



MM2045 System Performance Report – DRAFT

MM2045 Draft for Public Comment, July 27, 2021

Table of Contents

1.0	BACKGROUND	3
2.0	INTRODUCTION	8
3.0	TRAFFIC SAFETY PERFORMANCE	10
	Overview	11
	2021 Baseline and Target Development.....	11
4.0	NATIONAL HIGHWAY SYSTEM PERFORMANCE	12
4.1	Bridge Condition	14
	Overview	15
	Baseline and Target Development.....	16
	Mid-Performance Period Evaluation and Adjustment.....	16
4.2	Pavement Condition	17
	Overview	18
	Baseline and Target Development.....	19
	Mid-Performance Period Evaluation and Adjustment.....	19
4.3	System Reliability Performance	20
	Overview	21
	Baseline and Target Development.....	22
	Mid-Performance Period Evaluation and Adjustment.....	22
4.4	Traffic Congestion Performance	23
	Overview	24
	Baseline and Target Development.....	24
	Mid-Performance Period Evaluation and Adjustment.....	24

4.5	On-Road Mobile Source Emissions Reduction	25
	Overview	26
	Baseline and Target Development.....	26
	Mid-Performance Period Evaluation and Adjustment.....	26
5.0	METROPOLITAN PLANNING ORGANIZATION COORDINATION	27
	Highway Target-Setting Coordination.....	27
	Transit Target-Setting Coordination	27
	MPO Highway Target Elections.....	28
6.0	TRANSIT ASSET MANAGEMENT AND SAFETY PERFORMANCE	29
6.1	Transit Asset Management Plan and State of Good Repair Targets	29
6.2	Public Transportation Agency Safety Plan and Safety Targets	32

1.0 BACKGROUND

The 2012 Moving Ahead for Progress in the 21st Century ([MAP-21](#)) and subsequent 2015 Fixing America’s Surface Transportation Act ([FAST Act](#)), established performance and outcome-based programs to direct state investment of federal funds toward projects that collectively demonstrate progress toward achievement of national goals established by Congress. Prior to MAP-21, the Michigan Department of Transportation (MDOT) already had two decades of maturing its asset management and systems management approaches and its performance-based planning and programming.

National Transportation Goals

1. Safety: To achieve reduction in fatalities and serious injuries on all public roads.
2. Infrastructure Condition: To maintain highway infrastructure assets in state of good repair.
3. Congestion Reduction: To achieve 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 freight networks, 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 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 U.S. Department of Transportation (USDOT) Federal Highway and Transit administrations (FHWA and FTA, respectively) instituted through regulation the performance-based planning and programming requirements for state departments of transportation (DOTs), metropolitan planning organizations (MPOs), and providers of public transportation to follow. The regulation includes performance-based program data requirements, measures, metrics, thresholds, and methods for calculating baseline and predicted condition/performance (targets), performance periods, target reporting and adjustment, and federal assessment of progress achieved.

FHWA	Highway Safety Improvement Program (HSIP): Traffic Safety Performance (Performance Measure [PM] 1)
	National Highway Performance Program (NHPP): Bridge and Pavement Infrastructure Condition (PM2)
	National Highway Performance Program (NHPP): System Performance - Travel Time Reliability (PM3)
	National Highway Freight Program (NHFP): System Performance - Freight Reliability (PM3)
	Congestion Mitigation and Air Quality (CMAQ): System Performance - Congestion Mitigation (PM3)
FTA	Congestion Mitigation and Air Quality (CMAQ): System Performance - Emissions Reduction (PM3)
	Transit Infrastructure Condition
	Transit Safety Performance

The MAP-21/FAST Act performance requirements are expansive and complex. The remainder of this section provides key information as the basis for this report and does not reflect the comprehensive requirements of the authorization and implementation regulations. The U.S. Code of Federal Regulations (CFR) requires the respective parties integrate the national goals, objectives, and supporting performance measures and targets into statewide and metropolitan transportation planning processes. In addition, 23 CFR §450.216(f) requires the state long-range transportation plan include “a system performance report and subsequent updates evaluating the condition and performance of the transportation system with respect to the performance targets described in §450.206(c), including progress achieved by the MPO(s) in meeting the performance targets in comparison with system performance recorded in previous reports.” Furthermore, 23 CFR §450.206(c)(4) requires integration of performance measures and targets as required by Title 49 CFR, Chapter 53, Public Transportation. This system performance report focuses on national performance program measures, reflecting current condition and targets for the respective performance period, and has been developed to satisfy the federal requirements.

Asset Management Plans. MAP-21/FAST Act requires the development of risk-based asset management plans for the NHS and for capital assets used for the purpose of providing public transportation where the purchase, operation and management are supplemented with federal assistance. The NHS transportation asset management plan (TAMP) requirements have been implemented by FHWA through [23 CFR 515](#). The [Michigan TAMP](#) was certified by FHWA in 2019 and must be updated at a minimum of every five years. To support TAMP development, MDOT applied expertise gathered from more than two decades of commitment to asset management and developing a robust performance management system. MDOT has integrated the TAMP into planning processes such that it informs project selection and programming decisions toward achievement of asset condition and performance goals. The transit asset management plan requirements have been implemented by FTA through [49 CFR 625](#), and are further described in the transit section of this report.

Metrics, Thresholds, Measures, and Targets. The FHWA has defined each as shown in Figure 1 below. The FTA has used very similar definitions.

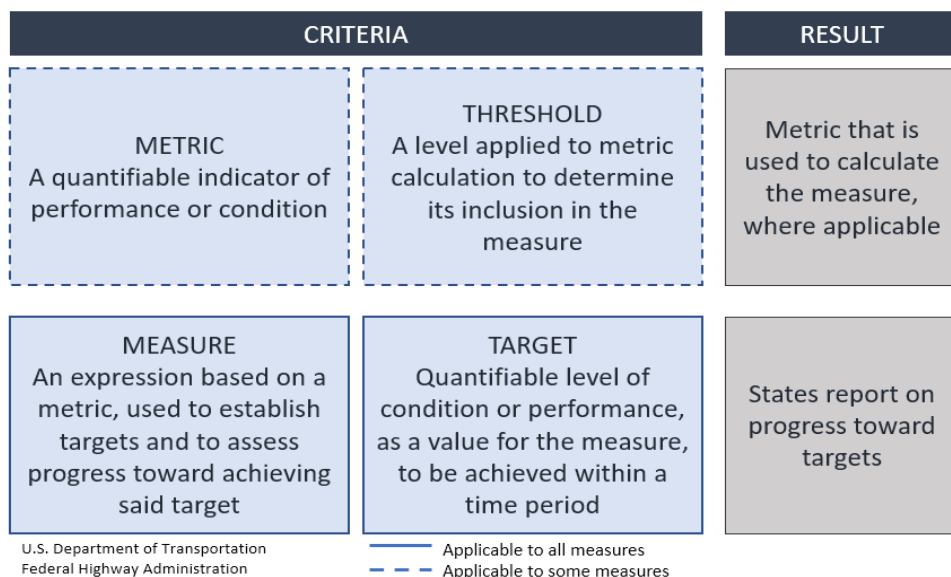


Figure 1 - FHWA criteria, intended result, and definitions

Target/Predicted Condition. MDOT prefers to use the term "predicted" condition or performance rather than "target," reflecting the connection between constrained investment-level across all programs and the resulting performance outcome for the short (one- or four-year) time-period of the national performance program. MDOT continues to focus on achieving long-term goals, such as the bridge and pavement goals established by the State Transportation Commission (STC) in 1997, through matured long-term investment strategies. The terms "target" and "predicted" condition or performance have been intentionally used throughout this document.

Coordinated Target Setting. The HSIP, NHPP and NHFP performance requirements include, to the extent practicable, coordination between MDOT and MPOs in setting both state and MPO targets. Coordination efforts for the traffic safety measures also include the Michigan State Police Office of Highway Safety Planning (MSP OHSP). The three CMAQ-focused measures, as applicable, require single unified targets to be collaboratively developed between MDOT and the applicable MPO(s). Similarly, the transit performance program requires, to the extent practicable and applicable, coordination between the transit agency, MPO(s), and MDOT.

Significant Progress Determination. FHWA has defined significant progress toward target achievement as (1) actual condition/performance is better than the performance period baseline or (2) actual condition/performance is equal to or better than the established target. At present, FHWA does not assess significant progress for the CMAQ program measures nor whether MPOs have made significant progress for any of the highway-related measures, nor does the FTA assess significant progress for the transit performance program measures.

