May 2019

SEMCOG System Performance Report, 2019

Companion to the 2045 Regional Transportation Plan for Southeast Michigan

SEMCOG | SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS

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Mission

SEMCOG, the Southeast Michigan Council of Governments, is the only organization in Southeast Michigan that brings together all governments to develop regional solutions for both now and in the future. SEMCOG:

- Promotes informed decision making to improve Southeast Michigan and its local governments by providing insightful data analysis and direct assistance to member governments;
- Promotes the efficient use of tax dollars for infrastructure investment and governmental effectiveness;
- Develops regional solutions that go beyond the boundaries of individual local governments; and
- Advocates on behalf of Southeast Michigan in Lansing and Washington

SEMCOG System Performance Report, 2019

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Abstract

The *2045 Regional Transportation Plan for Southeast Michigan* includes performance-based management elements that connect regional policy and investment priorities to federal performance measures, in accordance with federal law. The *SEMCOG System Performance Report, 2019* summarizes the performance-based management process, enumerates the federal performance measures and adopted performance targets, and ties the approach to achieving performance targets to policies and investments laid out in the *2045 Regional Transportation Plan for Southeast Michigan*. Since performance measures and targets are evaluated and updated on a rolling basis, this *System Performance Report* will only be updated once a year. For the most up-to-date information, visit SEMCOG's website (https://semcog.org/performance-measures) for direct access to the latest performance measure data and target setting.

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Introduction

The *SEMCOG System Performance Report, 2019* (SPR) is a companion to the *2045 Regional Transportation Plan for Southeast Michigan* (RTP) and the Transportation Improvement Program (TIP). It extracts information about the transportation performance management process that is integrated throughout the RTP and TIP, as well as the multiple actions taken by SEMCOG's Transportation Coordinating Council (TCC) and Executive Committee to set targets for all federal Transportation Performance Measures in one standalone document. The SPR contains information about transportation performance management, performance measures, target-setting, and how these measures and targets are considered in the formation of policies and project investments contained in the RTP and TIP.

SEMCOG, in coordination with the Michigan Department of Transportation (MDOT) and Metropolitan Planning Organizations (MPO) across Michigan, developed this performance management process in response to changes in transportation planning expectations articulated in law through the Moving Ahead for Progress in the 21st Century (MAP-21) Act and the Fixing America's Surface Transportation (FAST) Act.

This document contains all federally required performance targets to date for SEMCOG. It is organized into two sections:

- Transportation Performance Management Framework, describing the process used to incorporate performance measures into regional planning and project programming; and
- Transportation Performance Measures and Targets, listing the baseline measures and targets.

Each of the measurement and target sections include a description of the polices and plans that inform SEMCOG's approach to target attainment and a description of SEMCOG's efforts to integrate the targets into project development and programming for the RTP and TIP.

Transportation performance measures have been discussed at a series of TCC and Executive Committee meetings, as noted below by meeting and topic:

- January 18, 2018 – Transportation Coordinating Council – Baseline safety performance measure target setting recommendation.
- January 26, 2018 – Executive Committee – Baseline safety performance measure target setting adoption.
- April 19, 2018 – Transportation Coordinating Council – 2040 RTP and FY2017-2020 TIP FAST Act Compliance including recommendation to adopt performance management planning and programming approach.
- April 19, 2018 – Transportation Coordinating Council – Baseline congestion mitigation and air quality (CMAQ) performance measure target setting recommendation.
- May 3, 2018 – Executive Committee – 2040 RTP and FY2017-2020 TIP FAST Act Compliance including recommendation to adopt performance management planning and programming approach.
- May 3, 2018 – Executive Committee – Baseline congestion mitigation and air quality (CMAQ) performance measure target setting adoption.

- September 20, 2018 – Transportation Coordinating Council – Baseline travel time reliability and baseline pavement/bridge condition performance measure target setting recommendation.
- September 28, 2018 – Executive Committee – Baseline travel time reliability and baseline pavement/bridge condition performance measure target setting adoption.
- January 17, 2019 – Transportation Coordinating Council – 2019 safety performance measure target setting recommendation.
- January 17, 2019 – Transportation Coordinating Council – 2045 Regional Transportation Plan for Southeast Michigan recommendation for adoption.
- January 25, 2019 – Executive Committee – 2019 safety performance measure target setting adoption.
- February 22, 2019 – Executive Committee – 2045 Regional Transportation Plan for Southeast Michigan recommendation for adoption.
- March 14, 2019 – General Assembly – 2045 Regional Transportation Plan for Southeast Michigan adoption.
- April 18, 2019 – Transportation Coordinating Council – 2019 transit asset management target setting recommendation.
- May 2, 2019 – Executive Committee – 2019 transit asset management target setting adoption.

