



Performance Management

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TABLE L-1 | HIGHWAY PERFORMANCE MEASURES

Highway Performance Measures

Safety						
FEDERAL RULE	RULE STATUS	RULE EFFECTIVE DATE	MEASURE(S)	METRIC(S)	DATA SOURCE(S)	NETWORK APPLICABILITY
National Performance Management Measures for the Highway Safety Improvement Program	Final Rule March 15, 2016	Effective on April 14, 2016	Number of fatalities	Based upon 5 consecutive year rolling average (add 5 years, then divide by 5); For rates, use VMT	<ul style="list-style-type: none"> Number of fatalities from FARS VMT from HPMS (states or MPO) Serious injuries coded in KABCO, as described in the MMUCC 	All public roads
			Rate of fatalities per 100 million VMT			
			Number of serious injuries			
			Rate of serious injuries per 100 million VMT			
			Number of non-motorized fatalities and non-motorized serious injuries			

Source: Title 23 CFR Part 490, <https://www.govinfo.gov/content/pkg/CFR-2016-title23-vol1/xml/CFR-2016-title23-vol1-chap1.xml#seqnum490.207>

Infrastructure - Pavement and Bridge Condition									
FEDERAL RULE	RULE STATUS	RULE EFFECTIVE DATE	MEASURE(S)	METRIC(S)	DATA SOURCE(S)	NETWORK APPLICABILITY			
National Performance Management Measures for Assessing Pavement Condition	Final Rule January 17, 2017	Effective on May 20, 2017	Percentage of pavements in good condition, Interstates	Must follow HPMS Field Manual Four condition metrics: <ul style="list-style-type: none"> IRI Rutting (asphalt pavements) Faulting (jointed concrete pavements) Cracking percent 	<ul style="list-style-type: none"> Collect data in accordance with HPMS Field Manual National Bridge Inventory 	Interstate System			
			Percentage of pavements in poor condition, Interstates						
			Percentage of pavements in good condition, Non-Interstate NHS			PSR allowed as alternative where posted speeds <40 mph Three data elements: <ul style="list-style-type: none"> Through lanes Surface type Structure type 	<ul style="list-style-type: none"> Collect data in accordance with HPMS Field Manual National Bridge Inventory 	Non-Interstate NHS	
			Percentage of pavements in poor condition, Non-Interstate NHS						
			Percentage of NHS bridges in good condition					Three NBI items: <ul style="list-style-type: none"> 58-Deck 59-Superstructure 60-Substructure For culverts, 62-Culverts will determine classification	NHS
			Percentage of NHS bridges in poor condition						

Source: Title 23 CFR Part 490, <https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=58170fd863cd7ef24c33963c2a2ff3b0&mc=true&n=sp23.1490.d&r=SUBPART&ty=HTML>

Acronyms Defined:

FARS = Fatality Analysis Reporting System; **HPMS** = Highway Performance Monitoring System; **IRI** = International Roughness Index; **KABCO** = Coding Convention System for Injury Classification (est. by the National Safety Council); **MMUCC** = Model Minimum Uniform Crash Criteria Guideline (4th Edition, July 2012); **MPO** = Metropolitan Planning Organization; **NBI** = National Bridge Inventory; **NHS** = National Highway System; **PSR** = Present Serviceability Rating; **VMT** = Vehicle Miles Traveled

TABLE L-1 | HIGHWAY PERFORMANCE MEASURES (CONTINUED)

Highway Performance Measures (Continued)

System Performance - Reliability						
FEDERAL RULE	RULE STATUS	RULE EFFECTIVE DATE	MEASURE(S)	METRIC(S)	DATA SOURCE(S)	NETWORK APPLICABILITY
National Performance Management Measures to Assess Performance of the NHS	Final Rule January 18, 2017	Effective on May 20, 2017 GHG measure effective on September 28, 2017	Percent of Person-miles Traveled on Interstate System that are Reliable	LOTTR: a comparison, expressed as a ratio, of the 80th percentile travel time of a reporting segment to the "normal" (50th percentile ¹) travel time of a reporting segment occurring throughout a full calendar year.	<ul style="list-style-type: none"> Travel time data needed to calculate the LOTTR measures shall come from the travel time data set State DOTs, in coordination with MPOs, shall define reporting segments; reporting segments must be contiguous so that they cover the full extent of the mainline highways of the NHS in the State AADT needed to calculate the LOTTR measures that will be used, as reported to HPMS in June of the reporting year, to assign an annual volume to each reporting segment The average occupancy factors shall come from the most recently available data from FHWA; tailpipe CO₂ emissions will be posted on the FHWA website 	Interstate System
			Percent of Person-miles Traveled on the non-Interstate NHS that are Reliable			Non-Interstate NHS
			Percent Change in Tailpipe CO ₂ Emissions on the NHS (Generated by On-Road Mobile Sources) Compared to the Calendar Year 2017 Level	Annual Total Tailpipe CO ₂ Emissions on the NHS		Interstate and Non-Interstate NHS

