



## TECHNICAL MEMORANDUM

### FY 2008-2009 Prioritized TRIP Projects

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**Date:** September 13, 2007

**Project #:** 6761.23

**To:** Southeast Florida Transportation Council (SEFTC) Members

**From:** Jessica Josselyn and Phill Worth

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The Regional Transportation Technical Advisory Committee (RTTAC) commenced work on developing a regional project prioritization process in March 2007, with the assistance of the FDOT and Kittelson & Associates, Inc. The need arose to accelerate the effort such that an interim prioritization process could be developed and applied in time to produce a prioritized list of projects for the FY 2008-09 Transportation Regional Improvement Program (TRIP). The RTTAC succeeded in developing what is referred to as the *Interim South Florida Regional Prioritization Process* and produced a recommended list of prioritized TRIP projects for the SEFTC Board to consider adopting at the September 24<sup>th</sup> meeting. The urgency of this matter is due to the application deadline for TRIP being October 1, 2007.

#### **Consistency with Regional Goals/Objectives**

The Interim South Florida Regional Prioritization Process was developed to be consistent with the goals and objectives established by the region and the local MPOs. This consistency provides assurance that the resulting list of projects is accomplishing the stated mission of each organization.

#### **Goals for the Regional Prioritization Process**

The RTTAC established four goals for the regional prioritization process: objectivity, quantification, replication, and applicability to all project types. These goals require that criteria used in the prioritization process must provide a high level of objectivity and, therefore, they must be easily defined and measured. This leads the selected criteria to be quantifiable. Thus, criteria that are readily defined, measurable, and objective lead to a process whose results are easily replicated by others. The final goal is that the process be applicable to all types of project; specifically, highway, transit, and non-auto.

The RTTAC has concluded that the Interim South Florida Regional Prioritization Process achieves these goals to an acceptable level. Work will continue on the prioritization process to elevate it to a state of robustness such that its interim status can be removed.

#### **Interim Prioritization Process**

The cornerstone of the prioritization process is the determination of a user benefit-cost ratio for each project being evaluated. The user benefit-cost ratio methodology relies on the regional model to (1) represent each project being evaluated and (2) report the benefits in travel time

savings users derive from each project. This criterion is considered the most important because user benefits and costs are readily defined, easily quantified, and can be objectively measured using the methodology developed for this process.

Unfortunately, not all projects nominated for TRIP funding are in the regional model. Therefore, additional criteria had to be developed and added to the user benefit-cost ratio to complete the Interim South Florida Regional Prioritization Process. Four criteria (project readiness, safety benefit, multimodal benefit, and regional connectivity benefit) were defined and matched with quantifiable measures to complete the interim process.

The interim process is accomplished in three steps, as described below. Because of the importance placed on the user benefit-cost ratio, this criterion was set apart from the others and given a weighting factor of four. Further justification for this weighting is due to the other criteria lacking an equivalent level of objectivity and precise quantification.

**Step1: Tier 1 Criterion**

The Tier 1 criterion is the user benefit-cost ratio, where benefit is derived from the regional model (in the form of regional travel time savings) and cost is obtained from the agency leading the project. As noted above, a benefit-cost ratio cannot be calculated for all TRIP-nominated projects for one or more of the following reasons: (1) the project is not currently in the regional model, (2) the project impact is too small to reliably discern a benefit within the regional model, and/or (3) the project’s benefit cannot be measured in a highway/transit model (i.e. sidewalk improvements, etc.).

Illustrated below is the matrix framework for the Tier 1 criterion. This portion of the evaluation matrix (prioritization process) is applied for all projects that can be reliably modeled. The x-axis lists the projects to be scored; the y-axis lists the key values used to determine the weighted score for each project.

Project	Project Description/ Limits	Tier 1				
		Benefit <sup>1</sup>	Cost <sup>2</sup>	Benefit-Cost Ratio <sup>3</sup>	Raw Points <sup>4</sup>	Weighted Score <sup>5</sup>
Project #1	....			.....		
Project #2		....			....	
Project #3			.....			.....

Definitions of the key terms used in this illustration are as follows:

1. *Benefit* is defined as the annual travel time cost savings the region will experience if the project is built, as determined in the regional model. The annualized travel time saved is multiplied by the value of time and the area-wide vehicle occupancy rate to produce the benefit. A recently completed study in South Florida found that the value of time is \$12.70 per person per hour and that the area-wide vehicle occupancy rate is 1.33.
2. *Cost* is defined as the annualized cost of the said project. The total cost of the project is provided by the nominating agency and the annualized cost is determined simply by dividing the total cost by a 20-year assumed life span.
3. The *benefit-cost ratio* is simply the annualized benefit divided by the annualized cost.

