

**2021-2024 TRANSPORTATION IMPROVEMENT PROGRAM
FOR SOUTHWESTERN PENNSYLVANIA**

APPENDIX 3

Transportation Performance Measurement

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.

National transportation goals cover a range of key management issues: highway safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and reduced delivery delays (23 U.S. Code Section 150). The legislative framework also establishes 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. Performance measure requirements 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 provisions for 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, October 2018) and the Pennsylvania Transit Asset Management Group Plan (PennDOT, September 2018). 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. Transit Safety measures have not yet been completed; development processes are ongoing.

The federal PBPP targets must be integrated with (and consistent with) other performance-based planning efforts undertaken, such as the Pennsylvania Strategic Highway Safety Plan (and Regional Safety Action Plan), the National Public Transportation Safety Plan (and Transit Agency Safety Plans), state and agency transit asset management plans, the Pennsylvania Transportation Asset Management Plan (June 2019), the MPO Congestion Management Process, and the MPO CMAQ performance plan.

The scope of MPO Long-Range Transportation Plan (LRTP) planning requirements is included in 23 CFR 450.324. The MPO LRTP must include required performance measures, performance targets and a system performance report that includes an evaluation of system performance with respect to the performance targets, describing progress in comparison with system performance recorded in previous reports. The SPC LRTP includes performance measures and targets as well as baseline performance data for these measures. The initial system performance report and progress description will be due upon completion of the first scheduled performance period for each measure. The SPC TIP is an important element for achieving SPC performance targets.

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.

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 early 2017. It serves as a blueprint to reduce fatalities and serious injuries on Pennsylvania roadways and targets priority Safety Focus Areas (SFAs) that have the most influence on improving highway safety throughout the state. The SHSP contains Pennsylvania's statewide goals for fatalities and serious injuries over the next 3-4 years. 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 were to cut fatalities and serious injuries in half in the 25-year period 2006-2030. This plan is being updated in 2020.

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 and performance measures. 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 meetings 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 (2012-2016) and Target (2014-2018) periods. Over the past several years data yielded a downward trend of approximately 1%. This was compared to what was observed at a national level. Nationally these same numbers were rising by almost seven percent per year. 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 2% annual reduction goal was both aggressive and obtainable. Upon reaching this conclusion, 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 December 2017 and again in January 2019, SPC endorsed PennDOT's statewide Safety Performance Target of a 2% reduction for all five federal safety metrics for both reporting periods. In the most recent third reporting period (CY 2019), PennDOT proposed a reduced statewide target of a 1% across the board reduction for the five-year average (2016-2020). In January, 2020, SPC established its own targets for the CY 2019 reporting period. Based on historical regional data and the goals of the adopted Regional Safety Action Plan, SPC maintained a target of 2% reduction across all five safety metrics. The following table shows the CY 2019 Statewide and Regional Targets.

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

Safety Performance Measure	Statewide Baseline (2014-2018)	Statewide Target (2016-2020)	SPC Target (2016-2020)
Number of fatalities	1,182.0	1,179.1	224.1
Rate of fatalities per 100 million VMT	1.169	1.148	1.084
Number of serious injuries	3,839.6	4,400.3	907.4
Rate of serious injuries per 100 million VMT	3.797	4.309	4.390
Number of non-motorized fatalities and non-motorized serious injuries	679.0	781.7	122.2

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 2021 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 2017 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.
- Pennsylvania sets aside \$35 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 integrated a safety evaluation into the project evaluation criteria in all of its discretionary funding programs (CMAQ, TA and SMART Programs).
- SPC has conducted over 30 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 2016-2020 HSIP targets in December 2021. Four of the five measures will need to be met or significantly improved upon. FHWA will utilize 2014-2018 data as a baseline period for assessing significant progress. FHWA will report their findings to PennDOT by March 2022.