The FHWA will annually assess the five HSIP traffic safety measures and determine that significant progress has been achieved if four out of five measures achieved significant progress. If significant progress is not achieved, MDOT must submit an implementation plan to FHWA and use obligation authority equal to or greater than the HSIP apportionment for the prior year for highway safety improvement projects.

For the NHPP and NHFP performance measures, FHWA will biennially assess and provide formal determination of significant progress achievement. If FHWA determines Michigan did not make significant progress toward achieving one or more NHPP targets, then MDOT must report to FHWA a description of actions that will be taken to achieve the next biennial target(s) for that specific performance group. If FHWA determines MDOT did not make significant progress toward achieving the NHFP (freight) biennial target, then MDOT must report to FHWA an identification of significant freight system trends, needs and issues within the state and a description of freight policies and strategies that will guide future freight-related transportation investments to improve reliability and reduce freight bottlenecks on the NHS. FHWA will also determine significant progress has not been achieved for non-compliance with specific data collection and reporting requirements.

Bridge and Pavement Minimum Condition. Independent of the target development and assessment process, FHWA annually assesses whether congressionally established minimum NHS bridge and interstate pavement conditions are met. Per Congress, the condition of NHS bridges must not exceed 10 percent structurally deficient, by deck area, for three consecutive years. Similarly, the condition of interstate pavement must not exceed 5 percent poor condition in any single year. If either the minimum bridge and interstate conditions are not met, a funding penalty is applied the next fiscal year and remains in effect until minimum condition compliance is achieved. In addition, a penalty will also be assessed if annual bridge or pavement data collection and reporting is found to be non-compliant and the penalty will remain in effect until compliance is achieved.

Performance Periods. Performance periods play a key role in the national performance program and the respective federal agencies have established one- or four-year performance cycles, as shown below. One-year performance periods require development of targets for the next year, and four-year performance periods require two-year and four-year targets, noting some measures absent quality historical data are phased in during the first four-year period, as further described in the respective sections. Measures with a four-year performance cycle have an allowance to adjust the four-year target as part of the mid-performance period report.

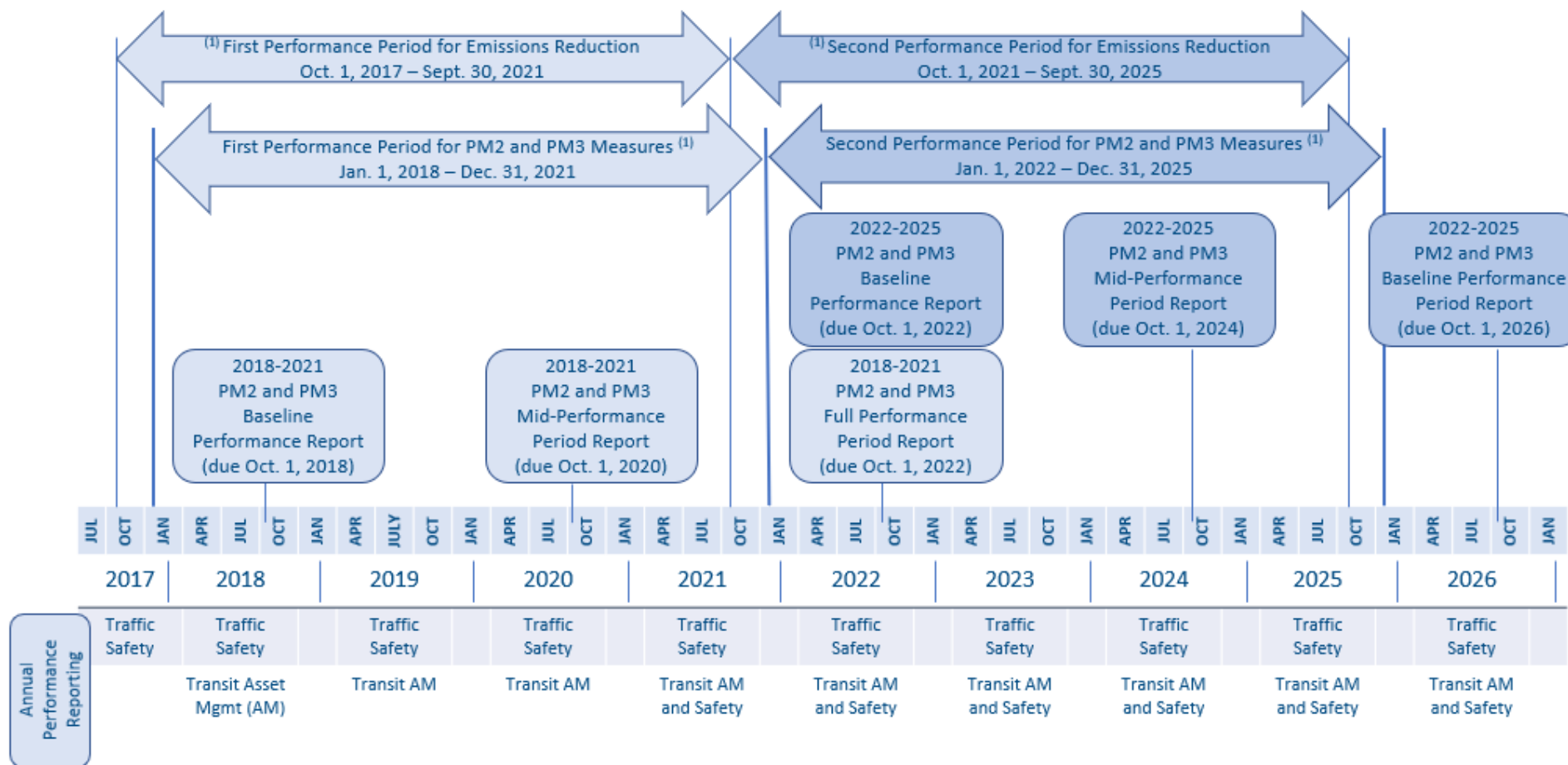


Figure 2 - Federal Performance Target Development Schedule

2.0 INTRODUCTION

A vibrant multi-modal transportation system is vital to Michigan’s future economic viability and competitiveness. Michigan Mobility 2045 (MM2045) is an integrated, performance-based 25-year long-range plan to guide investment planning and programming decisions across Michigan’s multi-modal transportation network. MM2045 considered and integrated national transportation goals in developing state goals, strategies, and performance measures.

MM2045 TRANSPORTATION GOALS

Safety and Security



Enhance the safety and ensure the security of the transportation network for all users and workers.

Network Condition



Through investment strategies and innovation, preserve and improve the condition of Michigan’s transportation network so that all modes are reliable, resilient, and adaptable.

Mobility



Enhance mobility choices for all users of the transportation network through efficient and effective operations and reliable multi-modal opportunities.

Quality of Life



Enhance quality of life for all communities and users of the transportation network.

Economic and Stewardship



Improve the movement of people and goods to attract and sustain diverse economic opportunities while investing resources responsibly.

Partnership



Strengthen, expand, and promote collaboration with all users through effective public and private partnerships.

For more than two decades, Michigan has remained committed to strategic investment through risk-based asset management and systems management approaches supported by a data-informed performance measurement system. Michigan’s performance-driven, outcome-based approach optimizes investment and stretches limited resources to maximum benefit. Michigan’s [statewide transportation improvement program](#) (STIP) is developed in cooperation with MPOs,

public transit providers, and regional planning organizations, covers a period of four years, and is consistent with MDOT's long-range plan. The STIP is fiscally constrained and communicates anticipated asset condition and system performance based on planned investment (projects). MDOT publishes an annual [Five-Year Transportation Program](#) (5YTP) that includes STIP projects and provides a near-term implementation view of MDOT's long-term goals and strategies. MDOT's annual 5YTP and the 2019 TAMP provide more detail on MDOT's approach and processes for performance-based planning and program development.

Michigan continues to focus on innovative and streamlined performance-based processes from planning and programming through construction and maintenance. However, decades of under-investment in transportation have negatively impacted Michigan's aging assets and systems performance. Without long-term stable federal and state funding at much higher levels than currently appropriated, asset condition will continue to deteriorate and the cost to maintain and improve the system will significantly increase. The declining condition negatively impacts system users and the state and national economy.

