	10th Ave N	10X	256000	184000	1.39No			
28	95	10th Ave N	Forest Hill Blvd	10X	194500	184000	1.06No			
29	1-95	Forest Hill Blvd	Southern Blvd	10X	198500	184000	1.08No			
30	I-95	PGA Blvd	Military Tr	6X	145000	110300	1.31No			
31	I-95	Military Tr	Donald Ross Rd	6X	145000	110300	1.31No			
32	LANTANA RD	High Ridge Rd	I-95	4D	44632	33200	1.34No			
33	LANTANA RD	I-95	Redding Dr	5	38451	33200	1.16No			
34	MARTIN LUTHER KING JR BLVD	Congress Ave	Australian Ave	2	16574	15200	1.09No			
35	NORTHLAKE BLVD	I-95	Congress Ave	6D	51564	50300	1.03No			
36	OKEECHOBEE BLVD	Military Tr	Palm Beach Lakes Blvd	8D	69046	67300	1.03No			
37	OKEECHOBEE BLVD	1-95	Australian Ave	8D	70826	67300	1.05No			
38	OKEECHOBEE BLVD	Australian Ave	Tamarind Ave	6D	59767	50300	1.19No			
39	PALMETTO PARK RD	St Andrews Blvd	Military Tr	6D	51512	50300	1.02Yes			
40	PALMETTO PARK RD	Military Tr	1-95	6D	60402	50300	1.2No	Already 8 lanes		
41	PALMETTO PARK RD	1-95	12th St	6D	57712	50300	1.15No			
42	PALMETTO PARK RD	12th St	Boca Raton Blvd	4D	35491	33200	1.07No			
43	PGA BLVD	SR 811	Gardens Mall	6D	63185	50300	1.26No			

		FAILING	G ROADWAYS	IN	LRT	2					
S.					2011			2035	12-16	5 yr Rd	
NO.	Roadway	From	10	Lanes	Counts	LOS D	V/C	LKIP	TIP	Prog	Notes
	IGLADES RD	Turnpike Entrance	Jog/Powerline Rd	6D	51915	50300	1.03	Yes	No	No	PD&E
	2GLADES RD	Jog/Powerline Rd	St. Andrews Blvd	6D	51325	50300	1.02	Yes	No	No	PD&E
	GLADES RD	St. Andrews Blvd	I-95	6D	67794	50300	1.35	Yes	No	No	PD&E
4	4GLADES RD	I-95	Perimeter Rd	6D	69419	50300	1.38	Yes	No	No	PD&E
	GLADES RD	Perimeter Rd	FAU Entrance(10th Ave NW)	6D	61703	50300	1.23	Yes	No	No	PD&E
(61-95	Broward County Line	Palmetto Park Rd	8X	191500	146500	1.31	Yes	Yes	No	
	71-95	Palmetto Park Rd	Glades Rd	10X	191500	184000	1.04	Yes	Yes	No	
8	3I-95	Glades Rd	Yamato Rd	8X	190500	146500	1.30	Yes	Yes	No	
9	91-95	Yamato Rd	Congress Ave Interchange	8X	173000	146500	1.18	Yes	No	No	
1(PALMETTO PARK RD	St Andrews Blvd	Military Tr	6D	51512	50300	1.02	Yes	Yes	Yes	
1:	IPOWERLINE RD	Broward County Line	SW 18th St	4D	33231	33200	1.00	Yes	No	No	
1	2POWERLINE RD	Camino Real	Palmetto Park Rd	4D	39450	33200	1.19	Yes	No	No	
13	SEMINOLE PRATT-WHITNEY RD	Okeechobee Blvd	Sycamore Dr E	2	17383	15200	1.14	Yes	No	No	
14	SEMINOLE PRATT-WHITNEY RD	Sycamore Dr E	60TH ST N	2	16094	15200	1.06	Yes	No	No	
1	SOUTHERN BLVD	Big Blue Trace	Forest Hill/Crestwood	4D	43698	33200	1.32	Yes	Yes	No	
10	5SR-7	Palmetto Park Rd	Glades Rd	6D	52849	50300	1.05	Yes	No	No	PD&E
1	7SR-7	Okeechobee Blvd	Orange Grove Blvd	2	16159	15200	1.06	Yes	Yes	No	

