

Appendix D

Performance Measures

Performance management is a strategic approach to connect investment and policy decisions to achieve performance goals. Performance goals are achieved through establishing performance measures and targets adopted in the TPA's Long Range Transportation Plan (LRTP). The TPA's aim is to provide a provide that uses data-driven, quantitative criteria to set and analyze achievable targets. Using a performance-based method ensures the most efficient investment of federal transportation funds by increasing accountability, transparency, and providing for better investment decisions that focus on key outcomes.

The FHWA and FTA have established performance measures and reporting requirements for DOTs, MPOs, and transit agencies through five Planning Rules. In response, the Palm Beach TPA and FDOT have adopted performance measures and targets based on the national goals enacted by Congress in Moving Ahead for Progress in the 21st Century (MAP-21). The Planning Rules specify the requirements to implement a performance-based approach to planning and programming. In total, there are three FHWA performance measure (PM) rules and two from FTA for transit-transit asset management and transit safety.

The various performance measures within the Planning Rules assess roadway safety (PM1), pavement and bridge condition (PM2), system performance and freight movement (PM3), transit asset management (TAM), and transit safety. The Planning Rules and associated performance measures also specify how the TPA should set targets, report performance, and integrate performance management into the Long-Range Transportation Plans (LRTP) and Transportation Improvement Programs (TIP).

To coordinate between agencies, the FDOT and the Metropolitan Planning Organization Advisory Council (MPOAC) developed the Transportation Performance Management (TPM) Consensus Planning Document to describe the processes through which FDOT, the TPA, and the providers of public transportation in the TPA planning area will cooperatively develop and share information related to transportation performance management and target setting. The Consensus Planning Document can be found after the performance measures. The adopted FDOT/TPA performance measures and targets are listed in the table below.

Federal Performance Measures and Targets

Category	Performance Measure	TPA Target
Safety	Fatalities	Zero (2020)
	Serious Injuries	Zero
	Rate of Serious Injuries per 100M VMT	Zero
	Rate of Fatalities per 100M VMT	Zero
	Nonmotorized Fatalities and Serious Injuries	Zero
System Performance	Percent of reliable person-miles traveled on the Interstate	≥ 85% (2024)
	Percent of reliable person-miles traveled on the non-Interstate NHS	≥ 93%
	Truck travel time reliability ratio (TTTR) on the Interstate	≤ 1.8
Bridges	Percent of NHS bridges classified as in Good condition by deck area	≥ 50% (2024)
	Percent of NHS bridges classified as in Poor condition by deck area	≤ 5%
Pavement	Percent of Interstate pavements in Good condition	≥ 60% (2023)
	Percent of Interstate pavements in Poor condition	≤ 5%
	Percent of non-Interstate NHS pavements in Good condition	≥ 40%
	Percent of non-Interstate NHS pavements in Poor condition	≤ 5%
Transit (Palm Tran) <i>Vehicles</i>	Percent of Vehicles exceeding useful life	(2020)
	Vehicles - Articulated Bus	≤ 10%
	Vehicles - Fixed Route Bus	≤ 10%
	Vehicles - Paratransit Bus	≤ 10%
	Vehicles - Paratransit Van	≤ 10%
<i>Equipment</i>	Percent of Equipment exceeding useful life	
	Equipment - Automobiles	≤ 20%
	Equipment - Trucks	≤ 20%
<i>Facilities</i>	Percent of Facilities exceeding useful life	≤ 0%
Transit (SFRTA) <i>Equipment</i>	Support & Maintenance Vehicles older than 8yrs	≤ 0%
	Other vehicles scoring lower than 2.5 (1-5 scale)	≤ 0%
<i>Rolling Stock</i>	Locomotives, Coach cars, self-propelled cars older than 39 yrs.	≤ 0%
	Bus (Cutaway) older than 10 yrs.	≤ 0%
<i>Infrastructure Facilities</i>	Rail fixed-guideway track with performance restrictions	≤ 8%
	Passenger terminals scoring lower than 2.5 (1-5 scale)	≤ 30%
	Maintenance facilities scoring lower than 2.5 (1-5 scale)	≤ 30%
	Administrative offices scoring lower than 2.5 (1-5 scale)	≤ 5%