TIP Investment in Projects that Improve Safety

The 2021 TIP includes a significant investment in safety projects. In the four-year TIP period over \$167 million will be invested in 35 safety projects that will increase the safety of the region's highway and bridge infrastructure. These safety projects include over \$4 million in railroad crossing safety. Notable 2021 safety projects include (Project ID, MPMS, in parentheses):

- SR 28 Goheenville Dip (69141)
- US 30 Corridor and Safety Improvements (110900)
- PA 68 Zelenople Curve (110826)
- US 119 McClure Road/Kingview Road Interchange (96661)
- SR 356 Safety Improvements (96654)
- SR 422 Margaret Road Intersection Realignment (85574)
- SR 3021 Safety Improvements (110783)
- Liberty Avenue Safety Improvements (106773)
- District 11 Guiderail Improvements (114290)
- District 12 Cable Median Guiderail (113755)
- District 12 Reflective Pavement Markings (113708/113707)

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 is the second in a series of three related rulemakings that together establish a set of performance measures for state DOTs and MPOs to use as required by MAP-21 and the FAST Act.

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 include 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

State 2-year and 4-year targets were due May 20, 2018 and were also reported to FHWA in the 2017 baseline report that was due October 2018. 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.

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.

- A workshop was conducted on October 12, 2017 with PennDOT, planning partners and FHWA Pennsylvania Division staff related to fully integrating an asset management approach into decision-making.
- A workshop was conducted on January 11, 2018 with PennDOT and FHWA Pennsylvania Division staff to identify future steps and requirements related to the Transportation Performance Management (TPM) rulemaking.
- PennDOT provided status updates on the development of performance measure data, tools and methodologies to the planning partners. On October 18, 2017, PennDOT provided an overview of the performance measures and general approaches for target setting at the planning partners fall conference in State College. On a March 20, 2018 conference call, PennDOT provided a status update on the development of baseline measures and targets.
- PennDOT conducted a webinar May 9, 2018 to review the state DOT targets with the planning partners.
- PennDOT has developed the Pennsylvania Department of Transportation MAP-21 and FAST Act Performance Management Road Map to provide planning partners with a resource on the performance measure requirements and calculations.

Any portion of the applicable transportation network within the SPC region must establish targets for the performance measures no later than 180 days after PennDOT establishes (or amends in future) their targets. SPC must establish targets for the performance measures no later than 180 days after PennDOT establishes (or amends in future) their targets. SPC adopted the statewide targets as the region's targets on September 24, 2019.

Data Collection and Analysis

PennDOT will collect and perform the analysis of the data for the pavement and bridge performance measures.

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 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% 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% 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.

Previously collected segment-level data for the years 2013-2016 was quantified and used to determine deterioration rates for each condition. Some assumptions related to significant repairs, segment averages and minor maintenance were included in deterioration. The overall deterioration rate was then increased by 3% to reflect the impact of inflation.

The resultant deterioration rates are provided in the following table:

Table 3-3: Pavement Deterioration Rates

Condition	Interstate	NHS Non-Interstate
Faulting (inch)	0.00024	0.00153
Concrete Cracking	0.94%	0.89%
Rutting (inch)	0.00651	0.00890
Bituminous Cracking	0.56%	0.90%

The appropriate deterioration rates were applied to each condition, and values for each tenth-mile increment were determined for the years 2021, 2025, and 2029 if nothing is done. Data from MPMS for anticipated projects on the Interstate and NHS non-interstate networks for the next eight years (2018-2029) was compiled. The mileage of the projects that affected pavement condition was determined, and these proportions were projected over the next four-year period (2022-2025) and the following four-year period (2026-2029). Projecting mileage beyond four years provided a better representation of the volume of work to be expected, assuming constant funding while reducing affected miles by 3% annual inflation. Given the mileages in good, fair, and poor condition, and the projected programmed miles in each condition, resultant mileages were determined for the years 2021, 2025, and 2029. The mileage with missing data was assumed constant over this duration.

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 9 to 0 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 3-4: 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% of a state's total NHS bridges by deck area are in poor condition.

Several different types of models have been created and run with historic data to determine the level of accuracy of the predictive models based on previous deterioration investigations.

The outputs from the best performing models were combined and used in conjunction with historic trends to produce a short-term projection.

State Pavement and Bridge Performance Targets

Table 3-5: State Interstate and Non-Interstate NHS Pavement Targets

Pavement Performance			
Measure	Baseline 2017	2-year Target 2019	4-year Target 2021
% of Interstate pavements in Good condition	67.2 %	N/A	60.0 %
% of Interstate pavements in Poor condition	0.4 %	N/A	2.0 %
% of non-Interstate NHS pavements in Good condition	36.8 %	35.0 %	33.0 %
% of non-Interstate NHS pavements in Poor condition	2.3 %	4.0 %	5.0 %

PennDOT's pavement condition targets (its desired state of good repair) for NHS Interstate roadways mirror the federal standard: no more than 5% 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.