4. Because other criteria are used in the process and the user benefit-cost ratio is weighted, it is necessary to convert the ratio to a *raw point* value. This is accomplished by listing the projects in the order they scored; separating them into five groups of equal number, and assigning five points to the highest scoring group, four points to the next highest, on down to one point for the lowest scoring group. Example: If there are 10 projects, then the two projects with the highest benefit-cost ratio will be assigned five points, the two projects with the lowest benefit-cost ratios will be assigned one point, and those projects in between will be assigned four, three, and two points, respectively. Projects without a benefit-cost ratio (i.e. those projects not in the model) are assigned a value of zero.
5. A weighting factor of four is applied to all projects that receive a benefit-cost ratio.

**Step2: Tier 2 Criteria Assessment**

The Tier 2 assessment serves two purposes. First, it allows for the consideration of other criteria than just user benefit. Second, it allows a fair comparison of all projects, regardless of whether they can be modeled and a benefit-cost ratio can be calculated. There are four criteria that comprise Tier 2: (1) project readiness, (2) safety benefit, (3) multimodal benefit (roadway and transit), and (4) regional connectivity benefit. Each category is scored on a scale from one to five. The second part of the prioritization matrix, representing the Tier 2 criteria, is illustrated below:

Project	Project Description/ Limits	Tier 2				
		Project Readiness <sup>6</sup>	Safety Benefit <sup>7</sup>	Multimodal Benefit <sup>8</sup>	Regional Connectivity Benefit <sup>9</sup>	Weighted Score <sup>10</sup>
Project #1	....			.....		
Project #2		.....			.....	
Project #3			.....			.....

The Tier 2 criteria definitions are as follows (all scored on a scale from 1 to 5 points):

6. *Project Readiness* is defined as the years in which the project will be implemented into the transportation system. For example, a project that will be implemented within 0 to 2 years will be assigned a value of five points, where as a project that is 11+ years out will be assigned one point.
7. *Safety Benefit* is scored over two subjects: (1) project purpose, and (2) reduction in level of user exposure. Projects whose purpose is to address an identified safety deficiency score up to five points. Projects that reduce user exposure rates receive one to two points.
8. *Multimodal Benefit* is a criterion that assesses whether a project improves multiple modes of travel or just a single mode. For example, a project that only improves one travel mode (i.e., auto or transit) receives a score of one. A project that directly improves all modes of travel (i.e. auto, transit, pedestrian, and bicycle) receives a score of five.
9. *Regional Connectivity Benefit* is scored over three subjects: (1) functional classification, (2) Strategic Intermodal System (SIS) designation, and (3) SIS connectivity. This criterion recognizes projects that have a strategic importance to the regional system (for

example, a roadway that is classified Principal Arterial, designated as a SIS Corridor, and connects to a SIS facility (corridor, hub, or connector) would score five points).

- The *weighted score* is calculated by summing the four individual category scores. A weighting factor of one is applied to the sum for all projects that have a Tier 1 criteria score. A weighting factor of two is applied to the sum for each project that does not have a Tier 1 criteria score. Page 4 summarizes the application of weighting factors.

**Step3: Project Ranking**

The final step in the prioritization process involves summing the Tier 1 and Tier 2 criteria scores to produce a Total Weighted Score. This last step is illustrated below as the final component of the prioritization matrix:

Project	Project Description/ Limits	Tier 1 Weighted Score	Tier 2 Weighted Score	Total Weighted Score
Project #1		.....		
Project #2			.....	
Project #3	.....			.....

Once the total weighted scores are calculated, the projects are then listed in descending order, with the highest score representing the highest rated project. This list represents the recommended priority projects in rank order, based on the technically objective evaluation.

**Weighting Factors**

Table 1 summarizes the difference between scoring a project with a benefit-cost ratio and one without a benefit-cost ratio. This table describes how the weighting factors apply to the assessment process.

**Table 1 Weighting Factor Summary**

Projects	Tier 1		Tier 2								Total Maximum Score
	B/C Ratio		Project Readiness		Safety Benefit		Multimodal Benefit		Regional Connectivity Benefit		
	Raw	Weight	Raw	Weight	Raw	Weight	Raw	Weight	Raw	Weight	
Modeled (B/C Ratio > 0)	5	20	5	5	5	5	5	5	5	5	40
Not modeled (B/C Ratio = 0)	0	0	5	10	5	10	5	10	5	10	40
Modeled % weight/ Not modeled % weight	50% weight/ 0% weight		50% weight/100% weight								

Table 2 summarizes the FY 2008-2009 prioritized project list based on the interim regional prioritization methodology described herein. This rank-ordered list of projects is recommended for adoption by the SEFTC Board.

