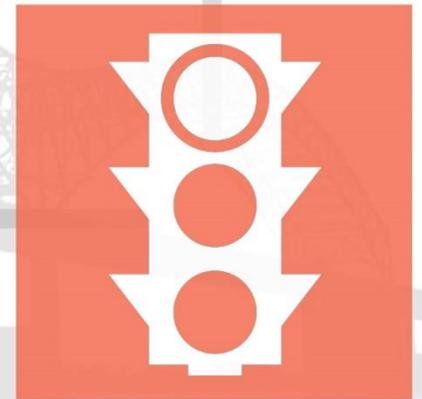


# FY 2017-2020

## TRANSPORTATION IMPROVEMENT PROGRAM (TIP)

### ADDENDUM 1: PERFORMANCE MEASURES



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## MEMPHIS URBAN AREA METROPOLITAN PLANNING ORGANIZATION (MPO)

(Programa de Mejora de Transporte para MPO de Memphis)



Memphis MPO  
METROPOLITAN PLANNING ORGANIZATION

*Strengthening Regional Transportation*

**TIP**   
**FY 2017-20**

## 1) Introduction

Performance measurement provides various transportation agencies with a better ability to identify and mitigate issues with their respective transportation networks. The introduction of The Moving Ahead for Progress in the 21st Century Act (MAP-21) and Fixing America's Surface Transportation (FAST) Act requires various transportation agencies, including MPOs, to take a performance-based approach to planning and programming activities. The Memphis MPO is currently coordinating with regional, State, and Federal partners to maintain compliance with Federal laws and regulations related to performance management. The integration of performance management regulations outlined in MAP-21 and the FAST Act into the MPO's plans and processes is an evolving effort, as various State, regional, and local transportation agencies are still in the process of establishing targets and finalizing target setting processes for certain performance measures. This addendum will be updated administratively as and when additional performance targets are set.

*Note: This section was prepared using the most recent transportation act, the FAST Act, and was developed with the intent of including performance metrics mandated by the most recent legislation. The FAST Act did not change national performance goals related to safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic viability, environmental sustainability, and reduced project delivery delays, which were established as part of MAP-21.*

## 2) Federal Requirements

MAP-21 was developed with the intent of creating a streamlined, performance-based, multimodal program in an effort to address challenges facing the U.S. transportation system. In relation to performance management, MAP-21 aims to increase the accountability and transparency of Federal highway programs by improving transportation investment decision-making through performance-based planning and programming.

As a result of MAP-21, 7 national goals were established to address safety, current infrastructure, traffic congestion, efficiency, environment, transportation delays, and project delivery delays;

1. **Safety** - To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
2. **Infrastructure Condition** - To maintain the highway infrastructure asset system in a state of good repair.
3. **Congestion Reduction** - To achieve a significant reduction in congestion on the National Highway System (NHS).
4. **System Reliability** - To improve the efficiency of the surface transportation system.
5. **Freight Movement and Economic Vitality** - To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
6. **Environmental Sustainability** - To enhance the performance of the transportation system while protecting and enhancing the natural environment.
7. **Reduced Project Delivery Delays** - To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

The FAST Act continues MAP-21's overall performance approach, and ensures that State DOT's and MPO's invest in projects that collectively make progress toward the National Goals that were established by Congress. The FAST Act made few adjustments to the performance management provisions established by MAP-21

As required under current the most recent transportation act, the Memphis MPO will be required to establish performance targets, and track progress towards target achievement, for the following performance measures:

### **1. Safety**

1. Total number of traffic related fatalities on all public roads
2. Rate of traffic related fatalities on all public roads per 100 million VMT
3. Total number of traffic related serious injuries on all public roads
4. Rate of traffic related serious injuries on all public roads per 100 million VMT
5. Total number of non-motorized fatalities and serious injuries on all public roads

### **2. Pavement Condition**

1. Percentage of pavements on the Interstate System in Good condition
2. Percentage of pavements on the Interstate System in Poor condition
3. Percentage of the non-interstate National Highway System in Good condition
4. Percentage of the non-interstate National Highway System in Poor condition

