

TRANSPORTATION PERFORMANCE MANAGEMENT

PAVEMENT PERFORMANCE MANAGEMENT

PAVEMENT PERFORMANCE REQUIREMENTS

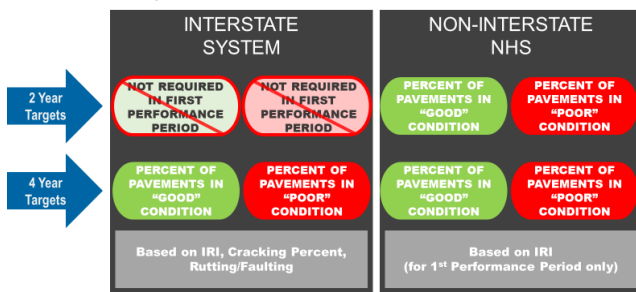
The Federal Highway Administration (FHWA) published in the Federal Register (82 FR 5886) a final rule establishing performance measures for State Departments of Transportations (DOTs) to use in managing pavement and bridge performance on the National Highway System (NHS). The National Performance Management Measures; Assessing Pavement Condition and Bridge Condition for the National Highway Performance Program Final Rule addresses requirements established by the Moving Ahead for Progress in the 21st Century Act (MAP-21) and reflects passage of the Fixing America’s Surface Transportation (FAST) Act. The rule became effective May 20, 2017.

The federal rule requires MDOT to establish targets for pavement condition measures Percent Good and Percent Poor on the Interstate and non-Interstate NHS. Targets are required for two and four-year intervals for each measure, with eight targets in total. For the Interstate measures, there will be no two-year targets for the first (2018-2021) performance period per 23 CFR Part 490, therefore, there will only be six targets in the first period.

condition. If two or more metrics are “poor,” it is to be considered in poor condition. Only IRI will be used to determine non-interstate condition for the 2018-2024 performance period, after which it will use PCM. Cracking Percent and IRI are to be reported on all pavement types. Rutting is to be reported only on asphalt pavements, and faulting, on jointed concrete pavements. The table below indicates the metric thresholds for condition on each pavement type, as defined by the rule.

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

REQUIREMENTS



The rule requires states to measure, monitor and set targets based upon a composite index of pavement condition measures (PCM). The four metrics to be used are International Roughness Index (IRI), Cracking Percent, Rutting, and Faulting as reported by states to the FHWA’s Highway Performance Monitoring System (HPMS). All four metrics will be used to determine the condition for Interstate. If all three metrics on a segment are “good,” then a pavement is rated in good

TARGET SETTING AND SIGNIFICANT PROGRESS

• **Targets:** The Transportation Performance Management (TPM) Pavement Rule designates recurring four-year performance periods for which MDOT is required to establish two-year (midpoint) and four-year (full performance) targets for pavement condition on the National Highway System (NHS).

• **Performance Measures:** There are four performance measures for assessing pavement condition based on composite analysis of the metrics above:

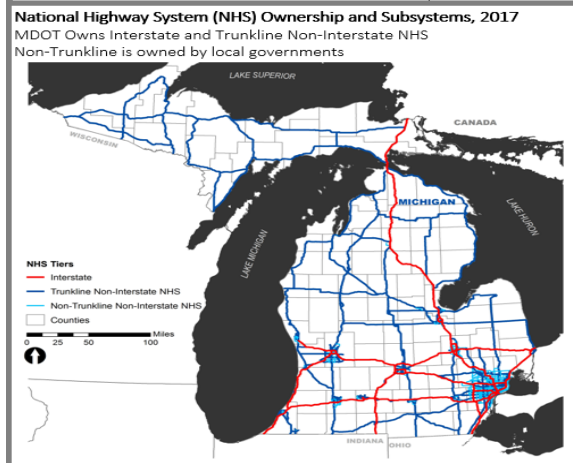
- 1) Percent of Interstate pavement in Good Condition
- 2) Percent of Interstate pavement in Poor Condition
- 3) Percent of Non-Interstate NHS pavement in Good Condition
- 4) Percent of Non-Interstate NHS pavement in Poor Condition. States were required to establish targets for each measure by May 20, 2018.

