



Prepared by :
Southwestern Pennsylvania Commission

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Transportation Improvement
Program (TIP) for
Southwestern Pennsylvania

APPENDIX III

Transportation Performance
Management (TPM)

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Appendix 3: Transportation Performance Management

Introduction

Transportation performance management is a strategic approach to transportation investments that uses system data to make investment and policy decisions to meet national performance goals. The Moving Ahead for Progress in the 21st Century Act (MAP21) and Fixing America's Surface Transportation (FAST) Act established Performance-Based Planning and Programming (PBPP) requirements as part of Transportation Performance Management rules for both highway programs and public transportation. This approach continues with the Infrastructure Investment and Jobs Act (IIJA) enacted in November, 2021.

The Bipartisan Infrastructure Law (BIL) continues the requirements established in Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation (FAST) Act for performance management. These requirements aim to promote the most efficient investment of Federal transportation funds. Performance-based planning ensures that the Pennsylvania Department of Transportation (PennDOT) and the Metropolitan Planning Organizations (MPOs) collectively invest Federal transportation funds efficiently towards achieving national goals. In Pennsylvania, the Rural Planning Organizations (RPOs) follow the same requirements as MPOs.

National transportation goals cover a range of key management issues: highway safety, transit safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and reduced delivery delays (23 U.S. Code Section 150). These regulations also establish performance measure requirements for the National Highway Performance Program (NHPP), the Highway Safety Improvement Program (HSIP), and the Congestion Mitigation and Air Quality (CMAQ) Improvement Program. These performance measure processes are further detailed in 23 CFR Part 490.

National public transportation policy and goals focus on individual mobility and environmental impacts and include related national goals such as air quality, energy conservation, international competitiveness, and individual mobility needs for specific populations such as the elderly, people with disabilities, and the economically disadvantaged. Mandatory performance measures related to these national goals are established in two key areas: Transit Asset Management (49 U.S. Code Section 5326) and Public Transportation Safety (49 U.S. Code Section 5329).

State Departments of Transportation, Metropolitan and Rural Planning Organizations (MPOs/RPOs), and operators of public transportation are required by 23 CFR Part 450 to jointly agree upon written provisions to collect and share data, cooperatively develop and update performance targets, and report performance targets and ongoing progress towards attaining the targets.

PennDOT, in cooperation with MPOs/RPOs, has developed a Performance Based Planning and Programming (PBPP) Procedures document to serve as Pennsylvania's consensus on PBPP roles and responsibilities (March 2019). A joint SPC-PennDOT Written Provisions Acknowledgement letter dated 3/29/2019 establishes cooperatively-developed joint-processes

for highway safety performance (PM1), National Highway System performance (PM2), and NHS system performance/freight movement/CMAQ measures (PM3).

Separate processes for Transit Asset Management measures are documented in the Port Authority of Allegheny County Transit Asset Management Plan (PAAC TAM Plan, 2022) and the Pennsylvania Transit Asset Management Group Plan (PennDOT, September 2022). Written Provision Acknowledgements between SPC, PennDOT and each transit agency in the region have been completed accepting PBPP-based Transit Asset Management roles and responsibilities. SPC is required, to the maximum extent practicable, to coordinate with public transportation providers when setting performance targets. In accordance with federal planning provisions, in August 2018, SPC formally acknowledged receipt of the Public Transportation Agency Safety Plans (PTASP) and Safety Performance Targets for the Port Authority of Allegheny County c/d/b Pittsburgh Regional Transit and the Pennsylvania Department of Transportation-developed PTASP's and Safety Targets for Beaver County Transit Authority, Butler Transit Authority, Fayette Area Transportation Authority, Mid-Mon Valley Transit Authority, Washington County Transit Authority, and Westmoreland County Transit Authority, the small urban transit operators and direct recipients of FTA funding for the Pittsburgh Transportation Management Area. SPC formally agreed to support the Safety Targets established in those plans for transit modes: Rail, Bus, Commuter Bus, and Demand Response (Paratransit).

Performance Based Planning and Programming

Pennsylvania continues to follow a Performance Based Planning and Programming (PBPP) process, with a focus on collaboration between PennDOT, FHWA, and MPOs/RPOs at the county and regional levels. These activities are carried out as part of a cooperative, continuing, and comprehensive (3C) planning process which guides the development of many PBPP documents, including:

- Statewide and Regional Long Range Transportation Plans (LRTPs)
- Twelve-Year Transportation Program (TYP)
- State Transportation Improvement Program (STIP)
- Regional Transportation Improvement Programs (TIPs)
- Transportation Asset Management Plan (TAMP)
- Transit Asset Management (TAM) Plans
- Public Transportation Agency Safety Plans (PTASP)
- Pennsylvania Strategic Highway Safety Plan (SHSP)
- Comprehensive Freight Movement Plan (CFMP)
- Congestion Mitigation and Air Quality (CMAQ) Performance Plan(s)
- Congestion Management Process (CMP)

The above documents in combination with data resources including PennDOT's bridge and pavement management systems, crash databases, historical travel time archives, and the CMAQ public access system provide the resources to monitor federal performance measures and evaluate needs across the state. Based on these resources, PennDOT and MPOs/RPOs have worked together to (1) create data driven procedures that are based on principles of asset management, safety improvement, congestion reduction, and improved air quality, (2) make investment decisions based on these processes, and (3) work to set targets that are predicted to be achieved from the programmed projects. Aligning goals and performance objectives across national (FHWA), state (PennDOT) and regions (MPOs/RPOs) provide a common framework for decision-making.

The Transportation Improvement Program (TIP) must demonstrate consistency with the LRTP as well as other performance management plans. Projects included in the TIP must be consistent with and reflect the LRTP's investment priorities. The TIP should also provide a description of how the TIP will work toward achievement of the performance targets established in the LRTP and link the performance targets with investment priorities.

In addition to considering PBPP as part of program development, SPC has taken steps to document and share the region's performance measure progress. In 2020, SPC published a standalone TPM webpage on its website <https://spctpm-spc.hub.arcgis.com/> that is regularly updated and serves as the go-to resource to find the region's performance measures and condition data. The website serves as a comprehensive PBPP resource and complements the documentation included in the TIP and LRTP. The webpage shares timely data updates, explains TPM and its connection to the federal legislation and the PBPP requirements, and includes key definitions and useful context that clearly explains how SPC and its planning partners collaborate on establishing and updating performance targets. The webpage also includes "useful links" to related planning documents, data sources, and legislation.

Highway Safety Performance Measures

The FHWA final rule for the National Performance Management Measures: Highway Safety Improvement Program (HSIP) and Safety Performance Management Measures (Safety PM) were published in the Federal Register (81 FR 13881 and 81 FR 13722) on March 15, 2016 and became effective on April 14, 2016.

The HSIP Final Rule updates the HSIP regulation under 23 CFR Part 924 to be consistent with MAP-21 and the FAST Act, and clarifies existing program requirements. The Safety PM Final Rule adds Part 490 Subpart B to Title 23 of the Code of Federal Regulations to implement the performance management requirements in 23 U.S.C. 150.

The Safety PM, also referred to as PM1, Final Rule supports the HSIP, as it establishes safety performance measure requirements for carrying out the HSIP and to assess fatalities and serious injuries on all public roads.

The Safety PM Final Rule establishes five performance measures, calculated as five-year rolling averages, to be:

- Number of Fatalities
- Rate of Fatalities per 100 million Vehicle Miles Traveled (VMT)
- Number of Serious Injuries
- Rate of Serious Injuries per 100 million VMT
- Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries

Coordination on Target Setting

Pennsylvania's historic comprehensive approach to the planning and programming process was utilized as a basis for PennDOT and MPO/RPO coordination on the state's safety targets. The coordinated efforts to deliver the Safety Targets began in April 2016 at a Statewide Safety Summit. The Summit focused on a variety of legislative, engineering, technology and behavioral topics.

Efforts continued when staff with representation from PennDOT and MPO/RPOs, including SPC, participated in a Federal Highway Administration (FHWA) Target Setting Peer Exchange in May 2016. At this meeting, participants discussed Pennsylvania data trends, MPO coordination, approval processes, and what it would take to be successful with implementing performance targets in Pennsylvania.

Pennsylvania's current [Strategic Highway Safety Plan \(SHSP\)](#) was updated in 2022. It serves as a blueprint to reduce fatalities and serious injuries on Pennsylvania roadways by identifying Priority Emphasis Areas (Lane Departure Crashes, Impaired Driving & Pedestrian Safety) and additional Safety Focus Areas that have the most influence on improving highway safety on all public roads throughout the commonwealth. Using data-driven methods and implementing strategies pertaining to the emphasis and safety focus areas discussed throughout this document will have a high impact on driving down fatalities and serious injuries. The SHSP was developed and will be updated in conjunction with federal, state, local and private sector stakeholders including Pennsylvania's MPOs/RPOs.