### **3. Bridge Condition**

1. Percentage of National Highway System bridges classified as in Good condition
2. Percentage of National Highway System bridges classified as in Poor condition

### **4. NHS Travel Time Reliability**

1. Percent of the Person-Miles Traveled on the Interstate that are reliable
2. Percent of the Person Miles Traveled on the Non-Interstate National Highway System that are reliable

### **5. Freight Reliability**

1. Percentage of Interstate System mileage providing reliable truck travel time

### **6. Traffic Congestion**

1. Annual hours of peak hour excessive delay per capita
2. Percentage of non-single occupancy vehicle travel

### **7. Total Emissions Reduction**

1. Total emissions reductions by applicable pollutants under the CMAQ program

### **8. Public Transportation (Transit Asset Management)**

1. The percentage of revenue vehicles (by type) that exceed the useful life benchmark (ULB)
2. The percentage of non-revenue service vehicles (by type) that exceed the ULB
3. The percentage of facilities (by group) that are rated less than 3.0 on the Transit Economic Requirements Model (TERM) Scale
4. The percentage of track segments (by mode) that have performance restrictions

### 3) MPO Performance Measure Targets

The Memphis MPO is currently coordinating with regional, state, and federal partners to establish performance measure targets for the MPO Planning Area. Apart from performance measures related to traffic congestion, MPOs have the option to adopt their own performance target(s) or support the State target(s). For performance measures related to traffic congestion, States and MPOs must collectively establish 2-year and 4-year targets. **Table 3.1** identifies the dates by which MPOs are required to submit their performance target:

**Table 3.1- Implementation Schedule**

Performance Measure (By Category)	MPO Due Date	Status
<b>Safety</b>	February 27th, 2018	Completed
<b>Pavement Condition</b>	November 16th, 2018	Underway
<b>Bridge Condition</b>	November 16th, 2018	Underway
<b>Travel Time Reliability</b>	November 16th, 2018	Underway
<b>Freight Reliability</b>	November 16th, 2018	Underway
<b>Traffic Congestion</b>	May 20th, 2018	Completed
<b>Total Emissions Reduction</b>	November 16th, 2018	Underway
<b>Transit Asset Management</b>	October 1, 2018	Completed

The Memphis MPO recognizes the importance of linking agency goals, objectives, and investment priorities to the agency's performance targets, and that establishing this link is critical to the achievement of the agency's performance targets. The TIP criteria was developed to reflect federal, state, and regional priorities. In an effort to link investment decisions to regional goals and priorities, the TIP project evaluation process applies more weight to criteria that support regional goals and priorities. This allows for the prioritization of investment decisions that help achieve regional goals and priorities. **Table 3.2** demonstrates the Memphis MPO's effort to link federal, state, and regional goals and objectives to investment priorities and performance targets:

