

VII. System Performance Report



Photo by: Keith Perry, Hudson Valley Drones

The 2040 UCTC Long Range Transportation Plan contained specific performance measures that were utilized by UCTC to program its planning funds as well as in choosing TIP programs and adjusting the goals and objectives in the plan. The current federal regulatory environment requires UCTC to address specific performance measure regulations adopted by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA).

UCTC’s Plan 2045 addresses actions that are necessary for the implementation of Transportation Performance Management (TPM) in carrying out the federally- required planning and programming activities. In addition, Plan 2045 includes the public transportation performance management requirements to advance the general policy and purposes of the public transportation program to “foster the development and revitalization of public transportation systems”. The following seven national performance goals for the Federal-Aid Highway Program are addressed in the Plan.

NATIONAL TRANSPORTATION PERFORMANCE MANAGEMENT GOALS:

It is in the interest of the United States to focus the Federal-aid highway program on the following national goals:

- 1 **Safety** – To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
- 2 **Infrastructure condition** – To maintain the highway infrastructure asset system in a state of good repair
- 3 **Congestion reduction** – To achieve a significant reduction in congestion on the National Highway System
- 4 **System reliability** – To improve the efficiency of the surface transportation system
- 5 **Freight movement and economic vitality** – To improve the national freight network, 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 natural 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

23USC §150(b)

The Federal Highway Administration defines Transportation Performance Management (TPM) as a strategic approach that uses system information to make investment and policy decisions to achieve national performance goals.



Investment Decisions

Using goals, measures, and data to make better informed decisions about how to invest transportation funding.

Aimed at a Better Performing Transportation System

Setting targets, developing plans, reporting results, and being accountable for performance.

For Connected and Productive Communities

Focusing on the effective delivery of goods and safe, reliable journeys to work, to school, to shopping, to community activities.

On May 27, 2016, the FHWA and the Federal Transit Administration (FTA) issued the Statewide and Nonmetropolitan Transportation Planning and Metropolitan Transportation Planning Final Rule, referred to as the Planning Rule. This rule details how state DOTs and MPOs must implement the new MAP-21 and FAST Act planning requirements, including the new **transportation performance management** provisions, in the statewide and metropolitan planning process. In accordance with the Planning Rule, UCTC must include as an element of its Long-Range Transportation Plan (LRTP) a description of the performance measures and targets that apply to the UCTC planning area and a **System Performance Report**. UCTC addresses the federal actions that are necessary for the implementation of performance-based planning, including the following system performance report that describes the condition and performance of the transportation system with respect to required performance targets.

The System Performance Report evaluates the condition and performance of the transportation system with respect to required performance targets, and reports on progress achieved in meeting the targets in comparison with baseline data and previous reports. **The Planning Rule specifies the following timeframes for when UCTC must include the System Performance Report in the LRTP:**

- ▶ In any LRTP adopted on or after May 27, 2018, the System Performance Report must reflect Highway Safety (PM1) measures.
- ▶ In any LRTP adopted on or after October 1, 2018, the System Performance Report must reflect Transit Asset Management TAM measures.
- ▶ In any LRTP adopted on or after May 20, 2019, the System Performance Report must reflect Pavement and Bridge Condition (PM2) measures.
- ▶ In any LRTP adopted on or after May 20, 2019, the System Performance Report must reflect System Performance, Freight, and Congestion Management and Air Quality Improvement Program (PM3) measures.
- ▶ In any LRTP adopted on or after July 20, 2021, the System Performance Report must reflect Transit Safety measures.