SPC, with participation and support from its planning partners, established its first Regional Transportation Safety Action Plan (SAP) in 2015. This plan compared statewide crash trends to regional crash trends and identified regional safety focus areas. This plan also established the region's safety goals, which are to cut fatalities and serious injuries in half in the 25-year period 2006-2030. This plan was updated in 2020 to include incorporation of PennDOT's Highway Safety Network Screening data. The Regional Transportation Safety Action Plan was updated in 2025 to include a High Injury Network analysis by county.

To strengthen communication and coordination efforts, Pennsylvania established a Safety Planning Workgroup with representation from PennDOT, the MPOs/RPOs and FHWA. The group includes technical safety and planning professionals that meet regularly to discuss relative topics such as the SHSP, performance measures, and vulnerable road user safety. PennDOT and the MPOs/RPOs will continue to utilize the Workgroup to coordinate the state's safety target setting. Information discussed as part of this Workgroup will be shared at annual Statewide Planning Partners Meetings and bi-monthly conference calls.

PennDOT will be responsible for scheduling and conducting Safety Planning Workgroup calls, as well as annual Planning Partners meetings and conference calls where coordination on target setting will occur. MPOs/RPOs, including SPC, will be responsible for ensuring there is adequate representation on the Safety Planning Workgroup. SPC will ensure staff participates in Planning Partners meeting and conference calls to provide input into target setting.

Data Collection and Analysis

Data for the fatality-related measures are taken from the Fatality Analysis Reporting System (FARS) and data for the serious injury-related measures are taken from the state motor vehicle crash database. The VMT are derived from the Highway Performance Monitoring System (HPMS).

PennDOT has collected traffic volumes for approximately 2,500 local highways. This extra traffic volume task for the network screening will also be a benefit for the new Model Inventory of Roadway Elements (MIRE) Fundamental Data Elements (FDE) collection mandate in the FAST Act.

PennDOT is responsible for reviewing the state's crash and fatality data and evaluating it for overall trends. PennDOT will compare these trends to what can be observed at a national level. PennDOT will assess the state and national trends to determine how they relate to the SHSP Goals and the *National Toward Zero Deaths* initiative.

PennDOT shares both the statewide data and planning region specific findings with the MPOs/RPOs to assist in their decision-making process as to whether they are going to support the state's targets or adopt their own. SPC also evaluates historical regional trends over a 15-year period.

PennDOT evaluated the overall trends for the state's crash and fatality data for the Baseline (2020-2024) and Target (2022-2026) periods. 2020 was a pandemic year and due to the

shutdown, there was still about a 3-6 percent less vehicle miles travels statewide and regionally in 2022. In the SPC region, there were decreases in serious injuries, and non-motorized fatalities and serious injuries.

In support of the *National Toward Zero Deaths* initiative, there was the desire to be aggressive in trying to further reduce the numbers in Pennsylvania. This coupled with the emerging development of vehicle-assist technology and autonomous vehicles led all involved to the belief that a two percent annual reduction goal was both aggressive and obtainable. Serious injuries are on the rise regionally, statewide, and nationally. In addition, a federal definition change with regard to serious injury data and Pennsylvania’s adoption of this change in 2016, resulted in more injuries being documented as serious. Based on these factors, PennDOT established a 0% reduction target for serious injuries statewide.

Upon reaching these conclusions, PennDOT shared both the statewide data and planning region specific data to the MPOs/RPOs to assist them in their decision-making process as to whether they were going to support the state targets or adopt their own.

Safety Targets

In the last reporting period (2024) SPC has endorsed PennDOT's statewide Safety Performance Target of a 2% reduction for all fatalities and 0% reduction in serious injuries. The following table shows the latest Statewide and Regional Targets.

Table 3-1: Pennsylvania Statewide and Southwestern Pennsylvania Regional Safety Targets

Safety Performance Measure	SPC 2020	SPC 2021	SPC 2022	SPC 2023	SPC 2024	Statewide Baseline (2020-2024)	Statewide Target (2022-2026)	SPC Target (2022-2026)
Number of fatalities	211	206	212	203	195	1174.8	1140.4	197.7
Rate of fatalities per 100 million VMT	1.240	1.010	1.072	.9940	1.015	1.216	1.176	1.007
Number of serious injuries	865	1041	974	939	943	4746.2	4722.0	948
Rate of serious injuries per 100 million VMT	5.080	5.100	4.930	4.600	4.910	4.914	4.870	4.828
Number of non-motorized fatalities and non-motorized serious injuries	102	130	117	122	118	864.6	944.0	121.3

PennDOT will include state targets for all five of the safety performance measures as part of the annual Pennsylvania Highway Safety Improvement Program (HSIP) report submitted by PennDOT to FHWA by August 31st of each year. PennDOT will submit the state targets as part of the annual Pennsylvania Highway Safety Plan submitted to NHTSA by July 1st of each year.

Reporting on Progress toward Target Achievement

The 2023 STIP and individual MPO/RPO TIPs were developed to ensure progress toward target achievement. The following has helped to ensure planned HSIP projects help to achieve a significant reduction of traffic fatalities and serious injuries on all public roads:

- Implementing the strategies in the 2022 Strategic Highway Safety Plan (SHSP) through a data-driven safety analysis, and the use of low-cost safety improvements systemwide to support achieving these reductions.
- In January 2017, the HSIP funding site was opened using Microsoft SharePoint. The HSIP funding site provides a single point of communication for all HSIP project eligibility and funding requests. Project applications are reviewed through an approval workflow involving PennDOT District and Central Office safety and planning staff.
- Projects are being planned and completed that were associated with the Intersection Safety Implementation Plan (ISIP) and Roadway Departure Safety Implementation Plan (RDIP).
- In 2017, Pennsylvania began using the PA Regionalized Safety Performance Functions (SPFs) for a statewide network screening of about 20,000 locations. These new evaluations will use the Highway Safety Manual's (HSM) analysis method of Excess Expected Average Crash Frequency with Empirical Bayes (EB) adjustments also known as Potential for Safety Improvement (PSI). This method will use the calculated expected crashes for a location and subtract the predicted crashes for that same location to produce an excess (or PSI) value. The new regionalized SPFs have been added to a Pennsylvania specific HSM analytical tool. The Highway Safety Network Screenings for the SPC region are shown on the following map <https://arcg.is/1ejqyS1>.
- Pennsylvania sets aside \$50 million per federal fiscal year (FFY) of HSIP funds to utilize to advance projects statewide that are evaluated and ranked based on benefit/cost analysis, HSM analysis, fatal and injury crashes, application of systematic improvements, improvements on local roads, and deliverability.
- Given SPC's recent safety target setting, regional efforts are being made to better coordinate and identify in a timely manner additional HSIP opportunities and successful applications as part of the MPO TIP process.
- SPC is organizing a coordinating committee that will meet on a regular basis to accomplish this. The committee will be comprised of safety and programming staff from SPC, PennDOT Districts, PennDOT Central Office, and others. Coordination meetings will include a discussion of crash data retrieved from the Pennsylvania Crash Information Tool and future planned projects. SPC has reintroduced a more formal regional HSIP process to this coordinating committee.
- SPC has integrated a safety evaluation into the project evaluation criteria in all of its discretionary funding programs (CMAQ, TA Set-Aside and SMART).

- In 2025, SPC developed the Regional Transportation Safety Action Plan, which is the essential planning tool to aid in identifying strategies and project locations to achieve the safety goals set forth in the regions long range plan and attaining the five federal safety performance measure targets for the region.
- SPC has conducted over 55 Road Safety Audits since 2009 that have assisted our PennDOT Districts and other planning partners with identifying safety mitigation for incorporation into potential funding applications and upcoming planned safety projects.

PennDOT will continue to include information on Safety Targets and progress towards meeting these targets as part of annual safety submissions to NHTSA and FHWA. It is expected that FHWA will determine if Pennsylvania has met or made significant progress toward meeting their 2021-2025 HSIP targets in May 2026. Four of the five measures will need to be met or significantly improved upon. FHWA will utilize 2020-2024 data as a baseline period for assessing significant progress. FHWA will report their findings to PennDOT by July 2026.

