
Appendix L – Performance Measures

Performance Measures

A key feature of the Fixing America's Surface Transportation (FAST) Act is the establishment of a performance and outcome-based program, originally introduced through the Moving Ahead for Progress in the 21st Century (MAP-21) Act. The objective of a performance-based program is for states and MPOs to invest resources in projects that collectively will make progress toward the achievement of national goals. In response to this federal requirement, MPOs such as GSATS, are required to set performance measure targets consistent with the established national performance measures. These performance measures are becoming a critical tool in gauging how a transportation system and/or agency is functioning and operating, as well as informing decision making and assigning responsibility for a more efficient and effective program implementation. When implemented effectively, they can improve project and program delivery, inform investment decisions, and provide greater transparency and accountability. These performance measures were established to address safety, current infrastructure, traffic congestion, efficiency, environment, transportation delays, and project delivery delays.

Between 2016 and 2017, FHWA and the Federal Transit Administration (FTA) published several rules establishing performance measures and reporting requirements for State Departments of Transportation (DOTs), MPOs, and transit agencies. The Federal Highway Administration defines transportation performance management as a strategic approach that uses system information to make investment and policy decisions to achieve national performance goals. Among these are:

- **Safety** – to achieve a significant reduction in injuries and fatalities on all public roads
- **Infrastructure Condition** - to maintain the highway infrastructure asset system in a state of good repair
- **System Reliability** – to improve performance of the surface transportation system
- **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
- **Congestion Reduction** – to achieve a significant reduction in traffic congestion on the National Highway System
- **Environmental Stability** - to enhance the performance of the transportation system while protecting and enhancing the natural environment
- **Reduced Project Delivery Delays** – to reduce project costs and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process

In addition, each public transit fund recipient must establish performance targets that address the MAP-21 transit asset management (TAM) and safety performance measures and report their progress toward achieving targets. These measures include:

- **Infrastructure Condition** - rolling stock (revenue service vehicles including buses, vans, trolleys, etc.), equipment (non-revenue service vehicles including autos and other rubber tire vehicles), facilities (administrative, maintenance, passenger and parking facilities)
- **Safety** – injuries, fatalities, safety events, system reliability

According to the GSATS 2040 MTP Update the proposed performance measures for GSATS were determined by starting with SCDOT and NCDOT performance measures and then tailoring them for the GSATS area. Those considerations include the following:

- **Data Availability** – The data and analysis tools needed for the measure should be readily available or easy to obtain. The data should be reliable, accurate, and timely.
- **Strategic Alignment** – The measures should align well with the goals and objectives of the North Carolina’s Statewide Long-Range Plan and South Carolina’s Statewide Multimodal Transportation Plan, and the National transportation policy.
- **Understandable and Explainable** – The measures should be easy to understand and useful when communicating to external partners.
- **Causality** – The measures should focus on the items under the transportation planning organizations and local governments span of control.
- **Decision-making Value** – The measures should provide predictive, diagnostic and reporting value to agency decision makers.

Transportation

As stated in the GSATS 2040 MTP, the role of goals in the development of an MTP is to establish a framework of objectives around which performance- based planning can be created. Additionally, policies and improvements to the regional transportation system will be identified to support these goals and objectives and will be evaluated using performance measures. The development of these goals was rooted in the GSATS 2035 Long Range Transportation Plan. The previously established goals were reviewed for current relevance to regional interests and applicability to the FAST Act. These goals were presented to the GSATS Steering Committee and first approved in fall 2016.

The goal areas for the GSATS 2040 MTP are:

- Coordinated Land Use and Transportation
- Economic Competitiveness
- Mobility and System Accessibility
- Environmental Stewardship
- Modal Choices and Balanced System
- Safety and Security
- Infrastructure Preservation and Maintenance
- Congestion and Reliability

The goals, objectives and proposed performance measures from the GSATS 2040 MTP are shown below in **Table 1**.

