



7 performance measures

Performance measures provide Indiana the strategic framework to evaluate how successfully transportation goals and objectives are met. Using a performance-based approach for investment decisions provides INDOT a transportation system more in-line with identified goals of safe and reliable travel, a well-maintained system, and efficient movement of people and goods across the state. The LRTP establishes performance measures that support the Goals and Objectives described in Chapter 1.

FEDERAL PERFORMANCE MEASURES

Indiana's performance measures are strategically developed to align with Federal performance measures to support national transportation performance goals. Federal performance measures became codified with the passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) in 2012.

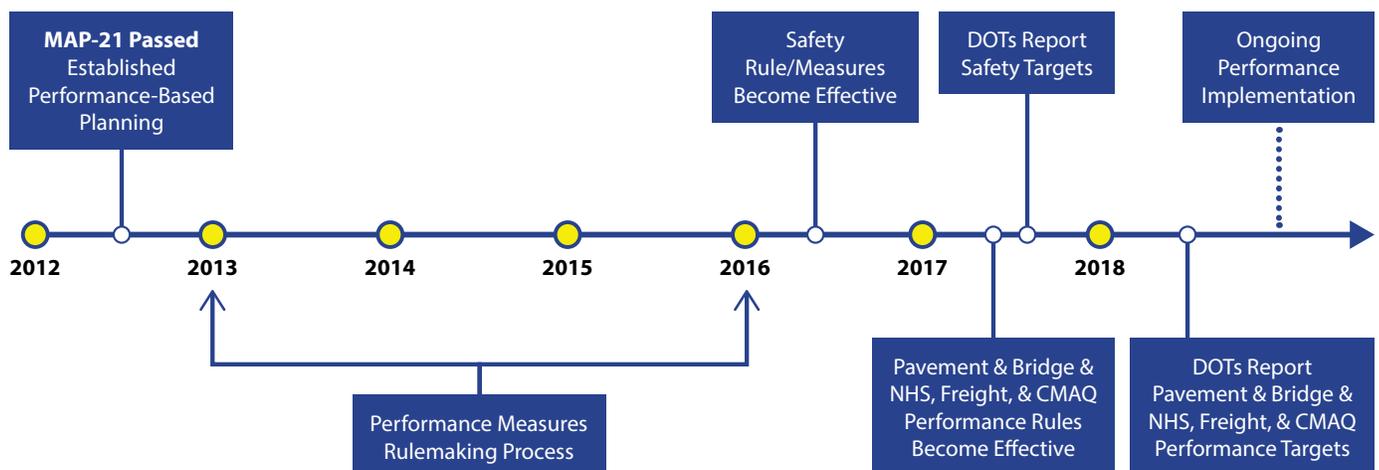
Since that time, the US Department of Transportation has gone through a lengthy rule-making process. The safety rule measures became effective in 2016. The pavement and bridge condition and National Highway System (NHS), freight, and Congestion Mitigation and Air Quality (CMAQ) performance rules became effective in 2017. Target setting and reporting has gradually begun to "go live" for the various performance categories since 2017. Thus, this LRTP is INDOT's first statewide, multimodal plan to define and apply Indiana's performance measures with an understanding of the national direction on transportation performance. A timeline of the Federal performance measure process is shown below.

FAST ACT & PERFORMANCE MEASURE IMPLEMENTATION

The Fixing America's Surface Transportation (FAST) Act was signed into law in December 2015. The authorization continued on the previous legislation's (MAP-21) emphasis on transportation performance management approach, along with adding funding for surface transportation,