Investment in Projects that Improve Safety

The Draft TIP includes a significant investment in safety projects. In the TIP approximately \$198.6 million will be invested in highway safety projects that will increase the safety of the region's transportation infrastructure. A sample of notable safety projects from the TIP include (Project ID/MPMS, in parentheses):

- McClure/Kingview Road Interchange (96661)
- US 30 Corridor Improvements (110900)
- Donohoe Road/Georges Station Intersection (113823)
- SR 4002 North Greengate Road & RR Tunnel (119609)
- SR 51 @ SR 151 Roundabout (118443)
- SR 4014 @ SR 4012 Roundabout (118444)
- PA 18/PA 21 Safety Improvements (118003)
- PA 201 Ramp to PA 51 Bridges Safety Improvement (105350)
- SR 2010, Lovedale Road Wall Remediation (114194)
- All Weather Pavement Markings (118579, 118580)
- High Friction Surface Treatments (123280,123693,123818)
- Reflective Pavement Markings (117431,117432,117433,177435)
- Railroad Crossing Safety Improvements (121379,121091,121380,121378)

Pavement/Bridge Performance Measures

The FHWA final rule for the National Performance Management Measures: Assessing Pavement Condition for the National Highway Performance Program and Bridge Condition for the National Highway Performance Program was published in the Federal Register (82 FR 5886) on January 18, 2017 and became effective on February 17, 2017.

This final rule established six measures related to the condition of the infrastructure on the National Highway System (NHS). The measures are commonly known as PM2. The current regulations are found at [23 CFR 490 Subpart C and Subpart D](#). Targets are established for these measures as part of a four-year performance period, the first was 2018 to 2021. The current PM2 performance period is 2022 to 2025.

The final rule established performance measures for all state DOTs to use to carry out the National Highway Performance Program (NHPP) and to assess the condition of the following: Pavements on the National Highway System (NHS) (excluding the Interstate System), bridges carrying the NHS that includes on- and off-ramps connected to the NHS, and pavements on the Interstate System. The NHPP is a core federal-aid highway program that provides support for the condition and performance of the NHS and the construction of new facilities on the NHS. The NHPP also ensures that investment of federal-aid funds in highway construction is directed to support progress toward the achievement of performance targets established in a State's Transportation Asset Management Plan (TAMP) for the NHS. This final rule establishes regulations for the new performance aspects of the NHPP that address measures, targets, and reporting.

The pavement and bridge performance measures include:

- 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 in Good condition
- Percent (%) of NHS bridges by deck area classified in Poor condition

Coordination on Target Setting

A Transportation Asset Management Plan Steering Committee was formed in January 2017 and held a series of six meetings through April 2018. The committee is comprised of PennDOT Executive Management, staff from the Federal Highway Administration, the Pennsylvania Turnpike Commission, as well as PennDOT's Engineering Districts, Asset Management Division, Center for Program Development and Management, Bureau of Planning and Research, and Highway Safety and Traffic Operations Division. The committee coordinated the development, submission, and implementation of the Transportation Asset Management Plan (TAMP), and the pavement and bridge condition performance measures. PennDOT CPDM, BOMO, Engineering Districts and the MPOs/RPOs continue to utilize the committee to coordinate the State's pavement and bridge target setting. Information discussed as part of the committee is shared at Statewide Planning Partner Meetings and conference calls.

PennDOT provides Planning Partners with updated annual PM-2 condition reports for statewide, region, and PennDOT District highway networks in July or August each year. These reports include data on actual condition of roadways and bridges, and any revisions in the forecasted condition targets – PM-2 targets for federal Interstate and NHS performance measures, and for other highway networks as well.

In the fall of 2023, SPC reviewed PennDOT's 2022 Performance Measure Annual Report and presented the statewide and region actuals and targets to the Work Groups involved in developing the TIP project list. The district TIP Work Groups in Districts 10, 11, and 12 dedicated an entire meeting to reviewing the status of performance measures and how LLCC methodologies and asset management tools were being used by PennDOT staff in identifying and prioritizing candidate projects.

PennDOT submitted to FHWA a State Biennial Performance Report in December 2022 that included new 2-year and 4-year targets for the 2022-2025 Performance period. PennDOT also submitted a State Biennial performance report for the period 2018-2021 in December 2022, which

reported on the status of target achievement for the period. SPC adopted PennDOT's new targets for statewide NHS pavement and bridge conditions (PM-2) on April 24, 2023. By supporting PennDOT's targets, SPC agrees to plan and program projects to contribute toward achieving PennDOT's targets. To satisfy coordination requirements [23 CFR 490.105(e) (2)], PennDOT has coordinated with Planning Partners in the development of the measures and selection of targets to ensure consistency to the maximum extent practicable. Updates on PM2 related activities are shared at bimonthly PennDOT Planning Partner coordination calls. PennDOT has been receptive to supplying SPC with updated PM2 reports and answering questions. The performance data and updated targets identified in Tables 3-5 and 3-6 (below) are based on PennDOT's 2022 State Biennial PM-2 Performance Report. The established targets were consistent with PennDOT's asset management objectives of maintaining the system at the desired state of good repair, managing to lowest life cycle costs (LLCC), and achieving national and state transportation goals. Targets are expected to be calculated based general system degradation (deterioration curves) offset by improvements expected from delivery of the projects in the TIP along with planned state funded maintenance projects.

Data Collection and Analysis

Data for the pavement and bridge measures are based on information maintained in PennDOT's Roadway Management System (RMS) and Bridge Management System (BMS). The VMT are derived from the Highway Performance Monitoring System (HPMS). PennDOT will continue to collect and perform the analysis of the data for the pavement and bridge performance measures. For details on data collection and data quality please see PennDOT Data Quality Management Program (May 2018).

Pavement

Determining pavement condition requires rigorous data collection. In the past, all PennDOT data was collected for each roadway segment, which are approximately one-half-mile in length. 23 U.S.C. 119 now requires that all distress component information be collected for one-tenth-mile increments. PennDOT and its partners have adjusted their pavement data collection to meet FHWA standards. Data collection at the tenth-mile increment level began in 2017 for cracking, rutting, and faulting and was used in submission of the TAMP.

Pavement performance measures required for FHWA reporting include the following four distress components:

- **International Roughness Index (IRI)** — Quantifies how rough the pavement is by measuring the longitudinal profile of a traveled wheel track and generating a standardized roughness value in inches per mile.
- **Cracking** — Measures the percentage of pavement surface that is cracked.
- **Rutting** — Measures the depth of ruts (surface depression) in bituminous pavement in inches.
- **Faulting** — Quantifies the difference in elevation across transverse concrete pavement joints in inches.

These distress measurements translate to good, fair, or poor condition scores. The following table summarizes the pavement condition metrics for IRI, cracking, rutting, and faulting.

Table 3-2: Pavement Condition Metrics for IRI

Rating	Good	Fair	Poor
IRI (inches/mile)	<95	95–170	>170
Cracking Percentage (%)	<5	CRCP: 5–10 Jointed: 5–15 Asphalt: 5–20	CRCP: >10 Jointed: >15 Asphalt: >20
Rutting (inches)	<0.20	0.20–0.40	>0.40
Faulting (inches)	<0.10	0.10–0.15	>0.15

IRI and cracking apply to both bituminous asphalt and concrete pavements, while rutting is exclusively for bituminous and faulting is exclusively for concrete. Each one-tenth-mile pavement section is considered in good condition if all three of its distress components are rated as good, and in poor condition if two or more of its three distress components are rated as poor.

23 CFR part 490.315(a), Subpart C requires that no more than 5 percent of a state's NHS Interstate lane-miles be in poor pavement condition. If the threshold is not met, restrictions are placed on PennDOT's federal funding—specifically, National Highway Performance Program and Surface Transportation Program funds. FHWA has not established a minimum condition for NHS non-Interstate roadways, but requires the state DOT to establish performance targets.

23 CFR 490.313(b)(4)(i) requires the total mainline lane-miles of missing, invalid, or unresolved sections for Interstate System and non-Interstate NHS shall be limited to no more than 5 percent of the total lane miles. A section is missing if any one of the data requirements specified in 23 CFR 490.309 and 23 CFR 490.311(c) are not met or the reported section does not provide enough data to determine its Overall Condition. For the region, the amount of missing PM2 pavement data for the Non-Interstate NHS was 2.91% in 2024.

Maps of the NHS pavement conditions at the time of the 2027 TIP development are included on the following map <https://arcg.is/1aCaT83>.

Bridge

The FHWA final rulemaking also established performance measures for all mainline Interstate Highway System and non-Interstate NHS bridges (23 CFR 490 Subpart D) regardless of ownership or maintenance responsibility, including bridges on ramps connecting to the NHS and NHS bridges that span a state border. FHWA's performance measures aim to assess bridge condition by deriving the percentage of NHS bridges rated in good and poor condition by deck area on the NHS.

