



FREIGHT PERFORMANCE MEASURES

CENTRAL MIDLANDS REGIONAL FREIGHT MOBILITY PLAN



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NOVEMBER
2017

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1. Introduction

The intent of this technical memorandum is to document the process in which performance measures for the Central Midlands Freight Mobility Plan can be used to identify and prioritize projects in the region. This document provides guidance to local governments to implement goals, objectives, and performance measures into the project identification, prioritization and programming process of their own municipalities.

The FAST Act promotes the development of freight plans to better understand and improve the condition and performance of the regional freight network. The FAST Act encourages states to identify freight projects that may qualify for an increased level of federal funding participation. South Carolina has a MAP-21 compliant state freight plan. This document will provide a summary of the finalized performance measures.

1.1 PERFORMANCE MEASURES

Performance measures gauge how a transportation system is operating. They inform decision-making and assign responsibility for a more efficient and effective program implementation. Performance measures provide three functions:

1. **Plan Development:** Provides a method of evaluating current performance and the impacts of plan options to support trade-off decisions and communicate potential impacts of various investment strategies.
2. **Plan Implementation:** Acts as support for implementing the plan by highlighting agency goals and objectives and incorporating them into future budgeting, program structure, project selection, and project/program implementation policies.
3. **Accountability:** Facilitate tracking and reporting on system performance as they relate to plan goals and objectives to support accountability for plan implementation and results.

There are several key considerations for the development of freight performance measures to ensure they are appropriate for the Central Midlands Region. These considerations include:

- **Data Availability:** the data and analysis tools needed for the measure should be 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 Columbia Area Transportation Study Metropolitan Planning Organization 2040 Long Range Transportation Plan (COATS 2040 LRTP), Midlands Tomorrow: 2035 Rural Long Range Transportation Plan, SCDOT Statewide Freight Plan, the SCDOT 2040 Statewide Multimodal Transportation Plan, SCDOT Statewide Rail Plan, and federal 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 on control.
- **Decision-Making Value:** the measures should provide predictive, diagnostic and reporting value to agency decision makers.

1.2 IDENTIFICATION OF PERFORMANCE MEASURES

It is crucial that performance measures are developed based on other CMCOG and SCDOT plans in addition to national policies that already exist or are in development. To align the goals and outcome of the Central Midlands Freight Mobility Plan, it is recommended that the performance measures be consistent with those called for in the SCDOT Statewide Freight Plan.

1.3 APPLICATION OF PERFORMANCE MEASURES

The development and application of freight performance measures will allow the CMCOG the ability to monitor how well the transportation system is accommodating safe and efficient freight activity. In turn, these measures lend themselves to the identification of trends and challenges before they become larger problems. This provides the CMCOG the opportunity to address those issues and be better prepared and responsive to private sector needs. These freight performance measures allow the CMCOG to effectively communicate with freight stakeholders in the region. Once enacted, the freight performance measures can be an easily updatable part of the regular planning process.

2. Consistency with Other Transportation Plans

The Central Midlands Freight Mobility Plan goals align with the goals, objectives, and performance measures discussed in the FAST Act, SCDOT Statewide Freight Plan, SCDOT Statewide Rail Plan, and the Columbia Area Transportation Study Metropolitan Planning Organization 2040 Long Range Transportation Plan (COATS 2040 LRTP).

2.1 FAST ACT PERFORMANCE MEASURE REQUIREMENTS

The FAST Act establishes a new National Highway Freight Program to improve the efficient movement of freight on the National Highway Freight Network (NHFN) and supports several goals, including:

- Investing in infrastructure and operational improvements that strengthen economic competitiveness, reduce congestion, reduce the cost of freight transportation, improve reliability and increase productivity;
- Improving the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas;
- Improving the state of good repair of the NHFN;
- Using innovation and advanced technology to improve NHFN safety, efficiency, and reliability;
- Improving the efficiency and productivity of the NHFN;
- Improving State flexibility to support multi-State corridor planning and address highway freight connectivity; and
- Reducing the environmental impacts of freight movement on the NHFN.

Under the MAP-21 Act and the FAST Act, departments of transportation and metropolitan planning organizations are required to set performance targets consistent with the established national performance measures for freight, integrate those targets within their planning processes, and report to the USDOT on their progress.

The FAST Act performance management approach follows that of MAP-21, where states invest resources in projects that collectively make progress toward national goals. MAP-21 required departments of transportation establish performance measures in a number of areas, including the assessment of freight movement on the Interstate System. MAP-21 also requires that each state set performance targets for those measures. The FAST Act requires that if the Administrator determines that a state has failed to meet (or make significant progress toward meeting) its freight performance targets within two years after the establishment of targets, the

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state must describe in its next performance report to DOT the actions it will take to achieve these targets¹. The FAST Act requires the development of a National Freight Strategic Plan that includes mechanisms to monitor the conditions and performance of the national freight system. Regional and MPO freight plans must align with statewide freight plans as the statewide freight plans align with the national freight plan.