¹ Normal Travel Time (or 50th percentile travel time) is the time of travel to traverse the full extent of a reporting segment which is greater than the time for 50 percent of the travel in a calendar year to traverse the same reporting segment.

Source: Title 23 CFR Part 490, <https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=b1521648fcd9da2e67cbf5fbb6fa59d&mc=true&n=sp23.1.490.e&r=SUBPART&ty=HTML>; <https://www.fhwa.dot.gov/tpm/rule.cfm>

System Performance - Freight						
FEDERAL RULE	RULE STATUS	RULE EFFECTIVE DATE	MEASURE(S)	METRIC(S)	DATA SOURCE(S)	NETWORK APPLICABILITY
National Performance Management Measures to Assess Freight Movement on the Interstate System	Final Rule January 18, 2017	Effective on May 20, 2017	Percent of the Interstate System Mileage providing for Reliable Truck Travel Times (TTTR Index)	TTTR Index to be calculated by State DOT for each contiguous segment	<ul style="list-style-type: none"> Travel Time Data Set (See Reliability Measure) 	Interstate System

The Truck Travel Time Reliability Index is also referred to as the Freight Reliability measure.

Source: Title 23 CFR Part 490, https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=52750d35b02116533de9cee379a3dbad&mc=true&n=pt23.1.490&r=PART&ty=HTML#se23.1.490_1601

Acronyms Defined:

AADT = Annual Average Daily Traffic; CO₂ = Carbon Dioxide; DOT = Department of Transportation; FHWA = Federal Highway Administration; GHG = Greenhouse Gas; HPMS = Highway Performance Monitoring System; LOTTR: Level of Travel Time Reliability; MPO = Metropolitan Planning Organization; NHS = National Highway System; TTTR = Truck Travel Time Reliability

TABLE L-1 | HIGHWAY PERFORMANCE MEASURES (CONTINUED)

Highway Performance Measures (Continued)

System Performance - Congestion Reduction						
FEDERAL RULE	RULE STATUS	RULE EFFECTIVE DATE	MEASURE(S)	METRIC(S)	DATA SOURCE(S)	NETWORK APPLICABILITY
National Performance Management Measure for Assessing the CMAQ Improvement Program - Traffic Congestion	Final Rule January 18, 2017	Effective on May 20, 2017	Annual Hours of PHED Per Capita	Total PHED (vehicle-hours)	<ul style="list-style-type: none"> Travel Time Data Set (see Reliability Measure) State DOTs (and MPOs) determine segments; State DOTs develop or measure hourly traffic volume data and assign to contiguous segments AADT reported to the HPMS (within the past 2 years) may be used to estimate hourly traffic volumes State DOTs shall use estimated annual vehicle occupancy factors for cars, buses, and trucks in urbanized areas provided by FHWA. 	<ul style="list-style-type: none"> First performance period - NHS in urbanized areas with population over 1 million Second and other performance periods - NHS in urbanized areas with a population over 200,000 <p><i>Non-attainment and maintenance areas</i></p>
			Modal-Share - Percent of Non-SOV Travel, including travel avoided by telecommuting	Percent of Non-SOV Travel		
<p><i>Excessive delay means the extra amount of time spent in congested conditions defined by speed thresholds that are lower than a normal delay threshold. For the purposes of this rule, the speed threshold is 20 miles per hour (mph) or 60 percent of the posted speed limit, whichever is greater.</i></p> <p><i>Peak period is defined as weekdays from 6am to 10am and either 3pm to 7pm or 4pm to 8pm. State DOTs and MPOs may choose which afternoon peak period to use.</i></p> <p><i>At this time, this measure is applicable due to CRTPO Designation as maintenance for ozone.</i></p>						