Since performance measures and targets are evaluated and updated on a rolling basis, this System Performance Report will only be updated once a year. For the most up-to-date information, SEMCOG's website (https://semcog.org/performance-measures) provides direct access to the latest performance measure data and target setting.

Transportation Performance Management Framework

The U.S. Department of Transportation developed a model framework for Transportation Performance Management that establishes a feedback loop between performance results and future planning. These are the goals of the framework:

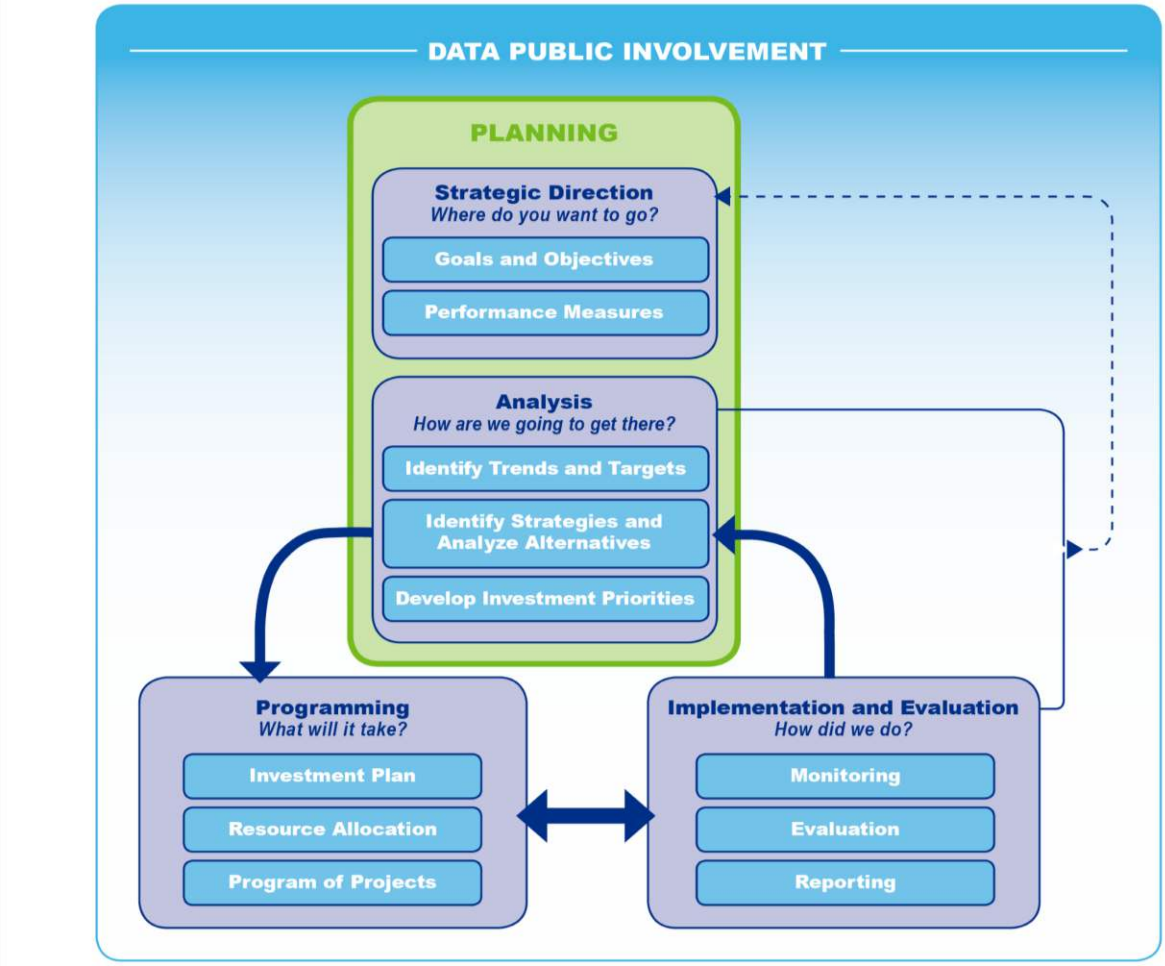
- Be systemically applied on a regular, ongoing process;
- Provide key information to help decision makers, allowing them to understand the consequences of investment decisions across transportation assets or modes;
- Improve communication between decision makers, stakeholders, and the traveling public; and
- Ensure targets and measures are developed in cooperative partnerships and based on data and objective information.