**Table 2 FY 2008-2009 Prioritized TRIP Projects**

County	Project Name / Facility	Limits		Project Type	Tier 1 Criterion (T1)				Tier 2 Criteria (T2)												Total (T1 + T2)						
		From	To		Benefit-to-Cost Ratio				Project Readiness			Safety Benefit			Multimodal Benefit			Regional Connectivity Benefit (Divided into 3 Categories)									
					Actual BCRatio <sup>1</sup>	Raw (0-5)	Weight <sup>2</sup>	T1 Total	Raw (0-5)	Weight <sup>3</sup>	Comments	Raw (0-5)	Weight <sup>3</sup>	Comments	Raw (1-5)	Weight <sup>3</sup>	Comments	Functional Classification		SIS Facility Designation		SIS Connectivity		Total Raw (0-5)	Weight <sup>3</sup>	T2 Total	
MDC	Krome Avenue	SW 8th Street	SW 88th Street	Widen to 4-lanes	21.34	4	16	16	4	4	In Design currently, DOT staff indicate complete construction 3-4 yrs	5	5	Project purpose safety driven	1	1	Auto focused improvement, no existing transit routes on the facility	2	Principal Arterial	2	SIS Corridor	1	Improves SIS connectivity	5	5	15	31
MDC	I-95/South Florida Rail Corridor	At Golden Glades Interchange		Multi-modal Facility & Access Improvements	NA	0	0	0	3	6	PPP in-process, need PD&E and Design	2	4	Acknowledged safety deficiency	5	10	Improves auto, transit, and pedestrian	2	Principal Arterial	2	SIS Hub	1	Improves SIS connectivity	5	10	30	30
BC	Palm Ave	Stirling Rd	Griffin Rd	Add 2L (4LD)	36.77	5	20	20	5	5	Construction 2009	1	1	Reduces exposure	1	1	Auto focused improvement, no existing transit routes on the facility	1	Minor Arterial	0	Not on SIS	0	Does not improve connection to SIS facility	1	1	8	28
BC	Pembroke Rd	SW 136 Ave	SW 160 Ave	New 4LD and Bridge	36.06	5	20	20	5	5	Construction 2009	1	1	Reduces exposure	1	1	Auto focused improvement, no existing transit routes on the facility	1	Minor Arterial	0	Not on SIS	0	Does not improve connection to SIS facility	1	1	8	28
SRFTA	Tri-Rail Station Parking and Circulation Improvement Program, Phase 1	Tri-Rail Stations: Mangonia Park, West Palm Beach, Lake Worth, Boynton Beach, Delray Beach, Boca Raton, Deerfield Beach, Pompano Beach, Cypress Creek, Fort Lauderdale, Dania Beach, Sheridan St, Hollywood, Golden Glades, Opa-Locka, MetroRail, Hialeah market, MIA Airport		Station Upgrades: increased parking, improve signage, security/safety improvements, connectivity improvements, pedestrian facility improvements, etc.	NA	0	0	0	4	8	Project Study indicates 2010 implementation	1	2	Reduces exposure	3	6	Transit focused, but improves auto parking capacity and pedestrian facilities	2	Exclusive Rail	2	SIS Rail Corridor	1	Improves SIS connectivity	5	10	26	26
PBC	Okeechobee Boulevard	Australian Avenue	Tamarind Avenue	Intersection Improvements; 8-laning Okeechobee, add WB LT-lane	NA	0	0	0	5	10	Construction 2009	1	2	Reduces exposure	3	6	Auto focused, but on facilities which carry transit	2	Principal Arterial	0	Not on SIS	1	Improves SIS connectivity (to I-95)	3	6	24	24
BC	Griffin Rd	SW 172 Ave	SW 185 Ave	Add 2L (4LD)	15.45	4	16	16	5	5	Construction 2009	1	1	Reduces exposure	1	1	Auto focused improvement, no existing transit routes on the facility	1	Minor Arterial	0	Not on SIS	0	Does not improve connection to SIS facility	1	1	8	24
BC	Transit Amenities/Regional Corridors	Along Regional Corridors		Stop improvements, focus on regional routes and strategic locations that provide critical connections for people traveling throughout the region	NA	0	0	0	5	10	Construction 2009	1	2	Reduces exposure	3	6	Transit focused, but also improves pedestrian connectivity	2	Major Arterials	0	Not on SIS	1	Improves SIS connectivity	3	6	24	24
MDC	US-1/South Dixie Highway	At Quail Roost Drive		Park-n-Ride Facility (structure)	NA	0	0	0	4	8	MPO staff indicated 2-4 years	1	2	Reduces exposure	3	6	Transit focused, but improves auto parking capacity	2	Principal Arterial	0	Not on SIS	1	Improves SIS connectivity	3	6	22	22
PBC	Indiantown Road (SR 706)	Maplewood	Maplewood	Intersection Improvements, construction of NB left-turn lane	NA	0	0	0	5	10	Construction 2009	1	2	Reduces exposure	3	6	Auto focused, but on facilities which carry transit	2	Principal Arterial	0	Not on SIS	0	Insignificant regional connectivity benefit	2	4	22	22
BC	ITS/Regional Corridors	Regional Corridors, County wide: US-1, Hallandale Boh Blvd to Hillsboro Blvd, Flamingo Rd, Red Rd to Hillsboro Blvd, Powerline Rd, Hallandale Boh Blvd to Hillsboro Blvd, SR-7, Miramar Pkwy to Hillsboro Blvd, University Dr, Miramar Pkwy to Hillsboro Blvd, US-27, Pines Blvd to Griffin Rd		New Controllers, and equipments (275 intersections)	NA	0	0	0	5	10	Construction 2009	0	0	Safety impact unknown	3	6	Auto focused improvement, but on facilities which carry transit	2	Principal and Major Arterials	0	Not on SIS	1	Improves SIS connectivity	3	6	22	22