**Table 3.2 – RTP Goals, Objectives, and Performance Measures**

MAP-21 National Goal	FAST Act National Planning Emphasis Area	Livability 2040 Goal	Livability 2040 Objectives	Livability 2040 System-Level Performance Measures	TIP Project Evaluation Criteria		Federal Performance Measures	Performance Targets for Federal Performance Measures	
					Criteria	Points			
Infrastructure Condition	Emphasize the preservation of the existing transportation system	<b>Goal 1.</b> Maintain existing transportation assets and infrastructure	<b>Objective 1.1</b> Maintain existing assets as a priority, before system expansion is considered <b>Objective 1.2</b> Prioritize strategies to better manage travel demand on existing infrastructure before adding new infrastructure <b>Objective 1.3</b> Promote construction/maintenance techniques, materials and practices that minimize maintenance needs over the plan horizon	Pavement: Percent Lane Miles in Good/Fair Condition, National Highway System, NHS  Bridge: Percent Deck Area Non-Structurally Deficient	<b>Project Improves or Maintains an Existing Roadway or Transit Operation</b>	6	Percentage (%) of pavements of the Interstate System in Good Condition	-	
					<b>Project Upgrades Route (Design Improvements, Complete Streets, Etc.)</b>	3	Percentage (%) of pavements of the Interstate System in Poor Condition	-	
					<b>Project Integrates ITS Service Packages included in the MPO's Regional ITS Architecture</b>	2	Percentage (%) of pavements of the Non- Interstate NHS in Good Condition	-	
					<b>Existing Average Daily Traffic (ADT)</b>	5	Percentage (%) of pavements of the Non- Interstate NHS in Poor Condition	-	
							Percentage (%) of NHS bridges classified as in Good Condition	-	
Percentage (%) of NHS bridges classified as in Poor Condition	-								
Safety	Increase the safety of the transportation system for motorized and non-motorized users	<b>Goal 2.</b> Increase the safety and security of the transportation system for all users	<b>Objective 2.1</b> Support projects that address an existing, identified safety or security need <b>Objective 2.2</b> Support projects, programs and policies that advance safe and secure travel over the plan horizon <b>Objective 2.3</b> Initiate crash data management system to improve data collection, safety analysis, and performance reporting	Reduction in Number and Rate of Fatal and Serious Crashes	<b>Accident Rate</b>	8	Number of Fatalities	1021.4 (TN)	(677.8 (MS))
					<b>Project Incorporates Traffic Calming and Design Improvements (Maximum Combined Points)</b>	4	Rate of Fatalities per 100 Million Vehicle Miles Traveled (VMT)	1.337 (TN)	1.668 (MS)
	Number of Serious Injuries						7630.8 (TN)	574.4 (MS)	
	Rate of Serious Injuries per 100 Million VMT						9.982 (TN)	1.425 (MS)	
	<b>Project Incorporates Security Improvements (surveillance cameras, lighting, emergency access, etc.)</b>				4	Number of Non-motorized Fatalities and Serious Injuries	493.2 (TN)	119.8 (MS)	
Environmental Sustainability	Improve resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation	<b>Goal 3.</b> Minimize adverse impacts of transportation investment on the (social, natural, historic) environment and improve public health.	<b>Objective 3.1</b> Provide multimodal, active transportation options that reduce vehicle miles travelled and air pollution and improve public health <b>Objective 3.2</b> Preserve and protect natural resources <b>Objective 3.3</b> Support integrated and expanded greenway/multiuse plans	VMT/Capita Air Pollutant Emissions Land Preserved	<b>Environmental Justice Impacts (Maximum Combined Points)</b>	3	Total Emissions Reduction	-	
					<b>Environmental Impacts</b>	3			
					<b>Negative Environmental Justice and/or Environmental Impacts</b>	-6			
					<b>Project Provides Linkages Between Different Land Uses</b>	3			
					<b>Adopted Plans</b>	2			

MAP-21 National Goal	FAST Act National Planning Emphasis Area	Livability 2040 Goal	Livability 2040 Objectives	Livability 2040 System-Level Performance Measures	TIP Project Evaluation Criteria		Federal Performance Measures	Performance Targets for Federal Performance Measures
					Criteria	Points		
					<b>Project Serves a Strategic Area Targeted for Development</b>	1		
	Protect and enhance the environment, promote energy, conservation, improve quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns	<b>Goal 4.</b> Advance corridor and community redevelopment opportunities to improve economic development and quality of life	<b>Objective 4.1</b> Encourage context sensitive solutions derived from integrated transportation/land use planning efforts <b>Objective 4.2</b> Support complete streets implementation (on regional livability corridors) <b>Objective 4.3</b> Encourage access management planning and design to maintain minimum level of service (on regional mobility corridors) <b>Objective 4.4</b> Identify and mitigate freight/residential community conflict	Number of projects identified through integrated planning effort (transportation/land use/economic development)				
Economic Vitality/ Freight Movement	Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency Increase the accessibility and mobility of people and for freight	<b>Goal 5.</b> Ensure the region is well positioned to remain a leader in global logistics and freight movement <b>Goal 6.</b> Improve multimodal access to community and employment resources	<b>Objective 5.1</b> Reduce truck delay on critical freight corridors and within key freight hubs <b>Objective 5.2</b> Reduce intermodal conflict and delay <b>Objective 5.3</b> Advance an Airport/Aerotropolis Traffic Management Authority (TMA) <b>Objective 6.1</b> Improve bicycle and pedestrian access to educational, health, and recreational opportunities <b>Objective 6.2</b> Expand transit service to unserved regional employment markets <b>Objective 6.3</b> Focus complete streets upgrades in underserved regional markets with latent demand <b>Objective 6.4</b> Expand rural human services transportation services into areas not currently served <b>Objective 6.5</b> Improve system access for all system users <b>Objective 6.6</b> Advance Travel Demand Management (TDM) strategies so support last mile connections for key employment origins and destination	Annual Truck Hours Delay (Interstate System)  Bicycle and Pedestrian Mileage (New Infrastructure, Total System)  Population, Employment Served by Transit  Mode Split	<b>Economic Vitality</b>	6	Truck Travel Time Reliability Index (TTTR)	-
					<b>Freight Movement</b>	6		
					<b>Network Continuity</b>	2		