Separate bridge structure condition ratings are collected for deck, superstructure, and substructure components during regular inspections using the National Bridge Inventory (NBI) Standards. For culvert structures, only one condition rating is collected (the culvert rating). A rating of 0-9 on the FHWA condition scale is assigned to each component. Based on its score a component is given a good, fair or poor condition score rating.

The table below summarizes the FHWA scoring system for bridge condition metrics for deck, superstructure, substructure, and culvert components.

Table 3-3: FHWA Scoring System for Bridge Condition

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

A structure's overall condition rating is determined by the lowest rating of its deck, superstructure, substructure, and/or culvert. If any of the components of a structure qualify as poor, the structure is rated as poor. 23 CFR 490.411(a) requires that no more than 10 percent of a state's total NHS bridges by deck area are in poor condition.

Maps of the NHS Bridge conditions at the time of the 2025 TIP development are included on the following map <https://arcg.is/0b10ae0>

State and MPO Pavement and Bridge Performance Targets

PennDOT's pavement condition targets (its desired state of good repair) for NHS Interstate roadways mirror the federal standard: no more than 5 percent of Pennsylvania's NHS Interstate pavements shall be rated in poor condition.

PennDOT's pavement condition targets are consistent with its asset management objectives of maintaining the system at the desired state of good repair, managing to lowest life cycle costs (LLCC), and achieving national and state transportation goals. Life cycle planning and LLCC management are fully described in the PennDOT Transportation Asset Management Plan.

Table 3-4: Interstate and Non-Interstate NHS Pavement Targets

Measure	Baseline	Actual							Target ¹	
	2017	2018	2019 ²	2020	2021 ³	2022	2023 ⁴	2024	2023	2025
% of Interstate pavements in Good condition (PA)	67.2%	66.2%	72%	70.8%	68.8%	71.5%	69.4%	71.1%	69%	65%
% of Interstate pavements in Poor condition (PA)	0.4%	0.7%	0.6%	0.7%	0.4%	0.8%	0.2%	0.6%	2%	2%
% of Interstate pavements in Good condition (SPC)	60.5%	68.9%	78.6%	70.9%	73.1%	65.8%	67.9%	71.4%	66%	65%
% of Interstate pavements in Poor condition (SPC)	0.3%	0.2%	0.2%	0.3%	0.1%	0.4%	0.3%	0.4%	2%	2%
Measure	Baseline	Actual							Target	
	2017	2018	2019	2020	2021	2022	2023	2024	2023	2025
% of non-Interstate NHS pavements in Good condition (PA)	36.8%	34.8%	35.7%	34.6%	37.2%	30.7%	34.1%	33%	31%	29%
% of non-Interstate NHS pavements in Poor condition (PA)	2.3%	2.3%	3.8%	3.1%	1.5%	4.1%	1.2%	3.4%	6%	6.5%
% of non-Interstate NHS pavements in Good condition (SPC)	43.0%	42.6%	42.7%	41.4%	40.5%	36.8%	37.1%	38.4%	39%	35%
% of non-Interstate NHS pavements in Poor condition (SPC)	1.5%	1.4%	3.1%	2.2%	3.3%	3.1%	2.87%	2.68%	5%	6%

¹ Target values in this table and Table II-5 are from several sources. State target values are from Attachment 2A of PennDOT’s annual performance update letter to FHWA dated, February 15 2023. These were unchanged with a more recent FHWA Mid Performance Target Adjustment letter dated December 18, 2024. SPC forecasts for 2023 and 2025 are from regional 2022 asset management scorecards released by PennDOT in July of 2023. Note that these regional forecasts have changed with subsequent scorecards, but we use 2022 forecasts to be more consistent with when state targets were set.

² Actual values for 2019 are all based on the 2019 asset management scorecard.

³ Actual values for 2021 in this table and Table II-5 are from three sources. State performance values for 2021 are from Attachment 2A of PennDOT’s MPO-RPO 2023 PM2-PM-3 Target Setting Letter. SPC performance values for 2021 are from revised PennDOT asset management scorecards for 2021 released in August 2023.

⁴ Actual values for 2023 are from two sources. State performance values for 2023 are from the Enclosure to PennDOT’s Planning Partners_PM2-PM3 Mid Performance Target Adjustment Letter to MPOs sent Dec 18 2024. All other values are from PennDOT’s asset management scorecards for 2023. Note that all other actual values are from corresponding scorecards for the given year.

PennDOT's bridge condition targets are consistent with its asset management objectives of maintaining the system at the desired state of good repair, managing to LLCC, and achieving national and state transportation goals.

Table 3-5: State and SPC NHS Bridge Targets

Measure	Baseline	Actual							Target	
	2017	2018	2019	2020	2021	2022	2023	2024	2023	2025
% of NHS bridges by deck area classified in Good condition (PA)	25.9%	26.7%	27.2%	27.9%	27.5%	27.8%	27.5%	28.1%	28%	28%
% of NHS bridges by deck area classified in Poor condition (PA)	5.5%	5.2%	5.1%	4.8%	4.4%	3.7%	4.2%	4.2%	7.5%	7.5%
% of NHS bridges by deck area classified in Good condition (SPC)	31.8%	31.9%	32%	32.4%	29.9%	30.6%	30.6%	32.2%	No Target	No Target
% of NHS bridges by deck area classified in Poor condition (SPC)	4.4%	4.3%	3.3%	2.9%	2.2%	2.1%	2.5%	2.9%	7%	5.5%

Reporting on Progress Toward Target Achievement

PennDOT and SPC continue to ensure the TIP is developed and managed to support progress toward the achievement of the statewide pavement/bridge objectives and targets that were established for the 2022-2025 performance period. Pennsylvania's pavement and bridge projects provided in the FY2025-2028 TIP were selected through extensive coordination with PennDOT Districts 10, 11, and 12 and PennDOT's Asset Management Section in accordance with the TAMP. The projects are consistent with PennDOT's asset management objectives of maintaining the system at the desired state of good repair, managing to lowest life cycle costs (LLCC), and achieving national and state transportation goals. SPC will continue to monitor performance trends through reviewing PennDOT performance reports and annual PennDOT asset management report cards.

PennDOT reports on progress toward target achievement in regular intervals by submitting biennial performance reports to the Federal Highway Administration. The most recent full period performance report for the period 2018-2021 was submitted in December 2022. This full period performance report showed that all PM2 targets for the 2018-2021 performance period were met. At the regional level, asset management scorecards indicate that SPC also met or exceeded all asset condition forecasts during this period save for the percent of non-Interstate pavement in poor condition, which it just missed for 2019 (the actual result was 3.1% vs. a 3.0% forecast).

PennDOT submitted its mid performance period progress report to the FHWA in the fall of 2024. A subsequent December 2024 letter to state MPOs noted that the statewide 2-year and 4-year asset condition targets established for the 2022-2025 performance period remained unchanged from those originally set in February 2023. The letter also provided an enclosure with actual results for 2023 for comparison against the performance period's 2-year targets.

For the first two years of the assessment period, Pennsylvania's Interstate pavement condition continued to exceed the targets, indicating significant progress. For example, the original two-year (2023) target set at the beginning of the performance period for the percentage of statewide Interstate pavement in good condition was 69%, while actual performance by 2023 was 69.4%. Similarly, the original two-year target for statewide Interstate pavement in poor condition was 2%, while actual performance for 2021 was 0.2%, which is well below the 5% threshold indicating a state of good repair has been maintained. PennDOT has made progress implementing a Lowest Life Cycle Cost approach for project and investment decision making, as required by FHWA.

Per asset management scorecard results, SPC's actual performance on interstate condition also exceeded original forecasts. In 2022, PennDOT's scorecard forecast that 66% of the region's interstate would be in good condition in 2023, but actual results exceeded this at 67.9%. The same scorecard predicted that the percentage interstate in poor condition in the region would be 2%, while actual results were 0.27%.

For the first two years of the assessment period, Pennsylvania's statewide NHS Non-Interstate pavement condition also exceeded the targets. The original two-year (2023) target for the percentage of statewide NHS non-Interstate pavement in good condition was 31%, respectively. Actual reported performance for 2023 was 34.1%. For poor statewide NHS non-interstate pavement, the original 2-year target was 6%. Actual reported statewide performance for 2023 was 1.2%. PennDOT has made progress implementing a Lowest Life Cycle Cost approach for project and investment decision making, as required by FHWA.

The two-year forecast for SPC NHS Non-interstate in good condition for 2023 set in the 2022 scorecard was 39%. SPC did not meet this forecast, with actual results coming in at 37.1%. The same scorecard anticipated that the percentage of NHS Non-interstate in poor condition in the region would be 4% for 2023, and actual results exceeded this at 2.87%. As with the previous performance period, SPC met or exceeded all pavement forecasts save for the percent of non-Interstate NHS pavement in good condition.