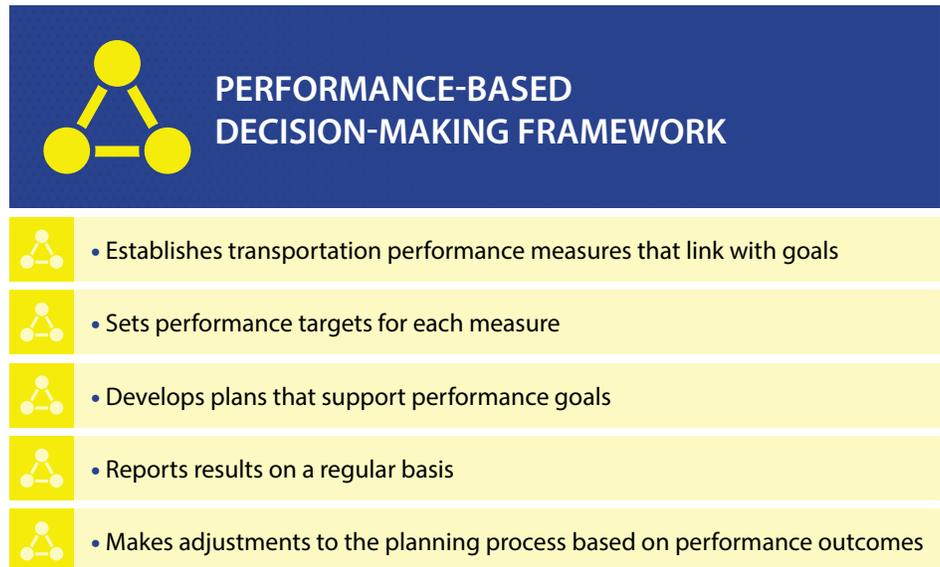
After passage of the FAST Act, the timeline for implementing performance measures evolved. The figure below reflects that ongoing process of implementing performance measures.

Federal Performance Measure Timeline



Establishing performance measures is a critical step in a performance-based transportation planning approach. The performance measures identified in the LRTP reflect Indiana's priorities and national performance goals. The performance measures included in the LRTP are consistent with other INDOT initiatives, such as the 2018 Transportation Asset Management Plan and the and the Next Level Roads Plan.

Performance-Based Decision Making Framework



GOALS & PERFORMANCE MEASURE CONNECTIONS

As shown, there is a relationship between the LRTP goals and performance measures. The performance measures are framed to promote the transportation system goals.

Relationship between Goals, Performance Areas and Measures



APPLICATION OF PERFORMANCE MEASURES

This section provides a summary of each of the performance measure areas, providing some additional discussion, data sources, and how the performance measures can be used in support of statewide planning. For each of these measures, INDOT has established targets, calculation methods, and in some cases, has begun the initial measures reporting. For the most current information on Transportation Performance Management, see the Appendix at the end of the document.

Safety Performance Measures

Summary: These measures were identified to track the number and rate of serious injury and fatal crashes. These measures support national and state goals to reduce traffic crashes, and directly support the Indiana Strategic Highway Safety Plan.

Data Sources and Calculation: Data includes Statewide crash-record database (most recent 5-years) and statewide vehicle-miles traveled (VMT) data from the Highway Performance Monitoring System (HPMS). Some MPOs may produce separate VMT estimates for their planning areas. Each reporting period is a 5-year “rolling average”, which averages the past 5 individual, consecutive years.

Application: Ongoing annual 5-year rolling average reporting. There is the potential to use corridor-based safety performance measures to help prioritize safety project selection.