2.2 SOUTH CAROLINA STATEWIDE FREIGHT PLAN

The purpose behind the development of the SCDOT Statewide Freight Plan (SFP) was to satisfy the requirements of MAP-21 legislation and more importantly, respond to the critical role of transportation infrastructure and freight movement to the economy of the state. The movement of goods is vital to the economic health of South Carolina since the state has access to major ports, airports, inland ports, rail lines and highways.

2.2.1 GOALS

The SFP outlines six transportation goals which incorporate the goals of the SCDOT 2040 Statewide Multimodal Transportation Plan (MTP) and those goals identified for a freight plan within MAP-21 legislation. The goals of the SFP encompass the goals of South Carolina while incorporating the National Freight Policy goals for consistency. The goals are listed below in **Table 2.1**.

2.2.2 PERFORMANCE MEASURES

The goals, objectives, and performance measures from the SCDOT Statewide Freight Plan are listed on **Table 2.1**. The performance measures of the SCDOT Statewide Freight Plan are FAST Act compliant.

Table 2.1: South Carolina Statewide Freight Plan Performance Measures

Goal	Objective	Potential Measures
Mobility & System Reliability	Reduce the number of system miles at unacceptable congestion levels	Reduction of South Carolina's Strategic Freight Network mileage that is less than a LOS E for urban areas and LOS C for rural areas
	Improve travel time reliability (on priority corridors or congested corridors)	Average or weighted buffer index or travel time index on priority corridors
	Reduce congestion on the freight transportation system	Miles of Strategic Freight Network above acceptable congestion levels
Safety	Improve the safety, security, and resilience of the freight transportation system	Number of large trucks reported in accidents (fatal, non-fatal, injury reported, hazardous materials)
	Improve substandard roadways	Percent of substandard roadway improved
Infrastructure Condition	Maintain or improve the current state of good repair for the NHS	Number of Miles of Interstate and NHS rated at "good" or higher condition
	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"	Reduction in 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	Percent of deficient bridge deck area

¹ Fixing America's Surface Transportation Act or "FAST Act", Performance Management, April 2016.
<https://www.fhwa.dot.gov/fastact/factsheets/performancemgmtfs.cfm>

Goal	Objective	Potential Measures
Economic & Community Vitality	Utilize the existing transportation system to facilitate enhanced freight movement to support a growing economy	Truck travel time index on the freight corridor network; Annual hours of truck delay; Freight Reliability
Environmental		
Equity		

2.3 SOUTH CAROLINA STATEWIDE RAIL PLAN

The SCDOT Statewide Rail Plan is a component plan of the SCDOT 2040 Statewide Multimodal Transportation Plan. The SCDOT Statewide Rail Plan adopts common goals and objectives from the State Freight Plan with a planning horizon year of 2040.

The SCDOT Statewide Rail Plan documents the state's policy on freight and passenger rail transportation (including commuter rail), establishes priorities and implementation strategies to enhance rail service in the public interest, and serves as the basis for Federal and State rail investment.

2.3.1 GOALS & PERFORMANCE MEASURES

The overall goals of the SCDOT Statewide Rail Plan are the same as the SCDOT Statewide Freight Plan. The objectives and performance measures apply to rail standards. The goals, objectives, and performance measures are identified in **Table 2.2**.

Table 2.2: Goals & Performance Measures of the South Carolina Statewide Rail Plan

Goal	Objective	Potential Measure
Mobility & System Reliability	Reduce the number of system miles at unacceptable congestion levels	Miles of NHS and state Strategic Corridor System above acceptable congestion levels.
	Utilize the existing transportation system to facilitate enhanced modal options for a growing and diverse population and economy	% change in tonnage moved by freight rail % change in rail passenger trips
Safety	Improve the safety, security, and resilience of the freight transportation system	FRA Reportable Railroad Incidents
	Reduce rail grade crossing crashes involving fatal or serious injury	Fatalities and injuries in rail grade crossing accidents. Percent of crossings with active safety warning devices installed.
Infrastructure Condition	Maintain or improve the current state of good repair of rail components of the freight transportation system	Miles of rail lines identified as out of service due to condition.

2.4 COATS LONG RANGE TRANSPORTATION PLAN

In addition to federal and state compliance, the performance measures of the Central Midlands Freight Mobility Plan should be consistent with the existing goals identified in the Columbia Area Transportation Study Metropolitan Planning Organization 2040 Long Range Transportation Plan (COATS LRTP). **Table 2.3** lists the goals and objectives pertaining to freight mobility found in the COATS LRTP. **Table 2.4** identifies the performance measures found in the COATS LRTP.