MAP-21 National Goal	FAST Act National Planning Emphasis Area	Livability 2040 Goal	Livability 2040 Objectives	Livability 2040 System-Level Performance Measures	TIP Project Evaluation Criteria		Federal Performance Measures	Performance Targets for Federal Performance Measures
					Criteria	Points		
Congestion Reduction	Promote efficient system management and operation	<b>Goal 7.</b> Reduce travel delay for people and goods	<b>Objective 7.1</b> Address critical highway bottlenecks as a priority <b>Objective 7.2</b> Focus capacity investment on corridor connections to regional employment centers <b>Objective 7.3</b> Improve system operations through technology applications	Annual Congestion Costs, Trucks/Auto  Annual Vehicle Hours Delay National Highway System (NHS)	<b>Congestion Reduction</b>		Annual Hours of Peak Hour Excessive Delay Per Capita	-
					<b>Bicycle Related Improvements (Maximum Combined Points)</b>	4	Percentage (%) of Non-Single Occupancy Vehicle (SOV) Travel	-
					<b>Pedestrian Related Improvements (Maximum Combined Points)</b>	4		
					<b>Transit Related Improvements</b>	4		
					<b>Regional Bicycle and Pedestrian Plan</b>	2		
System Reliability					<b>System Reliability</b>		Percent (%) of the Person-Miles Traveled on the Interstate that are reliable	-
					<b>Existing Volume to Capacity Ratio (V/C)</b>	4		
					<b>Travel Time Delay Reduction</b>	10		
					<b>Utilizes CMP Strategies</b>	X2	Percent (%) of the Person Miles Traveled on the Non-Interstate NHS that are reliable	-

**\*Note: The table does not include grouping project criteria. Grouping projects are evaluated based on criteria tailored to each grouping. (i.e. resurfacing projects, signalization projects, bicycle and pedestrian projects, etc.).**

**\*Note: For information on transit performance measures, see section 3.2**

### 3.1) Safety Performance Targets

On November 16, 2017, the Memphis Urban Area Metropolitan Planning Organization Transportation Planning Board approved a resolution that the Memphis MPO will support each individual state's safety targets, which are shown in the table below:

**Table 3.3 – State Safety Targets**

Safety Performance Measures	5 Year Rolling Averages			
	Tennessee (TDOT)		Mississippi (MDOT)	
	Baseline (2012-2016)	Target (2014-2018)	Baseline (2012-2016)	Target (2014-2018)
<b>Number of Fatalities</b>	995.6	1021.4	633.8	677.8
<b>Fatality Rate</b>	1.358	1.337	1.606	1.668
<b>Number of Serious Injuries</b>	7,319.4	7,630.8	567.6	574.4
<b>Serious Injury Rate</b>	9.976	9.982	1.439	1.425
<b>Number of Non-Motorized Fatalities and Serious Injuries</b>	434.6	493.2	111.8	119.8

By agreeing to support the states' (Mississippi and Tennessee) HSIP targets, the Memphis MPO agrees to:

- Work with the states and safety stakeholders to address areas of concern for fatalities or serious injuries within the metropolitan planning area
- Coordinate with the states and include the safety performance measures and the states' HSIP targets for those measures in the long-range regional transportation plan (RTP)
- Integrate into the metropolitan transportation planning process, the safety goals, objectives, performance measures and targets described in other state safety transportation plans and processes such as applicable portions of the HSIP, including the SHSP
- Include a description in the TIP (Transportation Improvement Program) of the anticipated effect of the TIP toward achieving HSIP targets in the RTP, linking investment priorities in the TIP to those safety targets

This addendum fulfills the MPO's requirement to include safety performance measures and the states' HSIP targets for federally required measures in the TIP (Transportation Improvement Program).