The following is the result of CMP 2012

- 1. There were 59 roadway links that failed LOS D using 2011 counts for the whole of Palm Beach County.
- 2. Of the 59 roadways only 17 were in the LRTP.
- 3. Of the 17 roadways, six were already programmed in the TIP and County's 5-year road program.
- 4. So we are left with 11 roadways in Tier 1, for further analysis.

CMP Tier Process Details

The previous maps and tables showed those facilities that failed the first cut and got included in Tier 1.

Each of these failing roadways are then moved to Tier 2 for further analysis.

CMP Tier Process Details

 As discussed, Tier 2 analysis involves:
 Peak Season, Peak Hour, Peak Direction Volume to Capacity Ratio and;
 Intersection Critical Sum or Volume

□ First, let's see the "peak" failure maps:

CMP Roadways Tier 2 Peak Conditions



CMP Roadways Tier 2 Peak Conditions



CMP Tier Process Details

Now, let's look at the intersection critical sum maps:

CMP Roadways Tier 2 Intersection Critical Sum



CMP Roadways Tier 2 Intersection Critical Sum



CMP Roadways Tier 2 Intersection Critical Sum

	LIST OF FAILING INTERSECTIONS IN PALM BEACH COUNTY											
S No					Critical Sum							
5.NU	EW Road	NS Road	Total_Vol	EBT/WBL	WBT/EBL	NBT/SBL	SBT/NBL	TOTAL	V/C			
1	Glades Rd	Fla Turnpike/Boca Grove Rd	6287	343	1690	266	308	1998	1.43			
2	Southern Blvd	Sansbury's Way/Lyons Rd	6854	1038	544	227	572	1610	1.15			
3	Southern Blvd	Forest Hill/Crestwood Blvd	8059	930	691	641	400	1571	1.12			
4	Northlake Blvd	Beeline Hwy	5238	393	611	319	960	1570	1.12			
5	Palmetto Park Rd	Military Tr	8239	811	702	730	284	1541	1.10			
6	Forest Hill Blvd	Military Tr	6537	506	648	730	821	1469	1.05			
7	Okeechobee Blvd	Jog Rd	7243	492	748	286	702	1449	1.04			
8	Summit Blvd	Jog Rd	3988	104	364	338	1067	1431	1.02			
g	Sw 18th St	Lyons Rd	5155	518	501	526	883	1400	1.00			

CMP Tier 2 Dual Failures

- We have seen the Tier 2 Peak roadway failures.
- We have seen the Tier 2 Intersection Critical Sum Failures.
- Now let's look at those roadways that have BOTH a Peak failure and an intersection(s) failure—these are the CMP Analysis Corridors.

CMP Analysis Corridors



CMP Analysis Corridors



The most congested corridors are prioritized using a point system for various strategies.

- The point system is based on the categories specified in the MPO's LRTP goals.
- Each category of goals, has few congestion mitigation strategies.
- Let's look at the different strategies.

Criteria & Ranking Table

Category	Criteria	Result/Value	Points
	Is the project on an identified truck route?	No	0
_		Yes	5
8	OR yes, and truck route has a V/C > 1.0?	Yes	7
noc	OR yes, and truck route has a V/C > 1.1?	Yes	10
E	Is the project on an intermodal access route?	No	0
fe		Yes	5
Ē	OR yes, and intermodal access route has a V/C > 1.0?	Yes	7
_	OR yes, and intermodal access route has a V/C > 1.1?	Yes	10
	Does the project provide or enhance intermodal		
	connections?	No	0
		Yes	5
	Do transit routes run along project?	No	0
		Yes	3
Q	Two or more routes run along project	Yes	5
es es	Do sidewalks exist along project extent?	No	5
e a	One side - meets standards (i.e. surface type, width)	Yes	2
Ľ ŏ	Both sides - meets standards	Yes	0
≤ <u>t</u>			
\overline{A}	Will the project provide bicycle lanes?	Already Exist	0
		No	0
		Yes	5