The framework sets up a process in which:

- A strategic direction is set,
- Standard analysis is conducted to identify trends and establish achievable future targets,
- Available funding is programmed to support the achievement of the targets, and
- Performance is monitored to evaluate and adjust future target setting and programming decisions.

Figure 1

Framework for Performance-Based Planning and Programming



Source: Federal Highway Administration

Roads and Highways National Performance Goals

The FAST Act directed the Federal Highway Administration (FHWA) to identify Transportation Performance Measures for six National Performance Goals. In response, SEMCOG adopted a highway performance management process that includes national Transportation Performance Measures. These will be used to inform SEMCOG's planning decisions. The six goals are:

- Safety – To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- Infrastructure Condition – To maintain the highway infrastructure asset system in a state of good repair.
- Congestion Reduction – To achieve a significant reduction in congestion on the National Highway System.
- System Reliability – To improve the efficiency of the surface transportation system.

- Freight Movement – To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- Environmental Sustainability – To enhance performance of the transportation system while protecting and enhancing the natural environment.

Public Transportation National Performance Goals

The FAST Act also directed the Federal Transit Administration (FTA) to develop a rule establishing a strategic process for operating, maintaining, and improving public capital assets effectively through their entire lifecycle. FTA established a Transit Asset Management rule that identifies four performance areas for transit providers to track asset conditions and create plans for systemically managing operations, maintenance, and capital investments. The four performance areas are:

- Rolling Stock – Revenue vehicles used in providing public transportation.
- Equipment – Articles of non-expendable, tangible property has a useful life of at least one year.
- Facilities – Buildings or structures that are used in providing public transportation.
- Infrastructure – The underlying framework or structures that support a public transportation system.

Transit providers in Southeast Michigan vary widely with the type and scale of assets. These providers range from large bus transit operators, such as the Detroit Department of Transportation, who run over 50 routes, to small urban bus operators, such as Lake Erie Transit in the City of Monroe, who run eight routes, to M-1 Rail who operate a 12-station streetcar line between downtown and midtown Detroit. To account for the diversity of rolling stock, equipment, facilities, and infrastructure owned and operated by transit providers, FTA instructs the providers to individually create Transit Asset Management Plans that identify assets and a condition evaluation approach that best fits their asset profile. Transit providers with more resources to dedicate to data and analysis, are encouraged to conduct evaluations of transit assets that match the scale and complexity of their asset profile.

In addition, transit agencies will be required to certify a Public Transit Agency Safety Plan (PTASP) that contains transit safety performance measures that track fatalities, injuries, safety events, and system reliability. The federal rulemaking process for these plans is not yet final. Southeast Michigan transit agencies must certify a PTASP and report targets for the transit safety performance measures to the State of Michigan and SEMCOG within a year of the final rule publication.

A full list of road and transit performance measure areas and measures can be found in Table 1.

Table 1

Federal Performance Measure Areas and Measures

Performance Area	Performance Measures
Safety Performance	• Number of fatalities • Rate of fatalities • Number of serious injuries • Rate of serious injuries • Number of nonmotorized fatalities and nonmotorized serious injuries
Pavement and Bridge Condition	• Percent National Highway System (NHS) bridges in good and poor condition • Percent Interstate pavement in good and poor condition • Percent Non-Interstate NHS pavement in good and poor condition
System Performance	• Interstate travel time reliability • Non-Interstate travel time reliability • Truck travel time reliability
Congestion Mitigation and Air Quality	• Peak Hour Excessive Delay • On-Road Mobile Source Emissions for Carbon Monoxide (CO) and Particulate Matter (PM2.5); and • Non-Single Occupancy Vehicle (SOV) Travel
Transit Asset Management	• Transit Asset Management (TAM) Plans • State of Good Repair measures are identified by individual transit providers as part of TAM Plan. • Percent of revenue vehicles within a particular asset class that have met or exceeded their Useful Life Benchmark (ULB) • Percent of facilities with a condition rating below 3.0 on the FTA Transit Economic Requirements Model (TERM) Scale.