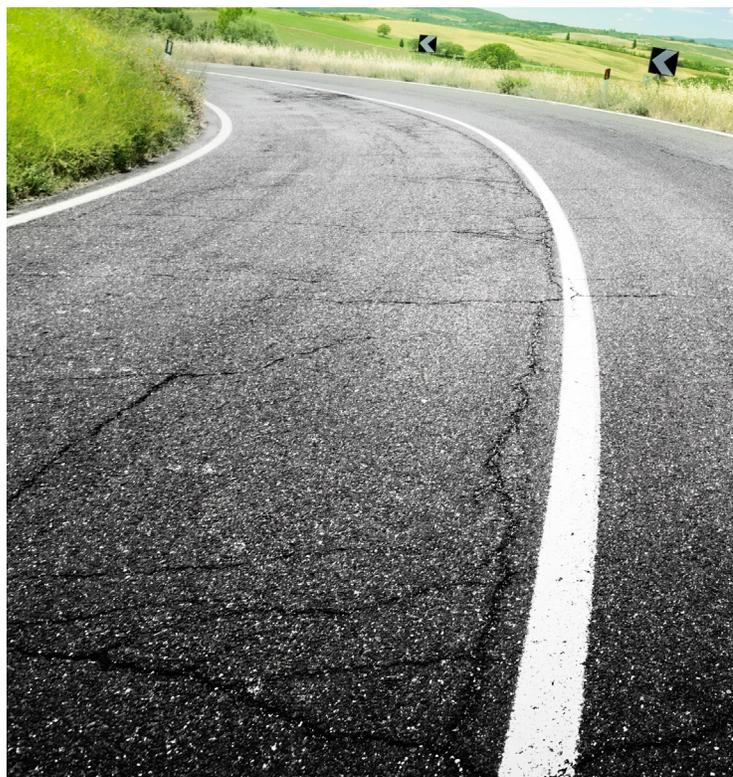


Pavement and Bridge Condition Performance Measures

Summary: These measures are established to evaluate and track the condition of pavement and bridges on the Interstate and National Highway System (NHS). They track infrastructure in good condition (bridges and pavement where major investment is not needed) and poor condition (bridges and pavement that likely need major reconstruction). These measures support the Indiana Transportation Asset Management Plan (TAMP). The TAMP is a strategic tool used by INDOT to manage the state’s roadway pavements and bridges, which provides a framework for improving the state’s transportation assets over the next 10 years. More information on the TAMP is available at: <https://www.in.gov/indot/3231.htm>.

Data Sources and Calculation: Pavement data comes from the state’s pavement condition database. Bridge data comes from National Bridge Inventory (NBI). Both databases are updated annually. The calculations used by INDOT combine four different measures to evaluate pavement conditions and three different condition ratings to evaluate bridge conditions, consistent with national performance guidance.

Application: Ongoing 2-year and 4-year condition reporting. There is the potential to use bridge conditions and performance measures to help prioritize pavement and bridge project selection.



Freight Reliability Performance Measure

Summary: This measure assesses how reliable truck travel times are on the Interstate system. Reliability is essentially a measure of how repeatable or predictable travel on a corridor is; reliable travel corridors do not have much travel time variation while unreliable corridors do. This measure supports the modern just-in-time delivery economy, providing predictable goods movement to businesses.

Data Sources and Calculation: National Performance Measure Records Data Set (NPMRDS) is available to INDOT from FHWA. This provides truck travel times on the Interstate system in 15-minute increments. This measure compares the 95th Percentile Truck Travel time to the 50th Percentile Truck travel time to derive the TTTR for five analysis periods: Morning Weekday, Midday Weekday, Afternoon Weekday, Weekends, and Overnight.

Application: Using the Truck Travel Time Reliability (TTTR) Measure for 2 year and 4-year reliability reporting. There is potential to give least reliable corridors higher priority for projects that would improve freight reliability.



Congestion Performance Measure

Summary: This measure tracks the annual “peak hour excessive delay” (PHED) per capita for NHS routes. This measure is only currently applied to urban areas: 1) with over 1 million people, and 2) are a designated air quality non-attainment area for ozone, carbon monoxide, or particulate matter. Based on current designations, this performance measure will apply to urbanized portions of Lake and Porter Counties in northwest Indiana. Starting in 2022, this measure will expand to all urban areas with populations over 200,000.

Data Sources and Calculation: The threshold for PHED is based on the amount of travel time at 20 miles per hour or 60% of the posted speed limit travel time, whichever is greater. The measure is also weighted according to vehicle occupancy and traffic volume. Similar to the Freight Reliability measure, the NPMRDS is used to calculate the travel speeds used for this performance measure. American Community Survey (ACS) 5-year estimates data for estimating population numbers for the “per capita” reporting.

Application: Ongoing 4-year performance reporting, switching to 2-year and 4-year performance reporting in 2020. There is the potential to use this measure as a corridor-based performance measure to help prioritize projects that reduce congestion in corridors that experience PHED.