It is important to distinguish the difference between MDOT long-term goals and the short-term narrow scope of the national performance program as outlined in the next sections of this report. For example, Michigan's long-term goal for interstate pavement is 95 percent good/fair, and 85 percent good/fair for non-interstate NHS using a measure of remaining service life (RSL), as approved by the STC. The interstate and non-interstate predicted condition shown in Section 4.2 of this report uses the federally required measures, metrics, and thresholds that are different than those used by MDOT to measure pavement performance.

The sections that follow provides an in-depth explanation for the federally required performance measures, metrics, thresholds, baseline/current condition, and predicted condition.

3.0 TRAFFIC SAFETY PERFORMANCE

Performance Measure 2021 Five-Year Moving Average Predicted Performance	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Predicted	2021 Predicted (Target)
Number of Fatalities	1,065	1,031	974	985	988.2	968.6
Rate of Fatalities per 100 Million Vehicle Miles Traveled	1.074	1.013	0.951	0.963	1.008	0.982
Number of Serious Injuries	5,634	6,084	5,586	5,629	5578.6	5,533.6
Rate of Serious Injuries per 100 Million Vehicle Miles Traveled	5.679	5.976	5.455	5.502	5.687	5.609
Number of Nonmotorized Fatalities and Serious Injuries	740	798	740	805	759.3	771.2

Table 1 - Traffic Safety Targets

Federal Program(s)	HSIP	Performance Period	Annual
Primary CFR	23 CFR 490, Subpart B	Target(s) Established	Aug. 31, 2020, for Calendar Year 2021
Applicability	All public roads	Target(s) Adjusted	Not applicable for traffic safety measures
Target-Setting Coordination	MDOT MSP OHSP Michigan MPOs	Data	NHTSA Fatality Analysis Reporting System Michigan Traffic Crash Facts Database Highway Performance Monitoring System (HPMS)
National Goal	Safety		
MM2045 Goal(s)	Safety and Security Quality of Life Economic and Stewardship Partnership	Related Planning Documents	State Transportation Improvement Program Michigan Strategic Highway Safety Plan Highway Safety Improvement Program Highway Safety Implementation Plan

Overview

In support of the national goal to reduce fatalities and serious injuries, FHWA has developed five traffic safety measures to assess the performance of the HSIP. The traffic safety measures use a five-year rolling average and are applicable to all public roads regardless of ownership/jurisdiction. The predicted outcome of three performance measures (number of fatalities, fatality rate, and number of serious injuries) are also reported by the MSP OHSP through the National Highway Traffic Safety Administration (NHTSA) Highway Safety Plan; the three targets must be identical in both plans. Michigan MPOs are also important safety partners and are actively involved in the annual target-setting process. Further, MDOT coordinates safety efforts with Michigan local transportation agencies and is a key member of the Governor's Traffic Safety Advisory Council, assisting in the development of the Michigan Strategic Highway Safety Plan. These collaborative efforts are consistent with Michigan's commitment to achieving its [Toward Zero Deaths](#) vision.

2021 Baseline and Target Development

Michigan is committed to a data-informed, strategic approach to improving highway safety. The first step in developing annual safety targets is to establish the five-year rolling average baseline trend. The next step is to consider how exogenous factors and improvement from safety investments influence/impact traffic fatalities and serious injuries. The target-setting coordinating partners have agreed to utilize a fatality prediction model developed and maintained by the University of Michigan Transportation Research Institute (UMTRI). The UMTRI model predicted 886 fatalities in calendar year 2020 and 967 in 2021. While serious injuries have fluctuated over the past several years, the linear relationship of the ratio of serious injuries and fatalities is still evident; therefore, a linear model using the last eight years of data was used, which projected a flattening pattern. The model predicted 4,960 serious injuries in 2020 and 5,409 in 2021. To develop fatality and serious injury rates, vehicle miles traveled (VMT) values have been predicted for 2019, 2020 and 2021. VMT estimates for 2020 were reduced due to COVID-19. Using the fatal and serious injury values, along with the respective predicted VMT, the forecasted fatality rates are 1.040 for 2020 and 0.945 for 2021, and annual serious injury rates of 5.822 for 2020 and 5.287 for 2021. Results from the UMTRI model (the fatality and serious injury relationship) were also used to generate nonmotorized predicted values of 714 for 2020 and 799 for 2021.

4.0 NATIONAL HIGHWAY SYSTEM PERFORMANCE

The following summarizes NHS performance measures for the four-year performance period wherein the baseline condition was reported in 2018. Refer to the individual sections for further details of each measure, metrics, thresholds, and other target-setting and reporting criteria. The four-year actual condition for the current performance period will be reported to FHWA through the required data submittals and summarized in a full-performance report to FHWA on Oct. 1, 2022.

Performance Measure	Baseline Performance	Two-Year Predicted Performance (Target)	Two-Year Actual Performance	Two-Year Progress Achieved	Four-Year Predicted Performance (Target)
NHS Infrastructure Condition					
4.1 Percentage of NHS bridges in good condition, weighted by deck area	32.7%	27.0%	26.5%	No	23.0%
4.1 Percentage of NHS bridges in poor condition, weighted by deck area	9.8%	7.0%	6.2%	Yes	8.0%
4.2 Percentage of interstate pavements in good condition	N/A	N/A	63.6% <i>(baseline)</i>	N/A	47.8%
4.2 Percentage of interstate pavements in poor condition	N/A	N/A	4.6% <i>(baseline)</i>	N/A	10.0%
4.2 Percentage of non-interstate NHS pavements in good condition	49.2%	46.7%	48.5%	Yes	43.7%
4.2 Percentage of non-interstate NHS pavements in poor condition	18.9%	21.6%	19.1%	Yes	24.6%
System Reliability Performance (Congestion)					
4.3 Level of Travel Time Reliability (LOTTR): Percent of reliable person-miles traveled on the interstate	85.2%	75.0%	88.6%	Yes	75.0%
4.3 Level of Travel Time Reliability (LOTTR): Percent of reliable person-miles traveled on the non-interstate NHS	N/A	N/A	88.5% <i>(baseline)</i>	N/A	70.0%
National Freight Movement Performance					
4.3 Truck Travel Time Reliability (TTTR) Index	1.38	1.75	1.44	Yes	1.75

Performance Measure	Baseline Performance	Two-Year Predicted Performance (Target)	Two-Year Actual Performance	Two-Year Progress Achieved	Four-Year Predicted Performance (Target)
Traffic Congestion Mitigation Performance					
4.4 Annual hours of peak hour excessive delay (PHED) per capita in the Detroit urbanized area (unified MDOT-Southeast Michigan Council of Governments [SEMCOG] target)	N/A	N/A	11.5 hours <i>(baseline)</i>	N/A	22.0 hours
4.4 Percent of non-single occupancy vehicle (non-SOV) travel in the Detroit urbanized area (unified MDOT-SEMCOG target)	16.0%	14.4%	16.1%	Yes	14.4%
On-Road Mobile Source Emissions Reduction Performance (kg/day)					
4.5 Fine Particulate Matter less than 2.5 microns (PM _{2.5})	653.357	417.410	1104.080	Yes	834.820
4.5 Ozone, Nitrogen Oxides (NOx)	N/A	N/A	12,412.100 <i>(Baseline)</i>	N/A	15,856.100
4.5 Carbon Monoxide (CO)	87,665.109	N/A	N/A	N/A	N/A
4.5 Ozone, Volatile Organic Compounds (VOC)	N/A	N/A	N/A	N/A	N/A
4.5 Particulate Matter less than 10 microns (PM ₁₀)	N/A	N/A	N/A	N/A	N/A

Table 2 - NHS Target Summary

4.1 Bridge Condition

Performance Measure 2018-2021 Predicted Condition (Target)	2018 Baseline Condition	Two-Year Predicted Condition (Target)	Two-Year Actual Condition	Two-Year Progress Achieved	Four-Year Predicted Condition (Target)	Four-Year Actual Condition
Percentage of NHS bridges in good condition (Percent of NHS bridge deck square foot classified in good condition to the total NHS bridge deck square footage)	32.7%	27.0%	26.5%	No	23.0% (adjusted from 26.0%)	Four-year actual condition will be reported in October 2022
Percentage of NHS bridges in poor condition (Percent of NHS bridge deck square foot classified in poor condition to the total NHS bridge deck square footage)	9.8%	7.0%	6.2%	Yes	8.0% (adjusted from 7.0%)	

