

Chapter 13 – Performance-Based Transportation Planning and Programming

Background

In 2012, Congress passed the Moving Ahead for Progress in the 21st Century (MAP-21) Act. MAP-21 introduced a new emphasis in the MPO transportation planning process, towards measurable performance and outcome-based metrics in the evaluation of projects and programs receiving federal support. MAP-21 focuses on 7 performance goal areas:

- Safety
- Infrastructure Condition
- Congestion Reduction
- System Reliability
- Freight Movement and Economic Vitality
- Environmental Sustainability
- Reduced Project Delivery Delays

On December 4, 2015, President Obama signed the [Fixing America's Surface Transportation \(FAST\) Act](#) into law. The FAST Act maintains the Federal Highway Authority's (FHWA) focus on safety, keeps intact the established structure of the various highway-related programs managed by FHWA, continues efforts to streamline project delivery, and, for the first time, provides a dedicated source of federal dollars for freight projects. In addition, the FAST Act continues the emphasis raised in MAP-21 on performance-based outcomes and requires federally funded transportation projects to support national goals for the nation's transportation system by focusing on projects that:

- Achieve a significant reduction in traffic fatalities and serious injuries on all public roads;
- Maintain the highway infrastructure asset system in a state of good repair;
- Achieve a significant reduction in congestion on the National Highway System;
- Improve the efficiency of the surface transportation system;
- Improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development;
- Enhance the performance of the transportation system while protecting and enhancing the natural environment;
- 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. [23 U.S. Code § 150.

Through the federal rulemaking process, the Federal Highway Administration (FHWA) is requiring State DOTs and MPOs to monitor the transportation system using specific performance measures prescribed in MAP-21 and the FAST Act. Table 13-1 describes these national goal areas, performance areas, and performance measures. The MPO can take on additional measures beyond what is described, however, what is outlined on the next page must be addressed at a minimum.

Performance-based planning and programming refers to transportation agencies' application of performance management as standard state of the practice in the planning and programming processes. This approach results in a planning process referred to as Transportation Performance Management. The MPO is developing its TPM process to meet federal requirements and to meet the unique planning needs of the MPO.

| Highway Performance Measures | | | |
|---|--|--|---|
| | National Goal | Performance Area | Performance Measure |
| PM 1 | Safety- <i>To achieve a significant reduction in traffic fatalities and serious injuries on all public roads</i> | Injuries & Fatalities | <ul style="list-style-type: none"> • Number of fatalities • Fatality rate (per 100 million vehicle miles traveled) • Number of serious injuries • Serious injury rate (per 100 million vehicle miles traveled) • Number of non-motorized fatalities and non-motorized serious injuries |
| | PM 2 | Infrastructure Condition – <i>To maintain the highway infrastructure asset system in a state of good repair</i> | Pavement Condition |
| Bridge Condition | | | <ul style="list-style-type: none"> • Percentage of NHS bridges classified as in Good condition • Percentage of NHS bridges classified as in Poor condition |
| System Reliability - <i>To improve the efficiency of the surface transportation system</i> | | Performance of the National Highway System | <ul style="list-style-type: none"> • Percent of person miles traveled on the Interstate System that are reliable • Percent of person miles traveled on the non-Interstate NHS that are reliable |
| PM 3 | Freight Movement and Economic Vitality- <i>To improve the National Highway Freight Network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development</i> | Freight Movement on the Interstate System | <ul style="list-style-type: none"> • Truck Travel Time Reliability Index |
| | Congestion Reduction – <i>To achieve a significant reduction in congestion</i> | Traffic congestion | <ul style="list-style-type: none"> • Annual hours of peak-hour excessive delay per capita • Percent of non-single-occupant vehicle travel |

| | | |
|---------------------------------------|--|--|
| <i>on the National Highway System</i> | | |
|---------------------------------------|--|--|

Table 13-1: Highway Performance Measures, as Identified by FHWA

The transportation legislation and federal rules that identify performance measures also describe how states and MPOs will need to incorporate these measures into their planning processes. ¹

Targets

- MPOs are required to establish performance targets no later than 180 days after the state or public transportation operator sets performance targets;
- For each roadway performance measure, a MPO can decide to commit to support a statewide target, or to establish a quantifiable target specific to its planning area;
- Both state and MPO targets for roadway performance measures will be set at two-year and four-year intervals;
- States, MPOs, and public transit operators must coordinate their respective targets for performance measures with each other to ensure consistency to the maximum extent practicable.