Safety Performance Measures (PM1)

Safety is the first national goal identified in the FAST Act and is also the first goal of the Florida Transportation Plan (FTP), the state's long-range transportation plan, and the emphasis of Florida's Strategic Highway Safety Plan (SHSP). On August 31, 2018, FDOT established statewide performance targets of zero fatalities and serious injuries. On November 14, 2018 and in 2019 & 2020 the Palm Beach TPA adopted the target of zero. The TPA plans and programs projects in the TIP that, once implemented, are anticipated to make progress toward achieving the targets. Safety performance measure targets are required to be adopted on an annual basis.

Baseline Conditions

Safety Performance Measures are evaluated using a five-year rolling average of crash data and Vehicle Miles Traveled (VMT). The table below presents the Baseline Safety Performance Measures 2014-2018 five-year rolling average for Florida and the Palm Beach TPA.

Baseline Safety Performance Measure Targets

Performance Measure	Florida 2014-2018	Palm Beach TPA 2014-2018	Statewide Targets (2020)	Palm Beach TPA Targets (2020)
Number of Fatalities	2,979	168	0	0
Number of Serious Injuries	20,654	1,163	0	0
Fatality Rate per 100 million VMT*	1.40	1.23	0	0
Serious Injury Rate per 100 million VMT	9.73	7.98	0	0
Number of non-motorized Fatalities & serious injuries	3,253.0	209	0	0

*VMT= Vehicle Miles Traveled Source: FDOT 2017 FHWA Performance Measures per MPO

Trends Analysis

The TPA uses crash data to track fatalities and serious injuries in Palm Beach County in order to analyze past trends and identify regional safety issues. Tracking these measures helps estimate the effectiveness of TPA transportation investment, as reflected in the TIP. The table below shows the changes in Safety Performance Measures rolling averages for Palm Beach County from 2010 through 2018.

Trends of Palm Beach Safety Performance Measures 2010-2018

Performance Measure	2010- 2014	2011- 2015	2012- 2016	2013- 2017	2014- 2018
Number of Fatalities	127.0	139.6	152.8	157.8	167.6
Number of Serious Injuries	1,040.2	1,027.2	1,055.2	1,080.6	1,088.2
Fatality Rate per 100 million VMT*	1.022	1.099	1.181	1.188	1.227

Serious Injury Rate per 100 million VMT	8.369	8.112	8.203	8.162	7.975
Number of non-motorized Fatalities and serious injuries 100 million VMT (vehicle miles traveled)	193.4	200.8	203.0	203.8	203.2
	124.42	126.82	128.83	132.63	136.44

*VMT= Vehicle Miles Traveled Source: FDOT 2017 FHWA Performance Measures per MPO

Safety Programs in the TIP

Safety is a primary focus of the Palm Beach TPA and is an important part of the TPA’s Vision of a “Safe, Efficient, and Connected Multimodal Transportation System”. The TPA adopted a Vision Zero Action Plan in April 2019 to establish safety priorities and identify achievable strategies with the best potential to reduce, and ultimately eliminate, fatalities and serious injuries for all roadway users. The Vision Zero Action Plan specifically addresses the five safety performance measures in PM1.

Safety is integrated into the planning, selection, and prioritization of TPA projects, especially projects selected through the Local Initiatives (LI) and Transportation Alternatives (TA) grant programs. LI and TA are annual competitive grant programs for projects submitted by local planning partners. Both the LI and TA grant programs include safety within the scoring criteria, and the TA program includes scoring specific to the Vision Zero Action Plan. The scoring for both programs also includes measures to address priority bike and pedestrian network gaps identified in the TPA’s Long Range Transportation Plan. A sample of projects in the TIP that are programmed to address safety are shown in the table below.