Table 3-6: State NHS Bridge Targets

Bridge Performance			
Measure	Baseline 2017	2-year Target 2019	4-year Target 2021
% of NHS bridges by deck area classified in Good condition	25.6 %	25.8%	26.0 %
% of NHS bridges by deck area classified in Poor condition	5.5 %	5.6%	6.0%

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.

Reporting on Progress Toward Target Achievement

PennDOT will need to report on performance at regular intervals. The first State DOT baseline performance period report was due October 1, 2018, for all measures in this rule.

Pennsylvania MPOs/RPOs that include, within their respective geographic boundaries, any portion of the applicable transportation network or area must report baseline conditions, targets and progress toward the achievement of their targets in TIPs and LRTPs adopted after May 20, 2019.

TIP Investment in Projects that Improve Pavement and Bridge Condition

Project selection processes for the SPC 2021 TIP prioritize the selection of projects that will support the achievement of the region's performance targets for non-interstate NHS pavements and bridges.

The 2021 TIP includes a significant investment in the condition of the region's non-Interstate NHS roadway system, \$203 million, with the bulk of the investment (\$187 million) focused on roadway preservation projects. This investment will address over 75 segment miles currently in fair or poor condition. A sampling of notable NHS roadway projects (Project ID, MPMS#, in parentheses):

- US 22 Concrete Repair (114224)
- US 22 - SR 48 to Westmoreland County Line (105449)

- PA 130 Triboro Expressway (110061)
- US 30 Lincoln Highway, Lennox to SR 48 (91696)
- US 30 Ardmore Blvd, Brinton to Bevington (113415)
- PA 28 - Etna to Highland Park Bridge (92273)
- PA 28 - Highland Park to RIDC (92274)
- PA 28 - Hamarville to Russellton (92276)
- PA 65 - Emsworth to Sewickley Bridge (97934)
- SR 51 Constitution Blvd B53 (109352)
- PA 8 - Allegheny Line to PA 228 (109628)
- Butler Bypass Preservation (105905)
- Charleroi Betterment (105426)
- Waynesburg Betterment (113683)
- SR 2040 - Buttermilk Hollow to Ceco Drive (26623)
- SR 2040 - Ceco Drive to Brownsville Road (28025)
- PA 18 7th Ave (29094)

The 2021 TIP includes a significant investment in the condition of the region's non-interstate NHS bridges, \$207 million, with \$133 million focused on bridge preservation projects. \$116 million of these bridges are currently in poor condition - 33 bridges with 223,133 sq. ft. of bridge deck area. A sampling of notable NHS bridge projects:

- PA 8 South of Cooperstown 1 (24715)
- PA 8 South of Cooperstown 3 (24717)
- PA 21 over PA 166 (79306)
- PA 21 over Toll Gate Run (105306)
- PA 28 Poverty Hill Bridge (24056)
- PA 28 over Yutes Run (74255)
- US 30 over Falls Run (28593)
- US 30 Ardmore Blvd over Br. Falls Run (100604)
- US 30 Ardmore Blvd over Br. Falls Run (28155)
- PA 88 over Tributary to Monongahela River (76050)
- US 119 over Two Lick Creek (95852)
- Philadelphia Street Bridges (106058)
- PA 356 over Pine Run (81751)
- Tarentum Bridge Ramp A (63306)
- PA 366 over Br Pucketa Creek (105315)
- PA 366 over Br Poke Run (32059)
- US 422 over Pony Farm Road (110602)
- SR 837 Eighth Av over Homestead Run (78441)

- Boulevard of the Allies Ramps (100728)
- Electric Avenue over Falls Run (78232)

System Performance Measures

The FHWA final rule for the 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 was published in the Federal Register (82 FR 5970) on January 18, 2017 and became effective on May 20, 2017.