Table 1: GSATS 2040 MTP GOALS

GSATS 2040 MTP Goals	GSATS 2040 MTP Objectives
Coordinated Land Use & Transportation Planning	<ul style="list-style-type: none"> • Improve data collection and forecasting methods to ensure the identification of existing and future areas of concern • Develop and utilize Land Use Design Guidance to improve streetscaping and incorporate Complete Streets • Improve pedestrian and bicycle linkages to activity centers • Protect and preserve historic, cultural, and civic assets
Economic Competitiveness	<ul style="list-style-type: none"> • Utilize the existing transportation system to facilitate enhanced freight movement to support a growing economy • Use transportation investment to support economic development, job creation, and commerce
Mobility and System Accessibility	<ul style="list-style-type: none"> • Improve access and mobility within the region by adopting and implementing access management, complete streets, and intersection design guidelines • Provide equitable transportation options for all travelers, including transit-dependent populations and users of all capabilities
Environmental Stewardship	<ul style="list-style-type: none"> • Provide a transportation system that is sensitive to the natural and man-made environment • Encourage modal partners to be proactive in considering and addressing environmental impacts of their transportation infrastructure investments • Encourage the protection and conservation of natural resources
Modal Choices and Balanced System	<ul style="list-style-type: none"> • Utilize the existing transportation system to facilitate enhanced modal options for a growing and diverse population and economy • Improve transportation choice and mode selection • Improve intermodal connectivity
Safety and Security	<ul style="list-style-type: none"> • Provide for a safe and efficient transportation system • Reduce highway fatalities and serious injuries • Reduce bicycle and pedestrian and other vulnerable roadway users' fatalities and serious injuries • Reduce fatal or serious injury crashes at at-grade rail crossings • Reduce fatal and serious injury crashes at intersections
Infrastructure Preservation and Maintenance	<ul style="list-style-type: none"> • Maintain or improve the current state of good repair for the National Highway System (NHS) • Reduce the percentage of remaining state highway miles (non-interstate/strategic corridors) moving from a "fair" to a "very poor" rating while maintaining or increasing the % of miles rated as "good" • Improve the condition of the state highway system bridges • Improve the state transit infrastructure in a state of good repair
Congestion and Reliability	<ul style="list-style-type: none"> • Reduce the number of system miles at unacceptable congestion levels • Improve travel time reliability (on priority corridors or congested corridors) • Provide improvements to relieve congestion based on rational and objective criteria to ensure the wise and effective use of limited resources

Table from GSATS 2040 MTP.

Traffic Injury and Fatality Reduction

South Carolina has the highest traffic fatality rate in the nation. It is 67% higher than the national average and 40% higher than the southeastern average. Reducing the number of transportation related accidents and fatalities are among SCDOT's highest priorities. To aid in this mission, the SCDOT Safety Office has offered MPOs and COGs safety workshops with data specific to their respective study area. These workshops are designed to provide an assessment on safety issues within the area and typically focus on issues such as roadway departures, intersections and access management. There are several factors to roadway safety many of which are attributed to human behaviors and personal decisions that could potentially be altered by education and enforcement campaigns. However, there are many road safety improvements that can also be implemented on individual corridors to provide drivers a safer more forgiving roadway. These design considerations work to keep a vehicle on the road and allow the driver to safely recover should a vehicle minimally depart the roadway. By focusing limited resources on engineering solutions, South Carolina is striving to move the needle in a positive direction by seeking to address these issues through various means including pavement shoulder improvements, rumble strips and the addition or modification of traffic signals. Crash data, traffic data and roadway data are also essential in identification of hazardous locations thus helping to identify, prioritize and provide guidance for selecting potential projects. GSATS is a key partner in this process.

Safety performance measure targets must be adopted annually and are based on a five-year rolling average. The measures adopted by GSATS include:

- Number and rate of fatalities
- Number and rate of serious injuries
- Number of non-motorized fatalities
- Number of non-motorized serious injuries

The recommendations in this study are compatible with the performance measures and standards used in the GSATS 2040 MTP Update as numerous recommendations address safety concerns. Recommendations include improving intersection and corridor safety, by reducing congestion, and improving the overall Level of Service (LOS) along the entire corridor.

Infrastructure Conditions

The GSATS 2040 MTP Infrastructure Preservation and Maintenance goal is to protect and preserve the existing public multimodal transportation system and facilities in a state of good repair. Having a transportation system in a state of good repair is critical to all other goals and objectives. SCDOT owns and maintains over 41,000 centerline miles, encompassing over 90,000 lane-miles, of roadway and approximately 8,400 bridges on its network. GSATS assists with the infrastructure condition performance measure by promoting projects being



selected that help maintain and improve the condition of pavement and bridges.

Specific objectives for this goal in the GSATS 2040 MTP include:

- Maintain or improve the current state of good repair for the National Highway System (NHS)
- Reduce the percentage of remaining state highway miles (non-interstate/strategic corridors) moving from a “fair” to a “very poor” rating while maintaining or increasing the % of miles rated as “good”
- Improve the condition of the state highway system bridges
- Improve the state transit infrastructure in a state of good repair

Congestion Reduction

Traffic congestion often refers to travel delay caused by interactions between vehicles on a roadway, particularly as traffic volumes approach a roadway’s capacity. There are many possible ways to measure congestion costs and evaluate potential solutions. Conventional congestion indicators, such as roadway Level-Of-Service and Travel Time Index reflect congestion intensity and the decline in vehicle traffic speeds during peak periods. Such information is useful for making short-term decisions but is largely unsuitable for strategic planning decisions. The majority of these commonly used evaluation methods tend to exaggerate congestion costs, so it is important to consider all impacts when evaluating potential congestion reduction strategies. Overall, how traffic congestion is evaluated can significantly affect transport planning decisions and is largely determined by community desires, long-range growth plans, economic status and other competing funding priorities.

The recommendations in this study are compatible with the congestion reduction performance measures and goals used in the GSATS 2040 MTP Update as they benefit the corridor in numerous aspects including crash and safety concerns, reduction in transportation related air pollution and other environmental issues, travel time, freight related reliability and safer conditions for bicycle and pedestrians.

