

Transportation Performance Management

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.

Transportation Performance Management (TPM) is a strategic approach that uses data to make investment and policy decisions to achieve national performance goals. [23 USC 150\(b\)](#) outlines the national performance goal areas for the Federal-aid program. This statute requires the Federal Highway Administration (FHWA) to establish specific performance measures for the system that address these national goal areas. The regulations for the national performance management measures are found in [23 CFR 490](#).

National Goal Areas	
Safety	<ul style="list-style-type: none"> To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
Infrastructure Condition	<ul style="list-style-type: none"> To maintain the highway infrastructure asset system in a state of good repair
Congestion Reduction	<ul style="list-style-type: none"> To achieve a significant reduction in congestion on the National Highway System
System Reliability	<ul style="list-style-type: none"> To improve the efficiency of the surface transportation system
Freight Movement and Economic Vitality	<ul style="list-style-type: none"> To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
Environmental Sustainability	<ul style="list-style-type: none"> To enhance the performance of the transportation system while protecting and enhancing the natural environment
Reduced Project Delivery Delays	<ul style="list-style-type: none"> 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

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 (L RTPs)
- 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)
- Regional Operations Plans (ROPs)

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) provides a common framework for decision-making.



PennDOT, in cooperation with the MPOs/RPOs, has developed written provisions for how they will cooperatively develop and share information related to the key elements of the PBPP process, including the selection and reporting of performance targets. These PBPP written provisions are available [here](#). In addition, PennDOT has updated Financial Guidance to be consistent with the PBPP provisions. The Financial Guidance provides the near term revenues that support the STIP and is available [here](#).

Evaluating 2023-2026 STIP Performance

The Federal Fiscal Year (FFY) 2023-2026 State Transportation Improvement Program (STIP) supports the goal areas established in PennDOT’s current long-range transportation plan (Pennsylvania 2045). These include safety, mobility, equity, resilience, performance, and resources. The goals are aligned with the national goal areas and federal performance measures and guide PennDOT in addressing transportation priorities.



The following sections provide an overview of the federal performance measures. Since asset management, reliability and CMAQ targets have not yet been set for the 2022-2025 performance period, the current project selection process for the FFY 2023-2026 TIP is highlighted and related to meeting future targets. Over the 4-year STIP, nearly 85% of the total funding is associated with highway and bridge reconstruction, preservation, and restoration projects. However, these projects are also anticipated to provide significant improvements to highway safety and traffic reliability for both passenger and freight travel. Through these performance measures, PennDOT will continue to track performance outcomes and program impacts on meeting the transportation goals and targets. Decision

support tools including transportation data and project-level prioritization methods will be continually developed and enhanced to meet PennDOT and MPO/RPO needs. Dashboards and other reporting tools will be maintained to track and communicate performance to the public and decision-makers. Additional information about performance measures, including an evaluation of the condition and performance of the transportation system with respect to these measures can be found in the [2021 Long-Range Transportation Plan](#) for the SEDA-COG MPO.

Safety Performance Measures (PM1)

Background		
The FHWA rules for the <i>National Performance Management Measures: Highway Safety Improvement Program</i> (Safety PM) and <i>Highway Safety Improvement Program</i> (HSIP) were published in the Federal Register (81 FR 13881 and 81 FR 13722) on March 15, 2016, and became effective on April 14, 2016. These rules established five safety performance measures (commonly known as PM1). The current regulations are found at 23 CFR 490 Subpart B and 23 CFR 924 . Targets for the safety measures are established on an annual basis.		
Data Source		
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 Vehicle Miles of Travel (VMT) are derived from the Highway Performance Monitoring System (HPMS).		
2022 Safety Measures and Targets (Statewide)		
Measure	Baseline (2016-2020)	Target (2018-2022)
Number of fatalities	1,140.6	1,113.7
Rate of fatalities per 100 million VMT	1.157	1.205
Number of serious injuries	4445.6	4,490.8
Rate of serious injuries per 100 million VMT	4.510	4.860
Number of non-motorized fatalities & serious injuries	761.2	730.1
Methods for Developing Targets		
An analysis of Pennsylvania’s historic safety trends was utilized as the basis for PennDOT and MPO/RPO coordination on the State’s safety targets. The targets listed above are based on a 2% annual reduction for fatalities and maintaining levels for suspected serious injuries, which was derived from the actions listed in the Strategic Highway Safety Plan (SHSP) , crash data analysis and the desire to support the national initiative Toward Zero Deaths.		

Progress Towards Target Achievement and Reporting:

PennDOT and the MPOs/RPOs continue efforts to ensure the STIP, regional TIPs, and Long-Range Transportation Plans (LRTPs) are developed and managed to support progress toward the achievement of the statewide safety targets. Since 2017, the SEDA-COG MPO has annually adopted the statewide targets.

PennDOT’s Strategic Highway Safety Plan (SHSP) serves as a blueprint to reduce fatalities and serious injuries on Pennsylvania roadways and targets 18 Safety Focus Areas (SFAs) that have the most influence on improving highway safety throughout the state. Within the SHSP, PennDOT identifies 3 key emphasis areas to improve safety – impaired driving, lane departure crashes, and pedestrian safety.

2022 SHSP Safety Focus Areas			
Lane Departure Crashes	Speed & Aggressive Driving	Seat Belt Usage	Impaired Driving
Intersection Safety	Mature Driver Safety	Local Road Safety	Motorcycle Safety
Pedestrian Safety	Bicycle Safety	Commercial Vehicle Safety	Young & Inexperienced Drivers
Distracted Driving	Traffic Records Data	Work Zone Safety	Transportation Systems Management & Operations
Emergency Medical Services	Vehicle-Train Crashes		

Pursuant to 23 CFR 490.211(c)(2), a State Department of Transportation (DOT) has met or made significant progress toward meeting its safety performance targets when at least 4 of the 5 safety performance targets established under 23 CFR 490.209(a) have been met or the actual outcome is better than the baseline performance for the year prior to the establishment of the target. For Pennsylvania’s 2020 targets, the FHWA determined in March 2022 that Pennsylvania did not meet the statewide targets and is subject to the provisions of 23 U.S.C. § 148 (i). This requires PennDOT to submit an implementation plan that identifies gaps, develops strategies, action steps and best practices, and includes a financial and performance review of all HSIP funded projects. In addition, PennDOT is required to obligate in FFY 2023 an amount equal to the FFY 2019 HSIP apportionment.