Reporting

- State and MPO LRTPs must describe the performance measures and targets used to assess system performance, evaluate the performance of the transportation system with respect to the federally required performance targets, and report on progress made;
- State Transportation Improvement Programs (STIPs) and MPO TIPs must link investment priorities to the targets in their respective LRTPs and describe, to the maximum extent practicable, the anticipated effect of the program toward achieving established targets;
- MPOs must report baseline roadway transportation system condition and performance data and progress toward the achievement of targets to their respective state Departments of Transportation (DOT).

Assessments

- FHWA will determine whether state DOTs have met or have made significant progress towards meeting targets for the highway system. Progress at the state level would be considered significant if an actual outcome is either equal to or better than the established target, or better than the baseline condition;
- FHWA and FTA will not directly assess MPO progress towards meeting targets for required performance measures. Instead, these agencies will review MPO performance as part of ongoing transportation planning process reviews,

¹ FHWA, Metropolitan Planning Organization Safety Performance Measures Fact Sheet, http://safety.fhwa.dot.gov/hsip/spm/docs/mpo_factsheet.pdf

including Transportation Management Area certification reviews and the Federal Planning Finding associated with approval of the STIP.

[MATS Support of GDOT Adopted Performance Measures and Targets](#)

The MATS 2040 LRTP Update is the first LRTP that incorporates this new emphasis on a performance-based planning process, using clearly identified goals, objectives and performance measures to identify and prioritize improvements to the region's transportation system. These goals and objectives reflect State or regional priorities and policy directions while supporting national goals specified in law.

As part of the 2040 LRTP Update, MATS staff reviewed the originally adopted 2040 LRTP goals and reconciled them with the national and state goals identified in the FAST Act and the Georgia 2040 SWTP, respectively. The MATS staff also proposed transportation related objectives for which future performance measures can be developed. Table 2-1 in the LRTP shows how the updated goals and objectives approved by the MATS Policy Committee build upon the general goals areas specified in MAP-21, FAST Act, the Georgia 2040 Statewide Transportation Plan and 2015 Statewide Strategic Transportation Plan, and the MATS specific goals and objectives adopted as part of the original 2040 LRTP.

This Performance-Based Transportation Planning and Programming section of the MATS 2040 LRTP is meant to serve as a bridge as the MPO transitions from the traditional transportation planning process to a more strategic Transportation Performance Management (TPM). The following sections describe:

- Adopted Safety Performance Measures and targets; and,
- Next steps for the MPO to build its TPM practices, process, and policies.

[PM 1 - Safety Performance Measures](#)

The Safety Performance Management is part of the overall [Transportation Performance Management](#) (TPM) program. The Safety PM Final Rule supports the Highway Safety Improvement Program (HSIP), as it establishes safety performance measure requirements for carrying out the HSIP and to assess fatalities and serious injuries on all public roads.

The Safety PM Final Rule establishes five performance measures as the five-year rolling averages to include:

- Number of Fatalities
- Rate of Fatalities per 100 million Vehicle Miles Traveled (VMT)
- Number of Serious Injuries
- Rate of Serious Injuries per 100 million VMT
- Number of Non-motorized Fatalities and Non-motorized Serious Injuries

The Safety PM Final Rule also establishes the process for State Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs) to establish

and report their safety targets, and the process that FHWA will use to assess whether State DOTs have met or made significant progress toward meeting their safety targets.

Transportation Safety in Georgia

According to the Georgia Highway Safety Plan (2018) ², in 2015 there were 1,430 motor vehicle fatalities in the State of Georgia. This was a 22.8% increase in roadway fatalities in comparison to the previous year, but remains a reduction of 12.3% from 2005 roadway fatalities. In 2015, there were 19,405 serious injuries and 385,221 motor vehicle crashes in Georgia. The number of roadway fatalities varied from 1994 to 2014, peaking in 2005 with 1,729 fatalities, and a rate of 1.52 fatalities per 100 vehicle miles traveled (VMT). However, in 2015 Georgia experienced a rate comparable to the 2008 rate, with 1.21 fatalities per every 100 million vehicle miles traveled (VMT). The highest fatality rate occurred in 1996 with 1.76 fatalities per 100 million vehicle miles traveled (VMT) and 1,573 roadway fatalities.