	What is the daily V/C ratio?	.7690	1
		.91 - 1.00	3
		1.01 - 1.10	5
		1.11 +	8
	What is the daily LOS2	Δ	0
<u>.0</u>		R	0
Ψ		D	0
σ		C	1
Ľ		D	3
		E	5
	What is the historical ADT growth rate?	< 1%	0
	(nerver three year evaluation period)	4 4 000/	4
	(per year, three year evaluation period)	1 - 1.99%	1
		2 - 2.99%	3
		3 - 3.99%	5
		4% +	8

Category	Criteria	Result/Value	Points
	What is the peak hour factor?	< .09 .0911 .11 +	0 3 5
Traffic	What is the peak hour, peak direction V/C ratio?	.7690 .91 - 1.00 1.01 - 1.10 1.11 +	1 3 5 8
	What is the duration of congestion? (length of time that volume exceeds capacity, using the peak hour capacity standard)	< 3 hours 3 - 4 hours 4 hours +	0 5 8

JCe	Does the project serve major activity centers?	No Yes	0 5
nomics/Finar	What is the roadway's functional classification?	R-MIN R-MAJ U-COLL R-MA U-MA R-PA U-PA	1 2 2 5 5 8
Eco	Potential extraordinary costs (right-of-way, environmental costs, e.g.)	Yes No	0 5
	What is the residential growth rate of the adjacent TAZs?	< 1%	0
elations	(per year, three year evaluation period)	1 - 1.99% 2 - 2.99% 3 - 3.99% 4% +	1 3 5 8
Browth Re	What is the expected future residential growth rate of the surrounding TAZs? (per year)	< 1% 1 - 1.99% 2 - 2.99% 3 - 3.99% 4% +	0 1 3 5 8
0	Does the project support urban infill and redevelopment?	No Yes	0 5

Category	Criteria	Result/Value	Points
ital/	Does the project provide any significant benefits to traditionally	No	0
	underserved populations (low-income or minority)?	Yes	5
nmer	Will the project provide for a reduction in air pollution?	No	0
ocial		Yes	5
Jviro	Does the project 'fit' the land uses and form of adjacent	No	0
Sc	properties and development?	Yes	5
ш	Is the project on a roadway with a Corridor Master Plan?	No Yes	0 5

	Is the project on an evacuation route?	No	0
₹ &		Yes	5
ri Ç	Do high hazard locations, as identified in the annual Palm	No	0
ਹੂ ਉ	Beach County crash report, exist along the project?	Yes	5
Sa Se		Top 5 location	8
	Is the project on an identified regional corridor?	No	0
ing.		Yes	5
	Does the project provide for an equal number of lanes as exist	No	0
ar	in an adjacent county on the same roadway?	Yes	3
й <u>с</u>	(applies at county lines)		
	Does the project provide relief to a CRALLS facility?	No	0
		Yes	5