As part of the Highway Safety Improvement Program Implementation Plan, PennDOT identified gaps and best practices to support further reducing serious injuries and fatalities. The following opportunities were identified to assist with meeting future targets: (1) appropriate project selection, (2) expanding local road safety in HSIP, (3) assessing programs that support non-motorized safety, (4) expanding use of systemic safety projects, (5) improved project tracking for evaluation purposes and (6) project prioritization for greater effectiveness.

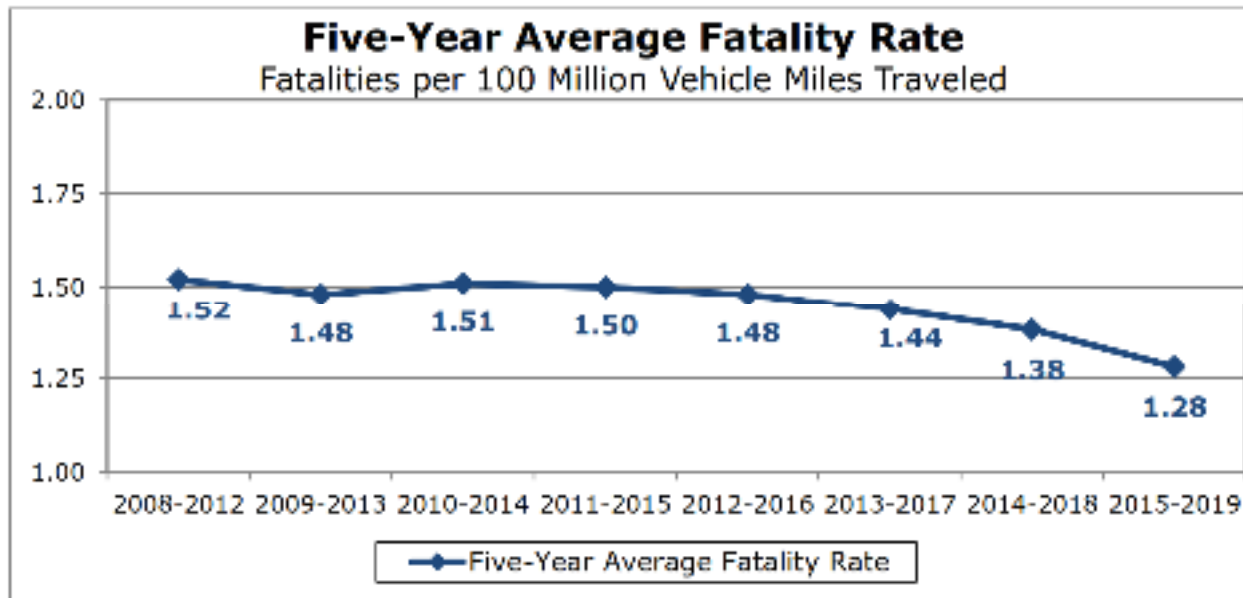
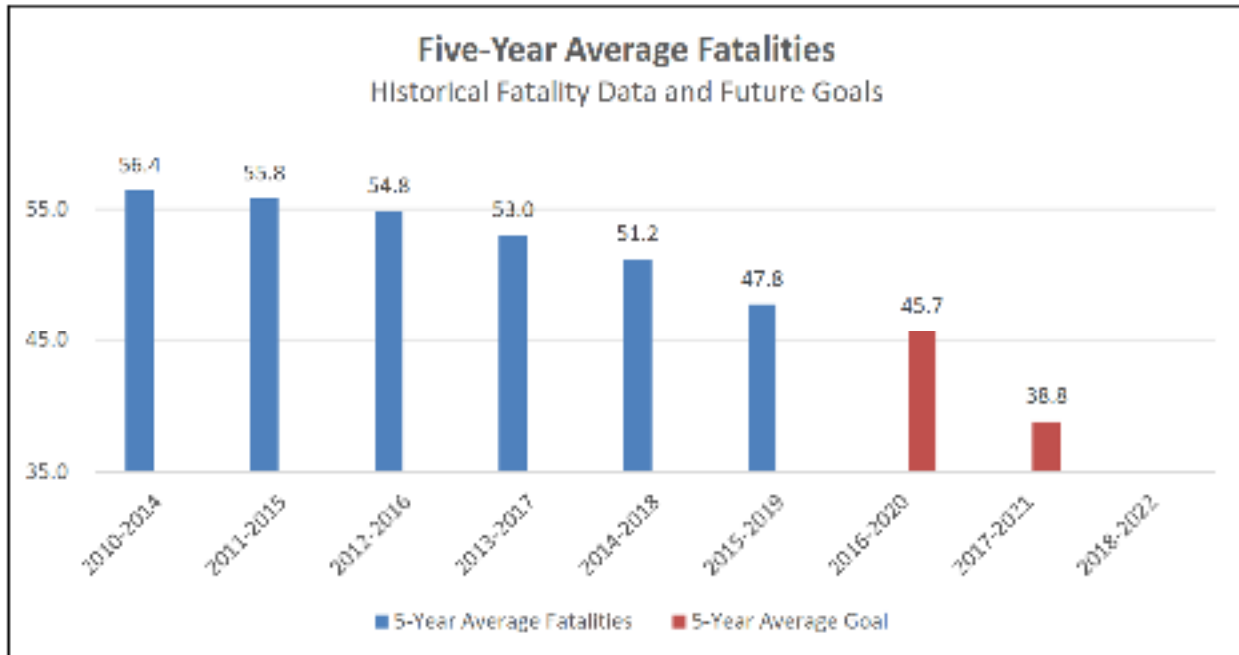
PennDOT continues to provide feedback on statewide and MPO/RPO-specific progress towards target achievement. The progress helps regional MPOs/RPOs understand the impacts of their past safety investments and can guide future planning goals and strategy assessments.

2022 Safety Measures and Targets (SEDA-COG MPO Region)		
Measure	Baseline (2016-2020)	Target (2018-2022)
Number of fatalities	46.4	50.9
Rate of fatalities per 100 million VMT	1.280	1.481
Number of serious injuries	175.2	165.2
Rate of serious injuries per 100 million VMT	4.832	4.805
Number of non-motorized fatalities & serious injuries	21.8	21.9

Since PennDOT focuses on and graphs fatality statistics as 5-year running averages for trend-based analysis, the first chart is included on the next page to reflect the SEDA-COG MPO region’s past 5-year running average total fatalities, starting in 2010. As evidenced on this figure, the total regional fatalities are trending downward.

The second chart on the next page shows the SEDA-COG MPO region’s past 5-year average fatality rates, from 2008 up through 2019. Although the regional fatality rate is trending downward, the regional rate remains slightly higher than the statewide rate.