There are several factors to roadway safety, many are contributed to human behaviors that are personal decisions that could only be swayed by public education and enforcement campaigns. However, there are targeted safety improvements that can be tailored to individual corridors that can provide a driver with a more forgiving roadway. These design considerations work to keep a vehicle on the road and/or allow the driver to safely recover the vehicle should it depart the roadway. By focusing scarce resources on engineering solutions, Georgia is striving to move the needle in a positive direction. The MPO is a key partner in this process.

Statewide Needs

The Governor's Strategic Highway Safety Plan (SHSP) outlines the State's strategy to reduce highway crashes, injuries, and fatalities based on safety data, patterns, and trends which reveal crash and/or hot spot locations that have an overrepresented number of crashes in relation to the amount of traffic. The 2015 Georgia Strategic Highway Safety Plan can be found at <http://www.gahighwaysafety.org/highway-safety/shsp/>. The Governor's Office of Highway Safety is in the process of developing the 2018 SHSP, with a targeted completion date at the end of 2018.

The SHSP was developed using a data-driven process consisting of extensive analysis of fatal and severe injury collision data from 2008 to 2012. This analysis revealed the following emphasis areas for the State: Lane Departures, Roadway Departures, Vulnerable Roadway Users (Motorcyclists, Pedestrians, and Bicyclists), Intersections, Work Zones, and Older Drivers (65 or more years of age). Figure 13-1 shows the crashes attributed to each emphasis area, note a single crash may have multiple factors identified³. The problems associated with these emphasis areas, along with engineering countermeasure techniques are include in Table 13-2 below.

² 2018 Georgia Highway Safety Plan (pg. 19)

³ Georgia Highway Safety Improvement Program – 2017 Annual Report

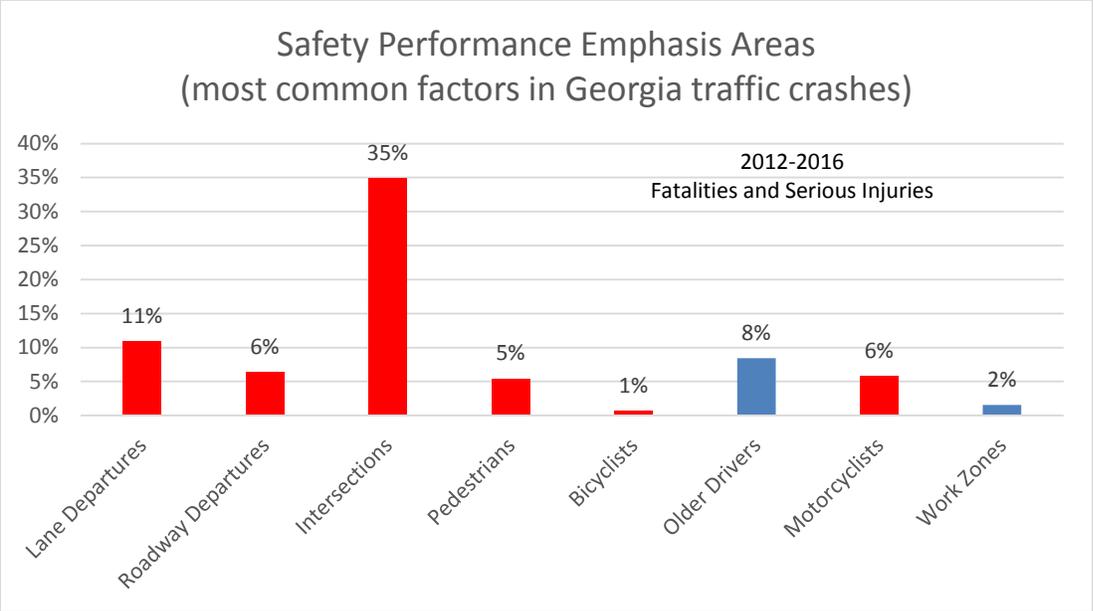


Figure 13 – 1: Emphasis Area Crash Data (Source: Georgia Highway Safety Improvement Program – 2017 Annual Report, pg. 57)