This final rule is the third in a series of three related rulemakings that together establish a set of performance measures for state DOTs and MPOs to use as required by MAP-21 and the FAST Act. The measures in this third final rule will be 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:

- 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
- Interstate System Truck Travel Time Reliability Index
- 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

State 2-year and 4-year targets were due May 20, 2018 and were also reported to FHWA in the 2017 baseline report that was due October 2018. 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. Specific coordination efforts are highlighted below:

- A workshop was conducted on January 11, 2018 with PennDOT and FHWA Pennsylvania Division staff to identify future steps and requirements related to the Transportation Performance Management (TPM) rulemaking.
- PennDOT conducted a performance measure workshop on February 26-27, 2018 with the Pittsburgh, Philadelphia, and York MPO planning staff to evaluate baseline performance measure trends and methodologies for target setting.
- PennDOT provided status updates on the development of performance measure data, tools and methodologies to the planning partners. On October 18, 2017, PennDOT provided an overview of the performance measures and general

approaches for target setting at the planning partners fall conference in State College. On a March 20, 2018 conference call, PennDOT provided a status update on the development of baseline measures and targets.

- PennDOT conducted a webinar May 9, 2018 to review the state DOT targets with the planning partners.
- PennDOT has worked to develop the Pennsylvania Department of Transportation MAP-21 and FAST Act Performance Management Road Map to provide planning partners a resource on the performance measure requirements and calculations.

Any portion of the applicable transportation network within the SPC region must establish targets for the performance measures no later than 180 days after PennDOT establishes (or amends in the future) their targets. SPC must establish targets for the performance measures no later than 180 days after PennDOT establishes (or amends in the future) their targets. SPC agreed to adopt the statewide targets as the region's targets on September 24, 2019.

Data Collection and Analysis

PennDOT has worked to identify and evaluate the data and tools used to produce the baseline performance measures. 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.

State System Performance Measure (PM3) Targets:

Due to potential tool enhancements, limited historic information, and the need for additional research to understand the variances and factors influencing each of the performance measures, PennDOT has established conservative targets. In some respects, these may be more appropriately referred to as benchmarks. PennDOT will track the measures over the next two years. States are permitted to adjust their 4-year targets at the midterm of the performance period, representing data through 2019 in a report due to FHWA by October 1, 2020. PennDOT will coordinate any updates to the performance measures with the Planning Partners. SPC will also track the annual PHED and Non-SOV travel measures and revisit the estimated established 4-year targets at the midterm period.

For the three reliability measures, PennDOT has set statewide targets (sub-state targets are optional). MPO baseline reliability measures have been provided for information purposes only. For the first performance period, the annual peak hour excessive delay and non-SOV travel measures must be developed for the Pittsburgh and Philadelphia urbanized areas only. PennDOT has worked closely with SPC and DVRPC to develop these targets and to include the necessary multi-state coordination partners in the target-setting process. The mobile source emission measure targets are produced statewide and for each MPO that is in nonattainment or maintenance of the National Ambient Air Quality Standards. The targets represent the amount of emissions to be reduced per day via projects selected to be

funded with regional Congestion Mitigation and Air Quality Improvement (CMAQ) program funds.

Table 3-7: Travel Time and Annual Peak Hour Excessive Delay Measures

Travel Time and Annual Peak Hour Excessive Delay Measures (Estimated using RITIS Data Extract from May 8, 2018)			
Measure	Baseline 2017	2-year Target 2019	4-year Target 2021
Interstate Reliability (Statewide)	89.8 %	89.8 %	89.8 %
Non-Interstate Reliability (Statewide)	87.4 %	N/A	87.4 %
Truck Reliability Index (Statewide)	1.34	1.34	1.34
Annual Peak Hour Excessive Delay Hours Per Capita (Urbanized Area)	SPC - 11.1	N/A	11.8

Table 3-8: Travel Baseline and Target Values for Non-SOV Travel Measure

PM-3 Baseline and Target Values for Non-SOV Travel Measure			
Measure	Baseline 2017	2-year Target 2019	4-year Target 2021
Percent Non-Single Occupant Vehicle Travel (Urbanized Area)	SPC - 24.8 %	24.6%	24.4 %

Table 3-9: PM-3 Target Values for CMAQ Emission Measures

PM-3 Target Values for CMAQ Emission Measures Applicable MPOs and Pollutants Determined from: https://www.fhwa.dot.gov/environment/air_quality/cmaq/measures/cmaq_applicability/pa/ge03.cfm#toc494364458			
Measure	MPO	Emission Reductions (kg/day)	
		2-year Target* 2019	4-year Target 2021
VOC Emissions	Statewide	109.460	201.730
	SPC	58.060	107.000
NOx Emissions	Statewide	337.700	612.820
	SPC	256.110	464.770
PM _{2.5} Emissions	Statewide	10.760	20.490
	SPC	7.010	13.350
PM ₁₀ Emissions	Statewide	9.540	17.470
	SPC	9.540	17.470
CO Emissions	Statewide	567.700	1135.400
	SPC	284.970	569.930

* 2-year emission targets are only applicable for states and for MPOs with populations of a million or more. MPOs with populations <1 million are not required to report 2-year emission targets. The values were used to establish statewide 2-year targets.