- **MPO Targets:** MPOs are required to establish four-year targets for these measures and have two options for target selection: agree to plan and program projects that support MDOT targets or commit to their own targets for their Metropolitan Planning Area (MPA).
- **MPO Targets Due:** MPO targets are due on November 16, 2018, 180 days after MDOT’s targets. These targets are not reported to FHWA but must be reported to MDOT in a manner both parties agree to. MPOs will include targets in their TIPs and LRP and explain how their projects and programs support either MDOT’s or the MPO’s targets.
- **Significant Progress:** FHWA will determine significant progress on the Mid- and Full Performance Period Progress Reports. Significant progress is defined as achieving a condition that is equal to or better than the target, or better than the baseline condition. If significant progress is not achieved, MDOT must document how it plans to achieve it for the next report

ROAD OWNERSHIP

The rule applies to the entire National Highway System (NHS), which includes the Interstate, and Non-Interstate NHS. The Non-Interstate portion of the system is comprised of trunkline (MDOT owned) and non-trunkline (local government owned) roads. Local agencies own 19 percent of the NHS in Michigan, while MDOT maintains ownership of approximately 81 percent (see table below). MDOT and MPO targets must cover the entire NHS, regardless of ownership,

Sub-System	Through-Lane Miles	% of NHS
Interstate	6,079.7	27.1%
Total Non-Interstate NHS	16,352.3	72.9%
Trunkline Non-Interstate NHS	12,081.6	53.9%
Local Non-Interstate NHS	4,270.7	19.0%
Total NHS	22,432.0	100.0%



meaning these agencies may have a limited capacity to achieve these targets. To account for this, the rule requires MDOT and MPOs to coordinate target setting, planning, and programming, ensuring targets are feasible, and projects are geared toward achieving them.

MDOT Investment Strategy Process

Department goals for state trunkline pavement condition are established by the State Transportation Commission (STC) and influence the way MDOT invests in and maintains state-owned transportation infrastructure. To do this, MDOT conducts investment planning. Investment strategies guide the allocation of capital resources to achieve the goals established. Investments are focused where they will most benefit the public, consistent with the direction established.

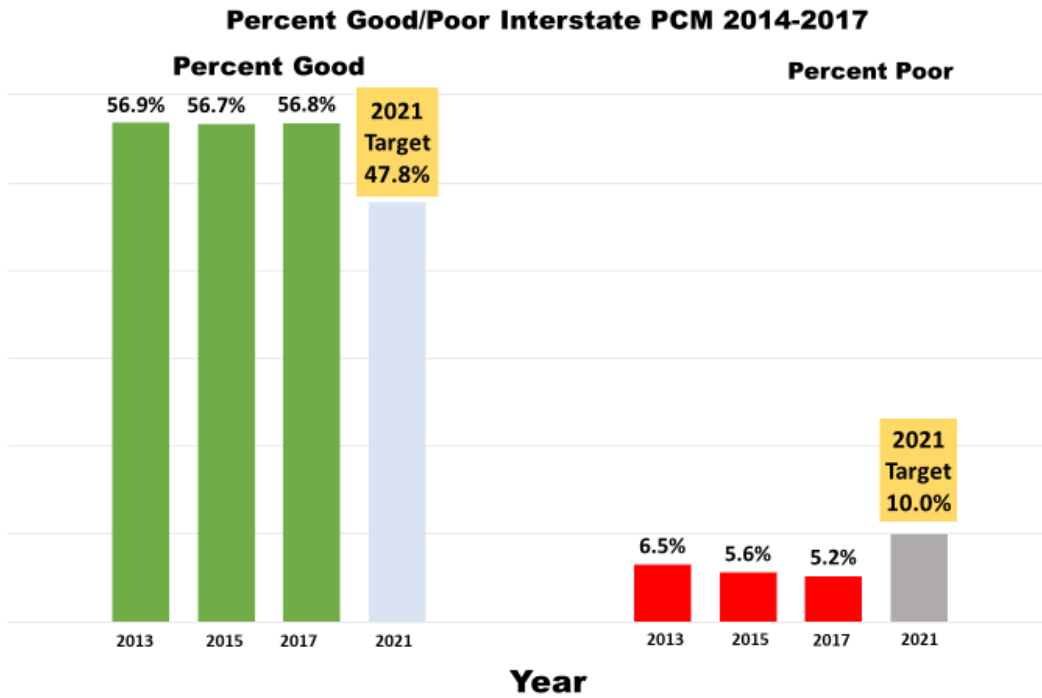
Investment strategies are developed utilizing anticipated available funding, life cycle planning, and performance gap analysis, and the results of risk analysis. The various strategies are also analyzed and compared to determine how they would impact the overall goals and objectives set by the STC. The desired mix of fixes, investment levels, and funding targets are developed for the selected investment strategy and provided in the Highway Call for Projects memo. They form the basis for project selection and prioritization. The selected investment strategy is communicated to the public by way of the annual Five-Year Transportation Program. MDOT’s investment strategy to achieve the constrained Michigan targets for asset condition are reflected in the 2017-2020 STIP program of projects.