TIP Section	Project Location	Project Description
Major TPA Projects	FEC Railroad Crossings from 15 th St in West Palm Beach to Martin County Line	Install Safety/Quiet Zone infrastructure on FEC Corridor
	SR 80 from SR 15 to CR 880	Street Lighting feasibility study
	US 1: Northlake to NPB Drawbridge in North Palm Beach	Lane Repurposing from 6 lanes to 4 lanes with separated bike lanes and furnishing zone
Local Initiatives (LI)	Australian Ave from 1 st St to Blue Heron Blvd	Add Pedestrian Scale Lighting
	George Bush Blvd from NE 2nd Ave to A1A (excluding Intracoastal Waterway bridge)	Widen to provide two 10-ft travel lanes, 5-ft designated bike lanes and 5-6-ft sidewalks. Add street lighting and drainage.
Transportation Alternatives (TA)	Palm Beach Gardens various locations	Install pedestrian activated flashers at 12 existing crossings
	FPL Pathway from Lamstein Ln to Las Palmas St in Royal Palm Beach	Install LED lighting adjacent to FPL pathway
	Belvedere Heights neighborhood	Install sidewalks and pedestrian scale lighting

Pavement & Bridge Condition Performance Measures (PM2)

On May 18, 2018, FDOT established statewide performance targets for the pavement and bridge condition measures. The TPA adopted FDOT's statewide pavement and bridge performance targets on March 21, 2019 and subsequently set a moral stringent local TPA target for National Highway System (NHS) bridges in poor condition at no more than 5%. The table below shows the Palm Beach TPA and statewide targets.

Statewide Pavement and Bridge Condition and Performance Targets

Performance Measure	2-year Statewide Target (2019)	4-year Statewide Target (2021)	Current Statewide Conditions	2-year Palm Beach TPA Target (2019)	4-year Palm Beach TPA Target (2021)	Palm Beach TPA Conditions (2018)
Percent of Interstate pavements in good condition	Not required	≥60%	66%	Not required	≥60%	23.2%
Percent of Interstate pavements in poor condition	Not required	≤5%	0.1%	Not required	≤5%	0.0%
Percent of non-Interstate NHS pavements in good condition	≥40%	≥40%	45%	≥40%	≥40%	39.9%
Percent of non-Interstate NHS pavements in poor condition	5%	5%	0.4%	≤5%	≤5%	0.1%
Percent of NHS bridges (by deck area) in good condition	≥50%	≥50%	72%	≥50%	≥50%	88.1%
Percent of NHS bridges (by deck area) in poor condition	≤10%	≤10%	1%	≤5%	≤5%	1.1%

FDOT is mandated by Florida Statute 334.046 to preserve the state's pavement and bridges to specific standards. To adhere to the statutory guidelines, FDOT prioritizes funding allocations to ensure the current transportation system is adequately preserved and maintained before funding is allocated for capacity improvements. These statutory guidelines cover the statewide federal targets that have been established for pavements and bridges.

In addition, MAP-21 requires FDOT to develop a Transportation Asset Management Plan (TAMP) for all NHS pavements and bridges within the state. The TAMP must include investment strategies leading to a program of projects that would make progress toward achievement of the state DOT targets for asset condition and performance of the NHS. FDOT's TAMP was updated to reflect MAP-21 requirements in 2018.

The TPA TIP reflects investment priorities established in the 2045 Long Range Transportation Plan. The focus of the TPA’s investments in bridge and pavement condition include the short list of projects below. A full list of projects is presented by section further on in this document. Most of the bridge and pavement projects that address PM2 are in the Major Maintenance section.

TIP Section	Project Location	Project Description
Major Maintenance (NHS)	Palmetto Park Rd from Glades Rd to Crawford Blvd	Resurfacing
	Jog Rd from Glades Rd to Yamato Rd	Resurfacing
	Forest Hill Blvd from US-441 to Pinehurst Dr	Resurfacing
	PGA Blvd over Indian River Lagoon	Bridge Rehabilitation
	Palm Beach Lakes Blvd over FEC R/R	Bridge Replacement

Through the annual competitive grant program administered by the TPA, scoring criteria are in place to address infrastructure deficiencies including infrastructure in poor or unacceptable conditions that is approaching the end of its service life. In addition to infrastructure condition for pavement and bridges, scoring is also in place to address the provision of non-motorized facilities on bridges as well as interchanges, and railroad crossings. In summary, all the performance measure targets set for PM 2 for pavement and bridge condition have been met or exceeded.