Reporting on Progress Toward Target Achievement

PennDOT and MPOs will need to report on performance at regular intervals. The first state DOT baseline performance period report was due October 1, 2018, for all measures in this rule.

SPC must establish targets for the performance measures no later than 180 days after PennDOT establishes (or amends in the future) their targets. SPC agreed to adopt the statewide targets as the region's targets on September 24, 2018. SPC also adopted its CMAQ Performance plan that establishes a baseline, monitors progress toward targets, and reports progress towards its targets on September 24, 2018. The CMAQ performance plan includes a process for reviewing and revising targets on regular 2-year cycle.

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

The 2021 TIP includes a significant investment in efficiency and operations, \$158 million, invested in 41 efficiency and operations projects to address traffic congestion, improve travel time and reliability, and reduce traffic delays. An additional \$128 million will be invested in new capacity projects at key bottleneck locations in the region. 29 of these

projects totaling \$157 million are in the region's congestion management corridors. Traffic signal investments total over \$73 million on 23 projects, primarily traffic signal upgrades, including SPC's Regional Traffic Signal Program line item. There are 12 intersection improvement projects such as the addition of turning lanes valued at over \$48 million. Notable projects that improve roadway efficiency and operations include:

- US 19 Corridor Signal Upgrades (107432)
- SR 68 Corridor Improvements (106568)
- SR 356 Corridor Improvements (106486)
- City of Pittsburgh CBD Signals (63378)
- City of Pittsburgh Smart Spines (109691)
- Penn Avenue Signal Improvement (114288)
- I-79 at SR 910 Interchange Improvements (104328)

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 reduction of VMT. Other factors such as project deliverability, potential safety benefits, and consistency with other plans and programs are also evaluated by the CMAQ Evaluation Committee. The following are a sample of projects that were selected to receive CMAQ funds during the 2019 CMAQ process.

- Pittsburgh Healthy Ride Electrified (114296)
- Pittsburgh Bus Rapid Transit Downtown Improvements (114283) and Bus and Bicycle Lanes (114280)
- City of Pittsburgh Bus Shelters/Mobility Hubs (114294)
- Allegheny River Green Boulevard (114290)
- I-376 Active Traffic Management (94651)
- I-79/SR 910 Interchange Improvements (104328)
- Traffic Signal System Improvements on US 30 (114563), US 119 (110402) (114560), SR 18 (114561) and Penn Avenue (114288)

Transit Safety Performance Measures

Safety performance management is a critical tool that will support transit providers and FTA in identifying safety concerns and monitoring progress in safety improvements throughout the transit industry. FTA's National Public Transportation Safety Plan (January 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 that would 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 would be developed and certified by FTA and agency staff trained and certified through a national-level Public Transportation Safety Certification Training Program. These prerequisites are in the development stage. A national safety performance management tool – the SMS (Safety Management System) is also under development.

There are currently no agency-specific safety performance measures or performance targets in place for the region’s public transportation agencies pending completion of the pre-requisite safety management processes (national safety training and certification; Agency Safety Plans with tailored measures and targets; and FTA Safety Management System).

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:

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

Federal PBPP requirements require the use of certified TAM practices by all recipients of certain types of

Southwestern Pennsylvania Public Transit Providers:

- Port Authority of Allegheny County (PAAC),
- Beaver County Transit Authority (BCTA),
- Butler Transit Authority (BTA),
- Fayette County (FACT),
- Indiana County Transit Authority (IndiGO),
- Mid-County Transit Authority (TACT),
- Mid-Mon Valley Transit Authority (MMVTA),
- New Castle Area Transit Authority (NCATA),
- Washington County Transit Authority (WASH),
- Westmoreland County Transit Authority (WCTA);
- ACTA Shared Ride,
- Allied Coordinated Transit Services (ACTS),
- Butler County Shared Ride,
- Greene County Shared Ride,
- Heritage Community Transportation (HHF),
- SPC CommuteInfo.

federal transit funds. For management purposes, transit agencies fall into two basic types based on size and mode. The region has one Tier I agency – Port Authority of Allegheny County. There are 15 Tier II transit service providers.