Table 3 - NHS Bridge Targets

Federal Program(s)	NHPP	Performance Period	Jan. 1, 2018 - Dec. 31, 2021
Primary CFR	23 CFR 490, Subpart D 23 CFR 515 (TAMP)	Target(s) Established	Oct. 1, 2018
Applicability	NHS Bridges	Target(s) Adjusted	Yes, both good and poor four-year targets
Target Setting Coordination	MDOT Michigan MPOs	Data	National Bridge Inventory (NBI)
National Goal	Infrastructure Condition		
MM2045 Goal(s)	Network Condition Mobility Economic and Stewardship Partnership	Related Planning Documents	STIP MDOT 5YTP MDOT TAMP (2019)

Overview

In support of the national goal to maintain the highway infrastructure asset system in a state of good repair, FHWA has developed NHS bridge condition measures to assess the performance of the NHPP. The National Bridge Inspection Standards (NBIS) defines a bridge as a structure carrying traffic with a span greater than 20 feet and requires that all bridges be inspected every two years to monitor and report condition ratings. While the NBIS applies to all publicly owned highway bridges, the required NHPP TAMP targets are only applied to those bridges carrying routes on the NHS, including bridge on and off ramps connected to the NHS, regardless of ownership. The FHWA requires for each NHS bridge that the performance measures be based on the minimum values for substructure, superstructure and deck, or culvert as shown in Figure 3.

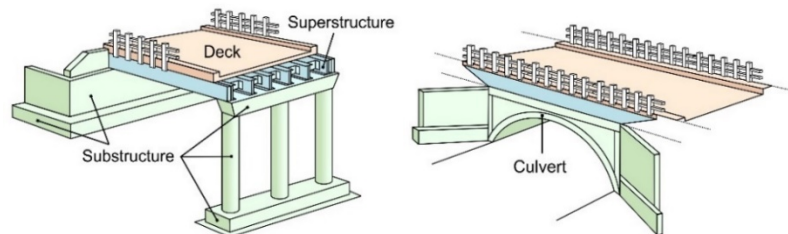


Figure 3 - Anatomy of a Bridge or Culvert

Condition ratings are based on a 0-9 scale and assigned for each culvert, or the deck, superstructure and substructure of each bridge as shown in Figure 4, NBI Condition Ratings. These ratings are recorded in the NBI database. According to federal standards, ratings of 7 and above are in Good Condition, 4 and less are in Poor Condition, and the remainder are in Fair Condition. Condition ratings are an important tool for transportation asset management as they are used to identify preventive maintenance needs and to determine rehabilitation and replacement projects.

NBI Condition Ratings		
7-9	Good Condition	Routine maintenance candidate.
5-6	Fair Condition	Preventative maintenance and minor rehabilitation candidate.
4	Poor Condition	Poor Major rehabilitation or replacement candidate.
2-3		Serious or Critical Emergency repair or high priority major rehabilitation or replacement candidate. Unless closely monitored it may be necessary to close until corrective action can be taken.
0-1		Imminent Failure or Failed Major rehabilitation or replacement candidate. Bridge is closed to traffic.

Figure 4 - NBI Condition Ratings

While the NHPP solely focuses on NHS bridges, respective transportation agencies must manage their entire bridge network. The 2019 certified TAMP reported a total of 2,963 NHS bridges, or approximately 36.9 million square feet of deck area.

Ownership	MI NHS Bridge Count	MI NHS Deck Area (square feet)	Total MI Bridge Count	Total MI Deck Area (square feet)
MDOT	2,730	32,648,914	4,484	48,770,043
Michigan Bridge Authorities	8	1,998,475	8	1,998,475
Local Agencies	225	2,334,872	6,619	17,341,341

Baseline and Target Development

In 2018, MDOT, in collaboration with Michigan MPOs, used bridge deterioration modeling and analysis of constrained programmed investment to predict the percentage of NHS bridge deck in good, fair, and poor condition. The data-informed prediction indicated the percentage of deck area in good condition would decline, the percentage of deck area in fair condition would increase, and the percentage of deck area in poor condition would decrease during the 2018-2021 performance period. These predictions reflected the short-term expected conditions as MDOT and local agencies continue to implement long-term strategies, given fiscal constraints and competing investment needs. To account for uncertainty, the predicted deck area in good condition was conservatively reduced by an additional 1 percent, and the amount of deck area in poor condition was increased by an additional 1 percent. The 1 percent adjustment for uncertainty reflects about 30 average size structures.

Mid-Performance Period Evaluation and Adjustment

Using bridge condition reported to NBI for 2019, Michigan achieved significant progress for the two-year predicted poor condition but did not achieve significant progress for the two-year predicted good condition. The two-year 6.2 percent of NHS bridges in poor condition outperformed both the baseline condition of 9.8 percent poor and the two-year predicted condition of 7 percent. The two-year 26.5 percent of NHS bridges in good condition reflects the anticipated decline from the baseline of 32.7 percent good, but also fell short of the 27 percent good target by 0.5 percentage points. When NHS targets were developed in 2018, 8.8 percent of NHS deck area was predicted to decline from good to fair condition at the two-year point, and 2.3 percent was expected to improve to good condition through investment. The actual decline of NHS deck square footage from good condition to fair condition was slightly larger than predicted and the 0.5 percentage point difference is 260,000 square feet of deck area.

During the two-year period (Jan. 1, 2018 - Dec. 31, 2019), four large bridges with a deck area totaling 1.4 million square feet, or just less than 4 percent of Michigan's total NHS deck area, deteriorated from good to fair condition faster than predicted. Two of the four bridges are segmental concrete box girders, adding complexity to projecting a one-point condition change in a two-year interval with only a few structures of this type in Michigan. The remaining two bridges were found to have alkali-silica reactivity substructure damage, resulting in accelerated deterioration. If the four large deck area structures had remained in good condition, the actual condition would have been 30.1 percent, an improvement over the predicted condition. When measured by count of NHS bridges rather than deck area, the total number of bridges in good condition increased during this two-year period. This demonstrates how a small subset of large NHS bridges, in this case four bridges, has an outweighed impact when exclusively evaluating the sum of NHS bridge performance by deck area.

As a result, the target-setting analysis was repeated in 2020 to account for the four large deck area NHS bridges that deteriorated from good to fair to bring the four-year good condition predictions in alignment with current condition. There is also a population of NHS bridges exceeding the expected "fair condition" lifecycle. To account for uncertainty, the amount of NHS deck area projected to be in good condition at the end of this performance period was conservatively reduced by one percentage point, and the amount of NHS deck area in poor condition was increased by 1 percent.

4.2 Pavement Condition

Performance Measure	Baseline Condition	Two-Year Predicted Condition (Target)	Two-Year Actual Condition	Two-Year Progress Achieved	Four-Year Predicted Condition	Four-Year Actual Condition
Percentage of interstate pavements in good condition ¹	N/A	N/A	63.6% <i>(baseline)</i>	N/A	47.8%	Four-year actual condition will be reported in October 2022
Percentage of interstate pavements in poor condition ¹	N/A	N/A	4.6% <i>(baseline)</i>	N/A	10.0%	
Percentage of non-interstate NHS pavements in good condition ²	49.2%	46.7%	48.5%	Yes	43.7%	
Percentage of non-interstate NHS pavements in poor condition ²	18.9%	21.6%	19.1%	Yes	24.6%	

Table 4 - NHS Pavement Targets

¹ FHWA identified an interstate pavement "phase-in" period for the first (2018-2021) performance period requiring four-year targets only. The mid-performance period actual condition is considered the baseline for the purpose of assessing significant progress of the four-year targets.

² The non-interstate NHS baseline and two- and four-year targets were developed considering the International Roughness Index (IRI) metric only, as a first performance period only transition allowance.

Federal Program(s)	NHPP	Performance Period	Jan. 1, 2018 - Dec. 31, 2021
Primary CFR	23 CFR 490, Subpart C 23 CFR 515 (TAMP)	Target(s) Established	Oct. 1, 2018
Applicability	NHS Pavements	Target(s) Adjusted	No targets were adjusted
Target Setting Coordination	MDOT Michigan MPOs	Data	HPMS HPMS Field Manual (for reference)
National Goal	Infrastructure Condition		
MM2045 Goal(s)	Network Condition Mobility Economic and Stewardship Partnership	Related Planning Documents	STIP MDOT 5YTP MDOT TAMP (2019)

Overview

In support of the national goal to maintain the highway infrastructure asset system in a state of good repair, FHWA has developed interstate and non-interstate NHS condition measures to assess the performance of the NHPP. The four metrics to be used are International Roughness Index (IRI), Cracking Percent, and Rutting (asphalt pavement) or Faulting (jointed concrete pavement) as reported to the FHWA HPMS annually as shown in Figure 5. Cracking percent and IRI are to be reported for all pavement types. Rutting is reported for all asphalt pavements, and faulting is reported for all jointed concrete pavements.