| Emphasis Area | Problem | Countermeasures |
|---|---|---|
| Roadway Departure / Lane Departure | <p>17% of all fatal and serious injury crashes in the state were lane or roadway departure related.</p> <p>Roadway departure crashes are frequently severe and account for the majority of highway fatalities. A roadway departure crash is defined as a non-intersection crash which occurs after a vehicle crosses an edge line or a center line, or otherwise leaves the traveled way.⁴</p> | <ul style="list-style-type: none"> • Paved Shoulders • Rumble strips • Adequate Clear Zone • Cable guardrail • Enhanced Signing / Marking • Pavement Friction • Horizontal curve improvements |
| Intersections | <p>35% of all fatal and serious injury crashes in the state were intersection related.</p> <p>Intersections are planned points of conflict in any roadway system. In the United States, one-quarter of traffic fatalities and roughly half of all traffic injuries are attributed to intersections.⁵</p> | <ul style="list-style-type: none"> • Roundabouts • Access Management • Alternative Intersection Designs • Adequate Sight Distance • Traffic Signals/Signs • Backplates with Retroreflective Borders • Road Diets |
| Vulnerable Roadway Users (Bicyclists, Pedestrians, Motorcyclists) | <p>After reducing bicycle fatalities, Georgia saw a 21% increase in bicycle related deaths in 2015.⁶</p> <p>From 2008 through 2015, there has been an increase in the percent of pedestrians killed in crashes in Georgia. Pedestrian fatalities accounted for 13.5% of all roadway fatalities in 2015, and the number of pedestrian fatalities increased by 18.4% from the previous year.⁷</p> <p>From 2009 to 2015, there has been an unsteady and fluctuating decrease of motorcyclist fatalities in Georgia. GOHS has the goal to maintain the 5-year moving average motorcyclist fatalities under the projected 177 (2014-2018) 5-year average by December 2018.⁸</p> | <p>Bicyclists</p> <ul style="list-style-type: none"> • Separate bike lanes • Improve connectivity for trail systems • Accommodations at intersections <p>Pedestrians</p> <ul style="list-style-type: none"> • Sidewalks • Medians and pedestrian crossing islands • Pedestrian hybrid beacons • Road diets <p>Motorcyclists</p> <ul style="list-style-type: none"> • Drainage and shoulder improvements • Communication of road conditions • Pavement conditions • Traffic control devices⁹ |

⁴ FHWA, Roadway Departure Countermeasures https://safety.fhwa.dot.gov/roadway_dept/rdctrm.cfm

⁵ FHWA, Intersection Safety <https://safety.fhwa.dot.gov/intersection/>

⁶ 2018 Georgia Highway Safety Plan (pg. 254)

⁷ 2018 Georgia Highway Safety Plan (pg. 254)

⁸ 2018 Georgia Highway Safety Plan (pg. 97)

Table 13-2: Highway Performance Emphasis Areas, Identified Problems, and Countermeasures

Safety Targets

GDOT evaluated and reported on its targets for the five required safety performance measures on August 31, 2017. This action started the 180-day clock for MPOs to evaluate and set regionally specific targets or to accept and support the State’s targets. When setting the State’s safety performance targets, GDOT performed extensive analysis of the data related to each measure (traffic fatalities and severe injuries and vehicle miles traveled). Using statistical models, GDOT predicted the crash numbers for 2018. Examining current and planned education and engineering safety initiatives, expected reductions in the number of fatalities and severe injuries were estimated, resulting in the calculation of the safety performance targets for the state. Using five-year rolling averages, the following Table 13-3 shows the safety performance measure targets for the State of Georgia (5-year average 2014-2018) and the target related baseline information for the MPO (5-year average 2012-2016).

| SAFETY PERFORMANCE MEASURE TARGETS | | | | | |
|--|-----------------------------|--|-----------------------------------|--|--|
| | Number of Fatalities | Fatality Rate (per 100 million VMT) | Number of Serious Injuries | Serious Injury Rate (per 100 million VMT) | Non-motorized Fatalities and Serious Injuries |
| GA Targets (5-yr avg. 2014-2018) | 1,593.0 | 1.32 | 19,643.0 | 16.318 | 1027.2 |
| MATS MPO Baseline (5-yr avg. 2012-2016) | 26.4 | 1.24 | 228 | 11.13 | 30.2 |

Table 13 – 3: GDOT Statewide Safety Performance Targets (with MATS MPO Baselines)

