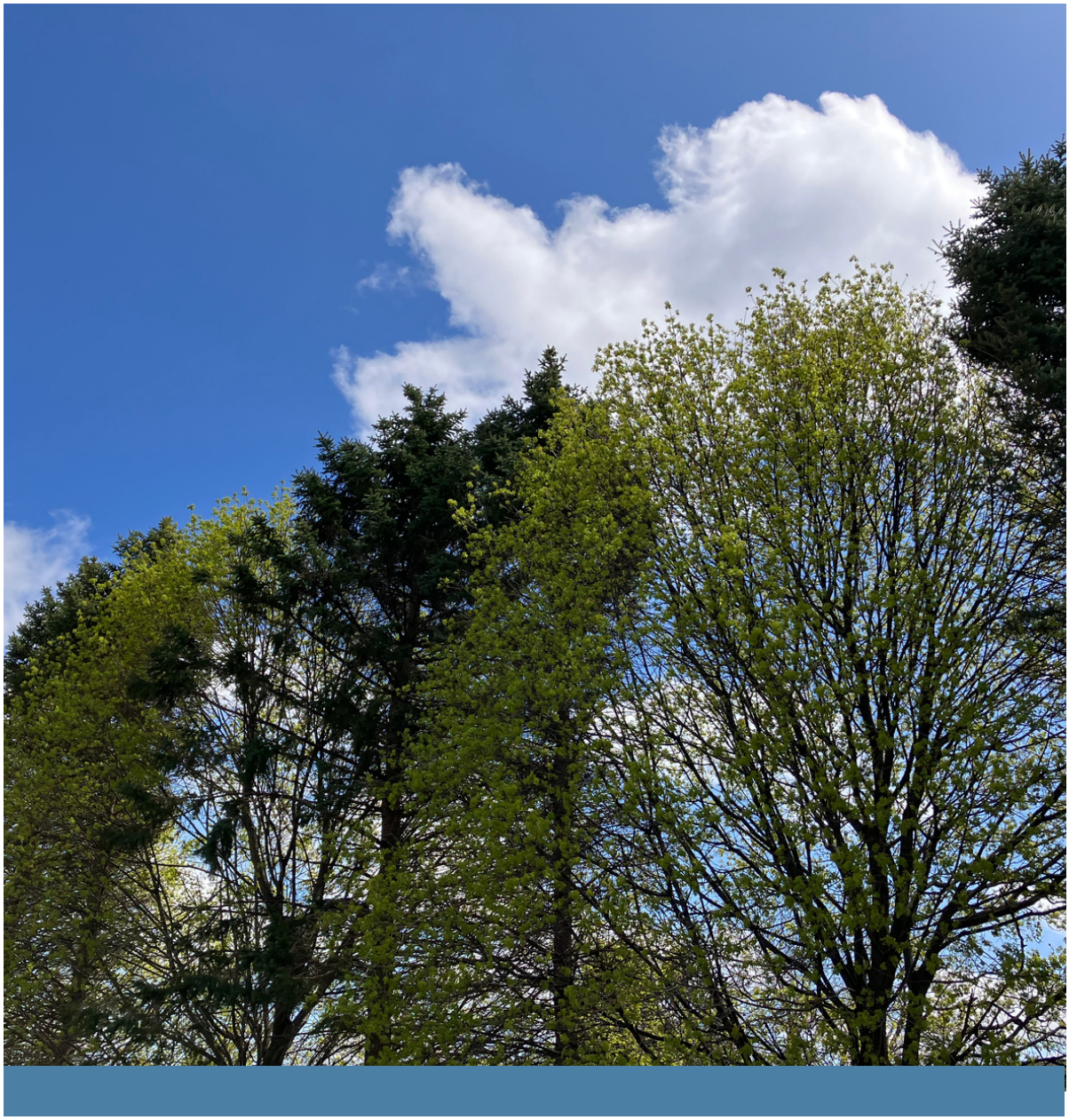
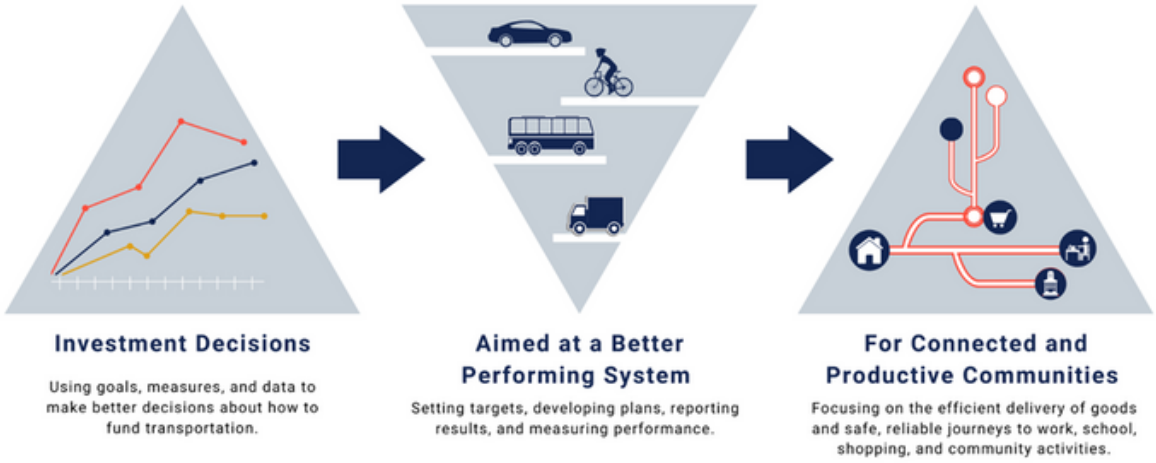