The SEDA-COG MPO continues to monitor trends in support of the statewide targets. This is done via analysis using the PA Crash Information Tool, coordination with PennDOT/MPO members, involvement with the region’s Active Transportation Committee and its Safety Work Group, participation in safety webinars, review of newspaper/newsletter articles, etc.



Evaluation of STIP for Target Achievement:

The following will ensure that planned projects in the STIP will help to achieve a significant reduction of traffic fatalities and serious injuries on all public roads:

- PennDOT receives federal funding for its Highway Safety Improvement Program (HSIP). The 2023-2026 STIP includes \$520 million of HSIP funding. PennDOT distributes nearly 70% of this funding to its regions based on fatalities, serious injuries, and reportable crashes. In addition, a portion of the HSIP funding is reserved for various safety initiatives statewide.
- All projects utilizing HSIP funds are evaluated based on a Benefit/Cost (B/C) analysis, Highway Safety Manual (HSM) analysis, fatal and injury crashes, application of systemic improvements, improvements on high-risk rural roads, and deliverability. Specifically, as part of PennDOT's HSIP application process, a data-driven safety analysis in the form of B/C analysis or HSM analysis is required. Performing this analysis early in the planning process for all projects will help ensure projects selected for inclusion in the TIP will support the fatality and serious injury reductions goals established under PM1.
- The process for selecting safety projects for inclusion in the TIP begins with the Network Screening Evaluation that PennDOT has performed on a statewide basis. Selecting locations with an excess crash frequency greater than zero from this network screening is key to identifying locations with a high potential to improve safety. This evaluation has been mapped and is included in PennDOT's OneMap to ease use by PennDOT's partners. At the current time, this is not all inclusive for every road in Pennsylvania. Locations not currently evaluated may be considered by performing the same type of excess crash frequency evaluation that PennDOT utilizes. Once this analysis has been performed, the data is used by the Engineering Districts and planning partners to assist MPOs/RPOs in evaluating different factors to address the safety concern.
- PennDOT continues to improve on the methods to perceive, define and analyze safety. This includes integration of Regionalized Safety Performance Functions (SPFs) that have been used to support network screening of over 20,000 locations.¹
- PennDOT continues to identify new strategies to improve safety performance. PennDOT is actively participating in FHWA [Every Day Counts](#) to identify opportunities to improve pedestrian safety as well as reduce rural roadway departures. These new strategies will be incorporated into future updates to the SHSP.
- Safety continues to be a project prioritization criterion used for selecting other STIP highway and bridge restoration or reconstruction projects. Many of these projects also provide important safety benefits.
- PennDOT continues to evaluate procedures to help in assessing how the STIP supports the achievement of the safety targets. As HSIP projects progress to the engineering and design phases, Highway Safety Manual (HSM) predictive analyses are completed for the project in accordance with PennDOT Publication 638. The HSM methods are the best available state of practice in safety analysis and provides quantitative ways to measure and make safety decisions related to safety performance. PennDOT will continue to identify ways to expand the application of HSM analyses to support more detailed assessments of how the STIP is supporting achievement of the safety targets.

Statewide HSIP Set Aside

Pennsylvania sets aside approximately \$40 million per year of HSIP funds in the first two years of the STIP to fund low-cost systematic improvement projects statewide, and to advance larger safety projects

¹ For more information on SPFs: <https://www.penndot.gov/ProjectAndPrograms/Planning/Research-And-Implementation/Pages/activeProjects/Safety-Performance-Functions.aspx>

for which regional HSIP funding allocations are too limited to complete. The set aside funding is additional to the regional HSIP funds that each MPO/RPO receives.

In summer 2021, PennDOT Districts and MPOs/RPOs were notified of the solicitation for FFY 2023/24 HSIP Set Aside Program funds. A data-driven safety analysis in the form of Benefit/Cost (B/C) Life Cycle analysis or Highway Safety Manual (HSM) analysis was required for each application. Evaluation criteria included B/C analysis, HSM analysis, fatal and injury crashes, application of systematic improvements, and deliverability. Carryover projects previously approved were continued. New projects that meet eligibility requirements were selected, based on evaluation criteria scoring, and demonstrate a significant potential safety return for the cost, within the currently available funding. Eligible projects not recommended for funding will remain on SharePoint as candidate applications to be considered as regional or as set aside program funds become available. As set aside funding becomes available, additional eligible candidate projects will be advanced to maximize use of HSIP funding statewide.

Below is an HSIP Set Aside project included in the FFY 2023-2026 SEDA-COG TIP:

- MPMS 117840 – SEDA-COG High Friction Surface Treatment on various routes, funded with \$1,611,967 in HSIP set aside funds

SEDA-COG MPO:

The SEDA-COG MPO FFY 2023-2026 TIP includes other safety improvement projects that are intended to improve the performance of the roadway system relative to the five federal safety performance measures.

To ensure planned HSIP projects achieve a significant reduction of traffic fatalities and serious injuries on all public roads, PennDOT District personnel and SEDA-COG MPO staff did the following for the development of the FFY 2023-2026 TIP:

- Reviewed the Highway Safety Network Screening Tool results, crash statistics, mapping, data driven safety analysis, prior road safety audits, and current and draft Pennsylvania Strategic Highway Safety Plans
- Considered input of maintenance personnel and local stakeholders received through meetings and coordination efforts
- Considered systematic and location-specific projects to address items indicated in the review of regional data
- Developed low-cost location-specific and systematic treatments that could be implemented as components of maintenance and TIP funded projects
- Developed candidate systematic and location-specific safety projects for regional and statewide HSIP funding
- Considered safety measures that could be incorporated into asset management projects
- Continued development and delivery of established safety projects carried over from previous TIP updates
- Coordinated with PennDOT District traffic safety managers and bicycle/pedestrian coordinators on an ongoing/as-needed basis
- Continued work with local sponsors to deliver studies, road safety audits, and other efforts that will result in programmable projects to address one or more safety performance measures
- Participated in regular PennDOT Planning Partners' meetings/calls where PM1 was discussed

- Consulted with county and municipal officials
- Participated in PennDOT Connects outreach meetings
- Participated in advisory committees for safety projects

Based on this process, the following regional SEDA-COG MPO safety projects were included in the FFY 2023-2026 TIP to help achieve a significant reduction of traffic fatalities and serious injuries on all public roads:

Project	Funding Code	Funding Amount
MPMS 111074 – River Road RR Warning Device	RRX	\$351,500
MPMS 117782 – Walnut St RR Warning Device	RRX	\$350,000
MPMS 114048 – Kish Pike RR Device Install	RRX	\$600,000
MPMS 114393 – 22-23 Raised Pavement Marking Contract SEDA-COG	581	\$78,000
MPMS 114394 – 23-24 Raised Pavement Marking Contract SEDA-COG	581	\$78,000
MPMS 114394 – 24-25 Raised Pavement Marking Contract SEDA-COG	581	\$79,000
MPMS 114394 – 25-26 Raised Pavement Marking Contract SEDA-COG	581	\$80,000
MPMS 103853 – SR 54 Corridor Safety Improvement	Regional HSIP	\$5,951,000
MPMS 103853 – SR 54 Corridor Safety Improvement	581	\$11,105,930
MPMS 112358 – I-80 ITS Camera #1 Danville Interchange ROP	NHPP	\$900,000
MPMS 117036 – SR 2008 Bloom Road Bike Lanes and Walkway	Multimodal	\$1,000,000
MPMS 111352 – SVRR RRX Northumberland County	RRX	\$2,093,327
MPMS 116221 – Warrior Run MTF	Multimodal	\$321,025
MPMS 117901 – West Shore RRX, SR 1011 and River Rd	RRX	\$880,000
	Total	\$23,867,782

The projects in the above table are consistent in scope and focus with the strategies for addressing several priority Safety Focus Areas from the Pennsylvania Strategic Highway Safety Plan and are considered to support the established statewide goals for a 2% reduction in fatalities and maintaining the current level for serious injuries.

When collaborating to set annual targets, PennDOT will provide feedback on how Pennsylvania, as well as individual MPO/RPO regions are doing on progress towards target achievement. PennDOT will continue to include information on Safety targets and progress towards meeting targets as part of annual safety submissions to NHTSA and FHWA. Four of the five measures will need to be met or significantly improved upon.

Pavement/Bridge Performance Measures (PM2)

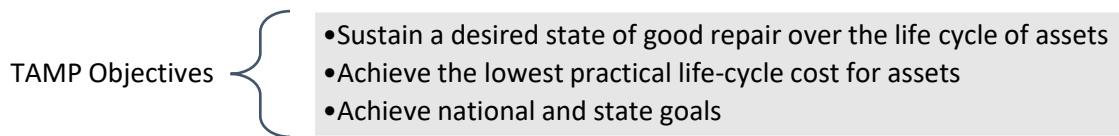
Background			
<p>The FHWA rule for the National Performance Management Measures: Assessing Pavement and Bridge Condition for the National Highway Performance Program was published in the Federal Register (82 FR 5886) on January 18, 2017 and became effective on February 17, 2017. This rule established 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 of which was for 2018 to 2021. The 2023 TIP includes projects that will impact the second four-year performance period of 2022 to 2025.</p>			
Data Source			
<p>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).</p>			
2022-2025 Pavement Performance Measure Targets (Statewide) – Due October 1 st 2022			
Measure	Baseline 2021	2-year Target 2023	4-year Target 2025
% of Interstate pavements in Good condition	TBD	TBD	TBD
% of Interstate pavements in Poor condition	TBD	TBD	TBD
% of non-Interstate NHS pavements in Good condition	TBD	TBD	TBD
% of non-Interstate NHS pavements in Poor condition	TBD	TBD	TBD
Bridge Performance Measure Targets (Statewide)			
Measure	Baseline 2021	2-year Target 2023	4-year Target 2025
% of NHS bridges by deck area in Good condition	TBD	TBD	TBD
% of NHS bridges by deck area in Poor condition	TBD	TBD	TBD
Methods for Developing Targets			
<p>Pennsylvania’s pavement and bridge targets will be established by October 2022 through extensive coordination with a Transportation Asset Management Plan (TAMP) steering committee and workshops with MPOs/RPOs and FHWA’s Pennsylvania Division. The targets will be 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.² Targets are expected to be calculated based on general system degradation (deterioration curves) offset by improvements expected from delivery of the projects in the TIP along with planned state funded maintenance projects.</p>			

Progress Towards Target Achievement and Reporting:

PennDOT continues to implement enterprise asset management for programming and decision-making as outlined in the TAMP.³ PennDOT is transitioning to the new TAMP that was finalized in the summer of 2022. The tools and methodologies are continually evaluated to prioritize state-of-good repair approaches that preserve transportation system assets. Within the TAMP, PennDOT identifies the following key objectives:

² For more information on LLCC: <https://www.penndot.gov/ProjectAndPrograms/Asset-Management/Documents/Lowest-Life-Cycle-Cost-Infographic.pdf>

³ PennDOT TAMP: <https://www.penndot.pa.gov/ProjectAndPrograms/Asset-Management/Pages/default.aspx>



PennDOT’s analyses pertaining to life cycle management, risk management, financial planning, and any performance gaps culminate in an investment strategy to support the objectives and goals established in the TAMP.

PennDOT and the MPOs/RPOs continue to ensure the STIP, regional TIPs, and LRTPs are developed and managed to support progress toward the achievement of the statewide pavement/bridge objectives and targets that will be established for the 2022-2025 performance period. Pennsylvania’s pavement and bridge projects provided in the FFY 2023-2026 TIP were selected through extensive coordination with 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.

After the 2022-2025 performance targets are set, PennDOT will provide feedback on statewide and MPO/RPO-specific progress towards target achievement. The progress helps each region understand the impacts of their past bridge and pavement investments and can guide future planning goals and strategy assessments.

SEDA-COG MPO:

The SEDA-COG MPO has agreed to support the statewide PM2 targets by planning and programming projects that contribute to meeting or making significant progress toward the established PennDOT performance targets. MPO staff coordinate closely with PennDOT District staff to evaluate performance trends and analyze outputs from PennDOT management systems as part of project selection. Longstanding commitments of the District staff and MPO board toward effective asset management have resulted in the baseline PM2 statistics for the SEDA-COG MPO region being better than the statewide 4-year targets during prior performance periods. SEDA-COG MPO staff monitors trends in support of the statewide targets during review of annual performance measures reports, generating LRTP regional performance measure reports, coordination with District staff, participating in BAMS/PAMS training opportunities, etc.