The original two-year target for statewide NHS bridges in good condition was 28%, with actual results almost but not quite achieving this at 27.5%. Statewide NHS bridges in poor condition came in at 4.2%, exceeding the two-year target of 7.5%, and well under the federally required threshold of 10%, indicating that a state of good repair has been maintained, and proper investments and decision making were performed.

Per PennDOT's 2022 scorecard, the percentage of SPC NHS bridges poor condition in 2023 were originally forecast to be 7%. Actual performance came in at 2.52%. Forecasts were not set for NHS bridges in good condition for SPC, but for 2023, actual results were 32.2%.

Investment in Projects that Improve Pavement and Bridge Condition

Project selection processes for the SPC 2027 TIP prioritize the selection of projects that will support the achievement of the region's performance targets for non-Interstate NHS pavements and bridges. Asset management tools at the statewide and district level were utilized in identifying and selecting new projects for the LRTP.

The 2027 TIP project list includes a significant investment in the condition of the region's non-Interstate NHS roadway system. over \$165.5 million will be invested in preservation projects on the region's non-interstate NHS roadway system. In addition, over \$62.3 million will be invested in roadway reconstruction projects on the region's non-Interstate NHS roadway system in the 2027 TIP. The roadway projects on the 2027 TIP will address 141 miles of non-Interstate NHS roadway that are in currently fair or poor condition.

A sample of notable NHS roadway projects (Project ID/MPMS#, in parentheses) is below. A full project description in Appendix:6 and a map of all NHS Pavement projects on the TIP is available at <https://arcg.is/1ySDfG3> :

- SR 422, Benjamin Franklin Hwy, 376 to Br. @ PA Ave, (92283)
- West Liberty Avenue, 100773 - PA 28 / East Ohio Street, (94645)
- PA 885 Second Avenue, (100817)
- PA 88 Improvements - Charleroi, (105426)
- SR 68 Midland Beaver Road, (109356)
- Bigelow Boulevard, (109383)
- US 422: Armstrong County Line to Indiana Bypass, (114605)
- SR 8 Butler City to SR 308, (114789)
- SR 837 North State Street, (115085)
- US 422 Lawrence County Line East PM, (115104)
- SR 51, Constitution Boulevard - Mill and Overlay, (115203)
- SR 18, Big Beaver Boulevard, (116315)
- SR 422, Bus. 422 to Butler County Line, (116560)

- US 22 Concrete Preservation - Clyde Section, (117138)
- US 422 County Line West PM, (117334)
- US 22 Concrete Repair - Washington, (117444)
- PA 28 Distant North Resurfacing, (119815)
- Glenwood Interchange, (119937)
- SR 68 Butler City Resurfacing, (122576)
- SR 8, SR 308 to SR 173 Resurfacing (123312)

The 2027 TIP project list includes a significant investment in the condition of the region's non-Interstate bridges. In the 2027 TIP over \$156.7 million will be invested in preservation projects on the region's non-interstate NHS bridges. In addition, over \$216.5 million will be invested in bridge rehab/reconstruction projects on the region's non-Interstate NHS system on the 2027 TIP. The bridge investment on the 2027 TIP includes work on 92 non-Interstate NHS bridge projects, including construction completed on 55 bridges, reducing the non-Interstate NHS poor deck area by over 345,000 sq. ft. Spike funding has been identified and programmed on Non-Interstate NHS bridges including, West End Bridge (100956) and McKees Rocks Bridge (1007010).

A sampling of notable NHS bridge projects is below (full project descriptions in Appendix 6) and mapping showing all the NHS bridge projects on the TIP is available here <https://arcg.is/Hm8TH0>:

- Grant Avenue Bridge over Girty's Run, (27573)
- Tarentum Bridge Ramps A, B, C, & D over Allegheny River, (63306)
- PA 28 over Yutes Run, (74255)
- PA 51 over Allen Run, (74347)
- Electric Ave over Falls Run, (78232)
- US 422 Shawood Pipe, (83611)
- Karns Crossing Bridge, (86105)
- McKnight Road over Babcock Blvd Bridge Replacement, (89046)
- US 119 over Two Lick Ck., (95852)
- McKees Rocks Bridge Phase 3, (100701)
- McKeesport-Duquesne Southern Ramps Deck Replacement., (100955)
- PA 18 Bridge over Beaver River, (105441)
- Highland Park Bridge, (109549)
- US 40 over Catfish Creek, (113722)
- US 119 over Crooked Creek, (117248)
- US 119 West Tech to PA 66,(119610)

System Performance and Reliability Measures

The System Performance and Reliability Measures are used by state DOTs and MPOs to assess the performance of the Interstate and non-Interstate National Highway System (NHS) for the purpose of carrying out the National Highway Performance Program (NHPP) (23 CFR 490 Subpart E); to assess freight movement on the Interstate System (23 CFR 490 Subpart F); and to assess traffic congestion and on-road mobile source emissions for the purpose of carrying out the Congestion Mitigation and Air Quality Improvement (CMAQ) Program (23 CFR 490 Subparts G and H). These system performance measures are collectively referred to as the PM-3 measures.

The PM-3 performance measures include:

- Performance of the National Highway System - Statewide
 - Percent of Person-miles Traveled on the Interstate System that are Reliable
 - Percent of Person-miles Traveled on the Non-Interstate NHS that are Reliable
- Freight Movement on the Interstate System - Statewide
 - Interstate System Truck Travel Time Reliability Index
- Measures to assess the CMAQ Program - MPO Targets
 - Annual Hours of Peak-Hour Excessive Delay (PHED) per Capita
 - Percent Non-Single Occupant Vehicle (SOV) Travel
 - On-Road Mobile Source Emissions Reduction for CMAQ-funded Projects

Coordination on Target Setting

Baseline measures and initial 2-year and 4-year targets for the three Reliability measures were due from PennDOT for MPO review on May 20, 2018. SPC was to endorse PennDOT's statewide targets, or establish regional targets for the performance measures no later than 180 days after PennDOT established (or amended in the future) its targets. Baseline measures and initial 2-year and 4-year targets for the three regionally-established CMAQ measures were due from SPC to PennDOT on September 20, 2018. SPC adopted the statewide system reliability targets, and adopted its regional targets for the CMAQ Program on September 24, 2018. The establishment of the baseline measures and the initial two- and four-year targets is documented in the SPC report "*Congestion Mitigation and Air Quality Improvement Program: 2014-2017 Baseline Performance Period Report and 2018-2021 CMAQ Performance Plan*" (SPC, September 2018). A similar process was followed to establish baseline measures and 2-year and 4-year targets for the second 4-year Performance Plan; 2021 through 2025. The process for establishing the 2021 baseline measures and reporting on 2022-2023 progress is documented in the SPC report "*Congestion Mitigation and Air Quality Improvement Program: 2022-2025 Performance Plan and 2023 Mid Performance Period Report*" (SPC, October 2024).

Data Collection and Analysis

PennDOT and SPC have worked to identify and evaluate the data and tools used to produce the baseline performance measures and for reporting on progress in achieving the targets. The University of Maryland CATT Lab RITIS software platform is used to generate the travel time-based measures. Data from the U.S. Census Bureau's American Community Survey (ACS) and FHWA's CMAQ annual reporting system are used for the non-SOV travel and mobile source emissions measures, respectively. Future revisions and modifications to these tools may impact the reported performance measures and established targets.

Performance Measure (PM3) Targets

SPC’s report “*Congestion Mitigation and Air Quality Improvement Program: 2022-2025 CMAQ Performance Plan 2023 Mid Performance Period Report*” (SPC, October 2024) documents the data collection, analysis and state-MPO coordination that occurred through the first 2 years of the 4-year performance period (2022-2023).

For the three system reliability measures, PennDOT set statewide targets (sub-state targets are optional). MPO baseline reliability measures were provided for information purposes only.

The tables below summarize the 2021 baseline values and initial 2-year and 4-year targets that were established in 2020. Also shown are the actual 2-year values, and the adjusted (if any) 4-year targets.