CHAPTER NINE

Performance Measures

PERFORMANCE-BASED PLANNING

Performance-based planning and programming have become a focus in the transportation community as a way to ensure that resources are used effectively and transparently to achieve goals. The objective of a performance-based transportation program is for states and metropolitan planning organizations (MPOs) to invest resources in projects that collectively make progress toward the achievement of national goals. As demonstrated in the graphic below, the Federal Highway Administration (FHWA) defines Transportation Performance Management (TPM) as a strategic approach that uses system information to make investment and policy decisions to achieve national performance goals. Federal rules identify seven areas of performance goals: safety, pavement and bridge condition, system reliability, congestion reduction, freight movement, environmental sustainability, and reduced project delivery delay. The MACC is required to incorporate the first three goals along with a fourth transit target.



The MACC has taken steps to incorporate performance measures and targets into the transportation planning process by using a performance-based approach in its planning activities and when building the Transportation Improvement Program (TIP) and Long-Range Transportation Plan (LRTP). The MACC supports adjusting its long-term planning strategies as necessary to assist the State of Michigan in reaching performance goals. It is the intention that any improvements made within the MACC area, which receives federal funds, will help support at least one of the targets set by the State of Michigan. A System Performance Report, which can be found in the appendix, looks at both state and local trends and provides information and feedback that allows for making any revisions in investment decision-making as required over the duration of the LRTP.

TRANSPORTATION PERFORMANCE MANAGEMENT FRAMEWORK

The U.S. Department of Transportation developed a framework that establishes a feedback loop between performance results and future planning. 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. There are four main goals of the framework.

GOALS OF THE FRAMEWORK

- Be 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.
- Ensure targets and measures are developed in cooperative partnerships and based on data and objective information.

FEDERAL REQUIREMENTS

The passage of Federal legislation in 2012, the Moving Ahead for Progress in the 21st Century Act (MAP 21), strengthened the growing focus within transportation agencies on using performance-based approaches in transportation planning. The law requires agencies to set targets in relation to established national performance measures and requests coordination between States and MPOs when setting targets to ensure consistency. These requirements are continued in the BIL.

FEDERAL REQUIREMENTS FOR PERFORMANCE- BASED PLANNING

Metropolitan transportation planning: “[MPOs]…, in cooperation with the State and public transportation operators, shall develop long-range transportation plans and transportation improvement programs through a performance-driven, outcome-based approach to planning.” 23 USC § 134(c)(1); 49 USC § 5303(c)(1). “The metropolitan transportation planning process shall provide for the establishment and use of a performance-based approach to transportation decision making to support the national goals….” 23 USC §134(h)(2); 49 USC § 5303(h)(2). During the TIP development process, the MACC uses performance measures to guide project prioritization.