Figure 7.1: NYSDOT 2020 Safety Performance Targets

Performance Measures	New York Performance (2018) Baseline)	New York 2020 Forecast	New York 2020 Target
Number of Fatalities	1,084	1,020	1,040.4
Fatality Rate	0.86	0.82	0.826
Number of Serious Injuries	11,242	10,392	11,017
Serious Injury Rate	8.89	8.42	8.709
Number of Non-Motorized Fatalities and Serious Injuries	2,736	2,557	2,626.8

Figure 7.2: NYSDOT Safety Performance Target Progress

Performance Measures	NY 2017 Performance 5-Year Average 2013-2017	NYSDOT Target 2020
Number of Fatalities	1,084	1,040.4
Fatality Rate	0.86	0.826
Number of Serious Injuries	11,242	11,017.0
Serious Injury Rate	8.89	8.709
Number of Non-Motorized Fatalities and Serious Injuries	2,736	2,626.8

Future iterations of this report will require “descriptions” of progress achieved toward targets, including “information that is available at the time of the plan adoption, such as information that has been reported as part of the reports required under 23 CFR 490.107.”

2. TRANSIT ASSET MANAGEMENT

The Federal Transit Administration (FTA) published a final Transit Asset Management (TAM) rule on July 26, 2016. The rule applies to all recipients and subrecipients of Federal transit funding that own, operate, or manage public transportation capital assets. The rule defines the term “state of good repair,”

A DYNAMIC PLANNING ENVIRONMENT

1. HIGHWAY SAFETY IMPROVEMENT PROGRAM AND HIGHWAY SAFETY

The 2017 New York Strategic Highway Safety Plan (SHSP) is intended to reduce “the number of fatalities and serious injuries resulting from motor vehicle crashes on public roads in New York State.” The SHSP guides the New York State Department of Transportation (NYSDOT), the MPOs, and other safety partners in addressing safety and defines a framework for implementation activities to be carried out across New York State. The NYSDOT Highway Safety Improvement Program (HSIP) annual report documents the statewide performance targets.

The UCTC has adopted the NYSDOT statewide 2020 targets for the following Safety Performance Measures based on five year rolling averages per Title 23 Part 490.207 of the Code of Federal Regulations September 25, 2019 via UCTC Resolution 2019-19. In addition, the UCTC conducted a detailed safety analysis of its transportation system. A summary of that work is provided in Section 4 of this MTP.

requires that public transportation providers develop and implement TAM plans, and establishes State of Good Repair (SGR) standards and performance measures for four transit asset categories: rolling stock, transit equipment, transit infrastructure, and facilities. Figure 2.3 below identifies the federal transit asset performance measures.

Figure 7.3: FTA TAM Performance Measures

Asset Category	Performance Measure and Asset Class
Rolling Stock	Percentage of revenue vehicles within a particular asset class that have either met or exceeded their useful life benchmark
Equipment	Percentage of non-revenue, support-service and maintenance vehicles that have met or exceeded their useful life benchmark
Infrastructure	Percentage of track segments with performance restrictions
Facilities	Percentage of facilities within an asset class rated below condition 3.0 on the Transit Economic Requirements Model (TERM) scale



Baseline Conditions and Performance Targets

Figure 2.4 presents the baseline performance/conditions for transit assets in the UCTC planning area as well as related performance targets. Ulster County Area Transit was among the first public transit providers in NYS to adopt a transit asset management plan, which became effective October 2018. The UCTC agreed to support these transit asset targets at that time and most recently on April 23, 2019 via UCTC Resolution 2019-04.

Ulster County Area Transit (UCAT) is the county-owned operator of bus transportation in Ulster County, NY.

Figure 7.4: Transit Asset Management Measures and Performance Targets

Asset Category – Performance Measure	ULB	2017 Target	2018 Target	2019 Target	2020 Target
Rolling Stock					
Age/% of revenue Vehicles exceeding ULB	Increase % of ULB by 2%	12%	14%	16%	16%
Service Vehicles- ULB	Maintain the ULB of 50%	50%	50%	50%	50%
Preventive Maintenance					
Mechanical Failures	Decrease 5% annually	187	<178	<169	<150
Service Vehicles- ULB	Maintain the ULB of 50%	50%	50%	50%	50%
Road Calls/Interruption of Service	Decrease 4.5% annually	88	84	80	75
Facility					
% of facility rated under 3.0 on TERM scale	--	15%	13%	10%	10%
Fuel Station TERM Scale Rating	Maintain TERM scale of 4 or above	4.5	4.5	4.5	4.5
Safety					
Accidents per vehicle miles traveled (accidents/total miles)	Continue annual decline	.05%	<.05%	<.05%	<.05%
ADA/Reliability					
On Time Performance %	--	79%	85%	90%	90%
Missed Trips	--	0	0	0	0
Performance Indicators					
Passenger per Revenue Mile	Increase 1.5% annually	\$12.94	\$12.89	\$12.85	\$12.65
Cost per Passenger	Decrease annually	50%	50%	50%	50%
Road Calls/Interruption of Service	Decrease 4.5% annually	88	84	80	75