Evaluation of STIP for Target Achievement:

The following has helped to ensure that planned projects in the STIP will help to maintain a desired state of good repair in bridge and pavement conditions for the interstate and NHS roadways:

- Nearly 85% of PennDOT’s STIP funding is directed to highway and bridge preservation, restoration, and reconstruction projects. Many of these projects are focused on Pennsylvania’s interstate and NHS roadways.
- Pennsylvania’s investment strategy, reflected in the statewide 2023 Twelve Year Program (TYP) and 2023-2026 STIP, is the result of numerous strategic decisions on which projects to advance at what time. PennDOT continues to address the challenges of addressing local needs and priorities, while ensuring a decision framework is applied consistently across the state.
- The TAMP provides a 12-year outlook that includes the financial strategy for various work types and is a driver for the TIP, STIP and LRTP development. The TAMP projects the levels of future

investment necessary to meet the asset condition targets and contrasts them with expected funding levels. This helps PennDOT to make ongoing assessments and to reevaluate data associated with its future investment decisions.

- In support of the STIP development, PennDOT and MPOs/RPOs jointly developed and approved General and Procedural Guidance and Transportation Program Financial Guidance documents.⁴ The guidance, which is consistent with the TAMP, formalizes the process for Districts, MPOs/RPOs and other interested parties as they identify projects, perform a project technical evaluation, and reach consensus on their portion of the program.
- The Procedural Guidance also helps standardize the project prioritization process. The guidance is key to resolving issues between programming to lowest life-cycle cost, managing current infrastructure issues and risk mitigation. The resulting methodology allows data-driven, asset management-based decisions to be made with human input and insight based on field evaluations to achieve maximum performance of the available funds. The guidance document is revised for each STIP cycle as PennDOT's asset management tools and methods evolve and enhance its ability to program to lowest life cycle cost.
- In the short term, candidate projects are defined, and the proposed program is compared to Pavement Asset Management System (PAMS) and Bridge Asset Management System (BAMS) outputs to verify that the program is developed to the lowest practical life cycle cost. The percentages of good and poor can also be projected for evaluation of how the program may impact the national performance measures. When PAMS and BAMS are further implemented and improved, then planners can use the systems to optimize the selection of projects to achieve optimal performance within the funding constraints. Draft programs can then be analyzed in relation to the PM2 measures.

SEDA-COG MPO:

The SEDA-COG MPO FFY 2023-2026 TIP includes roadway/bridge improvement projects that are intended to improve the performance of the NHS relative to the six pavement/bridge performance measures.

To ensure planned roadway/bridge projects achieve an improvement in bridge and pavement conditions for the Interstate and other NHS roads, the SEDA-COG MPO considered and engaged in the following for the development of the FFY 2023-2026 TIP:

- Coordinated with PennDOT District and Central Office staff
- Participated in regular PennDOT Planning Partners' meetings/calls where PM2 was discussed
- Consulted with county and municipal officials
- Reviewed recommendations from PennDOT District Roadway Five Year Plans
- Reviewed existing and projected future pavement/bridge conditions
- Considered strategies to continue to improve the NHS at the lowest life cycle costs
- Planning and programming of projects as part of fiscal constraint

Based on this process, the following regional SEDA-COG MPO key roadway/bridge projects were included in the FFY 2023-2026 TIP to help improve the performance of the NHS relative to the six pavement/bridge performance measures:

⁴ The 2023 Financial Guidance can be found at: <https://talkpatransportation.com/how-it-works/tip>

Project	Improvement Type	Funding Code	Funding Amount
MPMS 99404 – SR 11 from Briar Cr Boro to Berwick Boro line	Resurface Pavement	NHPP	\$1,600,000
MPMS 116203 – SR 11 from Park Blvd to Luzern Co	Resurface Pavement	NHPP/581	\$340,000
MPMS 116356 – SR 11 from Park St to Shaffer Rd (SR 1001)	Resurface Pavement	NHPP/581	\$305,000
MPMS 109577 – I-80 Bridge Piers Rehab	Bridge	STP/BRIP	\$1,752,000
MPMS 69423 – 2023 SR 22 Bridge Preservation	Bridge	NHPP/STP/BRIP/185	\$5,825,553
MPMS 116886 – 2025 SR 22 Bridge Preservation	Bridge	NHPP/BRIP/185	\$10,016,623
MPMS 4190 – SR 75 Bridge over Norfolk Southern Railroad	Bridge	NHPP	\$100,000
MPMS 85276 – SR 22 Bridge over Unnamed Tributary to Long Hollow Run	Bridge	STP	\$50,000
MPMS 69387 – SR 22 Bridge Long Hollow Run	Bridge	STP/185	\$1,927,726
MPMS 105922 – SR 22 Bridge over Branch Long Hollow Run	Bridge	STP/185	\$1,927,726
MPMS 113153 – SR 22 Bridge over Abandoned Railroad	Bridge	581	\$450,203
MPMS 116799 – SR 22 Bridge over Wakefield Run	Bridge	BRIP	\$393,928
MPMS 4582 – SR 22 Lewistown Narrows Rehab	Restore Pavement	NHPP	\$11,624,296
MPMS 93314 – SR 22 from McVeytown to Strodes Mills	Resurface Pavement	NHPP	\$2,040,146
MPMS 85290 – SR 522 Bridge over Jacks Creek	Bridge	STP/BRIP	\$2,300,290
MPMS 72767 – SR 522 from Lewistown to County Line Betterment	Resurface Pavement	NHPP	\$1,073,253
MPMS 114010 – SR 522 Betterment	Restore Pavement	NHPP/STP	\$5,787,516
MPMS 93316 – SR 1005 Valley Street Betterment	Restore Pavement	NHPP/STP	\$3,916,530
MPMS 91608 – SR 1012 Bridge over Laurel Run	Bridge	NHPP	\$1,860,000
MPMS 85299 – SR 3006 Bridge over SR 8005 Lewistown Bridge	Bridge	NHPP/BRIP	\$1,144,308
MPMS 85300 – SR 3006 Bridge over SR 8005 Lewistown Bridge II	Bridge	NHPP/BRIP	\$1,144,308
MPMS 115544 – SR 11 from 1500 ft west of Montour St to Clinic Rd	Resurface Pavement	581	\$15,000