The Memphis MPO will continue to coordinate with State and safety stakeholders to integrate each State's safety goals, objectives, and plans into its planning process by linking investment priorities to the State's safety targets to the maximum extent practicable. Furthermore, the Memphis MPO will continue to place an emphasis on maintaining and improving the safety of the transportation system for motorized and non-motorized users by continually implementing the goals and objectives related to safety outlined in the plan, and directing investments in the Transportation Improvement Program (TIP) toward projects that have the potential to reduce crash rates, improve pedestrian safety, reduce speeds, enhance safety design, and incorporate security improvements.

The TIP project selection process involves project ranking criteria such as accident rate, traffic calming and design improvements, and security improvements. These criteria are intended to measure the potential improvement to safety that the project will provide. As demonstrated in **Table 3.2**, the TIP places an emphasis on safety and security by applying more points to project evaluation criteria related to safety and security. In addition, the Signalization grouping, Bicycle and Pedestrian grouping, and Transportation Alternatives grouping emphasize safety and security by applying points to criteria related to safety and security. Projects that incorporate traffic calming and design improvements, incorporate security improvements, and/or have the potential to improve safety at high crash locations have the potential to score higher in the project evaluation process. Therefore, it is anticipated that the TIP's emphasis on safety related improvements will enable the MPO to contribute to state DOT Safety Performance Measure target achievement more effectively. Table 3.4 includes examples of projects that received high safety scores during the project evaluation process, and included as part of the FY 2017-2020 TIP:

**Table 3.4 – Safety Project Examples**

Project Name	TIP #	Fiscal Year(s)	Phase of Work
<b>Road Projects</b>			
Elvis Presley Boulevard	ENH-2010-01	2017-2019	PE-D/ ROW/ CONST
Union Avenue Complete Street	STBG-M-2017-04	2017-2018	PE-N/ PE-D/ ROW
Navy Road Streetscape and Median	STP-M-2014-05	2017-2018	PE-D/ ROW
McIngvale Road	MS-LSTBG-2017-01	2017-2018	PE/ ROW
<b>Signalization Grouping Projects</b>			
Quince and Perkins	STP-M-2009-06	2017-2020	PE-N/ PE-D/ ROW/ CONST
Trinity and Walnut Bend			
Bethel Road and Business Center Drive	MS-LSTP-2014-05	2017	
<b>Bicycle and Pedestrian Grouping Projects</b>			
Chelsea Ave Greenline	STP-M-2009-04	2017-2020	ROW/ CONST
Jefferson Ave Cycle Track			PE/ CONST
South Memphis Greenline			PE-D/ ROW/ CONST
<b>Transportation Alternatives</b>			
Westmont Street Sidewalk Improvements	TAP-2014-01	2017	PE-N/ PE-D/ ROW/ CONST
Macon Rd. Sidewalk Improvements			
Hernando Square Pedestrian Improvements	MS-TAP-2014-01	2017	

In addition, projects in the TIP are funded through a variety of programs (see **Tables 1, 2, and 3** in the introduction of the TIP document). Sources with a special safety focus or that include eligibility for funding safety improvement projects include STP-metropolitan (now STBG-M), TA, and SRTS. STP-State (now STBG-S), NHPP, and HSIP programs can and are used in part or in whole for safety improvement projects in the TIP, but are administered by TDOT and MDOT.