Table 3-6: Travel Time and Annual Peak Hour Excessive Delay Measures (estimated using RITIS Data Extract)

Measure	2021 Previous 4-year Target	2021 Performance	Target Met?	2023 2-year Target	2025 4-year Target
Interstate Reliability-Statewide*	89.5%	92.8%	Yes	89.5%	89.5%
Interstate Reliability-SPC Region	89.5%	95.9%	Yes		
Non-Interstate Reliability-Statewide*	87.4 %	92.6%	Yes	88.0%	88.0 %
Non-Interstate Reliability-SPC Region	87.4 %	93.8 %	Yes		
Truck Reliability Index-Statewide*	1.40	1.30	Yes	1.40	1.40
Truck Reliability Index-SPC Region	1.40	1.32	Yes		

Three performance measures are set by MPOs that have a population over 200,000 and are in EPA-designated air quality nonattainment areas. These are Annual Peak Hour Excessive Delay Hours per Capita, Percent Non-Single Occupant Vehicle travel (Non-SOV), and CMAQ Emissions Reductions. On October 24, 2022 SPC adopted its CMAQ Performance Plan that measured performance against the 2021 targets that were set in 2019, and has adopted 2023 and 2025 targets for these three measures for the current four-year Performance Period. The CMAQ Performance plan includes a process for reviewing and revising targets on a regular two-year cycle.

Table 3-7: Travel Baseline and Target Values for Non-SOV Travel Measure

PM3 Congestion Measure	2021 Target	2021 Actual (Baseline)	2023 2-Yr Target (2021-2023)	2023 Actual	2025 4-Yr Target (2021-2025)	2025 Actual
Percent Non-SOV Travel	24.8	27.6%	27.0%	31.8%	27.0%	
Peak Hour Excess Delay per Capita	11.8	9.3	10.5	11.6	10.5	

Table 3-8: PM-3 Target Values for CMAQ Emission Measures

PM3 Emission Reduction Measure (kg/day)	On-Road Mobile-Source Emission Reduction (kg/day)					
	2021 Baseline	2022-2023 2-Year Emission Reduction Target	2022-2023 Actual Emission Reduction	2022-2025 4-Year Emission Reduction Target	Adjusted 2025 4-Yr Emission Reduction Target	2022-2025 Actual Emission Reduction
VOC Emissions	95.63	35.58	27.60	71.16	71.16	
NOx Emissions	276.13	92.64	667.43	185.27	185.27	
PM _{2.5} Emissions	13.23	4.88	17.67	9.76	9.76	
PM ₁₀ Emissions	0.00	0.00	0.00	0.00	0.00	
CO Emissions	376.68	0.00	0.00	0.00	0.00	

Reporting on Progress Toward Target Achievement

PennDOT and MPOs are required to report on performance at regular intervals. The initial baseline measures and 2- and 4-year targets were established in September 2018 for the initial 4-year Performance Period (2018-2021). The Mid-Performance Period update was submitted in September 2020 to report 2-year progress through 2020 in achieving the targets. In September 2022 the Full Performance Period Report was submitted to 1) assess if the targets for the 2018-2021 Performance Period were met, and 2) to establish baseline measures and 2- and 4-year targets for the next 4-year Performance Period (2022-2025). The 2022-2025 Mid-Performance Period update was submitted in October 2024 to report 2-year progress through 2023 in achieving the 2023 and 2025 targets. Target setting and progress reporting will be repeated for subsequent 4-year Performance periods (i.e., 2026-2029, 2030-2033).

Investment in Projects that Improve Travel Time Reliability, Reduce Travel Delays, and Decrease Vehicle Emissions

The 2027 TIP includes a significant investment in efficiency and operations projects, \$204.7 million, invested in 33 efficiency and operations projects to address traffic congestion, improve travel time and reliability, and reduce traffic delays. An additional \$32 million will be invested in new capacity projects at key bottleneck locations in the region. The TIP includes 18 efficiency/operations/capacity projects, totaling \$136 million, in the SPC Congestion Management Program corridors. Traffic signal investments total over \$23.6 million on 6 projects, primarily traffic signal upgrades, including SPC’s traffic signal program line item. There are 6 intersection improvement projects targeting improved operation and efficiency, such as the addition of turning lanes valued at over \$36 million. Notable projects that improve roadway efficiency and operations for improved travel time, and reduced delay include:

- Three Degree Rd Intersection, (91286)
- Mars RR Bridge West Expansion, (92908)
- Bates Street Improvement, (98125)
- I-376/Parkway East A.T.M., (94651)
- PA 356 Corridor Improvements, (106486)
- US 19 Corridor Signal Upgrade, (107432)
- PA 50: I-79 to Thoms Run, (109640)
- Freeway Service Patrol & Traffic Control, (113508)
- PA 18: Main Street to Third Street, (114561)
- Smart PGH - Phase 1, (116300)
- Smart PGH - Phase 2, (116301)
- SR 2004 Freedom Crider Rd at Lovi Rd, (117332)
- Route 8 at Wildwood Intersection Improvement, (119183)
- SR 4003 - Nelson Run to Perrymont Signal Project, (119595)
- Downtown Uniontown Signal Improvements, (121190)
- Fiber Installation I-79, (121368)
- SR 422 @ SR 388 Intersection Improvement (122792)
- Arterial Traffic MPDG (121452)

The SPC CMAQ project solicitation and selection process, which takes place every two years in conjunction with the TIP update, supports the CMAQ Performance Plan and the performance-based programming of federal CMAQ funds allocated to the SPC region. SPC has a long-standing policy to select projects for the CMAQ program that provide the greatest air quality

benefit. Candidate projects are evaluated by their ability to reduce emissions, reduce vehicle trips and reduce VMT. Other factors such as project deliverability, potential safety benefits, and consistency with other plans and programs are also evaluated by the CMAQ evaluation process. The full list of CMAQ funded projects is included in Appendix 6: Highway/Bridge Program and Appendix 7: SPC Competitive Programs.

Transit Safety Performance Measures

Safety performance management is a critical tool that supports transit providers and the Federal Transit Administration (FTA) in identifying safety concerns and monitoring progress in safety improvements throughout the transit industry. FTA's National Public Transportation Safety Plan of 2017 established safety performance measures for all modes of public transportation through its multifaceted safety performance framework. The performance measures include:

- Fatalities (total number, and rate per vehicle revenue miles by mode)
- Injuries (total number, and rate per vehicle revenue miles by mode)
- Safety events – accidents, incidents or occurrences (total number, and rate per vehicle revenue miles by mode)
- System Reliability (mean distance between major mechanical failures by mode)

The National Safety Plan requires Transit Service Operators to develop agency-specific Public Transportation Agency Safety Plans (PTASP) that are designed to set performance targets based on the identified national measures. Agencies are permitted to develop additional sub-measures useful for local performance management purposes. Agency Safety Plans are developed and certified by FTA and agency staff trained and certified through a national-level Public Transportation Safety Certification Training Program.

Performance Targets

In accordance with 49 U.S.C. 5329(d)(1)(E), § 673.11(a)(30), each Public Transportation Agency Safety Plan must include safety performance targets based on the safety performance measures established by FTA in the National Public Transportation Safety Plan.

For the National Public Transportation Safety Plan, FTA adopted four initial safety performance measures:

- Fatalities
- Injuries
- Safety Events
- System Reliability

Performance measures are broad so that they will be relevant to all public transportation modes - intended to focus transit agencies on the development of specific and measurable targets, as well as the actions each agency would implement to improve their own safety outcomes.

Port Authority of Allegheny County d/b/a Pittsburgh Regional Transit Performance (PRT) Indicators and Targets

PRT performance targets based on the safety performance criteria and state of good repair standards set out in the National Public Transportation Safety Plan will report the following data to the PRT Board at least annually:

- Fatalities – total number of reportable fatalities and rate per million revenue vehicle miles, by mode, regardless of the cause of the fatality.
- Total Injury Rate – total number of reportable customer and employee injuries and rate per million vehicle revenue miles by mode, regardless of the cause of the injury.
- Safety Events (Rail transit) – total number of reportable events and rate per million light rail vehicle revenue miles.
- Safety Events (Bus) – total number of events and rate per million vehicle revenue miles by each separate mode (bus and paratransit).
- System Reliability – measured as revenue miles operated divided by the number of major mechanical failures.
- Rail Total Injury Rate – the number of injuries to passengers per million revenue miles including injuries on escalators, injuries to transit facility occupants and injuries to passengers onboard trains, regardless of the cause of the injury.
- Bus Total Injury Rate - the number of injuries to passengers per million revenue miles including injuries related to bus collisions and other injuries such as while boarding, alighting and sudden stops, regardless of the cause of the injury.
- Paratransit Total Injury Rate – the number of injuries to passengers and employees per one hundred thousand revenue miles including injuries related to collisions and other injuries such as while boarding, alighting, and sudden stops, regardless of the cause of the injury.
- Bus Collision Rate – the number of preventable and non-preventable bus collisions per million revenue miles.
- Paratransit Collision Rate – the number of preventable and non-preventable vehicle collisions per one hundred thousand revenue miles.
- Bus Pedestrian/Cyclist Incidents – the number of incidents in the calendar year involving pedestrians and cyclists.
- Smoke and Fire Incidents – the number of incidents in the calendar year.
- Suicides – the number of incidents in the calendar year.