Performance Measures Integration in Planning and Project Programming

Performance management is integrated throughout SEMCOG's planning and programming process. The RTP incorporates policies and actions detailed in subject matter plans and processes such as:

- *Southeast Michigan Traffic Safety Plan;*
- *Bicycle and Pedestrian Plan for Southeast Michigan;*
- SEMCOG Region *Congestion Management Process;*
- SEMCOG Region *ITS Regional Architecture Plan;*
- *Asset Management Guide for Local Agencies in Michigan;* and

- Administration of the Congestion Mitigation and Air Quality Program.

The 2045 RTP set a regional investment direction that focused available resources on pavement and bridge asset management preservation while implementing infrastructure, operational, and educational strategies from the safety and congestion management components.

The RTP infrastructure investments are programmed through the four-year TIP, which lists projects by year, and includes the primary federal performance area to which each project contributes. This process will evolve over time as additional data are collected and trends become clear.

Transportation Performance Measures and Targets

The following is a snapshot of the SEMCOG Transportation Performance Measure baseline conditions and adopted targets. Evaluation of trends and targets takes place throughout the year. To view the most current adopted targets and trends, visit SEMCOG's website (https://semcog.org/performance-measures).

Safety Performance

Federal transportation legislation establishes a performance based planning framework and target setting requirements for States and Metropolitan Planning Organizations (MPOs). These are designed to focus the federal-aid program on national goals. The goal areas include safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and reduced project delivery delays.

The Highway Safety Improvement Program (HSIP) final rule (23 CRF Part 490) requires States and MPOs to establish targets for calendar year 2019 and annually thereafter for five safety performance measures based on five-year rolling averages for:

- 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, and
- Number of nonmotorized fatalities and nonmotorized serious injuries.

Table 2 shows the statewide baseline measures and targets supported by SEMCOG.

SEMCOG will contribute to achieving these statewide targets through the following actions adopted in the 2045 RTP:

- Implement the *Southeast Michigan Traffic Safety Plan*.
- Promote low-cost, high-impact traffic safety engineering countermeasures.
- Promote emerging connected and automated vehicle technology and infrastructure.
- Support campaigns that promote effective and safe first responder training.
- Develop and educate drivers on best practices to clear incidents quickly and safely.
- Educate lawmakers on the need for more uniform crosswalk laws.
- Educate lawmakers, roadway designers, and local government officials on the impact of traffic speed on the rate of serious injury crashes and fatalities.
- Support community-led Americans with Disability Act (ADA) transition plans for sidewalks, paths, and crosswalks.
- Support community-led maintenance and snow removal plans.

Table 2
Safety Performance Measure Targets, State of Michigan

Safety Performance Measure	Baseline Through Calendar Year 2017	Calendar Year 2019 State Safety Target
Fatalities	981.4	1,023.2
Fatality Rate (per 100 Million VMT)	1.00	1.02
Serious Injuries	5,335.0	5,406.8
Serious Injury Rate (per 100 Million VMT)	5.47	5.41
Nonmotorized Fatalities & Serious Injuries	743.6	759.8

These actions correspond with MDOT's actions to meet these targets:

- Address trunkline locations with correctable fatality and serious injury crashes by selecting cost effective safety improvements, as identified in Michigan's *Strategic Highway Safety Plan* (SHSP).
- Ensure all proposed safety improvements are supported by the MDOT Region's *Toward Zero Death Implementation Plan*.
- Direct federal safety funds administered to local roads to projects that are supported by a local road safety plan or are addressed by means of a low-cost safety project.

Pavement and Bridge Asset Management

Federal rules on performance management measures for pavement and bridge require establishment of two- and four-year performance targets to be achieved beginning in 2018 for the following performance measures:

Bridge

- Percent National Highway System (NHS) Deck Area in Good Condition
- Percent NHS Deck Area in Poor Condition

Pavement

- Percent of Interstate Pavement in Good Condition
- Percent of Interstate Pavement in Poor Condition
- Percent of Non-Interstate NHS in Good Condition
- Percent of Non-Interstate NHS in Poor Condition

The SEMCOG pavement and bridge two- and four-year targets were established in coordination with MDOT, other state MPOs, the FHWA, and the FTA. SEMCOG will continue coordination with federal, state, and local road agencies to plan and implement projects that contribute to meeting the targets. Table 3 shows the statewide baseline measures and targets supported by SEMCOG.