On November 1, 2017, the MPO Policy Committee adopted a Safety Target Resolution accepting and supporting all five safety targets established by the GDOT (the resolution is available at: <http://mats2040.org/lrtp/wp-content/uploads/2017/11/20171101-MATS-Resolution.pdf>). The MATS MPO will demonstrate its support of the State’s safety targets through our planning and programming process by:

⁹ NCHRP, Leading Practices for Motorcyclist Safety, http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-68A_09-04.pdf

- Addressing areas of concern for fatalities or serious injuries within the metropolitan planning area through coordination with GDOT and incorporation of safety considerations on all projects;
- Integrating safety goals, objectives, performance measures, and targets into the planning process; and
- Including the anticipated effect toward achieving the targets noted above within the MPO's LRTP, TIP and UPWP, effectively linking investment priorities to safety target achievement.

PM 2 – Pavement and Bridge Condition Performance Measures

On January 18, 2017, the Federal Highway Administration (FHWA) published in the Federal Register rules to establish measures to assess the condition of pavements and bridges on the National Highway System (NHS) to carry out the National Highway performance program (NHPP) (82 Fed. Reg. 5886). The pavement and bridges rule addresses requirements establishing performance measures for State Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs), as mandated by the Moving Ahead for Progress in the 21st Century Act (MAP-21) and reflects passage of the Fixing America's Surface Transportation (FAST) Act. On May 20, 2017, the final rule was put into effect.

The measures for bridges on the National Highway System are:

- Percentage of NHS bridges by deck area in Good condition; and
- Percentage of NHS bridges by deck area in Poor condition.

The measures for pavement on the National Highway System are:

- Percentage of Interstate pavements in Good condition;
- Percentage of Interstate pavements in Poor condition;
- Percentage of non-Interstate NHS pavements in Good condition; and,
- Percentage of non-Interstate NHS pavements in Poor condition.

At present, MATS MPO is awaiting GDOT adoption of the State targets for these pavement and bridge performance measures. Once these targets are identified, they will be incorporated and discussed in this section.

State DOT's must establish two- and four-year statewide targets for the first Performance Period by May 20, 2018. Within 180 days after the State DOT(s) target is established, MPOs can decide to support the relevant State DOT(s) 4-year target or establish their own, quantifiable targets.¹⁰

Once these targets are identified, they will be incorporated and discussed in this section.

¹⁰ FHWA, Frequently Asked Questions: Pavement and Bridge Condition Performance Measures Final Rule, <https://www.fhwa.dot.gov/tpm/pubs/PM2FAQs.pdf>

PM 3 – System Performance and Freight Performance Measures

On January 18, 2017, the Federal Highway Administration (FHWA) published in the Federal Register (82 FR 5970) rules to establish performance measures that State Departments of Transportation (DOTs) and metropolitan planning organizations (MPOs) will use to report on the performance of the Interstate and Non-Interstate National Highway System (NHS) to carry out the National Highway Performance Program (NHPP); freight movement on the Interstate system to carry out the National Highway Freight Program (NHFP); and traffic congestion and on-road mobile source emissions for the purpose of carrying out the Congestion Mitigation and Air Quality Improvement (CMAQ) Program. The rule addresses requirements established by the Moving Ahead for Progress in the 21st Century Act (MAP-21) and reflects passage of the Fixing America's Surface Transportation (FAST) Act.

On May 20, 2017, the final rule took effect. The three measures that are applicable to the Macon MPO region include:

- Two measures of system performance:
 - A measure that will assess the percent of reliable person-miles traveled on the Interstate.
 - A measure that will assess the percent of reliable person-miles traveled on the Non-Interstate NHS.
- A measure that will assess freight movement on the Interstate by the percentage of Interstate system mileage providing for reliable truck travel time (Truck Travel Time Reliability Index).

State DOTs will need to establish targets for all measures in this rule by May 20, 2018. MPOs will have an additional 180 days beyond that date to decide to support their State DOT's 4-year target or establish their own, quantifiable targets. MPO staff will update this section as performance measure targets are adopted and will ensure that the targets and the MPO's implementation strategies are incorporated into the LRTP, TIP, and UPWP.

At present, MATS MPO is awaiting GDOT adoption of the State targets for these system performance, freight movement, emissions and congestion performance measures. Once these targets are identified, they will be incorporated and discussed in this section.