Source: Ulster County Area Transit 2017 Performance Management Plan

3. PAVEMENT AND BRIDGE CONDITION (PM2)

FHWA published the Pavement and Bridge Condition Performance Measures Final Rule in January 2017. This rule, which is also referred to as the PM2 rule, establishes six performance measures for pavement and bridge condition on Interstate and non-Interstate National Highway System (NHS) roads. **The PM2 measures are:**

- ▶ Percent of Interstate pavements in good condition;
- ▶ Percent of Interstate pavements in poor condition;
- ▶ Percent of non-Interstate NHS pavements in good condition;
- ▶ Percent of non-Interstate NHS pavements in poor condition;
- ▶ Percent of NHS bridges (by deck area) classified as in good condition; and
- ▶ Percent of NHS bridges (by deck area) classified as in poor condition.

Pavement Condition Measures

The four pavement condition measures represent the percentage of lane-miles on the Interstate and non-Interstate NHS that are in good condition or poor condition. The PM2 rule defines NHS pavement types as either asphalt, jointed concrete, or continuously reinforced concrete pavement (CRCP), and defines five pavement condition metrics that states are to use to assess pavement condition:

- ▶ **International Roughness Index (IRI)** – an indicator of roughness; applicable to all three pavement types.
- ▶ **Cracking percent** – percentage of the pavement surface exhibiting cracking; applicable to all three pavement types.
- ▶ **Rutting** – extent of surface depressions; applicable to asphalt pavements only.
- ▶ **Faulting** – vertical misalignment of pavement joints; applicable to jointed concrete pavements only.
- ▶ **Present Serviceability Rating (PSR)** – a quality rating that is applicable only to NHS roads with posted speed limits of less than 40 miles per hour, for example toll plazas and border crossings. A state may choose to collect and report PSR for applicable segments as an alternative to the other four metrics.

Bridge Condition Measures

The two bridge condition performance measures refer to the percentage of bridges by deck area on the NHS that are in good or poor condition. Bridge owners are required to inspect bridges on a regular basis and report condition data to FHWA. The measures assess the condition of four bridge components: deck, superstructure, substructure, and culvert.

Figure 7.5: Performance Rating Thresholds

Metric Rating	Good	Fair	Poor
Deck	≥ 7	5 or 6	≤ 4
Superstructure	≥ 7	5 or 6	≤ 4
Substructure	≥ 7	5 or 6	≤ 4
Culvert	≥ 7	5 or 6	≤ 4

The bridge condition measures are expressed as the percent of NHS bridges in good or poor condition. The percent is determined by summing the total deck area of good or poor NHS bridges and dividing by the total deck area of the bridges carrying the NHS. Deck area is computed using structure length and either deck width or approach roadway width.

Bridges in good condition suggests that no major investment is needed. Bridges in poor condition are safe to drive on; however, they are nearing a point where substantial reconstruction or replacement is needed.

Pavement and Bridge Condition Performance Target Requirements

Performance for the PM2 measures is assessed over a series of four-year performance periods. The first performance period began on January 1, 2018 and runs through December 31, 2021. NYSDOT must report baseline performance and targets at the beginning of each period and update performance at the midpoint and end of each performance period.

The PM2 rule requires state DOTs and MPOs to establish performance targets for all six measures and monitor progress towards achieving the targets. **States must establish:**

- ▶ Four-year statewide targets for the percent of Interstate pavements in good and poor condition;
- ▶ Two-year and four-year statewide targets for the percent of non-Interstate NHS pavements in good and poor condition; and
- ▶ Two-year and four-year targets for the percent of NHS bridges (by deck area) in good and poor condition.