FHWA developed thresholds for each pavement metric for the purpose of classifying NHS pavement into good, fair, or poor condition (Figure 6). Pavement condition is measured in segments that are a maximum length of one-tenth of a mile. Using the defined thresholds, if all three metrics on a segment are “good,” that pavement segment is rated in good condition. If two or more metrics are “poor,” it is considered to be in poor condition. All other combinations result in a “fair” pavement condition.

Pavement Condition Thresholds		Metric Value Range		
Metric	Surface Type	Good	Fair	Poor
International Roughness Index (IRI) (inches/mile)	Asphalt, Jointed	<95	95 - 170	>170
	Concrete, CRCP ¹			
Cracking Percent (% of total area)	Asphalt	<5%	5 - 20%	>20%
	Jointed Concrete	<5%	5 - 15%	>15%
	CRCP ¹	<5%	5 - 10%	>10%
Rutting (inches)	Asphalt	<0.20	0.20 - 0.40	>0.40
Faulting (inches)	Jointed Concrete	<0.10	0.10 - 0.15	>0.15

¹ Continuous reinforced concrete pavements

Figure 5 - Pavement Condition Thresholds

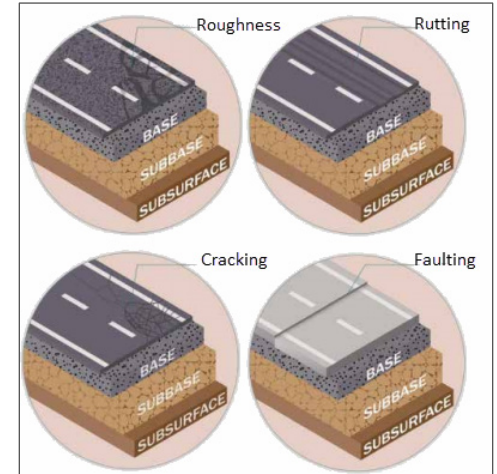


Figure 6 - Pavement Metrics

While the NHPP solely focuses on NHS pavement condition, transportation agencies must manage their entire pavement network. The 2019 certified TAMP reported 18,159 interstate (NHS) and 13,559 non-interstate NHS lane miles equaling just 8 percent of all Michigan lane miles. As noted below, 19 percent of the non-interstate NHS in Michigan is under the jurisdiction of local government agencies.

Ownership	Interstate (NHS) Lane Miles	Non-Interstate NHS Lane Miles	Total MI Lane Miles
MDOT	18,159	9,291	27,450
Local Agencies	0	4,268	225,275

MDOT continues to make progress in the further implementation of the federal Pavement Condition Measure (PCM) through the development of advanced deterioration models, improved pavement management software, and expansion of the measure’s representation in the project selection process. These advancements will improve the accuracy of the two- and four-year predicted conditions, allow the department to utilize the measure to make more well-informed investment decisions, and create the capacity for long-term goal achievement.

Baseline and Target Development

For the 2018-2021 performance period only, the non-interstate NHS condition targets were developed based solely on IRI, as allowed by regulation. In future performance periods, the full PCM will be used to develop non-interstate NHS performance targets. In addition, two-year interstate targets are not required for this first performance period. The mid-performance period (two-year) actual condition will be identified as the baseline for the purpose of assessing significant progress of the four-year interstate targets.

In 2018, MDOT in collaboration with Michigan MPOs, evaluated 10 years of historical pavement condition metric data, including but not limited to IRI, Remaining Service Life (RSL), and the Pavement Surface Evaluation and Rating (PASER). The Road Quality Forecasting System (RQFS) and the Pavement Condition Forecasting System (PCFS) were also used in the evaluation process. While neither the noted historical pavement metrics nor the pavement modeling tools fully align with the NHPP TAMP pavement metrics, they were beneficial in the development of 2018-2021 predicted conditions. Taking into account the 2018 baseline condition, historical pavement trends and investment, and constrained pavement investment for the performance period, the predicted conditions reflect an anticipated decline in pavement condition. The predicted condition (targets) was then conservatively adjusted for uncertainty, including a build-up of lane miles nearing the point of decline from good to fair condition. These predictions reflected the short-term expected conditions as MDOT and local agencies continue to implement long-term strategies given fiscal constraints and competing investment needs.

Mid-Performance Period Evaluation and Adjustment

Using 2019 HPMS pavement data (reported in 2020), Michigan achieved significant progress for the two-year non-interstate NHS pavement condition targets. The two-year performance outcome for non-interstate NHS of 48.5 percent good condition was an expected decline from the 2018 baseline condition but outperformed the two-year predicted condition of 46.7 percent good. The two-year performance for non-interstate NHS of 19.1 percent poor was an expected decline from the 2018 baseline but outperformed the two-year predicted condition of 21.6 percent poor. In accordance with federal regulation, the 2019 interstate pavement condition will serve as the baseline condition for the 2018-2021 performance period and will be used to assess progress for the interstate pavement four-year targets established in 2018.

In coordination with Michigan MPOs, MDOT evaluated the established four-year interstate and non-interstate predicted conditions against forecast revenues, planned projects, current condition, forecasted condition, and an assessment of potential risks. It was determined the four-year predicted condition for each measure remained moderately conservative with a reasonable probability of achieving significant progress and no adjustment was needed.

4.3 System Reliability Performance

Performance Measure	Baseline Performance	Two-Year Predicted Performance (Target)	Two-Year Actual Performance	Two-Year Progress Achieved	Four-Year Predicted Performance	Four-Year Actual Performance
LOTTR: Percent of reliable person-miles traveled on the Interstate	85.2%	75.0%	88.6%	Yes	75.0%	Four-year actual performance will be reported in October 2022
LOTTR: Percent of reliable person-miles traveled on the non-interstate NHS ¹	N/A	N/A	88.5% (baseline)	N/A	70.0%	
TTR Index (freight reliability) <i>Table 5 - System Reliability Targets</i>	1.38	1.75	1.44	Yes	1.75	

¹ FHWA identified a "phase-in" period for the first (2018-2021) performance period requiring four-year targets only. The mid-performance period actual condition is considered the baseline for the purpose of assessing significant progress of the four-year targets.

Federal Program(s)	NHPP NHFP	Performance Period	Jan. 1, 2018 - Dec. 31, 2021
Primary CFR	23 CFR 490, Subpart E (LOTTR) 23 CFR 490, Subpart F (TTR, freight)	Target(s) Established	Oct. 1, 2018
Applicability	NHS	Target(s) Adjusted	No targets were adjusted
Target Setting Coordination	MDOT Michigan MPOs	Data	National Performance Management Research Data Set (NPMRDS) HPMS Vehicle Occupancy Factor (VOF)
National Goal	System Reliability		
MM2045 Goal(s)	Mobility Quality of Life Economic and Stewardship Partnership	Related Planning Documents	STIP MDOT 5YTP

Overview

In support of the national goals to improve the efficiency of the NHS surface transportation system and to improve the national freight network, strengthening the ability of communities to access national and international trade markets, and in support of regional economic development, FHWA has developed reliability measures to assess the performance of the NHPP and NHFP. The Level of Travel Time Reliability (LOTTR) is a measurement of NHS performance regardless of ownership, and Truck Travel Time Reliability (TTTR), also known as freight reliability, is measured on the interstate only. The reliability measures are a composite index of reliability metrics as shown in Figure 7. Travel time reliability measures how consistent the travel time is from one point to another, from one day to the next. Travel time probe data is examined to see how reliability varies over time. Travel time for each discrete NHS segment is placed in order from the shortest time (fastest speed), which is the 1st percentile speed, to the longest time (slowest speed), which is the 100th percentile speed. Three performance measures are examined to compare the “normal” travel time (which is defined as the 50th percentile travel time) on a segment, with either the 80th percentile (person-miles) or the 95th percentile (truck) travel time to determine the overall reliability. If the difference between the normal travel time and the longer travel time (80th or 95th percentile time) is greater than 50 percent, then the segment is unreliable.