### 3.2) Transit Asset Management Performance Targets

The Transit Asset Management (TAM) final rule was published on July 26, 2016 with an effective date of October 1, 2016. This final rule establishes state of good repair standards and four state of good repair performance measures:

1. **Rolling Stock:** The percentage of revenue vehicles (by type) that exceed the useful life benchmark (ULB).
2. **Equipment:** The percentage of non-revenue service vehicles (by type) that exceed the ULB.
3. **Facilities:** The percentage of facilities (by group) that are rated less than 3.0 on the Transit Economic Requirements Model (TERM) Scale.
4. **Infrastructure:** The percentage of track segments (by mode) that have performance restrictions. Track segments are measured to the nearest 0.01 of a mile

As similarly required in the Safety PM for the target setting process, to the extent practicable, transit providers must coordinate with the MPO in the selection of TAM performance targets.

The FTA's 2012 Asset Management Guide specifies that in general, an asset management plan outlines the activities that will be implemented and resources applied to address the asset management policy and strategy. The plan will address the activities and changes to be implemented to increase the maturity of asset management practice.

Primarily, asset management plans have two major components:

1. Enterprise-wide implementation actions that provide enabling support and direction for asset management across all asset classes and services.
2. Direction and expectations for asset class owners and department managers regarding lifecycle management planning and processes—with a focus on the lifecycle management plans (see later in this section).

Plans should outline how people, processes, and tools come together to address the asset management policy and goals. They also provide accountability and visibility for increasing the maturity of asset management practices, and can be used to support planning and budgeting activities, communicating to internal and external stakeholders, and as an accountability mechanism.

The TAM Rule requires every transit provider that receives federal financial assistance under 49 U.S.C. Chapter 53 to develop a TAM plan or be a part of a group TAM plan prepared by sponsor. All TAM plans must contain:

- An inventory of assets
- A condition assessment of inventoried assets
- Documentation of the use of a decision support tool
- A prioritization of investments

Larger transit providers also have to include the following items in their TAM plans:

- TAM and SGR policy
- Implementation strategy
- List of key annual activities
- Identification of resources
- Evaluation plan

**Table 3.5 – MATA/MPO TAM Performance Measure Targets**

Transit Asset Management Performance Measures	Memphis Area Transit Authority (MATA)						
	Asset Type/Group	Asset Frequency			Baseline (2018)	Target (2019)	
		Total	Good Repair	Backlog			
<b>Rolling Stock - All Revenue Vehicles</b>	Streetcars	17	5	12	71%	50%	
	Regular Buses	142	104	38	27%	20%	
	MATA Plus Buses	68	47	21	31%	20%	
<b>Equipment - Non-Revenue Vehicles</b>	Trucks and Wreckers	29	3	26	90%	50%	
	Auto Service Cars	44	2	42	95%	50%	
<b>Facilities - All Buildings or Structures</b>	Improvements	101	61	40	40%	30%	
	Shop and Garage	28	3	25	89%	50%	
	Structure & Building	105	68	37	35%	30%	
	Misc. Equipment	161	31	130	81%	50%	
<b>Infrastructure</b>	Streetcar	Tracks	1	1	0	0%	0%
		Signals	1	0	1	100%	50%
		Systems	1	1	0	0%	0%

**Table 3.6 – TAM Project Examples**

Project Name	TIP #	Fiscal Year(s)	Description
Fixed Route Vehicles	5307-2006-05/ 5339-2013-01	2017-2020	Provides funding for the purchase of up to 12 fixed route vehicles.
Bus Facility Improvements	5307-2006-03/ 5339-2013-02	2017-2020	Includes various routine improvements to bus-related facilities, such as construction and repairs to maintenance, operations, and passenger facilities.
Preventative Maintenance	5307-2006-07	2017-2020	Provides funds for materials and supplies, inspections and routine maintenance needed to maximize the efficiency and service life of MATA's Capital assets, including fixed route and demand-response fleet, rail fleets, service vehicles, infrastructure, and facilities.
Transfer Centers and Super Stops	5307-2006-09/ 5307-2017-02	2017-2020	MATA plans to implement a system of transfer centers in various locations throughout the service area. Transfer centers typically consist of a small off-street passenger waiting area and bus berthing area.
Rail Facility Improvements	5337-2014-01	2017-2020	Includes various routine improvements to rail related facilities including repairs to tracks, switches, crossties, etc.