Table 3

Pavement and Bridge Performance Measure Targets, State of Michigan

Performance Area	Measures	Baseline Condition 2017	2-Year Target 2020	4-Year Target 2022
Bridge	Percent National Highway System (NHS) Deck Area in Good Condition	32.7%	27.2%	26.2%
	Percent NHS Deck Area in Poor Condition	9.8%	7.2%	7.0%
Pavement	Percent of Interstate Pavement in Good Condition	56.8%	N/A	47.8%
	Percent of Interstate Pavement in Poor Condition	5.2%	N/A	10.0%
	Percent of Non-Interstate NHS in Good Condition	49.7%	46.7%	43.7%
	Percent of Non-Interstate NHS in Poor Condition	18.6%	21.6%	24.6%

SEMCOG will contribute to achieving these statewide targets through the following actions adopted in the 2045 RTP:

- Share information on best practices in pavement design and engineering.
- Implement road projects that make the most cost-effective use of resources while focusing on maintenance to maximize the life of existing roads.
- Support the development of local asset management plans that are regularly monitored, updated, and coordinated with other infrastructure systems.
- Improve conditions to meet the needs of connected and automated vehicle deployment.
- Share information on best practices in bridge design, construction management, and maintenance practices.
- Implement construction projects that make the most cost-effective use of resources with a focus on maintenance to maximize the life of existing bridges.

These actions correspond with MDOT's actions to meet these targets:

- For highways and most bridges, develop investment strategies that use life cycle planning, performance gap analysis, risk analysis, and anticipated available funding.
- For the 48 bridges covered by the Big Bridge Program, considering that these bridges have outsized capital and preservation costs, develop a strategy that preserves these bridges in continuously good or fair condition.
- Compare results of analysis with goals and objectives set by the State Transportation Commission.
- Embed the selected investment strategy in the Highway Call for Projects through describing the mix of fixes, investment levels, and funding targets that corresponds to the investment strategy.
- Communicate the selected investment strategy to the public through the annual Five-Year Transportation Program.

System Performance

The federal rules on performance management measures for travel time reliability requires establishment of two- and four-year performance targets to be achieved beginning in 2018 for the following performance measures:

- Level of Travel Time Reliability of the Interstate
- Level of Travel Time Reliability of the Non-Interstate NHS
- Freight Reliability Measure of the Interstate

The level of travel time reliability for both the NHS interstate and non-interstate NHS measure the percentage of person-miles traveled considered to be reliable. The roads are considered reliable when the difference between normal travel time and congested travel times is below 50 percent. Baseline data from 2017 and 2018 that reveals Michigan's interstate highways and non-interstate highways have been around 85 percent reliable, meaning 85 percent of person-miles traveled are meeting the federally established thresholds. The freight reliability measure measures the same reliability, however the longer travel time is calculated using the 95th percentile travel time.

The SEMCOG reliability two- and four-year targets were established in coordination with MDOT, other regions, the FHWA, and the FTA. SEMCOG will continue coordination with state, federal, and local road agencies to plan and implement projects that contribute to meeting the targets. Table 4 shows the statewide baseline measures and targets supported by SEMCOG.

SEMCOG will contribute to achieving these statewide targets through the following actions adopted in the 2045 RTP:

- Monitor congestion levels, prioritize congested locations, and implement treatments.
- Use data to inform projects for inclusion in the short- and long-term planning process.
- Conduct an annual analysis of congestion performance target setting and program adjustments.
- Improve technology on priority corridors to provide drivers with real time travel information.
- Improve data sharing between road agencies and first responders.

- Implement best practices for work-zone design and alternate route detouring during construction.
- Manage demand for curb space to balance connected and automated vehicle technology, pick-up, deliveries, parking, and nonmotorized travel.

Table 4

System Performance Measure Targets, State of Michigan

Measures	Baseline Condition 2017	2-Year Target 2020	4-Year Target 2022
Level of Travel Time Reliability of the Interstate	85.1%	75.0%	75.0%
Level of Travel Time Reliability of the Non-Interstate NHS	85.5%	N/A	70.0%
Freight Reliability Measure of the Interstate	1.38	1.75	1.75

These actions correspond with MDOT's actions to meet these targets:

- Monitor performance measures and consider system performance as a factor in the decision-making process for transportation investments.
- Evaluate project types and funding templates that can impact travel reliability such as capacity changes, operational changes, safety projects that have operational impacts, pavement projects that change the condition from poor to good or fair.