Travel time reliability is not the same as congestion. Reliability provides a consistent travel time to a destination whether or not the route is congested. If a route is regularly congested, travelers can plan accordingly. However, if a route is unreliable, it is unknown how long it will take to arrive at the intended destination. Road segments can be both congested and reliable (e.g., reliably congested), whereas other segments can be congested but unreliable.

Probe data used to calculate each measure is made available by FHWA for use by DOTs and MPOs. The vehicle probe data set is called the NPMRDS. The data is processed through an analytical software tool known as Regional Integrated Transportation Information System (RITIS).

LOTTR

- Two- and Four-Year Targets¹
- Interstate and Non-Interstate NHS
- Four Time Periods
- 15-Minute Travel Intervals
- Longer Travel Time: 80th Percentile
- Normal Travel Time: 50th Percentile
- Threshold: Reliability is <1.50

Factors Applied: Vehicle volumes (HPMS) and VOF (provided by FHWA)

¹ LOTTR for the non-interstate NHS has been phased in and does not require a two-year target for the first (2018-2021) performance period.

TTTR

- Two- and Four-Year Targets
- Interstate
- Five Time Periods
- 15-Minute Travel Intervals
- Longer Travel Time: 95th Percentile
- Normal Travel Time: 50th Percentile
- Threshold: None

Factors Applied: No additional factors are applied

Figure 7 - Composite Index for Reliability Measures

Baseline and Target Development

In 2018, MDOT, in collaboration with Michigan MPOs, evaluated current conditions and potential influencing factors to establish the LOTTR and TTTR (freight) reliability baseline, two- and four-year Interstate targets, and the four-year non-interstate NHS target. Influencing factors that can cause volatility are not limited to weather events, construction, economic climate, and overall traffic volumes. At the time of evaluation and target setting, the probe data set (NPMRDS) was only available for the prior 17 months. This was insufficient to identify trends and perform extensive analysis. In addition, there were material segment data gaps with less than 60 percent of the 15-minute time periods with probe readings between the hours of 6 a.m. and 8 p.m. on the non-interstate NHS. Interstate probe data was more complete, with approximately 90 percent coverage for travel time reliability. However, there were also material fluctuations in segment data from one month to the next across the entire NHS. As NHS probe data coverage continues to expand and improve in quality, the ability to analyze and predict future performance will subsequently improve. As a result, conservative performance predictions (targets) were established, reflecting the best information available.

Mid-Performance Period Evaluation and Adjustment

Michigan achieved significant progress for the two-year interstate LOTTR and TTTR targets. The two-year actual LOTTR (person-miles) performance was 88.6 percent reliable, an improvement over the baseline condition of 85.2 percent, and outperformed the two-year target of 75 percent. The two-year actual TTTR (freight) performance index was 1.44, a decline from the baseline of 1.38, but outperformed the two-year target of 1.75. The two-year non-interstate NHS LOTTR person-miles actual performance will serve as the baseline condition for assessing the four-year target.

In coordination with Michigan MPOs, MDOT evaluated the current performance for each reliability measure, noting performance had slightly improved from the 2018 evaluation. It was determined the four-year predicted performance for each measure remained moderately conservative and no adjustment was needed for the established four-year targets.

4.4 Traffic Congestion Performance

Performance Measure	Baseline Performance	Two-Year Predicted Performance (Target)	Two-Year Actual Performance	Two-Year Progress Achieved	Four-Year Predicted Performance	Four-Year Actual Performance
Annual hours of PHED per capita (unified MDOT-SEMCOG target for Detroit urbanized area) ¹	N/A	N/A	11.5 hours <i>(baseline)</i>	N/A	22.0 hours	Four-year Actual Performance will be reported in October 2022
Percent of non-single occupancy vehicle (non-SOV) travel (unified MDOT-SEMCOG target for Detroit urbanized area)	16.0%	14.4%	16.1%	Yes	14.4%	

Table 6 - Traffic Congestion Targets

¹ FHWA identified a "phase-in" period for the first (2018-2021) performance period requiring four-year targets only. The mid-performance period actual performance is considered the baseline for the purpose of assessing significant progress of the four-year target.

Federal Program(s)	CMAQ	Performance Period	Jan. 1, 2018 - Dec. 31, 2021
Primary CFR	23 CFR 490, Subpart G	Target(s) Established	Oct. 1, 2018
Applicability	NHS, Urbanized Area (see overview for additional applicability criteria)	Target(s) Adjusted	No targets were adjusted
Target Setting Coordination	MDOT SEMCOG	Data	NPMRDS HPMS VOF American Community Survey CMAQ Public Access System
National Goal	Congestion Reduction		
MM2045 Goal(s)	Mobility Quality of Life Economic and Stewardship Partnership	Related Planning Documents	STIP MDOT 5YTP

Overview

In support of the national goal to achieve a significant reduction in congestion on the NHS, FHWA has developed congestion reduction measures to assess the performance of the CMAQ program. For the 2018-2021 performance period, the congestion measures are required for state DOTs and MPOs with NHS that cross any part of an urbanized area boundary with a population more than 1 million and that urbanized area contains any part of a nonattainment or maintenance area for any one of the criteria pollutants: ozone (O₃), carbon monoxide (CO), or particulate matter (PM₁₀ and PM_{2.5}). The population threshold decreases to 200,000 for subsequent performance periods. For each urbanized area, only one two-year and one four-year target shall be established (single unified state and MPO target), excluding the phase-in of the PHED measure that does not require a two-year target for the 2018-2021 performance period.

Population thresholds are determined by the U.S. census while NHS designations and urbanized areas are determined from HPMS, as stated one year before the baseline performance period report is due, and remain in effect for the entire performance period, even if these statuses change. The designation of nonattainment or maintenance area is determined based on the effective date of the [U.S. Environmental Protection Agency \(EPA\) designation](#) under National Ambient Air Quality Standards (NAAQS) effective one year before the baseline performance report is due to FHWA. The nonattainment and maintenance area applicability shall be nullified if on the date one year before the mid-performance period progress report is due the area is no longer in nonattainment or maintenance for a criterial pollutant.

The PHED measure is to promote investment toward reducing delay in travel time caused by traffic congestion on the NHS. PHED is calculated by determining the difference between the actual time it takes to get through a travel segment and the baseline time expected using a composite of data. The RITIS tool is used to identify where travel time speed is 20 mph or less, or 60 percent of the posted speed limit or less, whichever is greater, during 15-minute intervals per vehicle. The regulation applies to weekdays and prescribes morning peak hours as 6 to 10 a.m.; MDOT and SEMCOG elected the 3 to 7 p.m. option for afternoon peak.

The non-SOV measure is to promote investment across travel modes to provide and encourage mobility options other than driving alone, including traveling by carpool, public transportation, commuter rail, walking, bicycling, and telecommuting. The non-SOV is calculated using the American Community Survey Journey to Work data by deducting the workers who drove to work alone (single occupancy) from total workers.

Baseline and Target Development

In 2018, MDOT and SEMCOG worked collaboratively to evaluate historical data, current performance, and other factors that should be considered for potential influence on future performance. The PHED predicted four-year performance was developed with a 20 percent factor to conservatively address less mature data and unforeseen variables for this complex measure. The non-SOV baseline was reduced by a conservative 10 percent in developing predicted two-year and four-year performance as people are slowly veering toward other modes of commute travel and businesses are providing more opportunity for telework options.

Mid-Performance Period Evaluation and Adjustment

Michigan achieved significant progress for the two-year non-SOV-predicted performance. The two-year actual PHED performance will be used to assess progress for the four-year target. MDOT and SEMCOG jointly evaluated the current performance for each measure noting performance had slightly improved from the 2018 evaluation/baseline. It was determined the four-year predicted performance for each measure remained moderately conservative and no adjustment was needed for the established four-year targets.