MICHIGAN STATEWIDE PAVEMENT TARGETS

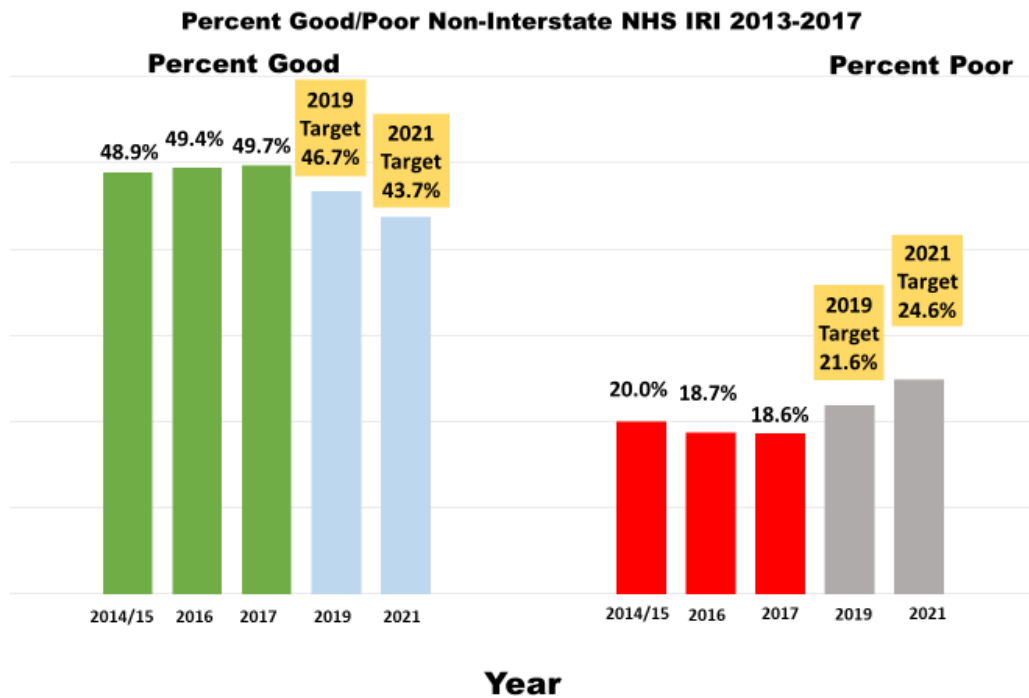
The TPM Pavement Team reviewed historical trends of condition metric data from the last decade (2007-2017) to support future target establishment. FHWA and MDOT use the Highway Performance Monitoring System (HPMS) to report pavement condition. According to the rule, HPMS data must be submitted annually by April 15 for Interstate data, and June 15 for Non-Interstate NHS data. These figures were used as a baseline to establish the statewide targets. With MDOT’s current funding levels, trunkline pavement condition is anticipated to decline over the course of the next decade, and therefore, MDOT has chosen conservative targets to reflect this decline. Given the

definition of significant progress (equal to or better than the target, or better than the baseline condition), MDOT can achieve significant progress while targets are declining if condition does not fall below the targets.

Interstate Targets



Non-Interstate Targets



Conservative Targets

The conservative nature of the approved targets is based on several factors:

- 1) Forecasts of the trunkline pavement condition based on Remaining Service Life (RSL) is declining.
- 2) Sample size for the cracking measure will move from 30% to 100% of roads sampled.
- 3) Issues surrounding the data such as the use of new vendors and the introduction of more advanced data collection may make data collection inconsistent.
- 4) A buildup in the Interstate IRI category at the edge of good gives the potential for a significant number of segments to fall into fair.
- 5) The use of a composite score means that all three measures must be good to be counted as good. If only one measure was to fall the whole segment is no longer considered good.
- 6) At the current time the sample size available for previous years is relatively small for the use of trend analysis.

Other major potential hindrances include climate changes, funding uncertainties, and funding levels.

REPORTING

National Goal: FHWA will annually assess the percent of Interstate pavement in poor condition to ensure compliance with a minimum condition level requirement **that no more than five percent of the Interstate System be in poor condition**. This is the only portion of the rule with a financial penalty for pavement funding and prioritizes the Interstate System by directing MDOT pavement funding toward it. Reports are structured on a 4-year reporting cycle, with midpoint (2-year) reports. Between October 2018 and October 2022, state DOTs will be required to submit three performance reports to FHWA.