Source: Title 23 CFR Part 490, https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=52750d35b02116533de9cee379a3dbad&mc=true&n=pt23.1.490&r=PART&ty=HTML#se23.1.490_1707

System Performance - Environment						
FEDERAL RULE	RULE STATUS	RULE EFFECTIVE DATE	MEASURE(S)	METRIC(S)	DATA SOURCE(S)	NETWORK APPLICABILITY
National Performance Management Measure to Assess the CMAQ Improvement Program - On-Road Mobile Source Emissions	Final Rule January 18, 2017	Effective on May 20, 2017	Total Emissions Reduction (applicable criteria pollutant for CRTPO) from On-Road Mobile Sources	2-year and 4-year cumulative reported emission reductions, for all projects funded by CMAQ for each criteria pollutant and applicable precursors (PM 2.5, PM10, CO, VOC, and NOx) under the CMAQ program for which the area is designated non-attainment or maintenance	<ul style="list-style-type: none"> CMAQ Public Access System; emissions reduction estimates for each CMAQ funded project 	Project financed with CMAQ funds in all non-attainment and maintenance areas under the CMAQ program
<p><i>At this time, this measure is applicable due to CRTPO Designation as maintenance for ozone (8-hour standard)</i></p>						

Source: Title 23 CFR Part 490, https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=52750d35b02116533de9cee379a3dbad&mc=true&n=pt23.1.490&r=PART&ty=HTML#se23.1.490_1707

Reduced Project Delivery Delays - No Federal Measures Are Proposed

Acronyms Defined:
AADT = Annual Average Daily Traffic; **CMAQ** = Congestion, Mitigation and Air Quality; **CO** = Carbon Monoxide; **CRTPO** = Charlotte Regional Transportation Planning Organization; **DOT** = Department of Transportation; **FHWA** = Federal Highway Administration; **HPMS** = Highway Performance Monitoring System; **NHS** = National Highway System; **NOx** = Nitrogen Oxide(s); **PHED** = Peak Hour Excessive Delay; **PM 2.5/PM 10** = Particulate Matter; **SOV** = Single-Occupant Vehicle; **VOC** = Volatile Organic Compound(s);

TABLE L-2 | HIGHWAY ASSET MANAGEMENT

Asset Management Plans

Asset Management Plans and Periodic Evaluations of Facilities						
FEDERAL RULE	RULE STATUS	RULE EFFECTIVE DATE	MEASURE(S)	METRIC(S)	DATA SOURCE(S)	NETWORK APPLICABILITY
Asset Management Plans	Final Rule October 24, 2016	Effective on October 2, 2017	N/A, but State DOTs must develop and implement Asset Management Plans for the NHS	<p>Asset management plans must include (at a minimum) a listing of NHS pavement and bridge assets (regardless of ownership)</p> <p>State DOTs are also encouraged (but not required) to include other NHS infrastructure within the NHS corridors and other public roads; examples of other assets include tunnels, ancillary structures, and signs; other roadways are non-NHS Federal Aid Highways</p>	<ul style="list-style-type: none"> HPMS and NBI 	NHS Required; Non-NHS Federal Aid Highways encouraged
Periodic Evaluation of Facilities Repeatedly Requiring Repair and Reconstruction Due to Emergency Events	Final Rule October 24, 2016	Effective on November 23, 2016	N/A, but State DOTs must shall conduct statewide evaluations to determine if there are reasonable alternatives to roads, highways, and bridges that have required repair and reconstruction activities on two or more occasions due to emergency events on or after January 1, 1997	Must re-evaluate after every emergency event to impacted infrastructure, and review and update entire evaluation every four years	<ul style="list-style-type: none"> Any data deemed useful and/or necessary by State DOT 	All NHS roads and bridges (by 11-23-18)

Source: Title 23 CFR Part 515, <https://www.federalregister.gov/documents/2016/10/24/2016-25117/asset-management-plans-and-periodic-evaluations-of-facilities-repeatedly-requiring-repair-and>

Source: Title 23 CFR Part 667, <https://www.federalregister.gov/documents/2016/10/24/2016-25117/asset-management-plans-and-periodic-evaluations-of-facilities-repeatedly-requiring-repair-and>

Acronyms Defined:

DOT = Department of Transportation; **HPMS** = Highway Performance Monitoring System; **NBI** = National Bridge Inventory; **NHS** = National Highway System

TABLE L-3 | TRANSIT PERFORMANCE MEASURES

Transit Performance Measures

Transit Asset Management and National Transit Database						
FEDERAL RULE	RULE STATUS	RULE EFFECTIVE DATE	MEASURE(S)	METRIC(S)	TIME FRAME	ADDITIONAL INFORMATION
Transit Asset Management Plans	Final Rule July 26, 2016	Effective on October 1, 2016	<ul style="list-style-type: none"> Each Tier 1 provider must develop and carry out a TAM plan Each Tier II provider must develop its own TAM plan or participate in a group TAM plan The regulations for the NTD must conform to the reporting requirements for the TAM system The updated NTD form includes the following: <ul style="list-style-type: none"> <u>Equipment</u> - % of service vehicles that have met or exceeded their useful life benchmark <u>Rolling Stock</u> - % of revenue vehicles that have met or exceeded their useful life benchmark <u>Infrastructure</u> - % of track segments with performance restrictions by class <u>Facility</u> - % of facilities rated below 3 on the FTA TERM Scale 	Required TAM Plan Elements: <u>ALL Providers - Tier I & II</u> <ul style="list-style-type: none"> Inventory of Capital Assets Condition Assessment Decision Support Tools Investment Prioritization <u>Tier I Providers Only</u> <ul style="list-style-type: none"> TAM and SGR Policy Implementation Strategy List of Key Annual Activities Identification of Resources Evaluation Plan 	<ul style="list-style-type: none"> Implementation deadline - An initial TAM plan must be implemented by October 1, 2018 Preliminary state of good repair performance targets are due by January 1, 2017 MPOs must establish their SGR targets before June 30, 2017 First targets may be entered in January, 2017 for FY2017 After initial implementation, targets are reported with each annual NTD report for the next fiscal year <ul style="list-style-type: none"> There should be one target for each mode or vehicle type 	TAM plans cover a horizon period of at least 4 years, and the plan must coincide with the relevant TIP There must be coordination with metro, non-metro, and statewide planning organizations in the selection of performance metrics
<p><i>Tier I Provider:</i> a recipient that owns, operates, or manages either (1) one hundred and one (101) or more vehicles in revenue service during peak regular service across all fixed route modes or in any one non-fixed route mode, or (2) rail transit.</p> <p><i>Tier II Provider:</i> a recipient who owns, operates, or manages 100 or fewer vehicles in revenue service during peak regular service across all non-rail fixed route modes or in any one non-fixed route mode; a subrecipient under the 5311 Rural Area Formula program; a subrecipient under the 5310 Seniors and Individuals with Disabilities program who operates an open-door service; or any American Indian Tribe.</p> <p>Note: This rule defines the term State of Good Repair and establishes minimum Federal requirements for TAM</p> <p>Source: 49 CFR 625.1 thru 625.45, https://www.transportation.gov/briefing-room/federal-transit-administration-announces-final-rule-requiring-transit-agencies-manage</p> <p>Source: https://www.gpo.gov/fdsys/pkg/FR-2016-07-26/pdf/2016-16883.pdf</p> <p>Source: 49 CFR 630, https://www.transit.dot.gov/regulations-guidance/rulemaking/2016-16883</p> <p>Source: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/NTD%20Asset%20Inventory%20NewMaster_111816.pdf</p> <p>Source: https://www.transit.dot.gov/sites/fta.dot.gov/files/TAM_NPRM_and_NTD_guidance_crosswalk.pdf</p>						
<p>Acronyms Defined: FTA = Federal Transit Administration; NTD = National Transit Database; SGR = State of Good Repair; TAM = Transit Asset Management; TERM = Transit Economic Requirements Model; TIP = Transportation Improvement Program</p>						