System Performance - Performance Measures (PM3)

Travel time reliability provides a way to measure the unexpected congestion drivers experience over normal travel flow during specific parts of the day. On May 18, 2018, FDOT established statewide performance targets for the system performance measures that assess the performance of the Interstate and National Highway System (NHS) and freight movement on the Interstate System. On September 19, 2019, the Palm Beach TPA adopted FDOT’s statewide system performance targets for truck travel time reliability and set TPA local targets for reliability on the Interstate and the non-Interstate NHS. The table below presents the statewide and TPA targets.

Statewide System Performance and Freight Targets and Current Conditions

Performance Measure	2-year Statewide Target (2019)	4-year Statewide Target (2021)	Current Statewide Conditions	2-year Palm Beach TPA Target (2019)	4-year Palm Beach TPA Target (2021)	Palm Beach TPA Conditions (2018)
Percent of person-miles on the Interstate system that are reliable (Interstate LOTTR)	75%	70%	82%	85%	85%	85%
Percent of person-miles on the non-Interstate NHS that are reliable (Non-Interstate NHS LOTTR)	Not Required*	50%	84%	93%	93%	93%
Truck travel time reliability (TTTR)	1.75	2.00	1.43	1.75	1.8	1.77

* Beginning with the second performance period covering January 1, 2022 to December 31, 2025, two year targets will be required in addition to four-year targets for the percent of person-miles on the non-Interstate NHS that are reliable measure.

LOTTR Measures (Level of Travel Time Reliability)

The LOTTR performance measures assesses the percent of person-miles traveled on the Interstate or the non-Interstate NHS that are reliable. LOTTR is defined as the ratio of longer travel times (80th percentile) to a normal travel time (50th percentile) of all applicable roads, across four time periods between the hours of 6 a.m. and 8 p.m. each day. The measure is expressed as the percent of person-miles traveled on the Interstate or Non-Interstate NHS system that are reliable. Person-miles assumes a people per vehicle estimate.

TTTR Measure (Truck Travel Time Reliability)

The TTTR performance measure assesses the reliability index for trucks traveling on the interstate. A TTTR ratio divides the 95th percentile truck travel time by a normal travel time (50th percentile) for each segment of the Interstate system over specific time periods throughout weekdays and weekends. This is averaged across the length of all Interstate segments in the state or metropolitan planning organization (MPO) planning area to determine the TTTR index.

The Palm Beach TPA’s TIP reflects the investment priorities established in the Palm Beach LRTP 2045 and are consistent with the FDOT’s Five Year Work Program. The focus of the TPA’s investments that address system performance and freight include a wide range of projects. A brief list of projects is listed below, and a complete list is provided in the sections that follow.

TIP Section	System Performance Type	Project Location	Project Description
Major TPA Projects	Corridor Improvement	Atlantic Ave from SR-7 to W of Lyons Rd	Widen from 2 to 4 lanes
	Transit - Mode Shift	Tri Rail: West Palm Beach to Jupiter	Extend commuter rail service onto the FEC corridor via the Northwood Crossover and construct 5 new stations - 45th St, 13th St, Park Ave, PGA Blvd, and Toney Penna Dr.
	Corridor Improvement	Atlantic Ave from W of Lyons Rd to Jog Rd	Widen from 4 to 6 lanes, including buffered bike lanes and 6-ft sidewalks
	Transit - ITS	Okeechobee Blvd from SR 7 to US-1; SR-7 from Forest Hill Blvd to Okeechobee Blvd	Implement Transit Signal Prioritization for entire corridor
	Transit - ITS	Lake Worth Rd from SR 7 to US-1; SR-7 from Lake Worth Rd to Forest Hill Blvd	Implement Transit Signal Prioritization
Local Initiatives (LI)	TSMO/ITS	Town of Palm Beach - 4 intersections	Upgrade signals to mast arms with video camera detection

The projects included in the TIP are consistent with FDOT's Five Year Work Program, and therefore to FDOT's approach to prioritize funding to address performance goals and targets. Given the significant resources devoted in the TIP to programs that address system performance and freight, the TPA anticipates that once implemented, the TIP will contribute to progress towards achieving the statewide reliability performance targets.