4.5 On-Road Mobile Source Emissions Reduction

Performance Measure	Baseline Performance	Two-Year Predicted Performance (Target)	Two-Year Actual Performance	Two-Year Progress Achieved	Four-Year Predicted Performance (Target)	Four-Year Actual Performance
Cumulative Two- and Four-Year Emissions Reduction in kg/day						
Fine Particulate Matter less than 2.5 microns (PM _{2.5})	653.357	417.410	1,104.080	Yes	834.820	Four-year actual performance will be reported in October 2022
Ozone, Nitrogen Oxides (NO _x) ¹	N/A	N/A	12412.100 (Baseline)	N/A	15,856.100	
<i>The following emissions measures are not applicable to Michigan for the 2018-2021 performance period:</i>						
Carbon Monoxide (CO) ²	87,665.109	N/A	N/A	N/A	N/A	
Ozone, Volatile Organic Compounds (VOC)	N/A	N/A	N/A	N/A	N/A	
Particulate Matter less than 10 microns (PM ₁₀)	N/A	N/A	N/A	N/A	N/A	

Table 7 - On-Road Mobile Source Emission Reduction Targets

¹ Due to an EPA classification of NO_x as a significant contributor and precursor to PM_{2.5}, FHWA required establishment of a four-year target using the cumulative 2018-2019 actual performance as the baseline.

² EPA attainment designation in 2019 nullified the requirement for this measure for the performance period.

Federal Program(s)	CMAQ	Performance Period	Oct. 1, 2018 - Sept. 30, 2021
Primary CFR	23 CFR 490, Subpart H	Target(s) Established	Oct. 1, 2018
Applicability	NHS, Urbanized Area (see overview for additional applicability criteria)	Target(s) Adjusted	No targets were adjusted
Target Setting Coordination	MDOT SEMCOG	Data	CMAQ Public Access System
National Goal	Environmental sustainability		
MM2045 Goal(s)	Mobility Quality of Life Economic and Stewardship Partnership	Related Planning Documents	STIP MDOT 5YTP

Overview

In support of the national goal to enhance the performance of the transportation system while also protecting and enhancing the natural environment, FHWA has developed on-road mobile source emissions reduction measures to assess the performance of the CMAQ program. The measure is required for all states and MPOs with projects financed from the CMAQ program for urbanized areas designated as nonattainment or maintenance for NAAQS of fine particulate matter (PM_{2.5}), particulate matter (PM₁₀), carbon monoxide (CO), volatile organic compounds (VOCs), and nitrogen oxides (NO_x). The designation of nonattainment or maintenance area is determined based on the effective date of the [U.S. EPA designation](#) under NAAQS effective one year before the baseline performance report is due to FHWA. The nonattainment and maintenance area applicability shall be nullified if on the date one year before the mid-performance period progress report is due the area is no longer in nonattainment or maintenance for a criterion pollutant.

Baseline and Target Development

The 2017 EPA designation under NAAQS identified counties within the Detroit urbanized area in nonattainment or maintenance for PM_{2.5} and CO. In 2018, MDOT and SEMCOG collaboratively analyzed 2014 through 2017 historical emissions data for PM_{2.5} and CO and considered projects that would be built within the urbanized area in the cumulative four-year period, including those in the first two years. The emissions benefit information was used to develop baseline cumulative two- and four-year mobile emissions targets, and then reduced target performance by 10 percent for unforeseen variables.

Mid-Performance Period Evaluation and Adjustment

Actual 2018-2019 performance for PM_{2.5} was evaluated and found to be better than the baseline and outperformed the two-year target. MDOT and SEMCOG collaboratively determined no adjustment to the four-year PM_{2.5} target was necessary. The EPA determined the counties within the Detroit urbanized area (SEMCOG boundary) had achieved attainment for CO in 2019, nullifying the reporting requirement for the remainder of the 2018-2021 performance period while also noting the two-year target had been achieved. The EPA classified NO_x as a significant contributor and precursor to PM_{2.5}, therefore FHWA required establishment of a four-year target using the cumulative 2018-2019 NO_x actual performance as the baseline.

5.0 METROPOLITAN PLANNING ORGANIZATION COORDINATION

MPOs are to incorporate the full extent of MAP-21/FAST Act MPO requirements, including coordination with state DOTs and respective transit providers, into their performance-based planning and programming processes to contribute toward achievement of the national goals established by Congress. 23 CFR §450.306(d)(4) states, “an MPO shall integrate in the metropolitan transportation planning process, directly or by reference, the goals, objectives, performance measures, and targets described in other state transportation plans and transportation processes, as well as any plans developed under 49 U.S.C. Chapter 53 by providers of public transportation, required as part of a performance-based program.” The regulation lists eight plans that are among those an MPO must integrate into MPO planning processes.

Highway Target-Setting Coordination

The national performance program requires coordination between MDOT and relevant Michigan MPOs in setting state and MPO highway safety, infrastructure condition and system performance program targets to ensure consistency to the maximum extent practicable. For each performance group/measure, MDOT and applicable MPOs discuss federal policy, data analysis and forecasting, exogenous factors, and other matters important to target development, respective annual/biennial review processes, and target adjustment determination. As previously noted, the MSP OHSP and other safety partners are involved in developing annual highway safety targets. CMAQ program measures applicable to urbanized areas meeting specific conditions require unified MDOT-MPO targets. MPOs shall establish targets for each performance measure within 180 days following establishment of the respective state targets with exception to the unified MDOT-MPO CMAQ program targets. For all measures, excluding the unified CMAQ program targets, MPOs shall establish targets by either agreeing to plan and program projects so that they contribute toward accomplishing state DOT targets, or by developing an MPO-specific quantifiable target. MPOs that make this election on a per measure basis can thus elect to support some state DOT targets and elect to develop their own quantifiable target for other measures. All phase-in and transition period allowances for MDOT also pertain to MPOs.

Transit Target-Setting Coordination

To the extent practicable and relevant, MPOs must coordinate the selection of asset management and safety performance targets with transit providers as prescribed by Title 49 U.S.C. 5326 (transit asset management) and 49 U.S.C. 5329 (transit safety) to promote consistency. Once a transit provider has established the initial set of targets, the MPO shall establish initial targets for each respective measure within 180 days. In setting targets, the MPO may elect to adopt transit providers targets, or in regions with multiple transit providers the MPO may elect to develop targets that reflect the needs of the region. Planning agreements will determine the frequency for which subsequent transit targets will be adopted or developed by an MPO for the region, noting the minimum is to revisit the targets with each metropolitan transportation plan (MTP) update (not amendment). It is the responsibility of the respective transit agency and MPO to publish targets in their respective plans and reports.

MPO Highway Target Elections

The traffic safety and national highway system performance measures have been grouped by primary category. Within each category there are two or more measures of condition/performance. On a per measure basis, MPOs can either (1) elect to support state targets (SST) and in doing so agree to plan and program projects to contribute toward accomplishing state targets, or (2) develop quantifiable targets that represent the specific needs of the MPO region (MPR). If an MPO elected to both support state targets and develop MPO regional targets within the same category, both indicators will be shown in the respective program(s). For traffic congestion and emission reduction measures, as applicable, MDOT and the respective MPO must establish a single unified target. The Michigan Transportation Planning Association (MTPA) represents Michigan MPOs and links to each MPO home page can be found on the [MTPA Members](#) site. MPOs should be contacted directly for any questions related to target elections.

MPO	2021 Traffic Safety	2018-2021 Performance Period					
		Bridge Condition	Pavement Condition	System Reliability	Freight Reliability	Traffic Congestion	Emissions Reduction
Battle Creek Area Transportation Study	SST	SST	SST	SST	SST	N/A	N/A
Bay City Area Transportation Study	SST	SST	SST	SST	SST	N/A	N/A
Genesee County Metropolitan Planning Commission	SST	SST	SST	SST	SST	N/A	N/A
Grand Valley Metro Council	SST	SST	SST	SST	SST	N/A	N/A
Kalamazoo Area Transportation Study	SST	SST	SST	SST	SST	N/A	N/A
Macatawa Area Coordinating Council	SST	SST	SST	SST	SST	N/A	N/A
Midland Area Transportation Study	SST	SST	SST	SST	SST	N/A	N/A
Region 2 Planning Commission	SST	SST	SST	SST	SST	N/A	N/A
Saginaw Area Transportation Agency	SST	SST	SST	SST	SST	N/A	N/A
Southeast Michigan Council of Governments	SST	SST	SST	SST	SST	Unified	Unified
Southwest Michigan Planning Commission	SST	SST	SST	SST	SST	N/A	N/A
St. Clair County Transportation Study	SST	SST	SST	SST	SST	N/A	N/A
Tri-County Regional Planning Commission	SST	SST	SST	SST	SST	N/A	N/A
Washtenaw Area Transportation Study	SST	SST	SST	SST	SST	N/A	N/A
West Michigan Shoreline Regional Development Commission	SST	SST	SST	SST	SST	N/A	N/A

Table 8 - MPO Highway Targets

SST: Support State Targets

MPR: MPO Regional Targets

Unified: Single Unified MDOT-MPO Target

6.0 TRANSIT ASSET MANAGEMENT AND SAFETY PERFORMANCE

Currently, there are 82 transportation agencies serving Michigan residences, including 21 urbanized (Tier I) transit organizations and 62 rural (Tier II) transit organizations. There are also four ferry boat service agencies in Michigan. By Federal Transit Administration (FTA) definition, Tier I public providers are those that own, operate, or manage either (1) 101 vehicles in revenue service during peak regular service across all fixed routes or in any one fixed route, or (2) rail transit. Tier II transit agencies are those who own, operate, or manage (1) 100 or fewer vehicles in revenue service during peak regular service, or (2) are subrecipients of the 5310 and 5311 rural area programs, or (3) are a Native American tribe. It should be noted that MDOT does not own, operate, or manage any public transit. Refer to [Michigan public transit providers](#) for additional information for each Tier I and II public transit provider, and ferry boat operators.