Statewide and nonmetropolitan transportation planning: "The statewide transportation planning process shall provide for the establishment and use of a performance-based approach to transportation decision making to support the national goals…and the general purposes [of the public transportation program]. The performance measures and targets established [in relation to national performance measures] shall be considered by a State when developing policies, programs, and investment priorities reflected in the statewide transportation plan and statewide transportation improvement program." 23 USC § 135(d)(2); 49 USC § 5304(d)(2).

STATE SUPPORTED TARGETS

SAFETY

The latest annual State targets for safety performance measures were released by MDOT on August 31, 2022, and were adopted by the MACC's Policy Board on January 9, 2023. Safety predictions are based on the current trends in the data and determined through models developed by the University of Michigan Transportation Institute. Five-year rolling averages are used for the baseline assumptions. Final safety targets were developed after evaluating the correlation between traffic crashes, VMT, Gross Domestic Product (GDP) per capita, and other economic factors that impact travel. FHWA strongly suggests that targets should be based on trends and projections, and not be simply aspirational. There are currently 24 projects programmed in the MACC's FY23-26 TIP that are specifically geared toward the improvement of safety.

SAFETY PERFORMANCE MEASURES
(STATE OF MICHIGAN 2023)

Safety Performance Measure	Baseline Condition (2017-2021)	Calendar Year 2023 State Safety Target
Fatalities	1,041.8	1,105.6
Fatality Rate*	1.071	1.136
Serious Injuries	5,742.2	5,909.2
Serious Injury Rate*	5.878	6.058
Nonmotorized Fatalities & Serious Injuries	752.0	743.4

*Michigan State Safety Targets (Rate Per 100 Million Vehicle Miles Traveled

PAVEMENT & BRIDGE CONDITION

MDOT has developed two-year and four-year targets for the National Highway System (NHS) separated by the Interstate and the non-Interstate. The performance measures focus on pavement conditions that are good or poor. Metrics include an International Roughness Index (IRI), cracking, rutting, and faulting.

MDOT has also developed a system to evaluate bridge conditions. The table below illustrates that bridge conditions throughout the state are expected to decline at a rate faster than improvements can be made. There are currently 27 projects programmed in the MACC's FY23-26 TIP that specifically target improving pavement and bridge conditions.

National Highway System Bridge Performance Measures

Bridge Perfomance Measure	Baseline Condition (2022-2025)	2-Year Predicted Performance (Target)	4-Year Predicted Performance (Target)
% Of National Highway System Deck Area in Good Condition	22.1%	15.2%	12.8%
% Of National Highway System Deck Area in Poor Condition	7.0%	6.8%	5.8%

Source: MDOT National Highway System (NHS) Bridge Targets

National Highway System Pavement Performance Measures

Pavement Performance Measure	Baseline Condition (2022-2025)	2-Year Predicted Performance (Target)	4-Year Predicted Performance (Target)
% Of Interstate Pavement in Good Condition	70.4%	59.2%	56.7%
% Of Interstate Pavement in Poor Condition	1.8%	5.0%	5.0%
% Of Non-Interstate Pavement in Good Condition	41.6%	33.1%	33.1%
% Of Non-Interstate Pavement in Poor Condition	8.9%	10.0%	10.0%

Source: MDOT National Highway System (NHS) Pavement Targets

SYSTEM RELIABILITY

MDOT has developed targets for travel time reliability on the NHS for Interstate and non-Interstate roads. Freight reliability is also included and is a separate measure. Data on travel time is evaluated to see how it varies over time and to demonstrate consistency. The definitions below help to explain the difference between congestion and travel time reliability:

Congestion – occurs when there are too many vehicles at the same place at the same time (demand exceeds supply). An increase in congestion usually results in a decrease in the "quality" of the driving experience. An increase in congestion relates to an increase in the "use of the system" and usually occurs during the "peak" periods of the day. Most travelers are accustomed to everyday congestion – they can plan for it.

Travel Time Reliability – relates to the consistency or dependability in travel time, and is measured from day to day, or across different times of the day. Unreliable travel times usually occur during the "peak" periods of the day, and most travelers are less tolerant of "unexpected" delays – as they can't plan for them. Michigan's highways have been around 85 percent reliable, meaning 85 percent of person-miles traveled are meeting the federally established thresholds. Due to longer travel times, the freight reliability measure is calculated using the 95th percentile travel time.