Targets

Table II-9: Rail Transit & Incline Plane Performance Measures

MEASURE	PRIOR YEAR TOTAL	PRIOR YEAR RATE	TARGET TOTAL	TARGET RATE
Fatalities	0	0	0	0
Injuries – Total	0	0	1	.66
Safety Events (NTD)	13	7.91	12	7.97
System Reliability	269	6,416	299	5,158

Table II-10: Bus Transit Performance Measures

MEASURE	PRIOR YEAR TOTAL	PRIOR YEAR RATE	TARGET TOTAL	TARGET RATE
Fatalities	0	0	0	0
Injuries – Total	54	2.88	72	3.89
Safety Events (NTD)	65	3.2	79	4.27
System Reliability	2,523	8,925	2,557	8,402

Table II-11: Paratransit Performance Measures

MEASURE	PRIOR YEAR TOTAL	PRIOR YEAR RATE	TARGET TOTAL	TARGET RATE
Fatalities	0	0	0	0
Injuries – Total	19	.29	17	.26
Safety Events (NTD)	11	.17	10	.16
System Reliability	102	63,907.25	96	67,715.18

Regional Transit Providers Safety Performance Indicators and Targets

Pursuant to § 673.11(d), each state must draft and certify a Public Transportation Agency Safety Plan (PTASP) on behalf of any small public transportation provider serving a small urban area (less than 50,000 population) located inside of that particular state.

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.

Targets are composite regional totals from PTASP Targets for: Beaver County Transit Authority (BCTA), Butler Transit Authority (BTA), Fayette Area Coordinated Transportation (FACT), Mid-Mon Valley Transit Authority (MMVTA), Washington County Transportation Authority (WASH) and Westmoreland County Transit Authority (WCTA).

Table II-12: Fixed Route (Bus) Transit Performance Targets

Measure	Number	Rate (per 100,000 Vehicle Revenue Miles)
Fatalities	0	0
Injuries (Total)	3.16	.52
Measure	Number	Rate (per 100,000 Vehicle Revenue Miles)
Safety Events	4.8	0.86
System Reliability	--	0.62

Table II-13: Paratransit/Demand Response Performance Targets

Measure	Number	Rate (per 100,000 Vehicle Revenue Miles)
Fatalities	0	0
Injuries (Total)	5.25	.43
Measure	Number	Rate (per 100,000 Vehicle Revenue Miles)
Safety Events	6	0.49
System Reliability	--	0.59

Transit Asset Management Performance Measures

Transit Asset Management (TAM) is a systematic process that enables public transportation agencies to reach and maintain assets in a State of Good Repair (SGR). TAM planning accounts for the full life-cycle of an asset used for public transportation service, from procurement through operations and maintenance to final disposition.

Basic objectives for the TAM planning model are to:

- Monitor and manage public transportation assets
- Increase reliability and performance
- Establish asset performance measures
- Improve safety

Federal requirements require the use of certified TAM practices by all recipients of certain types of federal transit funds. For management purposes, transit agencies fall into two basic types based on size and mode. The SPC region has one Tier I agency – Port Authority of Allegheny County d/b/a Pittsburgh Regional Transit (PRT). There are 15 Tier II transit service providers.

PRT, the Tier I agency, operates light rail fixed guideway service as well as a fixed route bus system with more than 100 vehicles. Tier I agencies manage their TAM planning functions internally. Planning systems and outputs, including performance measures and targets, are reported and reviewed directly by the Federal Transit Administration. PRT published the current update of its Transit Asset Management Plan in September 2024, establishing 20 asset-based performance measures across four investment categories (vehicles, facilities, systems and guideways).

PRT asset management data and capital needs are much more extensive and complex compared to the region's smaller agencies. PRT manages its own asset management systems, and also utilizes PennDOT's capital planning tool for public transportation providers. SPC and the PRT have a formal agreement on sharing public transportation performance data, and an acknowledgement that processes are cooperatively developed and involve required participants.

There are 15 Tier II agencies in the region operating fewer than 100 vehicles in either fixed route or non-fixed route modes. Small urban transit agencies can elect to participate in a state-managed TAM Group Plan. Rural and community-based transit agencies as subrecipients of FTA Section 5310 and Section 5311 funding are required to participate in the state-managed Group Plan. All the small transit agencies in the SPC region have established formal cooperative agreements with PennDOT guiding their participation in PennDOT's Group TAM Plan.

PennDOT's Group TAM Plan provides consolidated transit asset management services for both required and elective program participants. The Group TAM Plan fulfills federal planning requirements and encourages cooperative communication between participating transit agencies and their respective MPOs. SPC and each of the small transit agencies have separate formal agreements on sharing public transportation performance data, and an acknowledgement that federally-required planning processes are cooperatively developed and involve required participants. All the participating transit agencies are responsible for providing extensive data updates on the physical condition of transit assets, working within the PennDOT capital planning tool described below.

PennDOT's Bureau of Public Transportation (BPT) has developed a Capital Planning Tool (CPT) and used it since 2016 to complete a range of asset and performance management activities. Its functions are described in the PennDOT Group TAM Plan:

- Inventory all public transportation system assets

- Collect relevant data on those assets
- Predict asset replacement schedules based on Estimated Service Life (ESL) and asset condition
- Create a four-year capital program for each public transportation system to submit to their regional planning organization for review and approval
- Create an annual capital program for each public transportation system, which becomes an agency's individual capital application in PennDOT's electronic granting system (dotGrants)
- Create an annual statewide public transportation capital program
- Compare statewide capital needs to available funding
- Prioritize statewide capital program decisions based on meeting state of good repair (SGR) targets within available funding

The PennDOT CPT maintains crucial information about every asset type and maintains a complete history of the asset as it ages. Transit agencies record changes in condition, usage, value, depreciation, etc. for the following asset categories:

- **Rolling Stock (Revenue Vehicles):** Transit agency-owned or leased fixed route & paratransit vehicles, used to provide public transportation
- **Equipment:** Tangible support property having a useful life of at least one year, including all nonrevenue/support vehicles
- **Facilities:** A building or structure that is used in the provision of public transportation, including administration and maintenance, and passenger and parking facilities

Based on CPT data provided by the participating agencies, PennDOT annually updates performance targets for each agency based on two primary elements: prior year's performance, and anticipated/obligated funding levels.

In summary, transit agencies use the PennDOT TAM Plan tool - the CPT - to input information on asset inventories and detailed asset conditions into a statewide transit asset management database. The CPT uses the input data from each agency to generate four-year capital plans and performance targets based on asset-specific state-of-good-repair performance criteria for various categories of vehicles, equipment, and facilities. For the PRT, facilities also include systems resources and guideways/infrastructure. These sources inform the development of annual capital programs, which are shared with the MPO for approval and inclusion in the region's TIP. The CPT provides performance measure baseline conditions and informs the annual update of agency performance targets. Performance targets have already taken into account anticipated capital spending based on available transit revenues and CPT-determined prioritization of statewide TAM-based capital needs.

PRT uses internal management systems and processes described in its TAM Plan to determine performance targets for its more-extensive set of asset class measures.

Transit Asset Management Performance Measures and Targets

PRT's TAM Plan and PennDOT TAM Group Plan identify the asset management performance measures applying to transit capital investment for the region's 16 transit service providers. Baseline performance has been determined using 2025 data on asset condition and a complete inventory of agency assets. If the performance measure is based on a general asset condition rating, the FTA standard on asset conditions applies.

Table II-14: FTA Asset Condition Ratings

FTA Condition Rating	Description
5 Excellent	No visible defect, new or near new condition, may still be under warranty
4 Good	Good condition, but no longer new, may be slightly defective or deteriorated, but is overall functional
3 Adequate	Moderately deteriorated or defective, but has not exceeded useful life
2 Marginal	Defective or deteriorated in need of replacement; exceeded useful life
1 Poor	Critically damaged or in need of immediate repair; well past useful life

PRT uses FTA standards for Useful Life Benchmarks (ULB) to measure the useful service life remaining for various asset classes. The PennDOT CPT and its performance reports use statewide PennDOT Estimated Service Life (ESL) standards, which are referenced in the TAM Group Plan. The PennDOT standards are acknowledged and approved by FTA for Pennsylvania's PBPP transit use.

TAM performance measure tables for the PRT identify for each performance measure actual condition data for 2025 and applicable performance targets for 2026. The performance data and targets are updated annually based on current conditions and anticipated capital investments. The information is reported annually to FTA and shared with the MPO as described Metropolitan Planning Agreements.