Transit Asset Management (TAM)

On July 26, 2016, FTA published the final Transit Asset Management rule. This rule applies to all recipients and subrecipients of Federal transit funding that own, operate, or manage public transportation capital assets. The rule defines the term “state of good repair,” requires that public transportation providers develop and implement transit asset management (TAM) plans and establishes state of good repair standards and performance measures for four asset categories: equipment, rolling stock, transit infrastructure, and facilities. The rule became effective on October 1, 2018. The table below identifies performance measures outlined in the final rule for Transit Asset Management (TAM).

FTA TAM Performance Measures

Asset Category	Performance Measure
Equipment	Percentage of non-revenue, support-service and maintenance vehicles that have met or exceeded their Useful Life Benchmark
Rolling Stock	Percentage of revenue vehicles within a particular asset class that have either met or exceeded their Useful Life Benchmark
Infrastructure	Percentage of track segments with performance restrictions
Facilities	Percentage of facilities within an asset class rated below condition 3 on the TERM scale

Within the TPA planning area, there are two Tier 1 providers, Palm Tran operated by Palm Beach County and Tri-Rail operated by the South Florida Transportation Authority. Tier 1 providers, defined by the TAM Rule, are those that operate rail service or more than 100 vehicles in all fixed route modes, or more than 100 vehicles or more in one non-fixed route mode.

Useful Life Benchmark (ULB)

For equipment and rolling stock classes, useful life benchmark (ULB) is defined as the expected lifecycle of a capital asset, or the acceptable period of use in service, for a particular transit provider's operating environment. ULB considers a provider's unique operating environment such as geography, service frequency, etc. and is not the same as an asset's useful life.

On September 19, 2019, the Palm Beach TPA incorporated transit asset targets that reflect the targets established by Palm Tran and SFRTA through their TAM Plans. The targets for the TPA planning area are shown in the table that follows. The Palm Beach TPA TIP is developed and managed in coordination with Palm Tran and SFRTA and reflects investment priorities established in the 2045 LRTP.

Palm Tran and the South Florida Regional Transportation Authority (SFRTA) established transit asset targets as part of their Transit Asset Management (TAM) Plans in September 2018. The transit asset management targets are based on the condition of existing transit assets and planned investments in equipment, infrastructure, rolling stock, and facilities. The targets reflect the most recent data available on the number, age, and condition of transit assets, and capital investment plans for improving these assets. The tables below summarize the asset conditions and targets by asset class for each transit provider.

Transit Asset Management Performance Measures Targets

Percentage of assets that meet or exceeds useful life for	2019 Condition	2020 Target
Palm Tran		
Vehicles - Articulated Bus	0.0%	≤ 10%
Vehicles - Fixed Route Bus	0.0%	≤ 10%
Vehicles - Paratransit Bus	1.7%	≤ 10%
Vehicles - Paratransit Van	0.0%	≤ 10%
Equipment - Automobiles	31%	≤ 20%
Equipment - Trucks	29%	≤ 20%
Facilities	0%	≤ 0%
South Florida Regional Transportation Authority		
Rolling stock - locomotives, coach cars, self-propelled cars (>39 yrs old)	25%	≤ 0%
Rolling Stock - cutaway buses (>10 yrs old)	25%	≤ 0%
Equipment - Support & Maintenance Vehicles (>8 yrs old)	22%	≤ 0%
Equipment - Other vehicles (<2.5 on 1-5 scale)	22%	≤ 0%
Passenger Terminals (<2.5 on 1-5 scale)	5%	≤30%
Maintenance Facilities (<2.5 on 1-5 scale)	5%	≤30%
Administrative Offices (<2.5 on 1-5 scale)	5%	≤0%
Rail fixed-guideway track with performance restrictions	3.3%	≤8%