TABLE L-3 | TRANSIT PERFORMANCE MEASURES

Transit Safety Program

Public Transportation Agency Safety						
FEDERAL RULE	RULE STATUS	RULE EFFECTIVE DATE	MEASURE(S)	SAFETY PLAN COMPONENTS	TIME FRAME	ADDITIONAL INFORMATION
Public Transportation Safety Program	Final Program Rule August 11, 2016 Public Transportation Agency Safety Plan published February 5, 2016	Effective on September 12, 2016	Fatalities, Injuries, Safety Events, System Reliability (State of Good Repair)	<p>The Board of Directors approve the plan and any updates</p> <p>The plan must include:</p> <ul style="list-style-type: none"> • Methods for identifying and evaluating safety risks • Strategies to minimize the exposure of the public, personnel, and property to hazards and unsafe conditions • A process and timefile for conducting an annual review and update of the plan • Performance targets • Assigment of a Safety Officer • A comprehensive staff training program 	Every transit agency must have a safety plan within one (1) year of the final rule effective date	Every transit operator that receives Federal financial assistance is required to develop and implement a Public Transportation Agency Safety Plan

Source: 49 CFR 670 Public Transportation Safety Program, <https://www.federalregister.gov/documents/2016/08/11/2016-18920/public-transportation-safety-program>

Source: Public Transportation Agency Safety Plan, <https://www.federalregister.gov/documents/2016/02/05/2016-02017/public-transportation-agency-safety-plan>

TABLE L-4 | NCDOT 2018 HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) SAFETY MEASURES

SAFETY PERFORMANCE MEASURES					
YEAR	FATALITIES	FATALITY RATE	SERIOUS INJURIES	SERIOUS INJURY RATE	NON-MOTORIZED FATALITIES AND SERIOUS INJURIES
2008	1,428	1.407	2,773	2.733	428
2009	1,313	1.280	2,480	2.417	358
2010	1,320	1.289	2,281	2.228	399
2011	1,230	1.186	2,368	2.283	405
2012	1,299	1.243	2,279	2.182	472
2013	1,290	1.227	2,117	2.013	406
2014	1,284	1.188	2,194	2.031	411
2015	1,379	1.233	2,422	2.165	437
2016	1,451	1.246	2,987	2.565	468

Source: NCDOT (2018 Safety Data)

TABLE L-5 | NCDOT 2018 HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) SAFETY TARGETS

TARGET SETTING CRASH DATA AND 2018 TARGETS					
YEAR	FATALITIES (5 YEAR AVERAGE)	FATALITY RATE (5 YEAR AVERAGE)	SERIOUS INJURIES (5 YEAR AVERAGE)	SERIOUS INJURY RATE (5 YEAR AVERAGE)	NON-MOTORIZED FATALITIES AND SERIOUS INJURIES (5 YEAR AVERAGE)
2008 - 2012	1,318	1.281	2,436	2.369	412
2009 - 2013	1,290	1.245	2,305	2.225	408
2010 - 2014	1,285	1.227	2,248	2.147	419
2011 - 2015	1,296	1.215	2,276	2.135	426
2012 - 2016	1,341	1.228	2,400	2.191	439
2018 Target	1,207.3	1.114	2,161.2	1.988	393.5

Source: NCDOT (2018 Safety Data)

BACKGROUND

Target Reporting Dates:

- State: August 31st with annual HSIP report
- MPOs: February 27th

How are targets set?

- Up to each State and MPO
 - MPO can adopt State methodology, or come up with their own

Assessment of Significant Progress

- FHWA will determine whether a State DOT has met or made significant progress toward meeting HSIP targets
- FHWA will not directly assess MPO progress towards meeting HSIP targets

STATE SAFETY PERFORMANCE TARGETS

Goal: Reduce fatalities and serious injuries by 2030

Target: Where do we need to be in 2018 (current target setting year) to reach this goal by 2030?

- 5 year rolling average of fatalities in 2013 = 1,290
- To reduce fatalities by 50% in 2030 = 645
- 5 year rolling average of fatalities in 2016 = 1,340.6

Baseline 2012-2016	$1340.6 \times (1 + -0.0510)^0$	=	1340.6
2017	$1340.6 \times (1 + -0.0510)^1$	=	1272.2
2018 Fatality Target	$1340.6 \times (1 + -0.0510)^2$	=	1207.3

RESOURCES

Metropolitan Planning Organization Safety Performance Measures Fact Sheet

https://safety.fhwa.dot.gov/hsip/spm/docs/mpo_factsheet.pdf

FHWA Safety Target Setting Resources

https://safety.fhwa.dot.gov/hsip/spm/target-setting_resources.cfm

North Carolina Strategic Highway Safety Plan

<http://ncshsp.org/>

MPO / RPO Crash Data

<https://connect.ncdot.gov/resources/safety/Pages/Crash-Data.aspx>