Tier I and Tier II plans and targets discussed in this section reflect the connection between constrained investment to available funds for the time period established by FTA. This is different than the long-term agency goals to be achieved over many years through implementation of prudent long-term investment strategies. As with the traffic safety and NHS programs, the greatest challenge is insufficient sustained funding. FTA has not established and does not impose penalties for not meeting performance targets set by transit providers.

6.1 Transit Asset Management Plan and State of Good Repair Targets

The transit asset management (TAM) plan regulation applies to all recipients and sub-recipients of federal financial assistance under 49 U.S.C. Chapter 53. For more detailed information on the complex plan development and target setting requirements, the FTA has provided a [Transit Asset Management](#) reference site, or the regulation can be found in [49 CFR §625.25](#). For performance measures and targets, FTA uses useful life benchmark (ULB) defined as, “The expected lifecycle of a capital asset for a particular transit provider’s operating environment, or the acceptable period of use in service for a particular transit provider’s operating environment” as the basis of measurement.

Tier I providers are required to develop an agency specific TAM plan and state of good repair (SGR) targets for required transit measures. Tier II transit agencies may elect to develop their own TAM plan or participate in a group plan. The MDOT Office of Passenger Transportation serves as the plan sponsor responsible for coordinating the development of the Tier II group TAM plan. The group plan communicates the statewide approach to improve asset management policies, practices, and investment strategies. In coordination with each asset management plan, agencies must also establish annual SGR performance targets for a set of performance measures established by FTA. Those who are participating in the Tier II group plan agree to a single unified target for each required measure, updated annually through collaborative work between MDOT (sponsor) and the respective Tier II agencies. The 2021 Tier II group plan performance targets are listed in Table 9 and Tier I 2020 targets are listed in Table 10. The targets are developed annually and reported to FTA through the National Transit Database (NTD). The targets are also shared with the MPO(s) by transit agencies operating within the respective MPO boundary to be incorporated into the MPO performance planning policies and practices, and for setting MPO targets.

If interested in a Tier I TAM plan or specific performance measure targets, the Tier I provider should be contacted directly. MDOT serves as a point of contact for Tier II Group TAM plan and group plan targets.

Transit Tier II State of Good Repair 2021 Group Plan Targets			
Performance Measure	Asset Category	Current Condition	2021 Target
Percentage of revenue vehicles exceeding ULB	Automobiles and Sport Utility Vehicles (SUV)	17% past ULB	Not more than 10% will exceed ULB of 7 years
	Vans	19% past ULB	Not more than 10% will exceed ULB of 7 years
	Cutaway	6% past ULB	Not more than 10% will exceed ULB of 10 years
	Bus, Medium Duty	13% past ULB	Not more than 15% will exceed ULB of 10 years
	Bus, Heavy Duty and Large	5% past ULB	Not more than 15% will exceed ULB of 14 years
	Ferry Boat	20% past ULB	Not more than 40% will exceed ULB of 42 years
Percentage of non-revenue service vehicles exceeding ULB	Service vehicles	62% past ULB	50% may exceed ULB of 7 years
	Administrative vehicles	44% past ULB	100% may exceed ULB of 7 years
Percentage of equipment exceeding ULB	Equipment more than \$50,000	29% past ULB	Not more than 50% will exceed ULB (varies)
Percentage of facilities rated 3.0 on the FTA Transportation Economic Requirements Model (TERM) scale	Administrative and Maintenance Facilities	3% past ULB	Not more than 5% will exceed ULB

Table 9 - Tier II Transit Agencies (Group Plan) State of Good Repair Targets

The following Michigan Tier I transit provider targets were extracted from the NTD [2019 Annual Database Performance Measure Targets](#). Tier I transit agencies should be contacted directly for any questions related to target elections.

Transit Tier I (Urban) Providers 2020 State of Good Repair Targets Percent of asset inventory that has met or exceeded its useful life benchmark (ULB)														
Agency	Percentage of Facilities Rated 3.0 or Less the FTA TERM Scale		Percentage of Track Segments with Performance Restrictions	Percentage of Non-Revenue Service Vehicles, and Equipment >\$50K, exceeding ULB		Percentage of Revenue Vehicles Exceeding ULB								
	Admin/Maintenance Facilities	Passenger/Parking Facilities	Monorail/Automated Guideway	Automobile	Trucks/Rubber Tire Vehicles	Articulated Bus	Automated Guideway Vehicle	Automobile	Bus	Cutaway	Minivan	Over-the-road Bus	Sports Utility Vehicle	Van
40057 Jackson Transit Authority					13%				55%	2%				
50029 Bay Transit Authority (Bay County)					2%				23%					
50030 City Battle Creek	5%	1%		33%	5%			5%	43%					
50031 Metro SMART				1%	15%			15%	2%	29%				35%
50032 Mass Authority (Flint)				57%	3%				2%	1%		42%		
50033 Interurban Transit (Grand Rapids)	2%			1%	84%				1%	1%	1%		1%	
50035 Central County Authority (Kalamazoo)				5%	13%				2%					12%
50036 Capital Area Authority (Lansing)				2%	6%	5%			28%	16%	19%			
50037 County of Muskegon					29%									
50038 City of Niles					1%					29%				
50039 Saginaw Transit Regional Service				5%	75%				5%	25%	5%	1%		1%
50040 Ann Arbor Transportation Authority														
50119 City of Detroit (Detroit DOT)	33%				7%				9%					
50141 Detroit Transportation Corporation			5%											
50148 Blue Water Transportation Commission					2%				2%	2%				
50180 Livingston County Board of Commissioners														
50184 Macatawa Area Express Authority (Holland)				1%										
50196 Harbor Transit Multi Transportation System				1%						23%	1%			
50208 Midland County Board of Commissioners										45%				
60026 City of Monroe (Monroe County)				33%										
50132 Twin Cities Area Transportation Authority (Benton Harbor)														

Table 10 - Tier I Transit Agency State of Good Repair Targets

6.2 Public Transportation Agency Safety Plan and Safety Targets

In light of the extraordinary challenges presented by the COVID-19 public health emergency, FTA extended the deadline for the Public Transportation Agency Safety Plan (PTASP) certification until July 21, 2021. Transit safety targets will be included in future updates of this report.

The PTASP requires recipients and subrecipients of financial assistance under the Urbanized Area Formula Program and rail transit agencies subject to FTA State Safety Oversight Program to develop a proactive, risk-based Agency Safety Plan. However, FTA has deferred applicability for operators that only receive funds through the 5310 Enhanced Mobility of Seniors and Individuals with Disabilities Program, or the 5311 Rural Area Formula Program. The plan must address agency strategies for minimizing the exposure of the public, personnel, and property to unsafe conditions, and include safety performance targets for a group of measures developed by the FTA, as noted below. Tier II agencies have the option of developing their own safety plan or they can elect to participate in the development of a group plan. Michigan Tier II agencies applicable to this policy requirement have elected to develop their own Agency Safety Plan.

The annual transit safety performance measures for which targets are to be developed, are as follows:

- Total number of fatalities reported to NTD, by mode
- Rate of fatalities per total vehicle revenue miles (VRM), by mode
- Total number of injuries reported to NTD, by mode
- Rate of injuries per total VRM, by mode
- Total number of safety events reported to NTD, by mode
- Rate of safety events per total VRM, by mode
- Mean distance between major mechanical failures, by mode