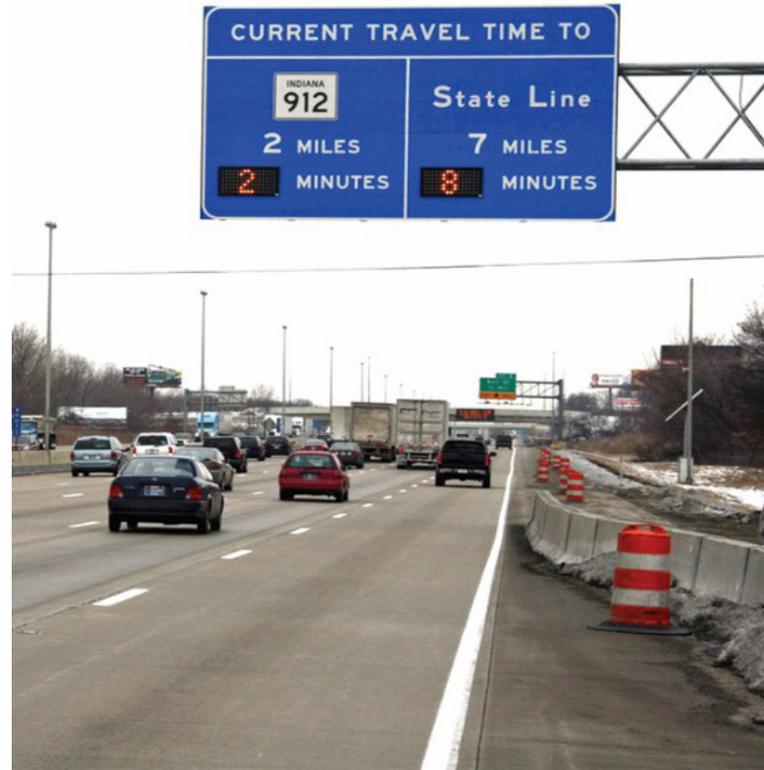


Travel Reliability Performance Measures

Summary: This measure is similar to the Freight Reliability Performance measure, but measures reliability for all persons traveling on the roadway. This measure applies to both the Interstate and NHS.

Data Sources and Calculation: Similar to the Freight Reliability and Congestion measures, the NPMRDS is used to calculate the travel reliability measures. Level of Travel Time Reliability (LOTTR) is defined as the ratio of the longer travel times (80th percentile) to a “normal” travel time (50th percentile) time to derive the LOTTR for four analysis periods: Morning Weekday, Midday Weekday, Afternoon Weekday, and Weekends. Average vehicle occupancy factors may be developed based on state data, or based on FHWA-supplied average vehicle occupancy factor of 1.7.

Application: The LOTTR Measure is used for 2-year and 4-year reliability reporting on the Interstate system, and 4-year reliability reporting on the non-Interstate NHS. The LOTTR is defined as the ratio of 80th percentile to the 50th percentile travel time. Similarly to the freight reliability measure, there is the potential to prioritize projects more highly that address the least reliable travel time corridors.



Ridesharing Performance Measure

Summary: This measure tracks the level of non-single-occupant vehicle (SOV) travel in the same urban areas as the congestion performance measure. The intent of this measure is to encourage more use of transit, carpooling, van pooling, and overall trip reduction.

Data Sources and Calculation: There are a few data source options for reporting non-SOV travel. The most straightforward approach is to use ACS estimates. Other options are surveys and volume and person-usage counts of various modes. The measure calculates the portion of person trips that are vehicles with only the driver in them.

Application: The non-SOV measure is used in ongoing 2-year and 4-year performance reporting for each applicable urbanized area. There is potential to provide priority to projects that shift person trips from single-occupant vehicles.



Air Quality Performance Measure

Summary: This measure tracks the level of emissions from on-road vehicle sources. This applies to Indiana as it has non-attainment areas for ozone. The goal of this measure is to support the Congestion Mitigation and Air Quality Improvement (CMAQ) program.