MPMS 115547 – SR 11 from the Northumberland County line to 1500 ft west of Montour St	Resurface Pavement	581	\$5,000
MPMS 116307 – SR 11 from Northumberland County line to Bald Top Rd	Resurface Pavement	581	\$910,000
MPMS 107128 – SR 54 Bridge under Market Street	Bridge	STP/185	\$1,075,000
MPMS 98991 – SR 54 Westbound Bridge over Mahoning Creek	Bridge	STP/185	\$1,300,000
MPMS 105525 – I-80 Westbound from Stump Rd to Klondike Rd	Resurface Pavement	NHPP	\$115,000
MPMS 105527 – I-80 from Klondike Rd to Mauses Creek Trib	Reconstruct Pavement	NHPP/STP	\$4,651,000
MPMS 99176 – SR 11 from SR 147 to C Street	Resurface Pavement	NHPP/581	\$810,000
MPMS 99177 – SR 11 from Ridge Road (SR 1024) to the Montour County line	Resurface Pavement	581	\$30,000
MPMS 117615 – SR 11 Bridge over the West Branch of the Susquehanna River	Bridge	BRIP	\$6,029,000
MPMS 115507 – SR 45 from Water St to SR 147	Resurface Pavement	581	\$25,000
MPMS 117570 – SR 45 & SR 1014 Bridges over West Branch Susquehanna River	Bridge	BRIP	\$960,000
MPMS 99009 – SR 61 Bridge over SR 2029 & SR 901	Bridge	STP	\$665,000
MPMS 99391 – SR 61 from Kulpmont Borough Line to Lancaster Switch	Resurface Pavement	NHPP/581	\$3,250,000
MPMS 87944 – SR 61 from Lancaster Switch to the Coal Township/Shamokin Township line	Resurface Pavement	581	\$819,250
MPMS 99006 – SR 61 Bridge over Dark Run	Bridge	BRIP	\$300,000
MPMS 110224 – SR 61 from Fifth Street to Dark Run	Resurface Pavement	581	\$585,000
MPMS 85623 – SR 147 Bridge over Tributary to Susquehanna River	Bridge	STP	\$550,000
MPMS 109833 – SR 147 from Eighth St. to SR 405	Resurface Pavement	NHPP/581	\$1,740,000
MPMS 115583 – SR 147 from Shamokin Creek to Church St	Resurface Pavement	NHPP/581/BRIP	\$2,662,000
MPMS 115584 – SR 147 from Church St to Shikellamy Ave	Resurface Pavement	NHPP/STP/581/BRIP	\$1,860,000
MPMS 97679 – SR 642 from West Branch Susquehanna River to Milton Borough	Resurface Pavement	581/STP/BRIP	\$1,310,000
MPMS 106278 – SR 11 Northbound from Penns Creek to SR 522	Resurface Pavement	581/185	\$741,000
MPMS 106279 – SR 11 from Penns Creek to SR 522 SB	Resurface Pavement	581/185	\$757,000

MPMS 99241 – SR 11 from Ulsh Road to Penn's Creek	Resurface Pavement	NHPP/581	\$8,891,000
MPMS 113787 – SR 11 from Roosevelt Ave to SR 15/11 Split	Resurface Pavement	581	\$2,550,000
MPMS 115551 – SR 15 from SR 11 to the Union County line	Resurface Pavement	581	\$10,000
MPMS 6886 – US 522 Bridge over Tributary to Middle Creek	Bridge	NHPP	\$1,750,000
MPMS 6899 – SR 522 Bridge over Beaver Creek	Bridge	STP	\$2,235,000
MPMS 6902 – SR 522 Bridge over Tributary to Middle Creek	Bridge	STP/BRIP/185	\$3,525,000
MPMS 6907 – SR 522 Bridge over Tributary to Middle Creek	Bridge	185	\$75,000
MPMS 104616 – SR 522 from Willow Ave to Swinehart Dr	Resurface Pavement	NHPP/581	\$720,000
MPMS 116340 – SR 522 from Gregor Hill Ln to Spring Alley	Resurface Pavement	581	\$5,000
MPMS 116341 – SR 522 from Smalsh Barrick Rd to Mountain Dr	Resurface Pavement	581	\$5,000
MPMS 108425 – SR 15 from Joe Rd to SR 1010	Resurface Pavement	NHPP/581	\$1,020,000
MPMS 99253 – SR 15 from Interstate 80 to White Deer Creek	Resurface Pavement	NHPP/581	\$1,010,000
MPMS 99273 – SR 15 from the White Deer Township Line to the Village of Allenwood	Resurface Pavement	NHPP/581	\$660,000
MPMS 99407 – SR 15 from SR 44 to the Lycoming County Line	Resurface Pavement	581	\$10,000
MPMS 110599 – SR 15 from Ikeler St to T-387 Hafer Rd	Resurface Pavement	NHPP	\$606,000
MPMS 114379 – SR 15 from the Snyder County line to State Route 304	Resurface Pavement	NHPP/581	\$365,000
MPMS 115562 – SR 15 from Winfield to Martin St	Resurface Pavement	581	\$10,000
MPMS 115565 – SR 15 from S. Hill Rd to Columbia Ave	Resurface Pavement	581	\$10,000
MPMS 116344 – SR 15 from Haffer Rd to Zeigler Rd	Resurface Pavement	581	\$5,000
MPMS 116351 – SR 15 from SR 1008 to Deitrich Rd	Resurface Pavement	581	\$5,000
MPMS 113788 – SR 45 from Bull Run to Northumberland County line	Resurface Pavement	581	\$25,000
MPMS 97551 – Interstate 80 West from SR 1010 to the Northumberland County line	Resurface Pavement	581	\$10,000
MPMS 105516 – Interstate 80 West from the Union County line to Mile Run	Resurface Pavement	NHPP	\$5,480,000

MPMS 110231 – Interstate 80 East from Mile Run to SR 1010	Resurface Pavement	NHPP/STP	\$2,760,000
MPMS 113612 – Interstate 80 West from Mile Run to SR 1010	Resurface Pavement	NHPP	\$2,900,000
		Total	\$25,751,000

The above projects are consistent with data-driven, asset management-based philosophies. MPO staff did not have full access to PAMS and BAMS for selecting and analyzing TIP projects for the 2023 TIP, but regional outputs from PAMS/BAMS were incorporated into the process as those resources and training in their use became available. It's presumed that these tools will be fully implemented for the 2025 TIP and allow staff to describe the anticipated effect of the TIP toward achieving the performance targets identified in the TIP/LRTP. Interim upgrades could likely include preparing a table/chart of the total amount of bridge deck area and miles of pavement improved based on the TIP, but data reports and insufficient time prevented them from being prepared for the 2023 TIP adoption milestone.