System Efficiency

An efficient system allows people to travel in as direct a route as possible reducing the amount of time spent in travel, the distance that must be traveled and the amount of time spent in congested traffic conditions. This directly impacts daily lives of those living and working within a region. It also impacts the economic wellbeing of a region as well. Unfortunately, transportation network capacity has struggled to keep pace with growth in travel and commerce. The resulting congestion makes travel times longer and less predictable.

Specific GSATS 2040 MTP goals include:

- Reduce the number of system miles at unacceptable congestion levels
- Improve travel time reliability (on priority or congested corridors)
- Provide improvements to relieve congestion based on rational and objective criteria to ensure the wise and effective use of limited resources

The recommendations in this study are compatible with the performance measures and standards used in the GSATS 2040 MTP Update. If nothing is done, the travel times are expected to increase by 100% along the corridor by 2040. With the proposed recommendations and 2040 projected volumes, travel times are expected to be 25% faster than today.

Freight Movement and Economic Vitality

The purpose of the freight movement and economic vitality performance measures is to improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development. This includes developing and assigning a high priority to projects that mitigate congestion on heavily traveled truck routes. As information and data on freight movement often resides in the private sector a public-private data sharing partnership offers an opportunity to gain access to information that accurately reflects freight flows and freight system performance.

Typical categories of freight performance measures include:

- Freight Demand
- System Efficiency
- System Condition
- Freight Safety
- Environmental Conditions
- System Investment

The recommendations in this study are compatible with the performance measures and standards used in the GSATS 2040 MTP Update. Recommendations along the corridor in regard to widening, access management, and reducing conflict points at intersection should improve the overall safety of freight operation. The corridor is expected to have less stop and go and provide more reliable travel times creating a more efficient system for freight as demand increases.

Environmental Sustainability

Many transportation agencies are now being called upon by their stakeholders to plan, build, and operate transportation systems that support a variety of environmental objectives. These include protecting and conserving natural resources and strengthening energy security. Many regulations are involved in the environmental review process which encompasses actions required under the National Environmental Policy Act, the Clean Water Act, the Endangered Species Act, and various other state and federal regulations. Global concerns about climate change, energy use, environmental impacts, and limits to financial resources for transportation infrastructure require new and different approaches to planning, designing, constructing, operating, and maintaining transportation solutions and systems.

There are multiple best practices at the system-wide, planning, design, construction, operations and maintenance levels of transportation organizations. Sustainability plans are an emerging tool for working toward better internal stewardship of resources and more sustainable transportation system management and decision-making. Results from these plans are not only important in terms of

environmental benefit but in terms of public satisfaction. Environmental review is generally the last step in the planning process for a transportation improvement and is followed by final design and construction. By the time of the environmental review, the location and general parameters of a project have been decided. Performance measures can also be instrumental in selecting a project alternative and associated mitigation measures that minimize adverse impacts.

Specific GSATS 2040 MTP goals include:

- Provide a transportation system that is sensitive to the natural and man-made environment
- Encourage modal partners to be proactive in considering and addressing environmental impacts of their transportation infrastructure investments
- Encourage the protection and conservation of natural resources

The recommendations in this study are compatible with the performance measures and standards used in the GSATS 2040 MTP Update in that the recommendations presented in this study are environmentally friendly such that improvements focus on the existing roadway rather than building parallel roadways impacting wetlands. Additionally, decreased delays at signalized intersections and overall progression along the corridor are expected to reduce air quality issues associated with vehicle idling. Simply put, the recommendations largely negate most environmental impacts.

Project Delivery

Transportation agencies are experiencing unprecedented pressure to deliver projects on time and at the lowest possible cost. Many factors contribute to this high-demand environment, including increasing congestion, reduced work periods for construction, intense public interest and involvement, and severe revenue pressures. Agencies are seeking ways to deliver projects in the most efficient and expeditious manner possible. The Project Delivery Process is a means of evaluating, planning, designing and constructing projects. This process is designed to ensure consistency and increases the probability a quality project is created in the most efficient manner possible. The project delivery lifecycle begins with analysis and planning of the existing system to identify potential projects and ends when a project transitions into maintenance and operations. The process typically has four stages:

- Program Development - Projects are created during this stage, beginning with transportation planning, to identify needs at the state and local levels.
- Project Development - Project Development contains a detailed framework for the development of a transportation project.
- Construction Management - Activities that address the managerial and technological aspects of highway construction. Conducted during the planning, design, construction and post-construction phases of a project.
- Maintenance and Operations - Includes everything from investment strategies to meet or exceed performance targets while considering long-term needs to routine maintenance work.

System Performance Report

The purpose of the State of the System Report is to provide a yearly “snapshot” on how the GSATS MPO is doing in meeting the federal requirements relating to Performance Measures and to assist in

monitoring planning efforts. MPOs are required to incorporate the performance measure targets in their regional transportation plan and transportation improvement programs (TIPs). As part of the federal performance requirements, GSATS will also be required to report on progress for these performance measures in subsequent long-range transportation plans. This reporting will provide analysis and information to evaluate the condition and performance of the transportation system and assist in the planning, prioritizing, funding and monitoring of the delivery of diverse transportation options.