Port Authority of Allegheny County (Port Authority) is a Tier I agency, operating 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 (FTA). Port Authority published its Transit Asset Management Plan in October 2018, establishing 20 asset-based performance measures across four investment categories (vehicles, facilities, systems and guideways).

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

There are 15 small 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 TAM Group Plan.

PennDOT's TAM Group Plan (September 2018) provides consolidated transit asset management services for both required and elective program participants. The TAM Group Plan fulfills federal PBPP requirements and encourages cooperative communications 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 PBPP processes were cooperatively developed and involved 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 TAM Group 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 Port Authority, 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.

Port Authority 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 Performance Measures and Performance Targets

The Port Authority 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 2018 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 3-10: 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

Port Authority 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 Port Authority identify for each performance measure actual condition data for 2018 and applicable performance targets for 2019. The performance data will be updated annually; an updated performance target will also be determined based on current conditions and anticipated capital investments. This information will be reported directly to FTA and shared with the MPO as described in the planning agreements.

TAM performance measure tables for statewide small transit agencies are provided from the PennDOT TAM Group Plan. PennDOT CPT output is not yet available for each agency; the performance measures and performance targets represent asset conditions statewide for each investment category or class. Performance measures identify actual condition data for 2017 and applicable performance targets for FY 2018-2019. A Performance Measures Summary is provided on the following pages. The performance data will be updated annually; an updated performance target will be developed through the PennDOT CPT, both statewide and for each agency. PennDOT will report this information to FTA and share it with the MPO 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 3-11: Port Authority Vehicle Condition Targets

Port Authority Vehicles	PM Description	Target	Actual
Bus	Useful Life Benchmark (ULB) – 12 years		
	Average Useful Service Life Remaining	5.0	5.9
	Percentage of fleet over ULB	10%	6%
Rail (4200)	Useful Life Benchmark (ULB) – 41 years		
	Average Useful Service Life Remaining	5.0	8.0
	Percentage of fleet over ULB	10%	0%
Rail (4300)	Useful Life Benchmark (ULB) – 31 years		
	Average Useful Service Life Remaining	5	17
	Percentage of fleet over ULB	10%	0%
Non-Revenue Vehicles	Useful Life Benchmark (ULB) – 8 years		
	Average Useful Service Life Remaining	2.0	-0.7
	Percentage of fleet over ULB	20%	42%
Non-Revenue Vehicles (other rubber tire)	Useful Life Benchmark (ULB) – 14 years		
	Average Useful Service Life Remaining	3.0	0.2
	Percentage of fleet over ULB	20%	49%
Non-Revenue Vehicles (steel wheel)	Useful Life Benchmark (ULB) - 25 years		
	Average Useful Service Life Remaining	5.0	-4.8
	Percentage of fleet over ULB	20%	75%
Incline Cars	Useful Life Benchmark (ULB) - 51 years		
	Average Useful Service Life Remaining	10	49
	Percentage of fleet over ULB	0%	0%

Table 3-12: Port Authority Ancillary Vehicle Condition

Port Authority Vehicles	Number	Average Age	ULB	Actual	% over
Bus	725	6.1 yrs	12 yrs	5.9	6%
Rail (4200)	55	33 yrs	41 yrs	8	0%
Rail (4300)	28	14 yrs	31 yrs	17	0%
NRV	225	8.7 yrs	8 yrs	-0.7	42%
NRV (other)	89	13.8 yrs	14 yrs	0.2	49%
NRV (steel)	4	29.8 yrs	25 yrs	-4.8	75%
Incline Cars	2	2 yrs	51 yrs	49	0%