System Performance Measures (PM3)

Background			
The FHWA final rule for the <i>National Performance Management Measures: Assessing Performance of the National Highway System, Freight Movement on the Interstate System, and Congestion Mitigation and Air Quality Improvement Program</i> was published in the Federal Register (82 FR 5970) on January 18, 2017 and became effective on May 20, 2017. This rule established six measures related to various aspects of the transportation system (commonly known as PM3). The current regulations are found at 23 CFR 490 Subparts E, F, G & H . Targets are established for these measures as part of a four-year performance period, the first of which was for 2018 to 2021. This 2023 TIP includes projects that will impact future performance periods based on when projects are constructed or completed.			
Data Source			
The Regional Integrated Transportation Information System (RITIS) software platform is used to generate the travel time-based measures. Data from the American Community Survey (ACS) and FHWA's CMAQ annual reporting system are used for the non-SOV travel and mobile source emissions measures, respectively.			
Travel Time and Annual Peak Hour Excessive Delay Targets - Due October 1 st 2022			
Measure	Baseline 2021	2-year Target 2023	4-year Target 2025
Interstate Reliability (Statewide)	TBD	TBD	TBD
Non-Interstate Reliability (Statewide)	TBD	TBD	TBD
Truck Reliability Index (Statewide)	TBD	TBD	TBD
Annual Peak Hour Excessive Delay Hours Per Capita (Urbanized Area)	Philadelphia - TBD	TBD	TBD
	Pittsburgh – TBD	TBD	TBD
	Reading	TBD	TBD
	Allentown	TBD	TBD
	Harrisburg	TBD	TBD
	York	TBD	TBD
	Lancaster	TBD	TBD
Non-SOV Travel Measure Targets			
Measure	Baseline 2021	2-year Target 2023	4-year Target 2025
Percent Non-Single Occupant Vehicle Travel (Urbanized Area)	Philadelphia - TBD	TBD	TBD
	Pittsburgh – TBD	TBD	TBD

CMAQ Emission Targets		
Measure	2-year Target 2023	4-year Target 2025
VOC Emissions (Statewide)	TBD	TBD
NOx Emissions (Statewide)	TBD	TBD
PM2.5 Emissions (Statewide)	TBD	TBD
PM10 Emissions (Statewide)	TBD	TBD
CO Emissions (Statewide)	TBD	TBD
Methods for Developing Targets		
The System Performance measure targets will be established by October 2022 in coordination with MPOs/RPOs within the state. PennDOT continues to evaluate historic variances in performance measures in relation to project completion to assist with the target setting process.		

Progress Towards Target Achievement and Reporting:

PennDOT and the MPOs/RPOs continue efforts to ensure the STIP, regional TIPs, and L RTPs are developed and managed to support the improvement of the reliability and CMAQ performance measures. This future progress will be measured against the targets established for the 2022-2025 performance period. PennDOT continues to monitor the impacts of completed investments on performance measures to better evaluate investment strategies. These efforts include evaluating the causes of historic reliability and delay issues, identifying freight bottlenecks, and assessing completed projects that provided the most benefits to reliability.

PennDOT remains committed to expand and improve system mobility and integrate modal connections despite the large percentage of funding dedicated to infrastructure repair and maintenance. PennDOT’s L RTP provides objectives to address mobility across the transportation system that will guide investment decisions. The federal systems performance measures will be used to assess future progress in meeting these objectives and the associated targets.

PennDOT L RTP Mobility Goal and Objectives

SEDA-COG MPO:

The SEDA-COG MPO has agreed to support the statewide PM3 targets by planning and programming projects that contribute to meeting or making significant progress toward the established PennDOT performance targets. MPO staff coordinate closely with PennDOT District staff to evaluate performance trends and analyze outputs from PennDOT management systems as part of project selection. The

District staff and MPO board are dedicated to maintaining and improving travel reliability. SEDA-COG MPO actively pursues implementing strategies from the area's Regional Operations Plan and supports candidate projects for funding through PennDOT Transportation Systems Management and Operations initiatives. Since air quality within the SEDA-COG MPO region attains all current air quality standards, the CMAQ measures are not applicable to the region.

Evaluation of STIP for Target Achievement:

The following has helped to ensure that planned projects in the STIP will help to achieve an improvement in the system performance measures for the statewide interstate and NHS road system:

- PennDOT continues to emphasize Transportation Systems Management and Operations (TSMO) initiatives to program low-cost technology solutions to optimize infrastructure performance. This has included the development of Regional Operations Plans (ROPs) that integrate with the MPO Congestion Management Process (CMP) to identify STIP projects. A TSMO funding initiative was established in 2018 to further support these efforts. The 2023-2026 STIP includes over \$289 million of funding dedicated to congestion relief projects.
- PennDOT has funded interstate projects to address regional bottlenecks. Mainline capacity increasing projects are limited to locations where they are needed most. These investments will provide significant improvements to mobility that support meeting the interstate and freight reliability targets.
- The statewide CMAQ program provides over \$440 million of funding on the STIP for projects that benefit regional air quality. PennDOT has worked with Districts and MPO/RPOs to develop more robust CMAQ project selection procedures to maximize the air quality benefits from these projects.
- Over \$210 million is provided in the STIP for multimodal alternatives. This includes funding for transit operating costs, transit and rail infrastructure, support for regional carpooling and other bike and pedestrian infrastructure within the state. These projects provide opportunities to reduce vehicle miles of travel (VMT) and increase the percentage of non-single occupant vehicles.
- At this time, the potential impact of past and planned STIP investments on PM3 performance measures are still being evaluated. The timeline for project implementation often prevents an assessment of measurable results until a number of years after project completion. PennDOT continues to monitor the impact of recently completed projects on the reliability and delay measures. As more data is obtained, these insights will help PennDOT in evaluating potential project impacts in relation to other factors including incidents and weather on system reliability and delay.

SEDA-COG MPO:

The SEDA-COG MPO region has a major active project that will relieve congestion and improve transportation system reliability: The Central Susquehanna Valley Transportation (CSVTV) project. The CSVTV project involves a new 4-lane limited access highway, approximately 13 miles long and separated into 2 sections: Northern Section – connects PA 147 south of Montandon to US 15 south of Winfield and includes a 4,500' long bridge over the West Branch Susquehanna River; Southern Section – connects US 15 south of Winfield to US 11/15 north of Selinsgrove and includes a connector from the new highway to PA 61 (Veterans Memorial Bridge). The Northern Section is anticipated to open to traffic in 2022 and the Southern Section is expected to open to traffic in 2027. The total project cost is estimated at \$900

million. The 2023-2026 SEDA-COG TIP has nearly \$150 million programmed for continuing the CSVT project. State Spike funds (581 funds) comprise \$136,970,562 of this funding programmed for the CSVT.