MPOs must establish four-year targets for all six measures by either agreeing to program projects that will support the statewide targets or setting quantifiable targets for the MPO’s planning area. The two-year and four-year targets represent expected pavement and bridge condition at the end of calendar years 2019 and 2021, respectively.



The Eddyville Bridge on Route 213 in Eddyville, NY.

NYSDOT Pavement and Bridge Condition Baseline Performance and Established Targets

This system performance section discusses performance for each applicable target as well as the progress achieved by the MPO in meeting targets in comparison with system performance recorded in previous reports. The federal performance measures are new and therefore, performance of the system for each measure and associated targets have only recently been assessed and developed. Accordingly, this first LRTP system performance section highlights performance for the baseline period of 2017. NYSDOT will continue to monitor pavement and bridge condition performance and report to FHWA on a biennial basis. Future system performance reports will discuss progress towards meeting the targets since the establishment of this initial baseline.

NYSDOT established statewide PM2 targets on May 20, 2018. UCTC was then required to establish PM2 targets no later than November 16, 2018. UCTC agreed to adopt NYSDOT’s PM2 performance targets on July 24, 2018 via UCTC Resolution 2018-15. By adopting NYSDOT’s targets, UCTC agrees to plan and program projects that help NYSDOT achieve these targets.

Figure 6 presents baseline performance for each PM2 measure for New York and for the UCTC planning area as well as the two-year and four-year statewide targets established by NYSDOT.

Details regarding the NHS and bridge conditions in Ulster County are provided in Section 4 of this report.

Figure 7.6: Pavement and Bridge Condition (PM2) Performance and Targets

Performance Measures	New York Performance (2018 Baseline)	New York 2-year Target (2020)	New York 4-year Target (2022)
Percent of Interstate pavements in good condition	52.2%	46.4%	47.3%
Percent of Interstate pavements in poor condition	2.7%	3.1%	4.0%
Percent of non-Interstate NHS pavements in good condition	20.4%	14.6%	14.7%
Percent of non-Interstate NHS pavements in poor condition	8.3%	12.0%	14.3%
Percent of NHS bridges (by deck area) in good condition	20.2%	23.0%	24.0%
Percent of NHS bridges (by deck area) in poor condition	11.7%	11.6%	11.7%

**For the first performance period only (January 1, 2018 through December 31, 2021), baseline condition and 2-year targets are not required for the Interstate pavement condition measures.*

4. SYSTEM PERFORMANCE, FREIGHT, AND CONGESTION, MITIGATION & AIR QUALITY IMPROVEMENT PROGRAM MEASURES (PM3)

On January 18, 2017, FHWA published the system performance, freight, and Congestion, Mitigation and Air Quality Improvement Program (CMAQ) Performance Measures Final Rule in the Federal Register. This third FHWA performance measure rule (PM3), which has an effective date of May 20, 2017, established six performance measures to assess the performance of the NHS, freight movement on the Interstate System, and traffic congestion and on-road mobile source emissions for the CMAQ Program. **The performance measures are:**

For the National Highway Performance Program (NHPP)

1. Percent of person-miles on the Interstate system that are reliable, also referred to as Level of Travel Time Reliability (LOTTR);
2. Percent of person-miles on the non-Interstate NHS that are reliable (LOTTR);

For the National Highway Freight Program (NHFP)

- Truck Travel Time Reliability Index (TTTR);

For the National Highway Freight Program (NHFP)

- Annual hours of peak hour excessive delay per capita (PHED);
- Percent of non-single occupant vehicle travel (Non-SOV); and
- Cumulative two-year and four-year reduction of on-road mobile source emissions for CMAQ funded projects (CMAQ Emission Reduction).



Traffic congestion on the Carmine Liberta Bridge in New Paltz on an autumn afternoon.

The three CMAQ performance measures listed above are applicable only to designated nonattainment areas or maintenance areas for National Ambient Air Quality Standards by the Environmental Protection Agency. The UCTC meets all current air quality standards and is not subject to establishing targets for these performance measures. The remaining performance measures are described below.