Congestion Mitigation and Air Quality

This measure is an assessment of the Congestion and Air Quality Improvement (CMAQ) Program through measurement of total emissions reduction of on-road mobile source emissions.

This Transportation Performance Management Target applies to areas designated as nonattainment or maintenance for ozone, carbon monoxide, or particulate matter. SEMCOG and MDOT established separate targets for each of these criteria pollutants and applicable precursors. SEMCOG is designated as nonattainment or maintenance for carbon monoxide (CO) and particulate matter (PM2.5). Targets reflect the anticipated cumulative emissions reduction to be reported in the CMAQ Public Access System. Table 5 shows the statewide baseline measures and targets supported by SEMCOG.

Table 5

CMAQ Performance Measure Targets, State of Michigan

Measure	Baseline Performance 2017	2-Year Target 2020	4-Year Target 2022
Peak Hour Excessive Delay	18 hours 30 minutes	22 hours	N/A
On-Road Mobile Source Emissions for Carbon Monoxide (CO kg/day)	87,665.109	32,968.780	65,937.560
On-Road Mobile Source Emissions for Particulate Matter (PM2.5 kg/day)	653.357	417.410	834.820
Non-Single Occupancy Vehicle Travel (Percent of Total Workers)	16.0%	14.4%	14.4%

SEMCOG will achieve these targets through the following actions adopted in the 2045 RTP:

- Continue air quality conformity analysis for all transportation projects.
- Ensure that new projects will not cause new air quality violations, worsen existing violations, or delay timely attainment of NAAQS.
- Seek opportunities to strengthen public-private partnerships to address unique air quality and water resource challenges.
- Enhance public education and awareness through Ozone Action, Commuter Connect, and One Water programs.
- Administer the Congestion Mitigation and Air Quality program in a manner that emphasizes the amount of criteria pollutants reduced per project dollar.

Public Transportation

Transit providers must develop Transit Asset Management (TAM) plans that track the asset conditions for rolling stock, equipment, and facilities while creating routines for systemically managing operations, maintenance, and capital investments. Since transit providers vary widely with the type and scale of assets, they must individually create TAM plans that identify assets and condition evaluation approach that best fits that providers' asset profile.

Table 6

Transit Asset Management Plan Targets, Southeast Michigan

Asset Category	Performance Measure	2019 Target
Rolling Stock e.g., buses	Age: Percentage of revenue vehicles that have met or exceeded their Useful Life Benchmark (ULB)	20%
Equipment e.g., non-revenue vehicles and maintenance equipment	Age: Percentage of equipment that has met or exceeded their Useful Life Benchmark (ULB)	25%
Facilities e.g., administrative buildings and bus shelters	Condition: Percentage of facilities with a condition rating adequate or below on the FTA Transit Economic Requirements Model Scale	5%

Initial targets for fiscal year 2017 were set by individual transit providers. SEMCOG coordinated with transit providers across Southeast Michigan to collect preliminary targets and used them to set preliminary regional targets, which are shown in Table 6. SEMCOG considers these preliminary since they were established prior to the detailed assessment of assets that will occur as part of the TAM plans. Transit providers prepared TAM plans in 2018 and will update TAM plans every four years.

Table 6 shows the regional baseline measures and targets for Transit Asset Management Plans aggregated by SEMCOG.

SEMCOG will continue to coordinate with transit providers to implement TAM plans and update TAM targets, incorporating capital expenditures leveraging federal funding into the Transportation Improvement Program (TIP).

Conclusion

The emphasis on performance management including setting performance targets, orienting policies and programs to achieve these targets, and evaluating policy and program effectiveness is a major change in federal transportation law. The required MPO targets are a chance for SEMCOG to connect short-term performance measurement to long-term regional priorities. Target setting helps guide the balance of high-level resource allocation – whether more attention or funding should be directed to improving certain measures or asset classes. The target setting requirements also give the region another path to call attention to the large investment and funding needed to improve critical elements of the regional transportation system. SEMCOG will continue tracking and updating measures and targets. All updates can be found at https://semcog.org/performance-measures.

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