National Highway System
Travel Time Reliability

System Reliability	Baseline Condition (2022-2025)	2-Year Predicted Performance (Target)	4-Year Predicted Performance (Target)
Percent of the Reliable Person-Miles Traveled on the Interstate Based on 80th Percentile Over 4 Time Periods	97.1%	80.0%	80.0%
Percent of the Reliable Person-Miles Traveled on the Non- Interstate Based on 80th Percentile Over 4 Time Periods	94.4%	75.0%	75.0%
Truck Travel Time Reliability (TTTR) Index on the Interstate Based on the 95th Percentile Over 5 Time Periods	1.31	1.60	1.60

Source: MDOT National Highway System (NHS) Travel Time Reliability Targets

PUBLIC TRANSPORTATION

Transit agencies nationwide vary in size, services, and needs leading the Federal Transit Administration (FTA) to require each agency to develop and submit a Transit Asset Management (TAM) plan by October 1, 2018. Updates to the TAM plan are required at a minimum of every four years, but updates can be submitted sooner. The purpose of the TAM plan is to record the current condition of each federally funded asset owned or maintained by an agency to achieve or maintain a State of Good Repair (SGR), defined as assets above marginal or poor condition ratings. Each asset's condition is ranked on a scale of 1 to 5, with the ratings being classified as the following:

5 - Excellent - No visible defects, new or near new condition, may still be under warranty if applicable

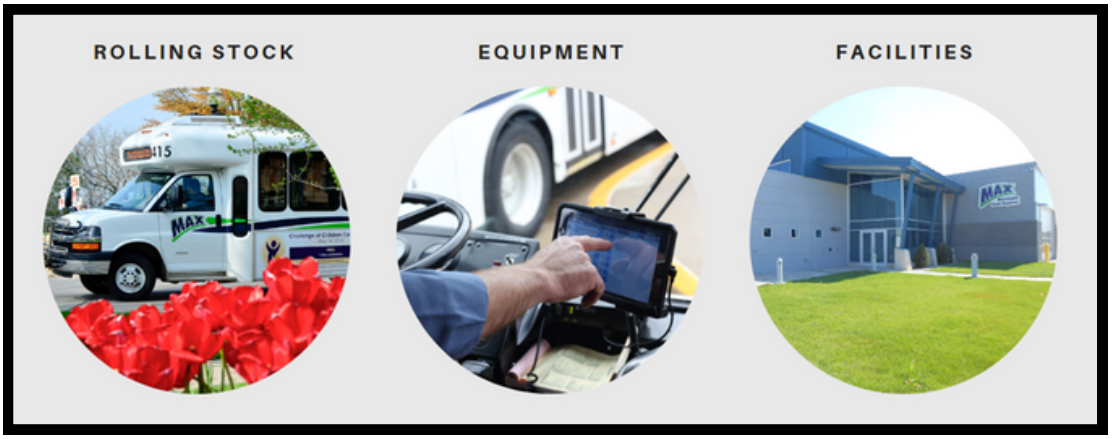
4 - Good - Good condition, but no longer new, may have some slightly defective or deteriorated component(s) but is overall functional

3 - Adequate - Moderately deteriorated or defective components; but have not exceeded useful life

2 - Marginal - Defective or deteriorated component(s) in need of replacement; exceeded useful life

1 - Poor - Critically damaged component(s) or in need of immediate repair; well past useful life

The federal rules for Transit Asset Management noted that the new standards are meant to help transit agencies keep their systems operating smoothly and efficiently while working at the same time to reduce the nation's backlog of needed transportation improvements. The Macatawa Area Express Transit Authority (MAX Transit) has prepared a TAM plan and approved SGR targets. The transit agency also created targets, which are adopted by the MACC Policy Board. Transit performance targets include revenue vehicles, equipment, and facilities. The table on the next page shows the performance targets for MAX Transit for the fiscal year 2024.



Revenue Vehicles - MAX Transit expects its full-service revenue fleet to remain within the Useful Life Benchmark (ULB) threshold. Buses, cutaways, and vans are targeted for replacement after reaching FTA's Useful Life age but before the ULB (or maximum age) is met.