TAM performance measure tables for statewide small transit agencies are provided from the PennDOT TAM Group Plan. The performance measures and performance targets represent asset conditions statewide for each investment category or class. Performance measures identify actual condition data for 2025 and applicable performance targets for FY 2026. A Performance Measures Summary is provided on the following pages. The performance data is updated annually; updated performance targets are developed through the PennDOT CPT, both statewide and for each agency. PennDOT reports this information to FTA and shares it with the MPO annually, along with investment information on priority capital projects anticipated for the following year. An Asset Inventory and Conditions Summary from the TAM Group Plan is also provided for statewide small transit agencies.

Table II-15: PRT Vehicle Condition Targets

PRT Vehicles	PM Description	Target	Actual
Bus	Useful Life Benchmark (ULB) – 14 years		
	Average Useful Service Life Remaining	5	6.9
	Percentage of fleet over ULB	20%	0%
Rail (4200)	Useful Life Benchmark (ULB) – 41 years		
	Average Useful Service Life Remaining	3.0	2.0
	Percentage of fleet over ULB	20%	0%
Rail (4300)	Useful Life Benchmark (ULB) – 31 years		
	Average Useful Service Life Remaining	12.0	11
	Percentage of fleet over ULB	20%	0%
Non-Revenue Vehicles	Useful Life Benchmark (ULB) – 8 years		
	Average Useful Service Life Remaining	2.0	0.8
	Percentage of fleet over ULB	30%	52%
Non-Revenue Vehicles (other rubber tire)	Useful Life Benchmark (ULB) – 14 years		
	Average Useful Service Life Remaining	3	3.1
	Percentage of fleet over ULB	30%	27%
Non-Revenue Vehicles (steel wheel)	Useful Life Benchmark (ULB) - 25 years		
	Average Useful Service Life Remaining	5	9.5
	Percentage of fleet over ULB	30%	25%
Incline Cars	Useful Life Benchmark (ULB) - 51 years		
	Average Useful Service Life Remaining	10.0	43.0
	Percentage of fleet over ULB	20%	0%

Table II-16: PRT Ancillary Vehicle Condition

PRT Vehicles	Number	Average Age	ULB	Actual	% over
Bus	685	7.4 yrs	14 yrs	6.6	0.0%
Rail (4200)	48	39.0 yrs	41 yrs	2.0	0%
Rail (4300)	28	20 yrs	31 yrs	11.0	0%
NRV	75	7.2 yrs	8 yrs	0.8	52%
NRV (other)	328	10.9 yrs	14 yrs	3.1	27%
NRV (steel)	2	2 yrs	25 yrs	23	0%
Incline Cars	4	8.0 yrs	51 yrs	43	0%

Table II-17: PRT Facility Condition

PRT Facilities	Performance Measure Description (Weighted aggregate average rating of asset categories 1 to 5)	Target	Actual
Maintenance	Average Condition Rating	2.8	3.6
	Percentage rated below FTA condition state 3 (FTA 1 or 2)	≤ 25%	0%
Service	Average Condition Rating	2.8	3.2
	Percentage rated below FTA condition state 3 (FTA 1 or 2)	≤ 25%	50%
Stations	Average Condition Rating	2.8	2.9
	Percentage rated below FTA condition state 3 (FTA 1 or 2)	≤ 25%	29%

Table II-18: PRT System Condition

PRT Systems	Performance Measure Description (Weighted aggregate average rating of asset categories 1 to 5)	Target	Actual
Security	Average Condition Rating	2.8	3.0
	Percentage rated below FTA condition state 3 (FTA 1 or 2)	≤ 10%	0%
Traction Power	Average Condition Rating	2.8	3.0
	Percentage rated below FTA condition state 3 (FTA 1 or 2)	≤ 10%	19.7%
Signals	Average Condition Rating	2.8	3.0
	Percentage rated below FTA condition state 3 (FTA 1 or 2)	≤ 10%	0%
Communications	Average Condition Rating	2.8	2.6
	Percentage rated below FTA condition state 3 (FTA 1 or 2)	≤ 10%	42.8%
Revenue Collection	Average Condition Rating	2.8	3.0
	Percentage rated below FTA condition state 3 (FTA 1 or 2)	≤ 10%	0%

Table II-19: PRT Fixed Guideway Condition

PRT Guideway	Performance Measure Description	Target	Actual
Trackway/Rail	Average Performance Restriction - # miles	<3 miles	1.15
	Percentage of trackway with performance restriction	≤ 10%	5%
	Percentage of total linear feet of rail deficiencies	< 1%	0.64%
	Number of rail deficiencies per 1000 foot of rail	< 1	0.7
Busway	Average Performance Restriction - # miles	< 2 miles	.92
	Percentage of busway with performance restriction	≤ 10%	5.1%
	Average condition rating	2.8	3.8
Bridges	Average condition rating	2.8	3.29
	Percentage rated below condition state 3	≤ 12%	6.3%
	Percentage of structurally deficient bridges (≤ 4)	≤ 12%	10%
Tunnels	Average condition rating	2.8	3.25
	Percentage rated below condition state 3	≤ 13%	0%
	Percentage rated ≥ CS3	≤ 13%	0%
Ancillary Structures	Average condition rating	2.8	3.5
	Percentage rated below condition state 3	≤ 13%	0%

Small Transit Agency Asset Inventory and Condition Summary (statewide)

Table II-20: Small Transit Agency Rolling Stock Condition

Rolling Stock (Revenue Vehicles)					
Asset Class	Number	Average Mileage	Average Age	Number met or exceeding ESL	% met or exceeding ESL
AO-Automobile	12	57,056	3	4	33%
BR- Over-the Road Bus	36	260,097	10	0	0
BU-Bus	554	218,669	8	22	4%
CU-Cutaway	1,147	101,093	5	273	24%
MV-Minivan	164	92,191	7	60	37%
VN-Van	391	65,875	5	89	23%
SV – Sports Utility Vehicle	5	111,267	4	3	60%
Grand Total	2309	124,979	6	451	20%

Table II-21: Small Transit Agency Equipment Condition

Equipment (Non-Revenue Vehicles)					
Asset Class	Number	Average Mileage	Average Age	Number met or exceeding ESL	% met or exceeding ESL
Automobiles	92	43,466	7	10	11%
Trucks and other Rubber Tire Vehicles	109	35,556	7	10	9%
Grand Total	201	39,176	7	27	13%

Table II-22: Small Transit Agency Facility Condition

Asset Class	Number	Average Condition on TERM Scale	Number met or exceeding ESL	% met or exceeding ESL
Administrative / Maintenance Facilities	46	3	3	7%
Passenger / Parking Facilities	35	3	1	3%
Grand Total	81	3	4	5%

Small Transit Agency Asset Management Performance Summary (Statewide)

Table II-23: Small Transit Agency Asset Management Targets

Performance Measure	Asset Class	Current Performance	FY 2026-27 Target
Rolling Stock (Revenue Vehicles)			
Age - % of revenue vehicles within a particular asset class that have met or exceeded their Estimated Service Life (ESL)	AO – Automobile	6%	6%
	BR-Over-the-road-Bus	48%	48%
	BU - Bus	30%	30%
	CU - Cutaway	59%	59%
	VN - Van	54%	54%
	SV – Sport Utility Vehicle	83%	83%
Equipment (Non-Revenue Vehicles)			
Age - % of non-revenue or service vehicles within a particular asset class that have met or exceeded their Estimated Service Life (ESL)	Automobiles	43%	43%
	Trucks and other Rubber Tire Vehicles	16%	16%
Facilities			
Condition - % of facilities with a condition rating below 3.0 on the FTA TERM scale	Administrative and Maintenance Facilities	4%	4%
	Passenger and Parking Facilities	6%	6%

Summary

Port Authority of Allegheny County d/b/a Pittsburgh Regional Transit:

- Current asset baseline condition is mostly "adequate" or above; in some cases, there are no assets in poor or marginal condition. In many cases the remaining useful life of an asset significantly exceeds the next-year target. Performance targets typically provide for some assets, on average, to drop into the "marginal" range. This is a conservative approach that allows for a "learning curve" as the TAM processes mature over time.
- Asset conditions for non-revenue vehicles are in the lower range of the poor rating. The targets, however, show that significant improvement is anticipated within the investment years.

Small Transit Agencies (Statewide):

- Targets here have also been conservatively set, with expected condition in the next year equal to current performance for every TAM performance measure. It will be easy to compare regional transit agencies to these stable statewide averages and performance targets and learn how the state processes work.