Baseline Performance Report: In this report, MDOT must establish 2-year and 4-year targets, describe baseline conditions, urbanized area boundaries and population data, NHS limits, and relationships with other performance expectations. The Baseline Performance Report will include HPMS data collected in 2016 and 2017. States will be able to adjust the 4-year targets in the Mid Performance Progress Report based on data collected in 2018 and 2019. To allow for the phasing in of new reporting requirements for Interstate pavement conditions, states are only required to establish 4-year targets for Interstate pavements in the Baseline Performance Report that is due October 1, 2018. Both 2-year and 4-year targets are required for non-Interstate NHS pavements. **Baseline Performance Report due 10/1/18.**

Mid Performance Progress Report: MDOT must report on 2-year conditions and performance, investment strategy effectiveness and discuss progress in achieving targets. States have the option to adjust 4-year targets at this time. In this report states may include a discussion of target achievement and extenuating circumstances. Because states are not required to establish 2-year targets for Interstate pavements in the Baseline Performance Report, they would use the Mid Performance Progress Report to update baseline condition/performance data and, if necessary, adjust the 4-year targets. **Mid-Performance Period Progress Report due 10/1/20.**

Full Performance Progress Report: This report includes the same content as the Mid Performance Period Progress Report but reports on the 4-year targets. If a state has not made significant progress for achieving the NHPP targets in two consecutive biennial determinations, then the state DOT will include a description of the actions they will undertake to better achieve the NHPP targets in the next performance period. Even though significant progress is assessed for all four pavement performance measures, pavement condition penalties only apply for Interstate pavements. As part of the Full Performance Progress Report, MPOs will report targets and progress toward the achievement of targets. MPOs will report their established targets, performance, progress, and achievement of the targets to their respective state DOT in a manner that is agreed upon by both parties and documented in the Metropolitan Planning Agreement. **Full Performance Period Progress Report due 10/1/20.**

Penalties

MDOT will be penalized if it does not meet the interstate pavement condition requirement. If FHWA determines that a State DOT's Interstate pavement condition is below the minimum condition level for the "most recent 2 years," then that State DOT would be subject to the penalty under the rule. The FHWA will notify MDOT annually of its compliance status regarding the minimum condition requirement prior to October 1 of the year in which the determination is made. State DOTs are subject to a statutory penalty that would obligate a portion of NHPP funds and transfer a portion of STP funds to address Interstate pavement conditions if they fail to meet this minimum condition requirement for 2 consecutive years. Specifically, if the state is out of compliance, they would be required to obligate the following:

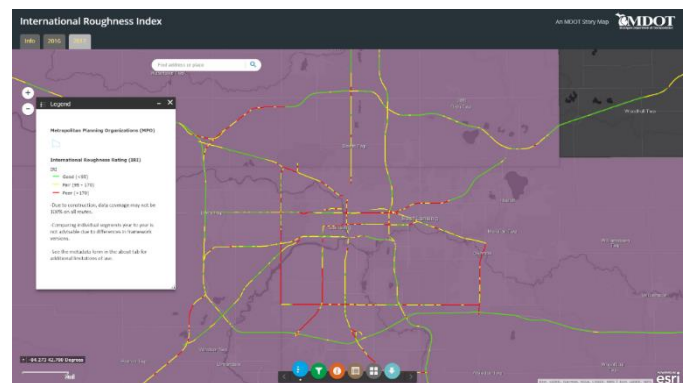
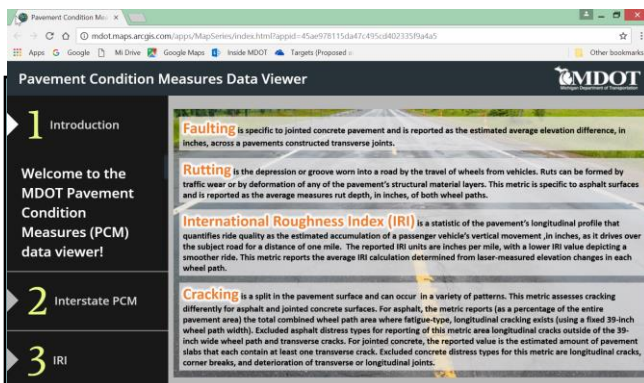
- From the amount apportioned to the State for the NHPP, an amount that is not less than the interstate Maintenance apportionment for fiscal year 2009 plus 2 percent per year compounded annually for the five additional fiscal years after 2013.
- For apportioned transfer Surface Transportation Program funds, an amount equal to 10 percent of Interstate Maintenance apportionment for fiscal year 2009.

These funds would need to be used to improve Interstate pavement conditions (as provided under the pre-MAP-21 Interstate Maintenance Program). This requirement will remain in effect until the Interstate system pavement condition exceeds the minimum condition level.

Available Data

A web application is available online showing pavement conditions and inventory for Interstate PCM and Non-Interstate IRI data. This tool is available for use by the MPOs. The link to the application is below.

<http://mdot.maps.arcgis.com/apps/MapSeries/index.html?appid=35d2f76862e74c5a89319a9d5a55e5bd>



For More Information

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