OTHER FACTORS
Non-quantifiable
Policies
Variable weighting
Public input





	Scoring to prioritize the failing roadway segments																
S. No.	Roadway	From	То	Lanes	V/C	TRCKRT	INTMDL	INTMDLENH	TRNST	SDWLK	BKLNS	VCD	LOS	TGRWTH	PHFS	VCPK	DURCNG
1	GLADES RD	Turnpike Entrance	Jog/Powerline Rd	6D	1.03	7	7	5	3	2	0	5	5	0		5	
2	GLADES RD	Jog/Powerline Rd	St. Andrews Blvd	6D	1.02	7	7	5	3	2	0	5	5	0		5	
3	GLADES RD	St. Andrews Blvd	I-95	6D	1.35	10	10	5	3	2	0	8	5	0		8	
4	GLADES RD	I-95	Perimeter Rd	6D	1.38	10	10	5	3	0	0	8	5	0		8	
5	GLADES RD	Perimeter Rd	FAU Entrance	6D	1.23	10	10	5	3	0	0	8	5	0		3	
			Congress														
6	I-95	Yamato Rd	Xchange	8X	1.18	10	10	5	0	5	5	8	5	0		5	
7	POWERLINE RD	Broward Cty Line	SW 18th St	4D	1.00	0	0	0	0	2	0	5	5	0		1	
8	POWERLINE RD	Camino Real	Palmetto Park Rd	4D	1.19	0	0	0	0	2	0	8	5	0		8	
	SEMINOLE	Okeechobee															
9	PRATT	Blvd	Sycamore Dr E	2	1.14	10	0	0	0	2	0	8	5	0		5	
	SEMINOLE																
10	PRATT	Sycamore Dr E	60TH ST N	2	1.06	7	0	0	0	2	0	5	5	0		5	
11	SR-7	Palmetto Park Ro	Glades Rd	6D	1.05	7	7	5	3	2	0	5	5	0		1	

Other Directions

2001 TRAFFIC COUNT DISTRIBUTION

Palmetto Park Rd, 130' West of Military Trail



Other Directions

2 AL AND 1.9-1.8-00 ENT FARMS 1.7-1.6-RITY 王 1.5-PGA BLVD 1.4-PRO 1.3-1.2-EB 1.1 \mathcal{Q}_1 RCA BLVD RD 0.9-FARMS WВ 0.8-> 0.7-**FURNS RD** 0.6-0.5-LIT. 0.4 Z HOLLY DR 0.3-0.2-LIGHTHOUSE DR 0.1 0-15 115 215 315 415 515 615 715 815 915 10151115121513151415151516151715181519152015211522152315 **15 MIN. TIME INTERVAL**

2001 TRAFFIC COUNT DISTRIBUTION PGA Blvd, 2000' E of I-95

Priority list of failing roadways for CMP 2012											
S.No.	Roadway	From	То	Jurisdiction	Lanes	V/C	Points				
1	I-95	Yamato Rd	Congress Ave	State	8X	1.28	98				
2	SOUTHERN BLVD	Big Blue Trace	Forest Hill/Crestwood	State	4D	1.43	93				
3	GLADES RD	I-95	Perimeter Rd	State	6D	1.50	89				
4	I-95	Glades Rd	Yamato Rd	State	8X	1.41	88				
5	GLADES RD	Turnpike Entrance	Jog/Powerline Rd	State	6D	1.16	86				
6	GLADES RD	Perimeter Rd	FAU Entrance	State	6D	1.26	86				
7	GLADES RD	St. Andrews Blvd	I-95	State	6D	1.39	84				
8	GLADES RD	Jog/Powerline Rd	St. Andrews Blvd	State	6D	1.06	77				
9	I-95	Palmetto Park Rd	Glades Rd	State	10X	1.10	77				
	SEMINOLE PRATT-										
10	WHITNEY RD	Okeechobee Blvd	Sycamore Dr E	County	2	1.13	69				
11	GLADES RD	Boca Rio Rd	Turnpike Entrance	State	6D	1.01	68				
12	SEMINOLE PRATT- WHITNEY RD	Sycamore Dr E	60TH ST N	County	2	1.08	60				

- The worst performing corridors are targeted for more comprehensive study, beyond what the currently available data allows.
- Project priority list is required annually.
- The prioritized projects are submitted to FDOT.
- FDOT develops Work Program.
- Draft TIP developed.
- Public Hearing.
- MPO adopts TIP.
- FHWA approval.

Palm Beach MPO

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