Data Sources and Calculation: The primary data source is the CMAQ Public Access System, which provides a national database of air quality benefits from CMAQ investments. Total emissions reduction is calculated by summing 2-year and 4-year emissions reductions for all projects funded with CMAQ funds.

Application: The CMAQ Air Quality Performance Measure is used to report the 2-year and 4-year project-related emissions reductions. This is a project-based measure, so there is the potential to give a higher priority to CMAQ projects that provide the most benefits according to the Public Access System database.

More information on each of these performance measures is available through review of the US Code of Federal Regulations (CFR).¹



TARGET SETTING

Target setting identifies the quantifiable level of progress than an agency wants to achieve on a performance measure, by a given date. The target setting process requires INDOT and its partners to not only set its performance objectives, but to monitor and report performance targets by collecting and analyzing baseline data and applying planning tools. The goal of the target setting process is to provide a quantifiable way to measure how well INDOT’s strategies and investments are moving it towards its ultimate performance measure goals. The process is ongoing, so INDOT can adjust how it does business to respond to how well it is achieving its performance targets.

INDOT worked with its 14 MPO partners to set targets for each performance measure. Discussion that helped to establish performance targets was related to INDOT’s system assessment tools and capabilities, workflow processes, freight bottlenecks, refinements to the NHS to reduce non-state-owned roadway. INDOT will continue to coordinate with its MPO partners through semi-annual meetings. These meetings will aim to gather feedback on funding tradeoffs, performance gaps and necessary adjustments to performance targets, potential refinements to business rules and processes, any major changes to the STIP and TIPs, and bridge and pavement system assessment impact analyses.

More details on the target setting by performance area are described below.

Safety Targets

Safety performance measures were developed through a process of evaluating several economic, travel, and data trends to forecast a baseline set of crash projections. These projections were not safety goals—but provided a baseline assessment of likely outcomes to inform target setting. Within the context of the MPO working group meetings, INDOT then crafted a set of safety targets.

INDOT Safety Targets

MEASURE	2019 TARGET*
Traffic Fatalities	889.6
Number of Serious Injuries	3,501.9
Fatality Rate	1.087
Serious Injury Rate	4.234
Total Number of Non-Motorized Fatalities and Serious Injuries	393.6

* As reported to Federal Highway Administration



Pavement and Bridge Condition Targets

Pavement and bridge condition targets established in the TAMP provide a planning framework for INDOT's asset management investment plan. These 10-year targets provide goals for INDOT to achieve by 2028 for system condition. The TAMP and the resulting targets were also produced through the working group process with INDOT's MPO partners. With exception of the multi-state MPOs of Kentuckiana Regional Planning and Development Agency (KIPDA) for the Louisville metropolitan area and Ohio-Kentucky-Indiana Regional Council of Governments (OKI) for the Cincinnati metropolitan area, the Indiana MPOs decided not to establish individual targets for the NHS and agreed to adopt INDOT's bridge and pavement asset targets. The KIPDA and OKI will need to further coordinate with their other State DOTs on these targets.

INDOT Bridge Targets

PERFORMANCE MEASURE	BASELINE	2-YEAR TARGET (2018-2019)	4-YEAR TARGET (2018-2021)
Percentage of NHS Bridges Classified as in Good Condition	50.0%	48.3%	48.3%
Percentage of NHS Bridges Classified as in Poor Condition	2.3%	2.6%	2.6%

INDOT Pavement and Bridge Targets

MEASURE	TAMP TARGET*
Interstate NHS Pavements, Fair or Better Condition	96.1%
Non-Interstate NHS Pavements, Fair or Better Condition	93.1%
INDOT Bridges, Fair or Better Condition	96.1%

* Achieve by 2028

Congestion Management and Air Quality Targets

A CMAQ task group was formed to coordinate efforts between INDOT and the MPOs in setting the INDOT CMAQ performance targets. This group included three representatives from INDOT's Technical Planning Section, two representatives from the Indiana MPO Council (Fort Wayne and Evansville), and a representative each from the Indianapolis and Northwestern Indiana MPOs—the two larger MPOs with over one million in population. A representative from the Indiana Division of the FHWA also participated in the task group to provide guidance.