PBC	Atlantic Avenue (SR 906)	Florida's Turnpike	Jog Road	Add 2L (6LD)	14.22	3	12	12	4	4	PBC staff indicated 3-4 years for implementation	1	1	Reduces exposure	1	1	Auto focused improvement, no existing transit routes on the facility	2	Principal Arterial	0	Not on SIS	1	Improves SIS connectivity (to Turnpike)	3	3	9	21
PBC	Indiantown Road (SR 706)	Central Boulevard	Central Boulevard	Intersection Improvements; add 3rd NB LT-lane, associated modifications due to triple left	NA	0	0	0	4	8	Construction 2010	1	2	Reduces exposure	3	6	Auto focused, but on facilities which carry transit	2	Principal Arterial	0	Not on SIS	0	Insignificant regional connectivity benefit	2	4	20	20
BC	Andrews Ave	Pompano Park Pl	Atlantic Blvd	New 4LD (EX 2L reconstructed to 4L)	11.89	3	12	12	5	5	Construction 2009	1	1	Reduces exposure	1	1	Auto focused improvement, no existing transit routes on the facility	1	Minor Arterial	0	Not on SIS	0	Does not improve connection to SIS facility	1	1	8	20
BC	SR-7	Hallandale Boh Blvd	Fillmore St	Add 2L (6LD)	9.14	2	8	8	5	5	Construction 2009	2	2	Acknowledged safety deficiency	3	3	Auto focused, but on facilities which carry transit	2	Principal Arterial	0	Not on SIS	0	Does not improve connection to SIS facility	2	2	12	20
BC	SR-7	Miami-Dade County Line	Palm Boh County Line	New BRT Stops (5-6 locations)	NA	0	0	0	5	10	Construction 2009	1	2	Reduces exposure	1	2	Transit focused	2	Principal Arterial	0	Not on SIS	1	Improves SIS connectivity	3	6	20	20
PBC	Atlantic Avenue (SR 906)	Jog Road	Jog Road	Intersection Improvements; add NB, SB, and EB RT-lanes	NA	0	0	0	5	10	Construction 2009	1	2	Reduces exposure	1	2	Auto focused improvement, no existing transit routes on the facility	2	Principal Arterial	0	Not on SIS	0	Insignificant regional connectivity benefit	2	4	18	18
PBC	Indiantown Road (SR 706)	SR 811	SR 811	Intersection Improvements; SR 811 add NB/SB TH-lane, add NB LT-lane	NA	0	0	0	5	10	Construction 2008	1	2	Reduces exposure	1	2	Auto focused improvement, no existing transit routes on the facility	2	Principal Arterial	0	Not on SIS	0	Insignificant regional connectivity benefit	2	4	18	18
MDC	ATMS/All Regional Corridors	County-wide		Advanced Traffic Management System (ATMS)	NA	0	0	0	5	10	MPO staff indicate project implementation has begun. Should be fully implemented within 2-3 years	0	0	Safety impact unknown	1	2	Auto focused	2	Principal/Major Arterials	0	Not on SIS	1	Improves SIS connectivity	3	6	18	18
BC	Andrews Ave	NW 18 St	Copans Rd	Add 2L (4LD)	8.80	2	8	8	5	5	Construction 2009	1	1	Reduces exposure	3	3	Auto focused, but on facilities which carry transit	1	Minor Arterial	0	Not on SIS	0	Does not improve connection to SIS facility	1	1	10	18
MDC	Vanpool/Regional Corridors	Regionwide		Vanpool; 16 Vehicle Expansion	NA	0	0	0	5	10	MPO staff indicate vehicles may be placed onto network immediately	1	2	Reduces exposure	1	2	Transit focused	2	Principal/Major Arterials	0	Not on SIS	0	Does not improve connection to SIS facility	2	4	18	18
BC	Transit (TSP)	Along Regional Corridors - For existing and planned limited stop routes		Transit Signal Priority	NA	0	0	0	4	8	Construction 2010	0	0	Safety impact unknown	1	2	Transit focused	2	Major arterials	0	Not on SIS	1	Improves SIS connectivity	3	6	16	16
MDC	SR 828 (Palmetto Expressway)	SW 32 Street	N. of SW 72 Street	Add two additional lanes; reconstruct Bird & Miller interchanges	3.73	1	4	4	4	4	MPO staff indicate Design is complete. Construction should begin within 2 yrs, and complete construction 3-4 yrs	2	2	Acknowledged safety deficiency	1	1	Auto focused improvement, no existing transit routes on the facility	2	Principal Arterial	2	SIS Corridor	1	Improves SIS connectivity	5	5	12	16
MDC	SW 152 Street/Coral Reef Drive	Overpass at SW 117 Avenue		Grade Separation	NA	0	0	0	2	4	PD&E and Design still needed. 7-8 yrs for complete construction	1	2	Reduces exposure	3	6	Auto focused, but on facilities which carry transit	2	Principal Arterial	0	Not on SIS	0	Insignificant regional connectivity benefit	2	4	16	16
MDC	Kendall Drive	Overpass at SW 127 Avenue		Grade Separation	NA	0	0	0	2	4	PD&E and Design still needed. 7-8 yrs for complete construction	1	2	Reduces exposure	1	2	Auto focused improvement, no existing transit routes on the facility	2	Principal Arterial	0	Not on SIS	0	Insignificant regional connectivity benefit	2	4	12	12