For the National Highway Freight Program (NHFP)

Travel time reliability refers to the consistency or dependability of travel times on a roadway from day to day or across different times of the day. For example, if driving a certain route always takes about the same amount of time, that segment is reliable. It may be congested most of the time, not congested most of the time, or somewhere in between, but the conditions do not differ very much from time period to time period. On the other hand, if driving that route takes 20 minutes on some occasions but 45 minutes on other occasions, the route is not reliable.

The LOTTR is defined as the ratio of the longer travel times (80th percentile) to a normal travel time (50th percentile) over applicable roads during four time periods that cover the hours of 6 a.m. to 8 p.m. each day (AM peak, Mid-day, PM peak, and weekends). The LOTTR ratio is calculated for each roadway segment. The segment is reliable if its LOTTR is less than 1.5 during all four time periods. If one or more time periods has a LOTTR of 1.5 or above, that segment is unreliable.

The two LOTTR measures are expressed as the percent of person-miles traveled on the Interstate or non-Interstate NHS system that are reliable. By using person-miles, the measures take into account the total number of people traveling in buses, cars, and trucks over these roadway segments. To obtain total person-miles traveled, the length of each segment is multiplied by an average vehicle occupancy for each type of vehicle on the roadway.

The sum of person-miles on reliable segments is divided by the sum of person-miles on all segments to determine the percent of person-miles traveled that are reliable.

TTTR Measure

The TTTR measure assesses travel time reliability for trucks traveling on the Interstate. A TTTR ratio is generated by dividing the 95th percentile truck travel time by a normal travel time (50th percentile) for each segment of the Interstate system over five time periods throughout weekdays and weekends (AM peak, Mid-day, PM peak, weekend, and overnight). The time periods cover all hours of the day.

For each Interstate segment, the highest TTTR value among the five time periods is multiplied by the length of the segment. The sum of these length-weighted segments is then divided by the total length of Interstate to generate the TTTR Index.

Travel Time Data

The travel time data used to calculate the LOTTR and TTTR measures is provided by FHWA via the National Performance Management Research Data Set (NPMRDS). This dataset contains historical travel times, segment lengths, and Annual Average Daily Traffic (AADT) for Interstate and non-Interstate NHS roads.

PM3 Performance Target Requirements

Performance for the PM3 measures is assessed over a series of four-year performance periods. States must report baseline performance and targets during the first part of the performance period and update performance at the midpoint and end of each performance period.

For the LOTTR and TTTR measures, the first performance period began on January 1, 2018 and runs through December 31, 2021.

The PM3 rule requires state DOTs and MPOs to establish performance targets for each measure and monitor progress towards achieving the targets. NYSDOT must establish two-year and four-year state targets for the Interstate LOTTR, TTTR, Non-SOV Travel, and CMAQ Emission Reduction measures. For the non-Interstate NHS LOTTR and PHED measures, NYSDOT must establish four-year targets.



New York State Thruway in winter.

Within 180 days of NYSDOT establishing targets, MPOs must establish four-year performance targets for both LOTTR measures, the TTTR measure, and, if applicable, the CMAQ Emission Reduction measure. MPOs establish targets by either agreeing to program projects that will support the State’s targets or setting quantifiable targets for the MPO’s planning area.

The two-year and four-year targets represent expected performance at the end of calendar years 2019 and 2021, respectively.

NYSDOT PM3 Baseline Performance and Established Targets

This system performance report discusses performance for each applicable target as well as the progress achieved by the MPO in meeting targets in comparison with system performance recorded in previous reports. The federal performance measures are new and therefore, performance of the system for each measure and associated targets have only recently been assessed and developed. Accordingly, this first LRTP system performance report highlights performance for the baseline period prior to 2018. NYSDOT will continue to monitor performance and report to FHWA on a biennial basis. Future system performance reports will discuss progress towards meeting the targets since this initial baseline report.