PERFORMANCE MEASURE		MEASURE UNIT	2-YEAR TARGET (2018-2019)	4-YEAR TARGET (2018-2021)
Level of Travel Time Reliability	Interstates–Statewide	% of person-miles reliable	90.5%	92.8%
	Non-Interstate NHS–Statewide			89.8%
Truck Travel Time Reliability (TTTR) for Interstates–Statewide		TTTR index	1.27	1.24
Peak Hour Excessive Delay (PHED) for NHS	Indianapolis Urbanized Area Entire Illinois-Indiana Chicago Urbanized Area	Annual hours of PHED per capita	Not required for first performance period	5.7
				15.4
Non-Single Occupancy Vehicle (SOV) Travel	Indianapolis Urbanized Area Entire Illinois-Indiana Chicago Urbanized Area	% of non-SOV travel	16.3%	16.3%
				31.6%
CMAQ Project Emissions Reduction–Statewide	VOC	Emissions reduction (kg)	1,600.0	2,600.0
	CO		200.0	400.0
	NOx		1,600.0	2,200.0
	PM10		0.3	0.5
	PM2.5		20.0	30.0

OTHER STATE PERFORMANCE MEASURES

In addition to the Federal performance measures and those measures that are established and implemented within the TAMP, there are several other transportation initiatives that have performance-based metrics. These other initiatives are described below.

The Next Level Roads Plan was created in 2017. It is a five-year, \$4.7 billion road maintenance and construction plan. It provides a performance-based approach to attaining pavement and bridge condition targets. More details on the program are provided in Chapter 8, Revenue and Funding.

The Community Crossings program provides funding to cities, towns, and counties to fund shovel-ready local bridge and roadway construction projects. The projects are submitted by local communities, and evaluated and ranked by INDOT according to project need, traffic volume, local

support, the impact on connectivity and mobility within the community, and regional economic significance.

The Local Trax program provides grants to cities, towns, and counties for grade separation, crossing closure and other safety enhancement projects at local road crossings of railroads. Projects are scored on crossing characteristics, safety, mobility, financial participation, economic development benefits, environmental effect, quality of life, and number of crossing closures. Additional scoring benefits are provided for political and community support and tax base increases due to the projects. More details on program funding are provided in Chapter 8, Revenue and Funding.

The Indiana Multimodal Freight Plan Update (2018) provided 11 performance measures.

FREIGHT GOAL	PERFORMANCE MEASURE
Economic Impact	<ul style="list-style-type: none"> • Percent growth in jobs in freight-intensive industries • Percent growth in export value (domestic or foreign)
Capacity to Meet Demand	<ul style="list-style-type: none"> • Percent of lane-miles at level of service C or better • Reduction in hours of truck delay • Improvement in Truck Travel Time Reliability Index
Multimodal Integraion and Synergy	<ul style="list-style-type: none"> • Percent of intermodal connectors with "fair" or better pavement conditions • Number of intermodal or multimodal projects completed
Access to National and International Markets	<ul style="list-style-type: none"> • Hours of delay on roadways within 5 miles of ports and cargo airports
Quality of Life	<ul style="list-style-type: none"> • Reduction in truck-involved crashes • Reduction in truck-involved fatal crashes • Removal of rail/highway grade crossings

The Indiana State Rail Plan (2017) includes several performance metrics for both freight and passenger rail service. The freight rail performance objectives relate to measurable safety improvements, economic development objectives, and approaches to improving the reliability of the rail system. The passenger rail metrics relate to financial performance, on-time performance, and other service quality measures.

There are also aviation-related performance goals. For instance, approximately \$4.6 million from the Indiana Business Promotion and Innovation Fund aims to

increase the number of direct flights across the state. Additionally, the Indiana State Aviation System Plan (2012) identified several performance measures for the state's airports, including:

- Maintaining pavement condition to standards
- Recommended minimum service levels for runway length, runway strength, additional airport infrastructure standards, and appropriate zoning
- Standards for instrument approach procedures
- Technology and policy approaches to increase Indiana's competitiveness