Calculations (Maximum Score per Project = 40 points)  
 1 BCRatio = Annual Travel Savings / (Project Cost/ 20 years); Annual savings derived from SERPM6  
 2 Tier 1: Those projects with a BC Ratio are weighted by a factor of 4.0.  
 3 Tier 2 criteria are weighted by a factor of 1.0 for those projects with a BC Ratio, and 2.0 for those without.

**TIER 1 CRITERION**  
**Benefit-to-Cost Ratio Scoring Measures**  
 0=Not available  
 1=BCRatio<5 (two lowest BC Ratio projects)  
 2=5<BCRatio<10  
 3=10<BCRatio<15  
 4=15<BCRatio<30  
 5=30<BCRatio (two highest BC Ratio projects)

**TIER 2 CRITERIA**  
**Project Readiness Scoring Measures**  
 0 = 11 or more years before construction begins  
 1 = 9-10 years  
 2 = 7-8 years  
 3 = 5-6 years  
 4 = 3-4 years  
 5 = 0-2 years  
**Safety Benefit Scoring Measures**  
 0 = Safety benefit unknown  
 1 = Reduces exposure  
**Acknowledged Safety Deficiency**  
 2 = Known safety deficiency based on local knowledge and data, but safety has not been identified as the project purpose  
**Project Purpose**  
 5 = Safety-driven project  
**Multimodal Benefit Scoring Measures**  
 1 = Fully promotes one travel mode only  
 2 = Fully promotes one travel mode, and partially promotes another mode  
 3 = Fully promotes two or more modes of travel  
**Regional Connectivity Benefit Scoring Measures**  
**Functional Classification**  
 0 = Minor Collector or local  
 1 = Minor Arterial/Major Collector (Transit: high-capacity, shared-use facility)  
 2 = Principal Arterial/Major Arterial (Transit: Exclusive operating environment)  
**SIS Facility Designation**  
 0 = Not on SIS network  
 1 = SIS Connector (Transit: Inter-county link)  
 2 = SIS Corridor or Hub (Transit: Regional Transit Facility)  
**SIS Connectivity**  
 0 = Project does not provide a connection improvement to a SIS facility and/or has minimal regional connection benefit (i.e., intersection improvement)  
 1 = Improves connection to a SIS facility