Table 3-13: Port Authority Facility Condition

Port Authority Facilities	Performance Measure Description (Weighted aggregate average rating of asset categories 1 to 5)	Target	Actual
Maintenance	Average Condition Rating	2.8	3.1
	Percentage rated below FTA condition state 3 (FTA 1 or 2)	≤ 17%	17%
Service	Average Condition Rating	2.8	2.9
	Percentage rated below FTA condition state 3 (FTA 1 or 2)	≤ 20%	50%
Stations	Average Condition Rating	2.8	3
	Percentage rated below FTA condition state 3 (FTA 1 or 2)	≤ 10%	26%

Table 3-14: Port Authority System Condition

Port Authority 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%	0%
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	3.0
	Percentage rated below FTA condition state 3 (FTA 1 or 2)	≤ 10%	0%
Revenue Collection	Average Condition Rating	2.8	3.0
	Percentage rated below FTA condition state 3 (FTA 1 or 2)	≤ 10%	0%

Table 3-15: Port Authority Fixed Guideway Condition

Port Authority Guideway	Performance Measure Description	Target	Actual
Trackway/Rail	Average Performance Restriction - # miles	<3 miles	N/A
	Percentage of trackway with performance restriction	≤ 10%	N/A
	Percentage of total linear feet of rail deficiencies	< 1%	N/A
	Number of rail deficiencies per 100 foot of rail	< 1	N/A
Busway	Average Performance Restriction - # miles	< 2 miles	N/A
	Percentage of busway with performance restriction	≤ 10%	N/A
	Average condition rating	2.8	N/A
Bridges	Average condition rating	2.8	3.3
	Percentage rated below condition state 3	≤ 10%	10%
	Percentage of structurally deficient bridges (≤ 4)	≤ 10%	N/A
Tunnels	Average condition rating	2.8	3.4
	Percentage rated below condition state 3	≤ 10%	0%
	Percentage rated ≥ CS3	≤ 10%	N/A
Ancillary Structures	Average condition rating	2.8	3.5
	Percentage rated below condition state 3	≤ 10%	0%

Small Transit Agency Asset Inventory and Condition Summary (statewide)

Table 3-16: 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	34	132,567	6	5	15%
BU-Bus	1,052	217,385	7	188	18%
CU-Cutaway	1,025	106,989	4	450	44%
VN-Van	482	119,407	5	297	62%
SV-Sports Utility Vehicle	4	64,724	6	3	75%
Grand Total	2,597	154,283	5	943	36%

Table 3-17: 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	148	54,316	8	57	39%
Trucks and other Rubber Tire Vehicles	5	103,732	15	5	100%
Grand Total	153	55,890	8	62	41%

Table 3-18: 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	34	3	9	26%
Passenger / Parking Facilities	49	3	10	20%
Grand Total	83	3	19	23%

Small Transit Agency Asset Management Performance Summary (Statewide)

Table 3-19: Small Transit Agency Asset Management Targets

Performance Measure	Asset Class	Current Performance	FY 2018-19 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	15%	15%
	BU - Bus	18%	18%
	CU - Cutaway	44%	44%
	VN - Van	62%	62%
	SV – Sport Utility Vehicle	75%	75%
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	39%	39%
	Trucks and other Rubber Tire Vehicles	100%	100%
Facilities			
Condition - % of facilities with a condition rating below 3.0 on the FTA TERM scale	Administrative and Maintenance Facilities	26%	26%
	Passenger and Parking Facilities	20%	20%

System Performance Reports

Federal planning regulations require MPOs to include in their LRTPs a performance-based planning section that includes applicable performance measures, current conditions, performance targets, and a System Performance Report that describes the progress that the MPO is making towards achieving the identified performance measures. While it is too early in the PBPP process to determine progress or performance gaps — baseline data and performance targets have been identified and adopted but formal conditions reports have yet to be produced — a number of observations can be made about existing conditions and targets.

Port Authority:

- Port Authority's 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 year.

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.

TIP Investment in Projects that Improve Transit Asset Maintenance Conditions

Project selection processes for the SPC 2021 TIP prioritize the selection of projects that will support the achievement of the region’s transit project sponsors’ transit asset maintenance performance targets

Table 3.20: TIP Investments that Improve Asset Condition

	Port Authority of Allegheny County		Small Urban and Rural	
	Funding	# of Projects	Funding	# of Projects
Equipment	\$ 51,930,696	11	\$ 3,695,179	50
Facilities	\$ 385,989,843	22	\$ 11,061,835	16
Rolling Stock	\$ 175,371,748	25	\$ 46,318,371	49