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Table 2.3: COATS LRTP Goals & Objectives

Goal	Objective
Preserve, make safe, and improve utilization of the existing transportation system.	Maintain the existing network of in a state-of-good repair. Use cost-effective transportation system management, transportation demand management, intelligent transportation system, and operational improvements and techniques to increase the efficiency and safety of the
Enhance regional transportation mobility and accessibility.	Provide cost-effective transportation improvements to address identified mobility problems and reduce the growth in traffic congestion. Enhance connections between modes. Support commercial goods movement within and through the region.
Coordinate transportation system improvements to be consistent with regional values.	Partner with state and local jurisdictions to ensure transportation and land use are complementary. Enhance transportation system sustainability and minimize impacts of the transportation system to the built and natural environment. Support regional economic development. Support transportation security.

Table 2.4: COATS LRTP Performance Measures

Performance Measure	Description	Source
Roadway Segment Volume to Capacity (V/C) Ratio/Level of Service	Comparison of observed and estimated traffic volumes to planning level roadway design capacities. Regional and System Level performance goals include reducing the number or share of road miles above V/C ratio 1.15 or operating at a LOS E or F.	SCDOT AADT, COATS Travel Demand Model output
Congestion Index (CI)	The CI is the ratio of the actual travel speed to the free flow travel speed. Regional and System Level performance goals include reducing the number or share of congested road	Real-time and archived speed data from I-95 Corridor Coalition Vehicle Probe Project
Travel Time Index (TTI)	The TTI compares peak-period travel times to free flow travel times illustrating both the duration and intensity of congestion on a corridor. Regional and System Level	Real-time and archived speed data from I-95 Corridor Coalition Vehicle Probe Project
Transit on Time Performance	Analysis of on time performance for high capacity routes. Regional and System Level performance goals include increasing the percentage of buses arriving on-time	National Transit Database (NTD), COMET ridership information

3. Central Midlands Freight Mobility Plan Goals & Performance Measures

Proposed performance measures have been identified in **Table 3.1**. The purpose of developing and implementing performance measures for Central Midlands is to provide a means of assessing how the transportation system and/or the agency is functioning. Performance measures better inform decision-making and establish accountability for efficient and effective program implementation.

To remain consistent with the SCDOT Statewide Freight Plan and the COATS LRTP, the Central Midlands Freight Mobility Plan proposes performance measures that align with the goals, outcomes, and performance measures of the state and MPO plans. The Central Midlands Freight Mobility Plan Performance Measures were developed in accordance with Federal and SCDOT performance measures. **Table 3.1** lists the performance measures of the Central Midlands Freight Mobility Plan Freight Performance Measures.

Table 3.1: Central Midlands Freight Mobility Plan Performance Measures

CMCOG Goals	Proposed Performance Measures	Potential Source of Data
Mobility & System Reliability	Reduction of Strategic Freight Network mileage that at less than a LOS E for urban areas and LOS C for rural areas	COATS Travel Demand Model Output, SCDOT
	Average or weighted buffer index or travel time index on priority corridors	INRIX, SCDOT
	Miles of Strategic Freight Network above acceptable congestion levels	INRIX, SCDOT, Point-in-Time data
Safety	Number of large trucks reported in accidents (fatal, non-fatal, injury reported, hazardous materials)	SCDOT
	Percent of substandard roadway improved	MPO data
	Number and rate of fatalities (rate= # of fatalities per 100 million vehicle miles traveled)	SCDOT
	Number and rate of serious injuries (rate= # of serious injuries per 100 million vehicle miles traveled)	SCDOT
Infrastructure Condition	Number of Miles of Interstate and NHS rated at "good" or higher condition	SCDOT
	Reduction in 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"	SCDOT
	Percent of deficient bridge deck area	SCDOT, NBIS ²
	Percent of state-maintained road miles in "good" condition	SCDOT
	Percent of state-maintained bridges in satisfactory condition	SCDOT, NBIS
Economic & Community Vitality	Truck travel time index on the freight corridor network; Annual hours of truck delay; Freight Reliability	SCDOT
	Travel Time Reliability index	INRIX, SCDOT
Environmental	MPO Air Quality Design Values	MPO data
	Annual hours of delay on principal arterials	INRIX, SCDOT

² National Bridge Inspection Standards (NBIS)

SECTION 3: CMCOG Freight Plan Goals & Performance Measures

The proposed performance measures in **Table 3.1** will be further finalized in coordination with SCDOT as the state finalizes their performance measures. SCDOT is anticipated to set performance targets for the federally required performance measures as required by MAP-21 and the FAST Act during the remainder of 2017. According to the National Performance Rule Making (NPRM), State DOTs and MPOs are to establish quantifiable statewide performance targets to be achieved over a 4-year performance period, with the first performance period beginning in 2018. MPOs may establish targets by either supporting the state department of transportation statewide target, or defining a target unique to the metropolitan planning area each time the state department of transportation establishes a target. In accordance with MAP-21, the NPRM proposed providing MPOs with an additional 180-day period to set targets following the date on which the state department of transportation established their targets. The CMCOG will continue to coordinate with SCDOT during the target setting process.

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