Transit Asset Management Performance Measures

Background				
<p>In July 2016, FTA issued a final rule (TAM Rule) requiring transit agencies to maintain and document minimum Transit Asset Management (TAM) standards, policies, procedures, and performance targets. The TAM rule applies to all recipients of Chapter 53 funds that either own, operate, or manage federally funded capital assets used in providing public transportation services. The TAM rule divides transit agencies into two categories (tier I and II) based on size and mode. The TAM process requires agencies to annually set performance measure targets and report performance against those targets. For more information see: Transit Asset Management FTA (dot.gov)</p>				
Data Source				
<p>The TAM rule requires states to participate and/or lead the development of a group plan for recipients of Section 5311 and Section 5310 funding, and additionally allows other tier II providers to join a group plan at their discretion. All required agencies (Section 5311 and 5310) and remaining tier II systems except for Centre Area Transportation Authority (CATA), have elected to participate in the PennDOT Group Plan. The Group Plan is available on PennDOT’s website at PennDOT Group Plan. The group plan is updated annually with new targets as well as the current performance of the group.</p>				
Transit Asset Management Targets (for all agencies in PennDOT Group Plan)				
Performance Measure	Asset Class	FY 2020-21 Target	Current Performance	FY 2021-22 Target
Rolling Stock (Revenue Vehicles)				
<p>Age % of revenue vehicles within a particular asset class that have met or exceeded their Estimated Service Life (ESL)</p>	AO-Automobile	16%	18%	18%
	BR-Over-the-road Bus	12%	18%	18%
	BU – Bus	29%	28%	28%
	CU-Cutaway	42%	52%	52%
	VN-Van	64%	63%	63%
	SV-Sports Utility Vehicle	17%	33%	33%
Equipment (Non-Revenue Vehicles)				
<p>Age % of non-revenue/service vehicles within a particular asset class that have met or exceeded their ESL</p>	Automobiles	46%	57%	57%
	Trucks / Rubber Tire Vehicles	50%	27%	27%
Facilities				
<p>Condition % of facilities with a condition rating below 3.0 on the FTA TERM scale</p>	Administrative / Maintenance Facilities	30%	14%	14%
	Passenger / Parking Facilities	83%	84%	84%
Methods for Developing Targets				
<p>PennDOT annually updates performance targets based on two primary elements: the prior year’s performance and anticipated/obligated funding levels. PennDOT requires rolling stock and non-revenue vehicles (equipment) to meet both age and mileage ESL standards prior to being replaced. While the identified annual targets represent only age and condition in line with FTA guidelines, PennDOT will continue to apply age and mileage when making investment decisions.</p>				

Progress Towards Target Achievement and Reporting:

The Pennsylvania TAM Group Plan fulfills the PBPP requirement and encourages communication between transit agencies and their respective MPOs and RPOs. In accordance with the plan, the following actions take place that fulfill the PBPP requirement:

- PennDOT provides asset performance reports to transit agencies by August 31 of each year that measure performance against established targets for the previous fiscal year.
- Transit agencies review the content for accuracy and confirm with PennDOT that information related to transportation asset performance has been received and is accurate.
- Transit agencies share performance data with their respective planning partner by the end of each calendar year, or earlier as decided between the partners.
- New performance goals for the upcoming fiscal year are established no later than September 15 of each year and communicated to transit agencies covered under the group plan.
- Transit agencies continue regular coordination regarding the local Transportation Improvement Program (TIP) and other planning initiatives of the local planning partner.

All transit agencies are required to utilize Pennsylvania's transit Capital Planning Tool (CPT) as part of their capital planning process and integrate it into their TAM process. The CPT is an asset management and capital planning application that works as the central repository for all Pennsylvania transit asset and performance management activities.

Consistent with available resources and in coordination with the PennDOT BPT, transit agencies are responsible for submitting projects consistent with the CPT for the development of the transit portion of the Program. This ensures that projects identified on the TIP are consistent with the TAM approach and respective TAM plans. PennDOT Program Center will update this project information in MPMS and share it with the MPOs/RPOs, PennDOT BPT, and the transit agencies.

Evaluation of STIP for Target Achievement:

The STIP includes an investment prioritization process using established decision support tools. The investment prioritization process occurs annually as part of the capital budgeting process. To prioritize investments at an agency level and at a statewide level, the following basic actions take place:

- Update inventory in the CPT to include age, mileage, condition, and operational status
- Identify assets that are not in a state-of-good-repair, using the following priority process:
 - Vehicles that surpass age and mileage ESL
 - Vehicles that surpass age or mileage ESL and are rated in poor condition or represent a safety hazard
 - Facilities that have a condition rating of less than 3 on the TERM Scale, with priority given to facilities that are the lowest in the scale and represent a critical need to maintain operational capacity
- Determine available funding based on federal and state funding sources
- Develop projects within the CPT Planner based upon funds availability
- Import CPT Planner into DotGrants for the execution of capital grants

Throughout the process, PennDOT reviews projects and works with agencies to approve and move projects forward through the grant process.

SEDA-COG MPO:

The SEDA-COG MPO has passed a resolution to adopt the performance targets of the Pennsylvania TAM Group Plan. Consultation with the MPO area’s transit agencies is used to develop transit projects for the TIP. The area transit operators develop their own capital plans and share anticipated grant funding requests with the MPO. The FFY 2023-2026 TIP includes the following projects that will help tier II transit agencies meet the targets included in the TAM Group Plan:

Project	Funding Code	Funding Amount
MPMS 115140 – Replace Small Transit Bus	Local	\$1,125,000
MPMS 115127 – Purchase Vehicles	Local	\$2,050,000
	Total	\$3,175,000

Public Transit Safety Performance Measures

In addition to the Transit Asset Management Performance, FTA issued a final rule on Public Transportation Agency Safety Plans (PTASP), effective July 19, 2019. The PTASP final rule (49 C.F.R. Part 673) is meant to enhance safety by creating a framework for transit agencies to manage safety risks in their organization. It requires recipients of FTA funding to develop and implement safety plans that support the implementation of Safety Management Systems (SMS). At this time, recipients of only Section 5311 (Formula Grants for Rural Areas) or Section 5310 (Enhanced Mobility of Seniors and Individuals with Disabilities Program) are exempt from the PTASP requirement.

As part of the plan development process, performance targets must be established for the following areas:

1. Fatalities,
2. Injuries,
3. Safety Events, and System Reliability

All public transit agencies in the Commonwealth have written safety plans compliant with Part 673 as of July 20, 2021. These safety plans must be updated annually based on agency specific execution dates and shared with PennDOT BPT. It is also the transit agency’s responsibility to share the updated plan with their respective MPO/RPO, so the new targets and measures can be incorporated into regional planning practices.