Equipment – MAX Transit is typically able to utilize some of its non-revenue/service automobiles (road supervisor, staff, and maintenance vehicles) slightly beyond the 8-year Useful Life Benchmark provided preventative maintenance costs remain reasonable.

Facilities – MAX Transit owns and operates two facilities, Padnos and Greenway. They are expected to remain well above a 3.0 score. Building systems are monitored monthly and scores are calculated following inspections of each facility's HVAC, substructure, electrical, fire protection, rooftop, and plumbing systems.

MAX Transit Annual Performance Target (FY2024)

Asset Category	Performance Measures	FY2024 Target
ROLLING STOCK		
Bus	Age - % of Revenue Vehicles Within a Particular Asset Class That Have Met Or Exceeded Their Useful Life Benchmark (ULB)	10%
Cutaway Bus		5%
Rubber Tire Vintage Trolley		0%
Van		0%
EQUIPMENT		
Non-Revenue/Service Automobile	Age - % of Vehicles That Have Met or Exceeded Their ULB	0%
Non-Vehicle Equipment (>$50,000)		0%
FACILITIES		
Maintenance	Condition - % of Facilities With a Condition Rating Below 3.0 on the FTA Transit Economic Requirements Model (TERM) Scale	0%
Passenger Facilities		0%

Source: MAX Transit Authority

PUBLIC TRANSPORTATION AGENCY SAFETY PLAN

In January 2021, the MACC approved MAX's Public Transportation Agency Safety Plan (PTASP). The PTASP is a plan that standardizes how each transit authority focuses on safety concerns and identifies weaknesses while considering risks and risk management throughout the agency. The document was discussed during the February 24, 2020 meeting of the MACC Policy Committee. At that time, it was noted that the safety plan would include performance measures to be brought to the MACC for incorporation into the TIP. Requirements of the Public Transportation Agency Safety Plan are noted below:

Certification of Compliance

- Each transit agency must annually certify via FTA's Certifications and Assurances process that its safety plan meets the requirements of the final rule.
- States must certify safety plans on behalf of small public transportation providers that operate 100 or fewer vehicles in peak revenue service within their states unless providers opt to certify their own safety plans upon notification to the state.

Documentation and Recordkeeping

- A transit agency must maintain documents that set forth its safety plan, including those related to SMS implementation.
- These documents must be made available upon request by FTA and other agencies with safety jurisdiction, such as the National Transportation Safety Board (NTSB) and State Safety Oversight Agencies (SSOAs).
- A transit agency must maintain these documents for a minimum of three years after they are created.

Mode of Transit Service	Fatalities (Total)	Fatalities (Per 100K VRM)	Injuries (Total)	Injuries (Per 100K VRM)	Safety Events (Total)	Safety Events (Per 100K VRM)	System Reliability (Failures/ 100K VRM)
Fixed Route	0	0	3	0.00003	3	0.00003	90/ 0.0009
Demand Response	0	0	5	0.00005	2	0.00002	85/ 0.00085

Source: MAX Transit

The MAX Authority Board approved the PTASP in May of 2020. MAX Transit prepares an annual report with highlights from the five-year statistics and includes a narrative explaining how the risk assessment matrix has been used to monitor and assess future risks. For the occasional, probable, and frequent incidents, the narrative would include examples from the five-year data and explain how the safety risk index would be used to determine whether to "accept the safety risk with monitoring or require additional action (medium)" or whether "safety risk must be mitigated or eliminated (high)". MAX will continue to evaluate safety records and incorporate safety performance in the training of new drivers, and retraining existing drivers.

SEVERITY CATEGORIES			
DESCRIPTION	LEVEL	INDIVIDUAL ITEM	SYSTEM OR VEHICLE FLEET
FREQUENT	A	Continuously Experienced	More Than 10 Events Throughout The Year
PROBABLE	B	Likely to Occur Frequently	No Fewer Than 5 and No More Than 10 Events Throughout the Year
OCCASIONAL	C	Likely to Occur Several Times	No Fewer Than 2 and No More Than 5 Events Throughout the Year
REMOTE	D	Unlikely, But Can Be Reasonably Expected to Occur	Fewer Than 2 Documented Events During the Year
IMPROBABLE	E	Unlikely to Occur, But Possible	0 To 1 Documented Events Throughout the Year

Source: MAX Transit