Transit asset condition and state of good repair is a consideration in the methodology the Palm Beach TPA and the transit agencies use to select projects for inclusion in the TIP. The Palm Beach TPA's TIP, once implemented, will make progress toward achieving these targets. The Transit - Operations and Maintenance section of the TIP provides the full list of capital and operating expenses to maintain the Palm Tran system. Below is a short list of transit projects directly prioritized and funded by the TIP to improve Transit assets.

TIP Section	Transit Agency	Project Location	Project Description
Major TPA Projects	SFRTA	Tri-Rail Northern Layover Maintenance Facility	Maintenance facility north of Mangonia Park Tri-Rail Station
Local Initiatives	Palm Tran	Countywide	Construct and Replace Transit Shelters
		Electric Bus Transition Initiative	Purchase 3 Electric Transit Buses and Charging Stations
Operation & Maintenance - Transit	Palm Tran	Countywide (phased implementation)	Fixed Route Bus Replacement

Transit Safety Performance

The Federal Transit Administration (FTA) established transit safety performance management requirements in the Public Transportation Agency Safety Plan (PTASP) final rule published on July 19, 2018. The rule requires public transit agencies that receive federal funding under 49 U.S.C. Chapter 53 to develop and implement a PTASP. The PTASP must include the following performance measures with associated targets:

- Total number of reportable fatalities and rate per total vehicle revenue miles (VRM) by mode.
- Total number of reportable injuries and rate per total vehicle revenue miles (VRM) by mode.
- Total number of reportable safety events and rate per total vehicle revenue miles (VRM) by mode.
- System reliability - mean distance between major mechanical failures by mode.

The PTSAP takes effect July 19, 2019 with the above-mentioned performance measures and targets to be included in each public transit agency's PTASP by July 20, 2020. However, on April 22, 2020, FTA issued a Notice of Enforcement Discretion that extends the PTASP deadline to December 31, 2020 due to the extraordinary operational challenges presented by the COVID-19 public health emergency. The Palm Tran reported values for 2019 are indicated below. Once Palm Tran establishes targets, the TPA Governing Board will adopt the targets and integrate them into the TIP and LRTP.

Transit Safety Performance Measures and Targets

Performance Measure	Reported 2019	2020 Target*
Palm Tran		
Fixed Route Bus		
Number of Fatalities	0	
Fatality Rate per 100k VRM	0	
Number of Injuries	68	
Injury Rate per 100k VRM	0.9	
Number of Safety Events	45	
Safety Event Rate per 100k VRM	0.6	
Mean distance between mechanical failures (miles)	13,282	
Paratransit (Palm Tran Connection)		

Performance Measure	Reported 2019	2020 Target*
Number of Fatalities	0	
Fatality Rate per 100k VRM	0	
Number of Injuries	38	
Injury Rate per 100k VRM	0.4	
Number of Safety Events	29	
Safety Event Rate per 100k VRM	0.3	
Mean distance between mechanical failures (miles)	6,664	

*Palm Tran Targets will be provided by December 31, 2020

Asset Management and Freight Performance Measures

MAP-21 and the FAST Act require the development of a risk-based Transportation Asset Management Plan (TAMP) for all pavement and bridges on the National Highway System. Florida's initial statewide TAMP was published by FDOT on April 30, 2018. The TAMP will serve as the basis for establishing the targets for the pavement and bridge condition performance measures in future TIPs. The TIP allocates funds towards the repair, maintenance, and rehabilitation of infrastructure. FDOT prioritizes state funding allocations to ensure the investments made in the current transportation system are adequately preserved and maintained before funding is allocated for capacity improvements. FDOT's statewide Freight Plan will serve as the basis for establishing the targets related to freight system performance in future TIPs.