NYSDOT established PM3 targets on May 20, 2018. In consultation with the New York MPOs, NYSDOT subsequently recalculated and amended the State’s LOTTR targets after discovering an error in the formula used to determine the 2018 baseline. UCTC was required to establish PM3 targets no later than November 16, 2018. UCTC agreed to support NYSDOT’s PM3 performance targets on July 24, 2018 via UCTC Resolution 2018-14. By adopting NYSDOT’s targets, UCTC agrees to plan and program projects that help NYSDOT achieve the State’s targets.

Figure 7 presents baseline performance for the LOTTR and TTTR measures for New York and for the UCTC planning area as well as the two-year and four-year targets established by NYSDOT.

Figure 7.7: System Performance and Freight (PM3) Performance and Targets

Performance Measures	New York Performance (2018) Baseline)	New York 2-year Target (2020)	New York 4-year Target (2022)
Percent of person-miles on the Interstate system that are reliable (Interstate LOTTR)	94.5%	85.0%	84.9%
Percent of person-miles on the non-Interstate NHS that are reliable (Non-Interstate NHS LOTTR)	85.9%	N/A	71.4%
Truck travel time reliability index (TTTR)	1.38	2.00	2.11

The UCTC 2045 LRTP addresses system performance and freight reliability, identifies infrastructure needs within the UCTC region, and provides funding for targeted improvements. Detailed Goals related to congestion are provided in Section 6 of this document under Goal 5: Mobility and Reliability.

On or before October 1, 2020, NYSDOT will provide FHWA and UCTC a detailed report of performance for the PM3 measures covering the period of January 1, 2018 to December 31, 2019. NYSDOT and UCTC will also have the opportunity at that time to revisit the four-year PM3 targets.

5. TRANSIT SAFETY

The Public Transportation Agency Safety Plan (PTASP) final rule (49 C.F.R. Part 673) requires certain operators of public transportation systems that are recipients or subrecipients of FTA grant funds to develop safety plans that include the processes and procedures necessary for implementing Safety Management Systems (SMS). The final rule becomes effective on July 19, 2019. Each transit operator is required to certify that it has a safety plan meeting the requirements of the rule by July 20, 2020.

Each safety plan must include, at a minimum:

- ▶ An approval by the agency’s Executive and Board of Directors (or an equivalent authority);
- ▶ The designation of a Chief Safety Officer;
- ▶ The documented processes of the agency’s SMS, including the agency’s Safety Management Policy and processes for Safety Risk Management, Safety Assurance, and Safety Promotion;
- ▶ An employee reporting program;
- ▶ Performance targets based on the safety performance measures established in FTA’s National Public Transportation Safety Plan (NSP);
- ▶ Criteria to address all applicable requirements and standards set forth in FTA’s Public Transportation Safety Program and the NSP; and
- ▶ A process and timeline for conducting an annual review and update of the safety plan.

The UCTC is required to set performance targets for each performance measure, per 23 C.F.R. § 450.306. Those performance targets must be established 180 days after the transit agency established their performance targets. Transit agencies are required to set their safety performance targets by July 20, 2020. In accordance with 49 U.S.C. 5303(h)(2)(B) and 5304(d)(2)(B), each State and transit agency must make its safety performance targets available to States and Metropolitan Planning Organizations to aid in the planning process. 49 C.F.R. § 673.15(b) requires, to the maximum extent practicable, a State or transit agency to coordinate with States and Metropolitan Planning Organizations in the selection of State and MPO safety performance targets

In coordination with its public transit carrier, Ulster County Area Transit, on December 18, 2019 UCTC endorsed the Safety Targets outlined in UCAT’s PTSAP under UCTC Resolution 2019-20 as follows:

Figure 7.8: Ulster County Area Transit Public Transportation Agency Safety Plan Safety Performance Targets

Safety Performance Targets

Year	Fatalities	Injuries	Safety Events	System Reliability	Preventable Accidents	Non Preventable Accidents
2019	0	0	<1% per vehicle mile	90%	1	2



Bike lanes on Hurley Avenue, Kingston, NY. Photo credit: City of Kingston